BRISTOL TRANSPORT STRATEGY

ADOPTED 2019

Tackling congestion and making Bristol a better place for all.
A vision up to 2036.

Mayor of Bristol,
Marvin Rees

Foreword from Mayor

Bristol is a city of hope and aspiration. Although we have many achievements to be proud of, we are also a city with high levels of deprivation. In order to build a more inclusive and connected city, my administration is committed to enabling individuals and communities to flourish. We need to connect people to people, people to jobs and people to opportunity.

We know that congestion, and its effect on air quality is a major problem in Bristol and has an adverse impact on our inclusive economic growth. We have to tackle the problem to connect people to education and employment opportunities, to health care, to retail and leisure facilities as well as visiting their friends and family across the city and beyond.

Bristol City Council's Corporate Strategy has four key themes and transport is a contributor to them all:

- Empowering and caring - we want to empower our communities to work with us to improve transport options to increase individuals' independence;
- Fair and Inclusive - we want to ensure people have access to learning, jobs and affordable homes and it is vital that good transport options are available to ensure no one is left behind;
- Well connected - we want to make sure our citizens are well linked by efficient and affordable transport options to jobs, services and each other;
- Wellbeing - we want to create healthier communities where citizens feel safe to walk or cycle and can breathe clean air.

However the Council alone will not be able to achieve these aims. That is why in 2017 I set up the Congestion Task Group, consisting of key stakeholder and influencers in the city to work with us to identify transport issues and solutions that are mutually supported. The Bristol Transport Strategy is a result of our partnership with the Congestion Task Group members and I fully support the ambition, vision and objectives of the Strategy.

Cabinet Member for Transport and Connectivity,
Cllr Kye Dudd

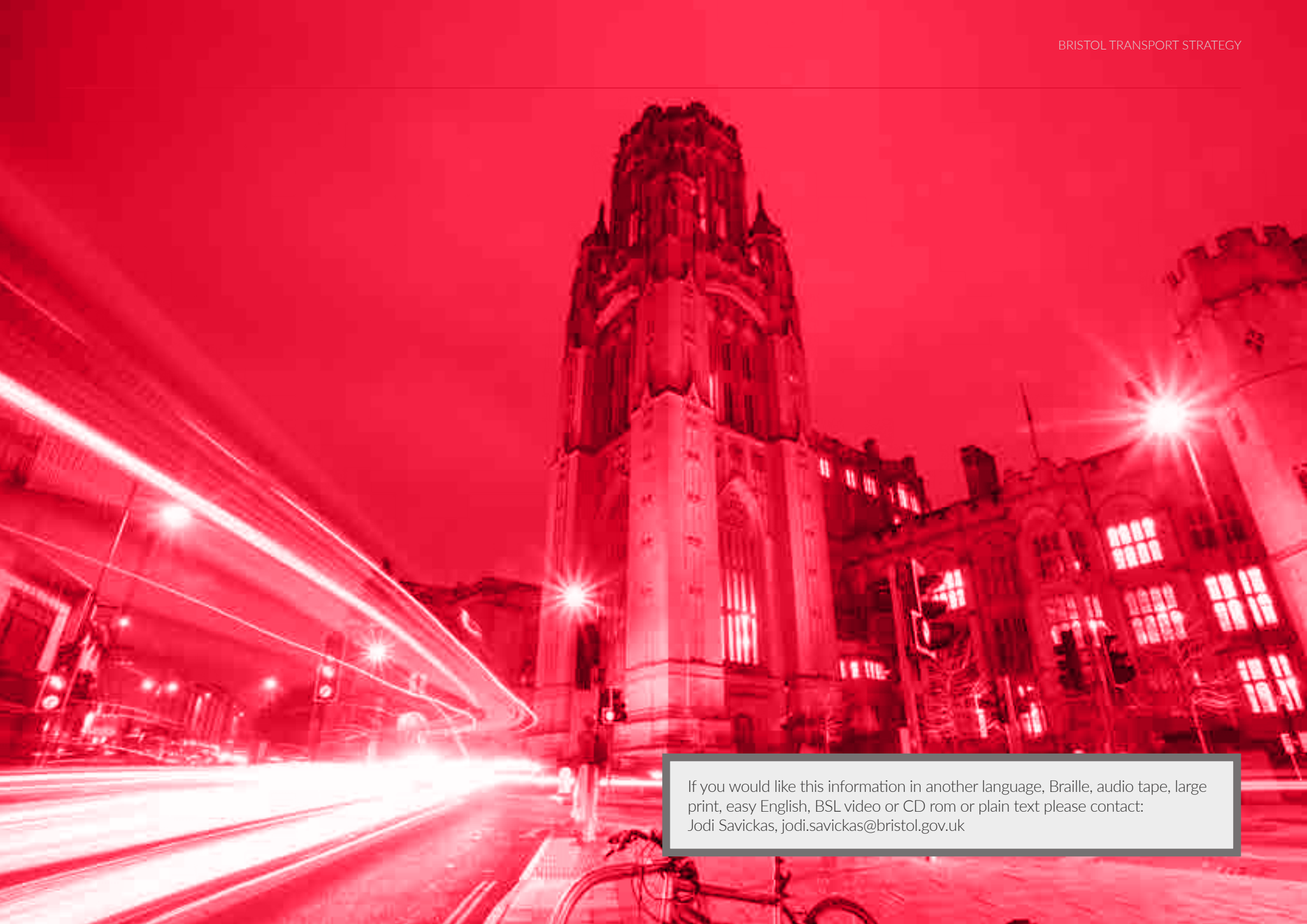
Foreword from Cabinet Member for Transport and Connectivity

It doesn't always seem like it but in many ways, we have made huge achievements in transport in Bristol over recent years. We have rising levels of public transport use in Bristol in a time when other cities across the UK are experiencing a decline in use. We are delivering most recently a bus rapid transit scheme- MetroBus-that has included improved bus prioritisation measures to prevent MetroBus and other buses getting caught up in general congestion to improve reliability. We were the first Cycling City in the UK, which brought high levels of investment in cycling infrastructure and promotion and saw cycling figures double. We now have higher levels of cycling to work than Sheffield, Nottingham, Newcastle and Liverpool combined.

However, this is just the start, and we still have both legacy and future challenges to tackle. In a city that has seen huge growth without investment in transport infrastructure, we know we have substantial challenges. We will be developing thousands of new homes and jobs and there will continue to be more people to move around on an already congested network. Realistic and affordable transport options in some parts of the city are still limited, resulting in poor access to jobs and opportunities. Beyond this transport strategy is our intention to grow public transport use through a major bus deal with the local bus operators and the development in the next decade of a mass transit system that will transform travel around the city.

Delivering the objectives of the Bristol Transport Strategy will require continued partnership working with our citizens and stakeholders- the council cannot solve these problems alone - and working with the Bristol Transport Board has begun this conversation.

The Bristol Transport Strategy is the local voice for local people and will be an active document to work and achieve our vision.



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Executive Summary

With a rich cultural heritage, prosperous economy, and world class universities, Bristol is consistently ranked as one of the best places to live in the UK[1]. However, as with other cities, we face rising inequality and some of the most deprived areas in the country are located here[2]. For Bristol to be an attractive place to work, live, and visit for everyone, it needs a transport network that supports the local economy, enhances the urban environment, and contributes to high-quality, people friendly places.

The city is experiencing the biggest investment in living memory with around £800m already being invested in transport infrastructure to 2020. This investment includes the first three routes of a MetroBus Rapid Transport network linking the city centre to the North Fringe and South Bristol. The MetroWest suburban rail scheme includes introducing a number of new cross city services and better timings. Cycle Ambition Fund programmes are helping to improve cycle infrastructure and transport investment linked to the Temple Quarter Enterprise Zone will provide sustainable transport access to new jobs.

This document looks ahead at the challenges that Bristol faces as a city, suggests a vision and objectives and outlines a number of aims and actions to ensure that sustainable travel becomes increasingly more convenient, reliable, attractive and cost effective.

The Bristol Transport Strategy

Bristol will be a city of sustainable communities that combine housing, employment, retail, education, training and leisure functions, all linked by a strong public transport network. In order to tackle congestion and air pollution, our vision for Bristol is to be a well-connected city that enables people to move around efficiently with increased transport options that are accessible and inclusive to all. We will deliver an improved sustainable and resilient transport network that supports Bristol's vibrant independent local centres and neighbourhoods and connects to an attractive and thriving city centre.

Challenges

The key transport challenges facing the city are:

- **Housing, jobs and regeneration:** Over 100,000 new homes and new jobs needed across the region by 2036[3]
- **Equality:** Bristol has some of the most deprived areas in the country, with a difference of 16 years in healthy life expectancy between the most and least deprived areas of the city[4].
- **Health:** Physical inactivity contributes to 1 in 6 deaths and around 300 deaths a year are due to air pollution[5].
- **Better places:** We need to tackle poor quality public space by creating high quality places and making better use of our streets
- **Reliable journeys:** Bristol has some of the worst congestion in the country, causing unreliable journeys for many people[6].
- **Sustainable growth:** We need to support economic growth and accommodate emerging technologies while cutting carbon emissions.

The use of technology to help us get around has increased rapidly and will continue to do so. Technology is helping people make their journeys door-to-door in a seamless way through measures such as journey planning tools, smart ticketing and mode sharing apps that allow citizens to access various modes of transport, reducing the need to own individual cars. We will embrace the use of technology that brings more efficient movement around our city and this is embedded throughout this strategy.

Journeys are made for many different purposes and to various points across the city; therefore it is not appropriate to identify just one target for all trips across all parts of the city[7]. We have identified a number of objectives, outcomes and actions that seek to overcome the challenges we face and to meet our vision.

City wide movement

A great deal of traffic that travels through the city each day is from surrounding areas to access employment sites in the centre of the city, which is a big contributor to congestion throughout the city. The road network is at capacity and will be placed under further pressure from planned housing and economic growth. Building more roads will not solve this issue. Apart from not having space available to do so, providing more road space for cars will mean more cars will add to overall congestion levels and will create more hold ups at already congested points in the city. We need to make changes the in the way we use our street space so that people and goods can move around the city more efficiently.

Working with neighbouring authorities is key to achieving our vision and tackling the region's transport challenges. Bristol City Council has been working with South Gloucestershire, Bath and North East Somerset, and North Somerset Councils on a Joint Transport Study (JTS)[8], which will inform the emerging Joint Local Transport Plan that covers the West of England region. Our approach to enable efficient movement around the city, which has been fully evidenced through the Joint Transport Study, is as follows:

- Manage the demand on the network to ease congestion.
- Enable people and goods to travel into and through the city more efficiently.
- Make space and improve safety for movement by sustainable modes.
- Encourage the use of sustainable modes and embed a sustainable transport ethos to help achieve our vision.

The outcomes we will seek to meet this approach are:

Outcome #1 | Efficient movement of people and goods around the city, with increased resilience of the network and minimised impacts of congestion and air pollution.

Outcome #2 | On and off street parking managed efficiently to encourage use of sustainable transport and tackle congestion, while providing options that support the city's 24 hour economy.

Outcome #3 | More efficient movement of goods in the city (especially during peak hours), working with industry to find cleaner alternatives.

Outcome #4 | Public transport to be visibly integrated, convenient and reliable to enable people to move around the city in a more efficient way.

Outcome #5 | Walking to be safe, pleasant, accessible and the first choice for local journeys and combined with public transport for longer journeys.

Outcome #6 | Cycling to be safe, segregated from other modes wherever possible, simple, accessible and convenient, either as an option for the whole journey or as part of a journey combined with public transport.

