AtkinsRéalis

# Transport Topic Paper

South Gloucestershire Council

February 2025

# SOUTH GLOUCESTERSHIRE LOCAL PLAN

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# 1. Introduction

## 1.1 Purpose of this document

This report sets out the transport evidence base to support the South Gloucestershire Local Plan. It demonstrates that there is sound evidence on the transport issues, challenges and opportunities across South Gloucestershire. This evidence base has been used to inform testing and appraisal of alternative potential locations for new development, which has then been used to inform the development of the spatial strategy and selection of locations for housing and employment development. This has also been used to inform the development of a vision-led transport strategy to support the Local Plan, which will play a key role in supporting a shift to walking, cycling and public transport, and reducing the need to travel by car.

South Gloucestershire is one of the constituent authorities of the West of England Mayoral Combined Authority ('MCA')[1]. This includes a role as the transport authority covering South Gloucestershire, and it is therefore critical to ensure that the Local Plan is fully aligned with transport policies for the area. The authorities have a strong shared, collective focus on promoting sustainable travel options across the Mayoral Combined Authority area.

The authorities have also made significant investments in building the transport evidence base. This includes the development of the West of England Regional Transport Model ('WERTM')[2]. This transport model has been built according to the Department for Transport's Transport Analysis Guidance[3] and it therefore provides a robust basis for the assessment of transport policies and schemes.

WERTM is being actively used for the development of business cases for a number of transport programmes and schemes, and it provides an appropriate framework for testing of the Local Plan. AtkinsRéalis has undertaken further enhancements to the model in the South Gloucestershire area to represent local conditions in more detail to support the Local Plan.

WERTM has therefore been used to help inform the evidence on current and forecast future transport conditions across the area. This has, in turn, been used to inform the assessment of different options for accommodating new homes and jobs across South Gloucestershire, for testing the impacts of the emerging preferred strategy, and for scoping and testing of potential transport mitigation measures.

South Gloucestershire Council has also worked closely with partners (including National Highways, the West of England Mayoral Combined Authority and adjoining councils) to review the evidence on current and forecast travel conditions and develop mitigation proposals.

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[1] The West of England Combined Authority - Home
[2] Transport modelling - West of England Combined Authority
[3] Transport analysis guidance - GOV.UK

This strong analytical foundation has helped to ensure strong understanding of the critical challenges to be addressed, and to inform development of an effective approach to mitigation. This approach means that the transport components of the Local Plan are:

- Positively prepared: because the identified transport requirements are based on clear understanding of the relationships between spatial strategy and the transport system.
- Justified: because the transport requirements are based on a robust and credible evidence base, which has also informed development of both the spatial strategy and transport strategy.
- Effective: because there is a clear understanding of how the components of the transport strategy would work in practice, supported by strong joint working across the area.
- Consistent with national policy: because there is a strong focus on applying sustainable travel principles from all local authorities in the West of England.

Decision-makers should now take a “vision-led” approach to transport planning. This means a move away from simply predicting peak car traffic and improving the road network to reduce traffic delays. Instead, where possible, decision-makers should build a clear vision for local areas and identify the blend of transport policies and infrastructure to achieve this vision, with a strong focus on more sustainable forms of travel. It has been known for several years that simply building more roads will lead to more car use, termed ‘induced demand’. The focus is now to think more holistically about the needs of different places, with planning of a wider range of travel options to proactively influence people’s travel choices.

## 1.2 Structure of this report

This report is structured as follows:

- Chapter 2 sets out the transport policy context that has informed development of the Local Plan and its supporting transport strategy. This includes national policies (informed by NPPF and the Department for Transport), regional policies (informed by the Western Gateway sub-national body), and local policies in the West of England.
- Chapter 3 provides evidence on the transport issues in South Gloucestershire. This includes an overview of the existing transport networks (road, rail, bus, and active travel), together with evidence on current patterns of accessibility and travel choices. It also sets out the challenges associated with background growth in travel demand in the area, and the impacts on future operating conditions on the transport network.
- Chapter 4 describes the process of developing the emerging preferred strategy that underpins the Local Plan. It describes the staged approach set out in the Local Plan Regulation 18 Phase 3 consultation to assessment and sifting of different development locations, including transport modelling of different ‘development lenses’, which provided quantified evidence to inform the site appraisal process.
- Chapter 5 presents the forecast impacts of the emerging preferred strategy on the transport network and the issues that will need to be mitigated. It then sets out the proposed transport strategy to support the Local Plan, including specific proposals to enhance walking, cycling and public transport services, together with measures to manage traffic impacts.
- Chapter 6 concludes by setting out the proposed delivery strategy, including alignment with new Local Plan policies, estimated costs and sources of funding.

# 2. Transport policy

## 2.1 Introduction

This chapter provides an overview of national, regional, and local transport policies that have influenced the development of the new Local Plan.

## 2.2 National policy

The **National Planning Policy Framework** (NPPF)[4] sets out the Government's policies for achieving sustainable development in the planning system. Chapter 9 of the NPPF sets out policies on sustainable transport, highlighting that transport issues should be addressed at the earliest stages in plan-making. It highlights that significant development should be focused on locations that are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. The NPPF therefore has a strong emphasis on reducing car trips, through promoting development in places that are close to existing amenities, with the potential to promote walking and cycling, with potential to be served by public transport for longer-distance journeys.

Following publication of the NPPF 2024 on 12th December 2024, South Gloucestershire Council is progressing its Local Plan in accordance with Para 234a of the NPPF.

The principles for sustainable transport set out in the NPPF are addressed in this Transport Topic Paper. Chapter 3 sets out the evidence on transport issues across South Gloucestershire, and the opportunities to provide a wide range of travel choices to support new development. Chapter 4 then demonstrates how testing of alternative locations for new development has been used to inform the Emerging Preferred Strategy, which is designed to meet the principles set out in the NPPF.

The Department for Transport (DfT) is responsible for setting transport policy across England. It has a strong focus on promoting sustainable travel policies, with strong support for walking, cycling, buses and rail, encouraging local authorities to develop tailored place-based approaches that meet the needs of their local communities.

The **Future of Mobility: Urban Strategy**[5] ('FoMUS') (March 2019) set out the opportunities and challenges associated with rapid changes that are taking place across the transport sector. These include major changes associated with automation, new business models, data and connectivity, cleaner transport, new transport modes, and changing attitudes to mobility. The FoMUS sets out the (former) Government approach to harnessing innovation to support national transport policy goals. In particular, it highlights that '*walking, cycling and active travel must remain the best options for short urban journeys*', and '*mass transit must remain fundamental to an efficient transport system*'.

[4] National Planning Policy Framework - GOV.UK
[5] Future of mobility: urban strategy - GOV.UK

The **Transport Decarbonisation Plan** ('Decarbonising Transport: A Better, Greener Britain', July 2021)[6] described the (previous) Government's plan for decarbonisation of the UK's transport system. This highlighted the scale of the challenge in meeting the Government's commitments and set out a comprehensive action plan to decarbonise cars and vans, buses and coaches, freight, railways, and the maritime and aviation sectors. It focusses on increasing walking and cycling for shorter trips, promoting growth in bus patronage, and providing more capacity on the rail network to accommodate growing passenger and freight demand. It also sets out the national strategy to accelerate adoption of zero emissions cars and vans and plans to support the transition to zero emissions goods vehicles.

The Decarbonisation Plan proposes place-based approaches that respond to the needs of different areas, with a key leadership role for local authorities. It sets out that local transport funding will be reformed to support decarbonisation objectives and highlights the importance of effective spatial planning in reducing the need to travel.

The spatial strategy set out in the Local Plan is designed to meet these objectives, by locating new homes close to existing employment and amenities, which will reduce distance travelled and provide a wide range of travel choices, and therefore reduce car dependency in new development. Chapter 4 of this Transport Topic Paper provides further detail.

**Bus Back Better**[7] (March 2021) is the national bus strategy for England. This described the (as then) Government's vision for buses, options for new ways of working, and future opportunities for funding. It highlighted the challenges associated with the recent cycle of decline in bus use across most of England and barriers to bus use, but also the recent examples of success, including investment in the West of England in the metrobus system.

It also highlights that buses should be more frequent, faster and more reliable, cheaper, more comprehensive, easier to understand and to use, with better vehicles, and with better integration. It specifically highlights the importance of effective collaboration between local transport authorities and bus operators (including moves to Enhanced Partnerships and potentially commencing the process of franchising services).

By the end of October 2021, each LTA was required to publish a **Bus Service Improvement Plan** (BSIP), which should be consistent with the Local Transport Plan (LTP). The BSIP should set targets for journey time improvements, identify where bus priority is needed, set targets for bus passenger growth and satisfaction, consider roadside infrastructure (including bus stops), and address issues associated with fares, ticketing and multi-modal integration. The BSIP for the West of England is described in Section 2.4 below.

In December 2024, the new Government announced a new **Bus Services Bill**[8] that is expected to change how bus services operate across England. This will give local authorities greater control over routes, timetables, connections and fares to support their local policy objectives. At the same time in December 2024, the Government launched the **Devolution White Paper**[9],

[6] Transport decarbonisation plan - GOV.UK
[7] Bus back better - GOV.UK
[8] Government News Release on Bus Services Bill
[9] English Devolution White Paper - GOV.UK

which sets out the Government's proposed approach to devolving power to local government, including increased powers over transport and spatial planning in local areas.

The Second **Cycling and Walking Investment Strategy** (CWIS2)[10] (March 2023) described the previous Government's vision for active travel in England, with the following ambition: 'we want to make walking and cycling the natural choices for shorter journeys, or as part of a longer journey by 2040'. It built upon the previous Gear Change Strategy[11] (The cycling and walking plan for England, July 2020).

CWIS2 also includes an objective to increase the percentage of short journeys that are walked or cycled (from 41% in 2018/19 to 46% in 2025). There are also further objectives to increase the number of walking stages, to double cycling between 2013 and 2025, and increase the percentage of children who walk to school to 55% in 2025. Beyond 2025, CWIS2 sets objectives that reflect the Transport Decarbonisation Plan to continue to increase the proportion of short journeys in towns and cities that are walked or cycled to 50% in 2030 and 55% in 2035.

CWIS2 has a strong focus on investment to enable everyone to walk, wheel and cycle, including development and delivery of **Local Cycling and Walking Infrastructure Plans** (LCWIPs), adherence to LTN1/20 cycle infrastructure design guidance, and the revised Manual for Streets. It also noted that investment will be fully integrated into wider transport and development plans, with Active Travel England (ATE) playing an important role in the spatial planning system. Investment will include consolidation of long-term funding through the City Region Sustainable Transport Settlements for mayoral combined authorities (which include the West of England, see below). The Local Cycling and Walking Infrastructure Plan for the West of England is described in Section 2.4 below.

## 2.3 Regional policy

The Western Gateway Sub-National Transport Body[12] is one of seven Sub-National Transport Bodies (STBs) in England, bridging the gap between national government and local authorities, working collaboratively to speak with one voice to improve transport across the region[13]. The STB has a vision for:

*'A resilient transport network that works for everyone and is fit for the future, helping people and businesses throughout the Western Gateway to thrive while protecting our environment.'*

Western Gateway has developed a **Strategic Transport Plan**[14] (STP), covering the period 2024-2050, with five focus areas:

- Supporting sustainable housing and employment growth by improving connectivity to enable all parts of the region to flourish.

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[10] The second cycling and walking investment strategy - GOV.UK
[11] Cycling and walking plan for England - GOV.UK
[12] Information on Western Gateway: Western Gateway | Sustainable Transport for All
[13] The region includes the West of England (South Gloucestershire, Bath & North East Somerset, Bristol, and North Somerset), Gloucestershire, Wiltshire, Dorset, and Bournemouth, Christchurch and Poole.
[14] Strategic Transport Plan | Western Gateway STB

- Delivering the changes needed to reduce emissions from transport and achieve net zero carbon.
- Enabling access to services and opportunities for everyone while reducing the need to drive.
- Improving transport links in the region from north to south to ensure prosperity and opportunity for all.
- Easing freight movements on strategic routes and supporting a shift to rail, coastal shipping and alternative fuels.

The STP records the extensive programme of building evidence at the regional level on transport and the regional economy, access to the region's ports and airports (including Bristol Port and Bristol Airport) and multiple strategic connectivity studies. Building on this evidence, the STP highlights the key transport challenges facing the region and identifies a series of strategic themes and policies. For example, under Theme 1: Sustainable growth and economy, Policy S1 states that Western Gateway 'will support our Local Authorities in planning for new housing and employment developments and placemaking'.

Western Gateway STB is now in the process of developing a **Strategic Investment Plan** (SIP) for the region. The STB issued a call for proposals from constituent authorities in summer 2024, focusing on strategic interventions that will have region-wide impacts. South Gloucestershire Council engaged proactively in this process to identify strategic interventions that will support the delivery of new housing across the area. The Draft SIP has been approved by the Western Gateway Board, and consultation on the SIP was launched in December 2024[15]. It sets out proposed priority proposals for regional investment. In the West of England, these include:

- Long-distance coach connections, including new services to Bristol Airport.
- Bristol to Oxford direct train service.
- Step-free access to all train stations in the West of England.
- Rail service improvements across the West of England.
- New Platform 0 at Bristol Temple Meads station, to support improved local train services, particularly strengthened services to Cardiff and South Wales.
- Westerleigh rail junction upgrade, which will unlock capacity for more frequent train services between Bristol and Gloucester and more freight trains serving Avonmouth.
- Bus corridor package in Bristol, with improvements on routes radiating out from the city centre towards the wider urban area.
- Portishead Rail Line (MetroWest Phase 1), including new stations at Portishead and Pill.
- Walking and cycling improvements across the West of England.
- Additional passing loops for trains between Yate and Gloucester (which will enable delivery of more frequent trains between Bristol and Gloucester).
- Henbury rail line (MetroWest Phase 2), including new stations at North Filton (serving the new Brabazon development) and Henbury.
- Bus service frequencies and rural bus service improvements, including both new bus routes and upgrades to existing services.

[15] Western Gateway Strategic Investment Plan Consultation (consultation closed 2nd February)

Western Gateway's STP and SIP have a strong focus on supporting delivery of new housing and employment floorspace. This provides a strong supportive regional framework for the delivery of regional-scale investment to facilitate ambitions for South Gloucestershire.

## 2.4 Local policy

The West of England Mayoral Combined Authority (MCA) is the **Transport Authority** for the area covered by Bath & North East Somerset Council, Bristol City Council and South Gloucestershire. As the Transport Authority, it has a statutory duty to prepare a Local Transport Plan, which sets out transport policies and priorities for the area.

The MCA, working with its three constituent local authorities, together with North Somerset Council, published its **Joint Local Transport Plan 4** (JLTP4)[16] in March 2020. This sets out the transport vision for the area over the period to 2036 and shows how partners will work to achieve a well-connected, sustainable transport network that works for residents, with better travel choices, and makes walking, cycling and public transport the natural way to travel.

The JLTP4 builds on a version that was consulted on during 2019, and it has also been subject to Strategic Environmental Assessment (SEA) (including Equalities Impact Assessment and Health Impact Assessment) and Habitats Regulation Assessment (HRA).

The latest JLTP builds on a well-established track record of joint working on strategic transport issues across the West of England. A Joint Local Transport Plan (JLTP3) was previously published in March 2011 by the (as then) West of England Partnership, with increasingly strong joint-working over the last decade.

The JLTP4 was based on a strong evidence base, including a Joint Transport Study, which identified potential strategic transport proposals for delivery up to 2036, to address current challenges and to respond to future development pressures across the sub-region. The vision for the JLTP4 is:

*'Connecting people and places for a vibrant, inclusive and carbon neutral West of England'.*

Based on the evidence of the challenges and opportunities, five objectives were identified:

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

Each objective includes a series of outcomes. For example, 'support sustainable and inclusive economic growth' includes an outcome in which delivery or new housing and jobs is supported. 'Enable equality and improve accessibility' includes outcomes to 'enable seamless 'door-to-door

[16] Joint Local Transport Plan - Combined Authority

movements of people and goods', and 'low carbon transport and opportunities for reducing the need to travel are maximised'.

The JLTP4 places a strong focus on a modal shift to walking and cycling for shorter trips and to access public transport, and well-connected public transport for longer journeys. It also identifies the different roles of different modes for longer-distance journeys, travel within the West of England (longer than ~10km), local journeys (up to 10km) and journeys within local immediate neighbourhoods. The JLTP4 identified an ambitious implementation programme, which included a number of major schemes in South Gloucestershire.

Since the publication of the JLTP4, the West of England, as one of the Mayoral Combined Authority areas, has benefited from significant devolution of powers, including funding. **City Region Sustainable Transport Settlements** (CRSTS) have provided a significant increase in funding to support the transport ambitions of England's city regions, including the West of England[17]. In April 2022, the area was awarded £540 million to improve the area's sustainable transport system, the highest funding per capita in England. The CRSTS programme in the West of England builds on the principles of the JLTP, with a strong focus on development of solutions to promote mode shift across the region. This included major investment in bus corridors across South Gloucestershire, together with new and improved Park & Ride sites.

In response to the requirements set out in DfT's Bus Back Better (see Section 2.2 above), the MCA has published its **Bus Service Improvement Plan (BSIP)**. The first version was published in October 2021, with a later version in December 2022, and the most recent version in June 2024[18]. This sets out seven objectives for high mode share for buses, high quality bus services, high quality waiting environment, high vehicle standards, high level of passenger satisfaction, high quality information, and low fares and simple ticketing. It sets ambitious targets to reduce journey times by 10%, ensure 95% of services run on time, grow bus passenger trips by 24% from pre-pandemic levels, increase passenger satisfaction to 95%, and require 100% of buses to be zero emission by 2035.

The BSIP sets out ambitions over the immediate term to 2025, and then over the longer term to 2035. This includes more frequent bus services (6-12 buses per hour on radial and orbital routes), a more sustainable and stable network, more bus priority to ensure that buses arrive on time, simpler fares, improved bus stops, stations and interchanges, and a new WEST network identity.

It builds on the **West of England Bus Strategy**[19] (June 2020), which sets out the vision for improving buses across the area. This places a strong emphasis on an interchange-based network, with high frequency core services and interchanges enabling people to more easily connect to more places.

The West of England also has ambitious plans for investment in the rail system. The region has a 10-year **Rail Delivery Plan**[20], jointly developed by the Mayoral Combined Authority and Network Rail, which will enhance local rail services, improve access to stations, and improve

[17] Sustainable Transport Settlement - West of England Combined Authority
[18] Bus Service Improvement Plan - West of England Combined Authority
[19] West of England Bus Strategy
[20] 10-year rail delivery plan - West of England Combined Authority

service frequencies. This was intended to support economic recovery, rebuild passenger numbers, increase volumes of freight carried by rail, and support the West of England's major locations for housing and new jobs. It re-states the case for existing schemes (including the current MetroWest programme) and develops a longer-term rail investment pipeline.

The current MetroWest programme includes the Portishead Rail Line (Phase 1) and Henbury Rail Line (Phase 2). Schemes also include improvements to the Severn Beach Line and improvements to services to Yate and Gloucester. These have also been confirmed as regional priorities in the Western Gateway SIP (Section 2.3 above).

Over the longer term, proposed measures include completion of electrification between Chippenham, Temple Meads and Bristol Parkway, new platforms at Temple Meads, and high frequency services between Cardiff and Portsmouth, Severn Beach to Westbury, and on the new Henbury and Portishead lines. Major capacity improvements will be needed on the network, in locations including the Severn Beach line and at Westerleigh Junction. The Rail Delivery Plan also commits to a new subway under the railway at Brierley Furlong, to improve walking and cycling access to Bristol Parkway, and delivery of the new station at Charfield.

The West of England has also developed a **Local Cycling and Walking Infrastructure Plan**[21], which responds to the requirements of DfT's Gear Change and CWIS2. This identifies a need for more than £400m investment across the area, to deliver infrastructure to support a vision where walking and cycling are the preferred choice for shorter trips. This covers the period 2020-2036 and includes specific proposals for improvements to key routes across the West of England, including South Gloucestershire.

There have been significant changes in the transport environment since the publication of the JLTP4. The COVID-19 pandemic significantly impacted patterns of travel demand, and the changing national policy context has necessitated the review of the Local Transport Plan.

The MCA and its partners (including South Gloucestershire Council) are currently in the process of developing a new **Joint Local Transport Plan (JLTP5)** in response to these changes. In particular, this has a strong focus on accelerating a shift to more sustainable modes of travel. Whilst guidance is still awaited from central government on best practice in development of new LTPs, it is understood that there will be a strong focus on enabling decarbonisation of the transport system and addressing the needs of different types of place. This will further emphasise the importance of enabling a shift to more sustainable modes of travel (alongside acceleration of zero emissions vehicles).

Alongside preparation of the evidence base and development of new transport policies, the MCA (as lead authority for the JLTP5) has coordinated the collation of a long list of potential transport schemes and programmes across the region. A multi-criteria assessment framework has then been used to assess and shortlist schemes and programmes for further consideration in the JLTP5. South Gloucestershire Council has proactively engaged in this process to identify measures to improve public transport accessibility and enable mode shift, which will also support the delivery of the new Local Plan.

The West of England has ambitious plans for its transport system. These are articulated through the current Local Transport Plan, which has a strong focus on mode shift to active travel, bus

[21] Local cycling and walking infrastructure plan - West of England Combined Authority

and rail to support transport decarbonisation and to proactively accommodate the rapid increase in travel demand expected in the region during the next two decades. This is supported by a commitment to delivering these changes, through the Bus Service Improvement Plan (BSIP), Rail Delivery Plan, Local Cycling and Walking Infrastructure Plan (LCWIP), and the City Region Sustainable Transport Settlement (CRSTS) programme for the area.

There is also a strong foundation for joint working across the West of England, through well-established working arrangements through the Combined Authority and between the four unitary authorities. This is reflected in a strong shared evidence base, alignment of transport policies, and a shared investment pipeline.

# 3. Transport issues

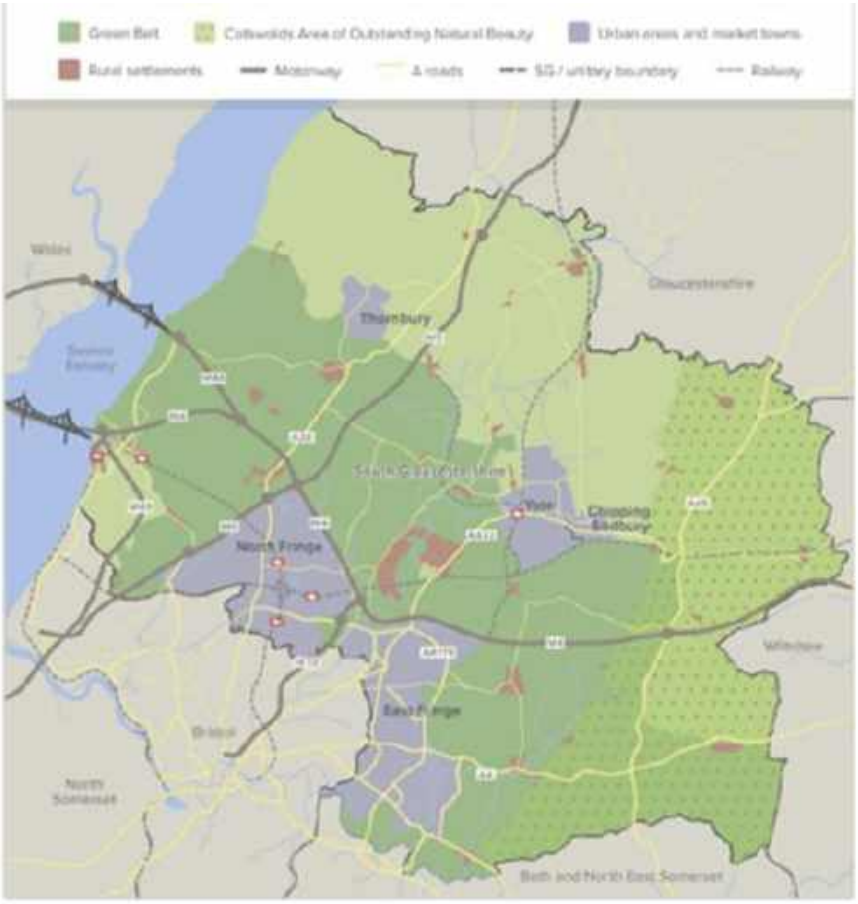
## 3.1 Introduction

This chapter presents evidence on the current transport issues in South Gloucestershire. It describes the transport network, accessibility and current travel choices, forecast travel demands, and performance of the transport network. This sets the context for identification of potential locations for new housing and employment, and the development of the Local Plan spatial strategy.

## 3.2 South Gloucestershire's transport network

Figure 3-1 shows the main roads and rail stations serving South Gloucestershire[22].

**Figure 3-1 South Gloucestershire's strategic transport network**




*Source: Local Plan Phase 1 Consultation document (see footnote below)*

[22] Local Plan Phase 1 Consultation 2020

South Gloucestershire contains several connections to the National Highways Strategic Road Network (SRN).

Running east to west through South Gloucestershire, the M4 provides strategic connections between London and South Wales via the Prince of Wales Bridge, and Chepstow via the M48 (the original Severn Bridge). M4 Junction 19 connects to the M32 (Junction 1) which serves the North and East Fringes of Bristol, and destinations within the city. M4 Junction 18 serves the A46, which connects from Stroud to Bath (which is a trunk road to the south of the junction).

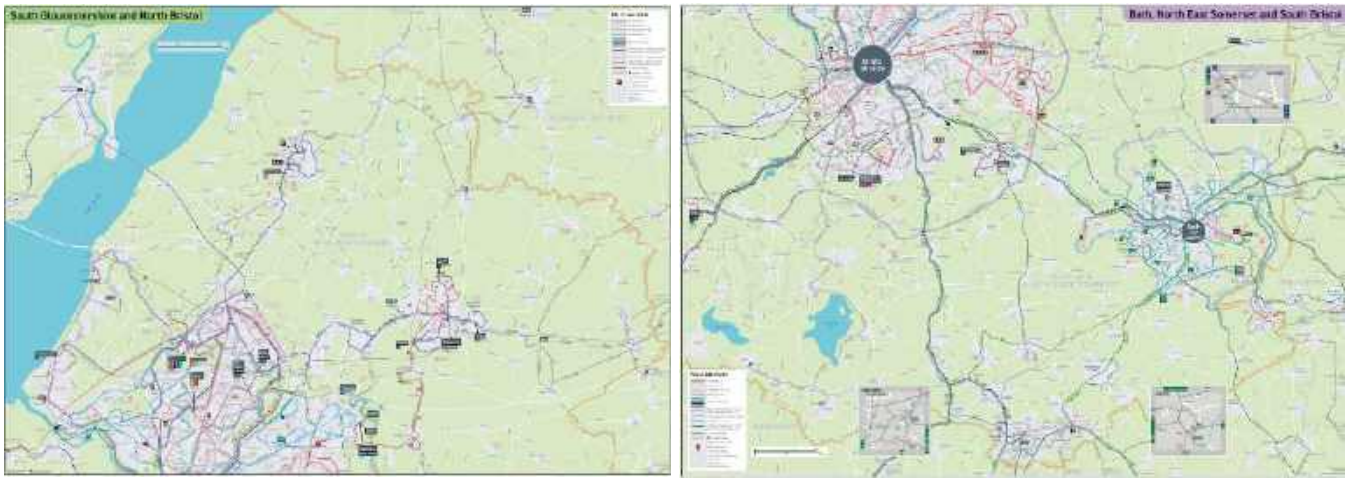
North to south, the M5 provides a strategic link connecting Birmingham to the South West. M5 Junctions 16 and 17 serve the North Fringe, whilst the M49 provides a further connection between the two major routes from Severn Beach to Avonmouth. In the north of the authority, M5 Junction 14 serves Charfield and Thornbury.

The other heavily used key traffic route is the A38 from Bristol through the North Fringe to Thornbury (and crossing into Gloucestershire to the north).

