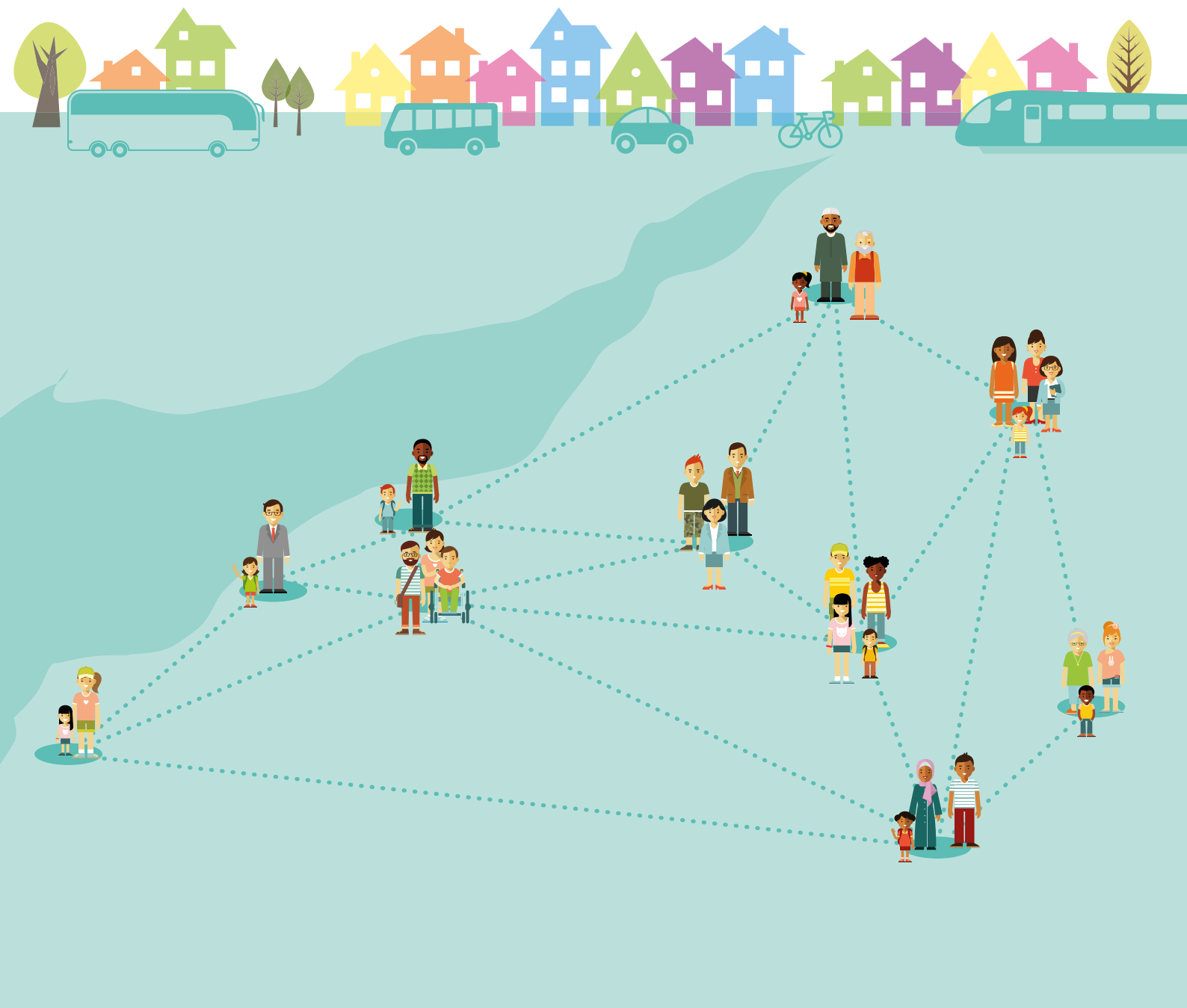


# Draft Joint Local Transport Plan 4 2019-2036

January 2019



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A note to the text

To demonstrate how the JLTP4 policies contribute towards delivering the objectives and outcomes, a series of icons have been developed. There is one icon for each objective, with the numbers below the icons showing which outcomes the policy is likely to make the largest contribution towards achieving.

The icons are included next to each policy at the start of the connectivity sections (Sections 6–9).

The objectives are:

-  **Support sustainable and inclusive economic growth**
-  **Enable equality and improve accessibility**
-  **Address poor air quality and take action against climate change**
-  **Contribute to better health, wellbeing, safety and security**
-  **Create better places**

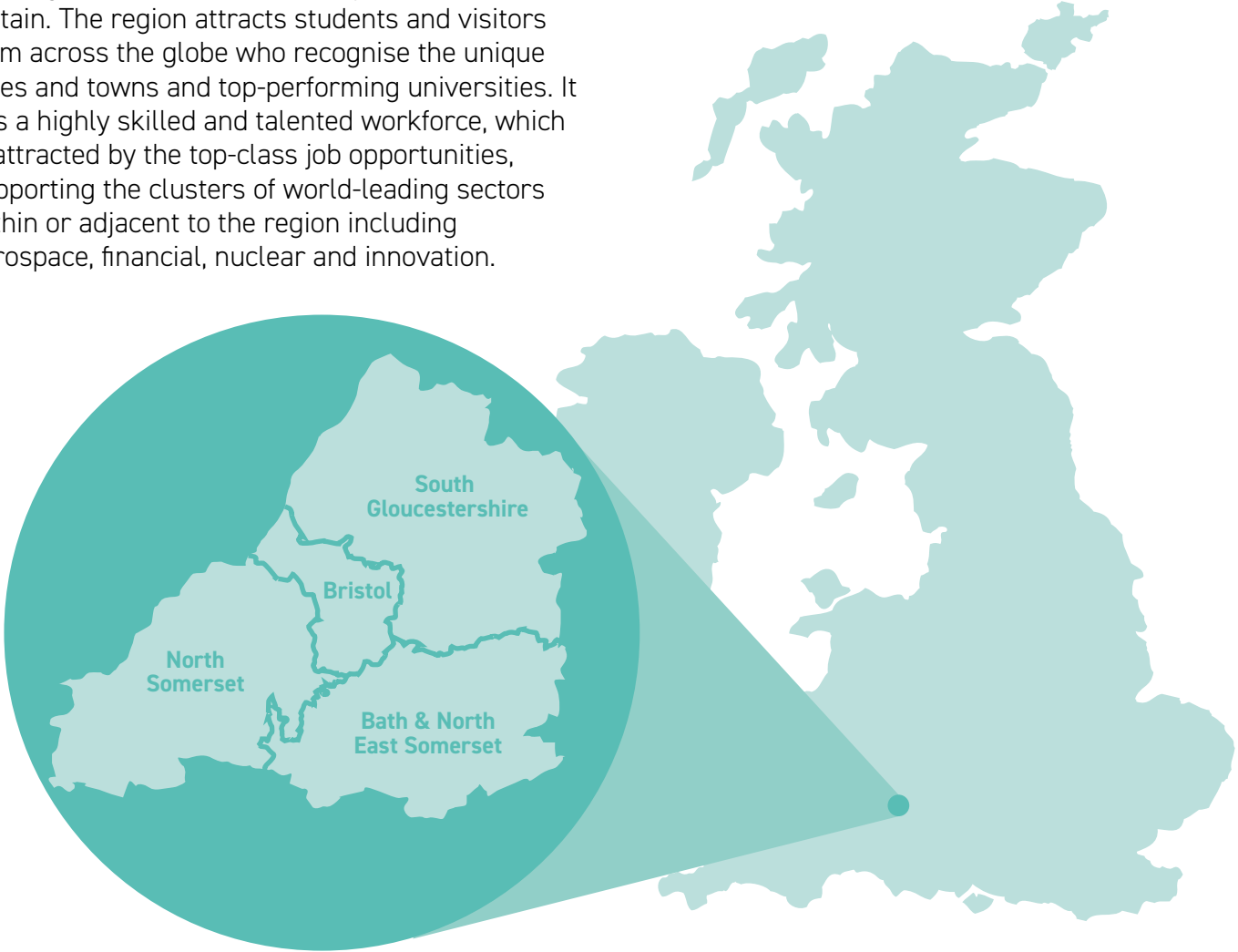
Section 1:  
Setting the scene

The West of England

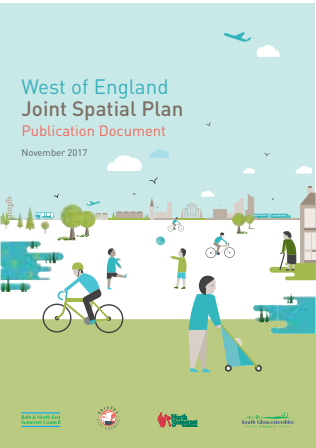
The West of England is a prosperous city region with a population of 1.1 million and an economy worth over £33bn a year. The region is diverse, with the vibrant densely populated cities of Bristol and Bath, complemented by surrounding rural areas and towns. The region’s growth has exceeded the national average over the past 15 years, while population grew by nine per cent between 2001 and 2011. Productivity is the highest of all the largest city regions in the United Kingdom outside London, and the region is one of the few net contributors to the UK economy.

The West of England is known across the UK and further afield for its creativity and quality of life; it is recognised as one of the best places to live in Britain. The region attracts students and visitors from across the globe who recognise the unique cities and towns and top-performing universities. It has a highly skilled and talented workforce, which is attracted by the top-class job opportunities, supporting the clusters of world-leading sectors within or adjacent to the region including aerospace, financial, nuclear and innovation.

In 2017, the West of England Combined Authority (WECA) was formed to help support increasing coordination of transport, housing and skills across the area administered by Bath & North East Somerset Council, Bristol City Council and South Gloucestershire Council. It is a legal body that can make transport decisions at the combined authority level and receive devolved powers and resources. It is through the West of England Joint Committee that WECA and North Somerset Council make decisions at the West of England level. Central government has devolved £30m per annum for 30 years to WECA, giving more local control and accountability over spending. The West of England authorities will continue to work closely with partners, including the West of England Local Enterprise Partnership.



Section 1:  
Setting the scene continued



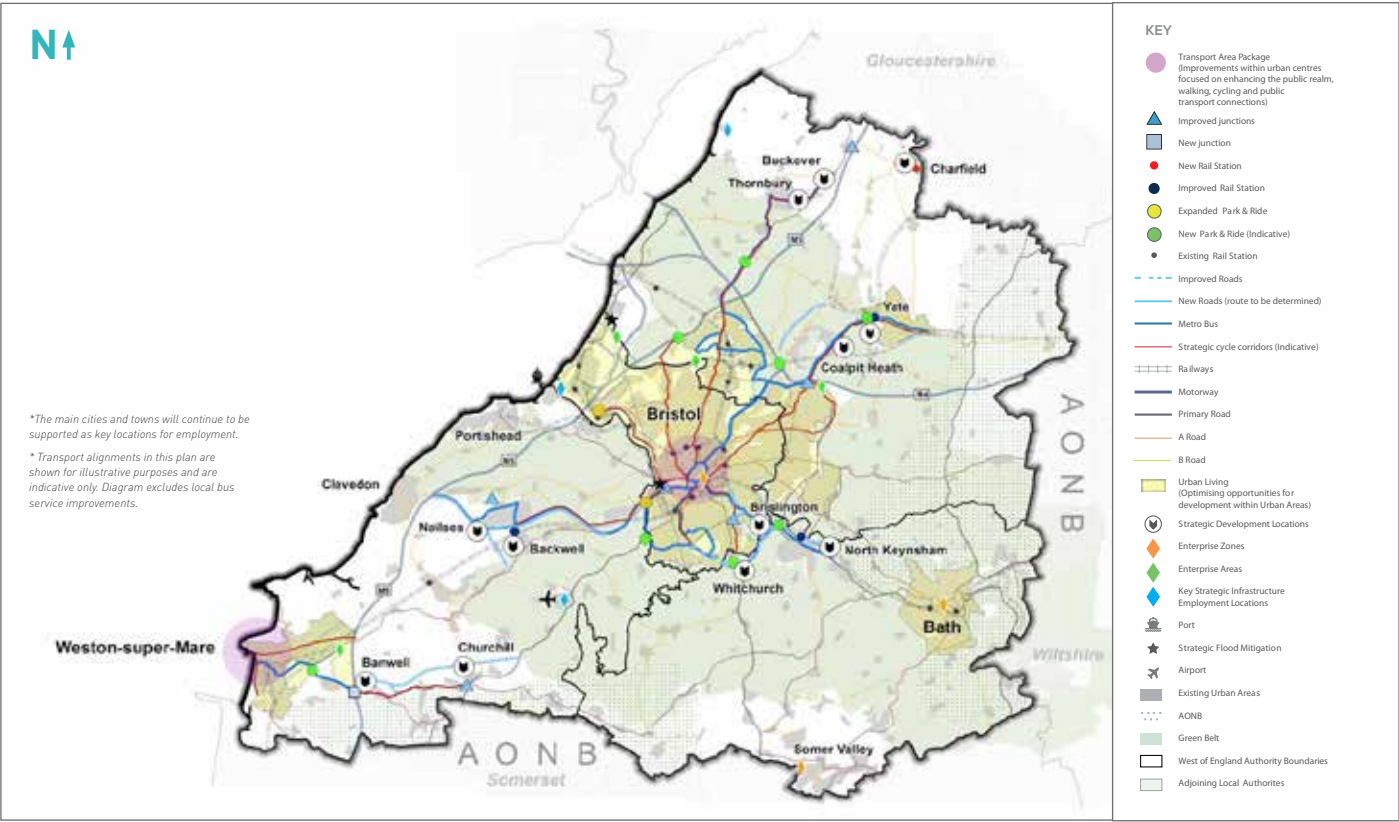
The JSP sets out a prospectus for sustainable growth to help the region meet its housing and

The Joint Spatial Plan and Joint Transport Study

The region has a strong legacy of partnership working; local government, transport providers, business and local communities, the voluntary sector and wider stakeholders have collaborated for over 10 years. This culminated

transport needs to 2036. It includes the policies and principles required to support the delivery of 105,500 new homes and 82,500 new jobs. The key growth areas – combining the Strategic Development Locations, Urban Living and employment locations (including Enterprise Zones and Areas) – are shown below. Local Plans for each authority contain the more detailed plans and policies for new development, including parking.

In tandem with the JSP, a Joint Transport Study (JTS) was undertaken to recommend how to address both current transport challenges, including carbon reduction, and forecast growth. The JTS, developed in partnership with Highways England, identified potential future strategic transport proposals for delivery up to 2036, that address current challenges and inform future development proposals in the JSP. The JTS set out the following approach for transport:



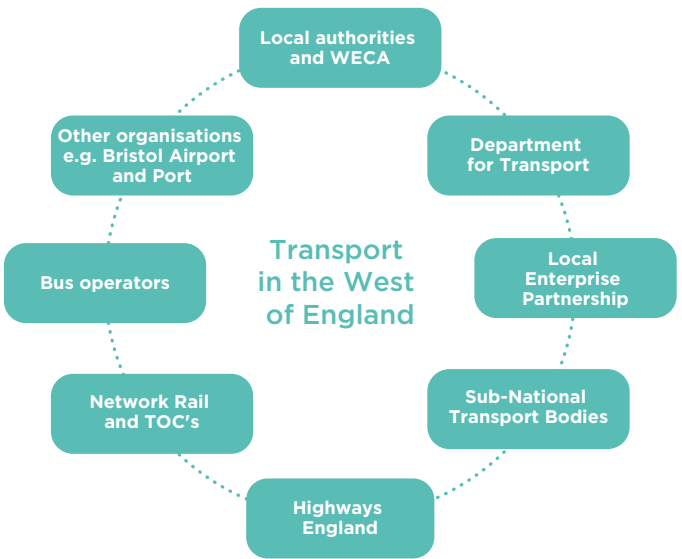
“Transport in the West of England will be transformed over the next 20 years through a programme of complementary measures designed to address underlying challenges and to enable the sustainable delivery of new housing and employment growth.”

The JTS has informed, and has been informed by, the JSP. The findings and recommendations in the JTS were advisory; this Joint Local Transport Plan takes account of these findings, builds upon them and formalises the work previously carried out.

Transport in the West of England

Transport in the West of England is planned, managed, delivered and funded by a large group of organisations, shown in Figure 1.1, working together to improve transport provision and support our commitment to carbon reduction.

Figure 1.1: Transport in the West of England



Local authorities and WECA

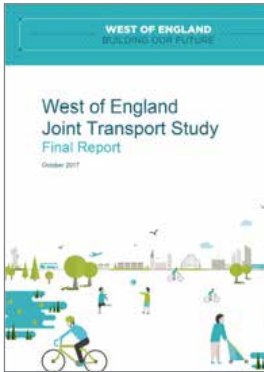
Local authorities are responsible for delivering local transport schemes. They also work together, through bodies such as WECA, on the development of cross-cutting strategies for the West of England and delivery of larger schemes, including MetroBus and MetroWest. Local authorities receive regular annual transport funding from local sources, including Council Tax, business rates and parking income. However, most transport funding comes from the Department for Transport (DfT) and other arms of central government.

Department for Transport

The Department for Transport (DfT) is responsible for allocating funding to transport schemes. In recent years, the level of regular annual funding that local authorities receive from DfT for capital transport projects and highway maintenance has been reducing. Funding is increasingly awarded through competitive bids, such as the Highways Maintenance Challenge Fund and Cycle Ambition Fund, and these can only be used for specific purposes. This shift to competitive bids means central government achieves greater control, accountability, and stronger value for money. However, it has led to more uncertain levels of funding for local authorities.

Local Enterprise Partnership

The West of England Local Enterprise Partnership (LEP) supports business growth and is working to attract new jobs to Bristol, Bath, Weston-super-Mare and the rest of the region. The LEP, which is accountable to WECA, brings together organisations from the private, public (including the four local authorities), education/training and social enterprise sectors, to support the delivery of the West of England Industrial Strategy.





Section 1:

Setting the scene continued

Sub-National Transport Bodies

The Government is encouraging the establishment of Sub-National Transport Bodies (SNTB) to provide more strategic thinking about transport investment priorities to improve regional productivity and sustainable economic growth. WECA and the four West of England authorities are planning to participate in the proposed “Western Gateway” Sub-National Transport Body, which will also consist of Borough of Poole Council, Bournemouth Borough Council, Dorset and Wiltshire Councils, and Gloucestershire County Council. At this stage it is proposed that the Western Gateway SNTB operate in shadow form, i.e. it will not be a statutory body, though it may decide to be this in the future. Additionally, a firm commitment remains to work closely with the proposed “South West Peninsula” SNTB on a number of shared strategic priorities.

Highways England

Highways England is responsible for the Strategic Road Network (SRN), which comprises of motorways and major A roads. Highways England receives funding from central government and sets out its investment priorities in five-year Road Investment Strategies (RIS). The development of RIS considers local needs for improvements to the SRN, such as new motorway junctions.

Network Rail and train operating companies

Network Rail is responsible for the rail tracks, signalling and other rail infrastructure, including Bristol Temple Meads station. Train operating companies, such as Great Western Railway, operate the trains and most stations. Like Highways England, Network Rail produces a five-year investment strategy, that takes into account strategic projects, such as electrification, and locally promoted projects, such as MetroWest.

Bus operators

Most buses in the West of England are run on a commercial basis by bus operating companies, such as First. They are responsible for setting routes, fares and timetables, and work with local authorities to improve services. Local authorities also subsidise a small number of services for local communities, where there is a social or accessibility need and it is not viable to run a commercial service.

Other organisations

A range of other organisations are involved in delivering transport improvements. This includes Bristol Airport and Port, housing and employment developers, walking and cycling charities and external stakeholders. Further details on how we will continue to embrace these and other partnerships are set out in Section 4.

Local Transport Plans

Local authorities have historically been required by government to prepare LTPs; this plan is the fourth prepared by the authorities in the West of England. In the past, LTPs would set out transport improvements the local authority had identified as required, and these would be reviewed by DfT. Based on the review, funding for core schemes would be allocated, with major schemes (those over £5m) funded through a separate bidding process.

The recent shift to most transport funding coming from bids means LTPs are now more aspirational documents that are increasingly used as bidding tools. Local authorities can set out a programme they would like to deliver, and in addition to regular funding, they can still apply to DfT for larger sums of money to deliver major schemes (for further information see Section 10: Funding and Implementation).



Achievements during the Joint Local Transport Plan 3 period

The West of England Joint Local Transport Plan (JLTP3), prepared in 2011, set out a 15 year vision for transport across the region. It focussed on reducing carbon emissions, supporting economic growth, and improving accessibility, safety and security, health, and the quality of life. The region has made significant achievements during the seven years of JTLP3, spending over £500m on the delivery of transport projects, including:

- Step-change improvements to the Greater Bristol Bus Network, including vehicle quality, information, service frequency and fare structures
- The launch of the first three MetroBus routes, providing a significant increase in the quality and speed of public transport along over 50km of routes, linking central Bristol with areas of North Somerset and South Gloucestershire
- Successful bid with bus operators for designation of key bus route corridors as a Better Bus Area to target specific improvements funded by displaced Bus Service Operators' Grant
- Programmes to facilitate travel behaviour change and increase cycle and bus use, delivered under the Local Sustainable Transport Fund, Access Fund, Better Bus Area Fund, Cycling Ambition Grant and Local Growth Fund
- Large areas of public realm improvements to improve conditions for pedestrian and cyclists and remove the dominance of vehicular traffic, including Weston-super-Mare town centre and The Cenotaph in Bristol
- Completion of the Weston-super-Mare transport package, including improvements to M5 Junction 21 and the Worle Parkway station interchange

- Completion of the Bath Transportation Package, including expansion to the capacity of Park & Ride, improvements to the city's bus stop infrastructure and reconfiguration of parts of the city's road network
- Completion of the A4174 South Bristol Link Road, a key multi-modal transport link connecting South Bristol with North Somerset at Ashton Vale, improving links between the M5 motorway, Bristol International Airport and the A38, and removing freight vehicles from Winterstoke Road

Additionally, on the rail network, delivery continues of the Great Western electrification project and new bi-mode intercity trains, bringing faster journey times and more services linking the region with London. Work is also progressing on MetroWest, which focuses on major improvements to local and suburban rail services, including the re-introduction of passenger services between Portishead, Pill, Henbury and Bristol.

These and other projects have contributed to very positive changes in how people get around the region. During the past ten years we have seen:

- The number of bicycle trips more than double, with an average year on year increase of 10%
- The number of bus passenger journeys increasing by more than one third – with 10-15% alone across much of the region in the year to 2016/17, compared to a fall of nearly 1% across England as a whole. Bus passenger satisfaction has remained stable in recent years with overall bus satisfaction levels standing at 89% in the 2017, which is higher than in most core city regions
- Rail passengers (since 2008) increasing by more than half, with more than double the number using the Severn Beach Line

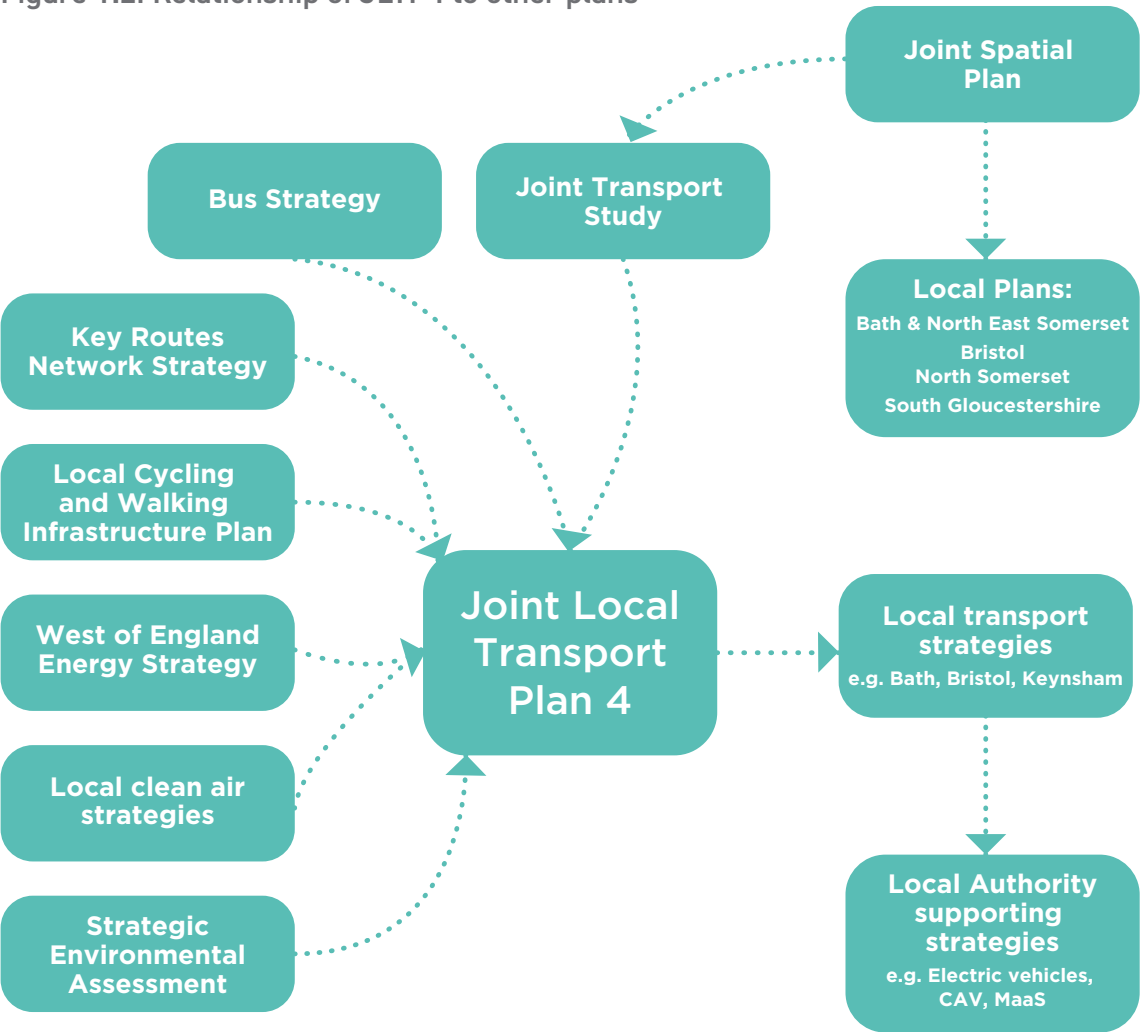
We exceeded the targets set out in JLTP3 in all these areas, along with those relating to improving road safety and reducing CO<sub>2</sub> emissions.

Section 1:  
Setting the scene *continued*

**Joint Local Transport Plan 4 (2019-2036)**

This draft Joint Local Transport Plan (JLTP) has been prepared by WECA and the four West of England local authorities – Bath & North East Somerset Council, Bristol City Council, North Somerset Council, and South Gloucestershire Council. It takes account of the JSP and JTS findings and recommendations and will support delivery of the more detailed interventions set out in local transport strategies across the region. This includes the Bath and Bristol Transport Strategies, and other supporting strategies for cycling, parking and other modes. JLTP4 will also be supported by other regional strategies covering cycling, walking, buses and the main road network

Figure 1.2: Relationship of JLTP4 to other plans



**Strategic Environmental Assessment (SEA)**

The European SEA Directive (2001/42/EC) requires an environmental assessment to be undertaken of any plans or policies that could result in an impact on the environment. The overall aim is to ensure better protection for the environment and human health. The SEA process aims to make decision-makers aware of the likely environmental effects of policies and plans at an early stage of development.

The SEA does not provide a detailed assessment of the schemes listed within JLTP4 but includes a broad assessment of the likely effects of the overall plan. It also considers the impact of adopting and implementing JLTP4 compared to the likely impact of any reasonable alternative scenarios. The likely impacts of the plan and the reasonable alternatives are identified, described and evaluated. The reasonable alternative scenarios considered as part of this JLTP4 assessment, are:

- JLTP3 remains the adopted transport policy for the West of England, and none of the transport policies included in JLTP3 are updated
- 'No Plan' option, which assumes there is no JLTP4 and JLTP3 ceases to be in place. This means the JLTP3 policies will no longer apply, but schemes directly mitigating JSP strategic development locations, and individual local authority transport policies, will continue to exist

An Environmental Report has been prepared for JTLP4, providing an assessment of "the likely significant effects on the environment". The Environmental Report includes a Habitats Regulations Assessment, Equalities Impact Assessment and Health Impact Assessment. The Environmental Report is being consulted upon at the same time as this consultation version of JLTP4. A summary of the draft Environmental Report is included in Appendix 1.

The SEA seeks to identify measures that can be integrated into JLTP4 to ensure that likely adverse environmental impacts of the plan are minimised and mitigated. The mitigations included in the Environmental Report, and the feedback obtained during the consultation period, will be considered and used to inform the final version of JLTP4.

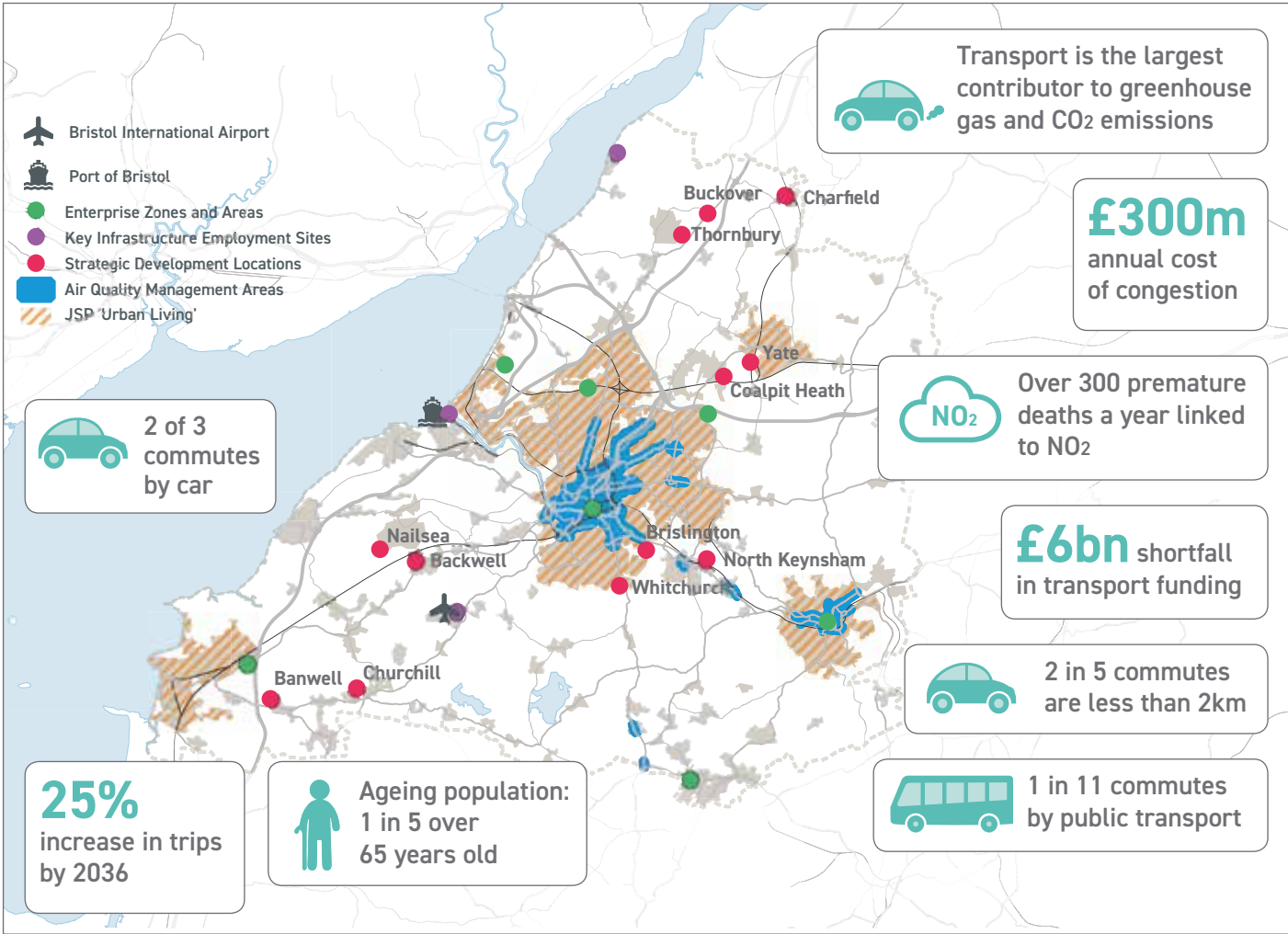
Section 1:  
Setting the scene *continued*

# Section 2: Transport challenges in the West of England

There have been significant achievements during the last seven years of JTLP3. Investment has contributed towards changes in how people get around the region, resulting in increased bus passenger numbers, increased levels of walking and cycling, improved road safety and reduced CO<sub>2</sub> emissions. However, the West of England faces serious transport challenges, which will become more acute with the anticipated scale of growth in the area. For population and economic

growth to occur sustainably, connectivity across the region needs to be transformed. We are faced with ongoing and new challenges, many of which are not unique to the West of England, and some of which we have little or no control over. This section sets out some of the key challenges faced. A high-level summary is shown in Figure 2.1.

Figure 2.1: High-level summary of transport challenges





Section 2:

Transport challenges in the West of England continued

Transport is the largest contributor to carbon dioxide emissions in the West of England

Transport is responsible for 29% of carbon dioxide (CO<sub>2</sub>) emissions in the West of England, compared to 26% nationally. Climate change impacts on the resilience and standard of the transport network, including issues such as flooding, landslides, potholes, heat damage to roads and rail buckling. The JLTP, JSP and West of England Energy Strategy will be key levers in supporting the UK commitment to the Paris Agreement, negotiated at the 2015 United Nations Framework Convention on Climate Change. This aims to limit the increase in global average temperatures to 1.5°C by 2050. The Climate Change Act is a legally binding commitment by the UK Government to achieve an 80% reduction in CO<sub>2</sub> emissions by 2050 from a 1990 baseline.

In October 2018, the United Nation's Intergovernmental Panel on Climate Change published a report saying the world is off track to keep to the 1.5°C limit and would likely exceed it by around 2040, even with the promises made as part of the Paris Agreement. It reports that CO<sub>2</sub> emissions must be cut drastically by 45% of 2010 levels by 2030 and 'net zero' levels achieved by 2050.

This means that alongside technology to reduce emissions, such as electric cars, significant advances are required in technology that can remove CO<sub>2</sub> from the atmosphere.

Local authorities in the West of England have adopted targets that are in line with, or more ambitious than the national targets in the Climate Change Act. The medium-term combined West of England carbon reduction target is to achieve a 50% reduction in absolute CO<sub>2</sub> emissions by 2035 from 2014 levels. Over the last decade a reduction in transport emissions has been achieved through improved fuel efficiency and some mode shift to walking, cycling and public transport. With significant population changes, however, this trend could reverse without intervention.



2 in 5 commuting car journeys less than 2km



Travel demand is growing, and there is an increased need to improve the offer of more sustainable modes of transport

The demand for travel to and within the West of England is growing, and will continue to grow, due to planned housing and employment growth. This will put increasing pressure on the already congested Strategic Road Network and other transport links. Changing travel patterns, due to the layout and location of more recent development, flexible working and the increasing availability of technology and telecommunications, will have some impact on transport growth, but if left unchecked there is still going to be an over-dependence on the private car, particularly for some very short journeys.

The common perception is that there are limited travel options

There are limitations to public transport connectivity resulting from the delivery of bus services by a deregulated commercial market with differing objectives, and delivery of rail services by franchisees working to the specification set by DfT.

Whilst the number of passengers has increased, public transport use is low compared to other city regions. Many journeys are across or around urban areas instead of to town and city centres, and travel options tend to be more limited or slower. Rail services are impacted by the age and low capacity of some rolling stock, infrastructure problems, and rail company staff shortages.

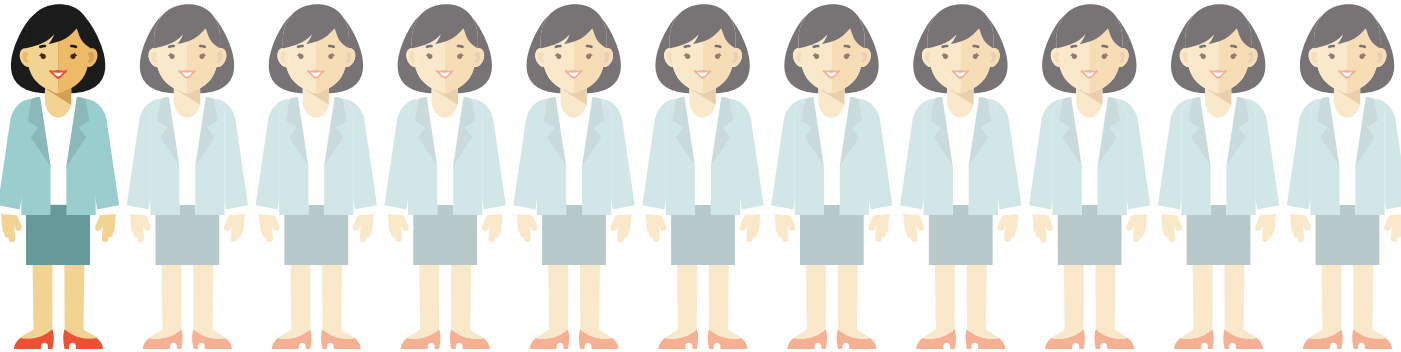
People who do not use public transport have the perception there are limited travel options, hence the level of satisfaction with public transport journey

planning information is lower than the national average.

Parts of the road and rail networks are under strain

The lack of spare highway capacity impacts on providing resilience, for example for diversionary routes following an incident on the motorway network. Congestion and unreliability are a major cost to the region due to increased vehicle operator costs, more non-productive time, and are barriers to further clustering of business sectors in Enterprise Areas/Zones and other major employment areas. This will impact on our sustainable growth aspirations and competitiveness if left unchecked. The removal of the Severn Bridge tolls is likely to worsen congestion on some major roads in the West of England. Additionally, the efficiency of the region's

1 in 11 commutes by public transport





Section 2:

Transport challenges in the West of England continued

network is impacted by different highway network management arrangements.

There is a need to sustainably accommodate growth in the number of delivery and freight vehicles. These are generated by our expanding airport, port and other road freight movements into and through the region, associated with the growing economy, population and home shopping.

The local authorities work hard to maintain their highway assets. However, budget constraints mean there is a highway maintenance backlog. There is an increasing incidence of poor or dangerous road surfaces, often arising from extreme weather events.

Demand is growing on the local and regional rail network, and trains are overcrowded at peak times, particularly into Bristol and Bath.

There are high levels of inequality and different accessibility needs

There are high levels of inequality across the West of England, with some communities or individuals not benefiting from the prosperity of the region but impacted by the high costs of living. The pockets of deprivation impact on opportunities to access services and employment. There is an ageing population

which has its own distinct travel needs. Older people rely increasingly on others to gain access to services, especially in rural areas where local facilities and public transport are lacking or limited.

Transport impacts on safety, security, air quality, public health and public realm

Vulnerable road users (particularly pedestrians, cyclists and motorcyclists) continue to be more seriously affected by road traffic incidents. Many streets are perceived to have safety or security issues, including high numbers of heavy vehicles. This makes walking or cycling unappealing and can increase vehicle trips, such as on the 'school run', thereby creating a vicious circle.

Poor air quality across several of our urban areas results in health impacts on local communities and negatively effects the natural environment. Air Quality Management Areas (AQMA) continue to be in place in areas including Bath, Bristol and other locations on major roads with heavy and/or slow-moving traffic. The Government has directed local authorities to prepare Clean Air Plans to reduce nitrogen dioxide (NO<sub>2</sub>) levels in the Bath and Bristol urban areas to legal levels by 2021 at the latest.

High car dependency, poor air quality and inactive lifestyles pose a major threat to public health. The quality of the public realm is poor in some areas, and severance and noise caused by motorised traffic exacerbates this and deters the use of active modes. As well as impacting on physical health, it limits the integration and vitality of local communities and negatively affects quality of life.

There is a need to manage emerging technology and innovation

We may be at the tipping point of a revolution in transport, as emerging technologies and innovation, including 'driverless' electric vehicles and smartphone apps, change how we choose to travel. We need to consider the potential for, and long-term impacts of this on mobility and travel (see Section 4: Embracing technology and partnerships for more details).

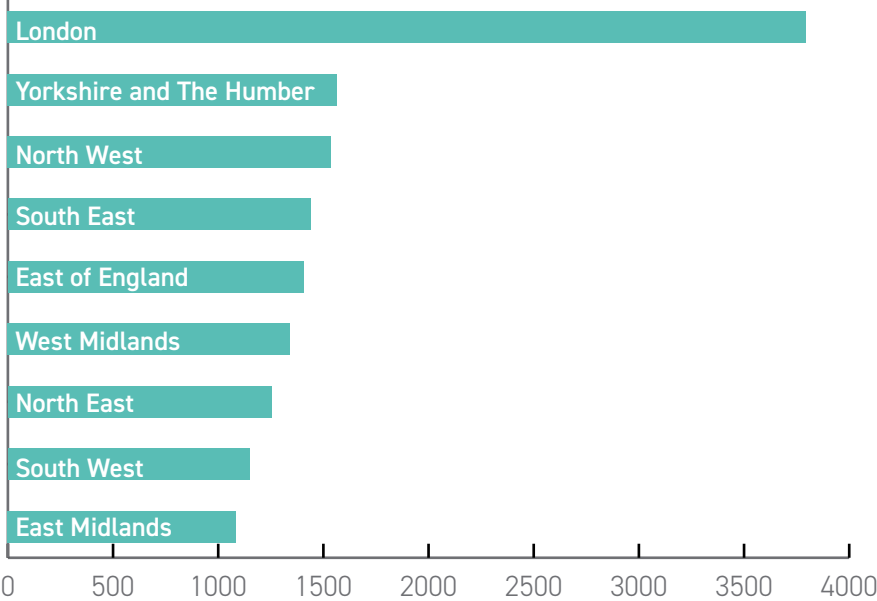


There has been limited transport funding

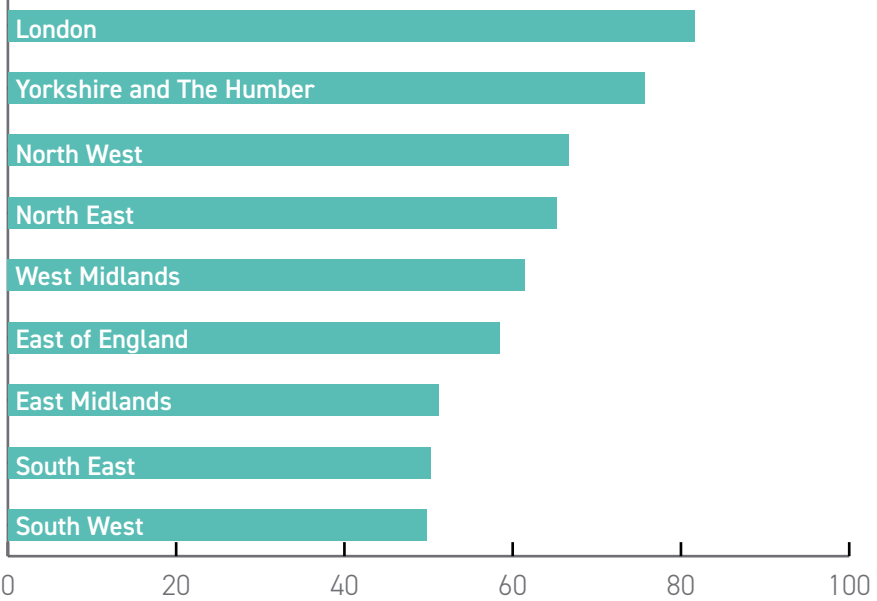
Many of the challenges are a direct result of limited transport funding across the region and wider South West for many years; the level of available resources has been insufficient to address the scale of growth. During the five-year period from 2012/13 to 2016/17, the average overall public spending on transport per resident of the South West region was around £1,150, the lowest across all regions except for the East Midlands. The average spend across England (excluding London) was nearly 20% higher, at £1,370. Furthermore, during the same period, the South West saw the lowest average overall public spend per Gross Value Added (GVA) on transport, at £49.76 per £1000 GVA. This compares to an average in England, excluding London, of £58.48 per £1000 GVA . The JTS recognises the need to catch-up through the most ambitious transport programme ever for the West of England.