Outcome #7 | A resilient, safe and well-maintained network to enable continuous movement of people and goods, using smart technologies.

Outcome #8 | More people making sustainable and healthy transport choices by improving engagement with communities, schools and businesses.

Outcome #9 | New developments to be innovative in their approach to prioritise sustainable transport options and address the impact on the existing network.

City Centre

In central Bristol, we will deliver the City Centre Transport Package to make the city a more attractive destination and place to work and enjoy. The regeneration of Temple Meads station and transport schemes linked to the Temple Quarter Enterprise Zone will support growth in this area. Our outcome for the City Centre is:

Outcome #10 | A city centre that is accessible by active and sustainable transport and attractive to live, work and visit, enhancing its status as the foremost shopping and cultural centre in the South West.

Corridors

Bristol has a number of transport corridors that carry large numbers of people from within the city and outside its boundaries to the city centre. Many of these corridors are local centres and high streets and have very limited space to expand to accommodate movements by multiple modes. We therefore have to be more radical in our thinking about how we can best move more people more efficiently along our corridors in mass transit modes, which could be located underground. Our outcome for corridors is:

Outcome #11 | More efficient transport corridors to move the largest number of people in the space available.

Local Centres

Local centres provide essential services and facilities for many residents who live nearby providing key facilities, which means residents do not have to rely on a car for many every day needs. They are also places for people to meet and interact, and the influence of transport can have large impacts on creating a sense of place. Our outcomes for local centres are:

Outcome #12 | Transport to support and enhance local centres and high streets by recognising that they provide key services and facilities for citizens to access and can also be transport corridors and destination points for visitors.

Outcome #13 | Reduced impact of motorised traffic on local centres creating better public spaces that are more accessible by walking, cycling and reliable public transport.

Neighbourhoods and residential streets

Bristol is made up of a number of neighbourhoods that each has its own identity and is where our citizens live. It is important that citizens feel safe and confident to walk and cycle in their neighbourhoods to access local services and connect to other parts of the city without relying on a car. Our outcomes for neighbourhoods and residential streets are:

Outcome #14 | Key facilities and services increasingly accessible to all citizens without the need to rely on a car.

Outcome #15 | Safer places to live by working with citizens to design and deliver measures to improve movement and liveability in our neighbourhoods.

Funding and implementation

Local government is under increasing financial pressure with cuts in budgets and inconsistent funding streams. We will continue to work with developers to negotiate delivery of transport infrastructure identified in this strategy that benefits new developments. However, delivering the proposals set out in this document will require a step change in capital funding in the region, along with increases in revenue funding to help operate and maintain the new infrastructure. While new funding has been released through the establishment of the West of England Combined Authority, additional sources of funding will be needed, including consideration of workplace parking levies and/or road user charging.

Introduction

With a rich cultural heritage, prosperous economy, and world class universities, Bristol is consistently ranked as one of the best places to live in the UK[9]. Sustained investment has resulted in large increases in sustainable travel across the city. Public transport use in Bristol has witnessed a rapid increase in recent years compared to decreases in the rest of the country, and more people now cycle to work in Bristol than in Sheffield, Nottingham, Newcastle and Liverpool added together[10].

The city is experiencing the biggest investment in living memory with around £800m being invested in its transport infrastructure to 2020. This investment includes:

- The first three routes of a MetroBus Rapid Transport network linking the city centre to the North Fringe and South Bristol.
- The MetroWest suburban rail scheme includes introducing a number of new cross city service and better timings.
- Cycle Ambition Fund programmes are helping to improve cycle infrastructure and transport investment linked to the Temple Quarter Enterprise Zone will provide sustainable transport access to new jobs.

We have a rising population and as such there is a need to provide around 100,000 houses and a similar number of additional jobs across the West of England by 2036. Whilst this will be a challenge it provides us with the opportunity to get things right at the planning stage and use development to fund new transport infrastructure.

However, as with other cities, we face rising inequality and some of the most deprived areas in the country are located here[11]. For Bristol to be an attractive place to work, live, and visit for everyone, we need a transport network that supports the local economy, enhances the urban environment, and contributes to high-quality, people friendly places. The transport network needs to provide access to jobs, while minimising negative impacts such as congestion, poor health and air pollution, which are often concentrated in the most deprived areas of the city[12].

Bristol's Corporate Strategy for the city contains the following themes:

- Empowering and Caring - empowering communities and individuals to increase independence;
- Fair and Inclusive - ensuring people have access to learning, jobs and affordable homes;
- Well Connected - linking people with jobs and each other;
- Wellbeing - creating healthier and resilient communities.

Each of these themes can be achieved by making access to increased transport options available to all our citizens[13]. Inequality across the city exists in part due to the lack of good quality transport options available to connect citizens to services. This strategy sets out objectives to ensure all citizens are able to get where they need to be to open up more opportunities and make sure no one is left behind.

The Bristol Transport Strategy looks up to 2036 and although we can plan for the known factors such as accommodating growth in housing and jobs, there are a number of unknown factors that could affect how people move around the city, such as the development of new technologies including driverless vehicles. We strive to keep ahead of emerging technologies to ensure the impact is to the benefit of all citizens and helps to overcome the challenges identified in this strategy.

This document looks at the challenges that Bristol faces as a city, proposes a vision for the future and outlines a number of objectives to ensure that healthy and sustainable travel becomes increasingly more convenient, reliable, attractive and cost effective. Tackling our local transport challenges head on will help make us a happier, healthier and economically stronger city that attracts investment and affords a rising quality of life to all of our residents.

SC63 XNM

park ride
33940

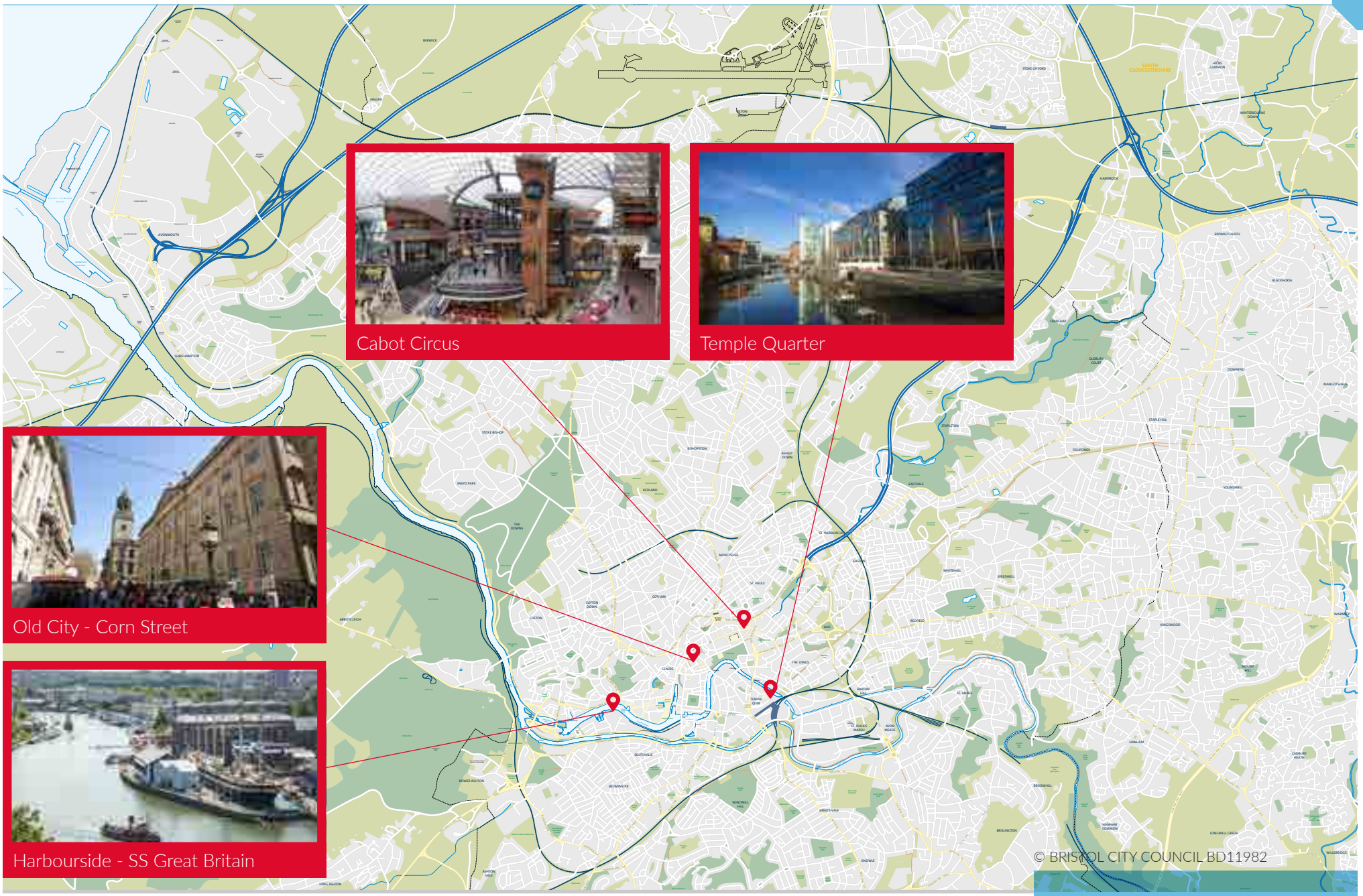
How Bristol works

The way we look at transport in Bristol cannot stop at the boundaries of the city. Bristol is part of the wider West of England Combined Authority (WECA), which also contains South Gloucestershire and Bath and North East Somerset. Data on where people travel from to get to work shows that people travel from across the West of England to access employment in Bristol, with 90% of people both living and working in the West of England[14]. Similarly, there are many journeys made from Bristol to our neighbouring areas, for instance to access large organisations on the northern fringe of the city in South Gloucestershire.

Within the city boundaries, Bristol city centre is spread across a series of central focuses:

- The enterprise area and transport hub at Temple Quarter;
- The shopping focus of Cabot Circus and Broadmead;
- The leisure and heritage focus of the Harbourside;
- The historical and cultural focus of the Old City.

The city centre is also home to regionally major hospitals the Bristol Royal Infirmary and the Bristol Children's Hospital, generating 24 hour movement from emergency vehicles, patients and staff.



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The city has two major watercourses flowing through it, which brings constraints in movement from one side of the city to the other as there are limited options to cross them, contributing to bottlenecks at various points in the city centre.

Bristol has many major transport corridors that stretch from beyond the city boundary to the city centre. There is very high demand on these corridors and they transport thousands of people travelling from the wider area daily. The impacts are felt at a local level, however the strategic nature of these linking routes need a co-ordinated approach for improvements from our West of England colleagues and are therefore part of larger transport proposals in the emerging Joint Local Transport Plan (see Policy Context section for more details).

Bristol has a number of local centres that provide key services and facilities but are also destination points in their own right, attracting visitors from across the city such as Gloucester Road, Bedminster, Fishponds, Clifton and many more.

Bristol's neighbourhoods and residential streets are all designed differently as a result of the different eras in which housing has been developed. This ranges from narrow, Victorian streets where houses do not have off street parking to wide modern streets, shared spaces and home zones.

The way our city is laid out means that day to day travel patterns are varied and it is recognised that an approach to how we plan movement in and through the city centre has to be different from how we plan movement in and between residential areas and local centres.