The area is served by several railway stations, including Bristol Parkway, Filton Abbey Wood, Patchway, and Yate. Severn Beach is connected to Bristol Temple Meads via Avonmouth, whilst Pilning has very limited services. New stations are also planned at Henbury, Filton North, and Charfield as part of the MetroWest rail investment programme.

Local sustainable travel options across the West of England are now being integrated under a 'WEST' (West of England Sustainable Travel) brand, led by the MCA, including buses, active travel and micromobility services. Figure 3-2 illustrates the WEST bus network[23] (these are shown in more detail in the links below).

**Figure 3-2 Bus network in South Gloucestershire**



*Source: Travelwest website (see footnotes below)*

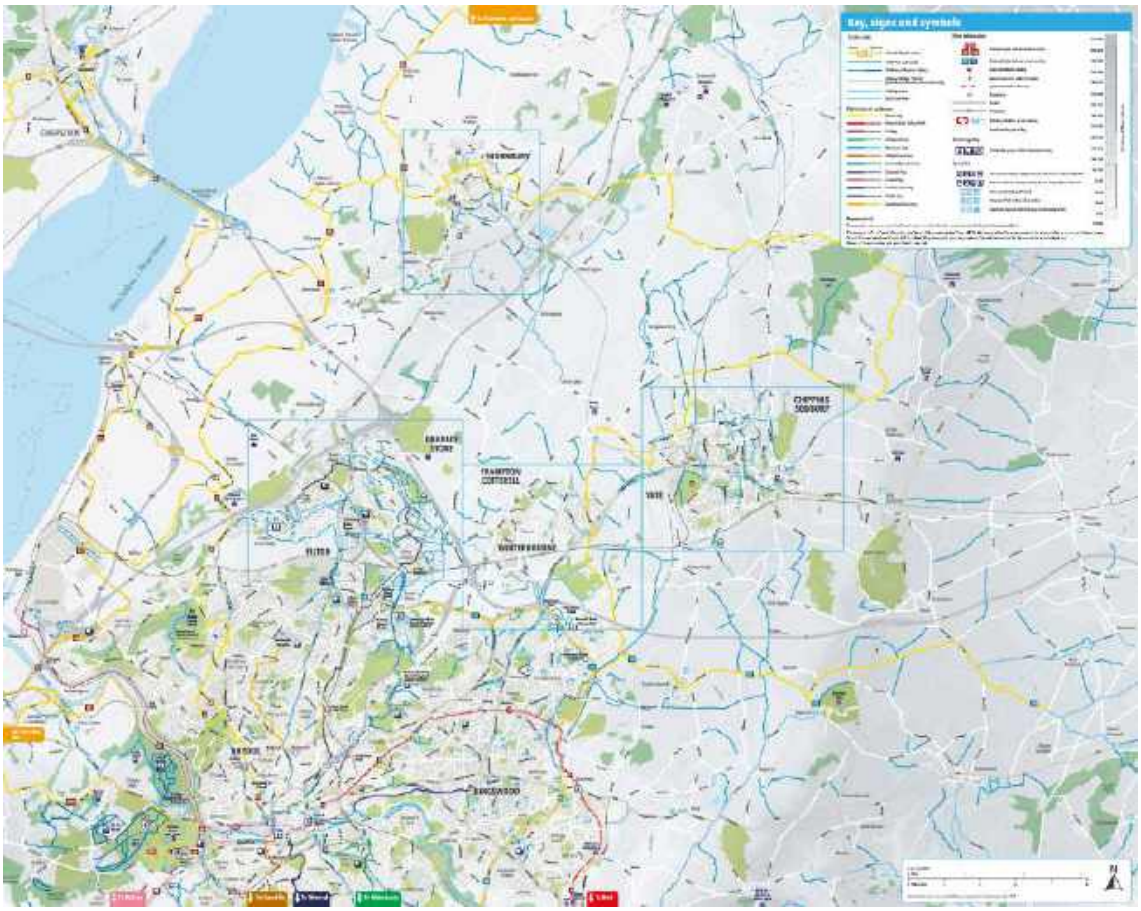
In the case of the bus network, the most frequent services are focused on the North and East Fringes. There are, however, gaps in public transport connectivity between the North and East

[23] South Gloucestershire and North Bristol Travel Guide - September 2024 to March 2025
Bath, North East Somerset and South Bristol Travel Guide - September 2024 to March 2025

Fringes. Yate also has frequent services within the town and connecting to the Bristol urban area, via the A432, Frampton Cotterell and Winterbourne[24], and Thornbury has frequent connections to Bristol via the A38 and Bradley Stoke. Bus services are much less frequent in the rural areas, except for connections between key towns. The MCA's Bus Strategy and Bus Service Improvement Plan (see Section 2.4) is supporting continued improvements to bus services, including network coverage, service frequencies and journey times.

Figure 3-3 shows the network of local cycle routes[25] (detail can be found in the link below).

**Figure 3-3 Cycling network in South Gloucestershire**



*Source: betterbybike website (see footnote below)*

South Gloucestershire benefits from an extensive cycling network, with segregated routes including the Bristol to Bath Railway Path (shown in red in the map above), Concorde Way path (connecting the North Fringe to Bristol) and Ring Road path (connecting the North and East Fringes). A number of other routes are also provided, and recent investment including through the LCWIP (see Section 2.4) has significantly improved conditions for cyclists in a number of areas.

[24] The A432 bridge crossing the M4 is currently closed for major structural repairs, with diversions of bus services and general traffic.
[25] South Gloucestershire Cycle Map.pdf

The West of England has also taken a leading role in the development of bike hire and micromobility services (WESTScoot and WESTbike)[26] through the Future Transport Zone. Hop-on / hop-off services are available in the North Fringe (within the area bounded by the M4) and East Fringe (inside the area bounded by the A4174 Ring Road).

This section demonstrates that extensive travel choices are available across much of South Gloucestershire, particularly the areas within and adjacent to the North and East Fringes of Greater Bristol. Comprehensive travel choices are also available in Yate and Thornbury. Travel choices are much more limited in the rural areas. It is also important to recognise that the areas in the north of South Gloucestershire are strongly dependent on locations in the North Fringe for jobs and amenities, which results in longer-distance trips and higher levels of car dependency.

## 3.3 Accessibility in South Gloucestershire

The maps on the following pages show accessibility to key destinations by public transport, as follows:

- Primary schools: Figure 3-4
- Secondary schools: Figure 3-5
- Hospitals: Figure 3-6
- Employment: Figure 3-7

These maps show that the urban areas of South Gloucestershire benefit from much higher levels of accessibility to key destinations.

In the case of primary schools, the primary mode of access (apart from cars) is walking; the widespread distribution of primary schools within villages and local neighbourhoods means that a large proportion of the population are able to access the nearest primary schools within a relatively short walk time. Secondary schools are fewer in number, and for many pupils these require a journey by bus.

Accessibility to hospitals (including the major facility at Southmead Hospital) is significantly affected by the configuration of the bus network, as shown by the journey time ‘isochrones’ following the bus routes towards Yate and Thornbury.

The major employment clusters in South Gloucestershire are concentrated in the North Fringe (including sites at Aztec West, Cribbs Causeway, Filton, Abbey Wood, and the University of the West of England) and at the Bristol and Bath Science Park in the East Fringe. These benefit from comprehensive bus services, but more is needed to provide strategic east-west connections to better connect to labour markets.

These maps show that accessibility is strongest in the greater Bristol urban area, including the North and East fringes, together with Yate and Thornbury. Accessibility is much more limited in the villages and rural areas, which directly impacts on travel choices.

[26] WESTscoot and WESTbike hire - WEST

**Figure 3-4 Accessibility to primary schools by public transport**

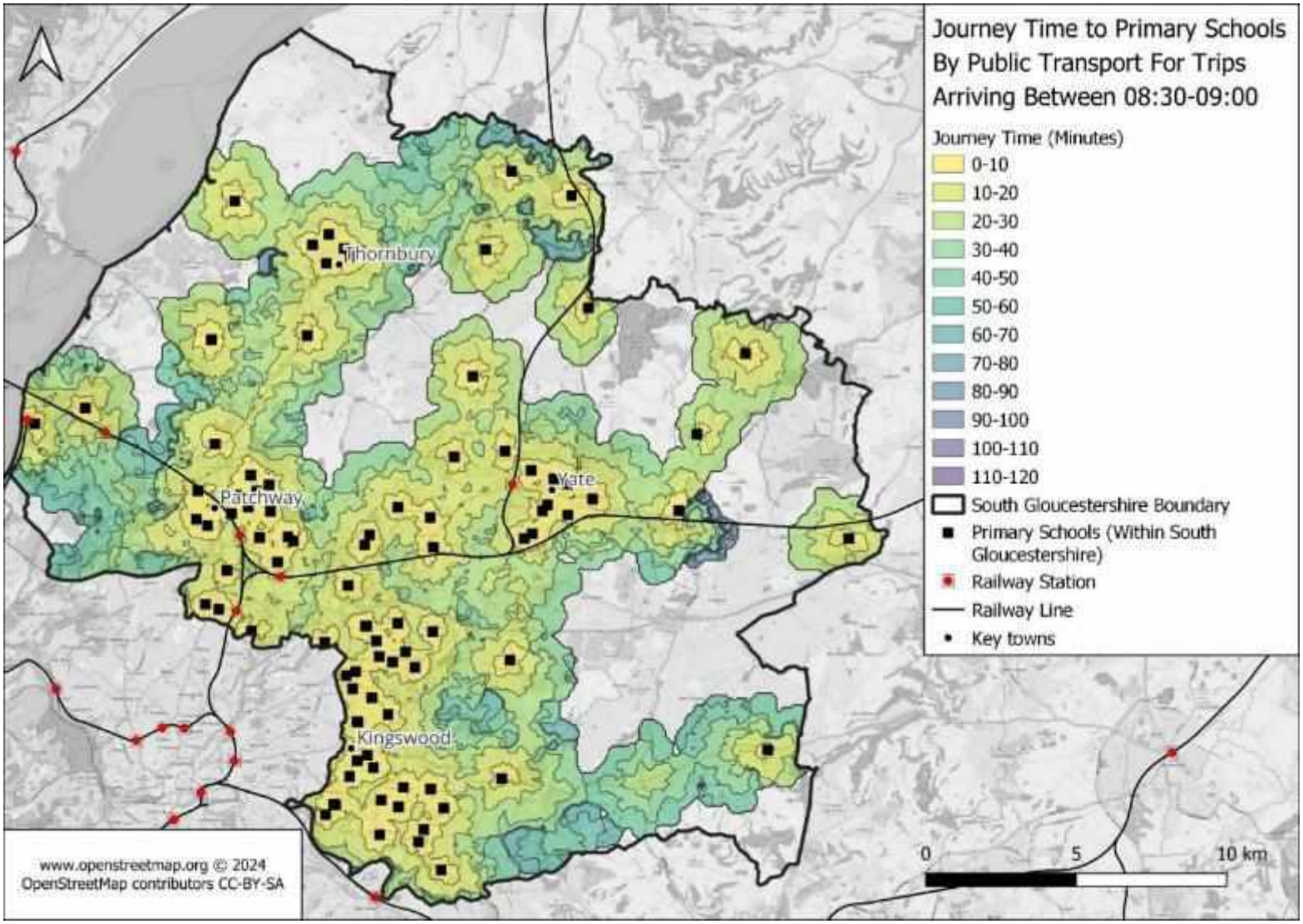


**Figure 3-5 Accessibility to secondary schools by public transport**

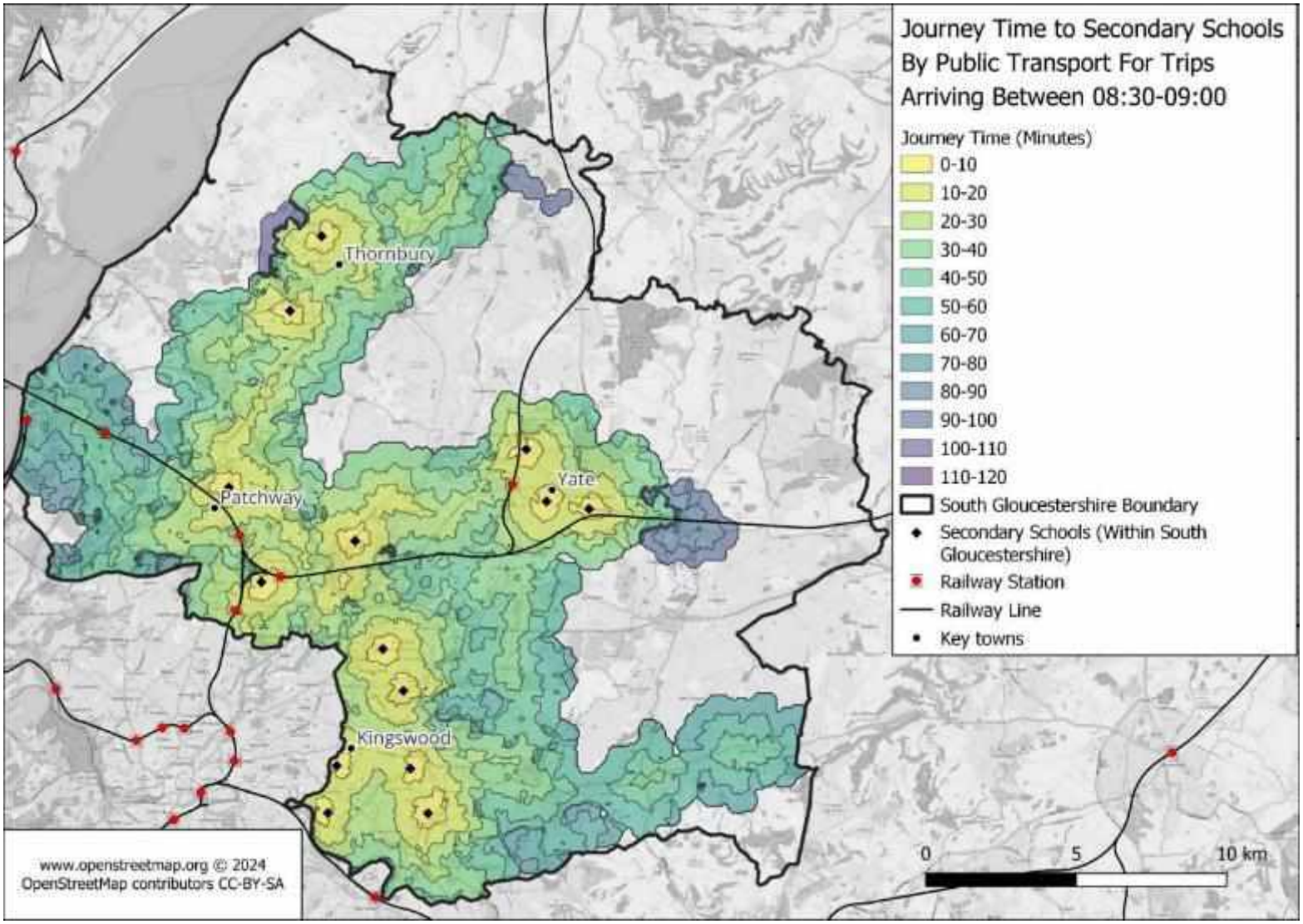


**Figure 3-6 Accessibility to hospitals by public transport**

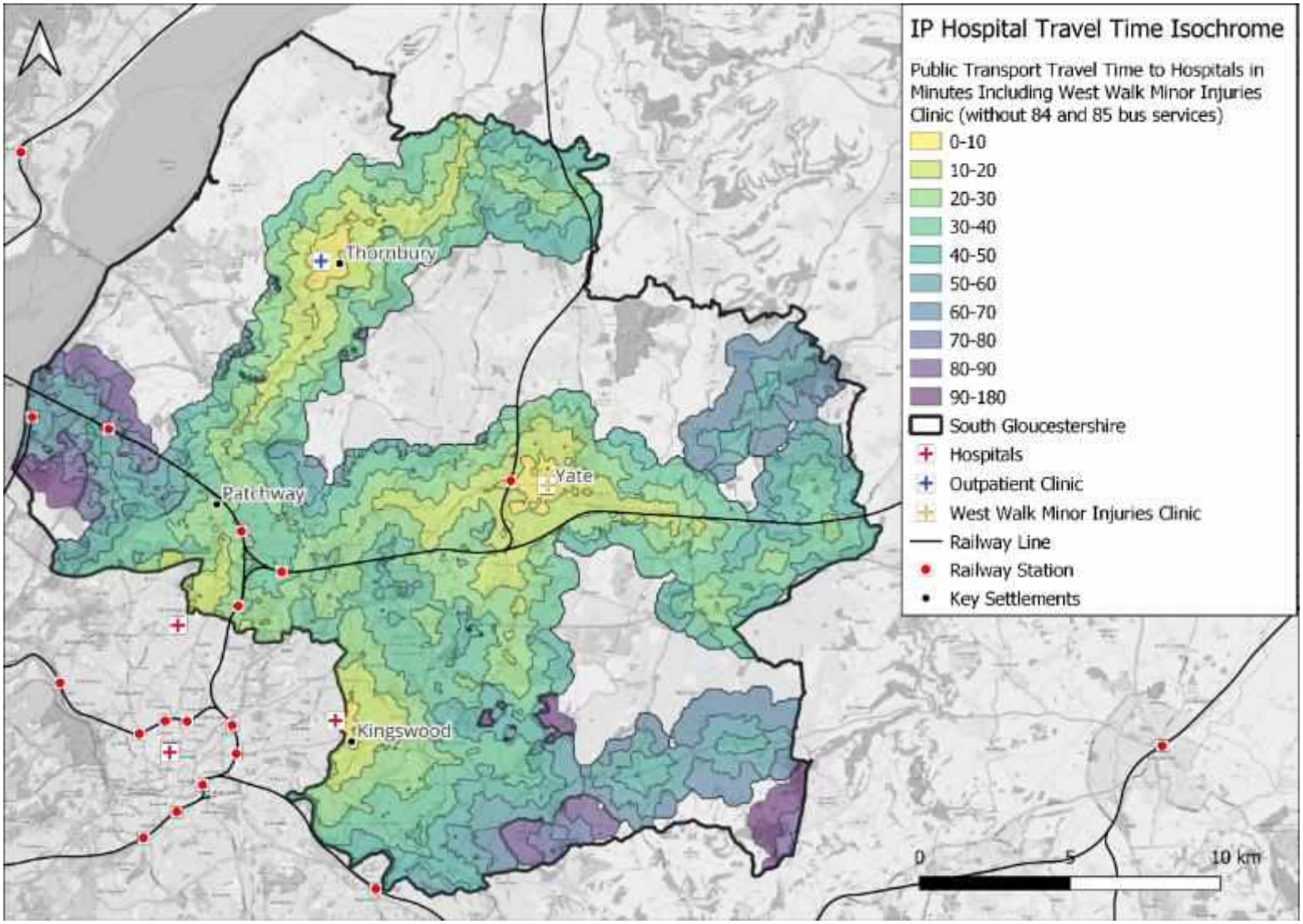
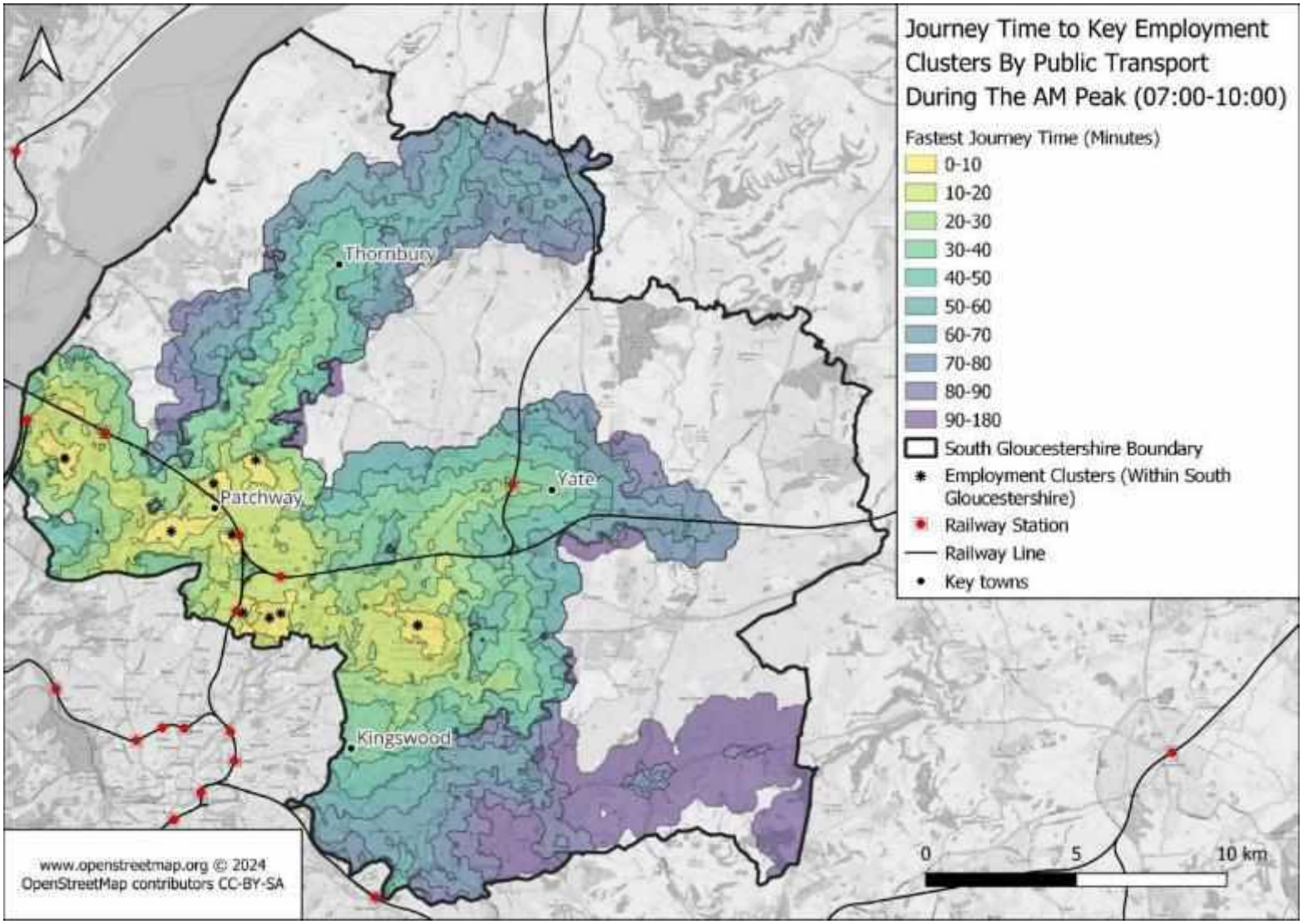


**Figure 3-7 Accessibility to major employment clusters**



## 3.4 Current travel choices

The West of England Regional Transport Model ('WERTM'), which was introduced in Chapter 1, provides extensive detail on the current patterns of travel in the West of England. This draws on extensive survey data and analysis and includes current travel patterns by mode (active travel, bus, train, car, and goods movements) and travel conditions on the road network.

The model includes a base year (based on travel demands in 2019, before the COVID-19 pandemic) and forecast years for 2029 and 2042. The 2019 base year is considered to be a suitable representation of current travel conditions, following the gradual return to 'normal' following the pandemic. The 2042 forecast year in the model is considered to be a suitable representation of future travel demands and transport conditions in the 2041 Local Plan period.

The figures on the following pages show the estimated proportions of demand for travel, by mode, across the model area during the 2019 base year. This includes all journey purposes, and therefore overcomes a common criticism over the use of Census data, which only includes travel to work. Figure 3-8 shows the mode share for active travel, Figure 3-9 shows the mode share for bus travel, and Figure 3-10 shows the mode share for travel by car. These maps show significant differences between the urban and rural areas. There are also strong correlations between people's travel choices and the patterns of accessibility shown in the previous section.

Figure 3-8 shows that many of the more rural areas are characterised by very low proportions of journeys made by walking and cycling. Although there is often a range of local services in larger villages (e.g. church, village hall, local shop, pub), the more remote rural areas have very limited services that are accessible within walking and cycling distances. In contrast, the urban areas are characterised by much higher proportions of journeys made by walking and cycling, due to much closer proximity to a wide range of amenities. These include the North and East Fringe areas (and adjacent areas such as Almondsbury and Shortwood), Yate and Thornbury.

In terms of bus demand, Figure 3-9 also shows significant differences between the urban and rural areas, although there are also higher levels of bus demand in corridors with established bus services. These include areas between Yate and the North Fringe (via the A432, Frampton Cotterell and Winterbourne) and between Thornbury and the North Fringe (via the A38 corridor). As expected, the highest levels of bus mode split are within Bristol, on corridors with high-frequency services, but these more urban characteristics are also evident in parts of South Gloucestershire such as Filton, Patchway, Kingswood and Staple Hill.

These variations in active travel and bus demand directly impact on the relative demands for car travel shown in Figure 3-10. The mode split for car travel is lowest in Bristol, which reflects the higher density of land uses, proximity of amenities, and reduced need to travel by car. These characteristics can also be seen in the more urban parts of South Gloucestershire, including Filton and Staple Hill, together with Yate and Thornbury. There are much higher levels of car use in the rural areas due to the much more limited travel options and higher propensity to drive.

This demonstrates strong evidence on the factors influencing current travel demand across South Gloucestershire and the wider West of England. It also highlights those areas that have the highest propensity for sustainable travel choices, which provides important evidence in helping to influence the development of the spatial strategy underpinning the new Local Plan.