The following sections of JLTP4 set out how we will continue to work together to build on our achievements to date, provide the step change in transport provision that is required, and embrace new opportunities and technology to provide enhanced connectivity across and beyond the West of England. This will ensure the West of England continues to be one of the best places to live, study work and visit.

Public spending (£) on transport per resident (2016/17)



Public spending (£) on transport per £1000 GVA (2016/17)



Section 2:  
Transport challenges in the West of England continued

Section 3:  
Vision and objectives

Vision

The long-term aspiration for transport in the West of England is encompassed in the vision for JLTP4:

**‘Connecting people and places for a vibrant and inclusive West of England’**

Objectives

Five objectives have been identified, based on the aspirations of the West of England authorities and previous plans and policies prepared. There is no priority allocated to the objectives as they all have a role to play in achieving the vision for the West of England. The objectives, as follows, are in no particular order:

-  Support sustainable and inclusive economic growth
-  Enable equality and improve accessibility
-  Address poor air quality and take action against climate change
-  Contribute to better health, wellbeing, safety and security
-  Create better places





Outcomes

For each of the objectives, several outcomes have been agreed. These outcomes set out what we are seeking to achieve by delivering the plan. The policies included in the plan will support the delivery of the objectives and outcomes.

To demonstrate how the JLTP4 policies contribute towards delivering the objectives and outcomes, a series of icons have been developed. There is one icon for each objective, with the numbers underneath showing the outcomes the policy is likely to make the largest contribution towards achieving. The icons are included next to each policy in the connectivity sections.

-  **Support sustainable and inclusive economic growth**
  1. Improved efficiency and reliability on local, national and international transport networks
  2. Delivery of new houses and jobs, identified through the JSP, is supported
  3. Access opportunities to employment growth areas is provided for all
  4. Transport assets are maintained and managed, and demonstrate value for money
  5. The high-quality transport network generates inward investment
  6. Congestion and demand on the network is better managed through technological advances

Section 3:  
Vision and objectives continued

- **Enable equality and improve accessibility**
  1. Connectivity is increased and transformed, enabling seamless “door-to-door” movements of people and goods
  2. Access for those with both visible and hidden disabilities is improved
  3. Access to services for residents in rural or remote areas is improved
  4. Better information to aid travel decisions is provided
  5. Low carbon transport and opportunities for reducing the need to travel are maximised
  6. New public transport systems, smarter ticketing and faster payment options are enabled
- **Contribute to better health, wellbeing, safety and security**
  1. There is a step change in the number of healthy, low carbon walking and cycling trips
  2. There is a continued reduction in the number of road casualties on the transport network
  3. Road safety for transport users is improved, particularly for those most at risk
  4. Personal safety on the transport network is improved, and there is less crime and fear of crime
- **Create better places**
  1. Journey experience is enhanced through an integrated and connected transport network
  2. The impact of the transport network on the built, natural and historic environment is minimised
  3. Streetscape, public spaces and urban environments are enhanced
  4. The transport network supports neighbourhood renewal and the regeneration of deprived areas
- **Address poor air quality and take action against climate change**
  1. NOx, particulates and carbon emissions are reduced
  2. Air quality in the AQMAs is improved
  3. Air quality remains better than national standards outside the AQMAs
  4. The transport network is resilient and adaptable
  5. Technological advances to improve air quality and monitoring are embraced

Section 4: Embracing technology and partnerships

**Technological advances and innovation**

Technological advances and innovation are striding ahead at the global level, with new digital systems and devices becoming an increasingly important part of our daily lives. The huge rise in internet shopping, more flexible working patterns and use of telecommunications software, are leading to fewer journeys being made per person for shopping, commuting and business. Technology has had a significant impact on mobility, and this will continue.

Future mobility is about so much more than technology; it’s about people, connectivity and the way we create and support change to deliver the future we want. People often adapt well to change, but opportunities need to be provided in the right place and at the right time to maximise benefits. As such, by shaping future mobility systems, we can, in turn, shape demand.

The right schemes and policy framework need to be in place to capitalise on changes, enabling us to harness the potential benefits and avoid negative impacts. We are witnessing rapid developments in many areas that could mean more people are able to choose walking, cycling and public transport. These changes could support a more inclusive society where the young, elderly, persons with mobility challenges, as well as those living in rural areas, have new travel options, and offer new ways of transporting goods to and around the region.

The main areas being explored, or where advances are occurring and evolving, are as follows:

**Connected and Autonomous (driverless) Vehicles (CAVs)** have the potential to radically transform the transport system in the longer-term future. The evolution of CAVs needs to be carefully managed. CAVs could offer the opportunity for fewer people to own cars, if sharing vehicles and journeys becomes more of the norm. However, more people could be able to access cars for journeys, which

may become significantly cheaper relative to public transport. This could potentially increase the number of vehicles on the road network, combined possibly with longer commutes, as people are able to work on the move. Within this JLTP4 period, CAVs will only provide part of the solution, and a multi-modal approach will still be needed.

**Mobility as a Service (MaaS)**, including Pay As You Go travel, could encourage a shift away from personally-owned modes of transport and towards solutions that are consumed as a service. This could include the concept of paying for a weekly travel pass that includes bike hire, car hire, bus and train travel, rather than owning a personal mode of transport.

**Open data**, stemming from data collation and sharing of information obtained from journey planning tools and ticket sales, for example, can provide an understanding of travel behaviour. In turn, the data can support the identification and development of measures that influence future travel demand and mobility networks.

**Smart city initiatives**, that use data and technology to create a more efficient and integrated network, such as Smart Motorways and Urban Traffic Management Control.

**Improved and faster wireless technology**, including 5G, will support the further development of many other technologies. The ability to access information, particularly when out and about, is critical to enabling people to maximise opportunities to access the services they require.

**Carbon reduction technology**, such as cleaner fuel and energy, are increasing in prominence and availability. This includes hybrid and electric vehicles, and e-bikes.

Timescales are hard to predict, and a transformative change that is driven by some or all these advances may not even occur. While mobility changes are mostly likely to occur just beyond the lifetime of this JLTP4, many of the JLTP4 schemes



## Section 4: Embracing technology and partnerships continued

will have a long lifespan, so potential technological impacts need to be considered. This will mean we are prepared for where we want to be, rather than adapting to the new mobility environment we find ourselves in. Initially, we will produce a strategy on CAVs and MaaS setting out our position, including our concerns and ambitions.

### Advancing together

We are committed to partnership working to ensure we are at the forefront of implementing technological advances in transport, through developing and sharing knowledge, lessons learned and innovations. The ambition for the West of England is to become a European leader in the progressive roll-out of new technologies and new forms of mobility. We will work with and support national and local legislation that encourages safe and sustainable travel, especially through technological initiatives to improve mobility.

We will release open source data for application developers to build apps and digital platforms, so the community can have direct involvement in enhancing our service. Data should be shared and open to avoid the creation of a monopoly. Open data is crucial with mobile phones and real-time information playing an increasingly important role in providing choice. We will put an expectation on our partners to provide us with any data they collect, to guide the future development of transport.

We recognise the need to gain confidence and public trust in using new technologies. We will encourage suppliers and partners to work closely with elderly and 'harder to reach' sectors of the population, to enable them to embrace new opportunities.

The West of England authorities are project partners with the ground-breaking Flourish and Venturer projects, which are considering the potential for, and long-term impacts of,

technological developments such as CAVs. Both projects involve academics, as well as legal and insurance experts, to understand the societal implications of these technologies. We are forming a regional technology consortium to combine the knowledge of these partners along with vehicle manufacturers, communication providers, technology specialists, national research projects, and academics of the universities in the region.

#### Case Study: Flourish

Flourish concentrates on connectivity and older people. Flourish is trialling some world leading Vehicle to Infrastructure (V2I) technology including the latest generation of Wi-Fi for cars. We have already demonstrated communication between vehicles, and between vehicles and a base station. Flourish is also developing driverless pods that will be tested in campus type environments, as well as in simulators. Flourish will focus on the needs of older people when using CAVs, and is building a detailed model of how Bristol could operate in future CAV scenarios.

Partners: Partners: Flourish – Atkins (part of SNC-Lavalin), Airbus Group, Axa, Dynniq, React AI, Designability, OPM, Aimsun (part of Siemens), Bristol City Council, South Gloucestershire Council, Transport Systems Catapult, Age UK, University of Bristol and University of the West of England.

The Government's Innovate programme is delivering research and innovation projects, complemented by the UK Digital Strategy 5G testbed projects, including CAVs. The West of England is bidding for a share of the £200m available as part of the new Urban Connected Communities Project, to develop a large-scale, citywide testbed for wireless 5G infrastructure.



We recognise the high cost of widespread implementation of 5G and will work with suppliers and other partners to help ensure that it does not only benefit areas or users where the highest level of financial return can be gained, and that rural areas, in particular, are not overlooked.

#### Case Study: Venturer

Venturer concentrates on autonomy. Using the state-of-the-art Wildcat autonomous vehicle developed by BAe Systems has allowed Venturer to develop a range of new sensor and control technology with experts at the Bristol Robotics Laboratory. A series of increasingly complex tests have been carried out over three years. Year 1 focussed on handover between human and machine; Year 2 focussed on interaction between the Wildcat and other vehicles; and Year 3 focussed on interactions between the Wildcat and pedestrians and cyclists. It also demonstrated "see through technology" where one vehicle reports to the vehicle behind it what is in front. Venturer partner Williams developed an advanced simulator based on a Range Rover Evoque that could replicate the real-world scenarios, as well as testing human perceptions of a range of factors in a CAV.

Partners: Venturer – Atkins (part of SNC-Lavalin), AXA UK, BAe Systems, Bristol City Council, South Gloucestershire Council, First Group, Fusion Processing, Williams Advanced Engineering, University of the West of England and University of Bristol.

### Maintaining and developing wider partnerships

The key to success in delivering JLTP4 is to work closely with our stakeholders and continue to build new partnerships. A JLTP4 Advisory Group has already been established to provide technical and professional advice, comprising over 20 representatives of transport operators and providers, transport user groups, transport discipline experts and emerging technology specialists. WECA and the four West of England councils will continue to maintain and develop partnerships with:

- Local and national transport operators and providers
- Transport user groups
- Persons with reduced mobility groups
- Local businesses and business groups
- Community and voluntary sector
- NHS and local sport organisations
- Educational establishments
- Community Rail Partnerships
- Police and Local Community Safety Partnerships
- Neighbouring councils (including across the River Severn)
- Service providers e.g. electricity network operators
- West of England Road Safety Partnership

Specific examples of how we work, and will continue to work with groups or organisations, are set out in the connectivity chapters.



Section 4:  
Embracing technology and partnerships continued



Section 5:  
Improving connectivity



We will provide a well-connected sustainable transport network that offers greater, realistic travel choice and makes walking, cycling and public transport the natural way to travel. Trips into and within the West of England will be seamless, faster, cheaper, cleaner and safer.

The focus for investment is on increasing the attractiveness of more active and sustainable modes, both by improving these networks and opportunities and implementing measures that can manage private car use. Individuals will be empowered to change their travel habits, with sustainable modes becoming the preferred choice for journeys, if journeys need to be made at all.

New and expanded rapid and mass transit, across the Bristol urban area and providing links towards the East and North Fringe, Bath and the airport, will be transformative, providing fast and reliable journeys for residents and visitors. It will be supported by comprehensive walking, cycling, bus and rail networks, that enable people to get to stops/stations quickly and easily. The quality and coverage of this supporting network is critical, as the first and last mile of any journey is often the most important factor in determining mode choice.

Attracting trips made by private car onto rapid and mass transit will bring improvements in journey times, reliability, air quality, carbon emissions and overall attractiveness of the network for more sustainable modes. Less traffic will improve the perceived safety and security of the network, and the reallocation of road space, where appropriate, will allow streets to be transformed, creating better places and improved public realm in urban areas.

Park & Ride (P&R) will play an important role in enabling people living outside the urban areas, who do not have easy access to public transport, to access central areas by non-car modes. By providing P&R sites on routes into the main urban areas, the accessibility of P&R will be improved.

We recognise that for some people the private car is essential and for others it is often the only realistic mode of travel, such as those in rural areas where a reasonable level of bus service is not sustainable. The needs of people with personal mobility challenges are recognised and supported. In line with our responsibilities under the Equality Act 2010, we will ensure all new infrastructure, vehicles and information are as accessible as possible. We will deliver improvements to existing transport networks, targeting parts that cause most disadvantage.

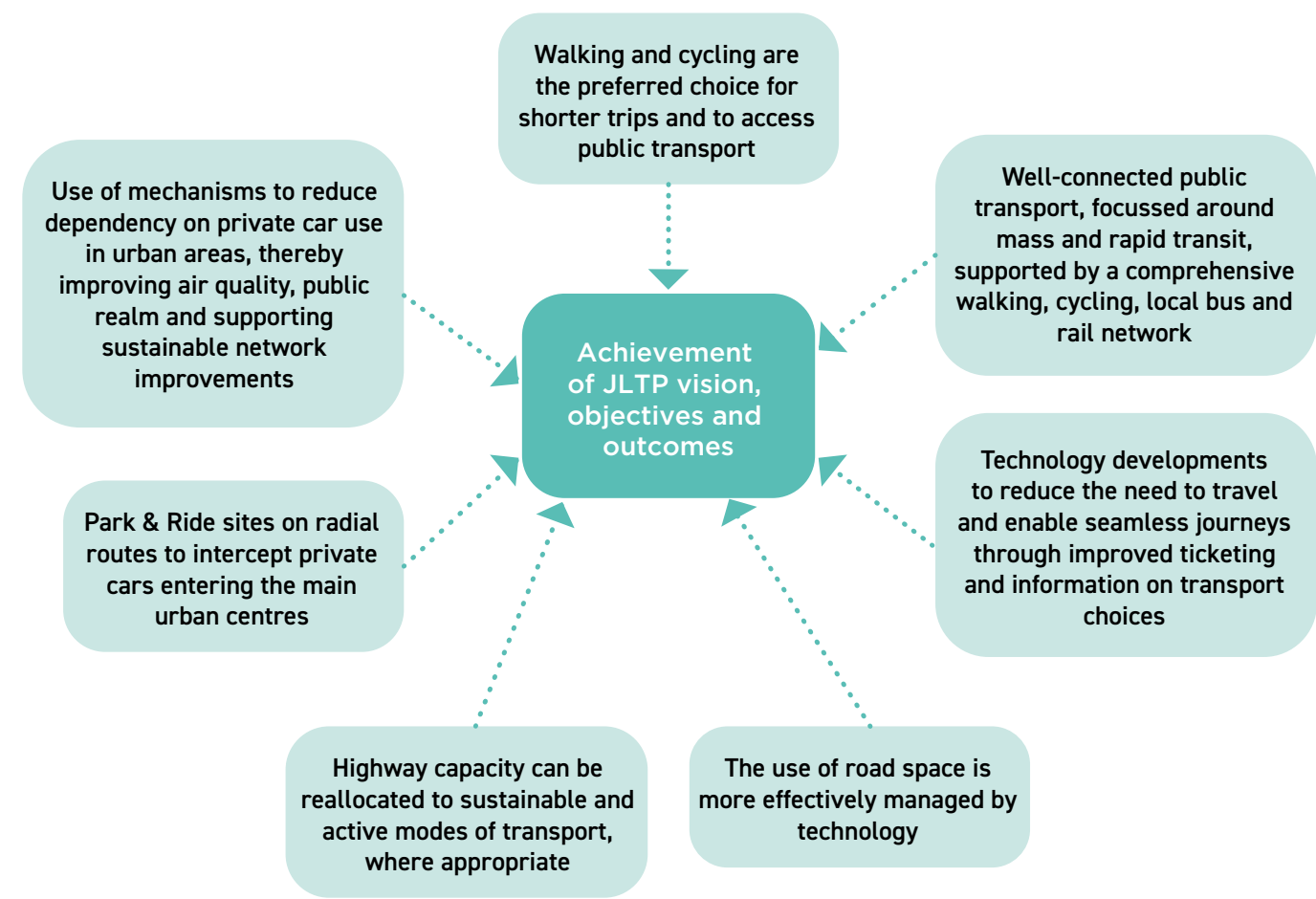
In seeking to reduce the level of emissions, including carbon, we will provide infrastructure to support the use of electric vehicles. We will also continue to explore the use of mechanisms to reduce dependency on private car use, including providing continued support in the development of new technologies.

Our strategy for improving connectivity in the West of England is shown in Figure 5.1.

This JLTP4 is structured around improving connectivity at four levels. These are not exclusive; some of the policies and interventions are relevant at more than one level, although they have not been repeated. As a plan that focuses on the West of England region rather than local areas, connectivity at the most strategic level is considered first.

Section 5:  
Improving connectivity continued

Figure 5.1: Strategy for improving connectivity



Beyond the West of England

Journeys into and out of the West of England, including to other areas in the South West, South Wales, national and international. The focus is primarily on:

- Strategic road and rail networks, including the role of coaches
- Supporting the role of the port and airport, for both passengers and freight



Local

Journeys of up to approximately 10km, including all journeys wholly within one urban area and those between neighbouring rural areas, and rural and urban areas. The focus is primarily on:

- Active travel, including improving cycling and walking networks
- Travel planning and increasing knowledge about sustainable modes
- Providing easily accessible information
- Access to services, including remote working and reducing the need to travel
- Improving air quality

Neighbourhood

Journeys within local communities, both urban and rural. The focus is primarily on:

- Removal of physical barriers, such as severance caused by major roads
- Safety and security, both perceived and actual
- Master planning, local planning and public realm

This JLTP4 is not structured around transport modes; however, Figure 5.2 sets out where the modes have the biggest role to play in improving connectivity in the West of England. Note that many journeys will combine at least two modes of travel.

Within the West of England

Journeys wholly within the West of England, but longer than approximately 10km, including those between main urban areas. There is recognition that long trips start with a local trip. The focus is on:

- Developing rapid and mass transit, and supporting and enhancing existing public transport
- Managing the demand of vehicles on the network
- Technology, to manage the network, provide future travel opportunities, and reduce environmental impact
- Freight and the needs of businesses

Section 5:  
Improving connectivity continued

Figure 5.2: Role of transport modes in improving connectivity at different connectivity levels

Personal Travel

	Neighbourhood	Local	Within WoE	Beyond WoE
Walking				
Ferries/boats				
Cycling				
Taxis and Private Hire Vehicles				
Mass and rapid transit				
Bus				
Rail				
Car/Electric Vehicle				
Motorcycles and mopeds				
Park and Ride				
Coach				
Aeroplane				

Freight

	Neighbourhood	Local	Within WoE	Beyond WoE
Delivery Bikes				
Light Goods Vehicles				
Heavy Goods Vehicles				
Rail/Port/Airport				

Section 6: Connectivity beyond the  
West of England

Beyond West of England challenges

The West of England serves, and requires linkages to, the wider South West, South Wales, the rest of the UK and international locations, to meet its growth targets and ambitions. The economic viability of the West of England and surrounding areas is dependent upon the provision of convenient and attractive access arrangements for industrial, business, shopping and tourist trips. However, trip lengths mean travel choices are often more limited for longer journeys. Combined with a network that is increasingly under pressure, specific challenges for connectivity beyond the West of England have been identified, building on the general challenges included in Section 2:

- The Strategic Road Network (SRN), particularly the M4 and M5 motorways, have heavy traffic flows due to both longer distance through traffic, and local movements that perceive the SRN to offer the best route
- The removal of tolls on the Severn crossings, from the end of 2018, is forecast to result in a large increase in traffic using the crossings, for which mitigation measures will need to be sought
- Both the Port of Bristol and Bristol Airport are planning to increase throughput, impacting on the area's transport infrastructure
- HGV and other freight delivery movements are increasing, due to rising freight volumes, impacting on the already congested highway network

The impact on the built and natural environment, particularly air quality, means alternative realistic opportunities need to be investigated for longer distance freight and people movement.

Beyond West of England policies and interventions




Two main policies will support delivery of the JLTP4 objectives at the beyond West of England connectivity level:

- B1: Enhance competitiveness of major gateways and improve connectivity to international markets
- B2: Improve strategic resilience of the network for all trips

The policies will be delivered by focussing on specific interventions.

B1.Enhance competitiveness of major gateways and improve connectivity to international markets

This policy contributes towards the delivery of the following objectives and outcomes:

			
1,3,4,5	1,2,4,6	5	1

The main interventions that will support the delivery of the policy, are:

- Support Bristol Airport as the main gateway for air travel in the South West
- Support the role of Bristol Port

Section 6:  
Connectivity beyond the West of England continued

Support Bristol Airport as the main gateway for air travel in the South West

As the third largest regional airport in the UK, carrying over 8 million passengers in 2017, Bristol Airport employs 3,000 people on site, and operations result in 4,200 direct and indirect jobs. Significant further expansion is proposed by Bristol Airport, which will enable the airport to cater for 12 million passengers per annum by the mid-2020s and 15 million per annum by the mid-2030s. There are long-term aspirations to cater for 20 million passengers per annum by 2050.

Improving connectivity to Bristol Airport is crucial not just for staff, passengers and travel along the A38 corridor, but for tourism and economic growth. In 2016, the average international visitor to the South West of England spent £534, with those arriving by air being the biggest spenders (visitbritain.org). There has been significant investment in improving accessibility in recent years, including the South Bristol Link Road and improvements to the Airport Flyer frequent bus service. However, further and more significant improvements are needed, such as mass transit to/from Bristol city centre, to unlock the additional growth being proposed at the airport. The expansion of Bristol Airport also offers the potential for business growth for functions necessary for airport operations. There is potential for further business clustering along the A38 strategic corridor and the Mendip Spring area, including opportunities for unlocking development.

Bristol Airport is required by government to produce an Airport Surface Access Strategy to support the delivery of a successful and growing airport. Improved access arrangements will enable the airport to grow and maintain competitiveness as the largest regional airport, particularly as confirmation of Heathrow Airport's third runway emerges and develops. It will include options to improve connectivity across transport modes, such as highway junction improvements on the nearby

Case study: Bristol South West Economic Link study (BSWEL)

North Somerset Council are leading on the Bristol South West Economic Link study (BSWEL), a major workstream to improve transport connectivity along the strategic corridor from the M5 through to the A38, Bristol Airport and on to Bristol.

The study will refine, develop and extend the previous Option Development Report work and assess modal options, together with route optioneering and connectivity, into existing highway and public transport networks. Improved transport connectivity along this key economic link will have benefits, including:

- Supporting sub-regional and regional economic, employment and housing growth including future growth aspirations of Bristol Airport
- Improved connectivity, multi-modal and mass transit surface access provision to and from Bristol Airport ensuring benefits of new infrastructure are shared with local communities
- Enhanced network resilience and reliability by addressing congestion along key strategic routes to the Airport and the wider sub-region
- Improving the environment and quality of life for residents and businesses in the area

The study is currently undertaking investigation & feasibility, with outputs expected in December 2018.



Case study: Partnership working with Bristol Airport

NSC meets regularly with Bristol Airport to engage over the development of the Airport Surface Access Strategy, as well as through pre-planning application discussions to iron out issues to ensure a smoother planning process for any airport expansion plans. Regular engagements like this can build strong relationships that deliver benefits for both the local authority and for the private sector interests, for the good of the West of England.

transport network, public transport improvements to the airport to improve journey time reliability (including exploring tram, light rail and heavy rail linkages), and exploring the improvement of existing bus routes to penetrate as many local towns and villages as viable.

Bristol Airport has recently consulted on their Master Plan, 'Towards 2050', focussing on aviation, economic impact, Green Belt, sustainable growth and surface access, setting out how the airport will expand to reach the passengers numbers projected. They are making sustainable improvements to their carbon footprint through national initiatives, such as Sustainable Aviation, and their own initiatives, such as the Noise Action Plan and their Environmental Impact Fund, and have a target of being net carbon neutral by 2030.

The price of airport parking does not deter many passengers, particularly when multiple passengers are travelling in one vehicle. Staff are encouraged to use car sharing, public transport and cycling, and the airport are identifying further measures that will influence mode choice.

The Airport Flyer express bus service from central Bristol saw a doubling of capacity in early 2018. While operating up to at least every 10 minutes during the daytime, it only operates hourly in the early morning. Passengers and staff need to arrive at the airport before 0500, in time for the busiest hour (0600 to 0700) for flight departures, when typically, over 15 flights (around 15% of departures for the whole day), depart. The Airport Flyer provides a limited option for passengers and staff needing to arrive at the airport early, which also applies to those travelling on direct buses from Bath and Weston-super-Mare, the latter of which only has an hourly service all day.

We will work with Bristol Airport to define a low carbon, accessible, integrated, efficient and reliable transport network, for both staff and passengers to access the airport when they need to, and support them in delivering this effectively and enable them to achieve their target of being net carbon neutral by 2030.

While ensuring affordable car parking is available for passengers for whom public transport is not an available or practical option, the demand for driving to the airport needs to be managed, particularly with the ambitious expansion plans. The provision of infrastructure to cater for technological advances in electric and autonomous vehicles will be prioritised, supporting delivery of improved air quality and health.



Section 6:

Connectivity beyond the West of England continued

We will work with the airport to limit the increase in demand for additional car parking provision, and support them in identifying infrastructure that prioritises lower emission vehicles.

Bristol Airport has dedicated airport private hire operators. Whilst private hire vehicles need to be readily available to passengers, operators will be encouraged to improve their vehicle fleets and embrace technological advances in electric and autonomous vehicles.

At present, there are no designated air freight services operating at Bristol Airport, although an estimated 900 tonnes of cargo per year of passenger belongings is carried in passenger aircraft. The Airport has no specific plans to introduce any air freight route as part of the ongoing expansion plans, but as it would be a commercial operator's decision, there is still the potential for this to happen. Approximately 1500 freight vehicles (LGVs and HGVs) use the airport main entrance per day, which will increase significantly with the proposed expansion plans.

We will support Bristol Airport in including freight in its Airport Surface Access Strategy, by identifying sensitive freight routing and delivery periods to minimise the impact, if road freight is the only option.

Support the role of Bristol Port

Bristol Port is one of the most productive and technically advanced ports in Europe. Current movements at Bristol Port include the storage and onward movement of bulk cargo, employees accessing the site for work and cruise passengers. In April 2018, the Department for Transport (DfT) set out their plans for improving the connectivity of England's ports by publishing 'England's Port Connectivity: the current picture'. It contained nine regional case studies, including Bristol.

Case study: Bristol Cruise Terminal

Bristol Port now accommodates a range of tourist cruise liner services, with 2017 seeing 12 different cruise lines embark from the port to places such as Norway, the Caribbean and Mexico, the Azores, Portugal and Spain, the Fjords, the Scottish Highlands and Islands, Normandy, Canary Islands and Madeira. This will improve the region's offer for both outgoing and incoming tourists, enabling competitiveness with other national cruise terminals.

The development of the Bristol Cruise Terminal also opens up an important tourism market for visitors to the West of England region and beyond. With good strategic road links, local rail links to Bristol and Bath and a direct waterway access to Bristol and the North Somerset coastline, visitors are well connected to a range of local and regional tourist attractions, providing a new and important source of income and recognition for the West of England region.

Issues impacting on the efficiency of port operations (including Avonmouth and Portbury), are:

- Journey time and reliability on the M5, particularly evening congestion at Junction 19, and the huge increase in traffic and congestion in the summer months
- Resurfacing and rebuilding of sections of the A403, as it forms a crucial link to the port
- Rail connectivity, such as gauge clearance for containers and the need to remove potential conflicts with passenger services



- The motorway severs the connection to/from local neighbourhoods, making it difficult for local employees to access the area by modes other than private car
- Significant freight movements to and from the port discourage walking and cycling due to perceived safety and air quality issues, and shift work means it is difficult and unattractive for employees to use public transport

We will work with Highways England to improve M5 Junction 19 to enhance access between the motorway network and the Royal Portbury Dock, Portishead, Portbury and Pill.

The amount of freight is set to increase in the future, with recent or planned investments at Bristol Port including £20m towards car handling facilities and consented development for a potential £800m container terminal. Improved connectivity is vital for the port as it expands further, enabling it to remain such an economically important player in the region's development and national and international links.

We will support Bristol Port in strengthening existing healthy working relationships with Network Rail, Highways England, relevant local authorities and the Local Enterprise Partnership, ensuring road and rail needs are incorporated into wider connectivity improvement plans and any expansion is 'green'.

There is an opportunity to maximise the developing tourist offer from the Bristol Cruise Terminal, by providing more seamless connections across multiple travel mode choices. For onward travel to Bristol city centre, opportunities could include: increased frequency ferries along the River Avon and to the North Somerset coastline; improved bus and coach connection via the nearby Shirehampton Park & Ride; local rail connection via Avonmouth or Shirehampton rail stations; and improved car hire options at the Bristol Cruise Terminal (including electric vehicle hire). Improved bike hire facilities

and cycling provision along the A4 Portway cycle route could benefit both tourists and staff who work at the terminal.

We will work with Bristol Cruise Terminal to explore ways that onward travel options across multiple mode choices can be improved, including opportunities with emerging technologies, such as electric vehicles.

B2. Improve strategic resilience of the network for all trips

This policy contributes towards the delivery of the following objectives and outcomes:



The main interventions that will support the delivery of the policy, are:

- Maximise opportunities arising from improvements to the strategic road and rail network, and identify and support delivery of further changes
- Identify opportunities to manage the impact of Severn Bridge tolls removal
- Support the role of coaches for residents and visitors
- Manage and mitigate the impact of regular and infrequent events on the transport network

Maximise opportunities arising from improvements to the strategic road and rail network, and identify and support delivery of further changes

Section 6:

Connectivity beyond the West of England continued

Strategic Road Network

The government’s Strategic Road Network (SRN), covering the country’s motorways and major A-roads, is managed and operated by Highways England (HE). As well as providing for strategic movements into and through the West of England, the use of the SRN needs to be balanced with an appropriate level of local accessibility and the use of the Major Road Network (MRN).

We will work with Highways England and neighbouring authorities to find the optimum balance of use of the SRN for strategic movements and appropriate local accessibility.

Investment in the network is funded by the Road Investment Strategy (RIS) and set out in the Route Strategies, three of which include SRN roads passing through the West of England:

- London to Wales (M4, M32, M48 and M49)
- Birmingham to Exeter (M5)
- South West Peninsula (A36/A46 south of the M4)

These routes frequently suffer from high levels of congestion and delays, particularly around Bristol and on the A36/A46. This impacts on the operation of adjoining and parallel roads, with some traffic (including heavy vehicles) using less appropriate roads; further, there are serious challenges with network resilience during incidents, causing temporary road closures. Conditions are particularly poor during summer weekends and holiday periods on the M5. Improving resilience on the SRN, through the provision of new motorway junctions or completion of link roads, would benefit the strategic movements between the far south west and the rest of the country, as well as in the Bristol area, and will enable the sustainable delivery of growth along the corridors it serves.

The only committed HE scheme included in the current RIS delivery plan is the new M49 Avonmouth junction (to improve access to

Avonmouth and Severnside), with works expected to commence in 2019.

The JTS, which was co-funded by HE, highlights the need for substantial investment in the SRN, including extensions to Smart Motorways and new and improved motorway junctions and links. This includes the need for a new motorway junction between M4 Junction 18 and Junction 19 (Junction ‘18a’), an associated link road to the A4174 Ring Road and a new motorway junction between M5 Junction 21 and 22 (Junction ‘21a’) to serve Weston-super-Mare, Bristol Airport and an associated link road to the A38. The link road to the A4174 Ring Road scheme would help tackle congestion problems in the north-east fringe of Bristol and help businesses operate more efficiently. A feasibility study identified a new junction located in the Emersons Green Enterprise Area. This would require improvements to the M4 between Junction 19 and the new Junction 18A, and improvements to all junctions on the Ring Road from Dramway to the A4 Hicks Gate junction. HE has accepted the broad principle of these proposals, and we will work with HE on the detail of scheme location and design, ensuring they meet the needs of the SRN and local road network.

We will work with Highways England to progress further work on a new M4 Junction 18A and associated improvements to the A4174 Ring Road.

The government is currently preparing a revised Route Investment Strategy (RIS2) to cover the period from 2020 to 2025, which will include a vision for the SRN to 2040 and beyond. The Delivery Plan is expected to be published in early 2020. This needs to include substantial investment in the SRN across the region (as detailed in this section of the JLTP) to ensure future growth is not constrained, and that growth in neighbouring regions does not negatively impact on the West of England SRN routes.



We will work closely with Highways England, neighbouring authorities and other partners to ensure the RIS2 delivery plan includes the East of Bath Link, new and upgraded junctions on the M4 (new Junction 18a) and M5 (Junctions 14/19/new 21a), new sections of Smart Motorway, and Park & Ride on the M32.

Direct improvements on the SRN itself should include measures to benefit non-car modes. This is important in the Bristol area, where interactions between the M4, M5 and local highway network are closely linked. The successful delivery of the M32 bus lane and bus-only junction demonstrates the benefits of greater integration of urban mobility and the strategic network.

We will encourage Highways England to give greater emphasis to non-car modes on the SRN in making investment decisions, as well as providing greater flexibility in using funding to help deliver infrastructure on the local highway network near to the SRN.

The SRN is limited in providing for longer distance north-south journeys passing through the region. The A36-A46 provides the only strategic SRN north-south link between the south coast and the M4, most of which is single carriageway. The A36 and A46 have large proportions of freight traffic and there are safety concerns on the A36 through Claverton village and on the A46 at Hartley Bends. The A36-A46 also routes traffic through the congested edge of central Bath, contributing to the poor air quality along London Road. Links from the region to Poole/Bournemouth and Weymouth are via less direct and lower standard A roads, particularly the A37 and A350.

The Port of Poole saw the completion in 2018 of a £10m expansion of the harbour to accommodate large cruise and cargo ships, which is expected to see notable increase in the volume of goods and passengers. This will increase demand for north-south journeys along the A350 corridor.

We will join Dorset and Wiltshire Councils in encouraging Highways England to undertake a strategic study to develop the case for improvements to north-south strategic road links (A36/A46 and A350 corridors), in seeking to include funded schemes in the next government’s Road Investment Strategy to cover the period beyond 2020. This includes:

- East of Bath Link: a new road connecting A36 (south of Bathampton) to A363 (near Bathford, south of A4 roundabout) or the A4, to provide a high quality north-south route connecting the A36 and A46 to the east of Bath.
- A46 to M4 route improvements at Cold Ashton: capacity improvements especially at the Cold Ashton roundabout to remove existing delays between Bath and junction 18 of the M4.

HGV movements will continue to play a significant role in distributing freight into and through the West of England. However, there is potential to improve the efficiency of road freight movements by consolidating, enabling fewer, fuller, and cleaner vehicles to take the most appropriate routes. Alternatives, such as water and rail freight, will remove trips from the highway network and help to reduce the impact of freight movements on the environment. Emerging technologies will enable further use of cleaner vehicles. We will use the West of England Key Route Network (see Section 7) to designate a core network for freight movements, ensuring these are kept on the most appropriate routes.

We will work with Network Rail, the South West Highways Alliance, Highways England, the Freight Transport Association and other partners to manage cross-boundary freight movements and promote more efficient movements, such as consolidation centres and the use of lower emissions modes.



Section 6:

Connectivity beyond the West of England continued

Strategic Rail

The West of England lies at the confluence of a number of frequent long-distance inter-city and regional train services. Great Western Railway (GWR) links the region with inter-city trains to London, South Wales and the South West, and regional trains between South Wales and the south coast via Salisbury. CrossCountry inter-city train services provide links to the Midlands, the North, Scotland and the far South West, and South Western Railway provide services to London Waterloo.

Bristol Temple Meads station is a nationally significant rail interchange, as well as a vital regional and local transport hub and gateway to the city and wider region, including Bristol Airport. The station has over 10 million passengers passing through each year, with usage anticipated to reach 22 million by 2030. Sitting at the heart of the region, the station has the potential to be the best connected and most productive area within the West of England; it is key to delivering other transport infrastructure.

The station is managed by Network Rail, who is leading on the development of a masterplan to ensure the station has the capacity, design and quality it needs to meet its role. The redevelopment of Temple Meads station will promote sustainable transport choices for trips to and from the station and surrounding area, providing attractive interchange facilities for pedestrians and cyclists. This will allow users to secure their bike and continue by bus or train, thereby facilitating multi-modal trips.

Bristol Temple Meads has a critical regeneration role in unlocking and serving as the catalyst for growth, from the Temple Quarter Enterprise Zone to development areas across the West of England. The 'Temple Quarter' will see new homes and employment space being delivered, the University of Bristol's new Enterprise Campus and other retail and leisure uses.

We will work with Network Rail, the University of Bristol, transport operators, developers and other delivery agents to transform Bristol Temple Meads into a regional interchange, enabling seamless connections with sustainable modes and providing new cycling and walking links to local destinations.

Bristol Parkway, located on the London to South Wales and cross-country routes, is also a principal station providing access to education and employment facilities and offering faster services to London than from Temple Meads. Bath Spa station, the main gateway to the region for tourists, is served by services from South Wales to the south coast, in addition to trains to London. Weston-super-Mare station is located on a single line spur off the main line and is served by a very limited number of long distance trains. As a result, there is an aspiration to provide an hourly service from Weston-super-Mare to London. Worle station, on the eastern side of the town, could provide an alternative stop for services remaining on the main line, an interchange for Weston-super-Mare and a gateway for Bristol Airport.

We will continue to work with our neighbouring local authorities to support improvements that would benefit West of England residents, such as faster travel options to major employment locations including Hinkley Point C construction site.

The full electrification of the Great Western Main Line to Bristol Temple Meads, via Bath Spa and Bristol Parkway, remains an aspiration, as does the extension of electrification from Birmingham to Bristol and on to Weston-super-Mare. In addition to bringing benefits to long distance services, it will provide the longer-term opportunity to link into HS2 (High Speed 2).



We recognise there are considerable capacity constraints around Bristol. A high-level strategy for potential rail interventions over a ten-year time frame, covering Control Period 6 and Control Period 7 (2019-2029), and the Joint Spatial Plan to 2036, will be produced with the rail industry.

Train services to and from the region also suffer from short-term resilience and operational issues. These include the closure of the line west of Exeter following severe weather damage to the sea wall in the Dawlish area and train operator staff shortages, faults with rolling stock and signal failures.

Although frequent, north-south public transport connections are poor between Bristol and Bath and the south coast. Slow regional or local stopping rail services operate to Weymouth, Southampton and Portsmouth. Travelling to Bournemouth and Poole requires a change of trains, meaning that the 70 mile road journey from Bristol to Poole takes around 3 hours by train. Coaches do not currently offer a direct or convenient alternative to rail either, with trips to the south coast requiring a journey via London.

We will develop a joint team with Network Rail, the Department for Transport and the franchise operators to prepare a feasibility study to improve network capacity, provide infrastructure and rolling stock enhancements and deliver improvement schemes. This includes better long-distance rail links to the South West, London and the Midlands, and new stops including Bridgwater and Worle.

Identify opportunities to manage the impact of Severn Bridge tolls removal

From the end of 2018, motorists will no longer be charged for crossing the M4 and M48 Severn Crossings. The lower transport costs and opportunities for increased agglomeration of the economies either side of the bridge is anticipated

to increase trips across the bridges, with the following impacts:

- Increased delays on already congested sections and junctions on the M4 Junction 19 to 20 and M5 Junctions 16, 17 and 19, including an increase in heavy road freight movements in this area and on connecting routes
- Increased congestion at these and other locations is expected to lead to a diversion of trips onto other routes across the West of England, impacting on the North and East Fringe, Severnside and North West Bristol, the A4 Portway, the A369 and the A46 from M4 to Bath
- Increased delay to buses, as they get stuck in additional traffic. Trains could also become less attractive, as the cost of travelling by private car becomes more comparable

A number of interventions identified through technical work will increase capacity and enable mode shift, thereby reducing the impacts of congestion on the road network. These include new or improved mass transit, MetroBus, Park & Ride, bus and cycle routes, and junction improvements, such as:

- Divert traffic to the Bristol urban area from the M4/Almondsbury towards the M49
- Capture vehicle trips bound for North Somerset, the Bristol urban area and Bath by new Park & Ride, MetroBus and other bus links, as well as MetroWest
- Consider demand management measures, such as charging measures and controls, on both sides of the Severn
- Improve the offer (including frequency) of cross-Severn public transport linking the West of England with Chepstow, Newport and Cardiff

## Section 6: Connectivity beyond the West of England continued

**We will work with Highways England, Network Rail, public transport operators, local authorities in South East Wales and other partners to identify options that will manage the impact of Severn Bridge tolls removal, and work with DfT to secure appropriate funding to mitigate the impacts on the West of England.**

### Support the role of coaches for residents and visitors

Coaches (chartered and scheduled) play an important role in the West of England's economy and provide inclusive mobility for all citizens and visitors. Coaches can reduce dependence on private cars and so help improve air quality, congestion and provide access to leisure opportunities for those who are unable to use cars.

The West of England has important tourist and visitor destinations that attract both national and international visitors. It is essential that the

#### Case Study: Weston-super-Mare bus and coach interchange

As part of the ambitious Weston-super-Mare Town Centre Regeneration programme, North Somerset Council has won funding to create a centralised bus and coach interchange at Alexandra Parade. The centralised interchange will integrate bus and coach services into one area, with improved real-time information infrastructure and waiting facilities. With tourist numbers increasing in Weston-super-Mare, the new interchange will ensure that the already important role of coach travel in bringing tourists to the town will be improved further. It will create a key public transport interchange closer to local facilities, helping to achieve a vibrant town centre for visitors and residents alike.

destinations continue to be attractive for coach tourism and leisure, to sustain the tourist economy. This includes providing facilities so visitors wishing to arrive by coach can do so in a safe, convenient and comfortable manner.