This strategy sets out our approaches in transport for the city as a whole, taking into account the differences in functions of areas across the city. As well as setting out outcomes and actions that apply to the complex range of movements around the city, we will set outcomes and actions for the following:

- **City Centre** - taking into account its multiple hubs, its changing function over time and the movements passing through and around the central area;
- **Corridors** - taking into account their dual role as corridors linking to the city centre carrying high volumes of movement, and local centres and destinations in their own right.
- **Local centres** - taking into account the importance of these areas for local trips and as destination points from further afield;
- **Neighbourhoods and residential streets** - taking into account the differences in design and functions across the city.

As transport movement does not stop at the city's boundaries, it is important that we work closely with our colleagues in the Combined Authority as well as neighbouring North Somerset to manage movement across the West of England. Throughout this strategy it will be made clear the objectives that we will manage in Bristol and those that will be managed in partnership with others on a wider scale.

You said in consultation...

Many of our citizens feel that we need to be more integrated with our neighbouring authorities to improve transport across the West of England.

Bristol: Part of a global movement for healthy liveable cities

Leading cities are promoting sustainable and healthy transport, helping to unlock economic growth and improve the health and wellbeing of citizens.

London | The aim of London's Healthy Streets Approach is to help create a vibrant successful city where people can live active, healthy lives. Key aims include 80% of trips to be made by foot, cycle, or public transport by 2041, along with the elimination of road deaths and carbon emissions. Key schemes include cycle super highways, and pedestrianisation of Oxford Street to increase footfall and help tackle air pollution. Shortly after opening, the east-west cycle superhighway carried 1,200 people per hour – a third of the throughput of the M32 in Bristol in just 3 meters of roadspace[15].

Manchester | Is undertaking one of the largest transport network development programmes seen outside London over recent years, which includes development of Metrolink, one of the best modern tram systems in Europe. A renaissance of rail travel is well underway with major investment taking place around the central Manchester hub in particular. The city is also investing in bus priority schemes, and its Velocity programme aims to transform Greater Manchester into a cycle city by 2025 [16].

The GROW project in Manchester is aiming to transform the city centre, with a new public transport system and public spaces. Oxford Road will be transformed into a pedestrian friendly boulevard giving priority to buses, taxis and bicycles with 'Dutch-style' segregated cycle lanes. General through traffic will be prohibited between 6am and 9pm, 7 days a week.

You said in consultation...

Many of our citizens recognise that achieving these successes requires radical changes and strong decision making, which is widely supported for Bristol.

Nottingham | Over the past decade Nottingham has built up a high quality integrated and efficient transport system. The Nottingham Line One tram now carries up to 10 million passengers per year, and a comprehensive integrated bus network carries over 60 million passengers per year (compared to around 35 million bus passenger trips a year in Bristol). Motor traffic dominance has been reduced in the city centre and high quality public spaces have been created[17].

Copenhagen | Over the course of more than 50 years, Copenhagen has gradually transformed its city centre to an urban space where walking and cycling are the most used forms of transport. Copenhagen has seen wide-scale pedestrianisation, the reduction in traffic lanes and prioritisation of cycles, as well as a gradual reduction in parking spaces by 2-3% annually and incremental increases in parking costs, all of which has helped to change the transport culture of the city. Land made available by the removal of parking spaces has been transformed into public open space[18].

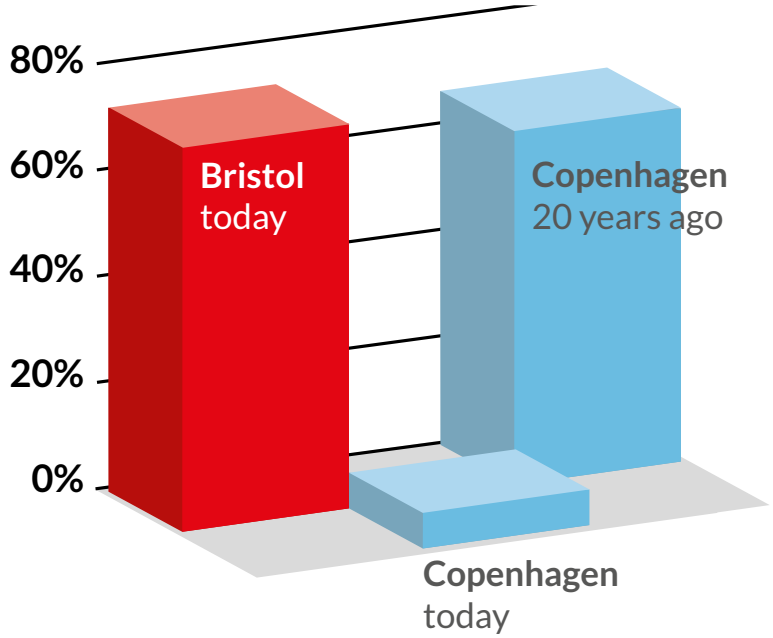


Figure 1: People rating congestion as "bad" in Bristol and Copenhagen

Policy Context

The Bristol Transport Strategy should be viewed in the wider context of national and regional transport policy as well as how it is framed by policy with indirect links to transport.

The Bristol Transport Strategy fills a policy gap that exists between the regional Joint Local Transport Plan (JLTP), which provides the transport strategy for the West of England region (more detail on this is on the following page), and specific mode, topic or area based strategies and plans. At the West of England regional level, we are also producing a Joint Local Cycling and Walking Infrastructure Plan (LCWIP) and a Joint Bus Strategy. These documents, due to be published in 2019 set the strategy for modes at the regional level, allowing the Bristol Transport Strategy and its subsequent mode specific strategies to outline the Bristol specific elements. The Bristol Transport Strategy is not designed to be a detailed transport plan for the city as this is not feasible and would quickly become out of date with ever increasing development. Therefore this is the overall policy and strategy framework for transport in Bristol to inform and be informed by other mode or topic specific strategies and area based plans that will go into more detail for delivery.

Some of these strategies are already published: A Safe Systems Approach to Road Safety (2015) and the Temple Quarter Enterprise Zone SUMP (2016). The Transport Development Management Guide is due to be published in 2019.

The Bristol Walking Strategy, the Bristol Cycling Strategy and the Bristol Parking Strategy are the next documents to be produced. Work will begin on these documents in 2019.

Parts of the city will come forward at different times for development to accommodate housing and jobs. In order to ensure sustainable transport is embedded from the outset, we will produce detailed masterplans for each area to include the transport requirements and to ensure alignment with strategic policies as set out in this strategy and the JLTP, as well as methods and timescales for delivery. This will involve detailed feasibility studies and designs, as well as collaboration with colleagues in planning, urban design, housing, economic development and more.

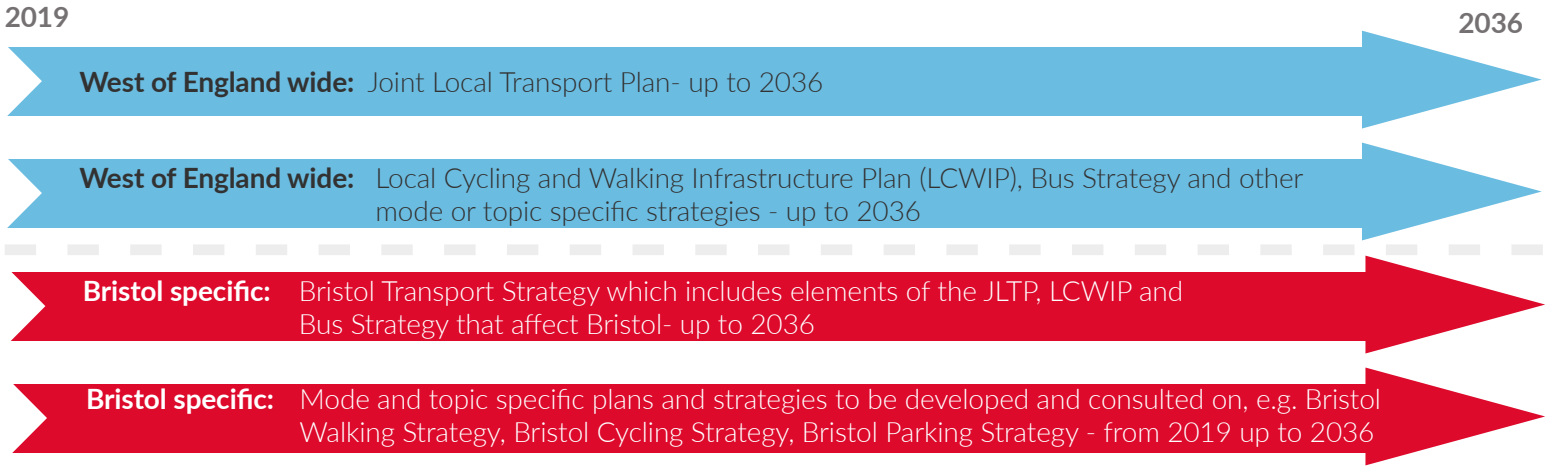
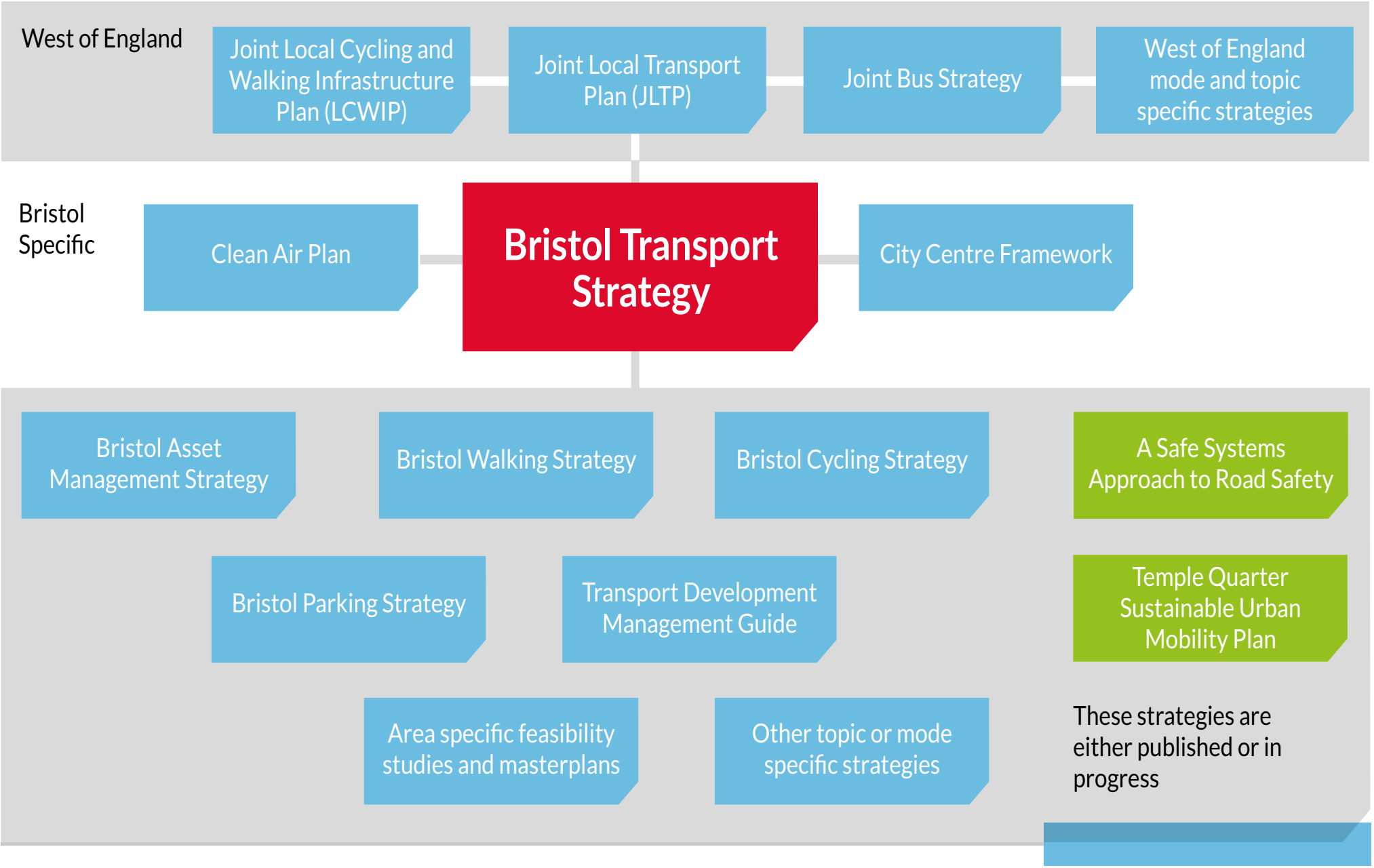