**Figure 3-8 Active travel mode share, by origin zone, in 2019 base year**

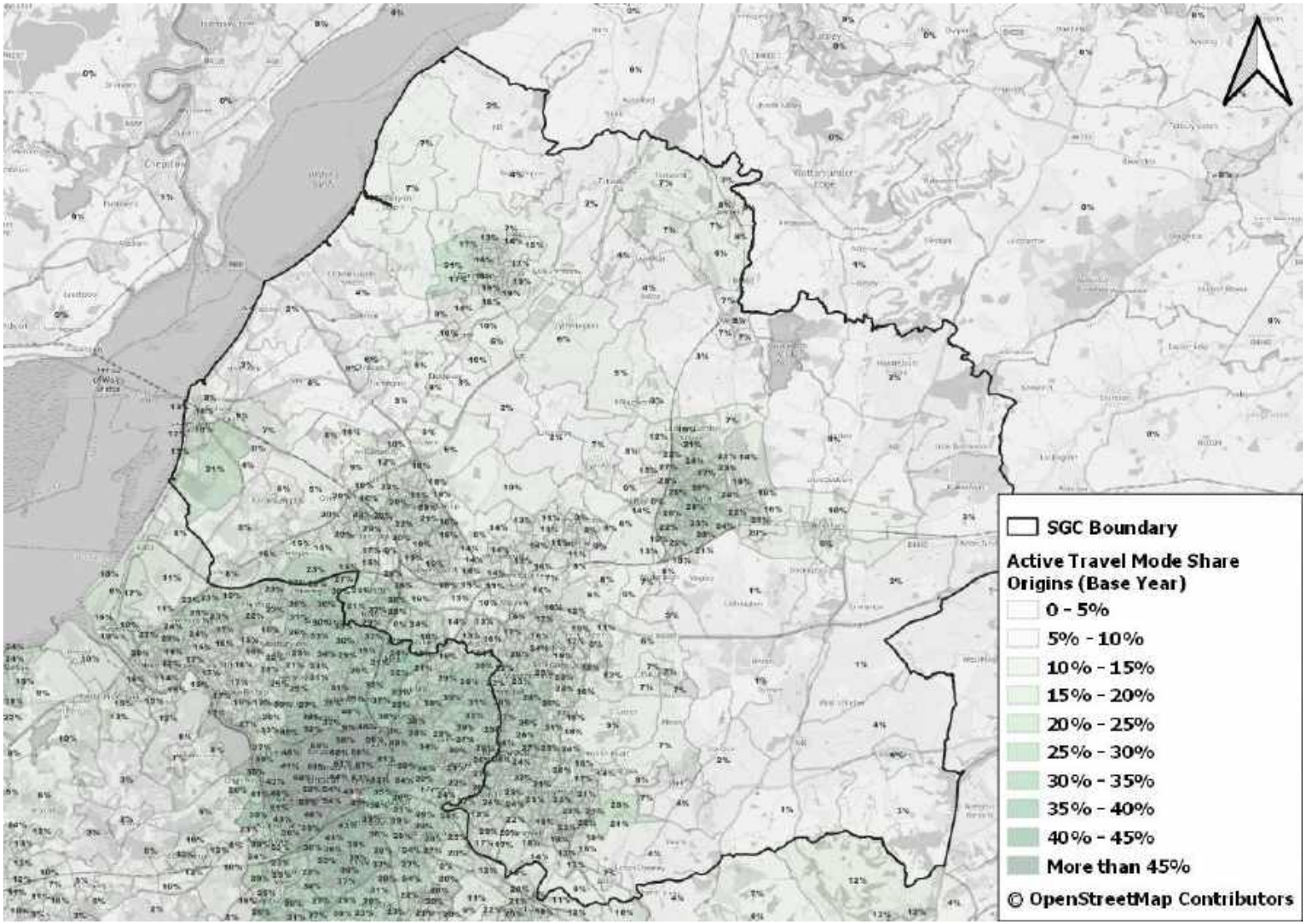


**Figure 3-9 Bus mode share, by origin zone, in 2019 base year**

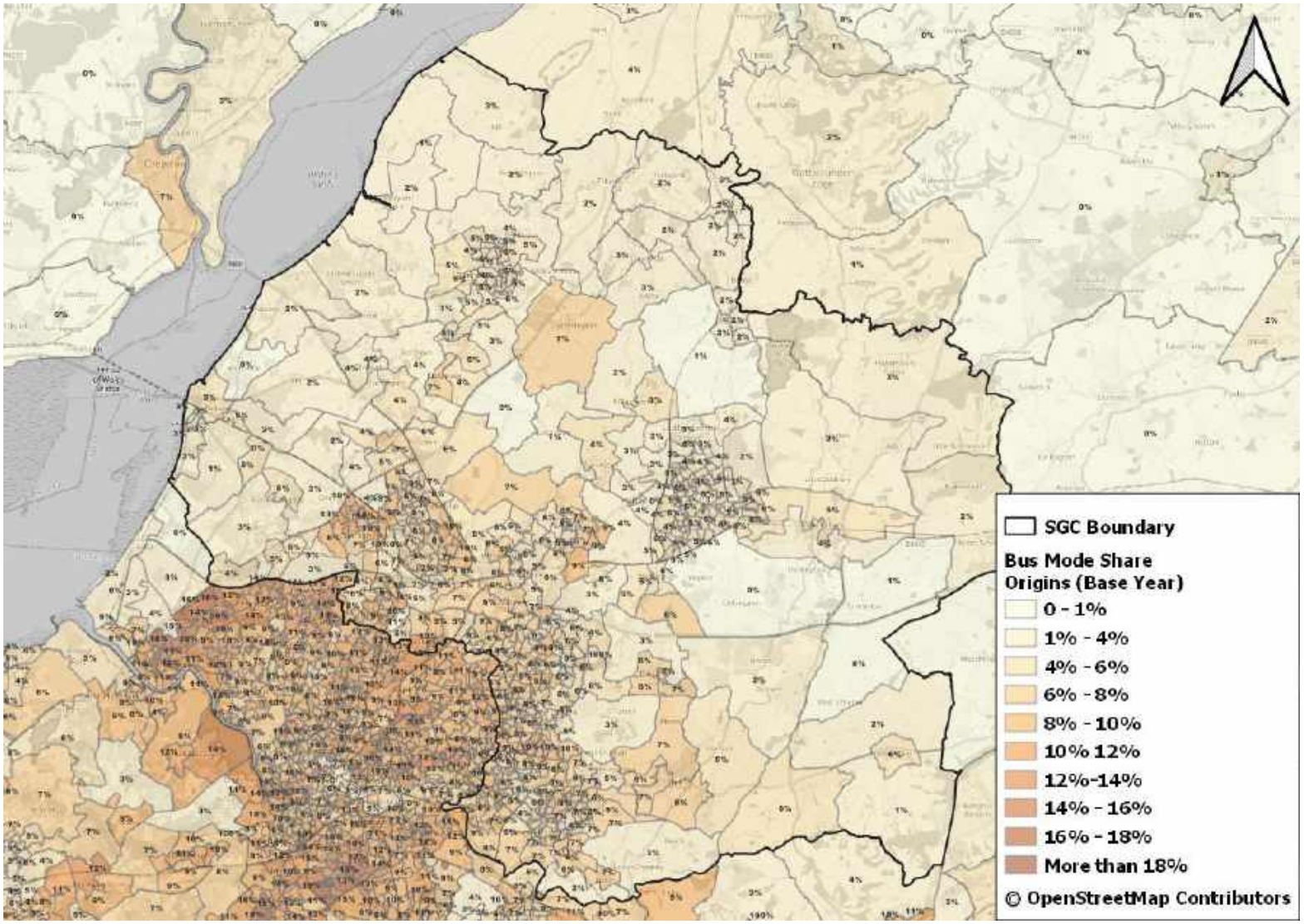
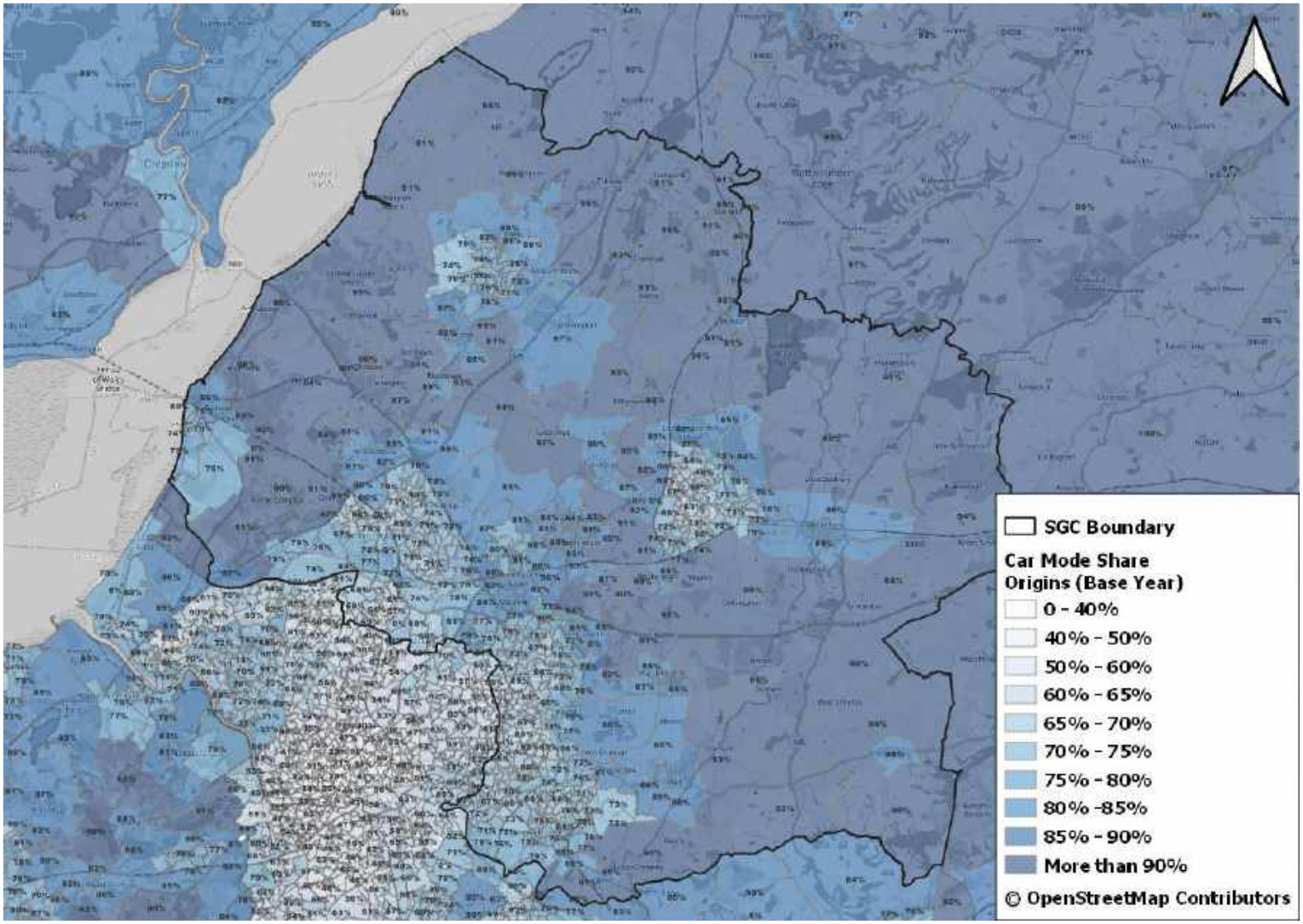


**Figure 3-10 Car mode share, by origin zone, in 2019 base year**



## 3.5 Forecast travel demand

The West of England Regional Transport Model (WERTM) has also been used to forecast future travel demand and transport conditions. As previously noted, forecasts have been generated for 2029 and 2042, based on changes in population, households and employment, which take account of committed delivery of new housing and employment land. These also take account of future economic activity (which is forecast to continue to drive increases in travel demand) and committed transport schemes, which will influence travel choices across the area.

The 2042 'Do Minimum' forecasts reflect committed delivery of housing and employment land, but do not make allowance for additional housing and employment to be accommodated through the Local Plan. Forecasts for the period between 2019 and 2042, based on committed housing delivery, before making provision for the Local Plan, estimate a 13% increase in population in the West of England as a whole, with a higher 17% increase in South Gloucestershire.

There is also forecast to be a considerable increase in freight trips within and through the region (due to anticipated increases in economic activity and the expansion of e-commerce) and long-distance trips using the M4 and M5 motorways. Forecasts have been prepared using national forecast data.

Central government forecasts indicate a 26% increase in vehicles - considerably higher than the increase in population - with fewer households with no access to a car. These forecasts also project a 30% reduction in the costs of operating vehicles, largely due to assumptions relating to electrification of the vehicle fleet. Bus and rail fares are assumed to rise marginally above long-term inflation, and it is assumed that parking costs will rise, in real terms, in central Bristol and Bath. The model also assumes the delivery of a range of committed transport infrastructure schemes (active travel, bus and highway improvements), as set out in the requirements of DfT's Transport Analysis Guidance[27].

Table 3-1 summarises the headline summary statistics from the modelling. The first part of the table shows mode split in South Gloucestershire in 2019 and the 2042 Do Minimum. The second part shows the forecast increase in travel demand by mode, in South Gloucestershire and across the wider West of England.

**Table 3-1 Summary statistics from modelling of travel demand**

| Mode split in South Gloucestershire | Car | Bus & Rail | Active | Total |
|---|---|---|---|---|
| Mode split: 2019 base | 64% | 11% | 25% | 100% |
| Mode split: 2042 Do Minimum | 66% | 11% | 23% | 100% |

| Increase in travel demand by mode | Car | Bus & Rail | Active | Total |
|---|---|---|---|---|
| Increase in South Gloucestershire | 28% | 13% | 11% | 23% |
| Increase in all of West of England | 17% | 13% | 5% | 13% |

[27] Transport analysis guidance - GOV.UK

Travel demand is forecast to grow particularly strongly in South Gloucestershire, by 23% between 2019 and 2042, significantly higher than the average for the West of England as a whole.  Active travel demand is forecast to grow by 11%, and public transport demand by 13%, but demand for travel by car is forecast to be much higher, at 28%. This will mean that the proportion of trips made by car will increase, from 64% in 2019 to 66% in 2042. This has been a key factor that has influenced the development of the Plan's spatial strategy.

Figure 3-11 shows the forecast bus demand in the 2042 Do Minimum scenario. Demand is forecast to be highest along key corridors oriented towards Bristol city centre.

**Figure 3-11 Bus patronage, 2042 Do Minimum (excl Local Plan) >100 passengers, 07:00-10:00 period**

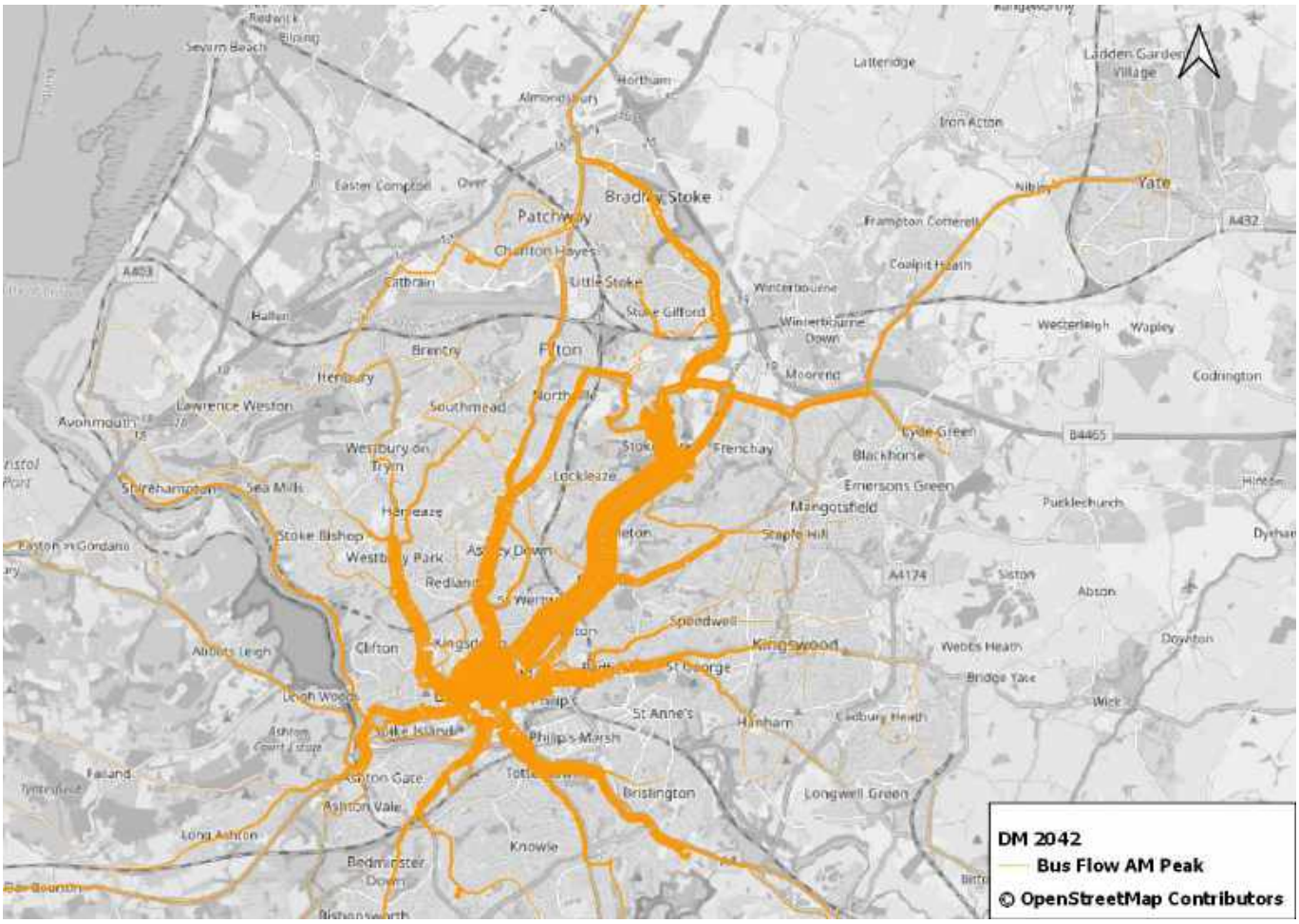



Figure 3-12 shows the forecast changes in traffic demand during the peak hour, from the 2019 base year to the 2042 Do Minimum.

**Figure 3-12 Change in traffic flows, 2042 Do Minimum (excl. Local Plan) vs 2019, AM peak hour**

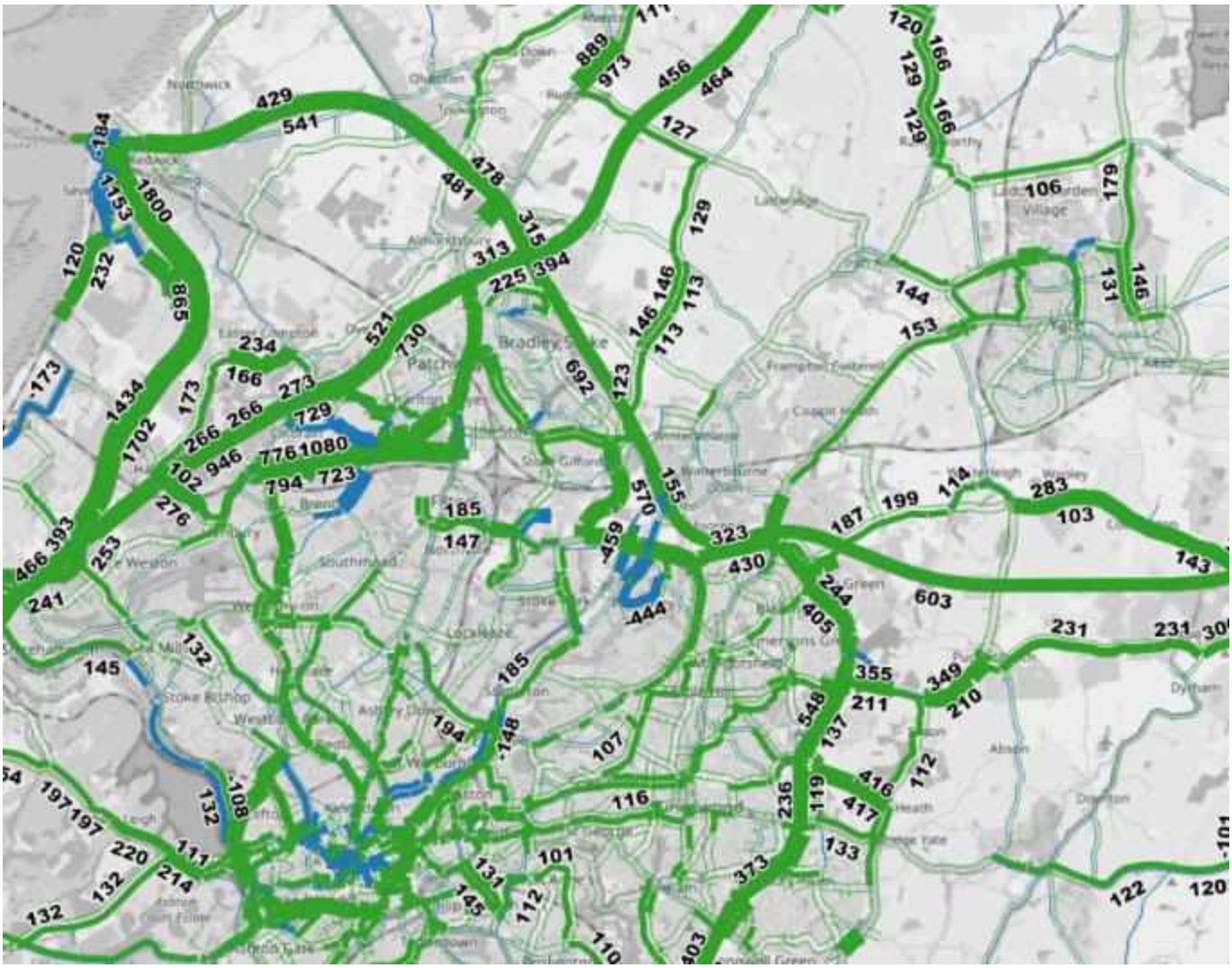



Figure 3-12 shows large increases in traffic (shown in green) in the area around Cribbs Causeway, due to the delivery of the planned Cribbs Patchway New Neighbourhood, Stoke Gifford (delivery of the East of Harry Stoke New Neighbourhood) and traffic associated with new development in Yate and Thornbury. These locations were identified in the prior Core Strategy, and South Gloucestershire Council has proactively planned the policies and infrastructure required to support the sustainability of these development locations. There are also some localised reductions in traffic (shown in blue) in locations around Filton Airfield and Hambrook due to traffic changes following new development.

The model also forecasts significant increases in traffic flows along the A4174 Ring Road, along the whole route from Hicks Gate to the University of West of England, and along the M4, M5 and M49 motorways. The increases in traffic demand on the motorways are driven by long-distance and freight traffic, together with background increases in travel demand in the West of England itself.

This evidence is clearly demonstrating the challenges of rising demand for travel across the West of England, which is particularly strong in South Gloucestershire. Falling costs of car use

will further exacerbate the challenges, with increased demands for travel by car outstripping growth in active travel and bus patronage. Although these forecasts take account of committed investments in the region (see Chapter 2), there is a clear need to raise the level of ambition to reduce car dependency by supporting mode shift to active travel and public transport. This will be critical in creating the right foundations for sustainable development in the Local Plan.

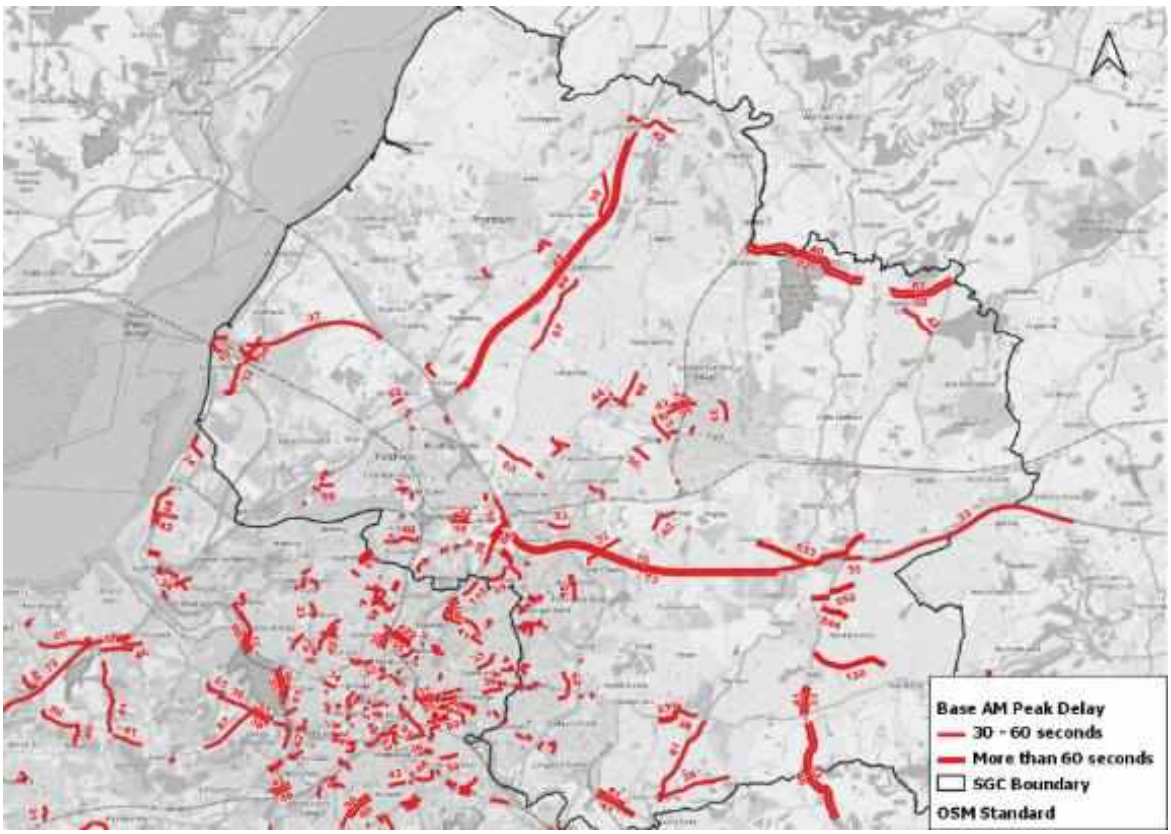
## 3.6 Network performance

The high levels of traffic in the West of England area result in extensive congestion. These are illustrated in the TomTom traffic report for the greater Bristol area[28], which provides both real time data on traffic conditions and data on performance of the network during 2024.

The forecast increases in daily vehicle trips, between 2019 and the 2042 Do Minimum, is expected to result in increasing congestion and delays on routes already experiencing congestion, trips re-routeing to alternative routes, and increasing trip re-timing and peak spreading. Average delays are likely to be exacerbated on routes that already experience delays, and there will be new hotspot locations.

Figure 3-13 maps traffic delays exceeding 30 seconds in the AM peak during 2019, Figure 3-14 shows delays in the 2042 Do Minimum, and Figure 3-15 shows the increases from 2019 to 2042.