Scheduled coaches, including National Express and Megabus, require high quality provision for passengers to wait for, board and alight from coaches, and interchange with connecting local travel options. Services currently operate from Bath and Bristol bus and coach stations, and on-street stops across the region where waiting facilities are poor. Coach operators require standing space and driver facilities while coaches are between services.

However, the presence of a large numbers of coaches can have a detrimental effect, with impacts on noise, air quality and visual impact, as well as unofficial parking. As a result, there is a need to improve the management of coaches, including embracing new technologies to enable improved enforcement, better monitoring, and more efficient movement and parking.

**We will provide improved pedestrian routes and wayfinding between coach drop off and pick up locations and key destinations, offering easy, high quality and convenient routes.**

Without a light or heavy rail link to Bristol Airport, the role of coaches is becoming increasingly important in delivering passengers from across a wide catchment area. The airport's catchment area spans the South West and into South Wales, with 19% of air passengers originating from Devon and Cornwall, 10% from Somerset and 20% from South Wales. There have been coach services set up to improve public transport access to manage this demand, including up to ten coaches per day from Cardiff and an hourly service linking Plymouth, Exeter, Taunton, Bridgwater, Burnham and Bristol city centre with the airport. These services have given direct access to the airport for a large geographical area.



#### Case study: Tourism in Bath

The City of Bath is an important tourist destination, in both regional and national terms. A total of 5.8 million visitors come to Bath each year. The total value of tourism to the city is £432 million per annum. Coach visitors are important to the economy of Bath with an estimated 11,000 coaches visiting Bath each year, and it is estimated that coach tourism is worth £25 million per annum.

**We will continue to work with Bristol Airport to support and promote the use of coaches as a sustainable way to access the site.**

B&NES is developing a new Coach Parking Strategy for Bath, which forms part of a wider parking strategy. A key element is the relocation of Bath's long stay coach park from its previous site at the Riverside Coach Park, to its new location at Odd Down Park & Ride site. This has allowed the delivery of the major regeneration scheme, Bath Quays, creating a new business and commercial district at Bath Quays North and associated employment opportunities and economic growth.

Bristol City Council has commissioned a study to investigate the value of coach-based tourism on Bristol's economy and to identify possible sites for coach parking, interchange and pickup/drop off locations. Once the results of this study are available, Bristol will seek to produce its own coach strategy for the city, following the lead from B&NES. North Somerset Council will investigate coach interchange and coach parking provision in Weston-super-Mare town centre, alongside a wider review of parking issues in the district.

**We will continue to work with coach operators and the Confederation of Passenger Transport and seek to achieve 'coach-friendly town' status for our key destinations.**

**We will work with coach operators to embrace new technologies, enabling improved enforcement, better monitoring and more efficient movement and parking of coaches.**

### Manage and mitigate the impact of regular and infrequent events on the transport network

The strategic highway network, rail network and coaches all have a role to play in providing access for tourists and for those coming into the West of England to attend events. Tourism, in particular, has a significant role to play in supporting the economy. However, we need to provide the infrastructure to support trips and enable visitors to make the 'right choice' for travel, minimising the impact individual trips have on the network. This includes providing clear information at international gateways outside of the region (e.g. Heathrow Airport) on coach and rail travel options.

**We will provide travel information at major hubs, such as airports and rail stations, on travel options into the West of England, including cost and journey time.**

The transport elements of event management depend on whether it is a regular event, such as football matches, or an irregular event, such as large concerts. Planners will work together to minimise clashes of events, liaising with rail and highway operators to ensure the network can be prepared for additional trips on a given day.

**We will continue to encourage key event organisers and transport operators to work together to minimise the impact of large scale planned events.**



Section 6:  
Connectivity beyond the West of England continued

# Section 7: Connectivity within the West of England

## Within West of England challenges

Without further major intervention, cars will continue to be the dominant form of travel and could become significantly cheaper to use with emerging technology. Further increases in the volume of car trips, such as from more people living and working in the area, will lead to significant increases in traffic and pose problems to the future operation of the transport network.

Building on the general West of England challenges identified in Section 2, more specific challenges for connectivity within the West of England have been identified, as follows:

- Congestion is currently experienced on the M32, reflecting heavy commuting into central Bristol, as well as other radial routes (A4 Bath Road, A4 Portway, Cumberland Basin, A37 and A420), the A4174 Ring Road, the A4 and A36 in Bath and the A370 in Weston-super-Mare
- Managing parking supply in a way that is acceptable to all authorities, as the availability and cost of parking is closely linked with the demand for motorised vehicle use
- Bus and rail use is significantly lower than other major UK cities, with common perceptions including limited travel options, congestion, reliability, resilience and connectivity
- Overcrowded trains deter people from using rail for business and leisure trips
- Most business-related travel within the West of England is by road, and the large amount of delay on the road network adds costs to journeys, both in terms of lost productive staff time and increased costs of moving goods
- Potential clustering of businesses is limited by the capacity of the transport network, including congestion in central areas, reducing productivity of the workforce and competitiveness of the West of England

- Climate change is impacting on the standard of our transport network, including temporary problems such as localised flooding, and long-term issues such as potholes

To deliver a more resilient and reliable network, the role of the private car needs to be managed, local and regional networks need to be integrated, and realistic alternatives need to be provided. As well as our need to reduce carbon emissions and take action against climate change, there is a need to adapt and create resilience to unavoidable climate change. The scale of work to be done to achieve these changes, and the cost of delivering network improvements at different levels, should not be underestimated.

## Within West of England policies and interventions

Connectivity within the West of England will support delivery of the JLTP4 objectives, by focussing on these main policies:






- W1: Provide more public transport options and improve service quality
- W2: Provide for journeys where public transport is not an option
- W3: Use, as appropriate, measures and technological advances to influence and better manage demand
- W4: Improve resilience of the network, providing increased reliability
- W5: Enable business clustering and the efficient movement of freight

The policies will be delivered by focussing on specific interventions.

Section 7:  
Connectivity within the West of England continued

W1. Provide more public transport options and improve service quality

This policy contributes towards the delivery of the following objectives and outcomes:

				
1-3,5	1-6	1-4	4	1,2,4

The main interventions that will support the delivery of the policy, are:

- Provide high quality and reliable mass and rapid transit
- Support and enhance existing public transport services
- Improve the availability and accessibility of accurate travel information and ticketing

Provide high quality and reliable mass and rapid transit

Many cities across Europe accommodate a mass and/or rapid transit public transport network, with an emphasis on segregation from general traffic. These can efficiently provide public transport trips that are less well covered by local bus or rail networks, either due to the journey distance/speed, or limited access to rail services.

Technical work, including the JTS, identified the need for a mass transit public transport mode across four core corridors with higher potential trip demand, to bring additional capacity and attractive, reliable journey times. Mass transit usually runs on rails. Examples include trams as an above ground option, or underground trains as a below ground solution.

Any mass transit network will be complemented by the emerging Bus Rapid Transit network, MetroBus. We are currently delivering an initial,

50 km MetroBus network that will provide for trips up to around 10 miles in length and with a stopping pattern around every 500 metres.

A future challenge is the need to manage the integration of any mass transit network and MetroBus with the local bus network. The objective would be to maximise patronage on higher-quality mass transit and MetroBus, whilst maintaining a comprehensive bus network for those not directly linked to these networks, and avoiding duplication of services. The network will also need to link to walking and cycling networks, to support first and last mile trips by active modes. This will enable and support people in accessing the network by active travel, wherever possible, maximising its accessibility.

High quality and reliable mass transit

The delivery of mass transit schemes will be transformative for trips within the West of England, whilst also having the potential to shape the scale and pattern of employment and housing growth.

A mass transit network could dramatically improve journey times across the Bristol and Bath urban areas, achieving reliable 15-20 minute connections between Bristol city centre and the urban fringes and Bristol Airport; and Bath gaining easier and faster movement in and around the city. In both instances congestion could be significantly decreased, leading to quicker and more reliable journeys for other modes such as cars and buses. These changes would encourage clustering of businesses, attracting additional jobs, and enable additional housing and economic growth.

The ambition is for new forms of mass transit (e.g. light rail or trams) where the potential is greatest for high passenger flows. On major corridors, rail-based mass transit will be considered to accommodate future demand and to maximise mode shift from car-based trips.

Mass transit will, wherever possible, be configured to complement MetroBus routes and to integrate



with the existing passenger rail network. New mass transit services could be introduced on some corridors by diverting through traffic onto other new or improved roads. For example, on the A4 Bristol – Bath corridor through Brislington, road space will need to be reallocated to accommodate mass transit services by diverting through traffic onto the Callington Road Link.

In some locations, it will be very challenging to achieve on-street running, for example through East Bristol, North Bristol, and some parts of South Bristol. In these cases, some underground sections may be required. The JTS highlighted potential for mass transit routes on the four major corridors, as shown in Figure 7.1.

A feasibility study is underway to explore all options for the greater Bristol area, both above and below ground, to deliver a mass transit network. An additional feasibility study will be required to explore potential options for mass transit linking Bristol to Bath, as well as the urban area within Bath itself. This will consider the best performing options for mass transit.

The studies will explore:

- Potential technology options for each route and/or the entire network
- Potential alignment options and station/stop locations
- Patronage forecasts
- Benefits assessment
- Funding options
- Environmental impacts

The scheme development process will take several years and include extensive engagement and consultation. A mass transit system will take many years to deliver and we must begin work now if it is to become a reality and unlock the potentially transformative benefits for the West of England.

We will continue to progress the work on mass transit options, leading to delivery of services along four corridors linking Bristol Airport, the north and east fringes, A4 Bath corridor, and Bristol city centre.

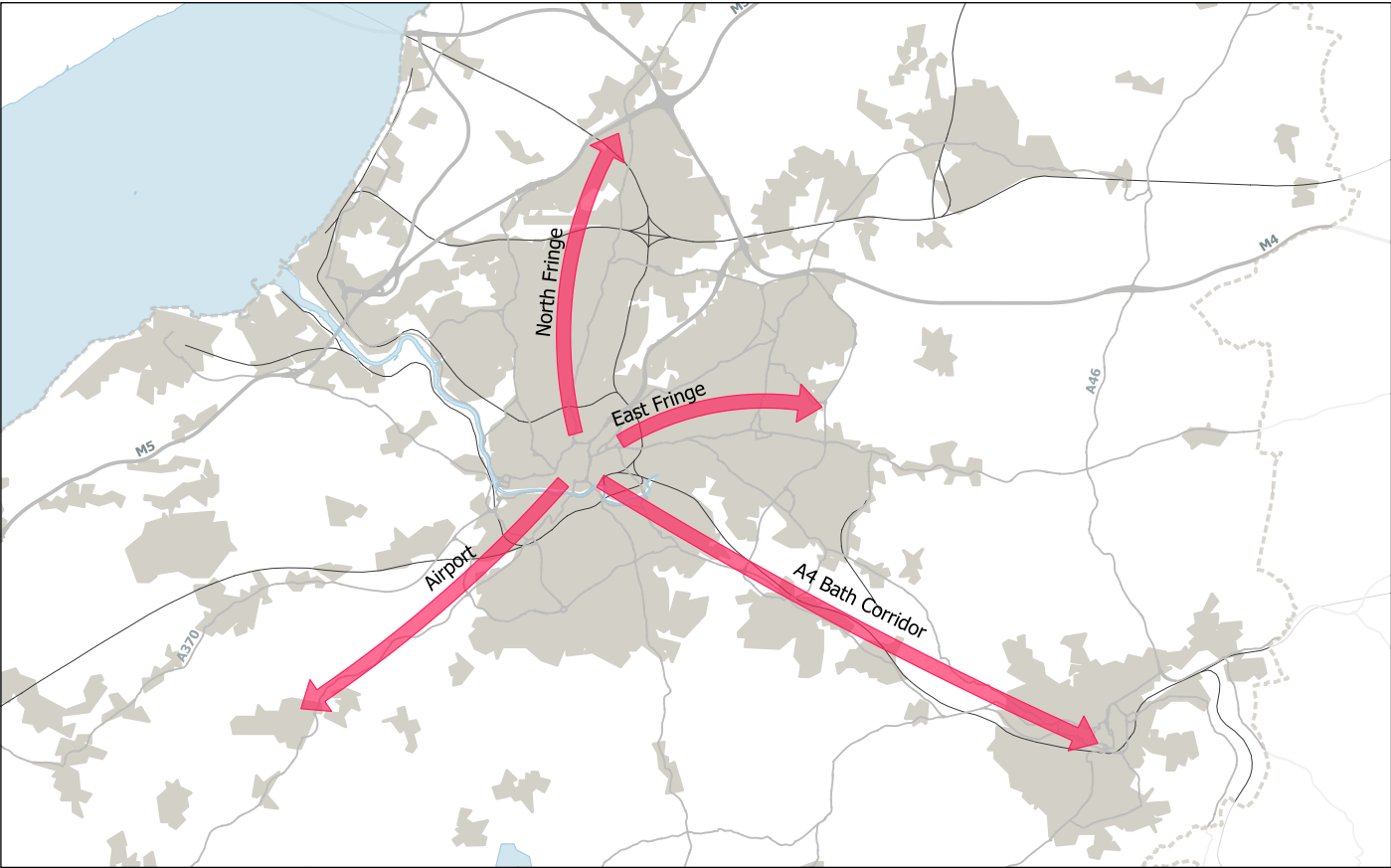
B&NES has already carried out a high-level study to understand the potential of re-introducing trams into Bath and how this might form part of the wider transport strategy for the city. By doing this, Bath would join other cities and world heritage sites that have reintroduced trams as part of the solution to reduce congestion, ease traffic pollution and re-energise the economy. Through further detailed technical work, the major role trams could play in helping to meet the future growth and transport needs of the city, and improved connectivity with Bristol, will be established.

Through further detailed technical work, B&NES will continue to explore the possibility of re-introducing trams in Bath to help meet the future growth and transport needs of the city.

Section 7:  
Connectivity within the West of England continued

Mass transit Bristol to Airport	Connecting the city centre, South Bristol, and the Airport.
Mass transit Bristol to North Fringe	Connecting the city centre, North Bristol, Southmead Hospital, Cribbs Causeway.
Mass transit Bristol to East Fringe	Connecting the city centre, East Fringe and East Bristol.
Mass transit Bristol to Bath	Initial priority for MetroBus corridor to Bath, with longer-term ambition for a high-frequency mass transit solution between Bristol and Bath. Longer-term ambition for light rail between the Hicks Gate / Keynsham area and Bristol city centre, to serve Hicks Gate Park & Ride and beyond, and Temple Meads.

Figure 7.1: Potential mass transit routes



Bus Rapid Transit – MetroBus

The MetroBus network has the following characteristics:

- An emphasis on segregation from general traffic, through bus lanes or bus-only alignments, with shared running in certain areas where traffic is free-flowing
- Highly visible and identifiable stops and interchanges, with good walking and cycling links to local neighbourhoods
- Rapid boarding times, with ticket purchase before boarding, facilitated through the provision of ‘iPoints’ at all stops
- Consistent marketing and branding, emphasising the quality and status of the mode
- A high-quality bus-based vehicle, with twin doors and ultra-low emissions
- Complementary benefits for cyclists, pedestrians and public realm delivered on the back of the MetroBus infrastructure

The JTS recommended substantial extensions to the MetroBus network, to be delivered up to 2036, which is supported by JLTP4. This has a strong link to the proposed Strategic Development Locations in the Joint Spatial Plan (JSP). These will be considered where they enable sustainable economic growth, accessibility in the local area, and accommodate of new housing and employment growth. Proposed extensions include:

- Bristol city centre to Avonmouth/Severnside
- Bromley Heath to Yate
- Almondsbury to Thornbury
- Bower Ashton to Nailsea and Clevedon
- Bristol to Bath (A4) corridor MetroBus, with potentially a light rail system extending from Hicks Gate to Bristol in the longer term

- Bristol Parkway via The Mall to Cribbs Patchway
- Orbital MetroBus route connecting South Bristol to Emerson’s Green via the Ring Road, serving new development at Whitchurch and new Park & Ride sites at Whitchurch, Hicks Gate and Warmley
- Weston-super-Mare network (to link the new Weston Villages developments, the accompanying M5 Junction 21 Enterprise Area, and the proposed Park & Ride site east of the town)

We will investigate and deliver future extensions to the MetroBus network, in a closely coordinated manner.

We support the provision of a ‘consolidation package’, to lock in the benefits of the network, including further bus priorities, signal upgrades and vehicle replacement.



Section 7:  
Connectivity within the West of England continued

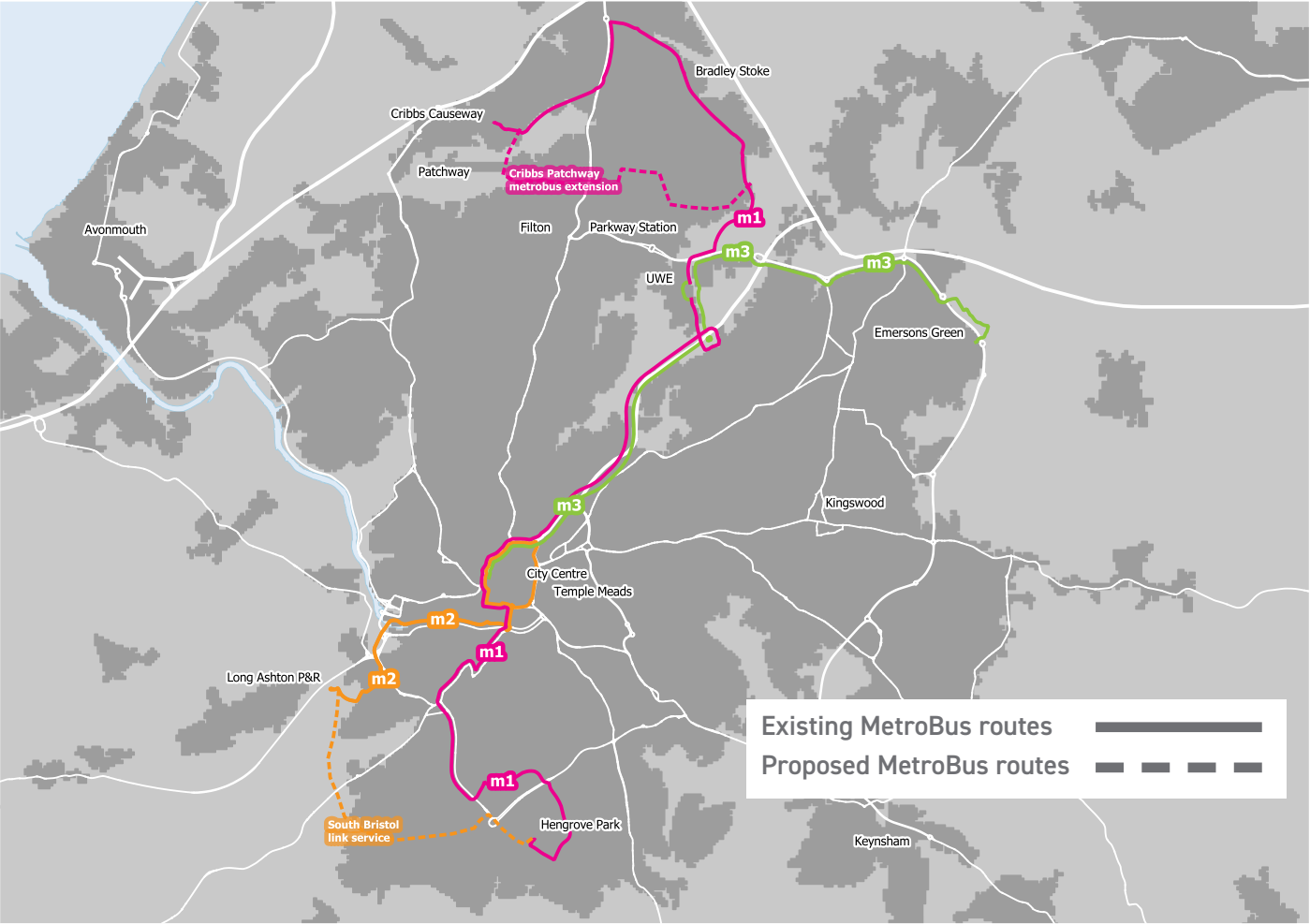
Case study: MetroBus

The network currently being completed has represented a £230 million investment and includes some major interventions such as a kerb-guided busway, the first bus-only motorway junction in the country on the M32, and a major remodelling of the Cenotaph area in Bristol city centre to improve public transport

interchange and the setting of the monument. There were three separate MetroBus schemes coordinated under a joint governance structure.

The initial network is forecast to carry around five million passengers per year.

Figure 7.2: Existing and proposed MetroBus routes



Support and enhance existing public transport services

The existing bus and rail networks will continue to have a role to play in providing connectivity within the West of England. The need for infrastructure and service improvements is recognised, alongside making it easier to use bus and rail.

Bus Strategy

Public transport has a role to play in enabling mode shift and tackling congestion. This includes seeking to provide realistic alternatives to private vehicle trips by continuing to improve local bus and rail networks, completing and expanding of the MetroBus network, and improving routes to bus stops and stations for people cycling and walking.

A Bus Strategy Overview Document will support this JLTP4 (see Appendix 2). It will detail how further growth in bus patronage will be encouraged, including specific proposals and frameworks intended to provide faster, more frequent, reliable and accessible services, combined with new and improved bus stations and other interchanges. Operator engagement has already been undertaken to help inform current challenges to improving the network and opportunities to grow patronage.

Buses play a pivotal role in the current transport network. The West of England has experienced significant, recent growth in bus passenger numbers, bucking the national trend. This increase is likely to result from changes to fares, the expansion of residents' parking schemes in Bath and Bristol, bus lanes, infrastructure upgrades, improved information, and fleet investment by operators. Bus passenger satisfaction has also improved. This success will be built on and an ambitious target to grow passenger numbers further will be set.

Following its creation in March 2017, the Combined Authority has a number of functions related to the 2000 Transport Act (including provision of

bus passenger information, concessionary travel, and non-commercial bus services shared with the constituent councils). The Bus Services Act 2017 gave additional powers to the Combined Authority, including stronger operator partnership arrangements and the power to franchise local bus services under certain conditions.

As well as being Equality Act compliant, local bus services need to provide a service which is attractive to different sectors of the population in different locations. The Bus Strategy will include a wider framework to assess gaps in the commercial bus network, including consideration of estimated patronage, links to deprived areas, links to employment and contribution to tackling traffic congestion. This information will be used to ensure bus services provide realistic opportunities for travel.

We will work with developers, education and key employment locations to identify how routes can be made more attractive in terms of facilities and providing 'seamless door-to-door journeys'.

We will work with operators and local communities to preserve, support, enhance and promote conventional bus services to meet rural needs, within available resources.

Improving co-ordination between the various transport providers in the voluntary sector has the potential to offer users improved efficiencies in public and demand responsive transport provision.

We will work with bus operators, and where necessary invest in the community and voluntary transport sector, to provide services in areas that are not adequately served by scheduled bus services.

We will work with operators to focus local bus services on connecting to high frequency services, to provide well integrated, seamless and reliable passenger transport services.



Section 7:

Connectivity within the West of England continued

The English National Concessionary Travel Scheme, funded by central government, is administered locally by WECA and North Somerset Council under the joint Diamond Travelcard brand. The constituent councils of WECA carry out most of the administrative functions on its behalf. The Diamond Travelcard offers additional benefits which are funded locally. This means those with the Diamond Travelcard can travel for free on journeys starting in our area at any time except between 0400 and 0900 on Mondays to Fridays, also on local buses starting anywhere else in England on Mondays to Fridays between 0930 and 2300 and any time on Saturdays, Sundays or public holidays.

Councils have powers to introduce other concessions for specific groups of people, such as young persons or apprentices. Such concessions, generally reduced fares rather than free travel, need to be funded locally, but can be effective in making access to education and employment easier.

Through the Bus Strategy, we will consider future opportunities for the concessionary travel scheme across the West of England.

The JTS notes that bus priority on the approaches to Saltford would improve bus journey times and punctuality through the village and benefit longer distance journeys along the A4 corridor between Bath and Bristol. A bypass for the town has been considered to reduce congestion through the town and enable road space reallocation to public transport.

We will undertake further work to assess options to provide bus priority on the approaches to Saltford before a decision on a Saltford Bypass is made. Consideration will be given to the potential conversion of bus priority measures in future to accommodate other forms of mass transit, such as light rail.

Case Study: Greater Bristol Bus Network (GBBN)

The GBBN was an ambitious project covering 10 'showcase' bus routes along strategic transport corridors across the four West of England authorities. The £80 million investment was funded by a range of project partners, including the DfT and First West of England, as well as local/developer contributions.

The key outcomes were to improve and upgrade the bus network infrastructure, and to enhance the bus passenger experience with better buses and improved information and reliability; reducing congestion and reducing emissions. The GBBN was also developed to deliver substantial improvements to the speed, quality, reliability and attractiveness of bus services.

Improvements included over 120 new buses, nearly 1,000 improved bus stops with new shelters & access, more than 300 real-time information (RTI) displays, bus priority signals, bus lanes to bypass traffic, pedestrian and cycle access improvements, public realm improvements and various marketing and promotion initiatives.

The GBBN set out an Evaluation Plan that identified a range of performance indicators to measure project effectiveness. These were bus patronage, park & ride patronage, bus satisfaction, bus punctuality, rail patronage, area wide traffic levels, congestion, air quality, cycling trip numbers and road safety. With one exception, where it was not possible to make a conclusion, the targets were met, and many were exceeded.



Most interchanges comprise two or more bus stops on-street. There is potential to improve the quality and availability of interchanges, as well as perceived reliability. We will prioritise improvements to interchanges for consideration and inclusion in scheme packages in transport programmes, such as GBBN2. GBBN2 will improve passenger experience by providing better bus services, targeted bus priority measures (and better enforcement), traffic signal upgrades, interchange upgrades, enhanced passenger information and integrated ticketing on inter-urban bus corridors, complementing proposed MetroBus and mass transit routes.

We will deliver the Greater Bristol Bus Network 2 to provide further targeted enhancements to the bus network.

Other than a limited number of 24-hour bus routes in Bath and Bristol, local bus and train services do not run throughout the night. This restricts access to some employment opportunities (for example Avonmouth and Emersons Green) and deters shift workers from using sustainable travel.

We will work with local bus and train operators, and Department for Transport, to review the need for bus services to operate throughout the night.

Rail

We want to transform suburban rail services in the West of England with new and high frequency turn up and go services, new lines and new stations. Stations will be brought up to a new high standard with improved passenger facilities and levels of accessibility, making them step free to enable all passengers to travel by train. Modern ticketing, fully integrated with local bus services, will make all journeys seamless.

The branding of services, information and stations will be made consistent, where possible. This will provide passengers with the confidence they are using an integrated network of fast and frequent services. This could be extended across other

modes to provide one transport network, be it buses, trams, trains, ferries, cycles or walking all under the one brand.

Our proposed and well advanced MetroWest programme will deliver by 2021/22:

- Half hourly services on the Severn Beach to Bath Spa and Westbury Lines. This is forecast to generate 0.6 million passengers a year
- Reopening of the Portishead Line, with initially an hourly service (half hourly aspiration) to Bristol Temple Meads and new stations at Portishead and Pill. This is forecast to generate 0.4 million passengers a year
- Re-opening of the Henbury Line with new stations at Henbury and North Filton to serve Cribbs Patchway New Neighbourhood (5,700 new homes) and the new Bristol Arena. This is forecast to generate 0.4 million new passengers a year
- New station at Ashley Down on the Filton Bank
- Half hourly services between Bristol Temple Meads and Yate (3,000 new homes) by 2021, with possible extension to Gloucester. This is forecast to generate 0.25 million new passengers a year
- Stations to be brought up to a new MetroWest high standard of passenger facilities, with step free access
- New station at Portway, part funded by the New Stations Fund, to serve the adjacent Park & Ride site

To date, over £12m has been invested by the West of England in developing MetroWest. It remains our rail priority.

We will deliver passenger rail service and capacity improvements, station upgrades and a new stations package, including MetroWest phases 1 and 2.

Section 7:  
Connectivity within the West of England continued

- Through the Great Western Franchise, we are working to secure:
- MetroWest services to be included and funded by the Department for Transport
  - Enhanced services on the Cardiff to Portsmouth, Bristol to Taunton/Exeter, Bristol to Weymouth and Bristol to Swindon routes
  - New Bristol to Oxford via Bath Spa service with links to East-West Rail
  - Additional stops at Worle (as the gateway and interchange for Weston-super-Mare and Bristol Airport) and Bridgwater (for Hinkley Point C). These may be secured through the new CrossCountry franchise.
  - New fleet of rolling stock to meet current and future demand

Building on MetroWest, we want to see 15 minute turn up and go services; the Clifton Down to Bath Spa route could be the first to benefit from this. Future expansion could see turn up and go services between Bristol Temple Meads and Henbury, Yate, Portishead and Weston-super-Mare.

Bristol East Junction remodelling remains key to our plans, enabling MetroWest services and providing the capacity to run more trains. We also recognise the importance of resignalling, platform and concourse works at Bristol Temple Meads to improve capacity.

Temple Meads will act as a critical transport hub for central Bristol, the West of England and wider region, providing interchange with the mass transit and MetroBus networks. There is a longer-term aspiration for the return of rail services into Brunel’s Grade 1 listed Passenger Shed – one of the oldest stations in the world. This would increase platform capacity, also facilitating some improvements in local frequencies further afield.

**We support Network Rail’s plans for Bristol East Junction and for bringing Platforms 0 and 1 in the Midland Shed back into use.**

During the life of JLTP4, we will consider extending services beyond Henbury and new stations to support the JSP at Charfield (1,200 homes), St Annes Park, Saltford, Ashton Gate and Constable Road, and new links to Thornbury and Bristol Airport. We will also work with planning colleagues to review the need to safeguard disused rail lines where they could have a future role to play.

**We will consider how new technologies can help deliver rail schemes, including options for light rail and tram trains, and how infrastructure costs can be reduced and affordable modern services can be delivered.**

**We will work with train operators, Severnside and Heart of Wessex community rail partnerships and others to promote rail travel and improve facilities at stations, including ticketing and perception of safety and security.**



**Improve the availability and accessibility of accurate travel information and ticketing**

Providing a single accessible portal for clear, comprehensive and reliable information on travel options is essential for achieving seamless door-to-door journeys. It provides people with the confidence to travel by public transport and active travel modes, particularly for journeys made less regularly. It will also help to overcome misconceptions relating to service frequency, fares and journey times by public transport, bicycle or foot.

Information needs to be available in advance of the journey, as well as being updated regularly ‘on the move’. Information provision and digital services is an area we are innovating in and is developing rapidly, including Mobility as a Service. We are ahead of a lot of cities/ regions and want to continue to develop provision, recognising the role this could have in encouraging behavioural change.

Quality information will continue to be provided online, through the travelwest website, as well as through reliable journey planning smartphone apps, such as bus checker. Opportunities to provide further information will be investigated, such as through Google Maps and citymapper. Citymapper can provide live running information and fares for buses and trains, station or stop progress alerts while on the move, and calories burnt for journeys by bicycle or foot.

**We will work with application developers to ensure as much travel information as possible is provided for different journey options, and information already available will be built upon and combined in one place.**

**Transport operators and providers will be required to make data they collect from app and website usage ‘open’, for use by others to inform and tailor future service and information provision.**

**Case study: Mobility as a Service in the West Midlands**

In 2018, a monthly subscription ‘Mobility as a Service’ was launched in the West Midlands, called Whim. Working in partnership with the West Midlands Combined Authority, Whim offers a single access point, via a smartphone app, to multiple transport options including local buses and trains, car hire, taxis and cycle hire. Reflecting the market offer for using mobile phones, users can either subscribe on a periodic basis to receive access to these services for a fixed fee, or use the app for pay-as-you-go purchases on a journey-by-journey basis. Three options are currently being offered in the West Midlands region; pay-as-you-go, a standard monthly package including unlimited public transport and capped daily car rental rates, and a premium monthly package that includes unlimited public transport, taxis (within a 5km radius of the user’s location) and rental cars. Access to shared bicycles will also be available later this year.

Participating companies include bus operator National Express West Midlands, taxi app Gett, car rental company Enterprise and cycle hire provider Nextbike, which will be launching in Birmingham later this year. The Combined Authority are keen to maximise travel options without the need to own cars, which on average (worldwide) are parked up unused for about 96% of their lifetime.

Whim was first launched in Helsinki, where it has 20,000 registered users, who receive a number of points which can be used as they like for a combination of taxis and car rental trips each month, supplementing public transport and cycling.



Section 7:  
Connectivity within the West of England continued

**Case Study: Bus checker app**

The bus checker app is a free to use smartphone app, developed by the West of England as part of the Local Sustainable Transport Fund Programme. We partnered with a specialist app developer, to present dynamic data, such as bus tracking and timetables, in an intuitive and attractive format using mapping and GPS.

The app provides users with a one stop shop for planning journeys using public transport, and access to live departure boards for every bus stop in the West of England. This enables users to plan their journeys before leaving, and monitor bus times at each stage of the trip.

Feedback from bus users showed that compared with travelling by bus before using the app, there was a more positive experience of bus travel, with less time waiting at a bus stop and greater knowledge of route options. Users also said the app had encouraged them to use the bus more often. The app is now a commercial service.

Opportunities to enhance existing hard-copy information provision will be considered, ensuring it is as up to date and relevant as possible. Information provided in leaflets, timetables, at libraries, leisure sites, large healthcare sites, major supermarkets and transport hubs, will ensure those who cannot access information online can still get the information they require.

We have a statutory duty to provide local bus service information (including Real Time Information). Existing strategies will be reviewed and a strategic Information Strategy formulated to include updated proposals for:

- Provision of timetable information at bus stops and online
- Real Time Information provision and monitoring
- Service information through Traveline, the West of England travelwest website, and regular social media updates

**We will prepare a Bus Information Strategy to update and replace the existing local authority documents, setting out the expected standard for bus information.**

Work will continue to develop an integrated smart ticketing scheme that is more flexible and easy-to-use, and the need for further, statutory ticketing schemes and their revenue cost implications will be assessed. We are currently moving towards a single smart ticketing scheme owned and managed by the authorities, with operator products being accommodated on the travelwest card. This will facilitate a connected transport network that runs as smoothly and efficiently as possible and enables simplified payment e.g. contactless. It forms a strong foundation for developing future mobile and contactless ticketing scheme options.

**To enable and achieve ‘seamless door-to-door journeys’ across the West of England, we will work to roll-out a universal, multi-operator smart ticketing scheme and explore the possibilities of its use across different transport modes.**



W2. Provide for journeys where public transport is not an option

This policy contributes towards the delivery of the following objectives and outcomes:

1-3	1-3	1,2,5	2-4	1,2

The main interventions that will support the delivery of the policy, are:

- Provide Park & Ride and sharing schemes to minimise the impact of single occupancy vehicles
- Recognise the needs of motorcycle and moped users

**Provide Park & Ride and sharing schemes to minimise the impact of single occupancy vehicles**

Park & Ride provides the opportunity for people living outside urban areas, who do not have easy access to public transport near to where they live, or cannot make door-to-door trips by public transport, to transfer from private car to public transport for onward journeys into urban areas. By intercepting traffic, Park & Ride releases highway capacity in central areas to enable transfer of road space to walking, cycling and public transport.

Building on work in the JTS, new and expanded Park & Ride sites will be focussed on the main arterial routes into Bath, Bristol and Weston-super-Mare. The impact of any new Park & Ride provision on the operation of the SRN will be assessed, along with the impact on overall journeys made.

**We support the concept of a ring of Park & Ride locations around the urban areas, to help tackle traffic and air quality problems in central areas.**

In Bath, the priority is to intercept traffic on the A4 corridor to the east of the city. Further expansion of existing sites will also be promoted, to reduce the number of trips being made into the city by single occupancy vehicles, contributing to carbon reduction in the congested city centre.

**We will explore options for, and support delivery of a new Park & Ride site east of Bath, to intercept traffic on the A4 corridor east of Bath. We will promote further expansion and improvement of the existing Park & Ride sites at Newbridge, Lansdown and Odd Down.**

**We will deliver the Freezing Hill junction upgrade and improvements at two other junctions along the route between the A420 and Lansdown Park & Ride.**

In the short-term, the priority in Bristol is to plug the gaps in existing provision, particularly to the north of the urban area. An M32 Park & Ride site would intercept the largest number of trips into the city, and have the most beneficial impact on congestion, air pollution, and road safety. It would also help unlock the transformation of Bristol city centre, enabling major public realm and transport improvements outlined in the City Centre Framework.

**We support delivery of an M32 Park & Ride site.**

Other new locations and sites being considered for expansion, include:

- A4 Portway expansion
- A38/A4174 South Bristol Link new site
- A4018 near Cribbs Causeway new site
- A38 North between Junction 16 and Thornbury new site
- A432 new site near Yate
- A420 /Ring Road new site(s) to connect to the East Fringe mass transit scheme

Section 7:  
Connectivity within the West of England continued

- A4 Brislington site relocation Hicks Gate
- A37 Whitchurch new site
- A370 Long Ashton expansion

We will support the delivery of new or expanded Park & Ride sites, where appropriate.

A new Park & Ride site to the east of Weston-super-Mare, potentially located near to the A370/A371 junction, will be investigated. This site could be served by Weston MetroBus services, to provide a high frequency rapid service to the town centre.

In North Somerset, we will investigate a new Park & Ride site to the east of Weston-super-Mare, potentially located near to the A370/A371 junction.

The performance of Park & Ride sites will be dependent on restricting parking provision in central areas and managing the cost of parking, to ensure that Park & Ride is the more attractive option compared to driving. The Park & Ride sites will be planned so that traffic impacts are managed around each site and any abstraction from existing bus and rail services is minimised.

The use of Park & Ride sites will be monitored as we seek to understand the demand for later opening of sites into the evening. These could potentially be served by passing bus services, rather than dedicated Park & Ride services. This will be considered further as part of the Bus Strategy.

In the short to medium term, the new and expanded Park & Ride sites will be served by bus, MetroBus and rail. Informal rail based Park & Ride already occurs, including at Bristol Parkway, Keynsham and Nailsea & Backwell rail stations, which will be retained.

Rail-based Park & Ride will continue to be explored as part of the MetroWest programme of suburban rail enhancements.

Improved signage and Variable Message Signs on the approaches to Park & Ride sites will increase awareness and usage of the sites, as will the quality of the journey to/from the site and the ease and speed of interchange.

Complementary uses for existing and new Park & Ride sites will be explored, with opportunities for sites to provide Park & Cycle or Park & Stride, overnight lorry parking, coach parking, freight consolidation functions, or even acting as bus depots. Any complementary uses would need to consider potential impacts on local communities and the local environment. Operators would need to be involved, as some proposals may require a parking charge to be introduced.

In the longer-term, we will explore the potential of new and expanded Park & Ride sites linked to mass transit routes, as well as exploring the potential for sites to act as transport hubs.

Informal Park & Ride is already established on radial corridors to Bristol and Bath, where commuters park on radial bus corridors and catch bus services into city centres. This often takes place where there is a frequent bus service and a rural catchment area with limited bus provision, for example in Radstock and Farrington Gurney. However, in some locations parking can cause congestion and blight local neighbourhoods.

We will investigate providing off-street parking for informal Park & Ride at suitable locations, to minimise potential impacts on surrounding areas.

Park & Share, where drivers meet at key places on the road network, one of the vehicles is parked and people continue the journey to the destination in one car, will also be considered. At present, some Park & Share activity takes place around Tormarton (M4 J18), Falfield (M5 J14) and on the A466 outside Chepstow. In some cases, inappropriate parking causes problems in local areas.



We will investigate where Park & Share facilities could be formalised, to encourage car sharing whilst better managing the impacts in local areas.

Car share schemes and car clubs have a role to play where alternative modes of transport are not available. There is a need to co-ordinate service provision to make services more responsive to people's needs and continue to support informal arrangements to widen its appeal. Car clubs can help to manage parking demand, encourage households to dispense of their second car and generally encourage alternatives to privately owned cars. Further benefits can be realised if the car club vehicles are low emission.

We will investigate opportunities to increase the use of car sharing through technology, including via social media, and implement measures as appropriate.

We will support the uptake and expansion of a car club network of low emission vehicles.

Recognise the needs of motorcycle and moped users

Motorcycles and mopeds can offer an affordable means of transport for trips where public transport is limited and walking and cycling unrealistic. They can provide a more economical alternative to private car use and enable access to opportunities and flexibility that cannot otherwise be gained.

Greater levels of information about facilities for motorcycle users will be provided, including clear signage of facilities on the approaches to towns and cities, as well as ensuring their needs are considered during design of new schemes and infrastructure. The increased provision of secure parking in well-lit areas will be investigated, particularly at public transport interchanges and town centres. Opportunities to allow motorcycles in areas currently restricted to public transport and pedal cycles will be investigated, and the use of bus lanes to provide diversion from congested

areas of traffic in urban areas will continue to be permitted.

We will support the role of motorcycle and moped users, ensuring facilities and parking are provided and clearly identified in appropriate locations.

W3. Use, as appropriate, measures and technological advances to influence and better manage the demand of private car use

This policy contributes towards the delivery of the following objectives and outcomes:

1,5	1,4,6	1-5	2,3

The main interventions that will support the delivery of the policy, are:

- Use technology to keep traffic moving
- Embrace technology to improve cleaner travel options
- Use, as appropriate, measures to influence and better manage the demand of private car use

Use technology to keep traffic moving

To address congestion we need to do more than just improve mode choice. On some of the congested routes in the West of England queueing and delay can already be severe. Future growth cannot be dealt with by continuing to widen roads as space is not available.

The role of technology is likely to become increasingly important in keeping traffic moving. In a few certain circumstances it might be appropriate to consider the use of charging mechanisms to optimise network operation and ensure trips can continue to be made.



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Connectivity within the West of England continued

Intelligent Transport Systems (ITS) are used to inform road users of disruptions, and maximise the efficiency of traffic signals to keep the highway network operating as efficiently as possible. Smart Motorway systems use technology to actively manage the flow of traffic. Managed by HE, these are used on the SRN, including the M4, M5 and M32 motorway network through the West of England.

**We will work with Highways England to implement Smart Motorway schemes on the M4 between Junctions 18 and 19, and the M5 between Junctions 17 and new 21A, complementing the delivery of new and improved junctions.**

The strategic transport network will continue to be monitored by HE, with the transport networks of Bristol, B&NES and South Gloucestershire monitored by their own traffic monitoring centres. North Somerset manages its own traffic signal network and has aspirations to improve monitoring functions, should both demand and resource allow it. Releasing open source data to transport network operators, including HE, will help to ensure that users of the network enjoy better journeys.

There is an increased role for technology in improving knowledge of available parking spaces, thereby reducing levels of driving around searching for a free space. The development of apps, such as Parkopedia, enables drivers to access real-time parking availability and tariffs which, with the installation of kerbside bay sensors, can include on-street spaces. These, in turn, can support more efficient use of local parking provision.