Figure 2: Timeline


West of England
Joint Local Cycling and Walking Infrastructure Plan (LCWIP)
Joint Local Transport Plan (JLTP)
Joint Bus Strategy
West of England mode and topic specific strategies
Bristol Specific
Clean Air Plan
Bristol Transport Strategy
City Centre Framework
Bristol Asset Management Strategy
Bristol Walking Strategy
Bristol Cycling Strategy
A Safe Systems Approach to Road Safety
Bristol Parking Strategy
Transport Development Management Guide
Temple Quarter Sustainable Urban Mobility Plan
Area specific feasibility studies and masterplans
Other topic or mode specific strategies
These strategies are either published or in progress

All major transport schemes for the West of England are covered by the JLTP, which spans the same period as the Bristol Transport Strategy up to 2036. The JLTP has been informed by the Joint Transport Study[19], which was completed in 2017 to set out the transport connections required for the West of England to accommodate growth in housing and jobs as set out by the Joint Spatial Plan. The Bristol Transport Strategy takes the policies and schemes within the JLTP and focuses them down to how it impacts on Bristol, therefore using the evidence and data in the Joint Transport Study to inform the majority of the content in this strategy.

We recognise that we have our own challenges to address through transport and so the Bristol Transport Strategy sets out our vision for transport for the city up to 2036 and how we plan to achieve it. As mentioned, more detail on the exact routings, timescales and deliverability for specific transport schemes will be produced following extensive feasibility studies to produce area, topic and mode specific strategies. The Bristol Transport Strategy therefore is the overarching framework that sets our direction and ambition.

Figure 3 shows this more clearly.

Figure 3: Overarching framework

Joint Transport Study completed in 2017 identified the transport requirements to connect new housing and jobs.

Joint Spatial Plan sets out locations for housing and job growth across West of England for next 20 years.

Joint Local Transport Plan sets out the transport vision for the West of England for the next 20 years.

The Bristol Local Plan sets out the planning policy and safeguards land for development as identified in the JSP.

Bristol Transport Strategy focuses the JLTP down to city level and sets out the transport vision for Bristol for the next 20 years.

Challenges

Challenges

The issues facing our city that have transport implications

Housing, jobs and regeneration

Over 100,000 new homes and 83,000 new jobs are needed across the region by 2036.

Equality

Bristol has some of the most deprived areas in the country, with a difference of 16 years in healthy life expectancy between the most and least deprived areas of the city.

Health

Physical inactivity contributes to 1 in 6 deaths in the UK, with 83% of children and more than a third of adults in Bristol not meeting recommended physical activity levels. Around 300 deaths a year in Bristol are due to air pollution.

Better places

We need to tackle poor quality public space by creating places where people want to visit and spend time and enable safe and convenient point to point movement in attractive environments.

Reliable journeys

Bristol's levels of congestion are among the worst in the country causing unreliable journeys for many people. This decreases the attractiveness of Bristol as a place to live and work and causes a drag on the local economy.

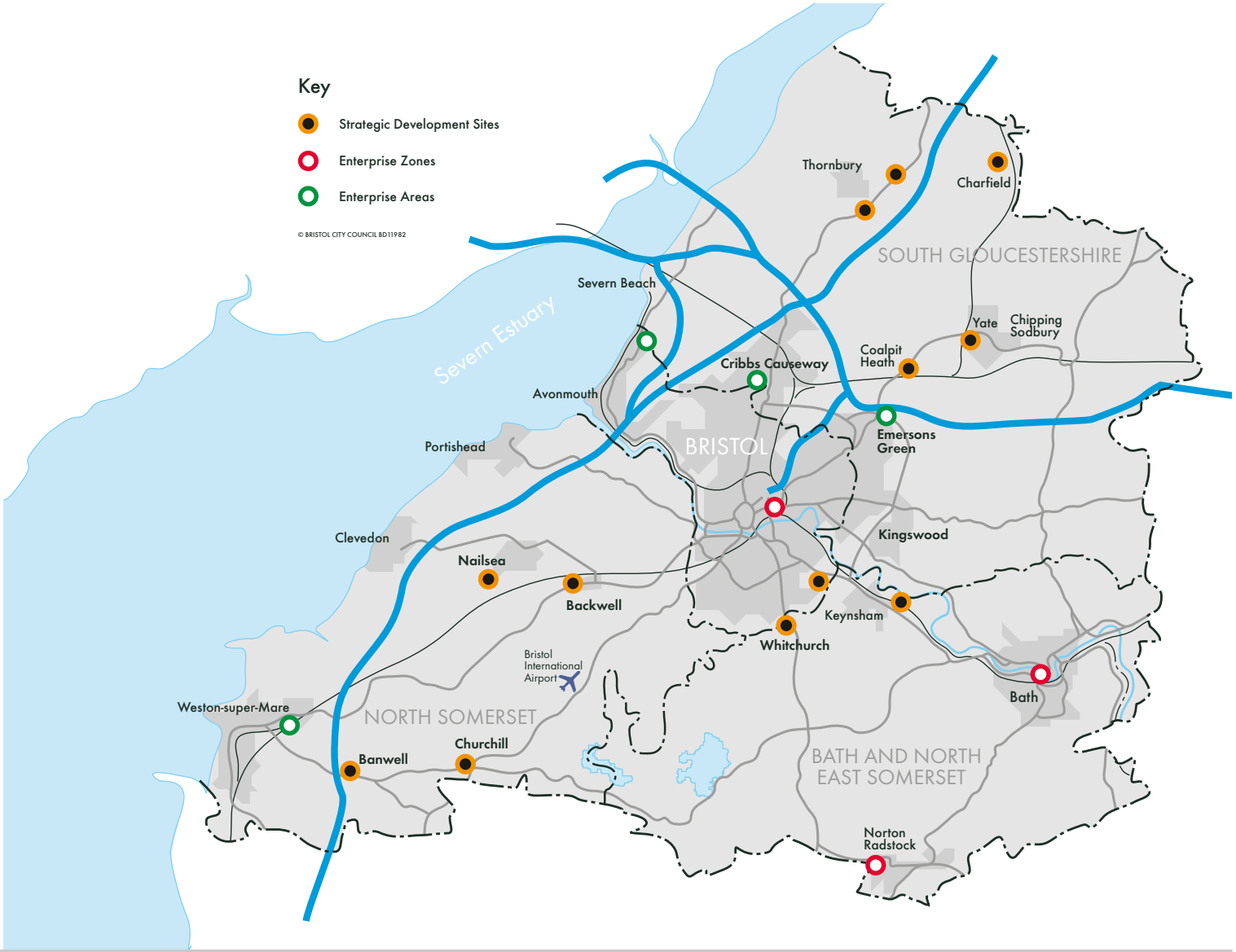
Sustainable growth

We need to support economic growth and accommodate emerging technologies while cutting carbon emissions to meet carbon neutrality targets.

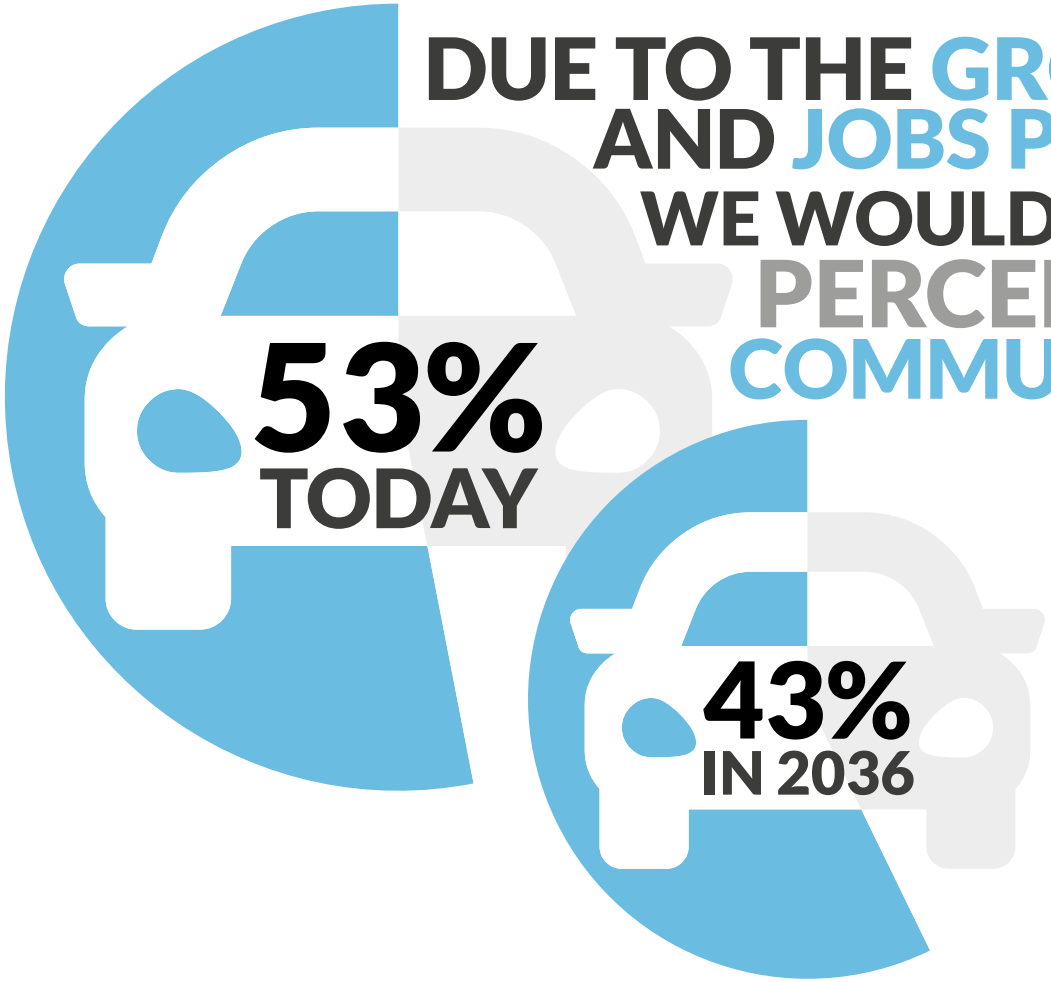
Housing, jobs and regeneration

Due to growth in population and reductions in the number of people living in households, the Joint Spatial Plan (JSP) for the West of England sets out plans to accommodate over 100,000 much needed new homes and around 83,000 new jobs over the next 20 years.