**Figure 3-13 Traffic delays (>30 secs): 2019 base year, AM peak**




[28] Bristol traffic report | TomTom Traffic Index

**Figure 3-14 Traffic delays (>30 secs): 2042 excluding Local Plan, AM peak**

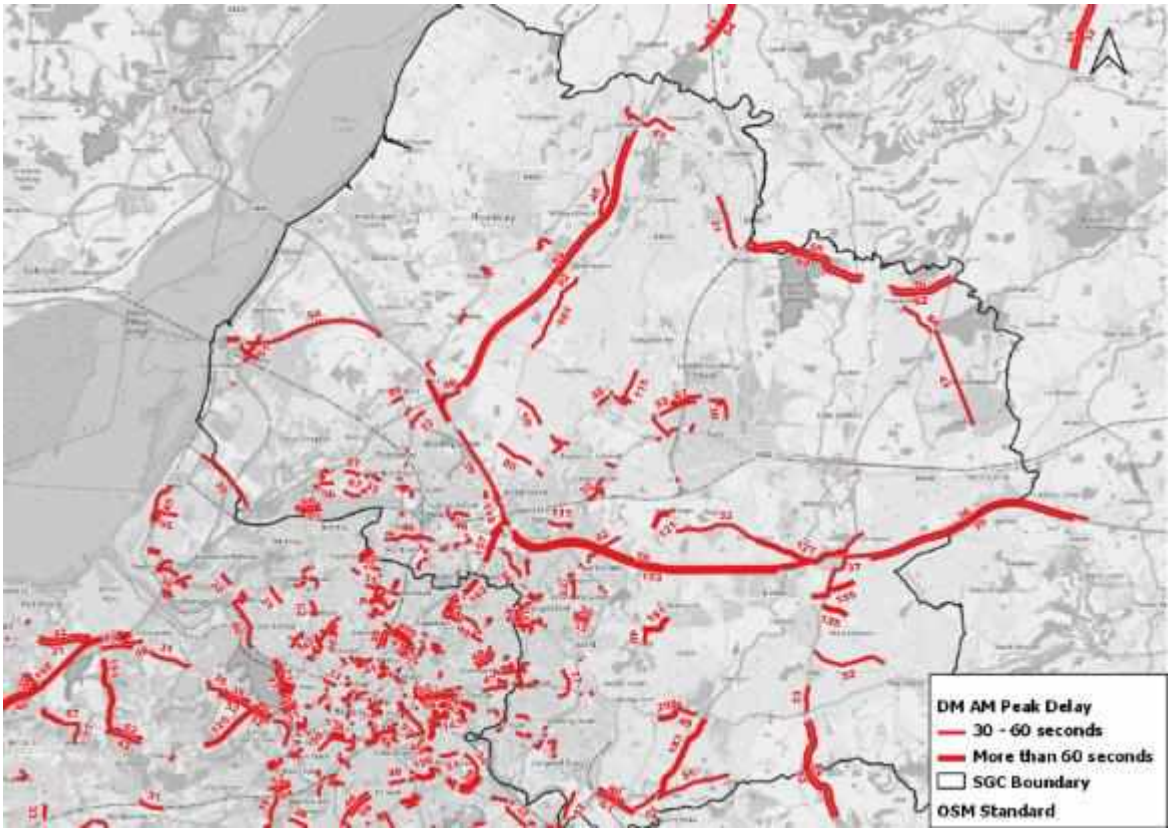



**Figure 3-15 Increases in traffic delays (>30 secs): 2042 Do Minimum vs 2019, AM peak**

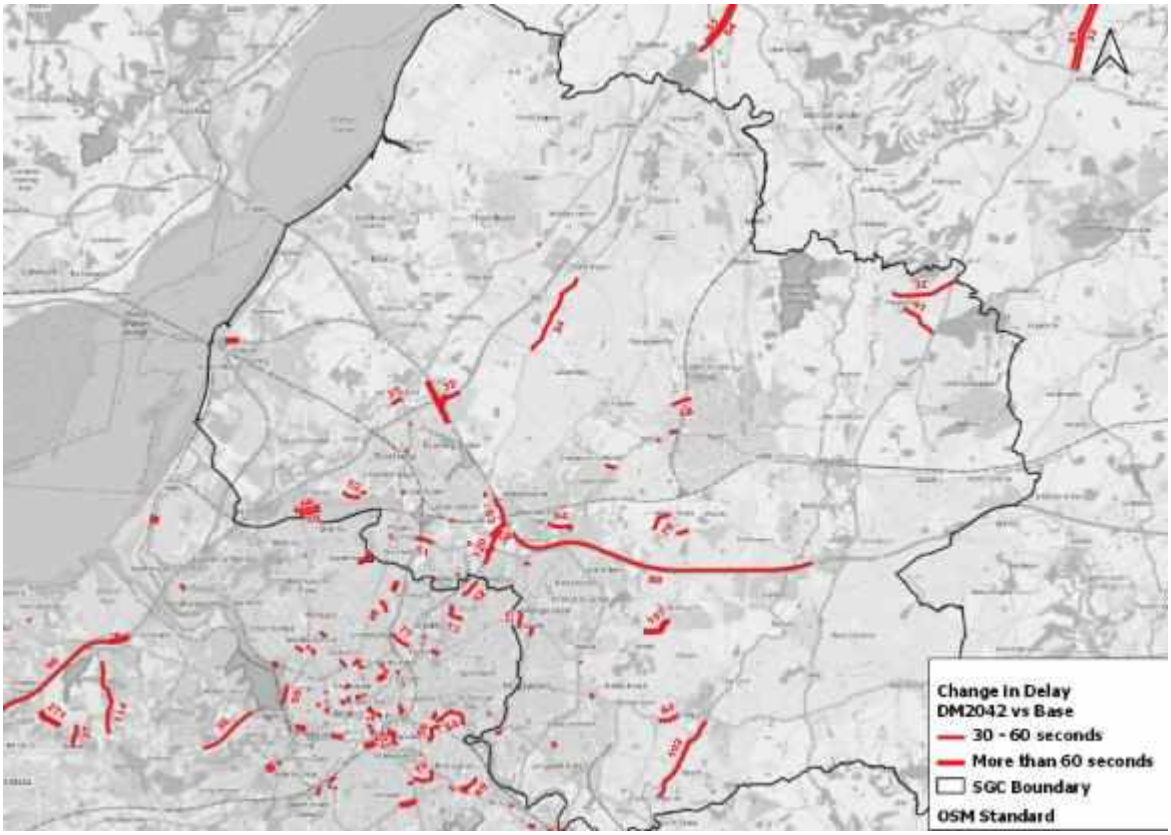


Figure 3-15 shows that there are likely to be widespread increases in traffic delays across the road network in the period to 2042. Within Bristol, there will be increases across the city, with notable increases around the city centre and Temple Meads, reflecting strategic planned development in this area. Within South Gloucestershire, increased delays are forecast on specific links in the Cribbs Causeway area (reflecting planned development at the Cribbs Causeway New Neighbourhood). Localised issues are also identified elsewhere on the network, particularly in rural areas, caused by longer-distance traffic in the rural areas.

The map also shows specific challenges on the Strategic Road Network:

- M5 northbound approach to Junction 19 (approaching the Avonmouth Bridge): caused by increasing traffic demand on the motorway from North Somerset and the south west.
- M4/M5 interchange at Almondsbury (M5 Junction 15 / M4 Junction 20): caused by increasing traffic demands on the M5 from Gloucestershire and M4 from South Wales.
- M4 westbound approach to Junction 19 (approaching the M32 junction): caused by increasing traffic demand from Wiltshire and the east.
- M4 Junction 19 and M32 Junction 1: caused by increasing traffic demand from the motorways and along the Ring Road corridor.

This indicates that strategic solutions will be required to address these challenges. There is evidence that traffic on the Strategic Road Network has increased since the previous Government's decision to remove the tolls on the Severn Crossings in 2018. National Highways commissioned a study to identify potential solutions to mitigate the impacts of the traffic, but it is understood that these focused on major capacity upgrades, which would face major deliverability challenges, and this work did not progress further.

Moving forward, it will be important for the partners in the region to work together to develop effective solutions to address these underlying challenges. The policy framework described in Chapter 2 makes clear that the primary focus should be in reducing the need to travel and enabling a shift to more sustainable modes, rather than the default approach of developing schemes to provide additional highway capacity.

The longer-distance movements using the Strategic Road Network will require new public transport solutions to enable this mode shift. The West of England authorities (the MCA as transport authority, and South Gloucestershire Council as highway authority) will need to work with the Western Gateway STB and National Highways to develop these new public transport solutions, which could include enhanced rail services and new longer-distance coach services, supported by strategic interchange facilities to enable drivers to leave their cars and reduce traffic pressures on this part of the network.

Committed development across the West of England, together with increasing background traffic, is forecast to result in widespread increases in traffic delays across the road network. It will not be possible to mitigate these increases in congestion through highway improvements alone. This will require a concerted programme to improve travel choices and facilitate mode shift, both within the West of England, and across the wider region, including trips crossing the Severn from South Wales. This approach to enable mode shift should be adopted across the region, rather than the default approach of developing schemes to provide additional highway capacity, which would also be likely to lead to induced traffic demand and the need for further increases in capacity at a later date.

# 4. Emerging preferred strategy

## 4.1 Introduction

This chapter describes the process of developing the spatial strategy within the Local Plan, with a particular focus on how transport evidence was used to help inform this process. The spatial strategy comprises a range of sites, which were selected based on a robust multi-criteria assessment process, with transport evidence playing a key role in the assessment.

## 4.2 Site selection process

The site selection process was described in the most recent Regulation 18 consultation, which took place between July and September 2024[29]. This consultation set out the Council's approach to ensuring that it has sufficient housing supply and whether it is possible to assist in meeting Bristol's unmet housing supply.

It included a Topic Paper setting out how the housing requirements would be met, together with a schedule setting out the process for assessment of the sites. Chapter 10 of the Topic Paper describes the methodology used to assess the sites. This set out the context for assessment that had already taken place to select the sites that formed the emerging preferred strategy (EPS) in the preceding Phase 3 Regulation 18 consultation[30], which took place between December 2023 and February 2024.

The steps used to sift the sites and to inform the Emerging Preferred Strategy (EPS) were as follows:

- The first step was to remove sites that were duplications, withdrawn by the promoter or had already been built out (this removed 38 sites).
- The second step was to assess the sites against the process outlined in the Housing and Economic Land Availability Assessment (HELAA) and Sustainability Appraisal (247 sites were removed).
- The remaining sites were then apportioned into three lenses for further assessment. However, some sites were also discounted at this stage based on:
  - Receiving planning permission prior to the finalisation of the lenses (16 were removed).
  - Sites with a specific focus on Gypsy Traveller/Travelling Show People or renewable energy installations were considered in other parts of the assessment (7 sites were removed).
  - Sites located within rural areas without a minimum level of sustainable access were considered inappropriate (5 sites removed).

[29] Regulation 18 - Local Plan Topic Paper for Housing Land Supply and Bristol Unmet Need - South Gloucestershire Online Consultations
[30] New Local Plan – Phase 3 towards a preferred strategy | BETA - South Gloucestershire Council

- Sites that were not near the urban edge of Bristol, market towns, transport corridors or any villages or settlements in South Gloucestershire, and not of a scale to provide services and facilities or deliverable public transport solutions (25 sites removed).

The 173 remaining sites were then taken forward for initial testing under three different lenses:

- Lens 1 - No Green Belt Loss:
  - Lens 1 sought to avoid any Green Belt loss to deliver the strategy over the plan period and therefore removed any site with that designation.
  - The 58 remaining sites included in this lens collectively had the potential, based on available capacity work, to deliver 8,353 homes over the plan period.
- Lens 2 - Urban Edge:
  - Lens 2 applied a principle to focus growth towards the Greater Bristol urban area where the majority of jobs, services and facilities would be located with good existing infrastructure and public transport connections.
  - Only those sites adjacent to the North and East fringes of Bristol were included. These 48 sites had the potential to deliver 12,750 homes over the plan period.
- Lens 3 - Transport Corridors:
  - Lens 3 focused growth at and along main transport corridors and transport hubs where there was more potential for travel by sustainable modes and public transport opportunities to be explored.
  - 74 sites in proximity to transport hubs (e.g. the planned reopening of Charfield station) or along key arterial routes into Bristol (such as the A38 and A432) were included which have the potential to deliver 11,890 homes over the plan period.

## 4.3 Testing of three lenses

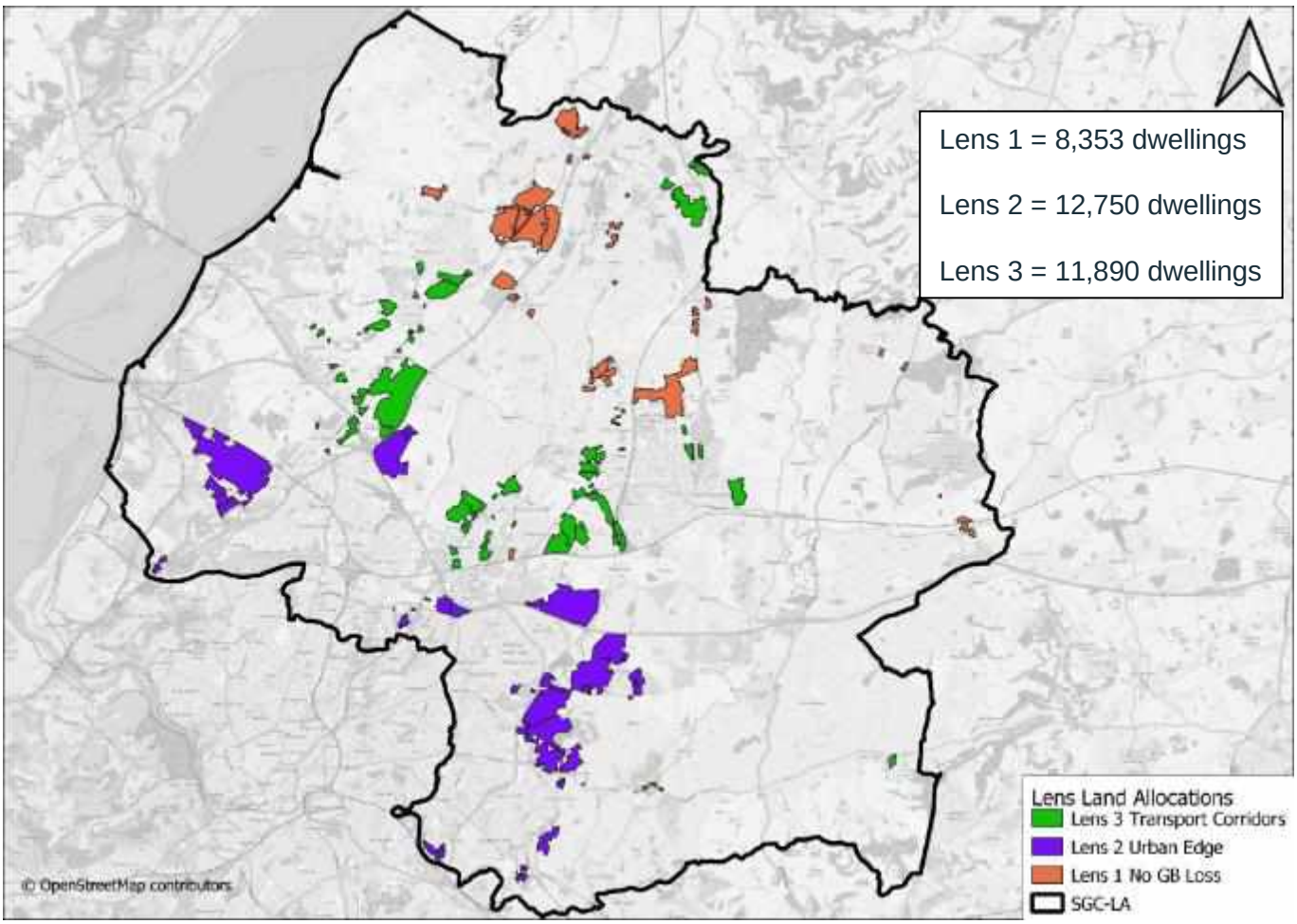
Transport modelling of the three lens options was completed in January 2024, with the report on the outputs from the modelling (**Local Plan Stage 1 Modelling Outputs Report**)[31] published in January 2024 as evidence to support the Phase 3 Regulation 18 consultation[32]. These were not tested as standalone scenarios, this approach instead grouped sites that had been taken forward from the previous sifting process.

The testing was undertaken using the West of England Regional Transport Model (WERTM) (see Chapter 3 for background context). The 2042 forecast model was used, building on the 'Do Minimum' described in Chapter 3, with updated assumptions to reflect the additional housing and employment assumed in the three lenses.

Figure 4-1 shows the locations of development in the three lenses.

[31] Local-Plan-Stage1-Transport-Report.pdf
[32] New Local Plan – Phase 3 towards a preferred strategy | BETA - South Gloucestershire Council

**Figure 4-1 Land allocations in the three lenses**




The Local Plan Stage 1 Modelling Outputs Report (Section 10.2) presented important conclusions from this model testing of the three lenses. Table 10-1 of the report is reproduced (in condensed form) in Table 4-1 below.

**Table 4-1 Overall summary of demand by mode for the three lenses**

| | Car | PT | Walk | Cycle | Total |
|---|---|---|---|---|---|
| **Additional Daily Trips by Lens** | | | | | |
| Lens 1 - No Greenbelt Loss | 25,678 | 1,237 | 2,277 | 244 | 29,435 |
| Lens 2 - Urban Edge | 38,315 | 2,285 | 5,572 | 1,204 | 47,375 |
| Lens 3 - Transport Corridors | 34,770 | 2,177 | 4,395 | 559 | 41,902 |
| **Mode Share for New Trips** | | | | | |
| Lens 1 - No Greenbelt Loss | 87.2% | 4.2% | 7.7% | 0.8% | 100.0% |
| Lens 2 - Urban Edge | 80.9% | 4.8% | 11.8% | 2.5% | 100.0% |
| Lens 3 - Transport Corridors | 83.0% | 5.2% | 10.5% | 1.3% | 100.0% |

*Source: Local Plan Stage 1 Modelling Outputs Report. Note: numbers of daily trips are rounded to integer values, so totals do not exactly match.*

Whilst Lens 1 (No Green Belt loss) would result in the smallest increase in trips overall and for each mode, the number of dwellings is far lower than in Lens 2 or Lens 3, and therefore absolute increases are not an appropriate basis for comparing the merits of each option.

Instead, it is more appropriate to understand the relative proportions of new trips made by car within each lens.

In this scenario Lens 1 (No Green Belt) would result in the highest proportion (87.2%) because the development would be in locations that are more remote from employment and amenities, with fewer viable active travel and public transport choices. In the absence of action to improve travel choices, only 8.5% of new trips were forecast to be made by active travel, and 4.2% by public transport.

Lens 2 (Urban Edge) would result in the lowest proportion of trips by car (80.9%) because new homes would be closer to employment and other amenities, with better travel choices available on the urban edge. 14.3% of trips were forecast to be made by active travel (facilitated by close proximity to existing facilities) and 4.8% of journeys by public transport.

In the case of Lens 3 (Transport Corridors), 83% of new trips were forecast to be made by car (i.e. between the other two lenses). Whilst proximity to existing corridors would assist with choices by public transport (with 5.2% mode share of new trips), many of these locations still require significant journeys to destinations, which reduces the scope for active travel (11.8% mode share).

Lenses 1 and 3 were also forecast to cause longer distance traffic across the area, due to new development being more remote from employment and amenities. This would include increases in traffic on the M5 due to higher demand from places such as Thornbury and Charfield. In contrast, Lens 2 would have less impact on the motorway junctions and more impacts on local roads in South Gloucestershire.

From this evidence, it was clear that Lens 2 presents the best opportunity to promote sustainable travel options. Closer proximity to destinations offers the potential to promote higher levels of walking and cycling, whilst enhancements to nearby bus services would help to enhance mode split for public transport. Locating new development next to existing bus corridors (Lens 3) could help to promote bus travel; however, if this is in places more remote from amenities, this would reduce the attractiveness of active travel.

## 4.4 Development of emerging preferred strategy

The process for development of the emerging preferred strategy is described in the documentation supporting the Phase 3 Regulation 18 consultation[33], specifically in Chapter 5[34] of the supporting report.

It specifically highlights that the emerging spatial strategy is designed to reduce the need for commuting across the Green Belt and to support the need to decarbonise travel. It focuses on directing a significant amount of new development close to the urban edge of greater Bristol,

[33] New Local Plan – Phase 3 towards a preferred strategy | South Gloucestershire Council
[34] 5. Towards an emerging preferred strategy | BETA - South Gloucestershire Council

using sites that are closer to existing jobs, public transport routes, and capitalising on existing facilities and infrastructure.

This included specific consideration of strategic transport issues, and the emerging preferred strategy was, where possible, influenced by the following principles:

- Locate homes and jobs in places that reduce the likelihood of long travel commutes.
- Locate homes and jobs in places where active travel connections already exist, can readily be enhanced, or new connections can be delivered and provide an attractive alternative to private car travel.
- Locate homes and jobs in locations that are on existing public transport routes or could be capable of delivering high-quality, viable and reliable public transport services in future.
- Locate homes and jobs in places that avoid, where possible, a high reliance on private car-based travel or costly infrastructure packages that are unlikely to be delivered in the plan period.

In arriving at the emerging preferred strategy, some sites, although they would meet the principles above, would have created conflicts with other key objectives (e.g. impacts on heritage assets), even if they are located near an existing transport corridor. The sites proposed in the emerging preferred strategy were therefore selected on the basis of meeting the above transport principles while avoiding significant conflicts with other objectives.

It is also important to recognise the importance of delivering a proportionate number of new homes to meet the needs of rural communities, including affordable homes. This may not lend itself to the transport principles described above, but these homes will be needed to support the needs of rural communities.

Consideration was also given to the infrastructure that it is likely to be needed to support the delivery of the new homes and jobs at the sites in the emerging preferred strategy. In addition to new transport infrastructure (e.g. sustainable travel, active travel improvements), this could include new schools, recreation space and new areas for green infrastructure.

In choosing locations for new development, one of the key principles applied was in demonstrating that the infrastructure could be delivered over the 15-year Local Plan period. Key factors including evidence of a delivery pathway, support from key stakeholders and potential funding routes. At that stage of developing the emerging preferred strategy, it was recognised that further work would be needed to develop the infrastructure programme, particularly in relation to delivery of the larger sites.

At the time of publication of the Phase 3 Regulation 18 consultation on the emerging preferred strategy, it was therefore recognised that further work would be needed to identify the transport requirements of individual sites and the Local Plan as a whole.

There have also been further iterations to the emerging preferred strategy since the Phase 3 Regulation 18 consultation. Further sites have been identified to provide additional housing supply, with the sites tested and selected using the template described in Section 4.2. More detailed transport assessment of a revised version of the emerging preferred strategy has been undertaken and is described in the following chapter.

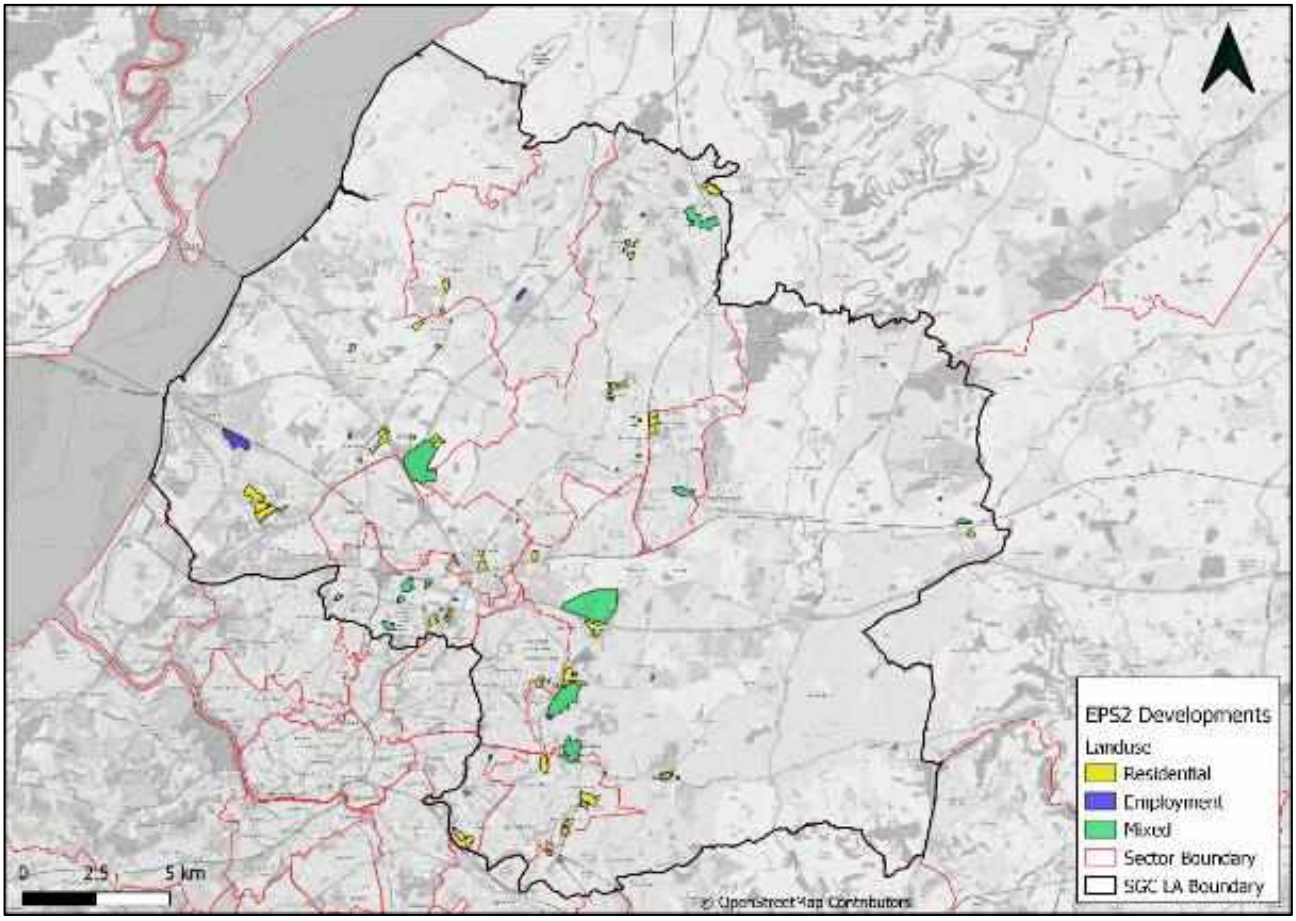
Transport criteria have played a critical role in development of the emerging preferred strategy. An objective assessment framework has been used to inform progressive sifting of sites, with more detailed transport modelling and evidence used in the testing of the three strategic lenses. This provides strong evidence to demonstrate the merits for a strategy with a strong orientation towards development on the edge of the greater Bristol urban area, in locations with good active travel access to local amenities and the ability to connect to existing bus services.

More detailed transport assessment of the emerging preferred strategy is described in the following chapters, including modelling of impacts on the transport network and development of a transport strategy to help facilitate sustainable travel choices and to support the wider transport objectives for the West of England.

## 4.5 The emerging preferred strategy

Figure 4-2 presents site allocations in the emerging preferred strategy, which was based on interim assumptions used for transport modelling. Final site allocations have since evolved to meet the latest housing requirement, which include increased housing allocations in the major development locations and minor allocations in some new locations.

**Figure 4-2 Location of Development Sites in emerging preferred spatial strategy[35]**




[35] Note: this refers to the version of the emerging spatial strategy used for transport modelling. There have since been some changes to meet the housing requirement.

**Table 4-2 Emerging preferred strategy: locations of new housing and jobs**

| Sector | Dwellings | Jobs | % Dwellings | % Jobs |
|---|---|---|---|---|
| Kingswood | 484 | 337 | 3.3% | 1.4% |
| Pilning & Severn Beach | 3,140 | 5,828 | 21.7% | 23.6% |
| Patchway | 220 | 742 | 1.5% | 3.0% |
| Filton Bristol Parkway & Frenchay | 2,007 | 10,095 | 13.9% | 41.0% |
| Thornbury | 115 | 601 | 0.8% | 2.4% |
| Iron Acton & Charfield | 1,168 | 252 | 8.1% | 1.0% |
| Yate | 647 | 2,070 | 4.5% | 8.4% |
| Pucklechurch & Chipping Sodbury | 5,404 | 4,008 | 37.3% | 16.3% |
| Mangotsfield | 98 | 595 | 0.7% | 2.4% |
| Longwell Green | 1,190 | 124 | 8.2% | 0.5% |
| **SGC Total** | **14,473** | **24,652** | **100%** | **100%** |

# 5. Testing of emerging preferred strategy

## 5.1 Introduction

This chapter describes the process of assessing the transport impacts of the emerging preferred strategy, which is proposing the delivery of 22,573 new homes over a 15-year period. This includes existing delivery commitments (e.g. major development at Cribbs Patchway) and the new sites set out in the emerging preferred strategy. This process has included:

- Describing the approach to engagement with site promoters to fully integrate sustainable travel principles into the masterplanning of each site from the outset.
- Providing an overview of the transport modelling approach.
- Presenting the forecast impacts of the emerging preferred strategy before mitigation.

This evidence has been used to inform the transport mitigation strategy, which has a strong focus on enhancing multi-modal accessibility and enabling further mode shift to support sustainability objectives.

## 5.2 Engagement with site promoters

South Gloucestershire Council has engaged closely with the promoters of major sites identified in the emerging preferred strategy. These sites, termed 'Sustainable Urban and Village Extensions' ('SUaVEs') will play a major role in meeting the housing needs of the area. Effective masterplanning of these sites will be critical to meeting the Local Plan's sustainability objectives, including reducing the need to travel, maximising the potential for sustainable modes, and reducing car dependency of residents of the sites.

The Council commissioned reviews of each site, during late 2023 and early 2024, drawing on the expertise of Design Review Panels (DRPs) organised by Design West. These identified a number of opportunities to enhance sustainability, including internal site permeability, active travel connections to surrounding networks, and improving bus connections.

Following this process, the Council and AtkinsRéalis engaged with site promoters during Summer 2024 to encourage further consideration of measures to further encourage sustainable travel choices and reduce car dependence at each site. This included a framework for site promoters to address:

- Overall development typology, including demonstrating a vision for a mixed-use place, effective integration with adjacent built-up areas, and a permeable urban form that promotes walking and cycling, effective penetration by public transport, and effective integration.
- Potential to increase self-containment, including a clear narrative on provision of amenities including schools, primary healthcare, community facilities, and local shops, as appropriate.
- Evidence on key destinations from each location, including employment, schools and shops, with objective evidence on travel options and a vision-led approach to mode split targets.
- Key routes for active travel, including addressing points of severance and identification of high-quality infrastructure to connect to existing active travel networks.