**We will continue to work with Highways England and other key stakeholders to explore and develop innovative measures to improve the efficiency of the transport network, including car parking, through technology.**

Embrace technology to improve cleaner travel options

As discussed in Section 4, the introduction of technological improvements will present the West of England with challenges and opportunities. Connected Autonomous Vehicles (CAVs) and Mobility as a Service (MaaS) are currently at early stages of development and it is not yet clear how we should be responding; however, not being involved in the mobility environment could result in missed opportunities and leave the West of England behind other areas of the country. CAVs are likely to come in a variety of forms; from small delivery robots, campus style pods, cars, taxis and even larger communal transport and lorry platoons. Different types of vehicles will require different approaches. Local, sub-regional and national government will need to consider how to manage these and who is responsible for which element.

The fundamental transport issues, and the need to prioritise sustainable and healthy transport, are likely to remain. However, there are a range of new potential issues raised, including:

- Conducting appropriate sensitivity testing in the development of long term major schemes to explore the potential impacts of CAVs
- Ensuring that the policy framework and the delivery of any necessary infrastructure keeps pace and responds to the needs of increased levels of mobility associated with advances in technology
- Encouraging the high-tech jobs associated with driverless cars and new technologies
- Providing a test bed for CAVs, enabled by high speed broadband and open data, particularly along identified key transport corridors
- Encouraging shared forms of ownership, driverless buses, and shared CAVs



- Protecting and enhancing the commercial viability of existing public transport services and working with them to adapt to changes
- Responding to potential equality issues to ensure people that do not use CAVs are not disadvantaged by their uptake
- Potential unemployment impacts because of less demand for drivers (e.g. for taxis, deliveries, buses)
- App based MaaS products should provide authorities with data obtained to maximise the benefits. For example, a condition of licencing Uber taxis could include a requirement to openly provide travel data.

There will be many different players involved in developing, promoting and ownership of CAVs. The technology adoption is likely to be both incremental, with small upgrades to existing technologies, as well as more disruptive with offers made by new technology players (such as the launch of Google or Apple), where residents will be offered completely new products. It will be important to watch developments closely and be able to respond to changing technology to optimise outcomes in line with this plan.

**We will produce a strategy on CAVs and MaaS that clearly sets out our position and how we can harness technology to deliver our objectives.**

**We will set up a technology consortium, involving the private sector, to oversee how this technology is introduced.**

Use, as appropriate, measures to influence and manage the demand of private car use

The high demand placed on the transport network across the West of England needs to be managed to ensure movement is efficient and journey times are reliable.

For some, driving a car is essential for travelling around the region. This may be due to mobility impairments, the nature of work patterns or having to transport bulky or heavy items. However, for many people who currently use their cars there will be opportunities to switch at least some journeys to walking, cycling or public transport. The policies and interventions set out in this plan enable and encourage the increased use of more sustainable and active modes of travel.

To influence the demand of drivers on the transport network who have alternative ways to travel, there is a need to consider the implementation of demand management measures, which will be determined by the appropriate authority. Measures to influence demand could include:

- Management of parking provision
- Re-allocation of road space to sustainable transport modes
- Road user charging, such as charging to drive into or through specific areas where alternatives to driving are available
- Workplace Parking Levy

Parking controls can encourage trips within urban areas to transfer to active modes or public transport. By reducing commuter parking in town and city centres, local economies can be improved by increasing the turnover of the limited number of spaces that are available. The potential for emerging technology in improving car park and kerb management will be considered through, for example, the reservation of on-street parking spaces (including EV charging points). Parking

Section 7:  
Connectivity within the West of England continued

policies will continue to accommodate those who are unable to use alternatives modes of travel to access urban areas.

Through the development of local parking strategies, we will continue to manage parking to control future traffic demand, including policies for on-street parking, off-street parking and the numbers of spaces provided in new developments and at workplaces.

Where appropriate, we will look to reallocate road space to modes of transport that carry people more efficiently. This can be achieved by converting a lane for general traffic into a bus lane or cycle lane. This approach makes buses more reliable and cycling safer, reduces capacity for general traffic and, as a result, can make driving on the most congested corridors the least attractive option in terms of journey time. This could encourage private car users to switch to alternative modes.

Road user charging and Workplace Parking Levies can manage the demand of private cars on the highway network. Extensive feasibility and consultation work, including with the public, would form part of any further consideration of demand management measures, including a road user charging scheme. Work would be required with partners within and beyond the West of England, including Highways England. As the SRN will fall outside any fiscal control, care will need to be taken in establishing such a scheme to address any unintended consequences for the remainder of the highway network, including the SRN.

A Workplace Parking Levy means employers are charged a fee per private parking space on their site. Employers may choose to pass this charge on to their staff, which can encourage staff to consider alternative ways of travelling to work. Previous assessments undertaken for the West of England show there is potential for a Workplace Parking Levy to deliver an estimated 2% reduction in trips. Coupled with a road user charging scheme, the

impact on the reduction of trips could be far more significant.

We will support the further investigation and potential future implementation of appropriate parking and road user charging policies, if initial consultation and feasibility work suggests they could influence and better manage the demand and impact the use of private vehicles in the West of England.

Funds raised through charging schemes would be reinvested in transport measures across the West of England, to improve the provision of realistic alternatives to the use of the private car. More details on charging schemes can be found in Section 10: Funding and implementation.

The West of England authorities will continue to work together to identify and agree a coordinated approach to parking and/or road user charging, to manage the impact on competing commercial and business centres.

Feasibility studies are being carried out to investigate the impacts and extent of charging Clean Air Zones in Bath and Bristol (see Section 8: Local connectivity). If feasible, this could include introducing charges for the most polluting vehicles entering these areas. This could help contribute towards improving air quality in our most congested areas. However, as with all schemes that seek to charge users of the transport network, significant objection is often generated, which will need to be carefully managed.

We will support ongoing work on Clean Air Zones, and proactively work to manage objections.



W4. Improve resilience of the network, providing increased reliability

This policy contributes towards the delivery of the following objectives and outcomes:

1,2,4,5	4	2,3	3

The main interventions that will support the delivery of the policy, are:

- Define, manage and maintain the Key Route Network
- Develop and improve network resilience through an ongoing commitment to highway maintenance
- Effectively manage the Major Road Network
- Effectively accommodate development sites and associated trips

Define, manage and maintain the Key Route Network

The West of England Combined Authority has a duty to define a Key Route Network (KRN) within its area. The KRN will clarify a priority highway network for the accommodation of multi-modal, passenger and freight movements, help guide the prioritisation of investment in the highway (including maintenance) and complement the transport major scheme programme.

Consideration is being given to the criteria for the KRN and its implementation and operational protocols, including the multi-modal nature of transport corridors (road, freight, port, airport, bus, MetroBus, cycle and rail), key transport hubs, major employment and housing areas, key movements of people and commuters, traffic volumes, network constraints, air quality including

Clean Air Zone proposals, and the Strategic Development Locations outlined in the Joint Spatial Plan.

The definition of the KRN will need to take account of principles around how movements should be accommodated and managed on the local network. This represents an opportunity for a fresh approach to the designation of corridors, and take account of the following issues as part of scheme design:

- The accommodation of strategic car and lorry movements on the most appropriate, defined corridors, to ensure efficient movement and to minimise congestion and inform a designated freight distribution network (see policy W5). This may include the omission of some corridors which have a current 'A' road designation, and the inclusion of others currently not designated as 'A' roads
- The designation and status of priority public transport corridors, including the potential to review the status of existing corridors in terms of accommodating through traffic movements and re-prioritise road space to more sustainable modes
- The appropriate balance and allocation of road space between different modes of passenger transport, and the balance of links based on their urban or rural environment and position within district centres
- Impact on air quality, particularly routes within Air Quality Management Areas (AQMA) and any forthcoming, designated Clean Air Zones
- Road safety implications, particularly for vulnerable road users (including taking account of designated 20 mph zones)
- Supply and management of parking and servicing of kerbside properties



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Connectivity within the West of England continued

- The JLTP's major scheme programme, including the linkages between radial and orbital links and opportunities to reallocate road space, and manage/restrict through traffic, on radial routes where through traffic is diverted away onto more appropriate roads
- Interaction with and inclusion of the MRN, and connections to the SRN and the rest of the local road network

The issue of wider connectivity will also be considered in the designation of the KRN. The West of England network accommodates strategic car and freight movements between the south coast ports and the Midlands, as well as movements from the South West Peninsula and South Wales to London. These movements are not only accommodated by the SRN but also on roads of a more local nature. The major scheme programme includes improvements to take account of these movements, to improve network efficiency, tackle bottlenecks and remove strategic movements from unsuitable routes.

A further key issue is resilience. Capacity is limited and an incident on the SRN can have severe implications across the region (and often much further afield), for private vehicles, public transport and freight movements, as well as having further road safety, economic and air quality implications as traffic is diverted onto unsuitable or congested links. One particular example is the M5 through North Somerset, where incidents, particularly in the busy summer months, have severe implications. This causes severe congestion, not just on the motorway but also on diversion routes and local roads in and between our towns. Resilience will form a key component in the designation of the KRN, as well as informing the major scheme programme.

**We will define, manage and maintain the KRN, ensuring it considers the key issues of wider connectivity and resilience.**

Develop and improve network resilience through an ongoing commitment to highway maintenance

A significant proportion of our total capital and revenue spending is allocated to managing and maintaining our transport assets ranging from carriageways, footways, cycleways and rights of way, to bridges, retaining walls, fences and barriers, verges, lighting, traffic signals, bus stops and other public transport infrastructure, street furniture and signage, car parks and Park & Ride sites and drainage infrastructure.

Growth in traffic levels has brought an increasingly widespread recognition of the importance of highway maintenance, and the high value placed on it both by users and the wider community. The impact of repairs and the need to access and maintain underground utilities beneath the highway has a detrimental impact on traffic disruption. There is significant public concern about the need to invest adequately and effectively in highway maintenance and the implications for safety and journey reliability.

To manage the network effectively we will:

- **Oversee the safe, effective and efficient use of the network in line with our duties under the 2004 Traffic Management Act and consider the needs of all road users**
- **Review our network management plans to ensure they are kept up-to-date and complementary**
- **Review road hierarchy through the KRN programme to consider which kinds of traffic should be directed onto the most appropriate routes, including heavy goods vehicles**
- **Adapt the network through engineering schemes and measures to ease congestion, improve safety and encourage sustainable transport modes**



- **Maximise the operational effectiveness of traffic signals and extend the use of Urban Traffic Control where deemed appropriate**
- **Maintain, manage and ensure best use of transport assets through a Joint Transport Asset Management Plan. This will include those key routes and corridors that form the KRN**
- **Develop and improve the network resilience, taking account of the impact of climate change**
- **Explore further with Highways England a strategy for the M32, which will consider options including declassification from motorway status and potentially unlock new Park & Ride sites along the M32 corridor**

**We are committed to better integrating traffic control systems across the region, and working with technology partners to better share network data and identify ways to manage the network.**

**We will implement the measures identified as part of the Better Bus Area scheme to co-ordinate and rationalise the information provided to bus operators in respect of planned road works.**

To fulfil its potential, it is crucial the highway network is well maintained. This can make a significant contribution to key transport objectives, for example road safety, particularly with respect to cyclists, pedestrians and motorcyclists. Equally, a poorly maintained highway network can deter people from choosing active modes of travel, therefore increasing levels of congestion and be detrimental to the quality of the public realm.

A Joint Transport Asset Management Plan (JTAMP) sets out a framework for the delivery of sustainable maintenance. This could form the framework for the management of the transport infrastructure asset base to deliver agreed Levels of Service and Performance Management targets in the most cost-effective way. The JTAMP could consider the following sorts of issues:

- Customer Care: to involve stakeholders and communities and users of the highway network to confirm how best to deliver their needs
- Asset Information Management: establish inventory systems and procedures to collect and collate asset characteristics and condition assessments
- Transport Asset Management Framework: implement a clear and focused Plan, compliant with statutory obligations, defining clear highway maintenance objectives and outcomes and detailing 'Life Cycle' planning, to ensure the most effective use and targeted maintenance of the asset over its operating life up to renewal/disposal. This will include appropriate consideration of both reactive and planned maintenance, at various stages throughout its life cycle. Consideration will be given to available funding and establish/maintain contingency plans for unplanned events and emergencies
- Work Planning and Service Delivery: adopt a policy for sustainable development compatible with predicted growth and planning for resilience. Identify maintenance implications arising from new and improved infrastructure projects and plan future maintenance, implement/maintain an effective process of risk management and deliver an effective system of inspection
- Use of new street works powers (including the New Roads and Streetworks Act and the Traffic Management Act) to improve the management of works on the highway network

**We will look to produce a JTAMP for the West of England area to provide a framework for delivering sustainable maintenance.**



Section 7:

Connectivity within the West of England continued

Effectively manage the Major Road Network

The Department for Transport is proposing to create a Major Road Network (MRN) to sit between the Strategic Road Network (SRN) and the local road network. It will provide the opportunity for a consistent and coherent network with a better balance of investment between the SRN and MRN and clarify their complementary roles and requirements.

To give the economy a stronger boost, unlock housing and relieve communities overwhelmed with traffic, there is a strong case for increasing investment on important roads managed by local authorities. Our approach to the MRN will, therefore, take into account future growth locations for housing and jobs and include key urban corridors. Public transport will be one of the key principles for the MRN, as these roads carry large numbers of people on buses and other modes. This recognises that public transport schemes are generally more effective in the long-term at reducing congestion than road widening schemes. Resilience schemes will be included where they have a demonstrable beneficial impact for the economy.

We recognise that there will be additional MRN capital infrastructure and this will have an impact upon maintenance budgets and requirements.

The West of England will work closely with the Department for Transport on proposals for the MRN in our area.

Effectively accommodate development sites and associated trips

We engage with developers early in the planning process to ensure they design their sites to match the priorities of the local planning authorities and contribute proportionately to identified transport improvements and mitigations. This includes the provision of highway links into the existing network. Regular update meetings with developers

Case Study: Cribbs Patchway New Neighbourhood Infrastructure Development Plan

Part of the Cribbs Patchway New Neighbourhood Infrastructure Plan includes a commitment from South Gloucestershire Council to forward fund up to £12m to ensure that infrastructure is comprehensively planned, phased and delivered. This demonstrates the Council's commitment in ensuring that the right infrastructure is available at the right time to allow people to make more sustainable travel choices.

of strategic sites give the West of England authorities the chance to outline transport network priorities and requirements through site design and help to iron out issues to ensure a smooth planning process.

It is essential that potential transport opportunities are used to influence decision making at the very earliest stages of land use development planning (see Section 9: Neighbourhood Connectivity). Accessibility – with an emphasis on developments being encouraged in areas served by, or providing greatest opportunity for, trips to be made by passenger transport, walking and cycling – will continue to be balanced with the need to deliver wider objectives. This could include supporting growth on strategic transport corridors or addressing local issues.

S106 contributions and Community Infrastructure Levy (CIL) will continue to be used to fund the delivery of mitigations and improvements as soon as possible. Site-specific mitigations will be via the S106 process and the more strategic improvements via CIL.



Given the evidence from the JTS, the focus of the JLTP is on achieving a substantial shift to more sustainable modes, that carry more people more efficiently. However, large numbers of cars will remain on the network given the planned growth across the region. Significant investment will be required to:

- Unlock new development, including strategic employment locations and clusters
- Tackle congestion blackspots
- Support the ambitions for changing people's travel behaviour, through enabling reallocation of road space to walking, cycling and public transport on congested urban corridors and directing traffic to more appropriate corridors, where appropriate

We will design new and improved road infrastructure to support the needs of pedestrians, cyclists and public transport users – including multi-modal transport corridors – to support the ambitious growth proposals in the area and to unlock the economic potential of areas including South Bristol.

We will work to ensure that all highway improvement and traffic management schemes consider potential improvements to bus infrastructure and incorporate features in design, wherever possible.

We will work with Highways England to provide a new Junction 21A on the M5 motorway south of the existing J21. This will be supported by a new multi-modal corridor connecting the new junction with the A38, bypasses for the villages of Banwell, Sandford and Churchill and major improvements to the A38 between Langford and South Bristol. The scheme will improve links to the airport and improve resilience of the Strategic Road Network. It will facilitate SDLs at Banwell and Mendip Spring Garden Village and Urban Living in Weston-super-Mare. It will also support growth at Bristol Airport.

We will work with Highways England to deliver improvements to Junction 14 of the M5, increasing capacity and enabling enhanced access to national networks.

We will deliver a new road link from Yate to a new M4 Junction 18A, to enable traffic from Yate to directly access Emersons Green and the east of Bristol.

We will deliver the following highway schemes to provide access to new development sites and accommodate associated vehicle trips:

- Multi-modal corridor improvement (highway, MetroBus, strategic cycling route) between Bristol and Nailsea, continuing to Clevedon / M5
- A4 to Avon Mill Lane highway link, Keynsham
- Winterbourne and Frampton Cotterell Bypass, to enable road space reallocation to provide a multi-modal corridor along the A432 between Yate and the North Fringe of Bristol
- A371 and Wolvershill Road / Churchland Way Link (North South Spine Road), Weston-super-Mare
- Herluin Way to Locking Road Link, Weston-super-Mare (to replace two current road bridges with a single one and enable double-tracking of the railway)

Section 7:  
Connectivity within the West of England continued

W5. Enable business clustering and the efficient movement of freight

This policy contributes towards the delivery of the following objectives and outcomes:

1,2,3,6	1,5	1-5	3,4	2,3

- The main interventions that will support the delivery of the policy, are:
- Support the delivery of Enterprise Zones/ business clustering
  - Balance the requirement for distributing goods, with mitigating the adverse impact of vehicles

Support the delivery of Enterprise Zones/ business clustering

The clustering of businesses can have a number of proven benefits, including trade and business between them improving, due to reduced transport costs and more immediate supply of goods or service. It is also more convenient for customers travelling to businesses or services to be able to access multiple services on one site. Increased business through footfall is normally higher when businesses cluster too, with impulse buying far greater.

These benefits can have significant positives for the transport network and public realm. Reduced travel distances between businesses result in a lower demand for trips on the transport network for both freight and delivery journeys, as well as staff and customers. The potential lower demand on the transport network can, in turn, improve connectivity by improving journey times, congestion and air quality. It can also result in a higher demand for public transport services to serve large employment sites, boosting public

transport usage. Schemes to improve walking and cycling access are also more effective when linking to employment clusters.

Business clustering offers significant benefit to local communities as they consolidate infrastructure, unlock key development sites, attract business and create jobs. Business rates collected from these clusters can be used by local enterprise partnerships or planning authorities to reinvest in the local economy and infrastructure.

To strengthen existing multi-business sites or to encourage further clustering, business clusters can be formalised as Enterprise Areas (EAs) or Enterprise Zones (EZs). The West of England actively promotes designated EAs/EZs across the region, including at Avonmouth/Sevenside, Bath City Riverside, Somer Valley, Bristol Temple Quarter, Emersons Green, Filton, J21 (Weston-super-Mare) and at South Bristol. There are also multiple priority growth locations across the region, offering further opportunities for clustering.

EZs are areas designated for businesses to locate to, encouraged by a range of measures to make it more attractive for business, such as tax breaks or business rate discounts. The process for applying for planning permission is normally simplified if businesses apply to locate to a designated EZ. EZs in the region will act as significant traffic generators, in terms of freight and employees, and have different needs and impacts on the transport network in the West of England. We are working with both sites to ensure sustainable economic growth can be achieved.



Case Study: Avonmouth/Sevenside Enterprise Area (ASEA)

The ASEA, at 650 hectares, is the largest brownfield industrial development site in Western Europe. It is located between Bristol and the River Severn, immediately adjacent to the M5 and M49 motorways and consists of two main areas of economic activity – Avonmouth to the south within the Bristol boundary and Sevenside to the north in the South Gloucestershire boundary. In Avonmouth, over £400 million has been invested in the Port of Bristol in recent years and it is the closest port to the main centres of UK population, with 45 million people (over 70% of the UK population) living within a radius of 300 kilometres. Royal Portbury Dock is a key component of the wider port in Bristol, handling ships of up to 130,000 tonnes deadweight and is conveniently linked by motorway and rail routes. In addition, Bristol Airport is in close proximity, connecting the sub-region to North America, Europe, the Middle East, Asia and Africa.

ASEA is particularly well suited to large scale warehousing, storage and logistics use with an open planning consent in place over a large proportion of the area that encourages development to come forward quickly and easily. Highways England has announced the development of a new junction from the M49 that will provide direct access into the heart of the development area. Recently a number of large scale distribution operations have come forward creating over 5 million sq ft of Regional Distribution Centre floorspace. There is another

2 million sq ft of logistics floorspace in the pipeline to come forward within the next few years, and space for another 5 million sq ft to follow on.

Commuting by workers to ASEA is predominantly by car for a number of reasons. The nature of large amounts of the business uses requires 24 hour work and therefore workers are on shift patterns that are often out of the usual business hours. As such, access by public transport services is often not realistic due to levels of services out of usual business hours. ASEA is geographically close to Lawrence Weston, a socially deprived neighbourhood that has high levels of unemployment, however the transport links between the two areas are poor and unsafe. Currently the only realistic access is by car, ownership of which is less likely for those who are unemployed. Despite being conveniently linked to motorway and rail routes, congestion and capacity problems cause connectivity issues.

The removal of the Severn Bridge tolls and the opening of the new junction from the M49, will leave fewer barriers to travel by car to ASEA from South Wales. Whilst this opens up opportunities for a new labour market to access the jobs that are expanding in the area, it also increases the opportunity for more people to drive from further afield, increasing the number of vehicles accessing the area and therefore increasing the negative impacts of congestion.



Section 7:  
Connectivity within the West of England continued

We will develop a joint strategy for movement in the Avonmouth/Sevenside Enterprise Area that ensures it develops to the benefit of the West of England, supporting freight, workers and associated access requirements.

**Case Study: Temple Quarter Enterprise Zone (TQEZ)**

TQEZ is at the heart of Bristol City Centre, adjacent to Bristol Temple Meads rail station. The adjacent area of St Philips Marsh is well established as an industrial estate. The vision is to create a new quarter of the city centre for working, living and leisure and has attracted many digital and creative industries, and is home to the enterprise hub at the Engine Shed.

There is a target to provide 22,000 jobs within the TQEZ over the lifetime of this plan. Major investment has been made in transport infrastructure to enable movement to the TQEZ by sustainable modes from across the West of England, providing opportunities of employment and enterprise for our residents.

Freight movement around the TQEZ is currently mixed, due to the industrial sites in St Philips Marsh, which generates HGV movements, and the contrasting digital technology sector in the TQEZ, which generates fewer HGV movements but still experiences high levels of small deliveries in vans. With limited options to bypass Bristol City Centre, the TQEZ experiences high volumes of through traffic, including freight vehicles, adding to an already heavily congested network in Bristol city centre. The vision for the TQEZ is to be sustainable in its operation, including seeking new ways to reduce the impact of freight movement.

**Balance the requirement for distributing goods, with mitigating the adverse impact of vehicles**

Road freight is the most common way to distribute goods in the West of England. However, congestion on the network results in unreliability and delivery problems, and impacts on other users of the network. We need to effectively manage the movement of freight, encouraging a shift from partially filled, heavily polluting road vehicles to fewer, fuller, cleaner vehicles and seek to transfer road freight to alternative methods such as rail and water.

**We will progress an ambitious programme to improve the efficiency, and reduce the impact, of freight movements.**

There are several key areas of intervention.

**Routing, management and information**

A designated core network of preferred freight routes will be developed in partnership with operators, through the establishment of a Strategic Freight Network. Through this, freight will be proactively managed on the highway network, in a way that minimises impacts on local communities and other road users. Operators will be encouraged to use HGV satellite navigation systems, maintain clear signage, provide better enforcement of suitable routes and weight restrictions, and consider more off-peak movements, including for refuse vehicles.

**We will seek to establish a Strategic Freight Network to better manage freight movements.**

To improve air quality, reduce carbon and create better places in central areas and certain corridors, traffic movement restrictions will be sought in some areas, including through measures in any forthcoming Clean Air Zones. Access could be provided to a group of streets, or zone, from a small number of access points.



**We will seek to restrict through traffic movement for heavy vehicles and most polluting goods vehicles in the central areas of Bristol and Bath.**

Currently the M4 has two bridges with restrictions close to Junction 19, which results in vehicles diverting onto the Bristol Ring Road and the A420 through Wick, to rejoin at Junction 18.

**We will work with HE to address restrictions affecting the carriage of abnormal indivisible loads.**

**Rail and water**

To reduce the impact of freight on the already congested highway network, work is required to encourage a shift for a range of goods from road to rail and water.

The creation of a multi-modal freight distribution centre in the Avonmouth area will be investigated, linked to the Freight Consolidation Centre, offering good access to rail and motorway networks. Improvements to the loading gauge on our core rail routes to increase rail freight capacity, by increasing the number of containers that can be accommodated on freight train paths, is supported. The potential to use passenger trains to carry freight and improve options for first and last mile logistics from rail stations, will be investigated.

**We will work with Network Rail to investigate further movement of freight by rail and improve options for first and last mile logistics from stations.**

The water courses through Bristol could offer the potential to carry freight, with electric vehicles or cargo bikes connecting to city centre locations for the first and last mile. This could offer opportunities for hospitality industry, and others with waterfront premises.

**We will work with partners, including freight operators and waterway authorities, to investigate the potential of using the waterways through Bristol to carry freight.**

**Case Study: Intercity Rail Freight**

Passenger trains can be used to transport freight between cities. Benefits include fast and reliable services, sustainable onward travel options from rail stations, running to a timetable making first/last mile integration easier, and carbon reduction by reducing highway freight movements.

**Loading and parking**

Pedestrian movements, cycle lanes, route hierarchy and public transport reliability, including the management of delivery times on core routes and town centre areas and appropriate enforcement, can all impact on the ability to efficiently deliver freight.

**We will review parking and loading restrictions, particularly in sensitive areas, ensuring loading bays are suitably located and have appropriate access times.**

**Case Study: Virtual loading bays**

Virtual loading bays can provide a solution to manage kerb space. Spaces where loading is normally prohibited can be reserved in advance, enabling the authority to prepare traffic management for the space to be used at a specific time, for a specified period. This enables vehicles to get as close as possible to delivery points, reduces congestion and smooths traffic flows, as the driver knows exactly where to park on arrival.



Section 7:

Connectivity within the West of England continued

Consolidation

The first urban freight consolidation scheme in the UK commenced in Bristol in 2004. The scheme has 157 retailers on board removing just over 20,000 HGV trips from Bristol and Bath since 2011 (DHL Monthly Review, 2017). Through a grant from the Office of Low Emission Vehicles (OLEV) as part of the Go Ultra Low project, we are seeking to enhance the freight consolidation offer with micro consolidation centres, using electric cargo bikes, small electric vans and other appropriate sustainable modes to serve narrow streets in Bristol and Bath, which are more appropriate to the environment than larger vehicles.

The challenge is to develop a freight consolidation centre that is commercially viable, and can be run at a profit with only a small initial subsidy from the public sector. To encourage more efficient movement of freight using fewer, fuller and more appropriate vehicles, collaboration with industry, local authority and further education establishments is required.

We will investigate opportunities to either expand the existing freight consolidation scheme, or introduce new facilities, to cover urban centres, by working with industry, local authorities and further education establishments.

We will introduce an online resource to advertise spare capacity in vans already travelling to congested areas to reduce the need for additional vehicles, particularly for smaller retailers or market traders.

Micro-consolidation of freight allows the pooling together of deliveries into a centre for a small area. Loan cargo bikes for businesses to hire to make short deliveries across congested areas will be investigated, so businesses can trial the scheme and realise the benefits. The use of rail stations and Park & Ride sites as delivery hubs for customers to collect and return parcels will also be investigated.

By coinciding with an already planned journey, this would reduce the need for LGVs to travel to customers at workplaces/more central locations.

We will work with delivery companies and transport hubs to identify options for loan cargo bikes and freight micro-consolidation.

Case Study: Consolidation hubs

The rise in ecommerce has resulted in an increase in the movement of light goods vehicles to homes. We want to reduce their impact by providing localised places where parcels can be dropped to allow customers to walk or cycle to collect them, without the requirement for light goods vehicles to circulate our residential areas. This can be easily introduced to new developments, where the consolidation hub for residents' parcels can be incorporated into the masterplan from the outset. We are beginning to see a rise in parcel collection/drop off points located in local shops and transport interchanges, therefore it is also possible to provide localised parcel hubs in established neighbourhoods. By removing unnecessary circuitous trips by light goods vehicles, the freight operator becomes more productive and the negative impacts of motorised traffic on our local streets is reduced.



Embracing innovation

Through our existing and developing partnerships, we will be at the forefront of embracing innovation, particularly using lower emission and automated freight vehicles.

We will support emerging technologies for improving the efficiency of freight movement, including planning for and managing the impact of CAVs and drones.

Case Study: Embracing innovation

Opportunities and impacts from new connected autonomous vehicle technologies are being considered through the ROBOPILOT autonomous light commercial vehicle project and the CAPRI autonomous POD fleet project. South Gloucestershire Council is a collaborator in these Innovate UK funded R&D projects to facilitate demonstrations of autonomous vehicle technology on our highway network and in campus environments, respectively. The learning from these projects can be used to help inform the council's own aspirations around supporting autonomous technology, in both highway and non-highway environments. New modes of transport (especially for first mile/last mile) will increasingly utilise such technologies, potentially creating more efficient, safer and economical ways for businesses, visitors and commuters to travel.

Planning conditions

To influence future freight movements, a set of planning conditions will be developed to guide local policies, that:

- Enable a reduction in the negative impacts of freight in future developments by using Construction Management Plans and Delivery Management Plans through the planning system
- For new developments that require a travel plan, include a focus on minimising trips for deliveries and servicing to reduce the impact of freight activity associated with the operation of the site, including investigation of consolidation, out-of-hours deliveries and details of loading locations
- Require new developments to incorporate good quality on site loading facilities

We will develop and apply local planning conditions to influence future freight movements.

Section 7:  
Connectivity within the West of England continued

Section 8:  
Local connectivity

Local challenges

Car use is very high in many rural areas, towns and in the outer parts of the urban areas, often reflecting the limited travel choices available. Although walking and cycling are relatively popular compared with other UK cities, many parts of the network have limited infrastructure facilities. The centralisation of shops and services has reduced the number and type of facilities available in many local communities, meaning many people need to travel further to access essential services, education and employment.

Building on the general West of England challenges identified in Section 2, more specific challenges for local connectivity have been identified, as follows.

- There are heavy flows on roads connecting towns, including the A370, A38, A36, A46 and A432
- Actual and perceived road safety and security concerns influence how people choose to travel
- There is a lack of knowledge and confidence around cycling and using public transport
- Local services and transport options are limited in many rural areas
- There are areas of poor air quality on the highway network, with AQMAs in central Bristol and Bath, in some urban areas in South Gloucestershire, and in some towns and villages in B&NES

Local policies and interventions

Local connectivity in the West of England will support delivery of the JLTP4 objectives, by focussing on these policies:

- L1: Enable walking and cycling, 'active modes of travel', to be the preferred choice for shorter journeys
- L2: Reduce the number and severity of casualties for all road users
- L3: Encourage residents and employees to make more sustainable and healthier travel choices
- L4: Support opportunities for all sectors of the population to access the services they require, wherever they live
- L5: Support the identification and implementation of measures that will improve air quality

The policies will be delivered by focussing on specific interventions.

Section 8:  
Local connectivity continued

L1. Enable walking and cycling, ‘active modes of travel’, to be the preferred choice for shorter journeys

This policy contributes towards the delivery of the following objectives and outcomes:

				
2,3	1-5	1-3	1-4	1-4

The main interventions that will support the delivery of the policy, are:

- Provide an attractive, safe and usable walking and cycling network
- Provide schemes to support the uptake of cycling

Provide an attractive, safe and usable walking and cycling network

Walking and cycling can reduce the negative impact of congestion on the local economy, as they offer the most reliable and consistent journey times. Active travel also contributes to increasing physical activity, which has many benefits for health. To make active modes of travel the preferred choice for shorter journeys, work will continue with walking and cycling groups, charities, and wider sustainable transport supporters to build on and develop best practice that can be shared across the West of England.

We will work with partners, charities and the voluntary sector to develop and implement best practice to make walking and cycling the preferred choice for shorter journeys.

Cycling also has a role to play for many journeys, particularly commuter and leisure trips. Off-road routes including the Bristol and Bath Railway

Path and Strawberry Line, and the on-road Avon Cycleway circular route, are well used, playing a part in improving the health and well-being of residents while reducing the number of vehicles on our roads.

To encourage citizens to change the way they travel from private car to more active modes, there needs to be good quality physical infrastructure connecting key destinations. The priorities of walking and cycling infrastructure for the West of England will be defined by the Local Cycling and Walking Infrastructure Plan (LCWIP). This will set out a programme of cycling and/or walking infrastructure improvements and the scale of investment that would be required to bring preferred routes up to a suitable standard. It will focus on ensuring key local destinations are connected by a comprehensive walking and cycling network. Interventions will be prioritised over the short (typically <3 years), medium (typically <5 years) and long (typically >5 years) term. The LCWIP will be inclusive for all types of cyclists and include options for different locations.

We will develop our Local Cycling and Walking Infrastructure Plan, which will be reviewed on a regular basis. It will incorporate:

- **Greater Bristol Walking and Cycle Network:** Strategic cycle routes to comprise key corridors, orbital and cross city routes as outlined in Bristol Cycle Strategy. This integrated strategic cycle network will connect key destinations across, and adjacent to, the Bristol urban area, including North and East Fringes, and connections to Whitchurch and Long Ashton. This will be supported by better pedestrian facilities to serve the Bristol urban area.
- **Interurban cycle routes:** Strategic cycle routes to Thornbury, Yate and Coalpit Heath from the North and East Fringes, linking into a network of routes into Bristol.



- **A38 Corridor improvements between Thornbury and the Bristol boundary.**
- **Weston-super-Mare Cycling and Walking Network:** Better pedestrian and cycling facilities to serve the town. Completion of a network of legible, attractive and safe strategic cycle routes in Weston-super-Mare, with a focus on east-west routes from Worle and Weston Villages into the town centre.
- **The North Somerset Coastal Cycle Route & Strawberry Line Extension:** to provide a continuous cycle route from Bristol to the Somerset coast at Brean, via the three North Somerset coastal towns. Further linkages from Clevedon to the strategic cycle network, through the long-standing ambition to reopen the Strawberry Line to connect to Yatton (including onward rail access) and onward segregated cycle linkages to Wells in Somerset, are in progress.
- **Bath Cycle Network and City Centre Package:** Completion of a continuous and integrated network of strategic cycle routes, comprising key corridors and cross city routes, complemented by improved permeability and investment in public realm in the city centre.
- **Bristol City Centre Movement Strategy:** public realm enhancements, improvements to the pedestrian network, continuous and integrated cycle network in Bristol city centre and link with the wider strategic improvements to be delivered by West of England’s LCWIP.

The Sustrans Bike Life study has identified that nearly twice as many men than women cycle at least weekly in Bristol, which is a significant gap that needs to be closed. Personal security, feeling safe and respected in public places are key issues identified by women. To increase the uptake of cycling, and particularly enable more women to cycle, interventions could include:

- Prioritising road safety, with protected, but direct, cycle routes
- Addressing all local journeys, including trips to school and work
- Training/engagement programmes to increase confidence
- Reaching out to women’s/parenting groups to integrate them in new infrastructure planning

Other interventions that could increase the number of people cycling, include:

- Focus more on secure storage, at homes (including on-street e.g. hangers), workplaces and other destinations
- Acting to remove perceived barriers to cycling
- Encouraging take up of e-bikes

We will work with partners to deliver opportunities that support all abilities into cycling, using the All Ages and Abilities (AAA) cycle network concept.



Section 8:  
Local connectivity continued



Case Study: Odd Down Cycle Circuit

Following a £600,000 grant from British Cycling, B&NES developed a cycle circuit at Odd Down in Bath. The 1.5km Closed Road Cycling Circuit at Odd Down Playing Fields opened in April 2013, enabling enthusiasts to learn, train and enjoy cycling without having to negotiate Bath's busy roads. Odd Down Cycling Circuit has been specifically designed to introduce and develop opportunities for cyclists to train at all levels, and is one of only 17 specific closed road cycling circuits in England.

Leisure cycling is a good way to introduce cycling to families and non-confident people to cycling, and the provision of safe infrastructure as leisure routes can complement more strategic networks. This can support people deciding to cycle into their thirties and older age, as safe provision can encourage parents to accompany children, and vice versa.

Bidding opportunities for walking and cycling connectivity schemes often arise at short notice and require 'shovel ready' evidenced based schemes backed up by local support to secure funding. The development of a joined up, endorsed LCWIP will put the West of England in a strong position to capitalise on any future funding opportunities that arise.

**We will work with key housing developers, employers, education providers and leisure sites to ensure walking and cycling infrastructure is provided in the right place.**

Case Study: Brean Down Way

North Somerset Council opened the first leg of its flagship Coastal Towns Cycle Route in July 2017. The three-mile Uphill to Brean section has been an exemplary example of working with a very wide range of partners, volunteers and funding sources, and the determination to make a long-held ambition happen. It was jointly led by North Somerset Council and national cycling charity, Greenways and Cycleroutes Ltd. It also involved the Environment Agency, Wessex Water, Natural England, Somerset County Council, Sedgemoor District Council and their contractors, Brean Parish Council, the National Trust and landowners.

The route continues for three-miles to the tip of Brean Down, which used to look close to Weston-super-Mare, but the barrier of the River Axe and poor connecting paths meant holiday makers and residents had to drive, take two buses, or cycle the busy, narrow and circuitous Accommodation Road, which was also three-miles longer.

Since the opening of the route in July 2017 up until the end of December 2017, there were over 47,000 pedestrian and cycle users on the route. Almost all the active travel journeys are new leisure trips, which were not possible or desirable before. The route won the Highway Partnership Award at the Institute of Highway Engineers (IHE) South Western awards on 10 May 2018.

Opportunities will be taken to reallocate road space to improve conditions for walking and provide safe, direct routes, well-lit routes for cycling and equestrians. This will be prioritised in locations where road space is freed up because of mode shift, or space is made available because of development or redesign.

All walking and cycling infrastructure needs to be maintained to a high standard. This includes addressing issues such as potholes, which can be particularly hazardous for cyclists. Priority routes should be free from vegetation and other natural obstructions, and obstacles such as unlicensed street furniture and vehicle parking. An attractive network, with consistent surfacing, will be more appealing to those who may use active modes.

**We will work to maintain footpaths and cycleways to an acceptable standard.**

Case Study: Hambrook Junction

An innovative Cycling Ambition Fund scheme has provided a straight through crossing of the A4174 Ring Road for cycle traffic or 'Parallel signalled cycle crossing'. The crossing is separate from the adjacent provision for pedestrians and allows cycle traffic to cross the Ring Road in a single phase, thereby reducing delays for cyclists. It utilises innovative above ground detection of cyclists to trigger a change in the signals. The new layout provides an important link to the employment areas and educational establishments around the ring road, for the local communities. In March 2016, the scheme was recognised as an 'exemplar case study' in good practice guidance published by the DfT.

The scale of investment in walking and cycling infrastructure provides a hook for our combined initiatives, addressing the 'structural' barriers preventing the wider uptake of active travel options. Relationships with internal partners, such as public health and air quality, and external partners, including the NHS and local sport or active travel organisations, along with public transport operators, are required to make the most of available funding. Partnership working will take place by holding regular engagement and forum events, and creating consortiums that meet quarterly or bi-annually for ongoing projects.

**We will continue to work in partnership with internal teams and external organisations to promote the benefits of cycling to health and the environment, further encouraging behaviour change.**

Perceptions of danger are a major factor in attitudes to cycling, with many people hesitant to cycle because of the fear of heavy or fast traffic. Fear of injury currently deters many people from making healthy and sustainable travel choices.

**We will improve and increase cycle education and training for all road users, to reduce cyclists' fear of being injured, and both the perception of risk and incidence of cycle injury.**

Section 8:  
Local connectivity continued



**Case Study: Bristol Family Cycling Centre**

The Bristol Family Cycling Centre (a partnership for 3 years with British Cycling) at Hengrove opened in Spring 2016 on the site of the former Whitchurch athletics track. It gives people of all ages and abilities the chance to ride, or learn to ride, in a traffic-free environment. The centre provides entry level cycling to a new generation of cyclists – starting with balance bikes of different sizes, through to 2, 3 and 4 wheelers, companion bikes, wheel chair bikes and hand-cycles, making cycling accessible to all.

There were 12,355 attendances in 2017-2018.

**Provide schemes to support the uptake of cycling**

Cycle training can significantly improve confidence, as well as safety. Involving whole families in training together can develop skills which can be used for either leisure or school/commuter trips. Support of these programmes will be continued, wherever possible.

Cycle hire schemes are becoming increasingly important to facilitate and encourage cycling, especially for people who do not own, or have immediate access, to a bicycle. These schemes enable residents and visitors to explore with freedom, contributing to our economy without negatively affecting air quality. Cycle docking stations are commonplace at our busiest transport interchanges and help to facilitate sustainable travel for door-to-door journeys.

**We will continue partnership working with third-party providers of cycle hire schemes to ensure a smooth operation that benefits residents and visitors.**

**Case Study: Next Bike**

Several cycle hire schemes are being developed across the West of England, including Nextbike in Bath, which has 14 cycle hire stations. These include locations at Bath Spa University campus and student residencies, which are ideal for students who do not want to bring a bike to university. They are supported by a subsidised membership scheme negotiated by the University. Since the scheme began in June 2014, there have been over 28,000 hires across the city, with the monthly average for June 2014 to November 2017 being 670.

Cycle parking needs to accommodate a wide range of bicycle types, including folding, tandem and bike trailers, and be located where there is natural surveillance, wherever possible. This includes cycle parking at public transport interchanges and some bus stops, where parking and hire schemes provide for onward travel. Other facilities, such as showers and lockers, can also be provided by offering grants to match fund inputs made by site owners/operators.

**We will work with employment site operators, education providers and leisure sites to provide advice and guidance about what would work at their site.**

**We will continue to provide funding for covered and secure cycle parking and promote 50% match funded grants to deliver facilities.**

National and local events including National Bike Week, charity sporting events and guided walks have a role to play in increasing the uptake of cycling and walking.

**We will support the wider promotion and provision of national and community-based cycling and walking activities.**

Electric bikes have an increasing role to play by enabling sustainable transport for longer journeys, where topography is challenging, and for ageing or sedentary populations. Bike share schemes, currently funded through the Local Sustainable Transport Fund and Access Fund programmes, have made electric bikes available to the public on 'try before you buy' borrow a bike schemes. We support the Go Ultra Low West Programme, funded by OLEV, to introduce electric bike share into Bath to increase its uptake among residents. In addition to the provision of the bikes, charging points and other supporting infrastructure needs to be provided. Locations where this is required will be agreed with employers and other service providers.

**We will investigate and implement future initiatives to support further take up of electric bikes, as appropriate.**

The REPLICATE project – looking at how smart technology could be used to enable greater sustainable mobility – is trialing a connected network of electric bicycles with electric cars in

**Case Study: Electric Bike Pool, North Somerset Council**

North Somerset Council provides sustainable travel alternatives for staff for work trips, by offering a pool of bicycles and electric bicycles for staff use. Work is underway to enable the booking of these on the pool cars and electric cars booking system. This enables and supports shorter journeys to be made by active travel, with positive benefits for staff health, congestion and air quality.