Around 32,000 new homes will be delivered in Bristol, and more across a range of sites beyond the green belt in neighbouring areas in the West of England. In terms of jobs, around 22,000 will be in Temple Quarter in the city centre and around 11,000 will be in the Avonmouth Severnside Enterpise Area, which spans the north western boundary into South Gloucestershire.



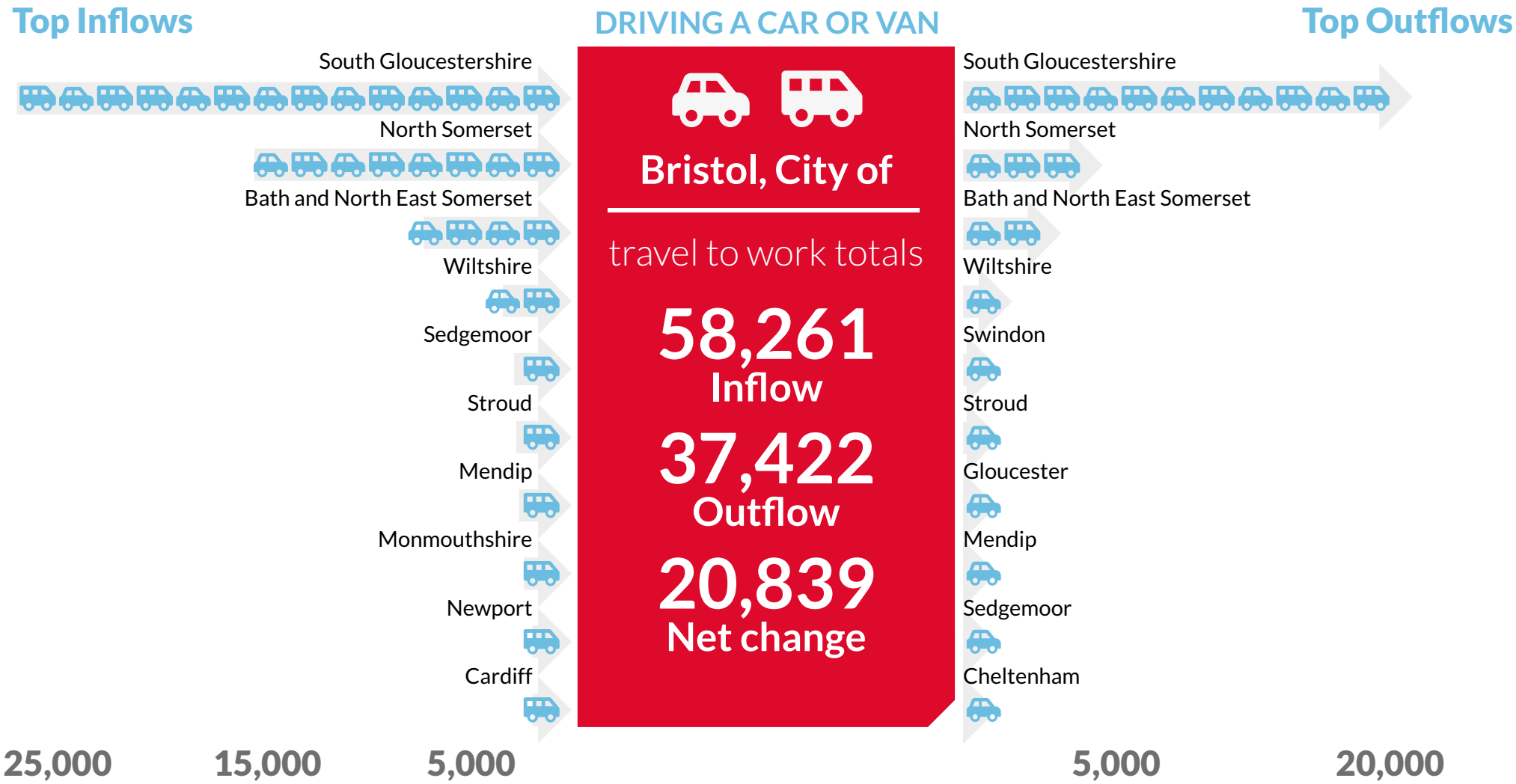
This development will create additional pressure on transport networks in Bristol. There are limited opportunities for significant highway capacity improvements in Bristol. As such, the overall approach is therefore to reduce the number of vehicles carrying one person to create the right conditions to support growth in housing and jobs by improving connections into the city by public transport and intercepting car trips traveling from further afield on the edges of the city. This will enable the city's roads to be restructured to support sustainable and healthy travel.



DUE TO THE GROWTH IN HOUSING AND JOBS PLANNED IN BRISTOL WE WOULD NEED TO REDUCE THE PERCENTAGE OF PEOPLE COMMUTING BY CAR FROM:

JUST TO MAINTAIN TRAFFIC AT ITS CURRENT LEVEL

(REF JTS).


Top Inflows
DRIVING A CAR OR VAN
Top Outflows
South Gloucestershire
North Somerset
Bath and North East Somerset
Wiltshire
Sedgemoor
Stroud
Mendip
Monmouthshire
Newport
Cardiff
Bristol, City of
travel to work totals
58,261
Inflow
37,422
Outflow
20,839
Net change
South Gloucestershire
North Somerset
Bath and North East Somerset
Wiltshire
Swindon
Stroud
Gloucester
Mendip
Sedgemoor
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25,000
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5,000
20,000

60% OF PEOPLE DRIVING TO WORK IN BRISTOL CITY CENTRE DO SO FROM NEIGHBOURING AREAS, AND OVER 35,000 BRISTOL RESIDENTS DRIVE TO WORKPLACES OUTSIDE OF BRISTOL.[20]

We cannot solve our transport issues alone and continuing to work effectively with our neighbouring authorities and the West of England Combined Authority is crucial to solving our transport challenges. Figure 4 shows that many areas with high levels of car and van use to work are outside Bristol's boundary. While travel patterns have become more dispersed over the last 20 years, the predominant travel movement in the region is still to/from central Bristol and the employment sites in the north at Filton Abbeywood and the surrounding areas[21].

The transport implications of this challenge are:

- Increased housing and jobs means more people need to move around.
- This will create added demand on already congested transport network.
- Currently high levels of commuting by car to Bristol from outside the city boundary.

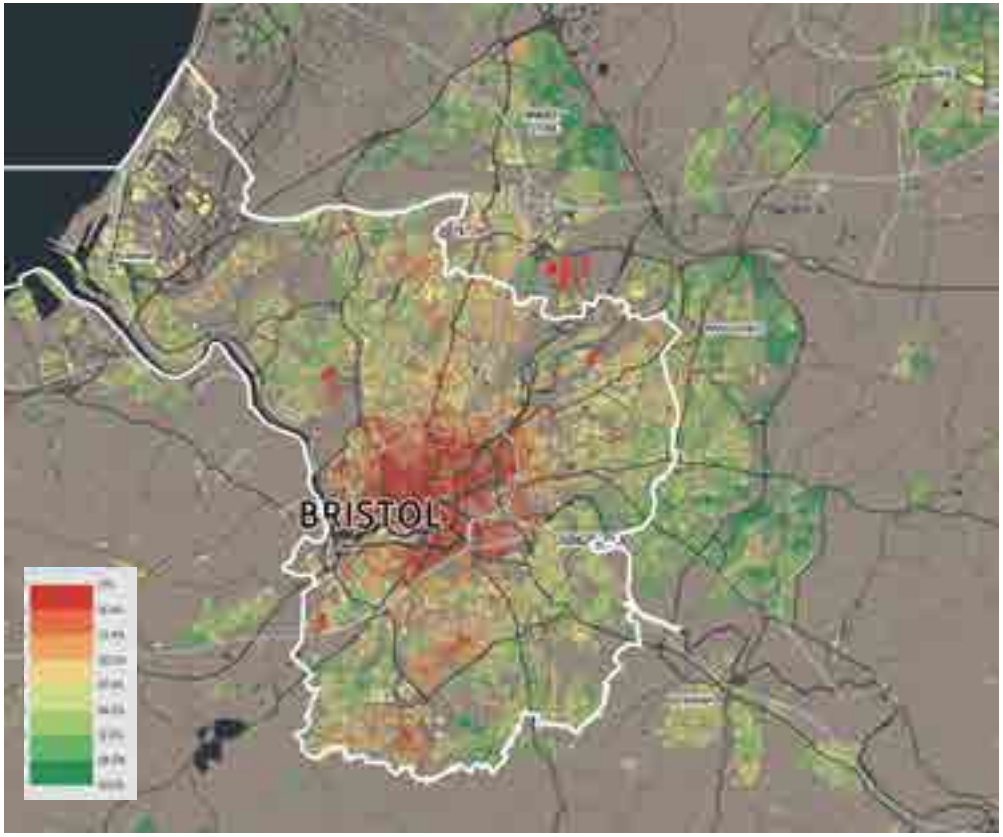


Figure 4: Car and van use for traveling to work

Equality

Transport can play a major role in tackling inequality. Residents in areas of high levels of deprivation have fewer opportunities to access jobs, health care, and green space.

Residents in these areas encounter worse air pollution, a disproportionate level of traffic injuries, and live closer to major roads which sever their communities. Poverty and deprivation also appear to be associated with a higher risk of excess weight in Bristol, and providing healthy travel choices can play a large role in tackling this[23].

People in the most deprived areas of Bristol are far less likely to own and drive a car, and far more likely to walk or get the bus than people in the least deprived areas. Given the high levels of walking in the most deprived areas the walking environments need to be safe and accessible for all citizens, and well connected to where people need to go. While the percentage of people cycling in the most deprived areas is lower than for other groups, for many people cycling is a lifeline to access jobs and services.

IMD 2015 Bristol	Don't own a car	Method of travel to work			
		Walk	Cycle	Bus	Car
10% Most deprived	43%	20%	6%	14%	44%
10% Least deprived	9%	10%	9%	5%	56%

Public transport is vital in enabling people to find and sustain employment. We need an inclusive transport system that caters for the rich and poor, young and old, and people with diverse mobility needs.

AROUND 40% OF JOBSEEKERS SAY THAT LACK OF PERSONAL TRANSPORT, OR POOR PUBLIC TRANSPORT, IS A KEY BARRIER PREVENTING THEM FROM GETTING A JOB

24

We must consider the needs of all when planning transport interventions so that everyone can access wherever they need to go in a safe and efficient way. The access requirements of disabled citizens and visitors may be different for non-disabled citizens and we must therefore ensure transport options are viable for all.

The transport implications of this challenge are:

- The negative effect of motorised traffic such as poor air quality, road collisions and community severance tend to be higher in the most deprived areas of the city.
- Transport options are limited to some residents in most deprived areas of Bristol, resulting in poor connections to jobs and training.
- Access requirements are not the same for all, therefore we must consider the needs of all our citizens to have suitable and realistic options to get around.

Health

Physical inactivity directly contributes to 1 in 6 deaths in the UK[25] and costs £7.4bn a year when the impact on the NHS, social care, absence from work and other factors are taken into account[26 27].

Air quality must also be improved with large areas of the city experiencing levels of pollution in excess of EU and UK health based objectives. Most of the pollution leading to breaches of these objectives is generated by motorised transport. Emissions from vehicle exhausts and the generation of particulate matter from brake, tyre wear and resuspension of particles are both significant sources of pollutants that are harmful to health[28]. Exposure to poor air quality can discourage walking and cycling, however a study has shown that exposure to polluted air is worse for those travelling in a car than it is for those using sustainable transport[29].