- Vision for integrating the site into the local public transport network, demonstrating that proposed services will be sufficient to attract users and that they would be viable.
- Potential for 'mobility hubs'[36], which bring together different transport modes to provide a wide range of travel choices for users.
- Options to reduce car dependency, including considering the potential for car clubs and shared mobility.

This process was used to encourage site promoters to adopt innovative thinking in the planning of their sites, to maximise the potential for sustainable travel options from the very outset of the masterplanning process. This provided a strong foundation for the development of the transport mitigation strategy that is described later in this chapter.

## 5.3 Overview of the modelling process

The modelling of the emerging preferred strategy has used the West of England Regional Transport Model (WERTM), which had already been used to provide evidence on the key transport challenges (Chapter 3) and to inform testing of different spatial lenses (Chapter 4). This approach was further developed and enhanced, in collaboration with key stakeholders, including National Highways[37] to ensure robust assessment of potential impacts on the Strategic Road Network, with a particular focus on the most congested motorway junctions.

The emerging preferred strategy was modelled using the 2042 forecast year, which is an appropriate representation of the 2041 Local Plan period. This built on the foundation of the 'Do Minimum', which includes committed development (described in Chapter 3), with additional housing and employment land included at the locations in the emerging preferred strategy.

The strategic multi-modal model was used to assess the impacts of the emerging preferred strategy on overall travel demands, and to forecast potential active travel and bus patronage with the Local Plan in place. This was used to identify areas where active travel connections should be improved, and to support the scoping of new and improved bus services to support the Local Plan.

Further assessment was then undertaken to assess, in more detail, the potential impacts on the road network. For each of the sites, trip rates were derived from the TRICS database, and tailored for each site based on potential levels of self-containment. This drew on evidence provided by the site promoters, drawing on the engagement process described in Section 5.2 above. These TRICS-based trip rates were assigned in the highway component of WERTM to derive traffic assignments on the road network. These assignments were then used as inputs to more detailed VISSIM microsimulation models of the motorway junctions and agreed with National Highways.

This modelling evidence was used to build a comprehensive picture of the key challenges for the transport network to meet the needs of the Local Plan. This addressed both the need for

[36] Mobility hubs > Overview and benefits, Mobility Hubs - West of England Combined Authority
[37] Engagement with National Highways will be documented separately in a Statement of Common Ground being prepared between South Gloucestershire Council and National Highways.

measures to improve accessibility and support mode shift, and measures to mitigate the impacts of additional vehicle trips on the road network.

## 5.4 Transport impacts before mitigation

The proposed scale of development in the Local Plan will result in a significant increase in travel demand across South Gloucestershire, with trips also impacting beyond the District into the wider West of England.

The modelling forecasts an overall 10% increase in trips compared to the 2042 Do Minimum in South Gloucestershire. Bus and rail trips are forecast to increase by 9%, active travel is forecast to increase by 10%, and car trips are forecast to increase by 10%. This is based on a scenario without any transport mitigation in place. Detailed statistics are provided in Appendix A-2 of this report.

The emerging preferred strategy has paid particular attention to locating new development in places that are accessible to walking, cycling and public transport. However, these forecasts indicate that there is a risk of high car dependency for travel from these sites in the absence of an effective transport strategy. The forecasts show that more than 72% of the trips generated from the Local Plan sites could be made by car, compared with an (already high) car mode split of 70% under the Do Minimum scenario. The corresponding mode splits by active travel and public transport would be lower than average if no action is taken to make these alternatives more attractive.

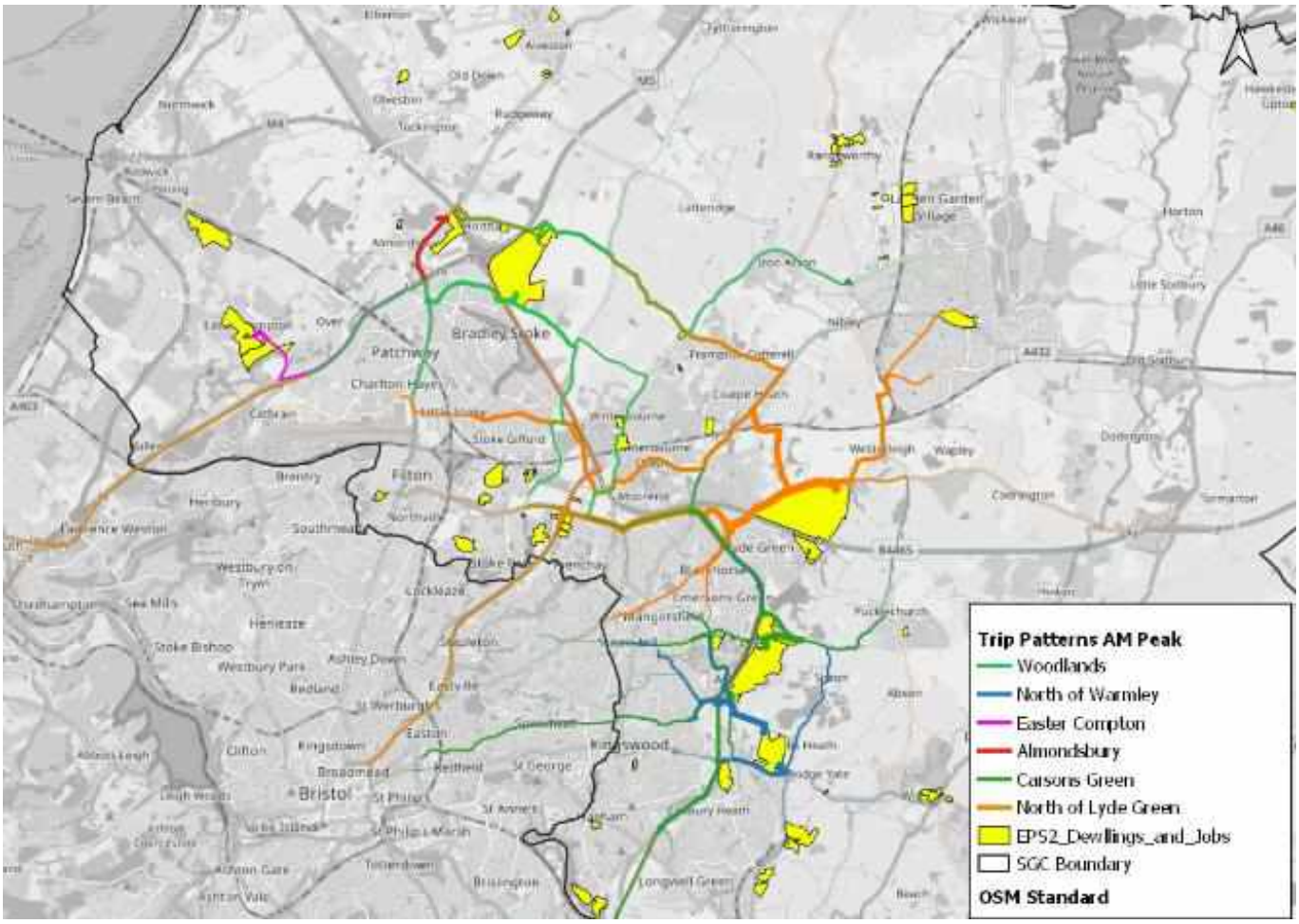
The maps on the following pages illustrate the patterns of travel demand under this ‘no transport strategy’ scenario.

Figure 5-1 illustrates the forecast routings of traffic demand from the SUaVEs. Different colours are allocated for each of the SUaVEs. This shows that most of the traffic demand from these major sites would be concentrated within South Gloucestershire, although there would be increased traffic demand from the SUaVEs towards central Bristol (via the M32 and through Fishponds), Avonmouth (via the M5) and Keynsham (via the A4174 Ring Road).

Figure 5-2 shows the forecast increases in bus passengers with the Local Plan in place. This shows a strong concentration in demand using the ‘Y’ services along the A432 corridor from Yate, A38 corridor from Thornbury and Bradley Stoke Way (T1 and M1 services), M32 (multiple services converging), routes along Filton Avenue and Gloucester Road into Bristol, and services through Kingswood and Redfield into Bristol.

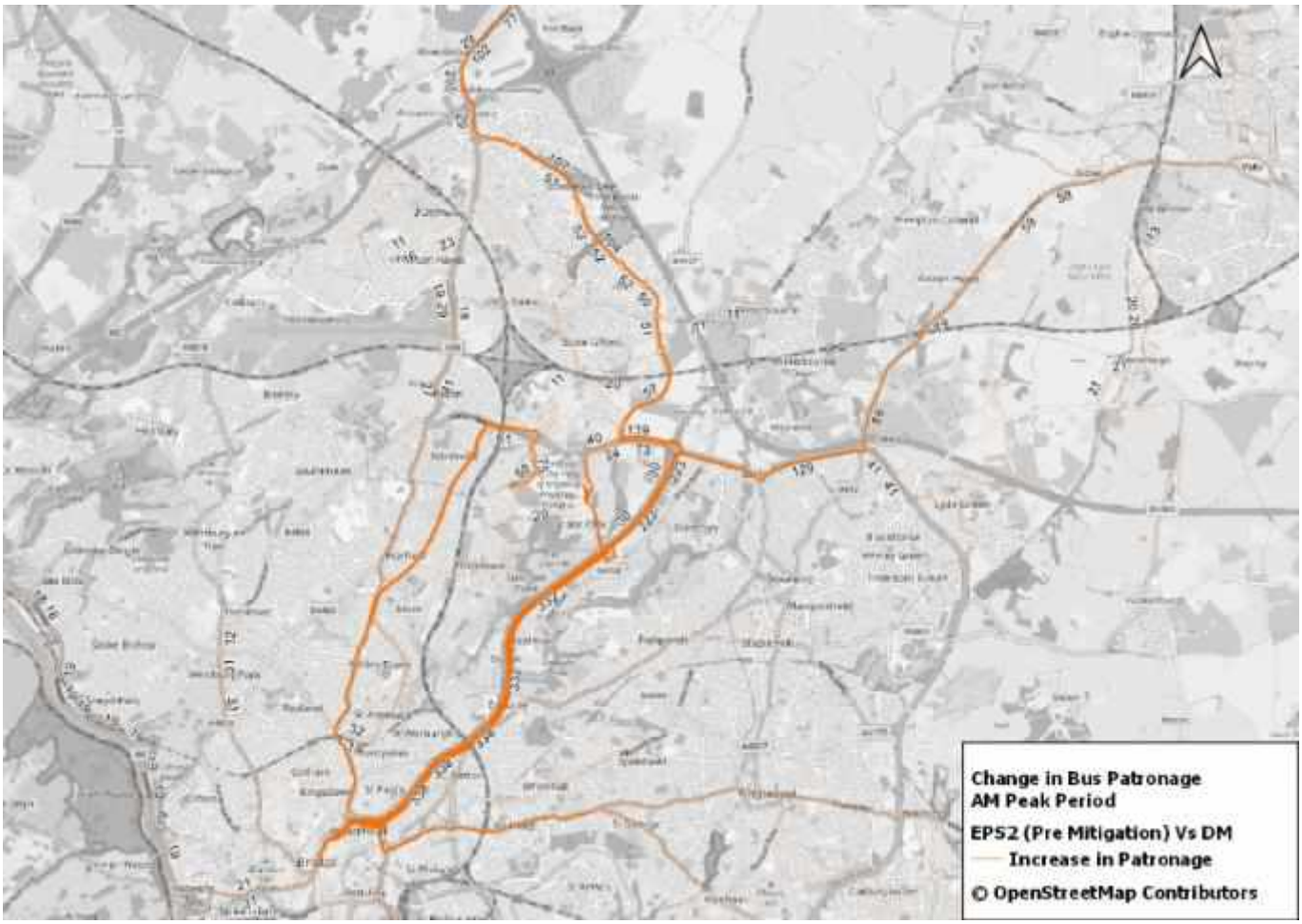
Figure 5-3 shows the forecast increases in active travel. This shows strong concentrations of active travel demand in the vicinity of the SUaVEs, particularly trips from the Woodlands site into Bradley Stoke, North of Lyde Green towards the Science Park, and significant concentrations of demand in Stoke Gifford and at the University of West of England. The sites at Carsons Green and North of Warmley benefit from close proximity to the Bristol to Bath Railway Path, and large increases in demand are forecast on the Railway Path, particularly towards Central Bristol.

**Figure 5-1 Highway trip routings (pre-mitigation) for the Strategic Urban and Village Extensions (SUaVEs), AM Peak**



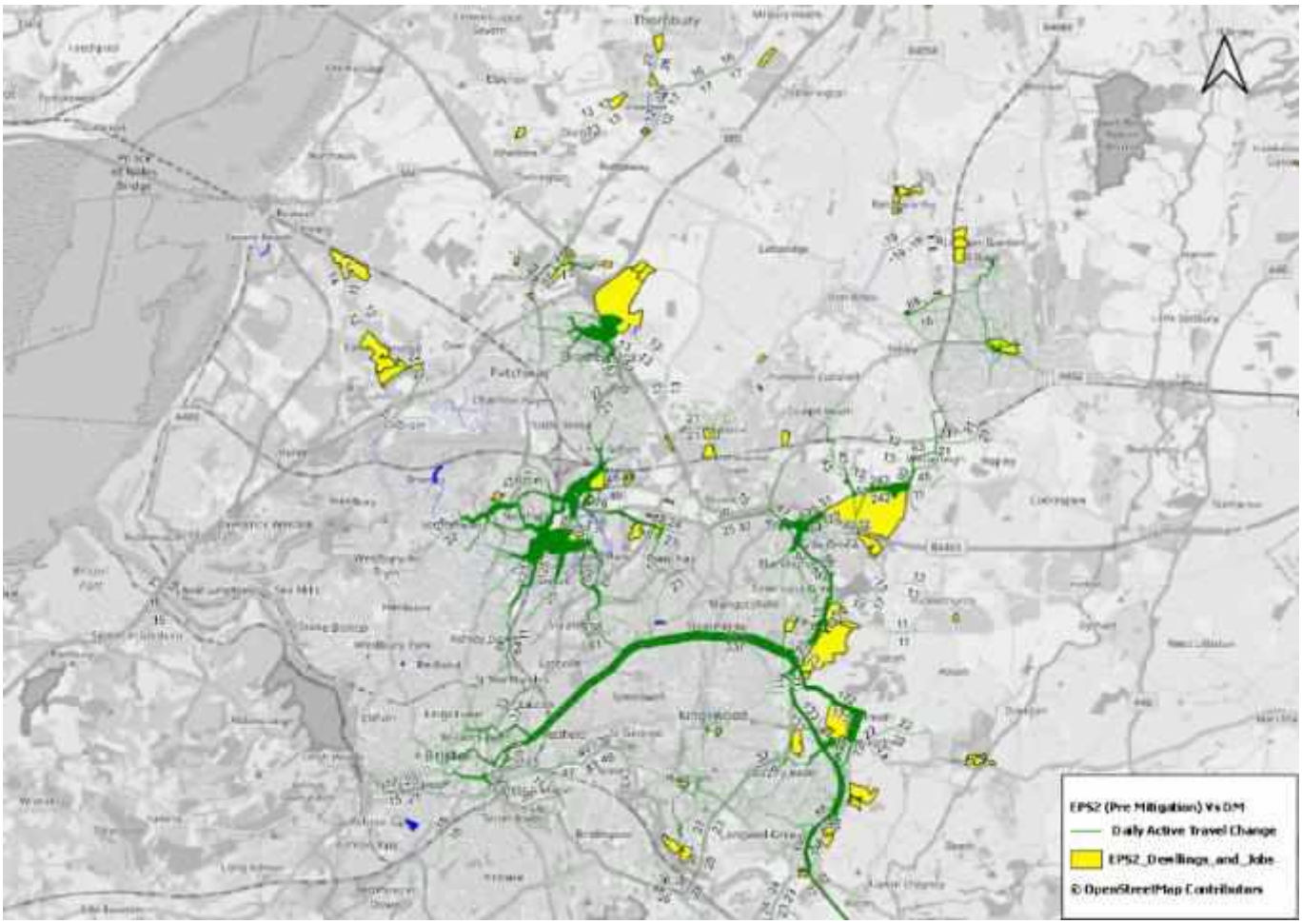

*Note: map shows development locations and model outputs from the version of the emerging preferred strategy that was used for transport modelling. There have subsequently been some amendments to the emerging preferred strategy that is the subject of the Regulation 19 consultation. However, these changes do not have a significant impact on the overall findings from the transport modelling.*

**Figure 5-2 Change in bus demand EPS (pre-mitigation) vs Do Minimum, AM Peak period**




*Note: map shows model outputs from the version of the emerging preferred strategy that was used for transport modelling. There have subsequently been some amendments to the emerging preferred strategy that is the subject of the Regulation 19 consultation. However, these changes do not have a significant impact on the overall findings from the transport modelling.*

**Figure 5-3 Change in active travel EPS (pre-mitigation) vs Do Minimum, Daily**

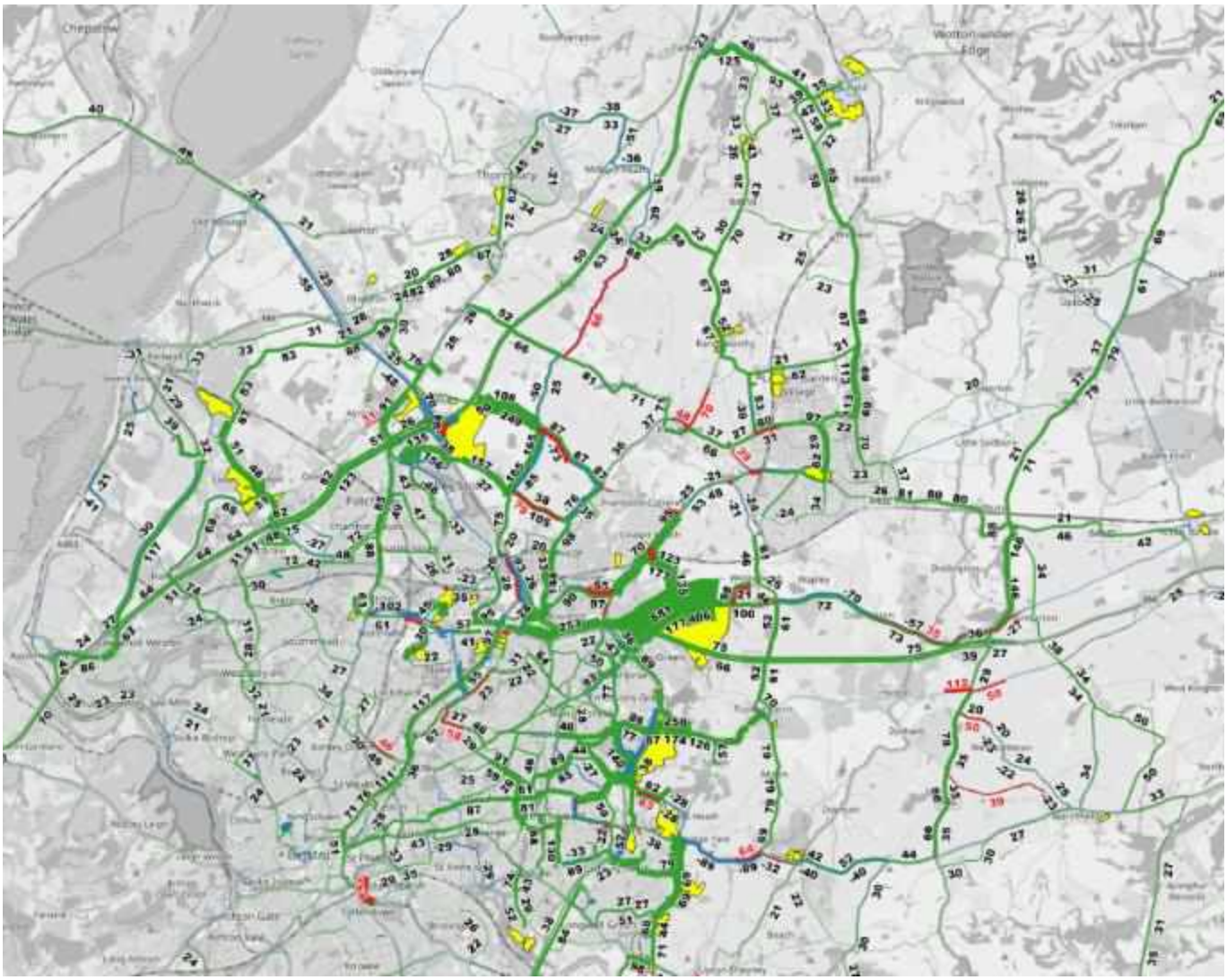



*Note: map shows development locations and model outputs from the version of the emerging preferred strategy that was used for transport modelling. There have subsequently been some amendments to the emerging preferred strategy that is the subject of the Regulation 19 consultation. However, these changes do not have a significant impact on the overall findings from the transport modelling.*

Figure 5-4 illustrates forecast changes in traffic flows and delays, resulting from the Local Plan, compared with the Do Minimum scenario. This assumes no transport strategy to mitigate the impacts of the increased traffic demand. Increases in traffic are shown in green, and increases in traffic delays are shown in red. Some localised reductions in traffic flows have also been identified (shown in blue), which are caused by re-routing of traffic in places.

This shows increases in traffic on many routes across South Gloucestershire, including on many rural roads, such as the lanes between Winterbourne and Almondsbury. This appears to be due to capacity constraints and congestion on key routes such as the A4174 Ring Road, with traffic displacing to alternative routes through the rural areas.

**Figure 5-4 Change in traffic and delay with EPS (pre-mitigation) vs Do Minimum, AM peak hour**



*Note: green = increases in traffic (>20 vehicles), blue = reductions in traffic flows (>20 vehicles), red = increases in delays (>30 seconds). Changes below these thresholds are not shown.*

Section 3.6 in Chapter 3 highlighted that there would be significant challenges with the operation of the motorway junctions under the Do Minimum scenario. This is due to background growth, from across the West of England and continued increases in long-distance traffic on the motorway network. These challenges will be exacerbated in the emerging preferred strategy, although the increases in traffic using the motorways (and the junctions) are forecast to be modest. For example, during the AM peak, congestion on the M5 near Junction 19 is likely to limit the volumes of traffic that are able to use Junction 17 to access Cribbs Causeway.

Previous work by National Highways has shown that solutions to mitigate the wider challenges on the motorway network will be difficult to achieve, if based on delivering new highway capacity. It is likely that there would be a need for significant reconfiguration of the motorway junctions, with major construction works, potentially significant environmental impacts, disruption to road users, and very large capital budgets. It is therefore recommended that measures are identified to encourage modal shift for trips using the motorway junctions, as noted in Section 3.6.

This section has demonstrated that it will be critical to increase the numbers of people walking, cycling and using buses from sites allocated in the Local Plan. This is required to support a vision-led approach for the Local Plan, but there is also a fundamental need to achieve mode shift across the wider region in order to address the region's underlying challenges, including variable accessibility, congestion and delays impacting on the performance of the regional economy, and the urgent need for rapid decarbonisation of the region's transport system.

There is a strong foundation for enhancing active travel, with the sites benefiting from close proximity to good quality active travel infrastructure (both existing and committed), for example the Bristol to Bath Railway Path. However, there will be a need to introduce new bus services to improve public transport choices. This will be a critical component in reducing car dependency from the new sites.

## 5.5 Transport mitigation strategy

A transport mitigation strategy has been developed to address the issues described in the preceding sections. This draws on the principles to maximise the sustainability of individual sites (described in Section 5.2) and a top-down, vision-led approach to achieve significant mode shift across South Gloucestershire. This approach has adopted the following principles:

- Stretching, ambitious travel plans to reduce the number of single-occupancy car journeys from the sites and to enable residents to make informed travel choices.
- A strategy to promote new models of car access in the new communities, for example car clubs, to reduce car ownership and change the balance in decisions on travel choices.
- Mobility hubs in the major sites to promote access to a wide range of travel choices from the start of the journey. These will include access to the car clubs, as well as micromobility and integration with local bus services.
- Active travel improvements to encourage walking and cycling for local trips and to enable access to the public transport network.
- Major improvements to bus services to cater for the needs of medium and longer distance movements, for example connections between the East Fringe and North Fringe.
- Building on existing investment commitments through the Local Cycling and Walking Infrastructure Plan and Bus Service Improvement Plan.
- Minimising the need for further major infrastructure improvements (e.g. major highway capacity upgrades) and focusing on making better use of existing infrastructure.
- Management of highway roadspace to encourage people to shift mode where new and improved alternatives are provided.

This is consistent with the existing transport policy framework, as set out in the JLTP4, LCWIP and BSIP, and will build on the current investment programme in the City Region Sustainable Transport Settlement (CRSTS), which runs to 2026/27. This also provides a strong framework to influence prioritisation for the second CRSTS programme, covering 2027/28 to 2031/32.

### Wider policy context

The strategy will have the flexibility to adapt in an evolving wider policy environment. At the national level, there is a strong focus in enabling a rapid shift towards zero emissions vehicles

(ZEVs). The running costs of these vehicles are forecast to be significantly lower than their petrol and diesel equivalents, which could cause further increases in traffic demand (and congestion).

At present, central government collects significant amounts of taxation from petrol and diesel vehicles through Vehicle Excise Duty (VED). ZEVs are not liable for VED, and central government will therefore face significant challenges with increasing gaps in tax receipts. It will therefore need to identify new mechanisms for taxation of motorists.

The West of England authorities also recognise the importance of locally-designed measures to manage highway demand. Bristol City Council has signalled its intention to explore the potential introduction of a Workplace Parking Levy, which will play an important role in encouraging businesses to manage their parking stock to influence commuting and business trips. South Gloucestershire Council is also introducing charges in off-street car parks, which will play an important role in influencing travel choices for local trips.

Across the West of England, there is also a strong focus on improving local bus networks, with growing national policy support from the new government.

The West of England is also developing ambitious plans for a new mass transit system, which will dramatically improve connectivity between Bristol and the North and East Fringes. However, the proposals are still at a very early stage, with discussions still taking place between regional partners on the potential form of the system and routing options along the corridors. Whilst this is a longer-term ambition for the region, it is not considered appropriate to include mass transit within the transport proposals to support the Local Plan.

## Potential alternatives and rationale for proposed approach

Potential alternative approaches to the proposed transport strategy are set out below.

**Do Nothing**: A business as usual approach with no significant action taken to address the challenges. There would be localised mitigations to address the impacts of each site, but no strategic interventions. This would result in uncoordinated, disconnected interventions that are unlikely to address the root causes of the challenges. Traffic demand would continue to rise, working against national, regional, and local sustainability goals.

A **Do Minimum transport strategy**: with relatively modest improvements to bus services, limited reallocation of roadspace, and modest improvements to congested junctions. This would be likely to only have limited impacts on future travel conditions. There would be risks with continued high levels of car ownership amongst residents of the new development sites, limited use of local bus services (with ongoing viability challenges), and significant congestion challenges on large parts of the road network. This would not deliver the mode shift needed to meet sustainability goals, including decarbonisation of the transport system.

A **'Predict and Provide' road-based strategy**: focused on addressing capacity constraints and delays on the road network. This would focus on addressing congestion on the A4174 Ring Road, other key routes in the North Fringe, and potentially new road infrastructure to mitigate congestion on key routes between Yate and the North Fringe. It could also include major upgrades to the motorway junctions to reduce queues on the slip roads. This would help to address congestion, in specific locations, but would be likely to result in induced demand that exacerbates downstream congestion issues, and it would fail to tackle the underlying transport

challenges in the area. It would result in significant increases in traffic demand, which would run counter to a wide range of sustainability goals. It would be more difficult to achieve the mode shift that is needed across the region, and high construction costs would mean that there would be major deliverability challenges.

A **transformational public transport strategy**: with major investment in new public transport infrastructure, including construction of segregated lanes and interchange facilities. This would maintain existing highway capacity, to minimise short-term impacts on general highway users. This would significantly improve the quality of alternatives to the car, but there would be limited incentives for drivers to shift mode. The overall scale of mode shift would therefore be limited. This would also be a very high-cost strategy, with likely deliverability challenges.