**Case Study: REPLICATE**

The REPLICATE project (Renaissance in Places with Innovative Citizenship And Technology) is a European research and development project that aims to deploy integrated energy, mobility and ICT solutions in city districts. In Bristol, the Ashley, Easton and Lawrence Hill Neighbourhood Partnership area was chosen as the target district. Among other things, the Bristol pilot explores how smart technology could be used to enable greater sustainable mobility to increase health and wellbeing as well as enable better access to training and employment, and engage citizens in their energy use and travel patterns to change behaviour. Some of the interventions being piloted include e-bikes, electric car club vehicles, an on-demand electric transport service, electric vehicle charging infrastructure, and personalised mobility applications.


Partners: Bristol, Florence (Italy) and San Sebastian (Spain). There are also a number of other 'follower' cities that will look into replicating interventions in their cities including Essen (Germany), Lausanne (Switzerland) and Nilufer (Turkey). In addition to this, there are also a number of 'observer' cities such as Guangzhou (China) and Bogota (Columbia).


Bristol, following the introduction of a similar scheme in Exeter. Exeter saw the first on-street, city wide, public hire electric bike network in the UK and the first with a common smartcard for electric bikes and car club. Bristol is looking to pilot similar opportunities through the REPLICATE project.


Section 8:  
Local connectivity continued

L2. Reduce the number and severity of casualties for all road users

This policy contributes towards the delivery of the following objectives and outcomes:

  
2-5

  
1-4

  
1-4

The main interventions that will support the delivery of the policy, are:

- Consider the needs of all road users in the design of transport and highway schemes, particularly vulnerable road users
- Deliver road safety education and skills training to equip people with the knowledge and skills to travel in a safe and sustainable way
- Work in partnership to build safer communities

Consider the needs of all road users in the design of transport and highway schemes, particularly vulnerable road users

The needs of all road users are considered in scheme design, and this will continue to be a priority. There is a focus on the needs of pedestrians, cyclists, equestrians and motorcyclists, who are most likely to be killed or seriously injured in collisions. Road safety is considered at all stages of the design process for transport and highway schemes, from concept to construction.

We will carry out road safety audits of schemes in accordance with the most up to date policies, and design schemes in a way that take account of local and national policies and best practice.

Engineering remedial schemes will be targeted at improving the safety of vulnerable road users, in both urban and rural areas. Where appropriate, partners from different vulnerable user groups, such as groups supporting those with sight, hearing or mobility impairments, will be involved during design to ensure specific needs are taken into consideration.

We will take the specific needs of vulnerable road users into consideration during design, by working with partners from different user groups.

Deliver road safety education, skills and training to equip people with the knowledge and skills to travel in a safe and sustainable way

Road safety continues to remain a statutory responsibility of local authorities, and each authority has their own Road Safety Strategy. A key way of improving safety is by delivering a programme of education, training and publicity.

A pro-active approach to road safety education and training will continue to be adopted, based on best practice and national guidelines. This will continue to be delivered in priority neighbourhoods, schools and to vulnerable road users. Work on road safety initiatives to reduce personal injury collisions by promoting campaigns which focus on pedestrian and cycle safety, child car seat safety, young drivers, motorcycle training and older road users, will also continue. Casualty data will be assessed, and a focus will be put on areas where there is an identified need or target group where skills can be improved.

We will review the programme of road safety education delivery, updating our approach with emerging best practice and seeking alternative ways to fund this critical skill provision.



Case study: Bikeability

Bikeability is the 'cycling proficiency' test for the 21st century, designed to give the next generation the skills and confidence to ride their bikes on today's roads. Training is organised through schools and available to other residents through subsidised sessions provided by local authorities or other providers.

Bikeability offers three levels: Level 1 is in a protected environment, Level 2 on street with Level 3 exposing cyclists to more challenging roads and traffic situations.

Since 2011, the West of England authorities have delivered in excess of 55,000 adult and children Bikeability training sessions.

Work in partnership to build safer communities

Political commitment, public support, cooperation across partners and coordination are essential ingredients in building safer communities. The term 'Safe System' represents the current best practice strategic thinking in road safety. This approach to road traffic injury prevention means addressing the unsafe behaviours of drink-driving, distraction (e.g. texting), and speeding, which have become part of the culture of many, and contribute towards deaths and injuries, as well as fear among pedestrians and cycle users. These behaviours can reduce the use of active modes of travel, transferring them to car use e.g. for the school journey.

Case study: Safe Systems Road Safety Plan, Bristol

In 2015, Bristol City Council published its Safe Systems Road Safety Plan. The plan demonstrated that poorer communities are at disproportionate risk of injury on roads, with children being up to six times more likely than children from the wealthiest communities to be impacted. Efforts were focused on reducing injuries within poorer communities, including lower traffic speeds and targeted traffic-law enforcement.

Working with the Police, other services and communities is important in delivering multi-faceted interventions to reduce both the risk of road traffic injury and the fear of injury. Educational work to support safe routes to schools is being enhanced. On-going work to improve air quality in the city will include information to the public e.g. about in-car air quality and other health issues.

The knowledge and experience of Avon and Somerset Police, Avon Fire and Rescue and other partners will continue to be used to deliver speed management systems to support casualty reduction and improve quality of life where there is evidence of speeding. Measures include:

- Interactive speed reminder signs
- Community speed watch
- Mobile speed enforcement

As technology continues to evolve, work will be required with developers to ensure advances, such as driverless vehicles, are not permitted on our roads without appropriate safety measures being taken. We also support the use of black boxes and cameras on vehicles, in appropriate circumstances, to maximise safety.



Section 8:  
Local connectivity continued

We will continue to work in partnership with Avon and Somerset Police, Avon Fire and Rescue and other partners, including those developing new technology, to build safer communities.

Fleet cars and vehicles used by car clubs can have an occupational road risk around them. Support will be given to disseminate best practice and minimise and manage risks associated with this type of car use, by working in partnership with providers.

We will work with fleet car and car club providers, to identify and implement processes that maximise the safety of users.

Case study: Highways vehicle fleet – road safety systems analysis

North Somerset Council's highway vehicle fleet, consisting of approximately 50% petrol/diesel vehicles and 50% electric vehicles, are all fitted with equipment to improve the safety of officers driving the vehicles and other users of the highway.

Each vehicle is connected to a braking and acceleration monitoring system, which can be viewed retrospectively in the vehicle booking management system. When braking or acceleration is deemed to be close to or outside of set safety parameters, then the vehicle driver will be alerted and be urged to amend their driving behaviours to fall within the parameters, or otherwise receive mandatory re-training to improve their safety ratings.

Forward-facing dashboard cameras are also fitted in each vehicle, recording every movement on the highway in view. Footage from these cameras are used when an incident or close shave occurs on the highway, with driver performance (or that of other vehicles and highway users) analysed to improve behaviours to avoid future similar occurrences.

This post-driving trip analysis allows users to drive the highway vehicles in the safest way possible, to improve road safety on the North Somerset highway.



L3. Encourage residents and employees to make more sustainable and healthier travel choices

This policy contributes towards the delivery of the following objectives and outcomes:



The main interventions that will support the delivery of the policy, are:

- Support travel planning with developers, education providers and individuals
- Support travel planning with businesses and employment sites
- Encourage mode shift through grants, incentives and rewards
- Maximise awareness of sustainable and active travel choices and the benefits these bring

Support travel planning with developers, education providers and individuals

We know that encouraging the use of walking and cycling at 'transition points', when people are making a change in their lives such as moving house, is likely to have a more lasting impact than proposing a change when routines are established. The provision of infrastructure to support walking and cycling is required when new facilities are opened. This needs to be supported with information to promote and inform potential users of door-to-door travel options from when they arrive.

With the level of growth planned in the West of England, engaging with residents when they move home will be a real opportunity to have an impact

on future travel behaviour. We are increasingly delivering residential travel planning on behalf of developers of new homes, enabling us to influence the quality and consistency of engagement with residents as they move home.

Personalised Travel Planning (PTP) provides people with the information, advice and motivation they need to walk, cycle and use public transport more often. It can break down the perceived barriers to using sustainable transport and provide attractive and reliable information on the alternatives.

We will target travel planning engagement with citizens who are at a transition point in their life and who are making new journeys before travel habits have been established.

We will continue to provide PTP at events and on the doorstep, as part of a package of measures to support and encourage active travel and mode shift.

Case Study: Travel information guides and personalised travel planning services

Through a combination of the Access West programme and Section 106 funding from developers, South Gloucestershire have been developing site specific travel information packs for residents when moving into a new development. The packs include travel information guides showing the sustainable transport options available in the local area, offers of support to try new ways of traveling such as loan bikes and/or bus tickets, as well as a range of travel leaflets and incentives. The packs are assembled on the doorstep as a personalised travel planning service, so are tailored to residents' specific needs.

Section 8:  
Local connectivity continued

Travel plans will continue to be secured for new developments through the development control process, and we are developing guidance to improve the quality of Travel Plans submitted. Travel plan S106 contributions are a regular feature of a very high proportion of approved development sites.

**We will enforce required contributions and explore the possibility of new supplementary planning documents (SPD) to secure the necessary resources.**

**We will continue to agree S106 funding from developers towards effective and lasting travel planning and developing supplementary planning documents, if required, to ensure appropriate funds are received.**

**We will support developers in the production, delivery and monitoring of travel plans, if required, and secure the contribution of further funds for transport improvements if mode share targets are not met.**

We are continuing our work with schools to encourage children living within walking and cycling distance to choose these modes of travel to school. In particular, we target young people at the transition point between primary and secondary school, providing them with the skills to use active modes to travel to their new school. By working with schools to develop travel plans for staff and children, the safe use of active modes will be encouraged. Instilling these behaviours at a young age means they are more likely to remain into adult life.

Education and training for school aged children will make active travel safer and teach the benefits of walking, cycling and scooting. We are currently supporting schools in communicating the impact of poor air quality, by monitoring NO<sub>2</sub> at 50 schools in Bristol.

**We will continue our active engagement with pupils and staff to promote road safety and active travel.**

**We will continue to engage with primary and secondary schools to deliver a combination of skills training (including pedestrian training and Bikeability), incentives and route planning sessions.**

**Case Study: Modeshift Stars**

All West of England Authorities support school travel planning by encouraging schools to adopt the Modeshift Stars scheme. This is an award scheme established to recognise schools that have demonstrated excellence in supporting active and sustainable travel. It allows schools to identify travel and transport issues and helps them to respond to them. It provides the necessary categories to create a national standard travel plan, which is accessible online.

The following numbers of primary school children and staff in North Somerset have been involved in the following Modeshift Stars initiatives between 2012 and 2017: Air Quality (1,430); Cycling (601); Public Transportation (1,604); Road Safety & Training (4,845); Walking (7,003).



**Case Study: School Travel – Access Fund**

The Access Fund is being used to work with schools from March 2017 until March 2020 to increase rates of active travel, focussing on increasing pupil walking rates by 10%.

Bristol City Council have identified schools and recruited 'Active Travel Champion' staff members in each one. The team have worked intensively with schools to implement the 'WOW Walk to School Challenge', involving pupils tracking their travel daily on an app, and earning badges for travelling actively each month. The team have also run a range of engagement activities, ranging from educational classroom sessions and assemblies, to scooter training, 'Car Free Days' and 'Park and Stride Events'.

During Year 1 of the Access Project, 57 Schools were engaged and 373 engagement activities were delivered. Engagement is resulting in an increase in active travel trips to school, including walking, scooting and park & stride. The aim is to continue recruiting new schools, alongside engagement with existing schools, to ensure active travel is embedded in each schools' ethos, and walking, scooting & cycling rates continue to rise.

**Support travel planning with businesses and employment sites**

We recognise sustainable economic growth relies on an efficient and reliable sustainable transport network. We know the needs of businesses can vary greatly, depending on type of work and location. Working in partnership with businesses enables an understanding to be gained of needs and site-specific issues. Measures, interventions

**Case Study: Travel to Work Survey**

Since 2011 South Gloucestershire has undertaken an annual survey of commuting patterns, with Bristol City Council joining in 2014, and B&NES and North Somerset from 2016. All organisations with more than 30 staff are invited to participate, and receive a detailed report showing their unique travel patterns to support continued engagement and influence staff travel.

On a sub-regional level, this data has shown a downward trend for commuting by single car occupancy, with accompanying increases in all sustainable modes of travel, including walk, cycle, bus and train. This data forms part of an independent evaluation of the many measures undertaken to support sustainable transport in the West of England. Together with a comments report, this is used by the authorities to identify key areas of improvement in their transport systems.

Participation in the survey has increased year on year up to 2017, when more than 21,000 people took part.

and ongoing support can then be tailored to their motivations, supporting their sustainable economic growth.

We are actively engaging with over 600 businesses to deliver a range of initiatives that encourage sustainable commuting. We are providing advice to support the uptake of more active modes of travel and promoting the benefits of this, including the resulting reduction in absenteeism through a healthier workforce and improved staff retention. This can help solve car parking issues, for those who have no alternative but to travel by car.

Section 8:  
Local connectivity continued

Evidence suggests that when employers have a travel plan in place, single occupancy car trips could be reduced by between 4% and 18%. This range is dependent on the intensity of measures to encourage the use of sustainable transport modes, as well as external 'push factors', such as localised congestion.

We actively promote a flexible working culture. This includes encouraging employers to offer greater flexibility in working hours, allowing employees to travel into the office out of peak times, resulting in less of a 'peak' on the transport network. We also encourage reducing the need to travel, by allowing employees to work from home.

Work will continue with both existing businesses and those that are moving into the area or to new development sites to gain a full understanding of their transport needs. This requires an appreciation of both employee travel needs, as well as those required for operating the business e.g. deliveries. For new employment development sites, we recognise the need to offer a range of travel options to enable more people to use sustainable modes of travel.

**We will work with those developing economic and land use policies, to provide a joined-up approach between economic and transport planners.**

**We will continue to tailor our engagement with businesses according to their motivations and site-specific issues, in addition to promoting flexible working hours and reducing the need to travel, by home working.**

**We will encourage areas to build upon the example set by North Bristol SusCom, developing best practice, sharing ideas and giving businesses a voice.**

**We will continue to take part in sustainable travel forums for businesses and organisations, giving them a voice to influence and shape transport policy and investment within the region.**

**Case study: North Bristol SusCom**

North Bristol SusCom is a group of leading employers working together to reduce congestion and support the development of a fully integrated, sustainable transport network for North Bristol. They know that combatting traffic congestion, and increasing the viability of walking, cycling and public transport, is vital for the long-term prosperity of our businesses and the health and well-being of our staff.

SUSCOM lead by example, taking a co-ordinated approach to managing traffic impact and supporting 40,000+ staff and 30,000 students to reduce the number of short car journeys made. North Bristol SusCom encourages car sharing, walking, cycling, bus and rail as preferred ways to travel to work and around the area on business. They also support home working, and if journeys need to be undertaken by car, electric vehicles and car sharing are promoted.

**Encourage mode shift through grants, incentives and rewards**

Match-funded employer grants, which originally started under the Local Sustainable Transport Fund, will continue to be offered via the Access WEST fund. Employers can apply for a match funded grant to implement infrastructure on their site to facilitate and promote sustainable modes. Examples include cycle storage facilities, Real Time Information screens within their premises and the marking and signing of bespoke car-share spaces within their premises.

It is important to incentivise and reward individuals to reinforce positive travel choices. The annual travel challenge will continue and there is an aim



to increase the number of participants who are motivated and encouraged to change their travel behaviour for a given period for a potential reward. The success of businesses who have implemented sustainable transport initiatives will be celebrated, by hosting sustainable travel awards, where accreditations for travel plans will also be presented.

**We will continue to offer grants, incentives, rewards and awards to businesses and individuals, to encourage the use of non-car modes of travel, building and refreshing schemes based on best practice.**

**Maximise awareness of sustainable and active travel choices and the benefits these bring**

The most fundamental issue in behaviour change is increasing motivation. Engagement needs to include a comprehensive range of high-level promotion, self-select information and services, personalised services and advice, social marketing and opportunities to participate to maximise delivery of effective change. We need to be further developing trip planners and other digital tools, and refreshing these to keep abreast of advances, not just reacting to them.

A major media/information campaign will be undertaken using local radio and social media, to inform the public about their travel choices and the impact of these choices. Advice will be sought from our partners on how bad news messages, such as the harm caused to the environment by driving, can be delivered in a way to grab people's attention. This social marketing will increase awareness about the role everyone must play in making the West of England a better place to live, work and visit.

**We will seek advice from our partners, including Living Streets, Sustrans and the NHS, to understand the key drivers for successful media campaigns.**

**We will use social marketing to maximise the reach of information campaigns to influence travel choice, building on best practice and experience from other sectors.**

Information and events will continue to be provided for West of England residents, ensuring active modes of travel are at the forefront of their minds when choosing how to travel. Area wide events, such as Bath Cyclefest, which was shortlisted for a Modeshift award for a Community Sustainable Travel Initiative in 2017, will be used to motivate and engage with communities. Work with other service providers and organisations who engage with communities will continue, enabling us to 'piggy back' on their events, such as health campaigns. This provides an opportunity to gain opinions and insights from people who would not normally attend a transport event.

**We will use events, including those run by other sectors, to maximise awareness of active travel and associated benefits.**

The travelwest website ([www.travelwest.info](http://www.travelwest.info)) is the one stop shop for all travel information, which prioritises walking, cycling and public transport options in the search results. This will continue to be promoted as a journey planner, alongside the Better by Bike website, as the dedicated portal for cycling information, providing practical advice, downloadable maps and information about routes and events.

**The travelwest website and journey planner will continue to be developed, maintained and promoted to support sustainable travel choices.**



Section 8:  
Local connectivity continued

L4. Support opportunities for all sectors of the population to access the services they require, wherever they live

This policy contributes towards the delivery of the following objectives and outcomes:

3	2-5	2,3	1,4

- The main interventions that will support the delivery of the policy, are:
- Support those without a private car, who need to travel, in accessing the services they require
  - Promote the role of technology in accessing services and employment
  - Support the role of taxis and private hire vehicles
  - Support the role of demand responsive and community transport

Support those without a private car, who need to travel, in accessing the services they require

Poor accessibility is most commonly associated with more rural areas, which are sparsely populated and have limited services. However, ensuring access to goods, services and information in urban areas is equally important. Congestion, combined with an already well used public transport network and rising costs of transport services, can impact on opportunities available to populations in towns and cities across the West of England.

Young people in rural areas can have difficulties accessing further education, training, employment, evening entertainment, advice and other services. As a result, they can find themselves isolated.

Limited opportunities, combined with a lack of affordable housing, is contributing to some young people moving away from rural communities. The cost and low availability of public transport in rural areas is a significant challenge for young people and can act as a barrier to their progress into employment. For many of these young people, having a driving licence and being able to afford a car is essential, but may be considered as 'forced car-ownership' given the lack of choice. Insurance costs can be prohibitive, and there is a real risk that other basic household budgets are cut to own and run a motor vehicle.

The consequences are reflected in the social and economic structure of rural areas, with some younger people seeking work having to move away, and local jobs largely being taken by people who have transport available. In the longer-term, this could impact on the demographic structure of rural communities.

Transport can be a significant factor in the exclusion and isolation of many low-income families and act as a barrier to the take up of employment, education and lead to missed health appointments. For some households the costs associated with owning and running a car are prohibitively high, making them dependent on public transport for longer journeys. Lower population densities in rural areas mean that bus routes tend to be longer, serving fewer potential passengers along the route, leading to higher operating costs and lower revenues. This can often result in rural areas having a limited and heavily subsidised public transport service.

Other groups that often report becoming isolated include parents without a car, people out of work, the long term ill, carers and people with disabilities and non-visible disabilities and conditions, including mental health issues. There is a growing elderly rural population who find themselves isolated and having to rely on family and neighbours to help them. Improvements in



accessibility are required to help older people maintain their access needs, therefore reducing the need to drive in old age.

- We will work with our partner organisations to assess whether people are able to reach key services and activities safely, reliably, affordably and with relative ease by public transport and produce an action plan to identify how to improve any existing gaps in provision, to enhance accessibility.
- To retain accessibility to key services in less populated areas, we will work with service providers and other partners, including the voluntary sector, to investigate options that change the way services are delivered, such as providing multi-service hubs, and other innovative and cost-effective measures.

Case study: Wheels to Work in the West of England

The Wheels to Work West project, part of the DfT funded Access West programme, spans the West of England. The project provides support for those in need to travel to job and training course interviews, new roles, job placements and voluntary positions, with the aim of promoting greater access to work and skills.

The scheme encourages cycling through the provision of loan bikes and discounted bike sales, and public transport through the provision of First Bus m-tickets (day, week and month tickets) and paper avon-rider tickets – which can be used on variety of different bus operators. In addition, participants can access a range of other offers including adult cycle training and dedicated travel advice to help them plan their journey to a place of work, volunteering or training.

The four authorities work closely with a range of partner organisations across the public, private and third sector to deliver the Wheels to Work West project including: Department for Work and Pensions Job Centre Plus, SGS College, Weston College, Southern Brooks, Alliance Homes, Sovereign Housing, Creative Youth Network, Curo, Julian House, LifeCycle UK amongst others, with new partners added on a regular basis.

The overall target for the Wheels to Work West project is to provide benefit to 5000 people seeking work, skills or training across the West of England region by the end of March 2020.

Section 8:  
Local connectivity continued



Case study: Total Transport

North Somerset Council was awarded funding from the Department for Transport for a Total Transport project to run between April 2015 and April 2017. The aim was to review passenger transport provision and develop a proposal for implementing service integration. Numerous proposals were identified, including: using rail to transport students from Yatton to Backwell School, combining community meals with home to school taxi routes, and integrating home to school transport with local bus services.

To deliver these changes, a new Integrated Transport Unit (ITU) was created in January 2017, bringing together staff delivering public transport, community transport, home to school transport and fleet management, directed by the Transport Commissioning Board. This provides a strategic overview of transport commissioning across the council. Medium-term financial plan savings of £600,000 were initially identified over three years. So far, £60,000 of savings were delivered in 2017/18, and £291,000 savings have been declared for 2018/19.

B&NES Council was also awarded Total Transport Fund funding in 2015. B&NES used the funding to consider how passenger

transport (public transport, home-to-school transport, community transport and non-emergency patient transport) in the Chew Valley area could be better integrated to get a more co-ordinated and efficient network and better connect people with the facilities they need. Recommendations were made on how existing passenger transport provision could be improved, but implementation would have imposed an unacceptable cost burden.

South Gloucestershire Council used the Total Transport Fund to help understand the challenges and issues facing access to health services particularly from rural areas. The baseline data identified there was some duplication of transport provided by community transport and the potential to make more of 'spare' capacity (empty seats). A feasibility study was undertaken to explore options to improve the efficiency of community transport and make greater use of spare capacity. The proposal was to provide a shared software membership/booking system, dedicated shared webpage and possibly a dedicated helpline. Unfortunately, no follow-on funding was available, so the proposals have not been taken any further.

Promote the role of technology in accessing services and employment

Access to the internet can be an alternative to making a journey. The past decade has seen considerable and widespread changes in the availability and use of the internet to access goods and services. The Broadband Delivery UK project has provided universal access to basic broadband, which has revolutionised quality of life and meant people can now access almost any goods and services without the need to travel. It has had

a profound impact on the way in which we now choose to consume our goods and services.

Whilst broadband services are now available across the West of England, there is widespread variation in the quality and speed of broadband services, with generally lower speeds in rural areas. We recognise that improved broadband coverage will help facilitate greater home working and relieve pressures on the transport network, particularly by avoiding the need to make journeys during peak periods. Homeworking can also allow

those who are unable to travel to work, to access employment without the need to travel.

We will work with the government and internet service providers to encourage them to increase existing levels of investment in broadband, 4G, 5G, and any other emerging internet access technologies, in all areas of the West of England.

We recognise that although access to the internet is now readily available in most areas, some sectors of the population do not have the skills to be able to benefit or consume services in this way. Training is needed for those who own, but are not confident using, computers and smart phones.

Training and internet accessibility is key for understanding information about journey options, such as distance, cost, time, energy used; checking timetables; accessing journey apps; and for purchasing slightly cheaper bus tickets and other tickets conveniently. The wider benefits this will bring to the West of England should not be underestimated.

We will work with skills providers to ensure training is available for those who would like to access services on the internet, so they can gain the skills and confidence to do so.

Support the role of taxis and private hire vehicles

Taxis and private hire vehicles have a role to play in providing accessibility to different sectors of the population. They can be cheaper than car ownership and play a role as part of a longer-journey using public transport, for example by providing links to and from rail stations, as well as some complex home-to-school transport journeys. Taxis and private hire vehicles provide a necessary service to those who are physically unable to access public transport and require a door-to-door service.

We will work with taxi operators to review charging policies, ensuring taxis are fair, competitive and accessible for all.

We will work to ensure the provision of adequate centralised taxi waiting and drop off facilities in city and town centres, and work with taxi operators to ensure that services are available to all as an alternative to the private car.

The emergence of on-demand taxi services, such as Uber, illustrates how traditional taxi provision may be unappealing to some segments of the population, as more demand responsive transport becomes increasingly popular. Mobile phone and web communications are enabling individuals to link with cars for specific journeys, providing a reliable and affordable alternative to traditional taxi or bus use.

Shared taxis can bolster existing public transport provision during busy periods such as the morning and evening peak hours, filling gaps in the public transport network by serving remote locations that are currently not served by public transport. By encouraging the use of electric vehicles as part of taxi fleets, taxis can not only contribute to removing traffic from our roads and reducing congestion, but also improve air quality.

One such shared taxi scheme is Slide, a shared journey to work service that operates in Bristol. The service is available during the morning and evening peak hours, offers fixed fares for users, is on demand with real time updates and users can book their journey via an application on their mobile phones. Once booked Slide then groups passengers requesting similar journeys to ensure the most efficient journey. The service is currently available 5 days a week and is targeted at providing commuters with an alternative option to either driving to work or taking more traditional forms of fixed public transport.

Section 8:  
Local connectivity continued

We will continue to support the introduction of shared use taxi schemes that support the local bus network and provide flexible attractive alternatives to those who would otherwise drive.

On-demand services, which may be through a shared, cross-region, multi-operator system or application, could assist local operators in keeping up with technological advancements and continue to remain competitive, enabling local economic growth. A shared system could involve journey options from existing on-demand services such as Uber, to provide a fair and competitive, accessible system across the West of England. This would enable users to choose the fastest and cheapest taxi services for their desired journeys.

We will continue to work with local taxi operators to encourage them to look at adopting on-demand services through smartphone technology.

Support the role of demand responsive and community transport

Community transport provides a flexible solution for local journeys, connecting rural areas to the main public transport corridors or stations. It supplements commercial transport by providing a public transport service for areas of low passenger demand, where regular bus services are not viable. Such schemes rely heavily on volunteers.

Community transport can fill a gap for commuters, as well as for social/mobility needs. Services include dial-a-rides, community buses, group minibus hire schemes and voluntary car schemes. Local authorities provide guidance, assistance and funding to schemes, but administration and service delivery is carried out by the schemes operators themselves. Local and central government make grants available occasionally for new vehicles.

There is no statutory duty on local authorities to support community transport, but it is widely recognised that the sector plays an important role in helping people who find it difficult to

access mainstream public transport to live more independently and play an active part in community life. However, the sparsity of population in many rural areas means only a small minority of residents are benefiting from the schemes. As technology and alternative access arrangements improve, demand responsive transport needs to become more attractive and responsive to people's needs.

We will continue to support and encourage increases in community and demand responsive passenger transport schemes, working with providers and the voluntary sector to improve information and passenger transport facilities, and co-ordinate service provision.



Case Study: Felton and Winford Community Bus

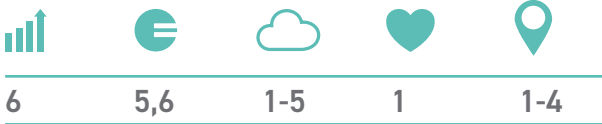
In 2015, the villages of Felton and Winford were left without public transport when the local bus operator withdrew services. With declining revenue support budgets, contract prices to operate a replacement service were unaffordable. Low passenger numbers and the rural nature of the area were not attractive to commercial operators.

As an alternative, North Somerset Council commissioned a community bus service, working with the parish council and a local community transport operator. The service operated with a minibus, which was sufficient to cater for the passenger numbers in the area and suitable for navigating rural roads. Felton and Winford are close to Bristol Airport, so the service operated to and from the airport only. This enabled passengers to access the high-frequency Airport Flyer service into Bristol city centre, and other local bus services.

The community bus began operation in August 2015 and, with a dedicated driver and vehicle, quickly became part of the local community. Local residents took ownership of the service, promoting it locally by word-of-mouth. The service operated for almost three years, until May 2018, when developer funding from Bristol Airport saw the return of a local bus service to the area. At this point, the community bus and driver were redeployed to another community in need (Worlebury area in Weston-super-Mare).

L5. Support the identification and implementation of measures that will improve air quality

This policy contributes towards the delivery of the following objectives and outcomes:



The main interventions that will support the delivery of the policy, are:

- Support ongoing work to manage the impact of transport on air quality and climate change
- Support ongoing work on Clear Air Zones and the UK Air Quality Plan
- Support work on Zero and Low Emission Vehicles

Support ongoing work to manage the impact of transport on air quality and climate change

Poor air quality has significant impacts on human health, which risks holding back economic growth due to the impacts of poor health on productivity. It is damaging the natural environment and negatively impacts on the quality and perceived quality and prosperity of the region. There is increasing public recognition that air pollution is associated with adverse health impacts throughout the human life cycle, contributing to heart disease, stroke, chronic obstructive pulmonary disease and lung cancer. Particulates are known to have negative health impacts, even at very low concentrations.

Levels of nitrogen dioxide (NO2) have started to fall in recent years. However, despite newer vehicles replacing dirtier older ones, the contribution from road vehicles has fallen at a lower rate due to an



Section 8:  
Local connectivity continued

increased share of diesel vehicles. Although the average emissions per vehicle is much higher for heavy goods vehicles and buses, the high number of diesel light passenger and commercial vehicles on the road means that these are the biggest contributors to overall pollution.

Air pollution levels in parts of Bristol, B&NES and South Gloucestershire continue to exceed government standards for NO<sub>2</sub>. Consequently, central Bath, Keynsham, Saltford, central Bristol, Kingswood and Staple Hill have active Air Quality Action Plans. Air Quality Management Areas have also recently been declared at Temple Cloud and Farrington Gurney on the A37.

**We will support the preparation of Air Quality Action Plans and delivery of specific measures identified to improve air quality.**

Tour buses, often open top, operate in Bristol and Bath. They operate as registered bus services to a fixed timetable and form part of the 'visitor experience', making a positive contribution to the local economy. However, these services need to be regulated to minimise any detrimental impacts such as exhaust pollution, noise pollution, road dangers, unnecessary traffic congestion and visual intrusion.

**We will work with tour bus operators to develop an upgrade plan to operate ultra-low or zero emission vehicles in city centres.**

In addition to NO<sub>2</sub> emissions, road transport is one of the largest sources of carbon dioxide (CO<sub>2</sub>) emissions, which are contributing to climate change. Although progress has been made in reducing emissions since the last Local Transport Plan was prepared, further action is needed to meet the combined West of England CO<sub>2</sub> reduction target for 2035, which is to reduce absolute CO<sub>2</sub> emissions by 50% from a 2014 baseline.

**Case study: Tour buses in Bath**

Tour bus services in Bath carry up to 3,000 passengers per day at busy times. Prior to 2005, Bath had four open top bus operators running tours in the city and there was a demonstrable impact on the quality of life for residents and visitors alike. The low costs of entry into the market and high rewards led to a situation of over-supply. Following a Public Inquiry held by the Traffic Commissioner, Traffic Regulation Conditions were introduced which strictly regulated open top tour buses in Bath. These have been highly successful in reducing the detrimental impacts of the services. Long-term investment by Bath Bus Co, with assistance from the DfT and supported by B&NES, has resulted in a fleet of low emission vehicles being operated in Bath. This makes a positive impact on air quality in the city, when compared to the alternative of visitors seeing sites by car or coach.



**Support ongoing work on Clean Air Zones and the UK Air Quality Plan**

To improve air quality, the Government has requested councils across England – including B&NES, Bristol City and South Gloucestershire – to achieve compliance with NO<sub>2</sub> limits 'in the shortest possible time'. This is part of the UK Air Quality Plan. There are hotspots in Bath, Bristol and South Gloucestershire where concentrations of NO<sub>2</sub> (caused by vehicle emissions) exceed the acceptable national and European limit of 40µg/m<sup>3</sup>.

Although most of the schemes in the JLTP4 will have positive impacts on air quality, the local authorities are also responsible for developing innovative Clean Air Plans that will achieve statutory NO<sub>2</sub> limit values in a way that best meets the needs of their communities and local businesses. This will include Clean Air Zones (CAZ) which are defined geographic areas where targeted action is taken to improve air quality, deliver health benefits, and support economic growth. Clean Air Zones may include both non-charging and charging measures. Feasibility studies are exploring options to achieve the required government standards within the shortest possible time.

This will be considered separately to JLTP4 due to the timescales needed to complete the Clean Air Plans. A decision on measures to be introduced will be taken on completion of business cases.

**We will support ongoing work, as appropriate, in the development of CAZs.**

Measures currently underway to improve air quality and climate change include:

- The Clean Vehicle Technology Fund provided funding to retrofit 42 Euro V classification buses with Thermal Management Technology to improve their environmental performance, whilst the Clean Bus Fund provided £0.5 million funding to retrofit 35 of the sub-region's most polluting bus services with selective catalytic reduction technology to improve their rating to Euro V and Euro VI standard. More recently, Bristol City Council, South Gloucestershire and B&NES were successful in a £2.2m bid to government to retrofit a further 81 Euro IV and Euro V buses, to bring them to Euro VI standard. The project is expected to be completed by the end of 2019.
- B&NES successfully received funding through the Green Bus Fund in 2012 to replace the existing Park & Ride buses in Bath with less polluting hybrid buses.
- Bristol City Council and South Gloucestershire Council successfully bid for around £5m funding from government. Through a partnership with First Bus, this funding helped to unlock more than £30 million investment, when match-funding was taken into account. This enabled the introduction of 110 new gas-powered buses into the sub-regional fleet.
- Bristol City Council in partnership with First Bus is in the process of trialing two hybrid electric buses that automatically switch to electric mode when entering an Air Quality Management Area.
- Bristol City Council received Early Measures funding from the Clean Air Fund for £1.1m to improve cycle accessibility in South Bristol and support taxi operators to move to low emission vehicles.

Section 8:  
Local connectivity continued

Clean Air Zones

The Government defines a Clean Air Zone (CAZ) as an area where targeted action is required to improve air quality. Resources are prioritised and co-ordinated to shape the urban environment in a way that delivers improved health benefits and supports economic growth.

In the designated CAZ area, measures to reduce vehicle emissions and cut pollution may be introduced, with the aim of improving everybody’s health. CAZs may include charging and/or access restrictions on vehicles to limit the most polluting vehicles using certain roads at certain times. The most polluting vehicles may include some buses, coaches, private hire

vehicles and taxis, as well as heavy goods vehicles, light goods vehicles and cars.

CAZs will be supported by complementary measures to encourage more active and sustainable travel and accelerate improvements in vehicle fleets. This could include better bus priority, bus stop facilities and live information, more secure cycle parking, electric cycle hire, and new or improved cycling and walking routes.



Support work on zero and low emission vehicles

With continued improvements in vehicle emissions standards and the replacement of older vehicles, air quality is likely to improve and CO2 emissions decrease over the longer-term. The future uptake of electric vehicles and other types of low emission vehicles will be critical in helping to deliver reductions in harmful emissions, although it is recognised they still contribute to congestion and poor air quality, due to brake and tyre dust.

Zero emission vehicles are fully electric and wholly driven by an electric motor with no combustion engine, meaning they do not produce any exhaust emissions. At present, most zero emission vehicles have a range of approximately 100-150 miles, however it is expected that this range, and the take up of these vehicles will increase as battery technology improves. Low emission vehicles are plug-in hybrids, which are powered both by an electric motor for a limited range, followed by a conventional engine that is used once the battery has been depleted.

The West of England has placed significant investment in Ultra Low Emission Vehicles (ULEVs) through the Local Sustainable Transport Fund and Rapid Charging Points scheme, including the ‘Source West’ project that promotes the introduction of electric vehicles into South West England. This provides information on electric vehicles, including an energy usage cost comparator and an app providing a secure payment interface.

The Government has launched its Road to Zero Strategy, with the ambition to see at least half of new cars to be ULEVs by 2030. Despite recent investment, there is a need for more funds to be dedicated to improving electric vehicle infrastructure. Recent research identified that by 2020 there will be more than 1 million electric vehicles on roads in the UK, resulting in an additional 83,500 charging points being required to meet demand. This is an increase of 83%, from the current number of 16,500 charging points



Case study: Electric vehicle funding and MetroBus ULEV buses

The Office for Low Emission Vehicles (OLEV) awarded £7million of funding over 5 years to promote the uptake of electric vehicles (EVs) across the region, following our Go Ultra Low West bid. As a result, EV purchases in the region will rise to 5,000 new registrations per year by 2020.

The MetroBus project will see over 50 new ULEV buses brought into service within the West of England. The gas-powered vehicles will be modern, low emission and expected to reduce carbon emissions and fuel consumption by 25 per cent, compared to a standard bus.

Together with sustained investment in active and sustainable modes of travel, low emission vehicles have a pivotal role to play in improving local air quality and addressing climate change.

We will continue to progress work on low emission vehicles in the short-term and:

- Identify and address any barriers to the uptake of ULEVs, especially in those areas which have been declared Air Quality Management Areas or CAZs
- Introduce policy measures to encourage EV uptake
- Through MetroBus, continue to support the introduction of low emission buses, through Statutory Quality Partnership Schemes or other measures, including Clean Air Zones
- Provide advice, support and training to other private and public-sector organisations, including businesses, to encourage the introduction of ULEVs

- Maximise CO2 reductions from the transition to ULEVs, by promoting ULEVs to run on renewable energy and to act as batteries for the electricity grid, helping to match energy supply from renewables with energy demand
- Include a requirement for new developments to provide greater levels of electric vehicle charging infrastructure for residential, commercial and industrial developments, through changes to existing parking standards

Case study: Weston-super-Mare Town Centre Regeneration Supplementary Planning Document (SPD)

The SPD requires at least 10% of the total parking spaces at new builds to include superfast charging points with a minimum of 1 space. In addition, to future-proof car parking areas passive provision is to be included to support the provision of charging points for 40% of spaces in the longer term.

Section 8:  
Local connectivity *continued*

Support will continue to be provided on work being undertaken through the existing Ultra-Low West programme, ensuring the region is at the forefront of providing facilities for EV owners. Across the West of England, the funding will be used to:

- Increase the number of charge points through a regional charging network. This would include public, business and car club charge points
- Deliver more EV-capable car club bays
- Convert at least 20-25% of the four West of England councils' light vehicle fleet to EV – approx. 100 vehicles
- Build 4 rapid charging hubs at high-profile locations across the region which would allow EV owners to charge their car in 30 minutes or less
- Expand the low-emission Freight Consolidation scheme to reduce the number of heavy-goods vehicles entering the city centre and link this with micro-consolidation and 'last mile delivery' for small and medium-sized businesses

Work will also continue to:

- Give greater consideration of low emission strategies within future planning documentation and define specific policy measures to encourage EV uptake, such as a West of England Electric Vehicle SPD and through Local Plan policies
- Promote ULEV taxis through improvements to infrastructure, grants and other take-up incentives
- Formulate a strategy to overcome barriers to the provision of LEV infrastructure

**We will support ongoing work, as appropriate, in the development of zero and low emission vehicles, including the necessary infrastructure including a regional electric vehicle charging network.**

**Case study: K:Port Electric vehicle charging hub, Portishead**

The Department for Transport Office for Low Emission Vehicles (OLEV) has given North Somerset Council £370,000 to design and build the K:Port as part of a larger package of works within Go Ultra Low West project, in partnership with the West of England authorities. The K:Port is due to be one of four charging hubs in the West of England by March 2020.

The four-vehicle Demonstration Charging Hub, to be situated in a popular location at Portishead Marina, aims to give residents and visitors a dedicated destination to charge an electric vehicle. Designed by a Bath-based award-winning sustainable architecture firm, the plans show an attractive charging facility offering rapid 50kW EV charging, which takes around 20-30 minutes to fully charge a standard EV car battery.

The Go Ultra Low West project has brought many advantages, including converting 40% of North Somerset council's fleet to electric vehicles and assisting businesses to install charge points at work for visitors and staff. This uses 50% match funded grants to install charging infrastructure at employment sites to enable staff and visitors to charge their electric vehicle.

Section 9:  
Neighbourhood connectivity

Neighbourhood challenges

Vehicle speeds, the volume of traffic and the pollution levels generated on main roads can often feel excessive for residents and impact negatively on those pedestrians, cyclists and equestrians who share the same space. This can significantly impact on the level of interaction within communities located in these areas. Those who live on streets with higher traffic levels are likely to have fewer social interactions within their neighbourhood.

Building on the general West of England challenges identified in Section 2, more specific challenges for neighbourhood connectivity have been identified, as follows:

- The dominance of traffic restricting the ability to reprioritise road space to other modes and improve public realm
- Perception of safety and security issues deterring use of active modes
- Lack of knowledge on making seamless door-to-door journeys by modes other than the private car, resulting in more private car trips being made in neighbourhoods than necessary

Neighbourhood policies and interventions

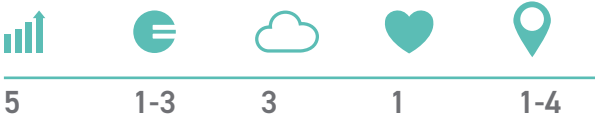
Neighbourhood connectivity in the West of England will support delivery of the JLTP4 objectives, by focussing on these main policies:

- N1: Use master planning and local design to create better places
- N2: Facilitate the use of active modes for all short trips, including the first and last mile of longer journeys

The policies will be delivered by focussing on specific interventions.

N1. Use master planning and local design to create better places

This policy contributes towards the delivery of the following objectives and outcomes:



The main interventions that will support the delivery of the policy, are:

- Improve the quality of streets and public realm
- Integrate walking, cycling and public transport into new developments
- Provide clear wayfinding and signage
- Improve and maintain Public Rights of Way

Improve the quality of streets and public realm

Major roads can provide a barrier to accessibility in neighbourhoods, segregating residential areas, services and facilities. There is growing recognition that high levels of car use and congestion are not conducive to the creation of vibrant and attractive urban areas and have a determining impact on how people choose to travel the first and last mile. High quality public streets and spaces, that allow people to move more seamlessly, are an essential part of successful urban environments and how people choose to travel for longer trips.

New developments

Through the planning process, new developments will be required to fully embrace, nurture and respond to the distinctive characteristics and features of the area surrounding them. This will support the protection and enhancement of the diverse range of places within the West of England.