Finally, we must improve the feeling of safety on our streets and continue to reduce road collisions. Actual and perceived safety is still a big barrier to cycling in particular.

Bristol has the highest proportion of people walking and cycling to work of any large city[30]. We need to build on this trend and tackle poor pedestrian environments in some areas including parts of the city centre.

The transport implications of this challenge are:

- Walking and cycling can increase levels of physical activity and reduce air pollution but our citizens have to feel safe on our streets to do this.
- The message that walking and cycling can improve health, wellbeing and air quality needs to be more widely promoted.

Method of travel to work 2011	Car/Taxi	Public Transport	Cycle	Walk	Other	Work from home
English core cities average (exc. Bristol)	55%	22%	2%	12%	1%	7%
Bristol	53%	11%	8%	18%	2%	8%

31

AROUND

51%

OF BRISTOL RESIDENTS REPORT BEING OBESE OR OVERWEIGHT

32

AROUND

300 DEATHS

(8.5% OF ALL DEATHS) EACH YEAR IN BRISTOL ARE ATTRIBUTABLE TO AIR POLLUTION

33

8 PEOPLE KILLED AND 1,200 PEOPLE INJURED ON BRISTOL'S ROADS IN 2015

34

ONLY 30%

OF RESIDENTS RATE CYCLING SAFETY IN BRISTOL AS GOOD OR VERY GOOD AND 80% SUPPORT IMPROVING CYCLE SAFETY

'I don't cycle because I am scared. The roads are quite busy with a lot of cars and sometimes it is not safe.'
Resident - Barton Hill

Better places

Transport has a large role to play in making the city, and the city centre in particular, a more attractive destination and place to work and enjoy, enhancing its status as the foremost shopping and entertainment centre in the South West.

With changes to consumer shopping habits and the increasing influence of internet shopping, Bristol needs to ensure its city centre is seen as an attractive place to visit and spend time in. The movement of people and goods is often the dominant function of our public areas and by changing how we move through an area can bring improvements to the public realm and air quality.

Many of our transport corridors are local centres and destinations in their own right, and transport improvements need to support and enhance these areas. We need to tackle poor quality public space dominated by the impacts of motorised transport to create places where people want to visit and spend time in safe and attractive environments.

Around 76% of Bristol's residents reported being satisfied with their local neighbourhood as a place to live[35], however, many neighbourhoods are dominated by motor traffic, and are poorly connected to each other.

Many neighbourhoods are multifunctional and act as local centres. By supporting and enhancing this we can encourage the development of a 'polycentric city' or a city that has multiple functioning centres, where facilities and amenities are available within a close distance to where people live, reducing the need to travel.

It must also be recognised that not all trips will be accessing the city centre or local centres and therefore we must enable point to point journeys across the city to allow citizens to get where they want to be.

The transport implications of this challenge are:

- Some of our public spaces are dominated by motorised traffic and are not inviting, safe or attractive to encourage our citizens and visitors to spend time and linger.
- The city has many differing functions that can be made better through transport improvements.
- Each function is different and therefore improvements must recognise these differences.
- There is a need to consider the entire point to point journey for all our citizens and visitors.

College Green- before, dominated by traffic *(left)* and after, the creation of improved public space *(right)*

City centre- before layout with the scissors junction *(left)* and after, created simplified, largely segregated routes for buses, pedestrians and cyclists *(right)*

Reliable journeys

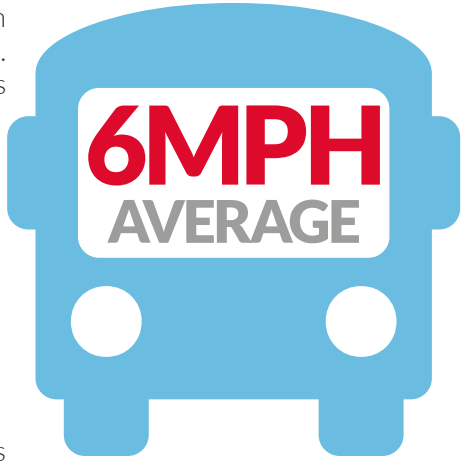
Congestion is an issue in Bristol, particularly at peak times, but increasingly throughout the day, making travel around the city slow and unreliable for many people.

This decreases the attractiveness of Bristol as a place to live and work and wastes time, causing a drag on the local economy and contributing to poor health and poor quality public spaces. This is an issue for private cars, but also for buses, business and freight movement that get caught up in congestion.

While building more roads may appear to solve some issues in the short term, it can cause an increase in motor traffic across the region by encouraging more car travel[36]. Due to our historic narrow road layouts and topographical challenges caused by hills and rivers, there is very limited space to provide additional highway capacity. Apart from not having space available to do so, providing more road space for cars will mean more cars will add to overall congestion levels and will create more hold ups at already congested points in the city. We must instead focus on moving the most people in the space we do have and improve the reliability of sustainable transport, freight and essential services.

Public transport use in Bristol is increasing fast and from a low base in 2011, with Bristol now in the top ten cities for bus use in the UK[37]. However, we still need to make public transport faster and more reliable as this appears as the top way to increase usage [38]. Many citizens rely on public transport to get them to destinations on time, or to link with other modes of transport, such as to get to rail stations or the Airport.

'I use the bus to get to Parkway Station and that has been frustrating at times as sometimes it doesn't even show up at all. There was one where I missed my train because of the bus.'
Student - University of Bristol



AVERAGE SPEED ON SOME BUS ROUTES IS CURRENTLY AS LOW AS 6MPH IN PEAK PERIODS WITH 80% 'ON TIME' IN 2015/16[39]

It is therefore vital that timeliness of public transport is improved. The majority of public transport use is by bus and in order to improve reliability of buses we need to improve the resilience of our road and rail network and reduce congestion by encouraging people out of individual cars and on to vehicles that carry larger numbers of people. The use of technology to give accurate journey times and to enable seamless movement through smart ticketing and app based travel modes is increasing and we must embrace this.

The current transport network is very vulnerable. Often when major incidents occur on our roads or on the motorway network, vehicles are forced to find alternative routes through the city, which cannot cope with additional demand. This results in heavy congestion that make journey times unreliable for most modes. Maintaining a resilient network to avoid the economic costs of failures in the transport system is an important focus. Our highways are the Council's biggest asset at a total value of £5bn, requiring over £7m per year to maintain. These pressures will be increased due to the impacts of climate change which will increase the frequency of extreme weather events.

The transport implications of this challenge are:

- High levels of congestion means journeys made by all motorised modes can be unreliable.
- Buses get caught up in traffic, causing buses to be late reducing the attractiveness of public transport.
- Transport network is vulnerable and incidents can cause the city to become severely congested.

OUR HIGHWAYS ARE COUNCIL'S BIGGEST ASSET AT A TOTAL VALUE OF £5BN, REQUIRING OVER £7M PER YEAR TO MAINTAIN

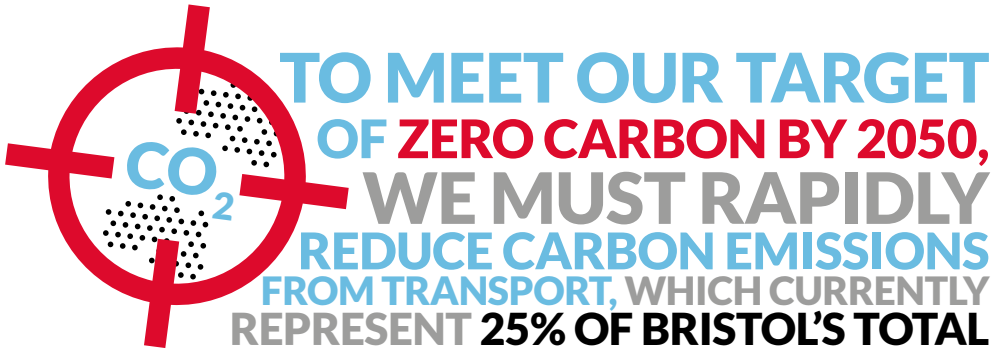
40

Sustainable growth

Tackling all of the challenges listed so far will help support sustainable growth, with savings for the NHS, more reliable journeys, and better places to encourage people to come to Bristol.

In addition, we also need to continue to reduce carbon emissions, adapt to and take action on climate change, and tackle the challenges raised by developments in technology that will impact on the transport network.

Motorised road traffic is one of the largest sources of carbon dioxide emissions, which is contributing to climate change[41].



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With more people living and working in Bristol, leading to significant increases in motor traffic, it will become progressively important and challenging to reduce the overall carbon footprint. Promoting sustainable and healthy modes of transport is one of the main ways we can reduce transport emissions, along with the promotion of more efficient vehicles.

Bristol is a major freight origin and destination. Bristol Port is an international gateway and the Avonmouth / Severnside Enterprise Area is an important logistics hub, which benefits from proximity to the Port and direct access to the motorway network. This area is forecast to grow significantly, resulting in increased movement of goods in this area.

The Temple Quarter Enterprise Zone (TQEZ) is another area of planned employment growth, with 22,000 jobs to be provided over the lifetime of this strategy with a focus on digital and creative industries. Major investment has already been made in transport infrastructure to enable movement to the TQEZ by sustainable modes from across the West of England, providing opportunities of employment and enterprise for our residents. With Bristol Temple Meads at the hub of the TQEZ, which connects to major cities and towns, the West of England is opened up as a strong economic competitor to London and the economic powerhouses.

There are limited options to bypass Bristol City Centre, therefore the TQEZ experiences high volumes of through traffic, including freight vehicles, adding to an already heavily congested network. Freight movement around the TQEZ is currently mixed, due to the industrial sites in neighbouring St Philips Marsh, which generates HGV movements, and the contrasting digital technology sector in the TQEZ, which generates fewer HGV movements but still experiences high levels of small deliveries in vans. The increase in light goods vehicles is expected to rise across the whole city to service the needs of businesses and households as shopping habits change[43].

The transport strategy must also consider the needs of a more flexible workforce, more able to work from home, along with how the needs of an ageing population can be met. New ways of traveling are being introduced at a rapid rate due to the rise in smart phone use and this must be embraced to enable more efficient movement around the city. Sharing modes of transport is no longer restricted to bus and rail, we can now share bikes, taxis and minibuses to get around, reducing the number of vehicles on our network.

Connected and autonomous vehicles (CAVs) are forecast to increase in around the period covered by this strategy[44], which could have the potential to transform how we travel. It is too early to tell how this transformation will unfold, but as with all new technologies, there are likely to be both positive and negative impacts. CAVs could enable greater efficiency in how the road network is used for instance through shared smart taxis, which can also reduce the need for parking. However, they could also increase the number of vehicles on the road and increase congestion, and there would need to be an even greater emphasis on promoting public transport. These questions are already being considered with the ground-breaking VENTURER and FLOURISH projects, with the ambition for the West of England to become a European leader in the progressive roll-out of new technologies and new forms of mobility.

Finally, local government is under increasing financial pressure with cuts in budgets and inconsistent funding streams, particularly for active travel measures. We will continue to work with developers to negotiate delivery of transport infrastructure identified in this strategy that benefits new developments. However, delivering the proposals set out in this document will require a step change in capital funding in the region, along with increases in revenue funding to help operate and maintain the new infrastructure. While new funding has been released through devolution and the establishment of the West of England Combined Authority, additional sources of funding will be needed to deliver and maintain the proposals in this strategy.