It is therefore considered that a **balanced transport strategy**, drawing on elements described above, would be the most appropriate approach to addressing the key transport challenges in the new Local Plan. This will strongly align with the West of England's policy objectives, including supporting transport decarbonisation, by providing a cost-effective approach to enhancing accessibility and enabling mode shift to active travel and public transport. The key modal components would include:

- New car access models such as car clubs, commercial rentals, or peer-to-peer sharing, to reduce the need for car ownership and change the balance in decisions on travel choices.
- Mobility hubs to promote access to a wide range of travel choices from the start of the journey, to include the car clubs, micromobility and integration with local bus services.
- Active travel improvements to encourage walking and cycling for local trips and to enable access to the public transport network.
- Major improvements to bus services to cater for the needs of medium and longer distance movements, for example connections between the East Fringe and North Fringe.
- Management of highway roadspace to encourage people to shift mode where new and improved alternatives are provided, including introduction of new bus priority measures.

## Proposed transport strategy

The following section presents the proposed transport strategy to support the Local Plan. This is focused on measures on the transport network outside the boundaries of the sites. In addition, promoters will be expected to deliver sustainable transport measures within the boundaries of the sites, in accordance with the principles described in Section 5.2 above.

### Active travel

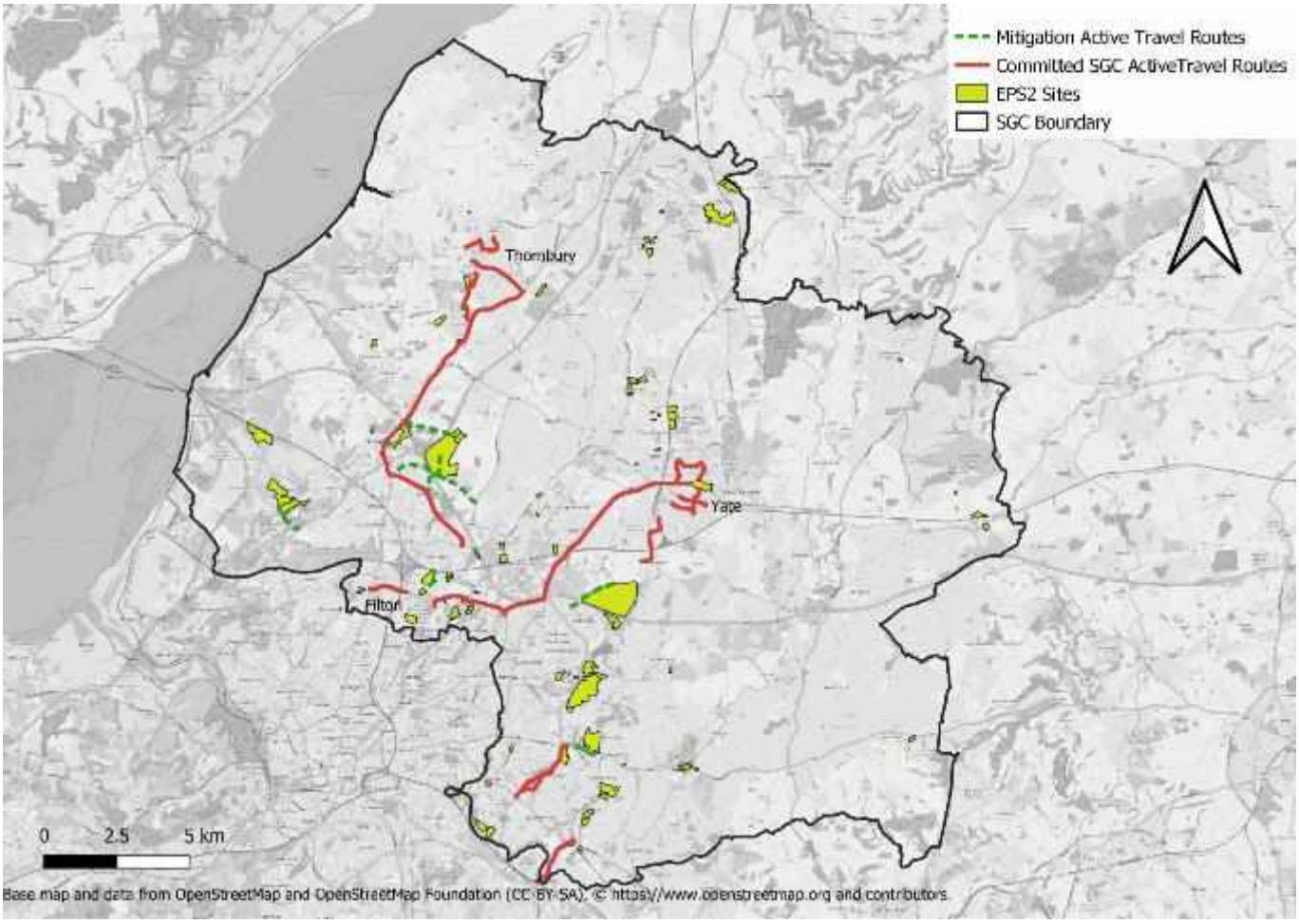
Figure 5-5 presents the proposed improvements to the **active travel network**. These routes were identified based on analysis of the patterns of routing of travel demand from each major site (shown in Figure 5-1), review of emerging proposals from the site promoters, and providing connections to existing or planned high quality active travel corridors. These provide connections from the Sustainable Urban and Village Extensions (SuaVEs) to existing walking and cycling networks and will facilitate increased numbers of people using active options to reach local destinations. These include the following key interventions:

- Along Hollywood Lane, to connect the SUaVE at Easter Compton with Cribbs Causeway;

- Between the SUaVE at Almondsbury and the A38 Gloucester Road and Lower Almondsbury;
- Between Woodlands and Bradley Stoke Way, including upgrades to walking and cycling infrastructure along Trench Lane, Woodlands Lane, Ellicks Close and through Savages Wood connecting to Bradley Stoke Way;
- From North of Lyde Green to connect to the Ring Road via a new segregated walking and cycling route adjacent to Westerleigh Road, and traffic calming along Henfield Road under the M4 bridge to connect to Elderflower Drive in Lyde Green;
- From Carsons Green to the Bristol and Bath Railway Path via Carsons Road and improved walking and cycling connections to the north via Cattybrook Road to the Ring Road path;
- From North of Warmley, through Warmley Forest Park to connect to the A420, with improvements along the A420 to connect to Kingswood.

Specific proposals are listed in the schedules in Appendix B. Active travel improvements will be planned and designed in accordance with best practice guidance from Active Travel England[38].

**Figure 5-5 Proposed active travel route changes**




[38] Active Travel England

## Bus and mobility hubs

Figure 5-6 presents the proposed **bus and mobility hubs strategy**, which includes new, amended, and higher frequency bus services. These serve both the Sustainable Urban and Village Extensions (SUaVEs) and the wider community. These were identified as follows:

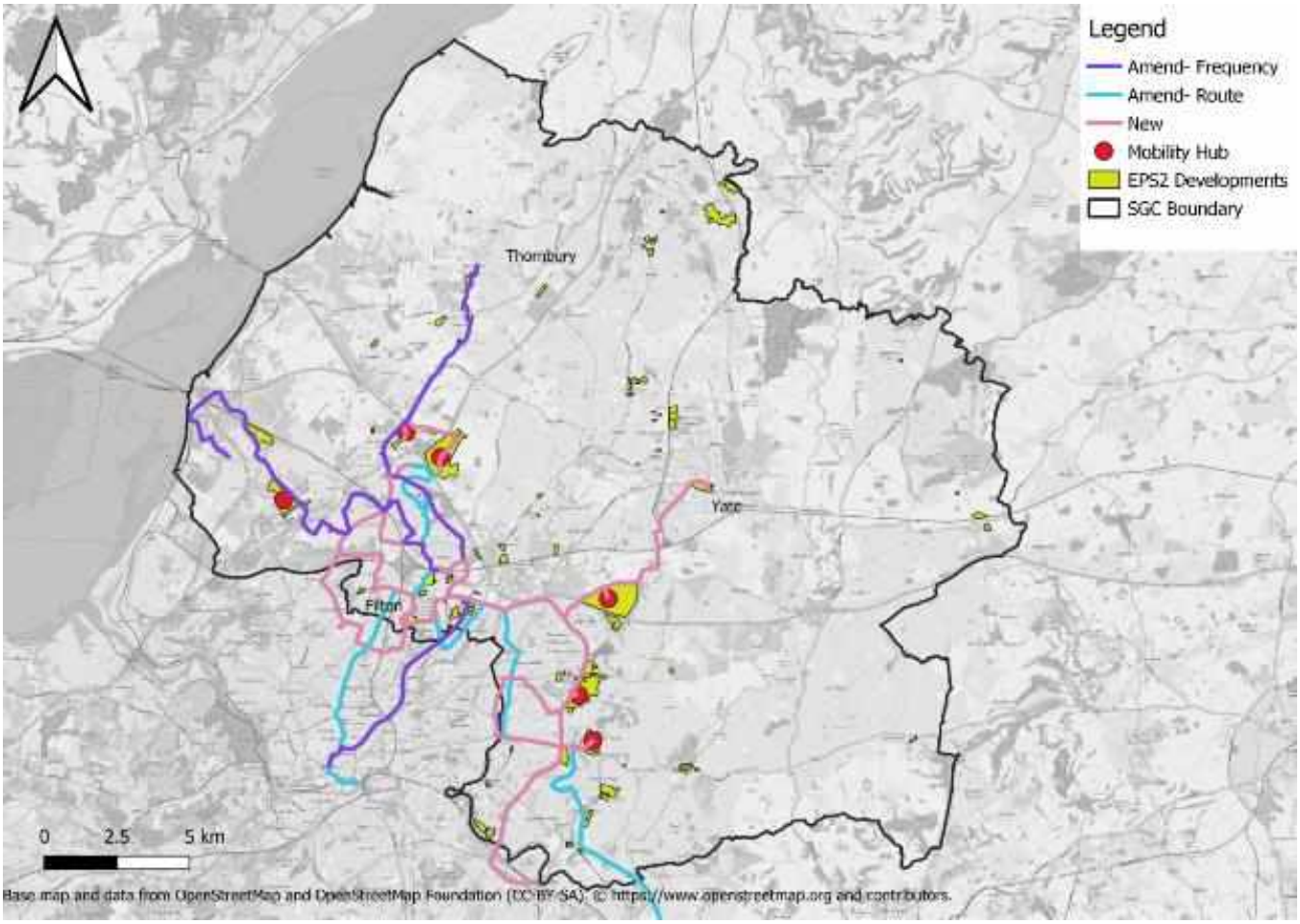
- Review of forecast travel demands generated by the SUaVEs (shown in Figure 5-1) to determine key corridors of movement.
- Review of existing bus services in the vicinity of each SUaVE, to determine if these could meet these needs. In some cases, there could be a case for enhancing service frequencies, for example the 86 service between Yate and Kingswood.
- In some cases, there are nearby bus services, but there would be a need for diversions to access the site, e.g. the 19 service from Bath to serve North of Warmley.
- In other cases, there is a lack of bus services to meet future connectivity needs and there is a need for new services to meet these needs. These initial proposals include a proposed new service from Almondsbury and Shortwood to Southmead Hospital, and new express services between Yate, Keynsham and the North Fringe to meet the needs of sites in the East Fringe.

Mobility hubs[39] were also specified for each of the SuaVEs, with the objective of integrating a wide range of travel choices, from the outset, into the planning of each development location. It is assumed that CoMoUK gold standard accreditation would be required for each hub.

Specific proposals for mobility hubs, improvements to bus services and improvements to bus infrastructure are listed in the schedules in Appendix B.

[39] The concept of mobility hubs is described on the CoMoUK website: Mobility hubs > Overview and benefits

**Figure 5-6 Proposed mobility hubs and bus routes**




*Note: this map is illustrative, showing a range of bus services that have been tested using the transport model to analyse potential impacts on travel demand. These include alterations to routes to serve the SUaVEs (show in light blue), enhanced frequencies for existing services (purple) and initial concepts for new bus services (pink). These concepts will be subject to ongoing iteration and development, taking into account effectiveness in achieving mode shift and ongoing financial viability. This could include rationalisation of these proposals and integration with existing bus services, and will also take account of the ongoing work by the MCA.*

## Improvements to the road network

In addition, a number of measures are proposed on the **highway network** to mitigate the impacts of additional traffic and to support the vision-led approach in the transport strategy:

- A new signalised junction on the A4174 Ring Road to provide multi-modal access to the site at Carsons Green. This would include bus priority measures to ensure direct, reliable journeys for buses serving the site.
- Reallocation of roadspace on the A4174 Ring Road to provide priority to buses. This is proposed to include conversion of the existing 2+ (car share) lanes into bus-only lanes. This will be critical for improving reliability of existing bus services and delivering reliable journey times for the new services. Different options have been tested for the provision of bus priority and management of roadspace on the Ring Road: these are described in Section 5.6.

- Traffic management measures on narrow rural lanes, including Swan Lane and Gaunts Earthcott Lane. This is likely to include prevention of through-traffic on these narrow lanes (whilst enabling local access, cycling and walking).
- Traffic management measures on the B4059 corridor between Yate and Iron Acton, to address underlying traffic issues in this area and impacts of development in Yate.
- Further traffic management measures in Coalpit Heath and Winterbourne to mitigate the impacts of traffic on east-west routes through the area.
- Traffic management measures in the areas adjoining the East Fringe, including Pucklechurch, Siston, Bridgeyate and Wick, to address the impacts of traffic generated by development at North of Lyde Green, Carsons Green, and North of Warmley.

Specific proposals for improvements to the road network (including traffic management schemes and improvements to the Ring Road) are listed in the schedule of schemes in Appendix B.

There will also be small increases in traffic flows on the Strategic Road Network, including M5 Junctions 16 and 17 and M32 Junction 1. However, these increases will be very modest compared with the background increases in demand seen in the Do Minimum that excluded the Local Plan growth.  It is not, therefore, considered proportionate or appropriate to scope a potentially large-scale highway mitigation scheme to address the impacts of Local Plan growth.

A highway-focused solution is also unlikely to be fully consistent with the principles of the transport strategy. However, in the interim, provision has been made for capacity improvements at M5 Junction 17, although ongoing work will continue with National Highways and partners to scope potential solutions.

It is recommended that a collaborative partnership is required to develop long-term solutions to the underlying challenges on the Strategic Road Network. The MCA and South Gloucestershire Council should work together with National Highways and Western Gateway STB to deliver solutions to enable mode shift for journeys into this area, which should include new bus and coach services, to intercept journeys that cannot be easily made by rail. Options should also include Park & Ride interchange points to enable people to easily transfer from their cars part-way on their journeys.

## Proposed transport packages

The measures described above have been grouped into a series of integrated packages. These comprise four geographic corridors and two thematic packages, as follows:

- **Severnside package**, which includes active travel, public transport and traffic management measures to address the impacts of development at Easter Compton and major employment at Pilning. This will improve multi-modal connectivity from parts of Severnside to the Cribbs Causeway area, which is a major employment and commercial destination.
- **North Fringe package**, which includes active travel, public transport and traffic management measures to address the impacts of major development at Woodlands and Almondsbury. This will build on recent investment elsewhere in the North Fringe, to support continued transformation of connectivity in this strategic economic asset for the West of England.
- **Yate package**, which includes a series of active travel and traffic management measures to address current traffic issues in this area, including traffic using unsuitable narrow lanes to

travel around the edge of the North Fringe. This is primarily intended to address current deficiencies in this mixed urban/rural corridor and the impacts of traffic in local communities.

- **Ring Road package**, which includes major active travel, public transport and traffic management improvements along the Ring Road, to address the impacts of major development at North of Lyde Green, Carsons Green and North of Warmley. This programme of strategic interventions will play a critical role in transforming multi-modal connectivity between the North and East Fringes and will help unlock the economic potential of this strategic corridor.
- **Mobility and car club package**, through which mobility hubs and car club facilities would be installed in the major developments at Easter Compton, Almondsbury, Woodlands, North of Lyde Green, Carsons Green and North of Warmley. This thematic programme will enable a transformation of travel choices across these strategic development locations and within the wider localities on the edge of the urban area.
- **Active travel package**, which will include securing contributions from development in smaller and medium-sized allocations in the Local Plan (outside the major sites listed above) to support active travel improvements across South Gloucestershire.

In response to national best practice that is advocating a shift to a vision-led approach to transport planning, these packages have been developed with a clear objective of improving accessibility and supporting mode shift, recognising the specific place-based challenges in different parts of South Gloucestershire.

The four place-based packages described above are designed to transform travel choices both for the major development locations and wider communities that are served in these corridors. The two thematic packages will play a key role in supporting the wider behaviour changes that will be needed to enable sustainable development across South Gloucestershire. More specific detail on the packages, and the impacts on travel behaviours, is set out in Section 5.6 below.

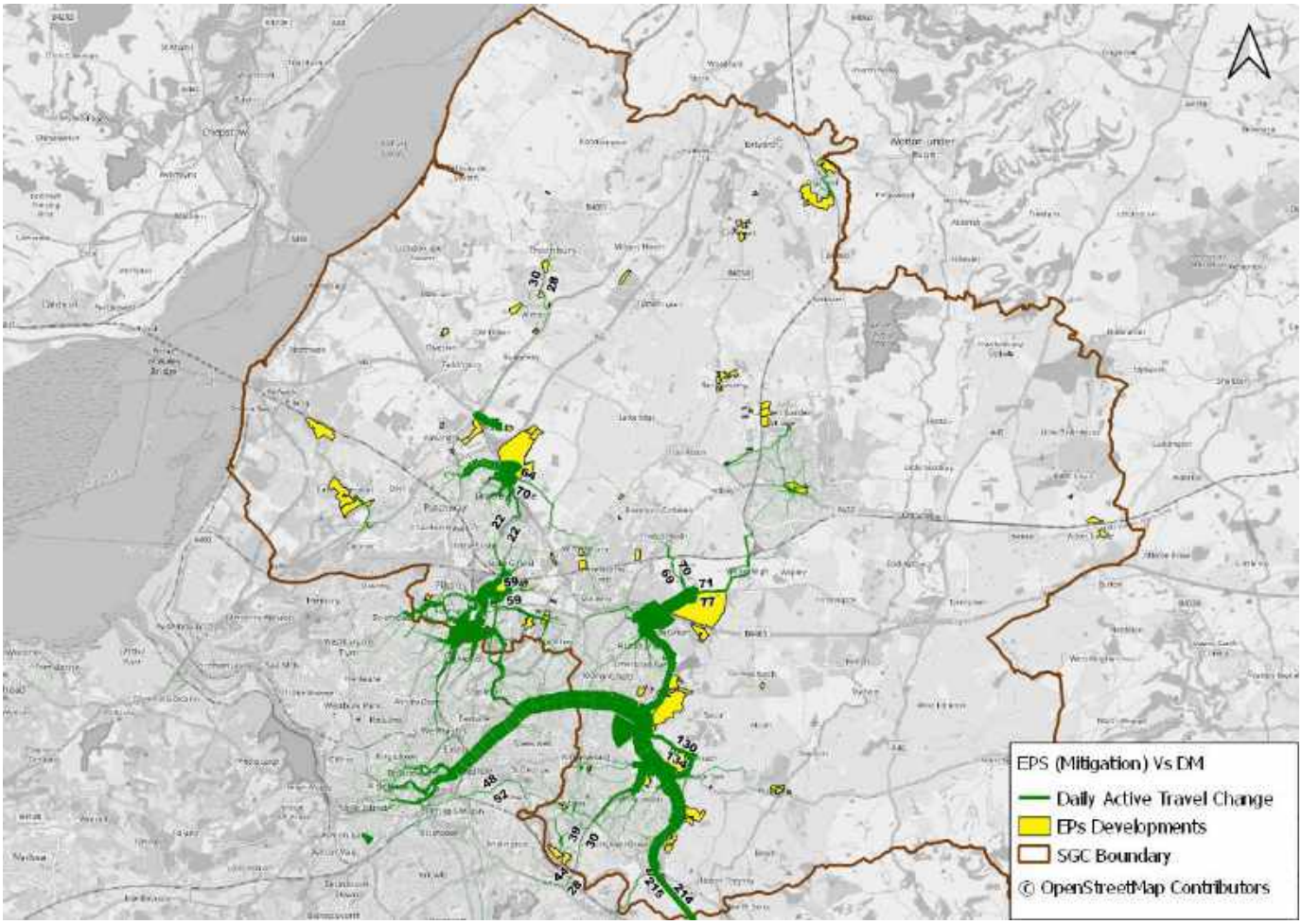
## 5.6 Impacts of transport mitigation strategy

This section provides information on the impacts of this proposed transport strategy, which includes increases in the numbers of people walking, cycling and using buses, and reductions in the impacts of the emerging preferred strategy on the road network.

### Active travel demand

Figure 5-7 illustrates the changes in daily active travel demand, comparing the emerging preferred strategy with the transport strategy versus the Do Minimum without Local Plan growth. This shows further increases in active travel demand, over and above the increases with no mitigation, with strong active travel movements in most cases.

**Figure 5-7 Change in active travel (EPS with mitigation vs Do Minimum), Daily**




This demonstrates that the active travel mitigation proposals will support significant increases in walking and cycling on routes connecting the Woodlands site to Bradley Stoke Way, and from Almondsbury to the A38. These improvements will connect with committed active travel improvements on the A38 and Bradley Stoke Way and will therefore play a key role in connecting these locations to local services in the North Fringe.

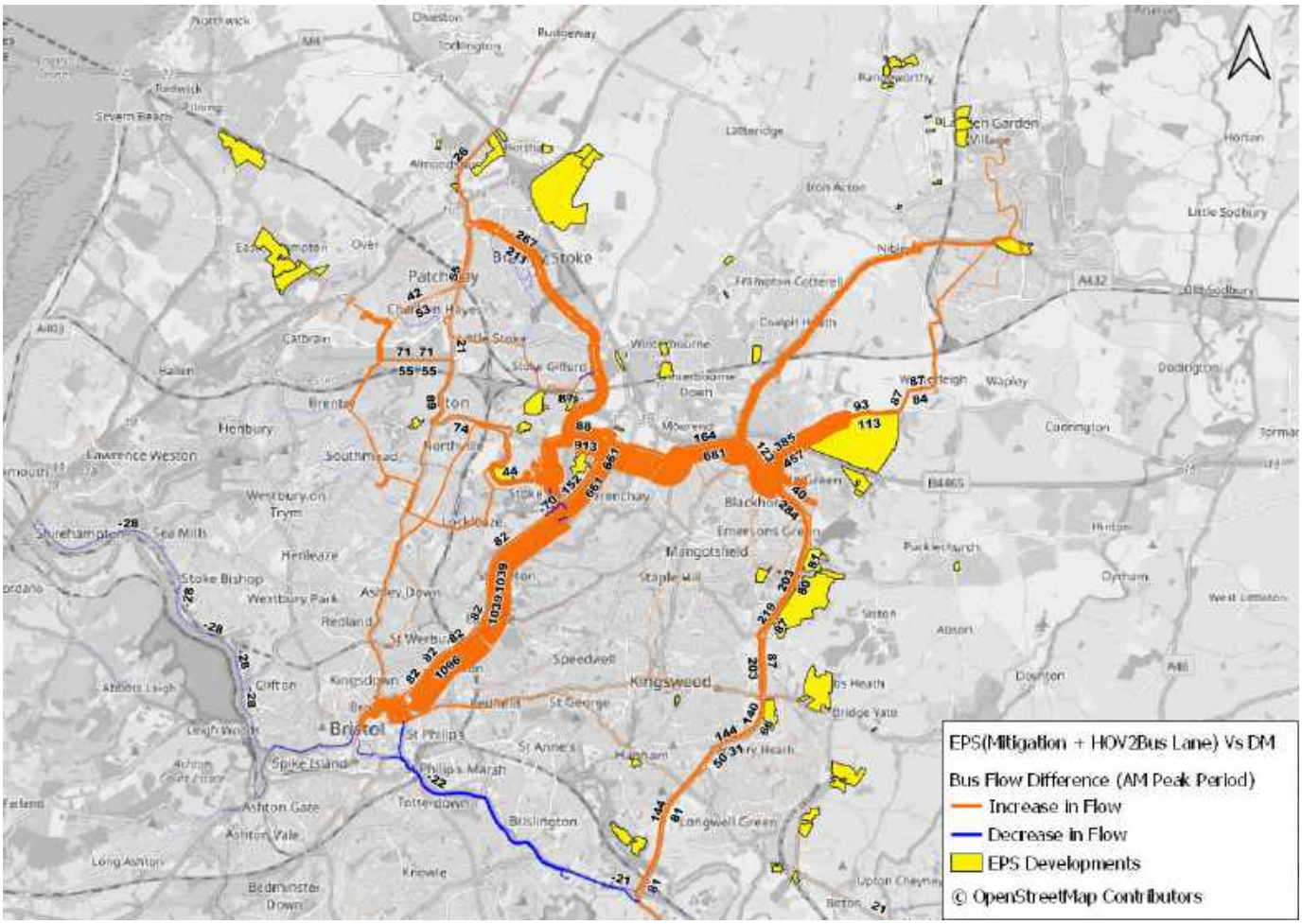
In the case of Easter Compton, proposed active travel improvements along Hollywood Lane (an existing traffic-free route) will support a modest increase in walking and cycling to connect with local schools and the extensive employment and amenities nearby at Cribbs Causeway.

The proposed active travel improvements serving North of Lyde Green, Carsons Green and North of Warmley have the potential to unlock large increases in walking and cycling in this part of South Gloucestershire. The area already benefits from high quality active travel infrastructure on the Bristol to Bath Railway Path and Ring Road cycle path. The proposed connections will address severance challenges caused by major roads and will make these high quality routes accessible to residents of the new communities.

## Public transport demand

Figure 5-8 shows the increases in bus patronage during the morning peak period, comparing the emerging preferred strategy with the transport strategy in place versus the Do Minimum without Local Plan growth.

**Figure 5-8 Change in bus patronage EPS (with mitigation) vs Do Minimum, AM period**




This shows a large increase in bus patronage compared with the scenario without mitigation (shown in Figure 5-2). There are large increases in bus patronage along the A4174 Ring Road between Lyde Green and M32 Junction 1, west of Junction 1 along the Stoke Gifford Transport Link and Bradley Stoke Way towards Almondsbury, and along the different routes towards Filton, Southmead Hospital, Cribbs Causeway and Aztec West. These demands reflect the configuration of the new bus services outlined in Figure 5-6.

The bus patronage along the Ring Road to the south of Lyde Green includes demands from the new site at Carsons Green (which would also be served by a new signalised junction on the Ring Road) and reflects mode shift for orbital movements from Keynsham.

Tests have been undertaken for a range of options to improve bus journey times and reliability around the Ring Road. These included:

- **Option 1:** new bus routes, but with no reallocation of roadspace for buses along the Ring Road. This would not address the existing challenges of congestion and poor journey reliability, particularly in the area between Lyde Green and Filton. There is a significant challenge for existing bus services (notably the m3 service from Lyde Green) that are stuck in queues on the westbound carriageway, which delays services, creates a poor journey experience, and increases operating costs. These problems will worsen with increasing travel demand across the area. Testing shows that there could be some moderate potential for mode shift, but failure to tackle the underlying roadspace challenge will significantly reduce the performance of this solution.
- **Option 2:** new bus routes, with conversion of the existing '2+' lanes on the Ring Road to bus lanes. One of the challenges with the existing 2+ lanes is that these are difficult to enforce, and there is limited incentive for people to consider car sharing. The conversion of the existing 2+ lanes to bus lanes (in both directions: eastbound from Coldharbour Lane to the M32, and westbound from Wick Wick to Bromley Heath Roundabout) will significantly improve bus journey times and service reliability, which will reduce operating costs and unlock significant mode shift towards the new bus services.
- **Option 3:** new bus routes, with conversion of the existing 2+ lanes to bus lanes, and further conversion of existing traffic lanes to bus lanes on other sections of the Ring Road. This would include the sections east of Wick Wick Roundabout towards Emersons Green and Carsons Green, although the bus lanes would terminate upstream of the junctions, to optimise junction capacities. It is also likely that improvements would be required to the junctions to enable people to access new bus stops on the Ring Road, and to ensure efficient junction operation. This would further improve bus journey times and reliability, but this could also mean that some traffic is diverted onto other routes.