Section 9:  
Neighbourhood connectivity continued

We will look to ensure that new developments are designed to:

- Positively contribute to an area’s character and identity, creating or reinforcing local distinctiveness
- Provide safe and welcoming public space that promotes walking, cycling and convenient transition to public transport
- Strengthen physical connections with surrounding areas
- Create vibrant resilient and healthy communities

Urban Living, a central plank of the Joint Spatial Plan, requires the creation of compact, high density, characterful urban areas where people can live, work and socialise with good access to public transport. For major development sites these attributes will be considered at an early stage through master planning and Local Plan policies.

Community participation and Neighbourhood Plans

To thrive, neighbourhoods need to be places that enable people to be safe, healthy and interact with their neighbours. Neighbourhoods need to facilitate community participation, enabling easy access to facilities, like shops and schools, for all sectors of the population.

Neighbourhood Plans can be prepared to promote greater community ownership, cohesion and pride. They can give neighbourhoods greater control over improvements to transport, connectivity and community facilities. This enables communities to shape the future of their neighbourhoods and provide a consistent basis for what development and transport proposals would be welcomed.

We will openly work with town and parish councils, informed by residents and neighbourhood groups, to develop Neighbourhood Plans.

Crucially, adopted Neighbourhood Plans can secure funding for identified transport and access proposals via the Community Infrastructure Levy (CIL). Areas with Neighbourhood Plans receive a greater share of CIL income, which can, at the discretion of that local area, be spent on transport and access improvements. As local authorities work with communities to develop the plans, it ensures that holistic, joined up thinking is behind the improvements that work for the benefit of all.

Improvements that could encourage pedestrian and cycle activity and provide safer, more sustainable neighbourhood journeys can be identified with support from local active travel groups (including Sustrans) and by working with town and parish councils and designated neighbourhood planning areas. These could include improved footways, cycleways, crossing points, traffic calming measures and improved bus stop infrastructure and access. With more people able to access local facilities, including open areas and parks, and businesses via walking and cycling, the perception of local areas will be improved as more people are out and about, with resulting impacts on improving public health.

We will provide support to neighbourhoods in identifying improvements for inclusion in their Neighbourhood Plans.



Case study: Highway Sustainable urban Drainage System (SuDS), Bristol

A pilot highway SuDS scheme was designed in partnership with Sustrans and in close consultation with the local community. The scheme saw the construction of four highway SuDS ‘pods’ and a storage basin. The SuDS pods effectively replaced existing nearby gullies and were constructed to accommodate highway runoff and store water beneath the ground before releasing it slowly into existing sewers beneath the road. The benefits of SuDS systems are that they slow the flow of water in the sewer network, which increases their capacity and reduces flood risk.

The pods are topped by soil and plants, so they clean the water and increase local biodiversity, as well as creating a more visually attractive environment. They also act as traffic calming, which is important given their location outside a primary school. The detailed designs of the pods were completed by internal BCC teams and have been adopted by BCC as Highway Authority.

Design guidance documents and Supplementary Planning Documents

The growing importance of improving our streets and places has been recognised through the development of bespoke design guidance documents for the cities of Bath and Bristol. Bristol’s draft City Centre Framework sets out a vision for how people will move around Bristol city centre and how their movement experience will be improved. Likewise, Bath’s Public Realm and Movement Strategy seeks to revitalise the economic, social and cultural wellbeing up to 2026 and beyond, by putting forward a plan to transform

streets and spaces across the centre, and by rebalancing the movement hierarchy.

We will support the implementation of local design guides to improve streets and places.

B&NES adopted their Placemaking Plan in July 2017, which includes a multi-faceted approach to the planning, design and management of new development and spaces. North Somerset Council have an adopted Weston-super-Mare Town Centre Supplementary Planning Document (SPD) that sets the agenda for the regeneration of the town centre. This includes design codes and a context of regenerating and improving town centre space. Higher density developments with more relaxed parking standards are encouraged, to improve town centre space for active travel modes and reduce traffic dominance to bring benefits for people and businesses.

Case study: Weston-super-Mare public realm and pedestrian and cycle improvements

In October 2017 NSC was granted £2.95m National Productivity Investment Fund money from DfT, and £1.5m from the LEP’s Local Growth Fund, for a series of WsM town centre public realm and pedestrian/ cycle improvements (Phase 1), with an integrated bus interchange coming as a second phase (Weston Town Centre Transport Enhancement Scheme). The bid was successful as reducing traffic dominance and improving public space via pedestrian/ cycle improvements is recognised as key in unlocking key town centre regeneration sites and attracting high-quality residential and employment developments.

Section 9:  
Neighbourhood connectivity continued

Improved opportunities to travel by active modes will enable people to access local shops and businesses, supporting the viability of these services. Providing sufficient parking outside of central areas and encouraging people to walk reasonable distances, 'Park & Stride', will reduce the number of cars and support the rebalancing of the network in favour of active modes. Improving the street environment for all road users will ensure our urban areas remain or become attractive, vibrant places to live, work and visit. This will enhance the attractiveness, appearance and safety of these centres to make them attractive to businesses, shoppers and the community.

**We will invest in our public places and rebalance transport and movement systems in favour of pedestrians, cyclists and public transport users. This includes delivery of public realm improvement packages in Keynsham and in Midsomer Norton and Somer Valley, including links to the Somer Valley Enterprise Zone.**

**Case Study: Bristol retailers**

A study in Bristol found that retailers on a local high street overestimated the proportion of shoppers arriving by car by almost double at 41% compared with the actual proportion of 22%. The retailers also underestimated how far pedestrians had travelled to get to the high street; over 60% lived within 1 mile. As well as the benefit of improved public realm, the study showed that pedestrians generally visited more shops than those arriving by car.

**Case Study: Bristol public realm improvements**

In Bristol, public realm schemes have been used to reclaim areas of the city centre from motor transport. This has created improved public spaces and places, with wide-reaching benefits. For example, to protect the historic environment, major roads adjacent to the Cathedral and through the Grade I listed Queen Square were removed in the 1990s. The MetroBus scheme has led to the removal of traffic from key sections of Bristol city centre, improving the public realm and creating an improved setting for the cenotaph. The upcoming Temple Gate scheme will remove road space from private cars, but improve public transport interchange and provide better access to Temple Meads Station.

As well as its role in enhancing places by making them more accessible, transport can equally harm the quality of a place. It has, and will continue to have, an impact on the built, historic and natural environment. Where possible, the public realm in these areas will be enhanced to both protect important buildings and locations, in tandem with working to improve public spaces, and address the impacts of noise.

Excessive noise pollution caused by high volumes of motor traffic has been linked with an increased risk of heart attack, obesity, impaired sleep and mental health problems. People living in areas with high traffic noise are 25 percent more likely than those in quieter neighbourhoods to have symptoms of depression. Noise management measures that might be appropriate, feasible and affordable are likely to include renewal of carriageways, targeted maintenance, noise barriers, speed limits and road hierarchy reviews.



**We will work with DEFRA to support them in the identification of appropriate mitigation measures to protect the quietness of open spaces, and provide our partners, including Highways England and the rail industry, with these aspirations to guide them in tackling noise as part of management plans.**

Transport can make a positive contribution to the natural environment, by using green infrastructure as part of scheme design. Green infrastructure is a planned network of green spaces and corridors in and around our towns and cities, which are designed to protect and enhance local communities, wildlife and the environment. The West of England's Strategic Green Infrastructure Plan provides context for green infrastructure delivery and supports individual Local Plan approaches to green infrastructure. Existing guidance suggests cycle ways, paving and parking should consider permeable construction first, then look at providing green infrastructure alongside the route, before considering traditional drainage. This brings benefits to communities and the natural environment.

**We will work to ensure transport scheme design and upgrades contribute to the creation of increased levels of resilient green infrastructure, in line with the Strategic Green Infrastructure Framework.**

**Integrate walking, cycling and public transport into new developments**

Higher development densities and a mix of land uses can encourage more local travel patterns and reduce journey lengths. Urban Living is a central plank of the Joint Spatial Plan, optimising opportunities for development in urban areas and previously developed land. By working with those developing these policies, we can drive the sustainable delivery of developments and provide the opportunity to minimise the need to travel and allow safe and convenient access to

services by walking, cycling and public transport. Developers will be engaged with right at the start of the planning process to achieve this. This will include, where appropriate, the encouragement of new housing with car-free areas (with car parking, where required, located outside of the living areas) to encourage more social interactions and walking.

**We will continue to encourage new developments in locations that are accessible by existing walking, cycling and public transport networks, and discourage proposals that fail to actively encourage mode shift away from the private car.**

**We will require developers to make developments 'bus friendly' by reference to guidance published in 2017.**

**We will engage with developers at the start of the planning process to ensure key services to be provided on site, based on the thresholds included in guidance, are high-quality, but also in the best location to maximise their accessibility via active travel modes and public transport.**

For smaller development sites that do not require the provision of on-site facilities or services, there will be a stronger emphasis on working with developers for transport improvements and mitigations to include high quality, direct walking and cycling linkages to off-site local facilities.

Accessibility is maximised through a consistent walking and cycling-focused street pattern, ensuring the necessary safe and direct cross-site permeability that makes active travel attractive. Clear priority for pedestrians and cyclists at junctions should be incorporated, wherever possible. With integrated on-site provision and access, more trips are retained within local areas so people are not forced to travel to access basic services, thereby encouraging the use of more active modes. The improvement and expansion of our walking and cycling network, including strategic cycle routes, is critical to providing access to local services and to ongoing economic growth.



Section 9:  
Neighbourhood connectivity continued

We will work with developers to ensure they are using existing street design principles, but increasingly focus on providing an attractive, integrated network that offers segregated areas for active modes, if required.

We will work with developers to ensure the high-quality walking and cycling infrastructure provided on-site does not stop at the site boundary, but integrates into the wider walking and cycling network, facilitating seamless onward active travel for the necessary journeys between villages, towns and city neighbourhoods.

In the interests of limiting safety implications and maintenance liabilities both during and after construction, local planning authorities will engage with developers over construction materials of the walking and cycling network improvements. The individual pedestrian and cycle strategies of the West of England authorities will also provide further design and principles where appropriate.

Provide clear wayfinding and signage

The design of transport schemes and new infrastructure will consider the needs of walkers, cyclists and equestrians. A simple and intuitive approach to wayfinding and signage will be adopted, including for Public Rights of Way such as bridleways and restricted byways.

Streets and places often suffer from a proliferation of traffic and directional signs. The approach will be used in the design of new schemes and the improvement to existing streets and places. Technology offers further opportunities to reduce the number and type of signs and influence the way people get directions to move around. Smart phones and interactive maps can play a significant role going forward, and innovations and emerging technology will be built on, as discussed in Section 5, to maximise the benefits this can bring.

**Case study: Public realm improvements in Bath**

The High Street Public Realm Improvement Scheme in Bath was completed in June 2013. The High Street did not provide a welcoming or enjoyable experience for pedestrians or bus users. The combination of narrow footways, busy bus stops and high footfall often resulted in overcrowding. The new scheme created a more pedestrian friendly environment, through the expansion of pedestrian areas, new street furniture including bus shelters, wayfinding signage, cycle stands and the improved signalised crossings. Together, the measures have created a more pedestrian friendly environment, enhanced the streetscape and afforded better access to public transport.

Pedestrian improvements to Stall Street and Lower Borough Walls in Bath were completed in late 2015. This busy thoroughfare carried around 25,000 pedestrians per day. By cutting vehicle traffic, the space is now more pleasant for local people and visitors to shop and socialise. Drawing on the same guiding principles as the High Street scheme, new traffic restrictions were implemented during core shopping hours. This was combined with improvements to the public realm through the use of shared space to make the area much more pleasant for pedestrians and cyclists.

We will develop an approach to signage that focusses on consistency and minimises duplication, building on opportunities offered by technology, as they arise.



Improve and maintain Public Rights of Way

Public Rights of Way have a role to play in providing access for pedestrians, cyclists and equestrians. Rights of Way Improvement Plans (ROWIP) are central in supporting the maintenance of Public Rights of Way, which offer recreational use across the West of England, as well as identifying actions to improve network connectivity and safety, including making the network easier to use and follow.

We support the safeguarding of Public Rights of Way in development in terms of their utility, amenity and safety. Any new routes proposed or being reviewed should be designed for use by pedestrians, cyclists and equestrian users, unless evidence deems a class of use as inappropriate in a specific location.

In identifying and developing new Public Rights of Way or active travel routes, the needs of pedestrians, cyclists and equestrian users will be considered and provided for, wherever possible.

N2. Facilitate the use of active modes for all short trips, including the first and last mile of longer journeys

This policy contributes towards the delivery of the following objectives and outcomes:

2,3	1-3	1-3	1-4	1-4

The main interventions that will support the delivery of the policy, are:

- Work with residents and communities to identify barriers to accessibility
- Support the provision of safe crossings and speed reduction in appropriate locations
- Improve actual and perceived personal security

Work with residents and communities to identify barriers to accessibility

The first and last mile trip concept is particularly relevant in neighbourhoods, as mode choice for longer trips is likely to be determined by the choices available to travel the first mile i.e. from home. Longer journeys originating in neighbourhoods, such as to services like employment or leisure, should be targeted for switching to active modes. This will be supported by, and build on the benefits being generated, from shorter trips being made by non-car modes.

Reducing the number of neighbourhood car journeys can have wide reaching benefits. Journeys within neighbourhoods are short, and for pedestrians, most neighbourhoods already have an extensive network of footways and Public Rights of Way. Fewer car journeys can increase the attractiveness of other modes, such as the use of scooters, particularly by younger children,



Section 9:  
Neighbourhood connectivity continued

to access local destinations. The importance of reduced traffic on equestrian links, can also not be overlooked in some areas.

Where traffic levels can be reduced through enabling more shorter journeys to be made by foot or bicycle, opportunities can be taken to provide public realm improvements. It also enables roads to more effectively accommodate the longer, more difficult trips that are necessary via public transport and the private car. Parking and traffic speeds can be more effectively managed, so they do not harm or hinder local neighbourhood access and facilities. Opportunities will also be taken, where appropriate, to create 'road cells' in residential areas, where groups of streets are closed with limited access points/one way (with contraflow for cyclists) to manage rat-running and provide a quieter space for residents, pedestrians and cyclists. The removal of through traffic and increased permeability will provide more direct routes for trips by foot and bicycle.

We recognise that availability of public transport is not feasible in all neighbourhoods. However, support will be provided to public transport services penetrating neighbourhoods, wherever feasible. Walking and cycling to/from public transport services can play a large role in encouraging physical activity and improving health. Knowledge and accessibility to information are required about how to travel without a private car, supporting equal access opportunities for people in all neighbourhoods

**We will support and promote opportunities for first and last mile trips being made by non-car modes.**

**Support the provision of safe crossings and speed reduction in appropriate locations**

To provide safer roads for all modes, evidence-based guidance will be developed to determine appropriate speed limits according to road features and function and encourage increased enforcement. Those roads with highest risk, particularly for walking and cycling, will be identified and schemes to manage speed and traffic volumes where there is evidence of safety problems will be prioritised.

**We will design and maintain our highway network to reduce the risk of collisions occurring.**

Reduced traffic speeds can improve the actual and perceived safety of roads, and influence decisions about mode choice. In neighbourhoods where speeds are identified as a factor in deterring people from walking and cycling, community participation will be encouraged to identify interventions that will support residents in walking and cycling, enhancing accessibility. This may include speed reduction measures, particularly close to local services; more cycle provision to create a wider network of safer routes; and measures to address areas with a high-risk or incident of collisions.

**We will support the provision of safe crossings and speed reduction in appropriate locations.**

In 2013, the Department for Transport (DfT) issued guidelines for the introduction of 20mph speed limits. Both Bristol City Council and B&NES have introduced 20mph limits, primarily along residential roads. 20mph limits consist of a speed limit change to 20mph, opposed to 20mph zones, which are accompanied by some form of traffic calming measures.

Following the introduction of 20mph limit schemes, both Bristol City Council and B&NES have conducted reviews into their effectiveness. B&NES's review concluded the overall reduction in speed was marginal, at just 1.3mph. Whilst



the number of collisions reduced in Bath, there was a small increase in the number of collisions elsewhere and the casualty severity was found to have worsened slightly. The findings of the review were consistent with other authorities including Portsmouth, Manchester and Hampshire. B&NES are awaiting the outcome of a detailed study commissioned by DfT in 2014 to research the effectiveness of 20mph speed limit only schemes, before deciding to implement further 20mph limits.

In contrast, the review carried out by the University of West of England into Bristol's 20mph limits, found they have led to 'very promising' improvements in road safety (see case study below). Bristol City Council has since committed to carry out their own review of the effectiveness of 20mph speed limits.

Section 9:  
Neighbourhood connectivity continued



Case study: 20mph speed limit roll out in Bristol

The 20mph speed limit roll out started in 2010, with 2 pilot areas. Wider roll out took place in 2014, and was completed in September 2015. 20mph limit was introduced as part of a wider package of transport measures aimed to improve road safety, increase active travel and create more pleasant communities. Other measures include bus improvements, cycle infrastructure improvements, local safety schemes and major transport schemes such as MetroBus and rail improvement.

The roll-out of 20mph speed limits across Bristol's residential streets and some local high streets is a signs-only based intervention. This relies on driver adherence to the posted '20mph' speed limit denoted by speed limit signs on entry to the limit area, and repeater signs within the area (complying with DfT requirements). 20mph zones are different because these include physical traffic calming measures. The 20mph speed limits are legally enforceable, like any other speed limit.

Lowering the speed helps make streets safer for all roads users, as those hit by a car at 20mph are far more likely to walk away with bruises and minor injuries than those hit at 30mph. It also helps to increase cycling and walking, by making communities more pleasant places to live and reduces anti-social road noise. Slower speeds on roads help to make walking or cycling more attractive options. 20mph is

part of a broader package of measures aimed to give children more confidence to walk, scoot, and cycle. Other measures include bus improvements, travel plans for schools and business, local safety schemes all of which will help increase active travel which is great for your health.

In February 2018, the Bristol Twenty Miles Per Hour Limit Evaluation (BRITE) study, carried out by the University of the West of England (UWE), assessed the impact that 20mph speed limits may have had since they were introduced in 2014 and 2015. The results showed there had been a reduction in road speeds and fatalities following road collisions since the lower speeds were introduced. It found the city has seen a reduction of 4 deaths, 11 serious injuries and 159 slight injuries each year, and the level of active travel in Bristol has increased, with more people walking or cycling for 10 minutes or more in their local area most days.

Over 94% of the roads surveyed had seen slower speeds, with drivers on all 20mph roads driving, on average, at speeds less than 24mph. Day speeds were found to have reduced by an average 2.7mph, with night speeds falling by an average 2.4mph. Previous statistics suggest that with every 1mph reduction in speed, the risk of a fatal or serious injury caused by a road collision falls by 6 per cent.

Improve actual and perceived personal security

The perception of risk surrounding personal security has become an important influence on traveller decision making. Fear and apprehension about personal security can affect all aspects of travel choice, such as route, the mode of transport used and the time of journey, and whether to travel at all. If we are to achieve the step change in active travel and public transport usage we are aiming for, personal security considerations need to be explicitly incorporated into decisions concerning the design, planning, operation and management of transport systems. This has become increasingly pertinent, following terrorist attacks targeting or using transport.

We will use natural surveillance and careful design when improving our streets and public places, to increase the numbers of individuals on our streets and make them feel safer.

Crime prevention officers will be involved as early as possible in scheme designs. This will ensure factors such as lighting, clear lines of sight and CCTV are included, based on local knowledge and in the context of existing crime factors in the vicinity.

Work will continue with the police on a 'secure by design' project. This incorporates security into the design of streets and places, rather than having to add features to improve security later. Advice will also continue to be sought on the measures required to protect against errant vehicles. This will include identifying locations and instances where there might be a need for measures to protect against vehicles used as weapons.

We will work with crime prevention officers and the police to ensure security considerations are incorporated in our scheme designs.

Section 9:  
Neighbourhood connectivity continued

Section 10:  
Funding and implementation

Introduction

This Joint Local Transport Plan is intentionally ambitious. It will require an unprecedented level of funding, with a large acceleration in spending from current levels. Although long-term aspirations to transform the way we move around the West of England will be costly to deliver, costs of active travel measures are comparatively low and could contribute towards meeting our objectives in the shorter term.

The total cost of delivering the schemes set out in the Joint Transport Study (JTS) Transport Vision was estimated to be at least £8.9 billion in future outturn prices. The programme is equivalent to expenditure of £450-600 million per annum, which is a step change from historic and current spend. The JTS assumed the four-line mass transit network would cost approx. £2.5bn to deliver, and if there is a need to deliver some sections underground, this cost will rise further.

In addition to these costs, this Joint Local Transport Plan process has identified further schemes to be included in our delivery programme.

Current situation

There is an increasingly strong case for infrastructure investment to improve society and support economic growth, but the government is facing competing demands from different parts of the UK. It will be critical for the West of England to make a compelling and collective case for investment, through working in partnership with transport operators and providers, other delivery agencies and wider stakeholders. Our success depends very much on this partnership approach.

Evidence shows that investment in the West of England is lower than in other parts of England. The National Infrastructure Pipeline shows that £18 billion was programmed to be spent on transport in the UK in 2016/17, equivalent to 1% of UK GDP.

If this benchmark is applied to the South West of England, this would be equivalent to around £1.4 billion per annum. However, analyses show that spending in the South West was around £390 million in 2015/16, dropping to around £300 million between 2015/16 and 2020/21 (or £540 million per annum including the A303 Stonehenge tunnel). This is less than half the expenditure that could be expected in the region, if the national 1% benchmark were to be applied.

The Government has made a commitment to increase the proportion of national GDP spent on economic infrastructure to prepare the country for the future. The West of England is the most productive part of the South West and is one of the UK's best performing city regions. However, there has been historic under investment that has contributed towards current transport challenges. There is, therefore, a strong case for increased investment to support the continued growth of the area.

There has been a consistent lack of long-term revenue funding, with projects and programmes such as Local Sustainable Transport Fund, running for a maximum of four years. Revenue budget pressures are likely to continue. We will look to address this through the potential funding sources below.

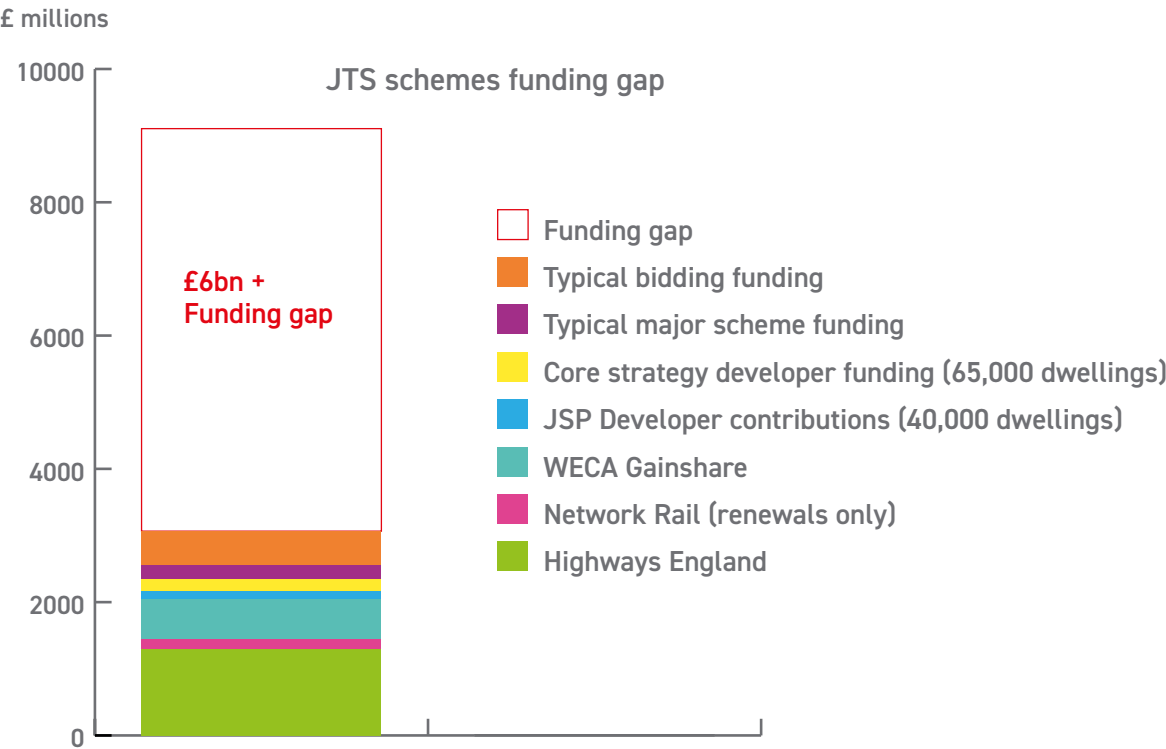
The funding gap

Figure 10.1 shows the scale of the funding gap. This is based on current levels of funding for the JTS Transport Vision. It shows at least a £6bn funding gap to deliver the JTS Transport Vision schemes. It is important to note that the JTS Transport Vision cost does not include all the schemes/policies within this JLTP and assumes a £2.5bn cost for the mass transit network.



Section 10:  
Funding and implementation continued

Figure 10.1: JTS schemes funding gap



Note: Scheme cost estimates as of spring/summer 2018

A number of assumptions have been made about potential funding sources, which have been used to prepare Figure 10.1:

- Typical bidding and major scheme funding was calculated using the approximate income from these streams over the past 10 years
- Developer contributions of £3,000 per dwelling. This is an assumed average across the region, and actual contributions are likely to vary significantly based on the location and specific site condition
- Not all WECA gainshare funding will be spent on transport
- Approximately half of total bidding, major scheme, and WECA gainshare funding will be spent on mitigating the impact of JSP growth (approx. 40,000 dwellings), and half will be spent on improving existing conditions and mitigating the impact of existing core strategy growth (approx. 60,000 dwellings)
- Network Rail fund renewals (maintenance) only
- Highways England fund all improvements on their network including Smart Motorways and new junctions. This assumption is likely to be overly ambitious and a significant local contribution will be needed towards Highways England schemes



Additional sources of funding

It is of note that there are areas of JLTP4 which are currently being delivered through grant funding from central government, which local authorities may not be able to continue delivering with increasing pressures on revenue budgets. A key area that could be affected is the behaviour change work taking place with businesses, schools and communities through the Access WEST Programme, which will conclude in March 2020. We will ensure we are kept both well informed and well prepared for new short-term funding sources from central government and other partners, to continue to deliver existing work, as well as the new interventions contained within JLTP4.

However, it is unrealistic to assume that central government will entirely fill the funding gap, particularly given competing demands for funding, and local sources of significant additional funding will be needed to deliver this JLTP4.

Raising additional local income will involve some difficult decisions. Potential local funding options that could be considered are:

- Community Infrastructure Levy – a planning charge for new development to pay for local infrastructure
- Highways England Shadow Toll – funding from Highways England for schemes that reduce pressure on the Strategic Road Network
- Council Tax Precept – increasing council tax for residents of the West of England
- Business Rate Supplement – increasing rates for businesses in the West of England
- Workplace Parking Levy – employers are charged for having private parking spaces. This charge can be passed on to employees who use the spaces

- Road Pricing, for example congestion charging to drive into specific areas
- Revenue raised from Mass Transit services
- Clean Air Fund and CAZ Implementation Fund
- Public Health funding

Not all measures could/should be implemented together. For example, a business rate supplement and Workplace Parking Levy both impact on local businesses. Local contributions are likely to provide less than half the funding gap, particularly as only a sub-set of the local funding options could be implemented.

The introduction of charging mechanisms, such as road pricing covering the Bristol and Bath urban areas, would raise a significant amount of revenue. This would help fill the funding gap and raise revenue for infrastructure delivery, but would be extremely challenging to deliver.

Feasibility studies and consultation will be carried out to determine the nature and extent of any charging mechanisms that could be used in the West of England. This will support the achievement of the JLTP4 objectives, particularly sustainable and inclusive economic growth, whilst not negatively impacting on the needs of our people and places.

Section 10:  
Funding and implementation *continued*

Case study: Nottingham Workplace  
Parking Levy

Nottingham introduced a Workplace Parking Levy in 2011. It levies a charge to employers that have 11 or more private parking spaces on their site. Over £44m has been raised in revenue since charging began. The administrative costs of running the scheme take less than 5% of the revenue raised, meaning a large amount is reinvested in transport improvements in the city. The funding has contributed to doubling the size of the tram network and redeveloping the city's rail station to supporting the electric bus network. The revenue raised has also been used as match funding to bid for funding from other sources. Workplaces that are required to pay the charge are offered grants to enable staff to cycle to work.

The levy scheme has resulted in a 4.5% increase in bus and tram patronage, building on already high levels. There were forecasts of businesses deserting Nottingham for other cities nearby, however in 2017 it was reported that Nottingham has one of the fastest growing economies of any UK city. The UK Powerhouse City Growth Tracker from Irwin Mitchell and the Centre for Business & Economic research shows that Nottingham's year-on-year economic growth figure of 2.5% is on a par with Greater Manchester and higher than Birmingham, Bristol, Leeds, Liverpool, Newcastle and Sheffield.

Section 11: Major schemes and  
summary of interventions

Major schemes

The West of England's Joint Transport Study (JTS) sets out an ambitious vision for transport to 2036, identifying a programme of transport packages that will transform the travel choices available to our residents and visitors. These, along with other schemes, are being taken forward as our major transport schemes programme to support the delivery of the JLTP4.

The region has made significant achievements during the seven years of JLTP3, spending over £500m on the delivery of transport projects, including a number of major schemes such as the Greater Bristol Bus Network, the launch of the first three MetroBus routes, and the completion of the Bath and Weston-super-Mare Transport Packages. Significant investment towards a number of major schemes has also been made by Highways England (including into the expansion of Smart Motorways on the M4 and M5) and by Network Rail (including electrification).

This major transport schemes programme is our most ambitious yet, continuing and expanding on scheme delivery during JLTP3. It includes schemes set out in the JTS, which in total have a value of at least £8.9 billion over twenty years. It will require a step change in investment to provide transformational infrastructure that responds both to the existing transport challenges, and our Core Strategy growth. Investment will also be required to address future transport challenges including the increased demand for travel associated with the growth and housing identified in the Joint Spatial Plan (JSP). The packages have a strong focus on encouraging active and sustainable transport as a preferred choice for more people.

Transport schemes take time to deliver. We will invest early to create network capacity in the short term, whilst continuing to work on the longer term,

more ambitious schemes. Priorities and timescales for delivery will depend on available funding and bidding opportunities from Central Government, as well as the timing of new development sites.

We will work with our transport delivery partners, Network Rail, Highways England and bus and train operators, to implement key rail, bus and road schemes that are within their delivery remit. In summary, our programme will:

- Explore potential **transformational infrastructure** schemes to address our existing challenges
- Ensure the core of our future transport programme demonstrates that the **requirements of future growth** will be met
- Show that we can **deliver in the short-term** as well as advancing a transformational longer-term programme
- Be delivered in **partnership with our transport partners** with responsibility for the strategic road and rail network

The major transport schemes set out in this section are those costing over £10m, many of which are unaffordable from our existing, regular funding sources. The current situation and the various challenges and opportunities for funding are discussed in more detail above in Section 10: Funding and implementation.

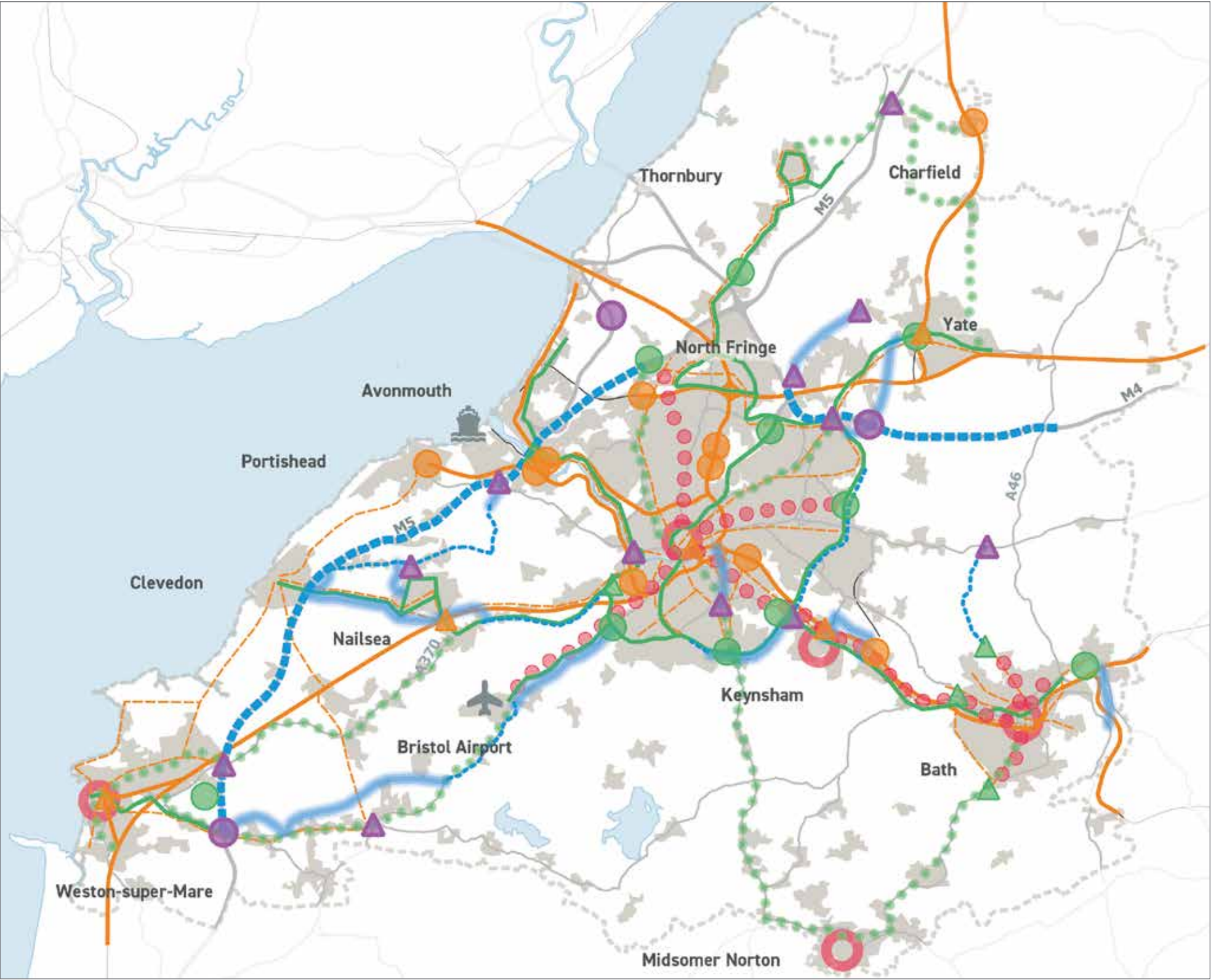
Figure 11.1 presents, in diagrammatic form, the schemes included in our major schemes programme, which are at very different stages of development. Tables 11.1 to 11.6 provide a summary of the type, cost range, and delivery timescale of each scheme. The definition of categories within each of the summary tables is provided in Appendix 3.



Section 11:  
Major schemes and summary of interventions continued



Figure 11.1: JLTP4 major schemes



- public realm improvements
- improved junctions
- new junctions
- improved road
- new road
- smart motorway
- cycle routes
- improved rail station
- new rail station
- rail station improvements
- MetroBus
- other bus route improvements
- mass transit
- expanded park & ride site
- new park & ride site



Section 11:  
Major schemes and summary of interventions *continued*

Transformational

To provide realistic and attractive alternatives to the private car, a fully integrated public transport network will be developed. This includes improvements to the bus network, an expanded MetroBus network, new Park & Ride sites and enhanced rail services.

There are, however, corridors with very high passenger flows where there is limited spare capacity to accommodate increased passenger demand. These corridors are:

- Bristol city centre to East Fringe
- Bristol city centre to North Fringe
- Bristol city centre to Bristol Airport
- Bristol city centre to Bath
- Bath corridors and the city centre

Transformational infrastructure in the form of mass transit (e.g. light rail, tram, tram-train or underground) is identified for these corridors. This is necessary to provide a step change in the capacity and quality of public transport on

the busiest corridors, that can respond to the significant forecast increase in trips across the region. It will also provide a more attractive alternative to trips by car. In some locations, it will be very challenging to achieve on-street running, particularly on routes through East Bristol, North Bristol and through some parts of South Bristol and on the Bristol to Bath corridor. Feasibility work has commenced to investigate how potential mass transit corridors could be delivered.

The total cost of delivering our transformational major schemes package is £3bn-£5bn. A summary of the type, cost and timescale of each scheme is provided in Table 1 below. Further detail on the schemes can be found in Appendix 4.

Our mass transit network will take between 10 and 20 years to deliver. Prior to the delivery of this network we will continue to expand our MetroBus rapid transit network, which will see the opening of several new routes across the region. In the meantime, transport connectivity to these mass and rapid transit networks will be improved, through both MetroBus and wider public transport schemes, cycling, walking and car-sharing initiatives.

Table 11.1: Transformational Major Schemes

Ref	Mode	Connectivity	Scheme	Cost	Timescale		
					S	M	L
T1	Public Transport	Within WofE	Mass Transit – Bristol City Centre to Airport	High			
T2	Public Transport	Within WofE	Mass Transit – Bristol City Centre to Bath	High			
T3	Public Transport	Within WofE	Mass Transit – Bristol City Centre to East Fringe	High			
T4	Public Transport	Within WofE	Mass Transit – Bristol City Centre to North Fringe	High			
T5	Public Transport	Within WofE	Mass Transit – Bath City Centre and corridors	High			



Transport requirements for future growth

The JTS Transport Vision has a strong focus on shifting travel behaviour towards sustainable modes and tackling congestion on the road network. The vision emphasises the importance of integrating different modes – walking, cycling, use of public transport, travel by car and freight – and ensuring they complement one another to improve travel choices. This will help maximise mode shift to active and sustainable forms of travel and public transport.

Our JTS Vision was developed in parallel with the JSP to ensure that the transport infrastructure required to unlock and facilitate future development would be delivered in a coordinated and timely way. Our major transport schemes programme will prioritise delivery of this mitigation infrastructure. Transport schemes identified in the JTS, required for future growth, are shown in Table 11.2. Further detail on the schemes can be found in Appendix 4.

Section 11:  
Major schemes and summary of interventions *continued*

Table 2: JSP transport programme: shortlisted options to mitigate JSP growth

Ref	Connectivity	Strategic corridor or location	Options	Cost	Timescale		
					S	M	L
G1	Within WoE	South East Bristol and Whitchurch	<ul style="list-style-type: none"><li>• A4 MetroBus + Callington Road Link</li><li>• Orbital MetroBus</li><li>• A37 Sustainable Transport</li><li>• Hicks Gate Park &amp; Ride</li><li>• Hicks Gate Junction</li><li>• South Bristol Orbital Link (A4-A37 and West of A37 Links</li><li>• Local highway improvements</li></ul>	High			
G2	Within WoE	Keynsham	<ul style="list-style-type: none"><li>• Keynsham railway station</li><li>• A4-A4175 Link</li><li>• Local highway improvements</li></ul>	Med			
G3	Within WoE	Yate and Coalpit Heath	<ul style="list-style-type: none"><li>• A432 Sustainable Travel</li><li>• Yate railway station</li><li>• Winterbourne and Frampton Cotterell Bypass</li><li>• Local highway improvements</li><li>• Coalpit Heath and Westerleigh Bypass</li></ul>	High			
G4	Within WoE	Nailsea and Backwell	<ul style="list-style-type: none"><li>• Nailsea sustainable travel, rail station, local network and public transport connections</li><li>• Nailsea – Backwell A370 link</li><li>• M5 J19 and J20 – improved connections</li></ul>	High			
G5	Within WoE	Banwell and Churchill	<ul style="list-style-type: none"><li>• Sustainable travel package</li><li>• A371 / A368 Banwell Bypass</li><li>• A368 Churchill and Sandford Bypass</li><li>• Local highway improvements</li></ul>	High			
G6	Within WoE	Thornbury, Buckover and Charfield	<ul style="list-style-type: none"><li>• A38 Sustainable Travel</li><li>• Charfield Station</li><li>• M5 J14</li><li>• Local highway improvements</li></ul>	High			
G7	Within WoE	Bristol Urban Area	<ul style="list-style-type: none"><li>• Bristol City Centre Framework</li><li>• Local bus package (GBBN2)</li><li>• Bristol walking and cycling package</li><li>• M32 Park &amp; Ride</li><li>• A38(S)/A4174 Park &amp; Ride</li><li>• A4018 Park &amp; Ride</li><li>• A4 Portway and A370 Long Ashton Park &amp; Ride expansion</li></ul>	High			
G8	Within WoE	Weston-super-Mare	<ul style="list-style-type: none"><li>• Weston-super-Mare MetroBus</li><li>• Weston-super-Mare Park &amp; Ride</li><li>• Local bus, walking and cycling improvements</li><li>• Local highway and junction improvements</li></ul>	Med			



Early investment schemes (including committed projects)

Early investment schemes have been identified to ensure a programme of works can be delivered in the short, medium and longer term of the JLTP4 period up to 2036. Some packages have allocated funding whilst others have partial funding allocated for delivery of feasibility studies, for example.

Committed schemes in progress

Preparations for MetroWest Phases 1 and 2 continue to progress, which will significantly improve rail travel across the area. Significant works are taking place to improve access to

Temple Quarter Enterprise Zone and work is progressing on investment in Bristol Temple Meads station. Delivery of highways and other access improvements will enable MetroBus and cycling/ walking links in the Hengrove and Lockleaze Urban Living developments. Also, delivery of a new M49 junction to improve access to Severnside, will commence in early 2019.

The total cost of delivering our package of committed early investment schemes is £500m-£1bn. A summary of the type, cost and timescale of each scheme being progressed is provided in Table 11.3 below. Further details can be found in Appendix 4.

Table 11.3: Early investment schemes in progress (committed projects)

Ref	Mode	Connectivity	Scheme	Cost	Timescale		
					S	M	L
C1	Freight	Beyond WoE	M49 Avonmouth junction	Low			
C2	Multi-modal	Beyond WoE	Temple Quarter masterplan	High			
C3	Public Transport	Within WoE	MetroWest Phase 1	Med			
C4	Public Transport	Within WoE	MetroWest Phase 2	Low			
C5	Multi-modal	Local	Hengrove Transport Package	Low			
C6	Multi-modal	Local	Lockleaze Transport Package	Low			

Section 11:  
Major schemes and summary of interventions *continued*

Schemes under development

A number of other early investment schemes in support of delivering the JLTP4 strategy are at an earlier stage of development. Table 11.4 summarises the type, cost and timescale of

each scheme. The total cost of delivering our early investment schemes under development is currently estimated as £2bn-£2.5bn. Further details can be found in Appendix 4.