The transport implications of this challenge are:

- Bristol is an economic hub with plans to expand and grow the economy of the city, but this will mean increases in movement to and from our enterprise areas of goods and people, increasing the pressure on an already congested network.
- The extent of emerging technologies in transport and how it can change how we move around and can increase efficiency in movement, however changes to how we move around in the future is relatively unknown.
- Funding for transport schemes that can deliver a step change in how people travel to achieve sustainable growth is inconsistent.

Stakeholder engagement

This strategy has been informed by engagement with a wide range of stakeholders during consultation exercises over a number of years on various plans.

Public consultation has helped to provide an evidence base to identify the issues people have with travel and transport in Bristol and what they feel the priorities for investment should be.

Examples of some of the strategies and projects that have included transport consultation are shown below:

'I'll go into town on the bus but I've got friends in Downend and Horfield and just find that the services don't connect well enough. I don't find it all that easy.'
Resident - St George

- **A Good Transport Plan for Bristol**
- **Temple Quarter Enterprise Zone, Sustainable Urban Mobility Plan**
- **West of England Joint Transport Study**
- **LSTF Attitudes to Sustainable Transport Survey**
- **National Highways & Transport Public Satisfaction Survey**
- **Bristol Resilience Strategy**
- **20mph Rollout and evaluation reports**
- **Bristol Bugbears**
- **Local Transport Plans**
- **Bristol Cycling & Walking Strategies**
- **Greater Bristol Bus Network**
- **Bristol Quality of Life Survey**

The recurring transport challenges that have been raised by the public and stakeholders are:

- Congestion
- Public transport provision
- Parking

Citizens and stakeholders are keen to see the following prioritised:

- Investment in public transport- buses and rail for improved reliability and punctuality
- Investment in walking and cycling to be better connected and safer

Consultations have also shown us that the public and stakeholders are keen to see more radical transport plans for the city, telling us to be more ambitious with our approaches.

Congestion Task Group

This strategy has been produced in collaboration with the Congestion Task Group, which was set up in 2017 to run for a year as a task and finish group consisting of stakeholders from across the city. The origins of this strategy have been informed by strong evidence from transport studies as well as input from stakeholders that use and rely on the transport network daily.

The Ongoing Conversation

Consultation on travel and transport in the city will continue throughout the development of the Bristol Transport Strategy and beyond. We will seek to engage with as wide a range of people as possible and look at innovative ways in which to gather the information necessary to create a plan that meets the needs of our citizens.

Delivering the objectives of the Bristol Transport Strategy will require continued partnership working with our stakeholders. We will continue to engage with citizens to ensure the strategy is the local voice for local people in a time when we will see Bristol develop and grow as part of the West of England region.

The Strategy

Vision

Our vision for Bristol is to be a well-connected city that enables people to move around efficiently with increased transport options that are accessible and inclusive to all. We will deliver an improved sustainable and resilient transport network that supports Bristol's vibrant independent local centres and neighbourhoods and connects to an attractive and thriving city centre.

To achieve this vision, and to overcome our challenges, our city needs to continue the transition to increased use of sustainable modes of transport, such as walking, cycling and public transport.

We have housing and jobs growth planned for the city, which means more people commuting every day. For the city to maintain congestion at its current level with the planned growth (and not increase), the percentage of people commuting by sustainable transport would need to increase further and people commuting by car would need to reduce from 53% today to around 43% in 2036[45].

Our ambition is to go further, as not every trip is for commuting purposes. We aim to reduce current levels of congestion and tackle the transport challenges we face, by increasing sustainable transport use for more journeys in line with leading liveable cities around the world.

As will be explored in the following sections, journeys are made for many different purposes and to various points across the city; therefore it is not appropriate to identify just one target for all trips across all parts of the city. How we contribute towards our vision will require measuring a number of factors, as outlined in the Monitoring section at the end of the strategy. To help achieve this vision and overcome the challenges identified, we have set out a number of objectives, which follow.

Freiburg, Germany

Prague, Czech Republic

Copenhagen, Denmark

Amsterdam, The Netherlands

Objectives

The overall objectives of the strategy respond to the challenges raised. The objectives are:

- Provide transport improvements to accommodate increased demand from growth in **housing, jobs & regeneration** on an already congested network with complex movements from within and outside the city boundary.
- Enable **equality** within an inclusive transport system that provides realistic transport options for all.
- Create **healthy places**, promoting active transport, improving air quality, and implementing a safe systems approach to road safety.
- Create **better places** that make better use of our streets and enable point to point journeys to be made efficiently.
- Enable **reliable journeys** by minimising the negative impacts of congestion and increasing network efficiency and resilience.
- Support **sustainable growth** by enabling efficient movement of people and goods, reducing carbon emissions and embracing new technologies

The objectives will be achieved by a number of outcomes and actions as detailed in the following sections of the strategy. Each outcome has the symbol(s) of the objective(s) as shown above to demonstrate how it contributes towards achieving the objectives. The How we will measure success chapter at the end of this strategy identifies the indicators we will measure and data we will collect to establish a baseline and report on how well we are meeting these objectives.

Outcomes and Actions

The strategy begins by setting out outcomes and actions for the complex range of movement across the city as a whole. The 'How Bristol Works' section outlined the various functions of the city by area, which follow with outcomes and actions arranged by these functioning areas. These are:

- **City Centre** - taking into account its multiple focuses, its changing function over time and the movements passing through and around the central area;
- **Corridors** - taking into account their dual role as corridors linking to the city centre carrying high volumes of movement, and local centres and destinations in their own right;
- **Local centres** - taking into account the importance of these areas for local trips and as destination points from further afield;
- **Neighbourhoods and residential streets** - taking into account the differences in design and functions across the city.

The outcomes are set out, along with actions of how we will achieve the outcome. The actions begin with the following:

- **Explore** - we will investigate options to implement this action.
- **Enable** - we will work with partners to implement this action.
- **Deliver** - we will be directly responsible for implementing this action.

Some outcomes and actions are part of the emerging Joint Local Transport Plan for the West of England, but have an impact on achieving the Bristol Transport Strategy objectives. Where this is the case, it is stated that we will work with our West of England partners on implementation.

City wide movement

Movements around the city are complex and made for many different purposes, including from home and various other points to work, school, health care, shopping, leisure, to visit friends and many more. The complexity of point to point movements around the city requires a range of approaches to enable such movement. This section sets out our objectives and actions to provide options to enable movement around the city in the most efficient and sustainable way.

A great deal of traffic that travels through the city each day is from surrounding areas to access employment sites in the centre of the city, which is a big contributor to congestion throughout the city. The road network is at capacity and will be placed under further pressure from planned housing and economic growth.

You said in consultation...

Many of our citizens recognise that building more roads is not the solution to reducing congestion and that we need to improve our existing roads instead of building new ones. However, some suggestions were made that new transport links could increase the resilience of our network where appropriate.

As identified in the challenges, building more roads will not solve this issue. We need to make changes the in the way we use our street space so that people and goods can move around the city more efficiently. Prioritising road space for buses does not necessarily slow down general traffic- in fact, buses carry more people so more people can move in one vehicle, helping to reduce congestion for all road users[46].

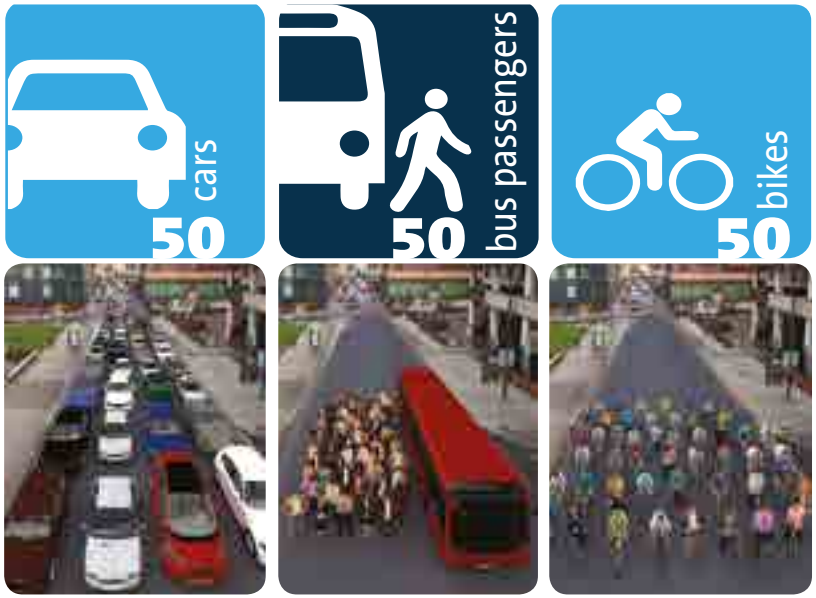
You said in consultation...

There is strong support from our citizens to prioritse road space to allow for better movement by sustainable modes of transport.

As identified in our challenges section, the health of our citizens is directly related to transport, in particular exposure to air pollution. Increasing separation distances between citizens and the heaviest polluting vehicles even just by 1m can reduce the levels of pollution exposure and reduce health impacts. The more citizens walking and cycling in our city will improve air quality and increase levels of physical activity, bringing increased health benefits.

It is vital that our transport network across the city and beyond is resilient and by enabling movement of people and goods using fewer vehicles can reduce the vulnerability of the congested network. It is recognized that the car has a role to play for many journeys that are currently unrealistic by alternative modes, however our approach is to encourage those who can make a switch to alternatives modes to do so to free up space on the transport network to reduce congestion and make alternative modes more efficient, encouraging more people to use them and overcome our transport challenges.

Street Space



Our approach to enable efficient movement around the city, which has been fully evidenced through the Joint Transport Study[47] is as follows:

- Manage demand on the network to ease congestion using measures to reduce the convenience of driving whilst recognising that alternatives may be unrealistic for some journeys.
- Enable people and goods to travel into and through the city more efficiently.
- Make space and improve safety for movement by sustainable modes.
- Encourage the use of sustainable modes and embed a sustainable transport ethos to help achieve our vision.

Manage demand on the network to ease congestion:

Outcome #1 | Efficient movement of people and goods around the city, with increased resilience of the network and minimised impacts of congestion and air pollution.

Along with our West of England partners, **Explore**, **Enable** and **Deliver** approaches to **managing the demand by vehicles on the transport network**. This could include measures such as managing parking provision, or charging for parking or charging to drive in specific areas to encourage those that can use alternative methods of transport to leave their cars at home. Funds raised through such schemes can then be reinvested in transport improvements. This is further detailed in the Funding section. It is vital that this is in conjunction with our West of England colleagues to avoid impact on competing commercial and business centres.

You said in consultation...

There is stronger levels of support than there are objections for demand management measures, which could include congestion charging or managing parking provision. Many citizens said that good alternatives need to be in place before such measures are introduced.

Along with our West of England partners, **Deliver** & **Enable improvements to network management** through a renewed traffic control centre, prioritising a 'resilient road network' to keep transport flowing through measures such as improved traffic signals. This includes an appraisal of the vulnerability of the road network to extreme weather events, working with partners in the field and employing innovative tools as necessary. Work with neighbouring authorities and Highways England to manage transport across the region, and improve roadside information through increased use of new technologies, allowing data to be digitised and open to the public to update.

Deliver & **Enable** continued use of our Code of Conduct to help **minimise the impact of all works that affect the highway**, and encourage greater compliance. Identify links between projects to minimise the number of times the road has to be closed for maintenance or to install new schemes and adopt a no idle roadworks policy.

Enable effective management of congestion associated with events, by working with partners to ensure **event management plans** are in place, encouraging initiatives such as the match day parking scheme for Ashton Gate.