The transport modelling has shown that roadspace reallocation will be needed to enable the effective operation of the new and improved bus services along the Ring Road. The key challenge will be to deliver sufficient priority to provide fast bus journey times, ensure reliability of services, and enable sufficient mode shift from car journeys, without significantly affecting the operational performance of the Ring Road for general traffic. At present, the strategy proposes the conversion of the '2+' lanes to bus only, but provision could be made for larger-scale intervention along the corridor, and further assessment of potential options will continue to take place to inform the approach to management of traffic on this corridor.

The transport modelling indicates that the primary cause of delays for vehicles on the Ring Road relates to junctions, rather than the number of lanes on the links between the junctions. Conversion of the existing 2+ lanes to bus-only lanes, together with a reduction in traffic demand (achieved through mode shift in the areas served by the high-quality bus services), has the potential to enhance the overall operational performance of the Ring Road for all users.

Initial assessments have also been undertaken of potential operating costs of the new bus services and potential demand and revenues from passengers. These assessments suggest that patronage could be lower than that needed to meet forecast operating costs of the proposed configuration of services which may mean a requirement for ongoing subsidies. Further work will therefore be undertaken to iterate service configurations (which could include amendments to existing services) to reduce operating costs and maximise potential demand.

This will be a major project, which will address both underlying connectivity challenges between the North and East Fringes and the impacts of Local Plan growth. The project will need to be

developed following DfT's Transport Analysis Guidance (TAG)[40], which requires a staged process of options development, design and appraisal to develop the optimum solution that supports the strategic objectives for the corridor whilst providing good value for money.

## Traffic flows and delays

Figure 5-9 shows forecast changes in traffic flows and delays during the morning peak hour, comparing the emerging preferred strategy with the transport strategy in place versus the Do Minimum without Local Plan growth.

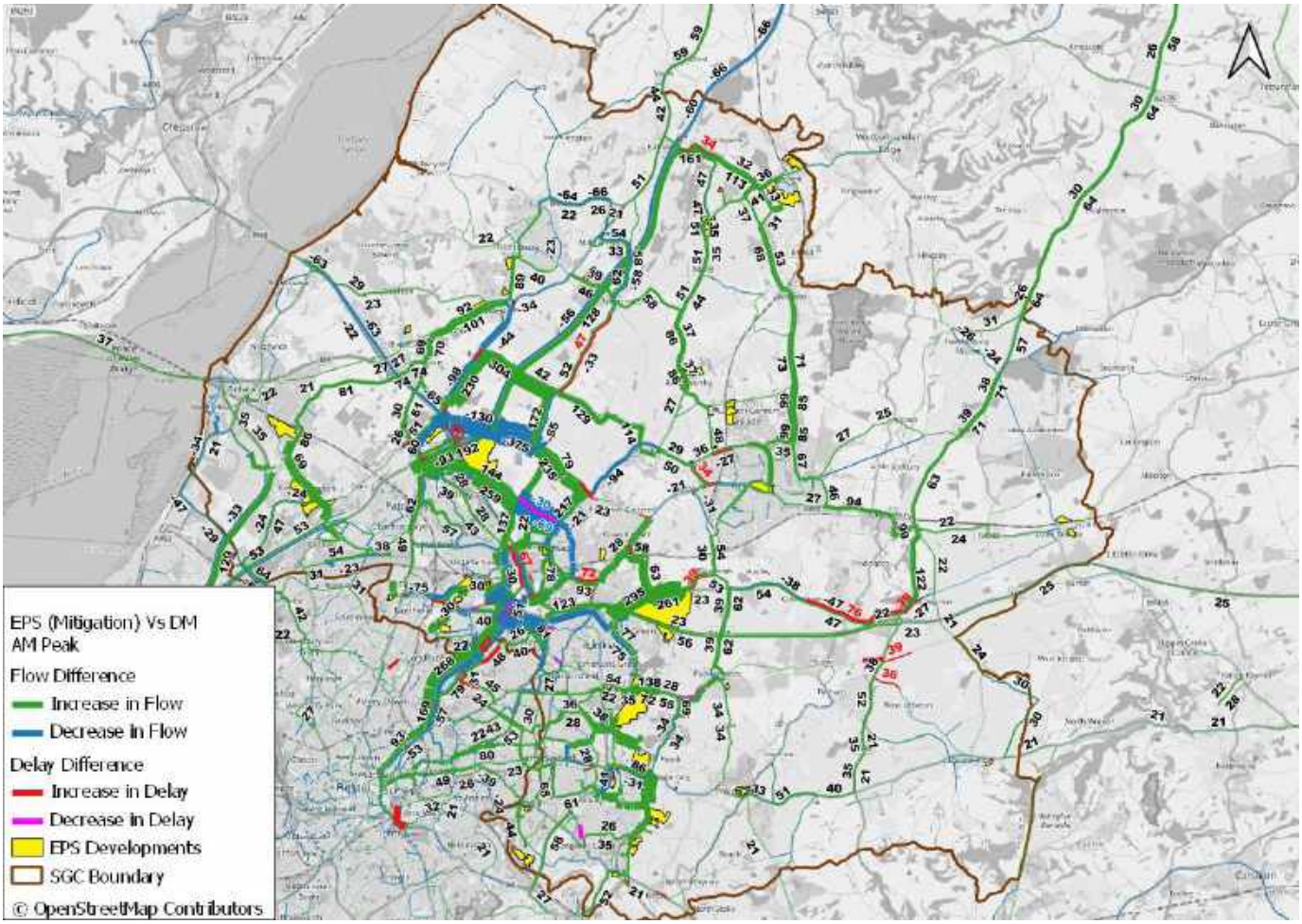
This shows that the transport strategy will play an important role in helping to reduce traffic demands from the Local Plan. This will significantly reduce traffic demands on the A4174 Ring Road and other key routes compared to the case without mitigation (shown in Figure 5-4). However, it is recognised that this map shows residual challenges relating to traffic using more rural routes, and through communities including Coalpit Heath and Winterbourne. Measures to address the impacts of this traffic will include improved signage, local safety schemes and public realm enhancements.

There will also be small increases in traffic flows on the Strategic Road Network, including M5 Junctions 16 and 17 and M32 Junction 1. However, these increases will be very modest compared with the background growth, in the Do Minimum excluding the Local Plan, that was highlighted in Chapter 3. It is not, therefore, considered proportionate or appropriate to scope a potentially large-scale highway mitigation scheme to address the impacts of Local Plan growth. A highway-focused solution is also unlikely to be fully consistent with the principles of the transport strategy.

It is, therefore, recommended that partners work together to identify mode shift solutions to address the causes of high vehicle traffic demands entering into this area from the wider region. This should include consideration of new bus and coach services connecting from North Somerset to Cribbs Causeway (to address capacity issues at M5 Junction 17) and new services from Stroud, Chepstow and the Forest of Dean (to address issues at M5 Junction 16).

[40] Transport analysis guidance - GOV.UK

**Figure 5-9 Change in traffic and delay with EPS (with mitigation) vs Do Minimum, AM peak hour**




## Conclusions

In conclusion, this chapter demonstrates that there is a credible approach to addressing the transport impacts of the Local Plan. This has been based on robust evidence on the travel demands generated by the proposed sites in the Local Plan, and the proposed transport strategy has a strong focus on enabling people to use active travel and enhanced bus services to access key destinations. There will be residual traffic impacts, but the overall approach is to proactively manage the road network to encourage more sustainable forms of travel.

The six transport packages, which have been developed through this process, will provide an integrated, vision-led and place-based approach to address the impacts of the Local Plan on the transport network. These six packages are as follows:

- **Severnside package**, which will improve multi-modal connectivity from parts of Severnside to the Cribbs Causeway area.
- **North Fringe package**, which will improve travel options at the northern edge of the North Fringe, and will support the continued transformation of connectivity in this strategic economic asset.

- **Yate package**, which will address current deficiencies in this mixed urban/rural corridor and the impacts of traffic in local communities.
- **Ring Road package**, which will play a critical role in transforming multi-modal connectivity between the North and East Fringes and will help to unlock the economic potential of this strategic corridor.
- **Mobility and car club package**, which will enable a transformation of travel choices across these strategic growth locations and wider local communities.
- **Active travel package**, which will support wider active travel improvements across South Gloucestershire.

# 6. Delivery strategy

## 6.1 Introduction

This chapter concludes the Transport Topic Paper by setting out the approach to delivery of the transport mitigation strategy. It explains how the principles of the strategy are being incorporated into new policies in the Local Plan and integrated into the supporting Infrastructure Delivery Plan. This includes evidence on initial costings, approach to delivery planning, joint working with other agencies, and potential delivery mechanisms.

## 6.2 Integration into local plan policy

The technical evidence from this Transport Topic Paper and the proposed transport mitigations have been integrated into a new Local Plan policy on strategic transport infrastructure. This is proposed to replace existing Core Strategy policies CS7 (Strategic Transport Infrastructure), CS8 (Improving accessibility), PSP 13 (Safeguarding Strategy Transport Schemes and Infrastructure), and PSP 14 (Safeguarding Rail Schemes and Infrastructure).

This new policy incorporates the transport strategy and packages described in Chapter 5 and sets out expectations for minimum levels of accessibility drawing on the evidence set out in this Topic Paper. It also sets out supporting text on the approach to the delivery of new active travel routes (including the requirement to follow guidance from Active Travel England[41]) and the proposed approach to delivery of public transport improvements, working in collaboration with the West of England Combined Authority.

It also includes policies for safeguarding of land for the upgrade of Westerleigh Junction on the rail network (to accommodate forecast growth in rail demand) and improvements to Severn Beach station (to accommodate growth ambitions for the Severn Beach Line).

As discussed in Chapter 5, the measures in the transport strategy have been grouped to provide a vision-led, place-based approach to address the specific needs of different spatial areas in South Gloucestershire, with a supporting area-wide mobility and car club package to support the behaviour changes that will be needed to deliver the Council's mode shift ambitions. These packages are as follows:

1. Ring Road Package *(this supports delivery of major development at North of Lyde Green, Carsons Green and North of Warmley)*.
2. Yate Package *(this addresses issues relating to current traffic routings in the Yate to North Fringe corridor, including addressing the issues caused by traffic using narrow rural lanes)*.
3. North Fringe Package (Woodlands/Almondsbury) *(this supports the delivery of major development at Woodlands and Almondsbury)*.
4. Severnside Package *(this supports the delivery of development at Easter Compton and new employment development at Pilning)*.
5. Mobility and Car Club Package *(an area-wide approach to delivery of mobility hubs and*

[41] Active Travel England

*alternative car access schemes in all the major developments in the Local Plan)*.

6. Active Travel Package *(which is designed to secure contributions towards the delivery of the wider active travel network from small and medium allocations in the plan that have not been included in the packages above)*.

These are expressed in the new policy in the following text. These components are identified in the packages that were developed and tested in Chapter 5 of this Topic Paper.

**Strategic infrastructure interventions to deliver Local Plan Growth**

The principal elements of the **Active Travel Package** comprise:

- **Active Travel**
  - Provision of or contributions towards the delivery of the wider Active Travel Network across the district from small and medium allocations within the plan not included in the packages below.

The principal elements of the **Ring Road Package** comprise:

- **Active Travel**
  - Reduction in Active Travel severance along and across the corridor, improving radial and orbital connectivity to and along the Ring Road between Parkway Station and Keynsham Station.
  - Improvements to the surrounding Active Travel Network, improving connectivity to the Ring Road.
- **Public Transport**
  - Prioritisation of bus movements along and across the Ring Road for improved radial and orbital connectivity and the introduction of new higher frequency services to achieve mode shift to sustainable transport modes.
- **Traffic Management**
  - Traffic management measures along the Ring Road Corridor to ensure the continued safe operation and efficient use of the road network including M32 Junction 1.

The principal elements of the **Yate Package** comprise:

- **Active Travel**
  - Improvement of Active Travel connectivity between Yate and North Bristol.
- **Public Transport**
  - Introduction of higher frequency and quality services along key routes.
- **Traffic Management**
  - Measures to manage surrounding rural traffic movements.

The principal elements of the **North Fringe Package (Woodlands/Almondsbury)** comprise:

- **Active Travel**
  - Provision of new active travel bridge across the M4 motorway to connect to the existing and committed Active Travel Network.
  - Deliver Savages Wood Active Travel Route.
  - Deliver active travel routes between Upper Almondsbury and Lower Almondsbury Village.
- **Public Transport**
  - Delivery of new and higher frequency public transport services.
- **Traffic Management**
  - Traffic management measures to the surrounding rural lanes.

The principal elements of the **Severnside Package** comprise:

- **Active Travel**
  - Improved Active Travel routes to better connect Severnside to North Fringe.
- **Public Transport**
  - Higher frequency bus services between Severnside and North Fringe.
- **Traffic Management**
  - Traffic Management through Easter Compton Village.
  - Traffic Management in the rural communities of Severnside.
  - Ensure appropriate access to the highway network for major employment uses at Pilning avoiding Easter Compton.

The principal elements of the **Mobility and Car Club Package** comprise:

- Provision of a network of strategic and local mobility hubs, car clubs and public realm improvements to provide a wide range of travel choices to local communities.

## 6.3 Costing of mitigation measures

The estimated capital costs for the infrastructure schemes are set out in Appendix B. For each component scheme, benchmark unit costs have been used to estimate the overall scheme cost, based on a scope (e.g. length of an active travel scheme, number of bus stops, etc) and typical unit rates for different scheme typologies.

In the case of **active travel improvement schemes**, potential interventions include improved footways, footway/cycleway schemes and new zebra and toucan crossings. For each required intervention, an initial assessment has been undertaken of the potential requirements along the route. Unit cost rates have been identified based on active travel programmes in a range of

locations across England, from which a range of potential rates has been derived, and then factored to a 2024 price base.

In some cases, the interventions are relatively modest, over a short length, and with modest levels of intervention needed to improve conditions for walking and cycling. In other cases, more substantial intervention is proposed to respond to potential walking and cycling demands that would be generated with development in place. There is also a major active travel intervention: the proposed new active travel bridge crossing the M4, which provides access into the Woodlands site from Bradley Stoke. Based on benchmarking against other active travel bridges over motorways, it is estimated that this could cost approximately £10 million in current prices.

It is assumed that **mobility hubs** will be specified to the CoMoUK gold level accreditation. Drawing on evidence from the MCA's mobility hubs programme, it has been assumed that it would be appropriate to make allowance for up to £250,000 per site.

**Improvements to bus infrastructure** will require new and improved bus stops in the vicinity of most of the major development locations. Evidence on the costs of improved bus stops has been obtained from the West of England (including the metrobus programme) and other locations in England that have developed major public transport improvements.

One of the key interventions would be the proposed conversion of the existing 2+ lanes on the A4174 Ring Road to bus-only lanes. The capital costs of these works are likely to be relatively modest. However, it is also likely that there would be a need for significant investment at the junctions to optimise the operation of the Ring Road. Indicative lump sum allowances have been made for these junction improvements (and also for the new junction on the Ring Road to serve Carsons Green).

In the case of **traffic management proposals**, indicative unit rates have been applied, based on evidence from schemes elsewhere in England, and lump sum allowances have been made for major junction improvements on the road network.

As highlighted in Chapter 5, the Ring Road scheme will be a major project, which will require significant further work to develop options, design schemes, and develop more detailed cost estimates. The costs set out in the schedule in Appendix B are only for initial 'programme entry' purposes, and will need to be developed further through the region's investment pipeline.

The overall capital cost of the programme is currently estimated to be approximately £100 million, based on the scope of the measures set out in Appendix B. There is potential for these costs to be revised as the scope of transport measures is further defined and schemes are designed. Funding will be sought from development and other sources, as discussed in Section 6.4.

It should be noted that these are all initial concept proposals, which have been scoped as part of the development of the initial transport strategy to support the Local Plan. These are all at a very early stage of development and have not yet been subject to design reviews. The estimated costs are based on an initial assessment of potential scale of the scheme (e.g. lengths of active travel improvements or bus lanes) and initial assessments of the potential scope. No design work has yet been undertaken.

As proposals are developed, more detailed options design, development and assessment work will be required, to inform more detailed costings and business cases to support funding bids.

There will also be substantial **operating costs for the proposed new bus services**. An operating cost model, using bus industry data, has been used to estimate these costs. This indicates that the most significant component will be driver costs, which have recently been rising in the West of England with higher salaries being offered to recruit new drivers. Allowances have been made for this issue in the cost model.

Other significant components include vehicle costs, which are lower for diesel buses, but much higher for the new electric buses that are entering the market. Careful consideration will need to be given to the specification of the new buses to serve these corridors, recognising that new electric buses are likely to be an attractive proposition to potential users, but with operating costs to also be considered. This will require careful coordination with the MCA as the lead authority responsible for bus policy.

This costing methodology takes no account of potential changes in the way that buses could be provided in the region (e.g. through a franchising or public ownership model), nor rapid technological changes that could, in future, enable the roll-out of driverless buses, which would significantly reduce operating costs.

Furthermore, a conservative approach has also been taken to the forecasting of potential passenger demand for the bus services, and hence revenues and commercial viability. This approach takes no account of measures that could encourage more people to use buses, for example emerging policies in Bristol to reduce parking supply and increase parking charges. This also takes no account of growth in demand from neighbouring areas, which could significantly boost the viability of new services.

It is also important to recognise that the car operating costs are forecast to continue to fall, particularly with the lower costs of running electric vehicles. In addition, bus fares have been assumed in the transport model to continue to rise over the next two decades. These two key factors, reducing costs of travel by car and rising costs of travel by bus, are key drivers of future travel behaviours, not just in the West of England but also across the whole of England. The MCA could play a key role in helping to cap future bus fares across the region (with potential funding implications), but wider government intervention is needed to influence the wider costs of car travel. This will be a major influence on future mode choices, and will also be pivotal to the success of transport decarbonisation policies.

## 6.4 Funding and delivery mechanisms

The West of England is in a strong position to secure funding to deliver new transport infrastructure to support growth in the region. As a Mayoral Combined Authority, the West of England secured a large City Region Sustainable Transport Settlement during the first round of funding (CRSTS1) between 2022/23 and 2026/27. Indicative settlements for CRSTS2 were published by the previous government in October 2023[42]. The MCA is currently working to an assumption that approximately £650 million could be available over the period 2027/28 to 2031/32.

Furthermore, other sources of funding include the MCA's own devolved Investment Fund, DfT's Active Travel Fund, and funding for the Bus Service Improvement Plan. In addition, developer contributions will be expected to support the delivery of transport infrastructure to mitigate impacts of growth.

For new and improved bus services, revenues from fare-paying passengers will play an important role in contributing to operating costs. Further work will also take place to refine the bus strategy to minimise long-term subsidy requirements. However, there will be a need for financial support to ensure adequate bus accessibility during the early stages of development of sites. Contributions will therefore be expected from development to support these services.

The Infrastructure Delivery Plan, which has been produced in support of the new Local Plan, sets out the expectations of how new development will support transport requirements within the overall infrastructure requirements.

# Appendix A. Technical detail

## A.1 Do Minimum: forecast changes in demand

Table A-1 shows the detailed forecasts of changes in demand between the 2019 base year and 2042 Do Minimum, for the full West of England area, sourced from the West of England Regional Transport Model (WERTM).

**Table A-1 Forecast changes in travel demand between 2019 and 2042 Do Minimum**

*24hr P/A trips: 2019 Base*

| Purpose | Car | Bus (inc P&R) | Rail (inc P&R) | Active | Total |
|---|---|---|---|---|---|
| HB Commute | 252,441 | 17,434 | 29,191 | 77,793 | 376,858 |
| HB Business | 41,702 | 1,646 | 4,091 | 3,421 | 50,860 |
| HB Education | 93,895 | 34,344 | 651 | 101,805 | 230,695 |
| HB Shopping | 304,051 | 51,659 | 9,402 | 129,897 | 495,009 |
| HB Recreation | 239,312 | 29,735 | 7,465 | 62,872 | 339,384 |
| NHB Business | 45,453 | 1,997 | 562 | 6,501 | 54,513 |
| NHB Other | 215,239 | 15,256 | 822 | 89,351 | 320,669 |
| Total | 1,192,093 | 152,071 | 52,184 | 471,640 | 1,867,988 |
| | 64% | 8% | 3% | 25% | |

*24hr P/A trips: 2042 Do-Minimum*

| Purpose | Car | Bus (inc P&R) | Rail (inc P&R) | Active | Total |
|---|---|---|---|---|---|
| HB Commute | 276,792 | 20,095 | 32,605 | 85,727 | 415,219 |
| HB Business | 46,985 | 2,172 | 4,725 | 3,949 | 57,831 |
| HB Education | 113,035 | 36,520 | 1,019 | 107,405 | 257,980 |
| HB Shopping | 364,293 | 55,779 | 15,441 | 136,826 | 572,339 |
| HB Recreation | 284,174 | 30,573 | 11,597 | 63,721 | 390,066 |
| NHB Business | 51,619 | 2,346 | 525 | 6,273 | 60,762 |
| NHB Other | 257,256 | 15,629 | 1,673 | 90,709 | 365,268 |
| Total | 1,394,154 | 163,115 | 67,586 | 494,610 | 2,119,466 |
| | 66% | 8% | 3% | 23% | |

*2042 Do-Minimum vs 2019 Absolute*

| Purpose | Car | Bus (inc P&R) | Rail (inc P&R) | Active | Total |
|---|---|---|---|---|---|
| HB Commute | 24,351 | 2,661 | 3,415 | 7,934 | 38,361 |
| HB Business | 5,283 | 527 | 633 | 528 | 6,972 |
| HB Education | 19,140 | 2,176 | 368 | 5,601 | 27,285 |
| HB Shopping | 60,242 | 4,120 | 6,039 | 6,929 | 77,330 |
| HB Recreation | 44,862 | 838 | 4,133 | 849 | 50,682 |
| NHB Business | 6,166 | 349 | - 36 | - 229 | 6,249 |
| NHB Other | 42,017 | 373 | 851 | 1,358 | 44,599 |
| Total | 202,061 | 11,044 | 15,402 | 22,971 | 251,477 |

*2042 Do-Minimum vs 2019 %*

| Purpose | Car | Bus (inc P&R) | Rail (inc P&R) | Active | Total |
|---|---|---|---|---|---|
| HB Commute | 10% | 15% | 12% | 10% | 10% |
| HB Business | 13% | 32% | 15% | 15% | 14% |
| HB Education | 20% | 6% | 57% | 6% | 12% |
| HB Shopping | 20% | 8% | 64% | 5% | 16% |
| HB Recreation | 19% | 3% | 55% | 1% | 15% |
| NHB Business | 14% | 17% | -6% | -4% | 11% |
| NHB Other | 20% | 2% | 104% | 2% | 14% |
| Total | 17% | 7% | 30% | 5% | 13% |

*Note: table shows numbers of trips, changes and percentage changes for different modes, and for different journey purposes. HB = home-based trips, NHB = non home-based trips.*

This shows that, in 2019, 64% of all trips were made by car, 8% by bus, 3% by train, and 25% by walking and cycling. There are forecast to be modest changes in mode split by 2042, with an increase to 66% of trips made by car, and a reduction to 23% in trips by walking and cycling. This demonstrates the challenges caused by the increases in car ownership and reducing costs of car use that are forecast over the next two decades.

## A.2 Emerging preferred strategy: forecast changes in demand

Table A-2 shows the detailed forecasts of changes in demand between the 2042 Do Minimum, emerging preferred strategy and the transport mitigation measures. This table covers the whole West of England model area, including trips generated from areas outside South Gloucestershire (including Bristol and Bath & North East Somerset), destined towards new development in the district.

**Table A-2 Forecast changes in travel demand 2042 Do Minimum, emerging preferred strategy and transport strategy (West of England area)**

| WECA Region | Car | Bus (inc P&R) | Rail (inc P&R) | Active | Total |
|---|---|---|---|---|---|
| Total 24hr Trips | | | | | |
| Do-Minimum | 1,394,154 | 163,115 | 67,586 | 494,610 | 2,119,466 |
| EPS2 | 1,427,266 | 165,879 | 68,918 | 504,497 | 2,166,560 |
| EPS2 (Mitigation + Bus lane) | 1,425,663 | 171,159 | 63,163 | 506,575 | 2,166,560 |
| Mode share | | | | | |
| Do-Minimum | 65.8% | 7.7% | 3.2% | 23.3% | 100.0% |
| EPS2 | 65.9% | 7.7% | 3.2% | 23.3% | 100.0% |
| EPS2 (Mitigation + Bus lane) | 65.8% | 7.9% | 2.9% | 23.4% | 100.0% |
| Absolute Change | | | | | |
| EPS2 vs Do-Minimum | 33,112 | 2,764 | 1,331 | 9,886 | 47,094 |
| EPS2 (Mitigation + Bus lane) vs Do-Minimum | 31,509 | 8,044 | 4,423 | 11,964 | 47,094 |
| EPS2 (Mitigation + Bus lane) vs EPS2 | -1,603 | 5,280 | 5,754 | 2,078 | - |
| % Change | | | | | |
| EPS2 vs Do-Minimum | 2.4% | 1.7% | 2.0% | 2.0% | 2.2% |
| EPS2 (Mitigation + Bus lane) vs Do-Minimum | 2.2% | 4.8% | -6.4% | 2.4% | 2.2% |
| EPS2 (Mitigation + Bus lane) vs EPS2 | -0.1% | 3.2% | -8.3% | 0.4% | 0.0% |

This forecasts an increase (with the EPS) of just over 47,000 trips per day, comprising over 33,000 trips by car (70%), almost 10,000 trips by walking and cycling (21%), and just over 4,000 trips by public transport (approximately 9% of the total number of trips).

The forecast car trips are the equivalent of 70% of all trips generated by the Local Plan. This is higher than the 66% background car mode split in the Do Minimum (see the top left of Table 7-2). The active travel mode split (21%) for new development in the Local Plan is lower than the background in the Do Minimum (23%), and this also applies to public transport (9% vs 11% in the Do Minimum). This is based on the scenario without transport mitigation, and demonstrates that a proactive approach will be needed to encourage mode shift from the new Local Plan sites.

The proposed additional bus and active travel mitigation measures (including additional infrastructure changes) are forecast to result in increasing numbers of sustainable travel users and reduced vehicular trips.

Table A-3 shows the corresponding data for South Gloucestershire only.

**Table A-3 Forecast changes in travel demand 2042 Do Minimum, emerging preferred strategy and transport strategy (South Gloucestershire area only)**

| SGC Region | Car | Bus (inc P&R) | Rail (inc P&R) | Active | Total |
|---|---|---|---|---|---|
| Total 24hr Trips | | | | | |
| Do-Minimum | 224,123 | 14,330 | 853 | 79,373 | 318,679 |
| EPS2 | 248,249 | 15,617 | 1,056 | 86,931 | 351,854 |
| EPS2 (Mitigation + Bus lane) | 245,409 | 17,254 | 898 | 88,704 | 352,265 |
| Mode share | | | | | |
| Do-Minimum | 70.3% | 4.5% | 0.3% | 24.9% | 100.0% |
| EPS2 | 70.6% | 4.4% | 0.3% | 24.7% | 100.0% |
| EPS2 (Mitigation + Bus lane) | 69.7% | 4.9% | 0.3% | 25.2% | 100.0% |
| Absolute Change | | | | | |
| EPS2 vs Do-Minimum | 24,126 | 1,287 | 203 | 7,558 | 33,174 |
| EPS2 (Mitigation + Bus lane) vs Do-Minimum | 21,286 | 2,924 | 45 | 9,331 | 33,585 |
| EPS2 (Mitigation + Bus lane) vs EPS2 | -2,840 | 1,637 | -158 | 1,773 | 411 |
| % Change | | | | | |
| EPS2 vs Do-Minimum | 10.8% | 9.0% | 23.8% | 9.5% | 10.4% |
| EPS2 (Mitigation + Bus lane) vs Do-Minimum | 9.5% | 20.4% | 5.2% | 11.8% | 10.5% |
| EPS2 (Mitigation + Bus lane) vs EPS2 | -1.1% | 10.5% | -15.0% | 2.0% | 0.1% |

This forecasts an increase of just over 33,000 trips per day within South Gloucestershire, comprising over 24,000 trips by car (72.7%), just over 7,500 trips by walking and cycling (22.8%), and less than 1,500 trips by public transport (4.5% of the total).