Table 11.4: Early investment schemes under development

Ref	Mode	Connectivity	Scheme	Cost	Timescale		
					S	M	L
E1	Highway	Beyond WoE	Bristol South West Economic Link (BSWEL)	Med			
E2	Highway	Beyond WoE	East of Bath Link	Med			
E3	Highway	Beyond WoE	M5 Junction 19	Low			
E4	Public Transport	Beyond WoE	Passenger Rail Service and Capacity Improvements, Station Upgrades and New Stations Package	High			
E5	Highway	Beyond WoE	Smart Motorways: M4 J18-19 and M5 J17-21A	High			
E6	Highway	Beyond WoE	M5 J21A	Med			
E7	Highway	Within WoE	A4174 Ring Road junction improvements including Wraxall Road (Longwell Green)	Med			
E8	Highway	Within WoE	Freezing Hill junction upgrade and whole route improvements	Low			
E9	Active Travel	Within WoE	Interurban cycle routes – including North Somerset Coastal Cycle Route, and cycle links to Yate and Thornbury	Low			
E10	Highway	Within WoE	M4 Junction 18A to A4174 Ring Road	High			
E11	Multi-modal	Within WoE	MetroBus – Bristol City Centre to Clevedon and Nailsea	Med			
E12	Public Transport	Within WoE	MetroBus consolidation package	Med			
E13	Public Transport	Within WoE	Park & Ride package for Bath	Low			
E14	Other	Within WoE	Regional Electric Vehicle Charging Network	Med			
E15	Multi-modal	Within WoE	MetroBus – Bristol City Centre to Severnside	Low			
E16	Active Travel	Local	Bath Cycle Network and City Centre Package	Low			
E17	Active Travel	Local	Keynsham / Midsomer Norton and Somer Valley Public Realm Improvements Packages	Low			
E18	Multi-modal	Local	MetroBus – Cribbs Patchway extension	Low			
E19	Multi-modal	Local	Weston-super-Mare Package 2	Med			
E20	Active Travel	Local	Weston-super-Mare Cycling and Walking Network	Med			
E21	Multi-modal	Within WoE	Banwell Bypass	Low			



Other longer-term opportunities

To assist in delivering the JLTP4 strategy we have also identified a set of aspirational schemes for consideration in the longer-term. These, subject to review during the lifetime of the JLTP4 along

with other new aspirational schemes, are shown in Table 11.5 below. The total cost of delivering our aspirational schemes is currently estimated as £0.5bn-£1bn.

Table 11.5: Other longer-term opportunities

Ref	Mode	Connectivity	Scheme	Cost	Timescale		
					S	M	L
L1	Freight	Beyond WoE	Strategic Rail and Road Freight Package	High			
L2	Highway	Within WoE	A46 to M4 route improvements, Cold Ashton	Low			
L3	Public Transport	Within WoE	Greater Bath Bus Network Package	Med			
L4	Public Transport	Within WoE	Henbury Loop rail services	Med			
L5	Public Transport	Within WoE	Rail services to Thornbury	Med			
L6	Multi-modal	Within WoE	M5 J20 Eastern Arm	Med			



Section 11:  
Major schemes and summary of interventions *continued*



Working with partners to build our current programme

There are a number of schemes outlined above that affect the motorway and major road network including new and improved motorway junctions, more sections of smart motorway and other improved strategic highway links. Moreover, there are packages of rail network improvements including additional capacity and services, new stations and upgraded junctions, benefitting freight and passengers.

These schemes would be partly or fully funded and delivered by Highways England and Network Rail. Those schemes that will be delivered in partnership with these bodies are identified in Table 6.

Table 6: Schemes to be developed in partnership with Highways England and Network Rail

Highways England
East of Bath link
M4 Junction 18a to A4174 Ring Road
M5 Junction 14
M5 Junction 19
M5 Junction 19 & Junction 20 improved links for Nailsea/Backwell
M5 J21a and A38 corridor
M32 Park & Ride
Smart Motorways M4 J18-19 and M5 J17- J21a
Network Rail
Charfield station reopening
Keynsham and Yate railway station improvements
MetroWest phase 1
MetroWest phase 2
Nailsea and Backwell railway station improvements
Passenger rail services and capacity improvements, station upgrades and new stations package

The schemes in Table 6 and other schemes (including those shared strategic priorities that are yet to be defined) will also be developed, where relevant, through working with neighbouring authorities and those further afield, through the South West Peninsula and/or the Western Gateway Sub-National Transport Body.

Summary of interventions

The following is a summary of interventions by level of connectivity; further details of these, including the actions, are set out in sections 6 to 9.

Beyond West of England

- Support Bristol Airport as the main gateway for air travel in the South West
- Support the role of Bristol Port
- Maximise opportunities arising from improvements to the strategic road and rail network, and identify and support delivery of further changes
- Identify opportunities to manage the impact of Severn Bridge tolls removal
- Support the role of coaches for residents and visitors
- Manage and mitigate the impact of regular and infrequent events on the transport network

Within West of England

- Provide high quality and reliable mass and rapid transit
- Support and enhance existing public transport services
- Improve the availability and accessibility of accurate travel information and ticketing
- Provide Park & Ride and sharing schemes to minimise the impact of single occupancy vehicles

- Recognise the needs of motorcycle and moped users
- Use technology to keep traffic moving
- Embrace technology to improve cleaner travel options
- Use, as appropriate, measures and technological advances to influence and better manage the demand of private car use
- Define, manage and maintain the Key Route Network
- Develop and improve network resilience through an ongoing commitment to highway maintenance
- Effectively manage the Major Road Network
- Effectively accommodate development sites and associated trips
- Support the delivery of Enterprise Zones/ business clustering
- Balance the requirement for distributing goods, with mitigating the adverse impact of vehicles

Local Connectivity

- Provide an attractive, safe and usable walking and cycling network
- Provide schemes to support the uptake of cycling
- Consider the needs of all road users in the design of transport and highway schemes, particularly vulnerable road users
- Deliver road safety education, skills and training to equip people with the knowledge and skills to travel in a safe and sustainable way
- Work in partnership to build safer communities
- Support travel planning with developers, education providers and individuals

- Support travel planning with businesses and employment sites
- Encourage mode shift through grants, incentives and rewards
- Maximise awareness of sustainable and active travel choices and the benefits these bring
- Support those without a private car, who need to travel, in accessing the services they require
- Promote the role of technology in accessing services and employment
- Support the role of taxis and private hire vehicles
- Support the role of demand responsive and community transport
- Support ongoing work to manage the impact of transport on air quality and climate change
- Support ongoing work on Clean Air Zones and the UK Air Quality Plan
- Support work on zero and low emission vehicles

Neighbourhood Connectivity

- Improve the quality of streets and public realm
- Integrate walking, cycling and public transport into new developments
- Provide clear wayfinding and signage
- Improve and maintain Public Rights of Way
- Work with residents and communities to identify barriers to accessibility
- Support the provision of safe crossings and speed reduction in appropriate locations
- Improve actual and perceived personal security

Section 11:  
Major schemes and summary of interventions *continued*



# Section 12: Targets, indicators, monitoring



## Background

Targets and indicators play an important role in JLTP4. They are designed to measure and monitor our progress towards achieving JLTP4's objectives, highlight where we are doing well and identify where we need to improve. Indicators need to strike the balance between being challenging but achievable; comprehensive but also practical to collect, analyse and report.

Our targets, indicators and monitoring will need to cover the identified issues and targets of the JTS, the most ambitious transport programme the West of England has seen. They will also reflect local priorities as identified in our key policy documents, such as our Core Strategies and Corporate Plans, covering sustainable economic growth, health and well-being, housing and social inclusion.

## Developing indicators

A range of possible JLTP4 indicators and how they would monitor progress against the five key objectives is set out in Table 12.1.

We will consider setting six year targets for some of these indicators. This will give us the flexibility to amend the targets at the end of each six year period to support the 17-year JLTP4 strategy. Some targets will have trajectories with interim milestones and there will be an appropriate mid-term review at three years to evaluate the suitability of the targets for the proceeding three years (see page 120 for breakdown of monitoring periods).

The targets for the indicators for JLTP4 will be set with evidence drawn from national policy, modelling, historical trends, local experience from the JLTP3 (2011 to 2026) and an evaluation of the impact of the proposed interventions.

It is possible that some of the JLTP4 outcomes will not have targets set against them, although they could still be monitored as indicators. Such issues include:

- Satisfaction with bus & rail services
- Economic viability of centres
- Best use of the transport network

These indicators either do not directly support monitoring of our performance against the outcomes, are fully or partially replicated in the indicators that do have targets set, are model-based targets where the data may not continue to be available, or the justifications or assumptions the target was based on become invalid.

## Monitoring indicators

It is important to have a robust, reliable and affordable method of monitoring progress against the indicators. This helps ensure comparability, transparency and crucially at a cost that local authorities can sustain; particularly in the context of significant budget cuts and an increasing strain on the already stretched local authority resources.

Robust monitoring procedures building on those established in JLTP3 will be put in place, informed by using set baseline data. An annual monitoring report against the targets and indicators will be published. A mid-term review will assess the suitability of the targets and based on performance some may be adjusted accordingly. This will set more appropriate targets for the remaining monitoring periods.

Section 12:  
Targets, indicators, monitoring continued

Table 12.1: Indicators against JLTP4 Objectives

✓ = direct impact    ✓ = indirect impact

Indicators	Sustainable & inclusive economic growth	Equality & accessibility	Air quality & climate change	Health, wellbeing, safety & security	Better places
Road congestion	✓	✓	✓		✓
Bus punctuality	✓	✓	✓		✓
Unlocking residential & employment growth	✓	✓			✓
Bus patronage	✓	✓	✓		✓
Cycle growth	✓	✓	✓	✓	✓
Road Maintenance	✓			✓	✓
Role of Technology in Journey Planning	✓	✓	✓		✓
Rail patronage	✓	✓	✓		
Bus satisfaction		✓		✓	✓
Community Transport Provision		✓	✓	✓	
Social media engagement to aid travel decisions		✓	✓	✓	
Travel to School		✓	✓	✓	✓
Travel to Work	✓	✓	✓		✓
Smart ticketing	✓	✓	✓		
Air quality	✓		✓	✓	✓
Carbon emissions	✓		✓	✓	✓
Car-sharing	✓	✓	✓		
Electric Vehicles	✓		✓	✓	✓
Road Safety		✓		✓	✓
Safety & Security on Public Transport		✓		✓	✓



The monitoring periods and mid-term review points for 2018-2026, assuming the plan is adopted in 2019, are:

- 1st Monitoring Period mid-term review: 2021
- End of Monitoring period 1 review: 2024
- 2nd Monitoring Period mid-term review: 2027
- End of Monitoring period 2 review: 2030
- 3rd Monitoring Period mid-term review: 2033
- End of Monitoring period 3 review (and end of plan period): 2036

Risks associated with meeting targets

There are a number of risks that could hinder our progress towards achieving the targets, so we need ways to avoid or soften them. The main risks are those outside the direct control of the local authorities, but there are also internal risks that can be influenced by the authorities.

Possible risks include:

- Reduced funding affecting the ability of authorities to meet targets
- Escalating costs reducing the number of deliverable schemes within budget constraints
- Extreme weather conditions causing road surfaces to deteriorate faster than usual timescales
- Bus and rail fares increasing faster than the cost of using the private car
- Increasing cost of bus service provision limiting the expansion of services/frequencies
- A lack of investment in rail
- Major transport schemes delayed or not implemented

- Annual figures fluctuating due to small figures (in absolute terms), for example the number of children killed and seriously injured in road collisions
- A breakdown in the supply of data or cooperation with private sector or government departments causing a reduction or end to providing publicly available data, for example the Office for Rail and Road annual rail patronage figures
- Housing completion and employment provision rates fluctuating outside of local authority control
- Change in central government policy shifting emphasis towards or away from areas monitored by in JLTP4, for example government funding for road space reallocation schemes for cycle/bus provision
- Rise of CAVs and automated technology and uncertainty over timescales of technology brought in and how this affects travel choices
- Impact of Clean Air Zones on travel choices

The risks will be managed within the monitoring periods and will be identified and reviewed at the mid-term review point.



Section 12:  
Targets, indicators, monitoring continued

Summary of indicators

Listed in the table below are the proposed targets, indicators and monitoring methods to achieve each JLTP4 objective and outcome. The specific quantified targets will be added once other informing strategies, such as the Bus Strategy, Local Cycling and Walking Infrastructure Plans (LCWIP) and individual unitary authority Road Safety Strategies are completed. The 19 indicators, with accompanying targets, are summarised below and are ordered according to when they appear in Table 12.2, and not on priority or importance. The targets are to be achieved by the end of each six year monitoring period unless specified otherwise.

Indicator: Road congestion

Target: To achieve green (0-5% increase) or amber (0-5% decrease) in average AM peak journey time on % of the identified key corridors across each monitoring period

Indicator: Bus punctuality

Target: % increase in bus punctuality across WofE bus network

Indicator: Unlocking residential & employment growth

Targets & monitoring for attributing residential and employment growth to individual transport improvement schemes are scheme-specific and so generic targets will not be set here

Indicator: Bus patronage

Target: % increase in bus patronage across the West of England region

Indicator: Cycle growth

Target: % growth in cycling on identified corridors to Enterprise Areas & urban centres, including from deprived areas

Indicator: Road maintenance

Target: % of roads in red or amber condition for A, B, and C/U roads

Indicator: Role of technology in journey planning

Target: % of respondents to the NHT survey using journey planning using SatNav/Google Maps/ other congestion/journey time software to avoid congested times/areas

Indicator: Rail patronage

Target: % rail patronage increase

Indicator: Bus satisfaction

Target: % increase in satisfaction with bus services across West of England

Target: % increase in overall satisfaction with bus services by passengers saying they have a disability

Indicator: Community transport provision

Target: % increase in satisfaction scores for Availability, Fares, Reliability of community transport services

Indicator: Social media engagement to aid travel decisions

Target: % increase in engagement through Public Transport & sustainable travel related social media campaigns

Indicator: Travel to school

Target: % increase in % of journeys to school by non-motorised modes  
Target: % increase in number of people engaged in cycle training initiatives

Indicator: Travel to work

Target: % increase in % of journeys by non single occupancy car journeys



Indicator: Smart ticketing

Target: % increase in bus ticket purchases through smart ticketing methods

Indicator: Air quality

Target: ensure levels of NO<sub>2</sub> across the WofE monitoring sites below the annual air quality objective of 40µg/m<sup>3</sup> remain this way  
Target: all AQMAs to improve to under 40µg/m<sup>3</sup> of NO<sub>2</sub> threshold  
Target: % decrease in deaths attributable to particulate air pollution

Indicator: Carbon emissions

Target: to remain below the national average of CO<sub>2</sub> levels  
Target: reduction in kt CO<sub>2</sub> emissions from 2016 levels

Indicator: Car-sharing

Target: % increase in car share journeys

Indicator: Electric Vehicles

Target: % uptake of ULEV vehicles per year  
Target: % growth in WofE charging points per year

Indicator: Road safety

Target: % reduction in road casualties (from a set baseline avg.)  
Target: retain proportion of casualties for 'Vulnerable Road Users' (motorcyclists, cyclists & pedestrians)  
Target: retain proportion in rate of child and 65+ casualties as % of all users

Indicator: Safety and security on public transport

Target: % increase in passenger satisfaction with personal safety on buses and waiting at stops

Section 12:  
Targets, indicators, monitoring continued

The Table 12.2 shows the JLTP4 objectives and outcomes that each target and indicator help to meet. The monitoring method is also shown for each.

Table 12.2:  
Targets & Monitoring: Indicators and Targets against JLTP4 Objectives  
Objective: Support sustainable and inclusive economic growth

Outcome	Indicators	Monitoring Methods/ Datasets	Targets
Improved efficiency and reliability on local, national and international transport networks	Road congestion	Average AM peak journey time on identified key corridors.	RAG rating system; 0-5% increase; 0-5% decrease; 5%+ decrease  Target: To achieve green (0-5% increase) or amber (0-5% decrease) in average AM peak journey times on % of identified key corridors across each monitoring period.
	Bus Punctuality	Bus punctuality statistics from local operators	Target: % increase in bus punctuality across WofE bus network
Delivery of new houses and jobs, identified through the JSP, is supported	Unlocking residential & employment growth	<i>Scheme-specific. Economic Case sections of funding bids will cover the potential of transport schemes in the number of residential units and job creations attributed to the scheme. The scheme will set its own targets. Housing and job completion monitoring by internal planning teams</i>	<i>Scheme specific – suggest no targets</i>



Table 12.2 continued:  
Targets & Monitoring: Indicators and Targets against JLTP4 Objectives  
Objective: Support sustainable and inclusive economic growth continued

Outcome	Indicators	Monitoring Methods/ Datasets	Targets
Access opportunities to employment growth areas is provided for all	Road congestion	Average AM peak journey time on identified key corridors (on routes to EAs and urban centres)	RAG rating system; 0-5% increase; 0-5% decrease; 5%+ decrease  Target: To achieve green (0-5% increase) or amber (0-5% decrease) in average AM peak journey times on % of identified key corridors across each monitoring period.
	Bus patronage	Bus patronage data from operators	Target: % increase in bus patronage across West of England region
	Cycle growth	Cycle counter data from sustainable travel teams	Target: % growth in cycling on identified corridors to EAs and urban centres, including from deprived areas.
	Car share users	Car-share take-up through joinmyjourney or LiftShare	Target: % increase in car share journeys
Transport assets are maintained and managed, and demonstrate value for money	Road Maintenance reporting (statutory)	Highways Maintenance Annual Condition surveys (statutory obligation)	Target: % of roads in red or amber condition for A, B, and C/U roads (same categories as already reported by UAs to DfT)
The high-quality transport network generates inward investment	Road congestion	<i>Scheme specific – monitoring journey times to EAs and urban centres. Economic case sections of bids will cover economic growth potential of schemes</i>	<i>Scheme specific – suggest no targets</i>
Congestion and demand on the network is better managed through technological advances	Role of technology in journey planning	Travel to work survey – question to cover use of technology in informing travel choices	Target: % of respondents journey planning using SatNav/ Google Maps/other congestion/JT software to avoid congested times/areas

Section 12:  
Targets, indicators, monitoring continued

Table 12.2 continued:

Targets & Monitoring: Indicators and Targets against JLTP4 Objectives  
Objective: Enable equality and improve accessibility

Outcome	Indicators	Monitoring Methods/ Datasets	Targets
Connectivity is increased and transformed, enabling seamless “door-to-door” movements of people and goods	Rail patronage	ORR station patronage & growth statistics	Target: % rail patronage increase
	Road congestion	Average AM peak journey time on identified key corridors.	RAG rating system; 0-5% increase; 0-5% decrease; 5%+ decrease Target: To achieve green (0-5% increase) or amber (0-5% decrease) in average AM peak journey times on % of identified key corridors across each monitoring period.
	Bus satisfaction	Transport Focus annual survey	Target: % increase in satisfaction with bus service frequencies across West of England
Access for those with both visible and hidden disabilities is improved	Bus satisfaction amongst key passenger groups	Transport Focus annual survey	Target: % increase in overall satisfaction with bus services by passengers saying they have a disability
Access to services for residents in rural or remote areas is improved	Community transport provision	NHT Survey (annual) – question PTBI 24, 25, 26 – Availability, Fares, Reliability of community transport services	Target: % increase in satisfaction scores for availability, fares, reliability of community transport services
Better information to aid travel decisions is provided	Bus satisfaction	NHT Survey (annual) – questions PTBI 13-20 – on satisfaction with availability/ quality etc of public transport information	Target: % increase in satisfaction scores against public transport information questions
	Social media engagement	No. of people engaged through PT social media posts	Target: % increase in engagement through PT-related social media campaigns



Table 12.2 continued:

Targets & Monitoring: Indicators and Targets against JLTP4 Objectives  
Objective: Enable equality and improve accessibility continued

Outcome	Indicators	Monitoring Methods/ Datasets	Targets
Low carbon transport and opportunities for reducing the need to travel maximised	Travel to school	Bikeability; Modeshift Stars; data from sustainable travel teams	Target: % increase in % of journeys to school by non-motorised modes; Target: % increase in number of people engaged in cycle training initiatives
	Social media engagement	No. of people engaged through PT social media posts	Target: % increase in engagement through PT-related social media campaigns
New public transport systems, smarter ticketing and faster payment options are enabled	Smart ticketing	Bus ticket stats on take up of contactless / Smart ticket payments on buses from bus operator(s)	Target: % increase in bus ticket purchases through smart ticketing methods

Objective: Address poor air quality and take action against climate change

Outcome	Indicators	Monitoring Methods/ Datasets	Targets
NOx, particulates and carbon emissions are reduced	Air quality (statutory)	UA annual monitoring across designated air quality sites, update reports annually	Target: ensure levels of NO2 across the WofE that are below the annual air quality objective of 40µg/m³ remain this way; Target: get all AQMAs back to under 40µg/m³ of NO2 by year 20XX
	CO2 levels	UK local authority and regional CO2 emissions national statistics (A roads, minor roads and transport other)	Target: Reduction in kt CO2 emissions from 2016 levels
	Health Impacts of Air quality	Public Health Outcomes Framework Annual indicators recorded collected by DEFRA/Air Pollution and Climate Change Group Public Health England	Target: % decrease in deaths attributable to particulate air pollution



Section 12:  
Targets, indicators, monitoring continued

Table 12.2 continued:

Targets & Monitoring: Indicators and Targets against JLTP4 Objectives

Objective: Address poor air quality and take action against climate change continued

Outcome	Indicators	Monitoring Methods/ Datasets	Targets
Air quality in the AQMAs is improved	Air quality (statutory)	UA annual monitoring across designated air quality sites, update reports annually	Target: all AQMAs to improve to under 40µg/m³ of NO2 threshold
Air quality remains better than national standards outside the AQMAs	Air quality (statutory)	UA monitoring of AQMAs, with regular update reports comparison to national air quality statistics from the DfT	Target: to remain below national average of NO2 levels
The transport network is resilient and adaptable	Road congestion	Average AM peak journey time on identified key corridors.	RAG rating system; 0-5% increase; 0-5% decrease; 5%+ decrease Target: To achieve green (0-5% increase) or amber (0-5% decrease) in average AM peak journey times on % of identified key corridors across each monitoring period.
Technological advances to improve air quality and monitoring are embraced	Electric Vehicle uptake	DfT Vehicle Licencing data – quarterly / annual data releases on ULEV uptake; Go Ultra Low project will also collect data on EV take-up AND EV charging infrastructure	Target: % uptake of ULEV vehicles per year
	Electric Vehicle infrastructure	EV charging point installations data via ZapMap.com	Target: % growth in WofE charging points per year



Table 12.2 continued:

Targets & Monitoring: Indicators and Targets against JLTP4 Objectives

Objective: Contribute to better health, wellbeing, safety and security

Outcome	Indicators	Monitoring Methods/ Datasets	Targets
There is an increase in the number of healthy, low carbon walking and cycling trips	Travel to school	Sustainable travel teams have information on some primary schools – we would use this as a proxy	Target: % increase in % of journeys to school by non-motorised modes;
	Cycle growth	Cycle counter data from sustainable travel teams	Target: % growth in cycling on identified corridors to EAs & urban centres, including from deprived areas.
		DfT annual monitoring of walking and cycling statistics	Target: % growth in adults who do any walking, at least once per week Target: % growth in adults who do any walking, at least five times per week Target: % growth in adults who do any cycling, at least three times per week. Target: % growth in adults who do any cycling, at least once per month
There is a continued reduction in the number of road casualties on the transport network	Road Safety (statutory)	Highways Road Safety statutory reporting on Killed or Seriously Injured (KSI)	Target: % reduction in road casualties (from a set baseline avg.)
Road safety for transport users is improved, particularly for those most at risk	Road Safety (statutory)	Road safety reporting – rates of collisions and KSIs by mode of transport	Target: retain proportion of casualties for 'Vulnerable Road Users' (motorcyclists, cyclists & pedestrians); Target: retain proportion in rate of child and 65+ casualties as % of all users
Personal safety on the transport network is improved, and there is less crime and fear of crime	Safety & Security on Public Transport	NHT Survey (annual) – questions PTBI 10 & 11 – on personal safety on buses & waiting at stop respectively	Target: % increase in passenger satisfaction with personal safety on buses and waiting at stops

Section 12:  
Targets, indicators, monitoring continued

Table 12.2 continued:

Targets & Monitoring: Indicators and Targets  
against JLTP4 Objectives

Objective: Create better places

Outcome	Indicators	Monitoring Methods/ Datasets	Targets
Journey experience is enhanced through an integrated and connected transport network	Road congestion	Average AM peak journey time on identified key corridors	RAG rating system; 0-5% increase; 0-5% decrease; 5%+ decrease  Target: To achieve green (0-5% increase) or amber (0-5% decrease) in average AM peak journey times on % of identified key corridors across each monitoring period.
	Cycle growth	Cycle counter data from sustainable travel teams	Target: % growth in cycling on identified corridors to EAs and urban centres, including from deprived areas.
	Bus punctuality	Bus punctuality statistics from local operators (as part of annual reporting to DfT)	Target: % increase in bus punctuality across WofE bus network
The impact of the transport network on the built, natural and historic environment is minimised	Air quality (statutory)	UA annual monitoring across designated air quality sites, update reports annually	Target: ensure levels of NO <sub>2</sub> across the WofE that are below the annual air quality objective of 40µg/m <sup>3</sup> remain this way;  Target: get all AQMAs back to under 40µg/m <sup>3</sup> of NO <sub>2</sub> by year 20XX



Table 12.2 continued:

Targets & Monitoring: Indicators and Targets  
against JLTP4 Objectives

Objective: Create better places continued

Outcome	Indicators	Monitoring Methods/ Datasets	Targets
Streetscape, public spaces and urban environments are enhanced	Safety and security on public transport	NHT Survey (annual) – questions PTBI 10 & 11 – on personal safety on buses and waiting at stop respectively	Target: % increase in passenger satisfaction with personal safety on buses and waiting at stops
	Air quality (statutory)	UA annual monitoring across designated air quality sites, update reports annually	Target: ensure levels of NO <sub>2</sub> across the WofE that are below the annual air quality objective of 40µg/m <sup>3</sup> remain this way; Target: get all AQMAs back to under 40µg/m <sup>3</sup> of NO <sub>2</sub>
	Scheme specific	As we deliver each project, part of the delivery should include pre and post-scheme public perception surveys that can be measured	Scheme specific targets
The transport network supports neighbourhood renewal and the regeneration of deprived areas	Cycle growth	Cycle counter data from sustainable travel teams	Target: % growth in cycling on identified corridors to EAs and urban centres, including from deprived areas.

Section 12:  
Targets, indicators, monitoring *continued*

# Glossary

**Active travel**

Using your own power to travel, such as cycling and walking. It also includes walking or cycling as part of a longer journey. Active travel helps to increase physical activity levels which has a range of health benefits and can play a role in reducing congestion and air pollution.

**Air Quality Management Area (AQMA)**

Areas designated by local authorities where air quality improvements are required to meet national air quality objectives. Local authorities are required to produce an air quality action plan describing the measures it will put in place to reduce pollution in the AQMA.

**Benchmarking**

The use of performance indicators and other metrics to compare performance results against a reference point, especially between organisations (and local authorities) with similar characteristics.

**Business rates**

A supplement levied by local government on non-domestic rate payers which is used to fund additional investment to promote economic development.

**Clean Air Zone (CAZ)**

A defined area where measures are taken to improve air quality, deliver improved health benefits, whilst supporting economic growth.

**Carbon dioxide (CO<sub>2</sub>)**

A gas produced and released into the atmosphere when fossil fuels such as petrol and diesel are burned. See also: Carbon Footprint , Climate change

**Carbon footprint**

The total greenhouse gas emissions caused directly and indirectly by an individual, organisation, event or product, expressed as a carbon dioxide equivalent. See also: Carbon dioxide, Greenhouse gas

**City region**

The functional area around a city or large town.

**Climate change**

The change in global climate patterns largely attributed to increased levels of carbon dioxide produced by the burning of fossil fuels. See also: Carbon dioxide

**Combined authority**

A combined authority is a legal structure that enables two or more local authorities to collaborate and make collective decisions across council boundaries.

**Community Infrastructure Levy (CIL)**

A tariff-based charge paid by developers to local authorities to fund strategic infrastructure. CIL money does not need to be used to provide infrastructure on the same site it is collected from. See also: Section 106

**Connected and Autonomous Vehicles (CAVs)**

Vehicles, also referred to as driverless cars, which incorporate a range of technologies allowing them to communicate with and draw information from their environment to enable the safe, efficient movement of people and goods.

**Core cities**

A network of eight major regional cities, including Bristol, forming a strategic partnership to enhance their economic performance and international competitiveness, with a particular focus on transport and connectivity, climate change, and sustainability.

**Core Strategy**

A compulsory and key strategic document in a Local Plan which includes: the evidence base for an area’s main social, physical and economic characteristics; its key strategic issues; and policies to shape the development and use of land in that area. See also: Local Plan



Glossary continued



**Enterprise Zone/Enterprise Area**

Areas across England that provide tax breaks and receive government support as part of a wider government strategy to support business and enable local economic growth.

**Greenhouse gas**

A gas which absorbs solar radiation contributing to the greenhouse effect which leads to global warming and climate change.

**Gross Value Added (GVA)**

An economic measure of the value of goods and services produced in an area, industry or sector.

**Heavy rail**

A term for the conventional railway system to distinguish it from light rail or tram systems.

**Intelligent Transport Systems (ITS)**

The use of information and communication technologies applied to road transport, infrastructure, vehicles and users to improve the efficiency of transport across a range of situations.

**Joint Spatial Plan (JSP)**

A statutory document which provides the strategic overarching framework to guide housing, employment and infrastructure over a defined period in a combined authority area. See also: Combined authority

**Joint Transport Study (JTS)**

A report assessing current transport issues which is used to inform high level strategy for the long-term development of a transport system over a defined period in a combined authority area. See also: Combined authority

**Key Route Network (KRN)**

A defined network of highway routes that contributes to economic growth by serving the main flows of people, goods and services, and provides connections to the national Strategic Road

Network. See also: Strategic Road Network and Major Road Network

**Light rail**

A form of urban rail transport which operates at a higher capacity to a tramway, often on an exclusive right of way, and serving parts of a large metropolitan area. See also: mass transit

**Local authority**

A local government organisation. In England there may be either one or two tiers of local government. A two-tier structure includes a County Council as the upper tier and a District Council as the lower tier. Local authority responsibilities include strategic land use planning, and highways and transport.

**Local Plan**

A statutory planning document which sets out the vision and framework for future development within a local planning authority area. It addresses housing, economy, community and infrastructure and is used as a tool to guide decisions about development proposals. See also: Core Strategy

**MaaS (Mobility as a Service)**

A shift away from privately owned vehicles towards a model where different transport modes are consumed as an on-demand service through a single (online) platform. For example, the concept of paying for a weekly travel pass that includes bike hire, car hire, bus and train travel.

**Major Road Network (MRN)**

The most strategic local routes in England, commonly A roads, for which local (unitary) authorities are responsible. See also: Key Route Network and Strategic Road Network

**Mass transit**

A form of public transport to satisfy higher potential trip demand, featuring limited stops, high capacity and attractive, reliable journey times. It is

usually rail based, such as trams or light rail above ground, or underground trains.

**Masterplan**

An overarching planning document which includes analysis and recommendations for a site or area's population, economic development, housing, transportation and other land uses.

**Mode shift**

A percentage change in the use of different transport modes. When one transport mode becomes more advantageous than another over the same route or market, a modal shift is likely to take place. The advantages of modal shift can be cost, convenience, speed or reliability.

**Multi-modal**

Combining different transport options, such as cycling and rail, to form one single trip.

**Nitrogen dioxide (NO<sub>2</sub>)**

A gaseous pollutant caused by motor vehicles. See also: NOX

**NOX**

A generic term for the nitrogen oxides that are most relevant for air pollution, namely nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>). NOX gases are produced during the combustion of hydrocarbon fuels in diesel and petrol-powered vehicles. In areas of high motor vehicle traffic, NOX can be a significant source of air pollution.

**Open data**

Data which anyone can access, use and share. For example, data obtained from journey planning tools and ticket sales can provide an understanding of travel behaviour and support the identification and development of measures that influence future travel demand and mobility networks.

**Private Hire Vehicle**

A vehicle with fewer than eight seats that is only

allowed to carry passengers with pre-arranged bookings and is therefore different to taxis (hackney carriages).

**Rapid transit**

Public transport on a high-quality bus-based vehicle, with twin doors and ultra-low emissions, which is often segregated from general traffic through bus lanes or bus-only alignments. Offers a significant increase in the quality and speed of public transport, including off-board ticketing. E.g. MetroBus

**Real Time Information**

The use of vehicle location systems to automatically update service information about whether services are running to time. Passengers can access this information through web applications and at public transport stops.

**Section 106 (S106)**

A financial contribution made by developers to pay for the infrastructure necessary to make their development acceptable in planning terms. See also: Community Infrastructure Levy

**Smart city**

An urban area which uses different types of electronic data collection sensors to supply information which can then be used to efficiently manage assets and resources. This includes data collected from citizens, devices and assets and can be applied to traffic, transport, and other systems.

**Smart ticketing/Smartcard/travelwest card**

An electronic form of pre-payment ticket for use on buses and other forms of public transport with the possibility of also being used to pay for other transport services. It is sometimes referred to as an 'electronic purse'.

**Smarter choices**

A range of initiatives to encourage people to make informed decisions about their choice of how to

Glossary continued

travel, including the consideration of sustainable travel alternatives to the private car.

Strategic Development Location (SDL)

Areas selected for major new residential and non-residential development to accommodate growing populations and the need for space for leisure and employment opportunities.

Strategic Road Network (SRN)

The network of 4,300 miles of motorways and major A-roads in England, which carries 30% of all traffic and 60% of freight and business traffic. It is managed by Highways England. See also: Key Route Network and Major Road Network

Supplementary Planning Documents (SPDs)

Documents which expand upon and support Local Plan policies with more detailed guidance. See also: Local Plan

Sustainable transport

Forms of transport which have lower environmental impact than single occupancy car use. It includes walking, cycling, public transport, park and ride, and car-sharing.

Unitary authority (UA)

A type of local authority with a single tier responsible for local government functions within its area.

Urban Living

The principle of significantly increasing densities in urban areas to create compact urban areas where people can live, work, socialise and easily access amenities, with good access to public transport.

West of England

The four local authority areas of Bath & North East Somerset Council, Bristol City Council, North Somerset Council, and South Gloucestershire Council.

Appendix 1: Summary of Environmental Report

West of England Joint Local Transport Plan (JLTP 4) Strategic Environmental Assessment (SEA) – Key Findings

The councils making up the West of England are currently updating their joint local transport plan (JLTP) into what is known as the “JLTP4”. The objectives of JLTP4 are to:

- Support sustainable economic growth
- Enable equality and improve accessibility
- Address poor air quality and take action against climate change
- Contribute to better health, wellbeing, safety and security
- Create better places

The overall aim is to provide a well-connected sustainable transport network that offers greater realistic travel choices and makes walking, cycling and public transport the natural way to travel. Policies and interventions under the new JLTP are structured around improving connectivity at four levels:

- Beyond the West of England – strategic road and rail, port and airport
- Within the West of England – between the urban areas, longer than 10km
- Local – up to 10km
- Neighbourhood – journeys within local communities

Central to this is the major schemes programme based around the West of England’s Joint Transport Study (JTS). The JTS was developed as part of the supporting technical work to the West of England Joint Spatial Plan (JSP).

The JLTP4 and the JSP are therefore intrinsically linked, with the former providing the transport schemes and infrastructure needed to address current transport challenges as well as to enable the sustainable delivery of new housing and employment growth to be delivered through the JSP and Local Plans. Core to the delivery of the JLTP will be the Major Schemes programme. The Major Schemes are grouped as follows:

- Transformational – including a mass transit network
- Mitigate Joint Spatial Plan growth – including corridor scheme packages
- Early investment schemes – including MetroWest
- Schemes under development – studies funded by the West of England
- Other long-term opportunities

A Strategic Environmental Assessment (SEA) is being prepared alongside the JLTP4. SEA is a process required by law for certain types of plan or programme, such as a local transport plan. The overall aim of the SEA process is to ensure better protection for the environment, population and human health by making decision-makers aware at an early stage of the likely significant effects of the plan on the environment and by seeking to introduce measures that can be undertaken either to avoid adverse effects or to help improve the environment.

In compliance with the Conservation of Habitats and Species Regulations 2017, an Appropriate Assessment (AA) of JLTP4 is also being carried out. The first stage (screening) of the assessment has identified a number of likely significant effects on European sites and therefore it is necessary to advance to the full AA stage. Please refer to the Habitats Regulations Screening Stage Summary prepared by ClearLead for further information.

Appendix 1:  
Summary of Environmental Report continued

An Equalities Impact Assessment and a Health Impact Assessment of the JLTP4 have also been undertaken and have informed the SEA process.

The SEA process is undertaken in five key stages which are:

- Stage A – Scoping: Setting the context and objectives, establishing the baseline and deciding on the
- Stage B – Environmental Assessment: Developing and refining alternatives and assessing effects
- Stage C – Reporting: Preparing the SEA Environmental Report
- Stage D – Consultation: Consulting on the draft programme and the SEA Environmental Report
- Stage E – Monitoring: Monitor the significant effects of implementing the plan or programme on the environment

The SEA Directive and associated UK Regulations state that the SEA must consider the following topic areas: Biodiversity; Population; Human health; Flora and Fauna; Soil; Water; Air; Climatic factors; Material assets; Cultural heritage, including archaeological and architectural heritage; Landscape; and the interrelationship between these factors.

The Scoping Stage, which included statutory consultation with Natural England, Historic England and the Environment Agency<sup>1</sup>, provided the baseline information on the topics listed above and identified the SEA Objectives listed in Table 1. The policies and interventions within JLTP4 were assessed against the SEA Objectives. The key findings of this assessment in terms of potential significant effects and mitigation are summarised in Table 1:

1 Consultation response from Environment Agency was still outstanding at the time of writing.



Table 1 JLTP4 SEA Objectives, potential significant effects and mitigation

SEA OBJECTIVE (SEAO)	POTENTIAL SIGNIFICANT EFFECTS	MITIGATION
SEAO 1: 'Improve accessibility for a growing and aging population	Most of the policies and interventions included in the JLTP4 aim at improving accessibility which aligns with this SEA Objective resulting in likely long term major beneficial effects.	There is a need to ensure that services and employment or education opportunities are accessible by those with limited mobility. Charging should not result in creating a barrier to employment or education opportunities, particularly for those who are unemployed or on low income.  Strategic and major schemes will be delivered through the appropriate consenting process and will need to be subject to assessments including health and equalities assessments. Detailed mitigation and enhancement opportunities will be developed as part of the design and consenting process.
SEAO 2: Reduce transport related air pollution'	Many of the policies and interventions within JLTP4 have the potential to reduce traffic congestion and associated air pollution. Major long-term beneficial health effects on urban population are therefore expected from policies and interventions which encourage modal shift away from private car use and those that promote active travel.  Minor adverse health effects for population near strategic road network, and those close to new proposed road links are expected from policies promoting additional road links or upgrading local and strategic road network. Future cleaner technologies may play a key role in reducing the amount of air pollution from transport in the longer term.	Public transport vehicles should be of high modern standards to utilise alternative fuels where possible and minimise emissions. Where schemes/initiatives are time limited, new replacement measures need to be implemented to maximise the opportunity for benefits over time.  Promoting exposure reduction and ensure that any new road links are isolated from vulnerable receptors, would reduce the harmful effects of the policies promoting additional road links or upgrading local and strategic road network.  Strategic and major schemes will be delivered through the appropriate consenting process and will need to be subject to Environmental Impact Assessment (EIA) and other relevant environmental legislation. Detailed mitigation and enhancement opportunities will be developed as part of the design and consenting process at the scheme level.



Appendix 1:  
Summary of Environmental Report continued



SEA OBJECTIVE (SEA0)	POTENTIAL SIGNIFICANT EFFECTS	MITIGATION
SEA0 3: 'Reduce transport related carbon emissions in line with national targets'	Numerous policies within the LTP4 will have a minor or potential major positive effect on this SEA objective. However, there is significant uncertainty in the assessment. Most of the policies require a modal shift away from private car use, to more sustainable mode of transports (e.g. bus, rail, tram, cycling). Success of the policies in the long term will depend upon whether traffic growth can be curbed and whether the required behavioural change associated with a shift towards sustainable travel modes takes place.	Public transport vehicles should be of high modern standards.  Where schemes / initiatives are time limited, new replacement measures need to be implemented to maximise the opportunity for benefits over time.  Strategic and major schemes will be delivered through the appropriate consenting process and will need to be subject to EIA and other relevant environmental legislation. Detailed mitigation and enhancement opportunities will be developed as part of the design and consenting process at the scheme level.
SEA0 4: 'Adapt transport network to effects of climate change and minimise the vulnerability of transport network to flood risk'	It is expected that new transport infrastructure will be designed to be more resilient to climate change than existing transport infrastructure. However, the low-lying nature of much of the sub-region, and its coastal and tidal location, mean flood risk is likely to be an increasing concern.  The potential effects of climate change and sea level rise are of particular relevance in the areas of the sub-region most affected by flooding. The potential effect of policies and interventions involving new major infrastructure has been identified as uncertain at this SEA level. Policies and interventions aimed at improving connectivity at local level and neighbourhood levels have been assessed as having mainly neutral effects on this SEA objective.	Strategic and major transport infrastructure schemes will have to be designed to take into the effects of climate change in line with national policy and best practice design such as CIRIA Report C753 The SuDS Manual.  Additionally, all strategic and major schemes will be delivered through the appropriate consenting process and will be subject to Flood Risk Assessment (FRA) and EIA. Detailed mitigation and enhancement opportunities will be developed as part of the design and consenting process at the scheme level.  Use of information regarding weather conditions and impact on travel can benefit transport users.

SEA OBJECTIVE (SEA0)	POTENTIAL SIGNIFICANT EFFECTS	MITIGATION
SEA0 5: 'Protect and enhance biodiversity and ecological networks'	Policies and interventions involving strategic and major transport infrastructure schemes have been identified as having adverse effects on this SEA Objective, some of them potentially major adverse. European designated sites are particularly sensitive receptors.  The Habitats Regulations Screening exercise has identified some likely significant effects of major schemes on European sites and therefore it is going to be necessary to advance to the appropriate assessment (AA) stage of HRA. The assessment of the effects on this SEA objective are preliminary and will need to be informed by the findings of the HRA AA. Please refer to the Habitats Regulations Screening Stage Summary prepared by ClearLead for further information.	The WoE JSP commits the authorities to develop a WoE Green Infrastructure (GI) Plan and to delivering a 'net gain' for the environment. The GI Plan, currently under preparation, will identify the strategic measures and mechanisms to support, guide and implement the delivery of environmental commitments set within the JSP and Local Plans, including mitigation for protected sites. Further development of GI Plans at an authority level should also reflect schemes within this JLTP.  All strategic and major schemes will be delivered through the appropriate consenting process and will be subject to EIA and relevant environmental mitigation. Detailed mitigation and monitoring measures will be developed as part of the EIA process. it is recommended that major schemes have a Construction Environmental Management Plan (CEMP).  The Habitats Regulation AA will provide the information with regards to mitigation associated with potential significant effects on European sites.
SEA06: 'Promote human health'	Most of the policies and interventions included in the Draft JLTP4 have as key objective promoting more sustainable and active modes of travel which would result in likely long-term benefits on human health. Encouraging more journeys to be made by active travel modes improves physical and mental health, quality of life and the environment. Direct beneficial effects on human health would result from increased physical activity whilst indirect effects may derive from less congested roads as well as improved access to services and opportunities which may tackle some of the inequality issues which may also underlain health issues. Beneficial effects might be offset by increased noise, air pollution and / or severance resulting from some of the proposed strategic road and rail improvements.	All strategic and major schemes will be delivered through the appropriate consenting process and will be subject to EIA which includes assessment of health. Detailed mitigation and monitoring measures to minimise potential adverse effects will be developed as part of the EIA process. Enhancement opportunities should also be considered as part of the development and consenting process of the larger schemes.  Any charging scheme should consider exemptions for drivers with specific need, those on low income or unemployed seeking access to employment or education opportunities.