Again, this demonstrates a higher car mode share for trips generated by the Local Plan (72.7%) versus the background car mode share in the Do Minimum (70%), with a corresponding lower mode split for active travel (22.8% vs 25% in the Do Minimum). Again, these forecasts are based on the scenario before inclusion of transport mitigation, but clearly demonstrate the need to encourage mode shift from the Local Plan sites.

Whilst the emerging preferred strategy is designed to locate new development in places that are accessible to active travel and public transport, this demonstrates that a proactive approach will be needed to encourage more people to walk, cycle and use public transport to and from the sites.

# Appendix B. Package costs

## B.1 Estimated capital costs

The estimated capital costs for the transport packages are set out in the schedules on the following pages.

These are grouped under the four area packages, including the six mobility hubs (which form a separate package). For each component scheme, information is provided on the related Sustainable Urban and Village Extension (SUaVE), the type of scheme, the location and a brief scheme description. It also provides a brief description of why the scheme is needed, and a brief overview of the rationale for the scheme.

Benchmark unit costs have then been used to estimate the overall scheme cost, based on an indicative scope (e.g. length of an active travel scheme, number of bus stops, etc). Potential contributions from development are then identified, together with the balance of costs to be funded from elsewhere, e.g. future City Region Sustainable Transport Settlements for the West of England.

It should be noted that these are initial concept proposals, which have been scoped as part of the development of the initial transport strategy to support the Local Plan. These are all at a very early stage of development, and have not yet been subject to design reviews. The estimated costs are based on an initial assessment of potential scale of the scheme (e.g. lengths of active travel improvements or bus lanes) and initial assessments of the potential scope. No design work has yet been undertaken.

As proposals are developed, more detailed options design, development and assessment work will be required, to inform more detailed costings and business cases to support funding bids.

| Package name | Related SUaVE(s) or other major developments | Component | Location | Description | Rationale (problem to be addressed) | Est total capital cost (£m) (2024 prices) | Development contribution to capital cost | Balance of capital funding required from other sources |
|---|---|---|---|---|---|---|---|---|
| **Severnside Package** | | | | | | | | |
| Severnside Package | Easter Compton | Active travel | Hollywood Lane + Bow Street Lane | Traffic calming and improvements for walking and cycling | Walking and cycling along this route is currently not an attractive travel option. This scheme will improve attractiveness of walking and cycling for local journeys to access primary school, facilities at Cribbs Causeway, and bus services connecting to Bristol. | £1.2 | £1.2 | £0.0 |
| Severnside Package | Easter Compton | Mobility Hub | Easter Compton (potentially in village) | Enhance mobility options in Easter Compton | Travel options in Easter Compton are currently limited. Mobility hub will provide a range of new mobility options, including hire of bikes, e-bikes, e-scooters, and car club. Provision to also be made for integration with enhanced bus services through Easter Compton village. | £0.3 | £0.3 | £0.0 |
| Severnside Package | Easter Compton | Bus | B4055 Blackhorse Hill | Improved bus stops in Easter Compton village centre | Existing bus stops are low quality and not attractive. Improved bus stops will help make bus travel more attractive for residents of the village and the new SUaVE. This will also complement the improved bus service provision. | £0.2 | £0.2 | £0.0 |
| Severnside Package | Easter Compton | Bus | Service 12 (Cribbs Causeway - Pilning) | Enhanced frequency of existing bus service | Existing bus service is only hourly, and only meets essential accessibility needs. A more frequent service is proposed to enhance accessibility from Easter Compton to Cribbs Causeway and other destinations in the North Fringe. | £0.0 | £0.0 | £0.0 |
| Severnside Package | Easter Compton Pilning | Highway | B4055 Blackhorse Hill | Traffic management measures through Easter Compton and Pilning | Development at the SUaVE will result in increased traffic through Easter Compton and Pilning. Traffic management measures are proposed to address local impacts of this traffic in the villages. | £1.6 | £1.6 | £0.0 |
| Severnside Package | Easter Compton | Highway | M5 Junction 17 | Widening of J17 N/B off-slip to reduce queue lengths | Forecast background growth will result in a large increase in queue length, extending back onto the motorway mainline, with resultant safety impacts. Local Plan growth will exacerbate this challenge. Partners (including SGC, WECA and National Highways). will need to work together to develop a long-term solution to address this challenge. At present, it is assumed that this will be a highway capacity solution, but SGC and WECA wish to work together to develop more sustainable mode shift solutions. A nominal total budget of £10m has been identified, with a 10% contribution from the Local Plan. | £10.0 | £1.0 | £9.0 |
| **Severnside Package: total package cost** | | | | | | **£13.2** | **£4.2** | **£9.0** |

| Package name | Related SUaVE(s) or other major developments | Component | Location | Description | Rationale (problem to be addressed) | Est total capital cost (£m) (2024 prices) | Development contribution to capital cost | Balance of capital funding required from other sources |
|---|---|---|---|---|---|---|---|---|
| **North Fringe Package (Woodlands / Almondsbury)** | | | | | | | | |
| North Fringe Package (Woodlands / Almondsbury) | Almondsbury | Active travel | Florence Park and The Hill | Traffic calming and improvements for walking and cycling | Footways along Florence Park are narrow. The Hill is a quiet private road. Volumes of walking and cycling will increase significantly with the new development: measures are required to make conditions more attractive along Florence Park, including providing access to the improved walking and cycling and bus stop facilities along the A38 Gloucester Road. | £0.3 | £0.3 | £0.0 |
| North Fringe Package (Woodlands / Almondsbury) | Almondsbury | Mobility Hub | Within the new SUaVE at Almondsbury | Enhance mobility options in Almondsbury | The middle of the SUaVE is approximately 400m from the A38 Gloucester Road, which will shortly benefit from improved walking, cycling and bus stop infrastructure. Mobility hub will provide a range of new mobility options, incl hire of bikes, e-bikes, e-scooters, and car club. Provision to also be made for integration with enhanced bus services along A38. | £0.3 | £0.3 | £0.0 |
| North Fringe Package (Woodlands / Almondsbury) | Almondsbury | Bus | T1 service from Thornbury | Enhanced frequency of existing bus service | There is strong demand for bus services between Thornbury and Bristol. This site is only 400m from this existing route, which offers the opportunity to provide high quality connections to Bradley Stoke, Parkway station and Bristol city centre. | £0.0 | £0.0 | £0.0 |
| North Fringe Package (Woodlands / Almondsbury) | Almondsbury Woodlands | Bus | New bus service to North Fringe | New bus service to North Fringe and North Bristol | There is currently no bus service from this area connecting to the major employment destinations in Filton, Cribbs Causeway and North Bristol. This service would connect the Almondsbury and Woodlands SUaVEs to Southmead Hospital via major destinations in the North Fringe. | £0.0 | £0.0 | £0.0 |
| North Fringe Package (Woodlands / Almondsbury) | Woodlands | Active travel | Hortham Lane (from site to A38 Gloucester Road) | Improved walking and cycling facilities | There are currently no walking / cycling facilities on the more rural section of Hortham Lane, and facilities are relatively poor through Hortham village. Improved facilities will improve connectivity for pedestrians and cyclists living in the north of the SUaVE to connect to the A38 Gloucester Rd. | £2.2 | £2.2 | £0.0 |
| North Fringe Package (Woodlands / Almondsbury) | Woodlands | Active travel | Over M4 | New active travel bridge crossing over M4 | The Trench Lane bridge over the M4 is narrow. It will need to accommodate high volumes of vehicular traffic to/from the SUaVE. This is unlikely to be acceptable to meet the needs of pedestrians and cyclists travelling to/from the site. A new separate active travel bridge over the M4 is therefore proposed from the site, which will connect to improved active travel routes in Bradley Stoke. A nominal total cost of £10m has been identified; this is an initial estimate; costs will need to be reviewed as the scheme is developed. | £10.0 | £10.0 | £0.0 |
| North Fringe Package (Woodlands / Almondsbury) | Woodlands | Active travel | Connections to Bradley Stoke Way | Improved walking and cycling facilities through Ellicks Close and Savages Wood | This SUaVE will generate strong walking and cycling demand towards destinations in Bradley Stoke and the wider North Fringe. There are committed active travel improvements on Bradley Stoke Way, but there is currently poor wayfinding and connectivity through Woodlands Lane, Trench Lane, Ellicks Lane and Savages Wood. This scheme will improve facilities, lighting and wayfinding to make these routes more attractive. | £3.4 | £3.4 | £0.0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| North Fringe Package (Woodlands / Almondsbury) | Woodlands | Mobility Hub | Within the new SUaVE at Woodlands | Enhance mobility options in Woodlands | The middle of the SUaVE is a significant distance from existing transport networks. This will necessitate a new mobility hub to provide a range of new mobility options, incl hire of bikes, e-bikes, e-scooters, and car club, together with provision for integration with new bus services to penetrate the site. | £0.3 | £0.3 | £0.0 |
| North Fringe Package (Woodlands / Almondsbury) | Woodlands | Highway | Trench Lane (east) | Traffic calming | This is a rural lane (with a 40mph speed limit) with relatively few frontages and a layout that encourages high traffic speeds. Traffic modelling also suggests that this could become a key traffic route to/from the SUaVE, connecting through to Old Gloucester Road and destinations to the east. Measures will be required to discourage excessive traffic, to control traffic speeds, and to address potential road safety issues. | £1.4 | £1.4 | £0.0 |
| North Fringe Package (Woodlands / Almondsbury) | Woodlands | Highway | Gaunt's Earthcott Lane | Traffic calming to deter through traffic | Gaunt's Earthcott Lane is a narrow lane (single-track in places, with passing places) that is not suitable for through traffic. Traffic modelling suggests that there could be potential from traffic from the Woodlands SUaVE heading to the east, and also attracting displaced east-west traffic from congested routes in the North Fringe. Measures will be required to deter through traffic, including consideration of measures such as local traffic filters along the lane. | £0.3 | £0.3 | £0.0 |
| North Fringe Package (Woodlands / Almondsbury) | Woodlands | Highway | Swan Lane | Traffic calming to deter through traffic | Swan Lane is a very narrow lane (mainly single-track) that is not suitable for through traffic. Traffic modelling suggests that there could be potential demand from traffic from the Woodlands SUaVE heading to the east, and also attracting displaced east-west traffic from congested routes in the North Fringe. Measures will be required to deter through traffic, including potential consideration of measures such as local traffic filters along the lane. | £0.3 | £0.3 | £0.0 |
| North Fringe Package (Woodlands / Almondsbury) | Almondsbury Woodlands | Highway | M5 Junction 16 | Intervention to mitigate traffic impacts | M5 Junction 16 is subject to growing traffic pressures caused by strong economic growth across the North Fringe area. These challenges will be exacerbated with the Local Plan. Partners (including SGC, WECA and National Highways) will need to work together to develop a long-term solution to address this challenge. There is unlikely to be a practical highway-based solution, and SGC and WECA wish to work together to develop sustainable mode shift solutions. A nominal total budget of £5m has been identified, with a £1 million contribution (equivalent to 20%) from the Local Plan. | £5.0 | £1.0 | £4.0 |
| **North Fringe Package (Woodlands Almondsbury): total package cost** | | | | | | **£23.3** | **£19.3** | **£4.0** |

| Package name | Related SUaVE(s) or other major developments | Component | Location | Description | Rationale (problem to be addressed) | Est total capital cost (£m) (2024 prices) | Development contribution to capital cost | Balance of capital funding required from other sources |
|---|---|---|---|---|---|---|---|---|
| **Yate Package** | | | | | | | | |
| Yate Package | N/A | Active travel | Beacon Lane and High Street, Winterbourne | Improved walking and cycling facilities | Winterbourne is currently congested at peak times, and facilities for pedestrians and cyclists are poor. Traffic is forecast to increase with the Local Plan, due to new development in Winterbourne itself, and with increased traffic from other growth areas. Improved walking and cycling facilities are proposed to tackle safety issues and better cater for the needs of residents of Winterbourne (including new developments). This is considered to be a strategic scheme, to address cumulative impacts of the Local Plan. | £4.2 | £0.0 | £4.2 |
| Yate Package | N/A | Bus | Yate to North Fringe corridor (B4058) | Improved bus stops in Frampton Cotterell and Winterbourne | Bus stop infrastructure in the corridor between Yate and the North Fringe is highly variable. Bus stops will be improved on the A432 corridor as part of a committed CRSTS1 corridor programme, but stops elsewhere in the corridor (through Frampton Cotterell) are poorer quality. Significant upgrades to stops are proposed to improve passenger experience and support mode shift for journeys into the North Fringe and Bristol. This is considered to be a strategic scheme, to address cumulative impacts of the Local Plan. | £1.3 | £0.0 | £1.3 |
| Yate Package | N/A | Bus | Yate to North Fringe corridor (B4058) | Programme of continued upgrades to bus services | Bus services in the corridor between Yate and the North Fringe are variable, with a range of different service combinations and lack of clarity of which areas are served by different services. Service frequencies for some areas are also relatively low. This intervention will deliver enhanced frequencies for different communities between Yate and the North Fringe, which will support mode shift and reduced car dependency in this corridor. This is considered to be a strategic measure, to address cumulative impacts of the Local Plan. | £0.0 | £0.0 | £0.0 |
| Yate Package | N/A | Highway | Winterbourne Down | Traffic calming measures | Traffic is forecast to increase in the Local Plan, including traffic from SUaVEs in the East Fringe connecting to the North Fringe. It will be important to mitigate the impacts of increased traffic demands, including addressing potential road safety impacts through Winterbourne Down. This is considered to be a strategic scheme, to address cumulative impacts of the Local Plan. | £1.8 | £0.0 | £1.8 |
| Yate Package | N/A | Highway | Church Road, Frampton Cotterell | Traffic calming measures | Traffic is forecast to increase in the Local Plan, including traffic from SUaVEs in the East Fringe connecting to the North Fringe. It will be important to mitigate the impacts of increased traffic demands, including addressing potential road safety impacts through Frampton Cotterell. This is considered to be a strategic scheme, to address cumulative impacts of the Local Plan. | £1.6 | £0.0 | £1.6 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Yate Package | N/A | Highway | B4058/B4059 signalised junctions, Iron Acton | Capacity improvements at two signal junctions on Iron Acton Bypass | Traffic is forecast to increase in the Local Plan, including traffic between Yate and the North Fringe. This is forecast to result in increased delays on the B4058 and B4059, which could result in traffic diverting to less suitable routes. This scheme will widen the approaches to the two junctions. A nominal total budget of £5m has been allocated, and will require more detailed assessment. This is a strategic scheme, to address cumulative impacts of the Local Plan. | £5.0 | £0.0 | £5.0 |
| **Yate Package: total package cost** | | | | | | **£13.9** | **£0.0** | **£13.9** |

| Package name | Related SUaVE(s) or other major developments | Component | Location | Description | Rationale (problem to be addressed) | Est total capital cost (£m) (2024 prices) | Development contribution to capital cost | Balance of capital funding required from other sources |
|---|---|---|---|---|---|---|---|---|
| **Ring Road Package** | | | | | | | | |
| Ring Road Package | North of Lyde Green | Active travel | Westerleigh Road (site entrance to Ring Road) | New footway/cycleway adjacent to carriageway | Westerleigh Road will be a key route for walking between the site and amenities at Emersons Green. There is currently no provision for pedestrians and cyclists along Westerleigh Road between the site entrance and The Folly. New walking and cycling facilities will be required parallel to the existing carriageway on both the eastern and western approaches to the M4 bridge, and roadspace will need to be reallocated on the M4 bridge itself. Walking and facilities should also be upgraded between The Folly and the Ring Road (where there are connections to elsewhere). | £3.1 | £3.1 | £0.0 |
| Ring Road Package | North of Lyde Green | Active travel | Henfield Road | Traffic calming along Henfield Road | Henfield Road will be a key route connecting to local facilities and public transport connections in Lyde Green. It crosses under the M4, and is the only crossing of the M4 east of the Westerleigh Road crossing. It is therefore critical in providing connectivity from the SUaVE to Lyde Green and beyond. This route is currently used by traffic and is not currently suitable for large numbers of people walking and cycling. Traffic management measures are proposed to prevent through traffic and to significantly improve conditions for walking and cycling, focusing on the section connecting to Elderflower Drive, just south of the M4 bridge. | £0.4 | £0.4 | £0.0 |
| Ring Road Package | North of Lyde Green | Mobility Hub | Within the new SUaVE north of Lyde Green | Enhance mobility options north of Lyde Green | The new SUaVE will be a major urban extension to the East Fringe, comprising more than 2,000 dwellings, new employment and mixed uses. The masterplan proposes a district centre and school provision in the middle of the site. This will be at the heart of the community, and it will need to be served by a range of transport options. It is expected that this will be served by existing bus services passing on Westerleigh Road (although these are currently infrequent), and new bus services connecting to a wide range of destinations. It also offers the opportunity to provide joined-up transport services, including hire of bikes, e-bikes, e-scooters and a car club, together with integration with the bus services. | £0.3 | £0.3 | £0.0 |
| Ring Road Package | North of Lyde Green | Bus | Westerleigh Road | MetroBus standard bus stops | The new SUaVE will generate large demands for travel by bus along the Westerleigh Road between the site and the Ring Road. There is currently no infrastructure for bus passengers along the route. High quality new bus stops will therefore be an essential component in encouraging people to use buses. | £0.6 | £0.6 | £0.0 |
| Ring Road Package | North of Lyde Green | Bus | Existing bus services on Westerleigh Road | Divert existing bus services into site | Existing Service 86 runs along Westerleigh Road, providing connections to Lyde Green, Coalpit Heath and Yate (this service is currently infrequent, only operating every 2 hours). Service would be diverted into the site, no overall increase in OPEX assumed. | £0.0 | £0.0 | £0.0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Ring Road Package | Carsons Green | Active travel | Northern site entrance (Main Road, Cattybrook Road) | Improved walking and cycling connections | Cattybrook Road provides the most direct route to the segregated cycle routes following the Ring Road. However, this lane is unlit and unlikely to be attractive for walking and cycling. Traffic calming and lighting improvements are proposed to make this a more attractive route to connect to wider destinations. | £0.5 | £0.5 | £0.0 |
| Ring Road Package | Carsons Green | Active travel | Southern Entrance (Carsons Road) | Improved walking and cycling connections | Carsons Road will be the main entrance from the south. However, there is an absence of footways in places, and walking and cycling connectivity is poor. Measures will include new walking and cycling facilities to connect to the Carsons Road Link and Siston Hill Roundabout, a new cycle crossing on the northern arm of the A4174, and new connections to the Bristol to Bath Railway Path. This will also include improvements to surfacing and lighting along The Dramway (running along the eastern side of the A4174). | £2.5 | £2.5 | £0.0 |
| Ring Road Package | Carsons Green | Mobility Hub | Within the new SUaVE at Carsons Green | Enhance mobility options at Carsons Green | The new SUaVE will be a major urban extension to the East Fringe, comprising more than 1,900 dwellings, new employment and mixed uses. The masterplan proposes a district centre and school provision in the site. This will be at the heart of the community, and it will need to be served by a range of transport options. Existing bus services are infrequent (see below), and will need to be served by new services connecting to a wide range of destinations. It also offers the opportunity to provide a joined-up transport offer, including hire of bikes, e-bikes, e-scooters and a car club, and integration with bus services. | £0.3 | £0.3 | £0.0 |
| Ring Road Package | Carsons Green | Bus | Existing bus services on Westerleigh Road | Divert existing bus services into site from north | Existing Service 525 runs along Main Road and Shortwood Hill, providing connections to Emersons Green, Pucklechurch, Westerleigh and Yate (this service operates hourly). There could be scope to divert this service into the north of the site. However, it is unlikely that it would not be viable to extend fully into the site, because this would significantly increase journey times for other passengers. No overall increase in OPEX assumed. | £0.0 | £0.0 | £0.0 |
| Ring Road Package | Carsons Green | Bus | Existing bus services on Carsons Road | Divert existing bus services into site from south | Existing Service 86 runs along Carsons Road, providing connections to Kingswood, Emersons Green, and Yate (this service is currently infrequent, only operating every 2 hours). Service would be diverted into the site, no overall increase in OPEX assumed. | £0.0 | £0.0 | £0.0 |
| Ring Road Package | North of Lyde Green Carsons Green North of Warmley | Bus | New bus services to North Fringe | Network of new services connecting to North Fringe, Yate and Keynsham | The scale of growth at the three SUaVEs in the East Fringe will necessitate a new approach to bus service provision in this area. Initial proposals are for a network of high-frequency bus services connecting to the North Fringe, Yate, and Keynsham. | £0.0 | £0.0 | £0.0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Ring Road Package | North of Lyde Green<br>Carsons Green<br>North of Warmley | Bus Highway | Bus priority and junction improvements on Ring Road | Conversion of existing HOV lanes and new bus lanes between Coldharbour Lane and new junction at Carsons Green | Existing bus services are subject to significant delays on parts of the A4174 Ring Road between UWE and the East Fringe. For example, the m3 metrobus service from Lyde Green experiences severe delays and very poor service reliability due to congestion and lack of priority. The transformation of bus services to support growth in the East Fringe will require a new approach to management of roadspace on the Ring Road. This will include conversion of the HOV lanes to bus lanes westbound between Wick Wick and Bromley Heath, and eastbound between Coldharbour Lane and the M32 junction. Other sections of route could also be converted from general traffic lanes to bus-only lanes, and provision has been made for capacity improvements at key junctions (Bromley Heath, Wick Wick, Lyde Green, Emersons Green, Pucklechurch Link Road). | £14.0 | £0.0 | £14.0 |
| Ring Road Package | Carsons Green | Highway | Pucklechurch | Traffic management to mitigate impacts of traffic through Pucklechurch | Traffic modelling forecasts increased traffic through Pucklechurch village. This scheme proposes traffic management measures to reduce traffic speeds and severance through the village centre. | £1.1 | £1.1 | £0.0 |
| Ring Road Package | Carsons Green | Highway | A4174 new junction | New at-grade junction on A4174 to provide access to Carsons Green. | Carsons Green SUaVE is currently severed from the existing built-up area by the Ring Road. Bridges over the Ring Road are provided at Main Road in Shortwood (to the north) and Carsons Road (to the south). However, these are insufficient to accommodate the strategic connectivity needs of the SUaVE, particularly future public transport connectivity. A new signalised junction is proposed on the A4174, north of the Siston Hill junction, to enable buses to connect into the SUaVE. A nominal total £10m budget has been identified for this scheme. | £10.0 | £0.0 | £10.0 |
| Ring Road Package | North of Warmley | Active travel | Warmley Forest Park | Upgraded walking and cycling track through Warmley Forest Park | Paths through Warmley Forest Park will provide the most direct connections between the North of Warmley SUaVE and London Road / High Street in Warmley. At present, these connections do not have lighting. Upgraded facilities will be required to make conditions for more attractive for walking and cycling for local journeys. | £0.2 | £0.2 | £0.0 |
| Ring Road Package | North of Warmley | Active travel | A420 London Road and High Street (east of A4174 Ring Road) | Upgraded walking and cycling facilities on London Road and High Street | There are heavy traffic flows on the A420 London Road and High Street between Bridgeyate and the A4174 Ring Road junction. London Road and High Street provide local services, and provide a key route to Kings Oak Academy (secondary school) and higher tier shops and services in Kingswood. There are poor conditions for walking and cycling, and improvements are required to make walking and cycling more attractive along this route. | £0.7 | £0.7 | £0.0 |
| Ring Road Package | North of Warmley | Active travel | A420 Deanery Road | Upgraded walking and cycling facilities on Deanery Road and Tenniscourt Road | Deanery Road connects to services in Kingswood, and Tenniscourt Road connects to Kings Oak Academy. Improvements are required to make walking and cycling more attractive along this route. | £0.6 | £0.6 | £0.0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Ring Road Package | North of Warmley | Active travel | Goose Green and Webbs Heath | Upgraded walking and cycling facilities and traffic management | Goose Green will play an important role in providing active travel connections from the North of Warmley SUaVE to the Bristol and Bath Railway Path. This is a narrow route, with no footway provision, and it is not an attractive option for walking and cycling. Intervention is required along this route to better manage traffic flows and to create better conditions for walking and cycling. | £0.7 | £0.7 | £0.0 |
| Ring Road Package | North of Warmley | Active travel | Carsons Road | Upgraded walking and cycling facilities | Carsons Road will play an important role in providing an active travel connections from the North of Warmley SUaVE to the Bristol and Bath Railway Path. This road is currently traffic dominated and unattractive for walking and cycling. Measures will include new walking and cycling facilities to connect to the Carsons Road Link. This will join with the scheme listed above for the Carsons Road Link. | £0.4 | £0.4 | £0.0 |
| Ring Road Package | North of Warmley | Mobility Hub | Within the new SUaVE North of Warmley | Enhance mobility options at Carsons Green | The new SUaVE will be a major urban extension to the East Fringe, comprising more than 1,000 dwellings, new employment and mixed uses. The development will need to be served by a range of transport options. Existing bus services will be diverted into the site and will need to be served by good quality waiting facilities. It also offers the opportunity to provide joined-up transport services, including hire of bikes, e-bikes, e-scooters and a car club, together with integration with the bus services. | £0.3 | £0.3 | £0.0 |
| Ring Road Package | North of Warmley | Bus | A420 London Road and High Street (east of A4174 Ring Road) | Improved bus stops in Warmley | Warmley High Street will be an important location for people from the SUaVE to access bus services to Kingswood and Bristol city centre. Bus stop facilities are currently very limited in this area, and improved facilities will be an important component in encouraging more people to use buses in this area. | £0.5 | £0.5 | £0.0 |
| Ring Road Package | North of Warmley | Bus | A420 London Road | Existing bus services diverted into North of Warmley SUaVE. | It will be important to provide bus services to connect from the SUaVE to key destinations, with a primary focus on Kingswood and Bristol. | £0.0 | £0.0 | £0.0 |
| Ring Road Package | North of Warmley | Highway | A420 between Bridgeyate and Wick | Traffic management to mitigate impacts of traffic on A420 and through Abson | Traffic modelling forecasts increased traffic delays at the traffic signal junction on the A420 in Wick, which will be caused by increased traffic generated by the Local Plan. Increased traffic flows are also forecast through Abson. This scheme proposes traffic management measures to address the impacts of increased traffic flows, including optimising capacity at the traffic signals in Wick. | £2.3 | £2.3 | £0.0 |
| Ring Road Package | North of Warmley | Highway | A420 / A4175 junction | Improvements to A420 / A4175 mini-roundabouts | The new SUaVE will generate significant amounts of traffic demand passing through the A420/A4175 junction, which has the potential to result in increased traffic delays on the approaches. Improvements are proposed to this junction to mitigate the impacts of this additional traffic. A nominal total £10m budget has been identified for this scheme. | £10.0 | £10.0 | £0.0 |
| **Ring Road Package: total package cost** | | | | | | **£48.3** | **£24.3** | **£24.0** |

| | | | |
|---|---|---|---|
| Severnside: total package cost | £13.2 | £4.2 | £9.0 |
| Woodlands / Almondsbury to North Fringe Package: total package cost | £23.3 | £19.3 | £4.0 |
| Yate to North Fringe Package: total package cost | £13.9 | £0.0 | £13.9 |
| Ring Road Package: total package cost | £48.3 | £24.3 | £24.0 |

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