Appendix 1:  
Summary of Environmental Report continued



SEA OBJECTIVE (SEA0)	POTENTIAL SIGNIFICANT EFFECTS	MITIGATION
SEA07: Improve road safety, particularly for vulnerable users, and to reduce road casualties'	The majority of policies will have a positive impact on improving road safety. Particularly, Policy W2 (which improves the road safety for motorcyclists), Policy L1 (through providing education for cyclists) and Policy L2 (using education and implementation of cycle lanes etc.) will all have a long-term major positive impact on the SEA objective.	Where schemes / initiatives are time limited, new replacement measures need to be implemented to maximise the opportunity for benefits over time.  Road safety camera enforcement provides opportunity for driver education. Targeting road safety campaigns at motorcyclist safety. Motorcyclists are disproportionately represented in road accident statistics.  New projects should be subject to safety audit checks and aim to improve road safety through design.
SEA08: Minimise adverse effects on soils such as loss, compaction, erosion and pollution from transport-related activities'	Policies and interventions involving major transport infrastructure schemes have been identified as having adverse effects on this SEA Objective. Strategic and major road and rail infrastructure schemes would result in direct adverse effects on soils in terms of loss and compaction where these are to be delivered on undeveloped land. Operational effects may result in pollution, erosion and increased run-off.  Due to the relative permanence and irreversibility of soil loss, the potential effect should be regarded as significant. Transport schemes to be delivered on previously developed land would result in beneficial effects through the remediation of contaminated soils.	As noted under SEA0 5 above, further development of GI Plans at an authority level should also reflect schemes within this JLTP. All strategic and major schemes will be delivered through the appropriate consenting process and it is recommended that major schemes have a CEMP. This would include mitigation and monitoring measures to avoid and minimise the degradation of soil resources.

SEA OBJECTIVE (SEA0)	POTENTIAL SIGNIFICANT EFFECTS	MITIGATION
SEA09: 'Protect, and where possible improve, water quality'	Policies and interventions involving major transport infrastructure schemes have been identified as having potential to result in adverse effects on this SEA Objective. The quality of water in rivers, streams, rhynes and ditches can be affected by the construction of transport infrastructure as well because of its operation through pollution and accidental spillages. It is expected, however, that new transport infrastructure will be designed following current best practice guidance and hence should include mitigation measures inherent to the scheme design. Overall, the potential effect on this SEA objective has been assessed as being uncertain for those policies involving major infrastructure works. There is the potential for adverse effects but also opportunities for beneficial effects through improved drainage design.	Detailed design should follow best practice guidance such as that provided within CIRIA Report C753 The SuDS Manual. The guidance covers the planning, design, construction and maintenance of Sustainable Drainage Systems (SuDS) to assist with their effective implementation within both new and existing developments. It looks at how to maximise amenity and biodiversity benefits, and deliver the key objectives of managing flood risk and water quality.  As noted under SEA0 5 above, further development of GI Plans at an authority level should also reflect schemes within this JLTP. All strategic and major schemes will be delivered through the appropriate consenting process and will be subject to EIA and relevant environmental mitigation. Detailed mitigation and monitoring measures will be developed as part of the EIA process. it is recommended that major schemes have a CEMP.
SEA010: 'Minimise waste produced and resources consumed by transport infrastructure and operation of transport services'	Generally, policies and interventions under consideration seek to make good use of existing infrastructure whilst new schemes would be designed in line with relevant policy and legislation aimed at minimising the production of waste and making sustainable use of resources. However, JLTP 4 comprises major new transport infrastructure which will result in significant use of materials such as aggregates and generation of waste. Interventions aimed at promoting alternative modes to private car would reduce reliance on fossil fuels. The overall effect on this SEA objective is likely to be adverse.	Seek to make best use of existing infrastructure to minimise resource consumption and waste generation before constructing new facilities.  Ensure scheme design incorporates sustainable use of materials as well as measures to minimise future maintenance requirements.  For construction projects, a Site Waste Management Plan (SWMP) should be implemented. New development can be designed to increase the potential for recycling waste.  New transport modes should use sustainable fuels (electric). There should also be modal shift to public transport and active travel from car use.

Appendix 1:  
Summary of Environmental Report continued



SEA OBJECTIVE (SEA0)	POTENTIAL SIGNIFICANT EFFECTS	MITIGATION
SEA011: Protect and enhance the rich diversity of the historical and cultural environment, its heritage assets and their setting'	In the short and medium term, the construction of strategic and major schemes is likely to adversely affect heritage. However, some policies (W5 and W1) are likely to reduce pressure from traffic in the cities of Bath and Bristol and therefore reduce impacts on their cultural heritage assets. Due to the relative permanence and irreversibility of damage to heritage assets, the potential effects (both adverse and beneficial) should be regarded as significant.	The JLTP provides an opportunity to improve the setting and integrity of the WoE's historic places, and ensure future development is appropriately considered and designed to respond to local context.  Good design (following best practice guidance such as <i>Highways England – the road to good design</i> (2018)), and cultural heritage assessments (as part of EIA where appropriate) should be required for all strategic and major schemes to minimise potential adverse impacts and maximise opportunities for benefits.
SEA012: Maintain and enhance the quality and character of the built environment and landscape'	Noise and congestion from traffic can seriously degrade the quality of the urban environment. The policies which are likely to have the most positive on this SEA objective are those which limit opportunity for private car use within urban centres and free up space for other activities and improvements to the urban realm.  Impacts from major schemes are likely to be on green belt land around the urban fringes. Introduction of new infrastructure would result in negative impacts on the landscape in terms of visual impacts and increased noise during construction and operation. Major development schemes also have the potential to have impacts on landscape setting.	Good design (following best practice guidance such as <i>Highways England – the road to good design</i> (2018)), and landscape/townscape and visual assessments (as part of EIA where appropriate) should be required in all strategic and major schemes to minimise potential adverse impacts and maximise opportunities for benefits.  Design the proposed infrastructure sensitively to reduced visual impact and to include effective landscaping scheme to soften any major structures.  It is recommended that signage and infrastructure for pedestrians and cyclists is designed to be sympathetic to the local distinctiveness whilst remaining clear, visible and informative.  Further development of The West of England's GI Plans at an authority level should also reflect schemes within this JLTP.  A modal shift away from car use is needed to maximise the potential beneficial impacts of JLTP4 on this SEA objective.  Measures to discourage car use within urban centres should be pursued to maximise use of alternative modes provided and to reduce traffic congestion and noise.

Generally, the certainty of the assessment has been assessed as being low to medium. The main reasons for this are listed below:

- Despite the strong commitment to shift journeys into cleaner and more sustainable transport modes, there are various degrees of uncertainty with regards to planned actions, programme and funding of some of the interventions
- There is uncertainty regarding whether improvements to the public transport system from the major schemes would be sufficient to counteract traffic growth and associated adverse environmental effects. The implications of removal of the Severn Crossing Toll are a key unknown
- Advanced technologies are currently in early development stages
- Uncertainty regarding the rate of climate change and the degree to which it will alter weather patterns in the medium and longer term
- Information from the Habitats Regulations Assessment is required to better understand potential adverse effects on European designated sites
- Effects are likely to be both variable across the region and dependent upon proximity of the sensitive receptors to the road network
- There are also uncertainties about route alignments as well as specific design details such as use of material and siting
- The combined effect of the predicted growth in the region with the various transport infrastructure schemes that may go ahead are likely to adversely affect biodiversity, soils and potentially water quality. This is also the case for potential effects on cultural and built environment. Mitigation / enhancement measures included as part of the design and implementation of the specific schemes may offset some of the adverse effects.

The following alternative scenarios were also assessed against the SEA Objectives:

- Continuation of JLTP3 (with period plan extended to cover the period up to 2036)
- The "Without Plan" Scenario

Continuation of JLTP3 and JLTP4 perform equally in SEA Objectives 1, 4, 7, 8, 9, 10 and 12. JLTP4 performs better against SEA Objectives 3 and 6, whilst Continuation of JLTP3 performs better against SEA Objectives 2, 5 and 11. The "Without Plan" performs worst against all the SEA objectives.

**Cumulative effects:**

The JLTP4 is intrinsically linked to the JSP. The type of development involved in both plans will result in similar type of effects and in some locations they will affect the same environmental and other assets. Cumulative effects are therefore expected from the implementation of these two plans. A coordinated and supportive approach to mitigation and enhancement between the plans will assist with minimising the likelihood and scale of adverse effects and maximising potential benefits. The development and implementation of the WoE GI Plan has been identified as the environmental strategic framework to facilitate this. The cumulative effect between the JLTP4 and the Local Air Quality Strategies of the WoE authorities have been assessed as being beneficial. A combination of both adverse and beneficial effects is expected as a result of the JLTP4 in combination with the WoE Adopted Joint Waste Core Strategy 2011 and the local transport plans of the neighbouring authorities.



Appendix 1:  
Summary of Environmental Report continued

**Monitoring:**  
The SEA Regulations require that monitoring is undertaken on a plan so that the significant effects of implementation can be identified and remedial action imposed. A monitoring framework for the SEA will be developed following consultation on this SEA. Given the links between JLTP4 and the JSP, a co-ordinated approach to monitoring of the plans will be considered.

**Next Steps:**  
The SEA Environmental Report will be made available at the same time as the draft plan or programme, as an integral part of the consultation process

Appendix 2: Bus Strategy Overview Document

West of England: Working towards a Bus Strategy

**Overview**  
The West of England councils are working with the Combined Authority to prepare a new Bus Strategy for our area.

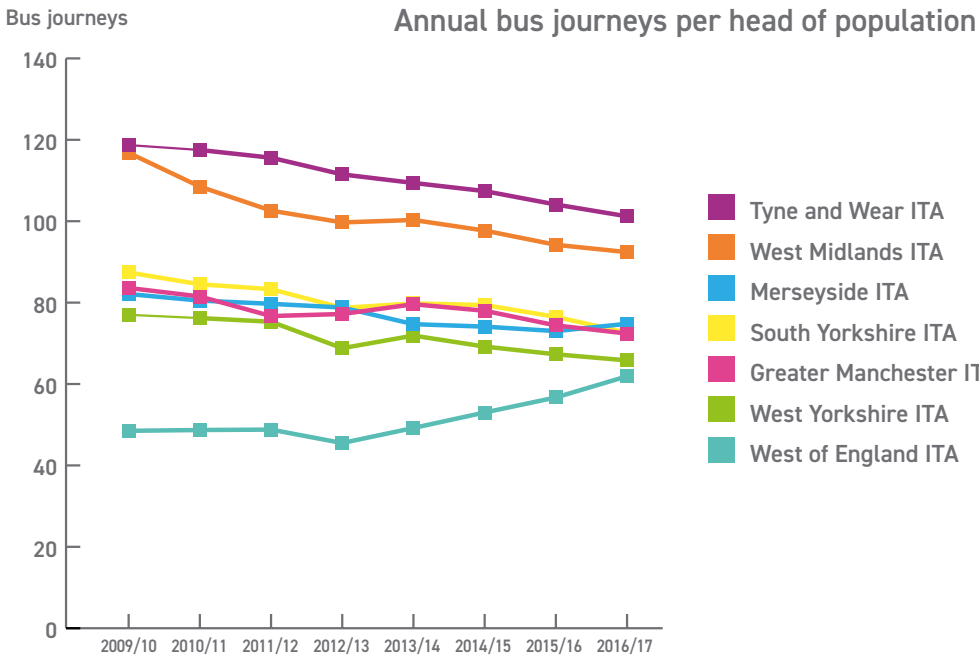
Buses have a major role to play in helping us tackle poor air quality and traffic congestion, reduce dependency on the private car and improve accessibility for everyone. More people are using the bus in the West of England. Passenger numbers have recently grown by about 7% year on year, bucking the national trend. Working with bus operators, our challenge is to maintain this growth by making bus services more reliable, quicker, accessible and attractive to existing and new passengers.

We will do this through a strategy to increase investment in infrastructure, new vehicles, simplified ticketing, interchanges and information. We will also assess new opportunities to structure and deliver bus services fit for the West of England for the next twenty years.

The full Bus Strategy will report on the work done and set out specific proposals, for publication from Spring 2019. This overview document highlights our challenges and key work areas, and sets out a work programme to address them.

**Background and Our Current Challenges**  
In line with Great Britain outside London, most bus services in the West of England are provided by operators on a commercial basis. The councils fund and provide infrastructure like bus stops and shelters, bus priority measures and Real Time Information screens. Services that are not profitable but socially necessary can be funded by the councils, and around 10% of service mileage in the West of England is provided in this way.

Around 67 million bus passenger journeys were made in the West of England in 2016/17, and this total has been growing steadily (bucking the national trend). About 9% of people in the West of England use the bus to get to work. However, the number of bus trips per head of population in the West of England is still some way behind that for most other 'core' English city regions.



Appendix 2:  
Bus Strategy Overview Document continued

Fares are now broadly comparable with other equivalent areas of the UK, and 89% of passengers in the West of England are either very satisfied or satisfied with their journey. The vehicle fleet is also relatively modern – and a significant proportion of vehicles meet or exceed the ‘Euro VI’ exhaust emissions standard.

Operating bus services is a complex undertaking. Bus operation is vulnerable to a range of wider factors such as traffic congestion, and overall profit levels in the UK bus industry can vary significantly year on year.

However, the overall bus network in the West of England is quite extensive. Most core corridors in the urban areas have service frequencies of at least every ten minutes throughout the day.

	JLTP Objective	Bus Strategy Objective
1	Support sustainable economic growth	Deliver a comprehensive bus network, maximise bus service reliability, reduce journey times and deliver simplified ticketing
2	Promote equality and accessibility	Increase availability and ease of use of accessible passenger waiting facilities and vehicles, and improve integration with other modes, thereby improving access to key employment, health and leisure destinations for everyone.
3	Improve air quality and respond to climate change	Operators to reduce carbon and other emissions from buses, and emissions to reduce from general traffic through increasing bus use
4	Contribute to better health, wellbeing, safety and security	Maximise service quality, in terms of vehicles, information and bus stop environment
5	Create better places	Improve public domain through the removal of car traffic, mode shift onto buses, and where possible transfer of highway space to pedestrians. Better access to places for public transport, and better design for bus services in new developments.

However, there are gaps in the coverage of the network, and bus services to rural areas tend to be less frequent or direct in order to serve a more dispersed population.

Vision and Objectives

Our Joint Local Transport Plan (JLTP) sets out an ambitious strategy to reduce car dependency and promote the use of public transport. Significant growth in housing and employment is also forecast for the West of England in the next twenty years. The bus network needs to play its part by accommodating and responding to this growth.

The JLTP’s wider policies and objectives will link with the Bus Strategy, as outlined below:



Targets

Our target for passenger trips will be consistent with the forecast in public transport mode share over this period set out in the recent Joint Transport Study which supports the JLTP. Our target for bus use is therefore proposed to be:

**A 100% increase in the number of trips on the local bus network by 2036.**

Other targets around passenger satisfaction, service reliability and accessibility will be formulated as part of the next phase of work and will be set out in the full Bus Strategy from Spring 2019.

Network Review

An open and wide-ranging review of the extent of the current bus network is proposed, to help clarify areas where the coverage of the current network needs improving. The review will consider the geographical extent of the network as well as accessibility, times and frequencies of services. It is also expected that interchange between services could play a significant role in how best to fill gaps in the network.

Potential Operating Frameworks

The Combined Authority has new powers to further influence the provision of local bus services. We will work together assess the opportunities presented by ‘Enhanced Partnerships’ and franchising, and compare them with the status quo. The full strategy will include a robust and transparent recommendation on the best way forward.

Infrastructure and Complementary Policies

The Joint Local Transport Plan includes an ambitious major scheme programme with an emphasis on boosting investment in infrastructure for sustainable transport modes. Furthermore, where new highway is proposed, opportunities will be used to reallocate road space to public

transport use on links which have been relieved of through traffic.

We will consider whether there are improvements to the bus network that could be made while we develop the bus strategy.

The JLTP also sets out a wider range of policies which the Bus Strategy will complement. In particular, measures to manage traffic capacity, air quality, parking and other possible restraint measures could play an important role in boosting bus passenger numbers.

Better Information

The Combined Authority and North Somerset Council have a duty to provide local bus information, including Real Time Information (RTI). Passenger information plays a critical role in attracting passengers, and the West of England has also significantly expanded its network of RTI displays at bus stops (there are currently around 1,000).

A Bus Information Strategy will be prepared to set out further improvements to the provision of information, including the types of information to be provided, future developments and the potential for better marketing and promotion of services and joint working with operators. Consideration will also be given to the establishment of a distinct ‘brand’ for West of England services, in addition to the existing MetroBus brand.

Ticketing

A significant cause of delay to bus services is the time taken to load passengers, with the driver selling tickets and products. Progress has been made through the wider rollout of smartphone apps and smartcards, as well as the recent availability of contactless payment, to help address this issue. The travelwest Smartcard will be available much more widely through the launch of MetroBus (which will also require passengers to ‘buy before they board’).

Appendix 2:  
Bus Strategy Overview Document continued

Multi-operator tickets are available but some products are priced with a premium and the ticket range is not widely promoted. The Bus Strategy is an opportunity to make simplified ticketing more widely available, and will look at and make recommendations on making the use of smart, multi modal and single branded ticketing the norm across the network.

Appendix 3: Scheme Summary Table – categories

Connectivity

- Beyond the West of England – schemes that improve journeys into and out of the West of England, including to other areas in the South West, South Wales, national and international
- Within West of England – a scheme that improves other journeys wholly within the West of England, but longer than approximately 10km, including those between main urban areas
- Local – a scheme that improves journeys of up to approximately 10km, including all journeys wholly within one urban area and those between neighbouring rural areas, and rural and urban areas. Many of these schemes will also benefit neighbourhood connectivity

Principal Mode

- Active Travel – cycling and walking
- Freight – by rail, road or water
- Highway – schemes that benefit all motor vehicles
- Multi-modal – schemes that benefit a number of principal modes
- Public Transport – local bus, MetroBus, mass transit, Park & Ride, rail
- Other – other modes or supporting measures

Cost Level

The indicative cost level (current prices, including risk allowance) is provided as follows:

- Low – up to £50m
- Medium – £50m to £200m
- High – more than £200m

Timescale

The indicative timescale for implementation of the scheme is shown as follows:

- Short – by 2021
- Medium – by 2026
- Long – by 2036

Type of scheme

- T – Transformational
- G – Linked to Growth
- C – Committed early investment scheme
- E – Early investment scheme under development
- L – Other longer-term opportunities

Scheme type and priority are subject to change based on the timing and purpose of emerging funding opportunities, such as Central Government bidding windows and developer contributions.



Appendix 3:  
Scheme Summary Table – categories continued

Appendix 4:  
Major scheme details

Transformational Major Schemes

Ref	Mass Transit Scheme	Details
T1	Bristol City Centre to Airport	Segregated mass transit route connecting Bristol Airport and South Bristol with city centre. Through the current mass transit studies and the Bristol South West Economic Link project (BSWEL) (see Scheme Ref. E1), various options are being considered for assessment. Those options which perform well against an initial set of criteria will then be developed into more detailed option variants for further assessment. Options to are being considered for bus, tram, tram-train, mass transit (fully segregated underground running) and heavy rail. Route to be determined balancing maximising patronage against engineering costs. The heavy rail option assessment includes a potential heavy rail link from Bristol Temple Meads.
T2	Bristol City Centre to Bath	A mass transit route providing high frequency, high capacity and fast public transport services between Bristol and Bath. The route from Hicks Gate to Bristol will be facilitated by diversion of traffic onto the Callington Road Link to enable reallocation of roadspace from car to public transport within Bristol. Careful consideration of routing options and future management of roadspace between Bristol and Bath, will be required. In the short term MetroBus would provide mass transit along the corridor from Bristol to Bath, and in the longer term there is an ambition for Light Rail.
T3	Bristol City Centre to East Fringe	A dedicated, segregated mass transit route providing high frequency, higher capacity and faster public transport services connecting central Bristol and the East Fringe and associated infrastructure to provide a high quality passenger experience. Sections of the dedicated route would probably need to be delivered below surface due to highway capacity constraints on the A420 and A432 corridors and environmental constraints on the Bristol-Bath Railway Path. It includes the A420/Ring road Park and Ride site(s).
T4	Bristol City Centre to North Fringe	A dedicated, segregated mass transit route providing high frequency, higher capacity and faster public transport services between central Bristol, North Bristol and the North Fringe with associated infrastructure to provide a high quality passenger experience. Constraints on the A38 Gloucester Road and other corridors mean that an underground alignment should be considered as one of the options to fully achieve the scheme objectives. This scheme would be complementary to the North Fringe – Hengrove MetroBus scheme currently being delivered and the planned MetroWest programme.
T5	Bath city centre and corridors	Introducing light rail in Bath city and environs. Given the environmental and physical constraints trams should be one of the options considered. All key routes will be considered including: – A367 Odd Down – Newbridge – either along the A4 or A36 integrating with the new rapid transit corridor between bath and Bristol – Lansdown from the north of Bath – A4 from the east of Bath

Appendix 4:  
Major scheme details continued



JSP Transport Programme: Corridor Scheme Packages  
to mitigate JSP Growth

Ref	Scheme	Details
G1	South East Bristol and Whitchurch	<p><b>A4 MetroBus + Callington Road Link</b> MetroBus service along the A4 corridor between Keynsham and Bristol, incorporating Callington Road Link to reduce congestion on the A4.</p> <p><b>Orbital MetroBus</b> MetroBus between Whitchurch and Emersons Green via a new A4-A37 link and A4174 Ring Road.</p> <p><b>A37 Sustainable Transport</b> Package of bus priority and enhanced bus services to Whitchurch, possibly including extension of MetroBus from Hengrove, and Park &amp; Ride option at Whitchurch.</p> <p><b>Hicks Gate Park &amp; Ride</b> New Park &amp; Ride site south of Hicks Gate junction – this would replace existing Brislington Park &amp; Ride site (to be used for development).</p> <p><b>Hicks Gate Junction</b> Changes to existing roundabout layout including a new link between the A4174 and A4 Keynsham Bypass.</p> <p><b>South Bristol Orbital Link</b> Made up of A4 – A37 Link between A4 Hicks Gate and A37 south of Whitchurch, and West of A37 Link from A37 Whitchurch connecting either to Washing Pound Lane or Halfacre Lane.</p> <p><b>Local highway improvements</b> Local traffic management schemes, including improvements to Whitchurch Lane towards Hengrove, and traffic management on A37 towards Pensford.</p>
G2	Keynsham	<p><b>Keynsham railway station</b> Review of access arrangements and passenger waiting facilities to enhance the attractiveness of rail for commuting and other travel needs from wider Keynsham area.</p> <p><b>A4-A4175 Link</b> Link between the A4 and A4175 including new bridges over rail line and possibly River Avon, and providing access to the SDL.</p> <p>Avon Mill Lane improvements – Improvements to covert Avon Mill Lane and A4175 junction to a roundabout with enhanced pedestrian and cycle facilities</p> <p>New Link Road Sustainable Travel – Package of strategic cycling corridor, bus priority, and enhanced bus services (including MetroBus) to Bristol and Bath. Including a direct link to the Bristol/Bath cycle way</p> <p>Hicks Gate Junction – Changes to existing roundabout layout including a new link between the A4174 and A4 Keynsham Bypass.</p> <p><b>Local highway improvements</b> Improvements to other junctions affected by traffic, including A4 / B3116 Roundabout (between Keynsham and Saltford) and A420 / A4175 junction at Bridgegate (in South Gloucs).</p>

JSP Transport Programme: Corridor Scheme Packages to mitigate JSP Growth

Ref	Scheme	Details
G3	Yate and Coalpit Heath	<p><b>A432 Sustainable Travel</b> Package of strategic cycling corridor, bus priority, and enhanced bus services (including MetroBus) to Coalpit Heath and Yate and potential Park &amp; Ride option west of Yate.</p> <p><b>Yate railway station</b> Package of measures to improve access and enhance waiting facilities, including improved bus interchange on A432.</p> <p>Winterbourne and Frampton Cotterell Bypass Single carriageway link between Stoke Gifford and Iron Acton, bypassing Winterbourne and Frampton Cotterell.</p> <p><b>Local highway improvements</b> Improvements to other parts of the network impacted by traffic, to include B4057 between Winterbourne and Stoke Gifford, B4058 / B4059 junctions at Iron Acton, and route between Yate and East Fringe via Westerleigh.</p> <p><b>Coalpit Heath and Westerleigh Bypass</b> A new multi-modal corridor (road and cycle route) from Yate to Emersons Green and the east of Bristol, connecting with the Ring Road and possibly a new M4 Junction 18A. The new link would connect the A432 Badminton Road to Westerleigh Road providing access to new employment and housing in Yate. This may be required instead of, or together with, a Winterbourne and Frampton Cotterell Bypass. This link would provide additional capacity, freeing up road space on the A432 for MetroBus.</p>
G4	Nailsea and Backwell	<p><b>Nailsea sustainable travel, rail station and local network improvements</b> Enhanced bus services, including options for improved connections to Bristol via the Long Ashton Park &amp; Ride and Metrobus M2 service, improved interchange at Nailsea &amp; Backwell rail station (cycle connections, improved parking facilities). Local improvements to road network (mostly on-line, with some local bypasses).</p> <p><b>Nailsea – Backwell A370 link</b> New link from Nailsea to A370 including crossing of the rail line, providing improved access to SDLs.</p> <p><b>M5 J19 &amp; J20 improved multi-modal connections</b> New or improved, multi-modal connections for Nailsea &amp; Backwell to M5 Junction 19 (Portbury) and Junction 20 (Clevedon), including bus priority, providing improved access to SDLs. Bus priority will support the delivery of enhanced bus services.</p>

Appendix 4:  
Major scheme details continued

JSP Transport Programme: Corridor Scheme Packages to mitigate JSP Growth

Ref	Scheme	Details
G5	Banwell and Churchill	<b>Sustainable travel package</b> To include enhanced cycling facilities, bus priority and bus services along A368/A371 corridor and serving the SDLs. Roadspace reallocation will be enabled by bypasses on the corridor. <b>A371 / A368 Banwell Bypass</b> Bypass to the north of Banwell, linking A371 with A368, and providing improved access to the SDL. <b>A368 Churchill and Sandford Bypass</b> Bypass to the north of Churchill and Sandford, providing access to the SDL. <b>Local highway improvements</b> Improvements to other junctions affected by additional traffic, including A368/A38 Churchill signals.
G6	Thornbury, Buckover and Charfield	<b>A38 Sustainable Travel</b> Package of strategic cycling corridor, bus priority, and enhanced bus services (including MetroBus) to Thornbury and Buckover, including potential Park & Ride option. <b>Charfield Station</b> New railway station at Charfield (services to Bristol and Gloucester). <b>M5 J14</b> Upgraded motorway junction to a full roundabout layout, improved approaches from east and west. <b>Local highway improvements</b> Improvements to local road network in the Thornbury, Buckover and Charfield area, including capacity improvements at B4509 / B4058 junction at Charfield Hill.



JSP Transport Programme: Corridor Scheme Packages to mitigate JSP Growth

Ref	Scheme	Details
G7	Bristol Urban Area	<b>Bristol City Centre Framework</b> Multi-modal package to improve connectivity and growth in Bristol city centre. Includes enhanced cycling provision, enhanced bus priority and reorganisation of road network in city centre core. <b>Local bus package (GBBN2)</b> Expansion of bus priority measures across the Bristol urban area and further improvements to bus facilities to support sustained growth in bus patronage across the city. <b>Bristol walking and cycling package</b> Improvements to walking and cycling infrastructure <b>M32 Park &amp; Ride</b> New Park & Ride site south of M32 J1 to intercept trips into Bristol. <b>A38(S)/A4174 Park &amp; Ride</b> New Park & Ride site at the A38/South Bristol Link roundabout, served by MetroBus and Airport Flyer services to Bristol. <b>A4018 Park &amp; Ride</b> New Park & Ride site, possibly served by rail services to Bristol from proposed Henbury station. <b>A4 Portway and A370 Long Ashton Park &amp; Ride expansion</b> Expansion of existing Park & Ride sites.
G8	Weston-super-Mare	<b>Weston-super-Mare MetroBus</b> MetroBus serving Weston town centre, Weston villages, and possibly Park & Ride. <b>Weston-super-Mare Park &amp; Ride</b> New Park & Ride site at either A370/A371 junction, M5 J21 or proposed J21a. <b>Local bus improvements</b> Additional bus priority measures and bus stop infrastructure to improve journey reliability. <b>Local highway junction improvements</b> Upgrades and improvements to a number of junctions related to the primary distributor route and other key junctions around the Weston-super-Mare area. <b>Local walking &amp; cycling infrastructure improvements</b> Package of walking and cycling infrastructure improvements, to promote sustainable transport modes



Appendix 4:  
Major scheme details continued

Early investment schemes in progress (committed projects)

Ref	Scheme	Details
C1	M49 Avonmouth junction	New M49 Avonmouth junction to improve access to the port of Avonmouth and the Avonmouth Severnside Enterprise Area; works are expected to be completed by the end of 2019.
C2	Temple Quarter masterplan	Masterplan to cover the 70-hectare development zone, to feature a mixed-use quarter comprising up to 11,000 homes and a revitalised transport interchange, including improvements to Temple Meads railway station. The masterplan will include station capacity improvements, better access to Temple Meads and the area, with new public space and improvements to the public realm. The project will also involve a sensitive adaptation, development and protection of the grade 1 listed station, which was designed by Brunel.
C3	MetroWest Phase 1	Upgraded train services to half-hourly connections for Severn Beach Line and the Bath Spa to Bristol line. Reopening the Portishead Line to passenger services with an hourly service is a priority for WoE authorities. New station at Portishead and the reopening of former Pill Station.
C4	MetroWest Phase 2	Reopening of Henbury line to an hourly spur and increase train services to Yate. New stations at Henbury, North Filton and Ashley Down.
C5	Hengrove Transport Package	Internal roads and creating access for Metrobus through urban living site of around 1500 homes.
C6	Lockleaze Transport Package	Including bus lane on Muller road and accessible pathway through Stoke Park to cater for urban living sites in Lockleaze (800 homes).



Early investment schemes under development

Ref	Scheme	Details
E1	Bristol South West Economic Link (BSWEL)	<p>New multi-modal corridor between the M5 and the A38, Bristol Airport, South Bristol and Bristol City Centre to improve connectivity and overall network resilience. The BSWEL Options Assessment Report grouped together the various options to form packages, based on their broad geographical location and their likely ability to meet the project objectives in a coherent way. The packages are labelled from 1-8, indicating the potential order of implementation, although this will depend on funding sources and engagement with external partners:</p> <ul style="list-style-type: none"><li>• Package 1: Weston-super-Mare bus network improvements; Weston-super-Mare to Bristol bus services with MetroBus compatibility (complementary services);</li><li>• Package 2: A38 online improvements between A368 to Bristol Airport, along with Downside Road junction improvements. A38 widening at Bristol Airport;</li><li>• Package 3: Banwell Bypass; Rail options: Weston Parkway station; Weston-super-Mare (WsM) – Weston Parkway – Bristol Airport bus service;</li><li>• Package 4: A38 offline improvements between Bristol Airport and South Bristol Link (SBL); A38/SBL Park &amp; Ride; Sandford and Churchill Bypass;</li><li>• Package 5: M5 J21A</li><li>• Package 6: Rail options: Bristol Airport Rail Link Phase One: Bristol Airport to Bristol Temple Meads</li><li>• Package 7: Rail options: Bristol Airport Rail Link Phase Two: Bristol Airport to Bristol Temple Meads, Severn Beach/Bath Spa, Bristol Airport to Weston-super-Mare/ Taunton</li><li>• Package 8: A370-A38 Link</li></ul>
E2	East of Bath Link	A new road connecting the A36 (south of Bathampton) to A363 (near Bathford, south of A4 roundabout) or the A4, to provide a high quality north-south route connecting the A36 and A46 to the east of Bath. This route will enable north-south traffic to avoid passing through Bath.
E3	M5 Junction 19	Improvements to M5 Junction 19 to improve access between the M5 and the Royal Portbury Dock, Portishead, Portbury and Pill. The scheme will provide enhanced capacity to improve the efficiency of movements for freight using the Royal Portbury Dock, enhancing connectivity to national road networks. The scheme will also assist in accommodating future traffic growth generated by planned housing and employment growth in the area.

Appendix 4:  
Major scheme details continued

Early investment schemes under development

Ref	Scheme	Details
E4	Passenger Rail Service and Capacity Improvements, Station Upgrades and New Stations Package	Package of rail improvement measures: Rail service improvements, bringing the frequency of local rail services up to a minimum of 2 tph, plus hourly rail services from Weston-super-Mare to London. – Infrastructure to support service improvements including double tracks on the loop line between Weston Railway Station, reinstating the southern chord at Weston-super-Mare, and the Herluin Way to Locking Road Link (bridge replacement to enable width for double tracking). – Longer rolling stock to cater for increased demand, in conjunction with longer platforms where required (including Worle, Nailsea & Backwell and Yatton), with higher quality rolling stock from all stations. – Station upgrades for existing rail stations with a focus on developing Interchange Hubs (interchange with MetroBus, Mass Transit, bus services and cycle parking provision), in conjunction with schemes to improve access to existing rail stations by sustainable modes on key routes to stations across the West of England. New railway stations at the following locations: • Constable Road, Bristol; • Ashton Gate, Bristol; • St Annes, Brislington, Bristol; • Saltford, Bath & North East Somerset. Stations to be delivered with associated infrastructure: passenger waiting facilities, bus stops, cycle stands, car parking, real-time information and be fully Equality Act compliant. Westerleigh junction upgrade.
E5	Smart Motorways: M4 J18-19 and M5 J17-21A	Smart Motorway scheme on the M4 from J18 (A46, Tormarton) to J19 (M32). This will complement the recently delivered M4 J19-20 and M5 J15-17 Smart Motorway to provide an extensive system of motorway management on the most congested parts of the network. The M4 J18-19 scheme will deliver increased capacity and enhanced reliability to complement the delivery of the new M4 J18A (to provide direct access to the Bristol East Fringe).  Smart Motorway scheme on the M5 from J21/21a (Weston-super-Mare) to J17 (Cribbs Causeway). This will complement the recently delivered M4 J19-20 and M5 J15-17 Smart Motorway, to provide an extensive system of motorway management on the most congested parts of the network. The scheme will deliver increased capacity and enhanced reliability through a potential combination of controlled motorway, all lane running and dynamic hard shoulder running, enabling improved journey times and regional connectivity.
E6	M5 J21A	A new Junction 21A on the M5 motorway south of the existing J21. This will be supported by a new multi-modal corridor connecting the new junction with the A38, bypasses for the villages of Banwell, Sandford and Churchill and major improvements to the A38 between Langford and South Bristol. The scheme will improve links to the airport and improve resilience of the Strategic Road Network. It will facilitate SDLs at Banwell and Mendip Spring Garden Village and Urban Living in Weston-super-Mare. It will also support growth at Bristol Airport.
E7	A4174 Ring Road junction improvements including Wraxall Road (Longwell Green)	Junction improvements supported by JTS linked to orbital bus route and J18a link. Wraxall Rd junction will be improved to improve access onto the Ring Road and safety at the roundabout.



Early investment schemes under development

Ref	Scheme	Details
E8	Freezing Hill junction upgrade and whole route improvements	This includes improvements at three junctions along the route between the A420 and Lansdown P&R, known as Freezing Hill Lane. Currently there are excessive delays and the route isn't suitable for the number of vehicles using it to access Lansdown P&R. The scheme also includes localised widening of the Freezing Hill Lane route.
E9	Interurban cycle routes	Strategic cycle routes across the region to supplement those detailed in the Corridor Scheme Packages to Mitigate JSP Growth. Many of these will be delivered along the MetroBus corridors and some will be identified through the West of England Local Cycling and Walking Infrastructure Plan.
E10	M4 Junction 18A to A4174 Ring Road	New motorway junction on the M4 (Junction 18A) between Junction 19 for Bristol and Junction 18 for Bath, providing a new highway link between the M4 and the A4174 Ring Road near the Emersons Green Enterprise Area. It would necessitate improvements to the M4 between Junction 19 and the new Junction 18A, plus improvements to junctions on the A4174. The scheme was considered in a feasibility study undertaken by South Gloucestershire Council and in partnership with Highways England which examined potential location options for the junction and link road. South Gloucestershire Council's Cabinet considered the outcome of the feasibility study in March 2018 and Option 1 (the Western Option at Emersons Green) was agreed as the Council's preferred location. The study has been provided to Highways England for their consideration.
E11	MetroBus – Bristol City Centre to Clevedon and Nailsea	MetroBus route from Clevedon and Nailsea to Bristol City Centre, a rapid transit limited stop service with an emphasis on segregation from general traffic with bus lanes. The section within Bristol would use the infrastructure for the Ashton Vale to Temple Meads route, which was completed in September 2018. This will help to support growth at Nailsea and Backwell and improve connectivity and travel choices.
E12	MetroBus consolidation package	A package of measures to make further enhancements to the existing MetroBus network, with potential measures including fleet upgrade, addition of descoped infrastructure, signals replacement, and Great Stoke ('Rabbit') roundabout.
E13	Park & Ride package for Bath	A Park & Ride package comprising future expansion of three existing sites at Odd Down, Lansdown and Newbridge and to explore the options for and support delivery of a new Park and Ride site to the east of Bath to address future demand for travel and to facilitate further mode shift from cars for travel into the city.
E14	Regional Electric Vehicle Charging Network	Increasing public charging infrastructure, including through 'Go Ultra Low West' (Source West) EV charging infrastructure programme.
E15	MetroBus – Bristol City Centre to Severnside	MetroBus route from Severnside to Bristol City Centre via the A403 and A4 Portway, connecting into existing MetroBus infrastructure in Central Bristol. The route would connect the logistics cluster at Severnside and Avonmouth with Bristol City Centre via the Portway Park & Ride site. This would improve travel options and connectivity for employees and businesses in accessing Severnside and Avonmouth. The scheme builds on the extensive existing bus priority on the A4 Portway, with extended bus priority, enhanced stops and upgraded MetroBus services. In particular, further bus priorities including potential bus-only links would be needed into Severnside.

Appendix 4:  
Major scheme details continued

Early investment schemes under development

Ref	Scheme	Details
E16	Bath Cycle Network and City Centre Package	Completion of a continuous and integrated network of strategic cycle routes, comprising key corridors and cross city routes, complemented by improved permeability and investment in public realm in the city centre. This network will connect key destinations across the Bath urban area. Local routes will be improved and integrated into the strategic network as part of ongoing programmes.  Bath city centre is in a natural 'bowl' with steep slopes into the city centre from the north and south. This is likely to constrain the attractiveness of cycling from the north and south, and the primary opportunities will be on east-west corridors in the city.
E17	Keynsham / Midsomer Norton and Somer Valley Public Realm Improvements Packages	Keynsham town centre public realm/ regeneration improvements to encourage sustainable modes of travel, such as walking, cycling and public transport. Including strategic cycling routes to/from Bath, Bristol, east/ north Bristol and within Keynsham including completion of the link from the Somerdale cycle bridge via the River Avon towpath to the Keynsham Peninsular and the Bristol/Bath strategic cycle network.  Midsomer Norton town centre public realm/ regeneration improvements to encourage sustainable modes of travel, such as walking, cycling and public transport. Highway, cyclist and pedestrian improvements linking the Somer Valley Enterprise Zone with the A37 to the west and the wider Somer Valley to the east.
E18	MetroBus – Cribbs Patchway extension	An extension to the existing North Fringe to Hengrove MetroBus route. MetroBus from Bristol Parkway to The Mall via Hatchet Road, Gipsy Patch Lane, North Way and CPNN. Includes bus lanes and bus links to enable rapid, reliable MetroBus services to connect existing and planned residential, employment and leisure areas in the North Fringe. Bus priority includes bus links at San Andreas roundabout and North Way, and bus lanes on Gipsy Patch Lane. The replacement of the existing railway bridge at Gipsy Patch Lane with a wider bridge to remove the pinch-point for motorised and non-motorised users is a key element of the scheme.
E19	Weston-super-Mare Package 2	Package of multi-modal highway/junction improvements to complement and support the other Weston-super-Mare schemes. These could include, but not be limited to, the M5 Junction 21 Bypass, A370/A371 Airport Rbt, Cross Airfield Link/A371 Rbt, West Wick Rbt, Airfield Bridge Link (which is likely to be bus/cycle/ped only) and Herluin Way to Locking Road Link.
E20	Weston-super-Mare Cycling and Walking Network	Completion of a network of legible, attractive and safe strategic cycle routes in the Weston-super-Mare area, with a focus on east-west routes from Worle and Weston Villages into the town centre. Within the Weston-super-Mare Town Centre Masterplan and SPD. This includes better pedestrian and cycling facilities to serve Weston-super-Mare as part of the JSP and Core Strategy Growth.



Other longer-term opportunities

Ref	Scheme	Details
L1	Strategic Rail and Road Freight Package	Freight consolidation centre (rail) at Avonmouth, network loading gauge enhancements on railway network, sustainable distribution projects at key stations (initially Bristol Temple Meads), and restrictions on HGV movements.
L2	A46 to M4 route improvements, Cold Ashton	Capacity improvements especially at the Cold Ashton roundabout to remove existing delays between Bath and junction 18 of the M4.
L3	Greater Bath Bus Network Package	New vehicles to implement fleet improvements at a faster pace. Real time information (RTI) screens at all stops and upgrade to thin-film-transistor (TFT) displays. New bus priority measures, including on A367 Wellsway, A36 Lower Bristol Road and A4 London Road. New access to Bath Bus Station from Churchill Bridge.
L4	Henbury Loop rail services	Orbital rail service around north Bristol, introduction of passenger services along freight line.
L5	Rail services to Thornbury	This includes the reopening of the line to passenger services to Thornbury. Assumes the completion of the Westerleigh junction upgrade.
L6	M5 Junction 20 Eastern Arm to Nailsea	New multi-modal connection from M5 Junction 20 (via new eastern arm) to Nailsea, which could include highway, public transport, MetroBus and walking & cycling connections to Nailsea.