Deliver a **Clean Air Zone** to improve air quality across the city and beyond by managing the movements of polluting vehicles (see box)[48]

Although there will be a separate consultation on Clean Air Zones, they will have an important effect on inner city movements and so need integrating into the Strategy. A Clean Air Zone is different from a congestion charging zone, as the sole purpose of a CAZ is to improve air quality through restricting access to the most polluting vehicles. A congestion charge on the other hand may also have this effect, however a charge could be applied to most vehicles in order to reduce the attractiveness of driving as well as raising funding to improve alternative transport methods.

Along with West of England partners, **Deliver** & **Enable** a **Joint Low and Zero Emission Vehicle Strategy**, including expansion of the charge point network and electrification of the Council's vehicle fleet, starting with 40 vehicles funded through the Go Ultra Low grant.

You said in consultation...

There is strong support for increasing the number of EV charge points across the city.

Although our vision is to reduce the dependency on the car and prioritise alternative modes, we recognise that cars have a role to play for some journeys where realistic alternative are not yet available, therefore in order to manage the air quality impacts of car use, we will encourage the use of cleaner fuels, including electric vehicles.

Meeting a carbon neutrality target

As part of the One City Plan, a target to achieve carbon neutrality by 2030 has been set for the city. We recently worked with University of Bristol to identify the measures in the Bristol Transport Strategy that will need to be prioritised in order to contribute towards this ambitious target. The study can be found in the appendix of this document.

You said in consultation...

There is very strong support to reduce access to the most polluting vehicles in the city, particularly during the peak times of day when most people are traveling.

Clean Air Zones

Air pollution levels in Bristol exceed government standards and affect health, causing around 300 early deaths per year in the city. The government has proposed mandatory Clean Air Zones (CAZ) for six cities (excluding Bristol) to deal with the breaches. Bristol has been directed by central government to conduct a feasibility study to comply with air quality standards in the shortest time possible.

Emissions from diesel vehicles are the dominant factor driving poor air quality. Historic central government tax incentives for diesel, based on benefits in terms of CO2 emissions have driven a steep rise in the proportion of diesels in the UK fleet. Non-compliance with EURO test standards in real world driving conditions have contributed further to significantly higher emissions of nitrogen dioxide and fine particles than predicted.

Further work will be needed to determine the appropriate arrangements for a CAZ in Bristol, and will be consulted on separately to the Bristol Transport Strategy. The key decisions for Bristol in implementing a CAZ are:

- Determining the geographical extent
- Determining which classes of vehicles to include
- The level and nature of any charges
- Enforcement arrangements
- The timetable for implementation
- Mitigation and support for individuals and businesses affected by the scheme

Enable **safe and efficient movement by motorbike.** Motorbikes provide an efficient way of moving around the city and play a key role in addressing issues of congestion. We will enable their use through the provision of high quality parking facilities, allowing access in bus lanes and maintaining and upgrading road network to provide safe surfaces. Working with organisations that represent motorcycling, we will promote advanced motorcycle training and improve motorcycle awareness among other road users.

Outcome #2 | On and off street parking managed efficiently to encourage use of sustainable transport and tackle congestion, while providing options that support the city's 24 hour economy.

You said in consultation...

There is strong recognition amongst our citizens that parking needs to be better managed in the city and there is support for the existing Resident Parking Schemes.

Deliver & **Enable** the production of a new Parking Strategy, (to be completed in the near future and appended to this document), which will need to include extensive research on how parking spaces are used in the city and then look at:

- Off-street and on-street parking, including the role of privately operated car parks
- Parking standards for new development (included in Local Plan)
- Parking at transport interchanges, e.g. rail stations
- Park & Ride sites, and the potential to remove city centre parking as more Park & Ride sites are built
- Residents Parking Zones
- Charges and income
- Enforcement, including pavement parking
- Parking information systems

You said in consultation...

Many citizens have suggested that more multi-modal hubs are created around the city to allow people to park on the outskirts and travel into the city centre by other modes, allowing city centre car parks to be re-purposed to accommodate facilities for other modes.

- Disabled parking
- Cycle parking
- Car club and electric vehicle parking
- Bus stands, loading, taxi ranks, coach parking, motorcycle parking
- Maximising the use of kerbside space
- Consistent approaches across the West of England to avoid impact on competing commercial and business centres.

Explore workplace parking levies as a means to influence the supply and use of parking for commuters. A robust business case must be made before progressing the implementation of any scheme. A case study for this is included in the Funding section.

Enable people and goods to travel into and through the city more efficiently:

Outcome #3 | More efficient movement of goods in the city (especially during peak hours), working with industry to find cleaner alternatives.

You said in consultation...

There is strong support amongst our citizens to reduce the number of freight vehicles moving through the city, particularly the city centre. Consolidating freight movement into fewer vehicles and better scheduling of deliveries are supported as methods to achieve this, but it is recognsied that freight operators and retailers need to work in partnership with us on this.

Along with West of England partners, **Deliver** & **Enable** a **new Freight Strategy**, which will be part of the emerging Joint Local Transport Plan and will include the following actions among other measures:

Enable increased use of **Freight Consolidation** and micro-Freight Consolidation. Explore the use of sustainable transport hubs and Park & Ride sites as delivery hubs.

Deliver & **Enable appropriate loading arrangements** across the city, to including loading arrangements within neighbourhoods and residential streets. This includes ensuring loading bays are suitably located, have appropriate access times, and exploring new concepts such as virtual loading bays.

Enable & **Explore** measures to encourage the take up of **low emission and appropriate sized freight vehicles,** including micro consolidation and last mile logisitics by bike where possible, as part of our Low Emissions Vehicle Strategy.

Enable & **Explore** measures to encourage **shift of road freight to more sustainable modes of transport** where appropriate including the use of rail to stations around the city and for inter-city freight movements with onward connections by sustainable modes.

You said in consultation...

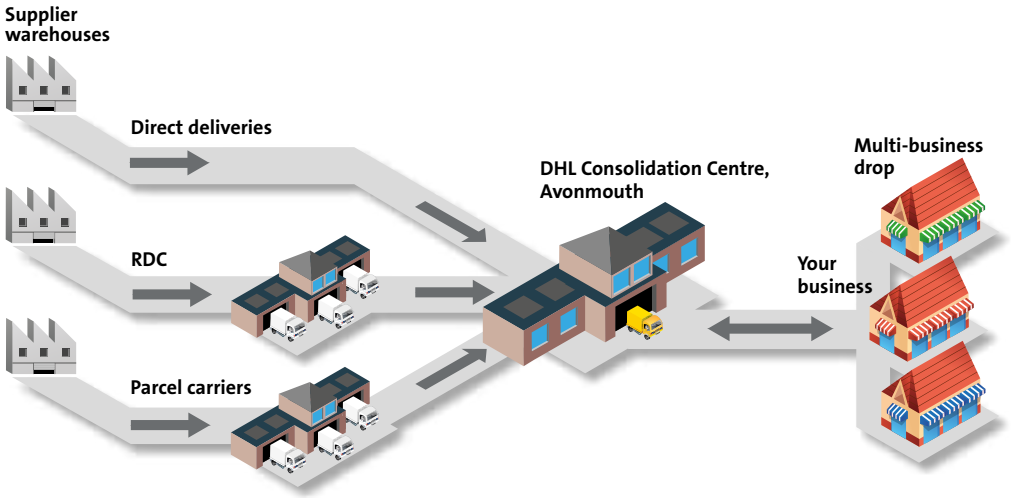
There is strong support from our citizens to see more freight being moved around the city by smaller,cleaner vehicles, bikes and rail as opposed to heavy goods vehicles.

Enable a reduction in the negative impacts of freight in future developments through the use of **Construction Management Plans** and **Delivery Management Plans** through the planning system.

Deliver enforcement of unacceptable loading, infringement or misuse of loading bays.

Explore emerging technologies to assist in reducing freight traffic.

Figure 5: Freight Consolidation



Outcome #4 | Public transport to be visibly integrated, convenient and reliable to enable people to move around the city in a more efficient way.

You said in consultation...

The most common comments in the public consultation referred to dissatisfaction in existing public transport services, including unreliability, cost and inconvenience. There is a strong urge to invest in improving all types of public transport to encourage its use.

Along with our West of England partners, **Deliver** & **Enable** a **Joint Bus Strategy**, to help achieve continuing improvements to bus services in the region. The bus strategy will need to consider:

- Working with operators to make local buses more attractive, improving the speed and reliability of service by: increasing bus priority, integrated smart ticketing, and improved bus information

You said in consultation...

There is strong support from our citizens for more bus lanes to allow buses to be more reliable and stop getting caught up in congestion.

- Suitable sites for bus depots, particularly to the north of the city, which is currently a significant constraint on bus growth
- How to develop the bus network to better serve the 24 hour economy and poorly served areas of the city

You said in consultation...

Many of our citizens would like to see more bus services that connect neighbourhoods together, as opposed to just connecting to the city centre. We will work with operators to identify opportunities to this extent.

- Investigating better interchanges between sustainable modes, such as cycling and rail stations
- Supporting the introduction of low emission buses

You said in consultation...

There is strong support from our citizens for cleaner buses in the city.

- Improving information and access to Demand Responsive and Community Transport.

Case Study: Accessing employment in Avonmouth

Avonmouth and Severnside Enterprise Area consists of 650 acres of brownfield development land and is currently home to large scale warehousing, storage and logistics use with an open planning consent in place over a large proportion of the area that encourages development to come forward quickly and easily. Recently a number of large scale distribution operations have come forward creating over 5 million sq ft of Regional Distribution Centre floorspace. There is another 2 million sq ft of logistics floorspace in the pipeline to come forward within the next few years, and space for another 5 million sq ft to follow on.

Workers at Avonmouth predominantly commute by car for a number of reasons. The nature of large amounts of the business uses requires 24 hour work and therefore workers are on shift patterns that are often out of the usual business hours. As such, access by public transport services is often not realistic due to levels of services out of usual business hours. There are parts of the city with high levels of unemployment, however transport links between existing and proposed jobs at Avonmouth are poor and unsafe. Currently the only realistic access is by car, ownership of which is less likely for those who are unemployed.

We need to investigate how we can improve links to Avonmouth from neighbouring Lawrence Weston and from areas in East and South Bristol to better connect people with jobs. The SevernNet Flyer is a project has been running in the area and provides a demand responsive minibus service that fills in some of the public transport gaps, however more of this type of innovation is required to address the accessibility issues in Avonmouth. A transport plan for the Avonmouth and Severnside Enterprise Area is an aspiration for the near future, which will include a focus on improving public transport and 'mobility as a service' connections.

Along with our West of England partners, **Deliver** & **Enable Enhanced metrobus routes**, including connecting the Portway Park & Ride site in to Severnside, new routes to Thornbury, Yate, and Clevedon, and an orbital route on the ring road connecting the East Fringe to key destinations on the route and other rapid transit routes to the city centre and beyond.

Along with our West of England partners, **Deliver** & **Enable improvements to local rail services** through the MetroWest project that seeks to reopen old and open new stations and increase the frequency of suburban rail services. This will include exploring new stations at Constable Road, Ashton Gate, St Annes and the stations already planned as part of MetroWest which include Portway, Ashley Down, Filton North and Henbury. It will also include investigating Park and Rail options at new stations. We will work closely with Network Rail Great Western Railway, Severnside Community Rail Partnership and local groups to deliver these improvements. Improvements will also be considered to encourage better use of and access to existing local stations, connecting with wider transport network to ease passenger congestion at Bristol Temple Meads.

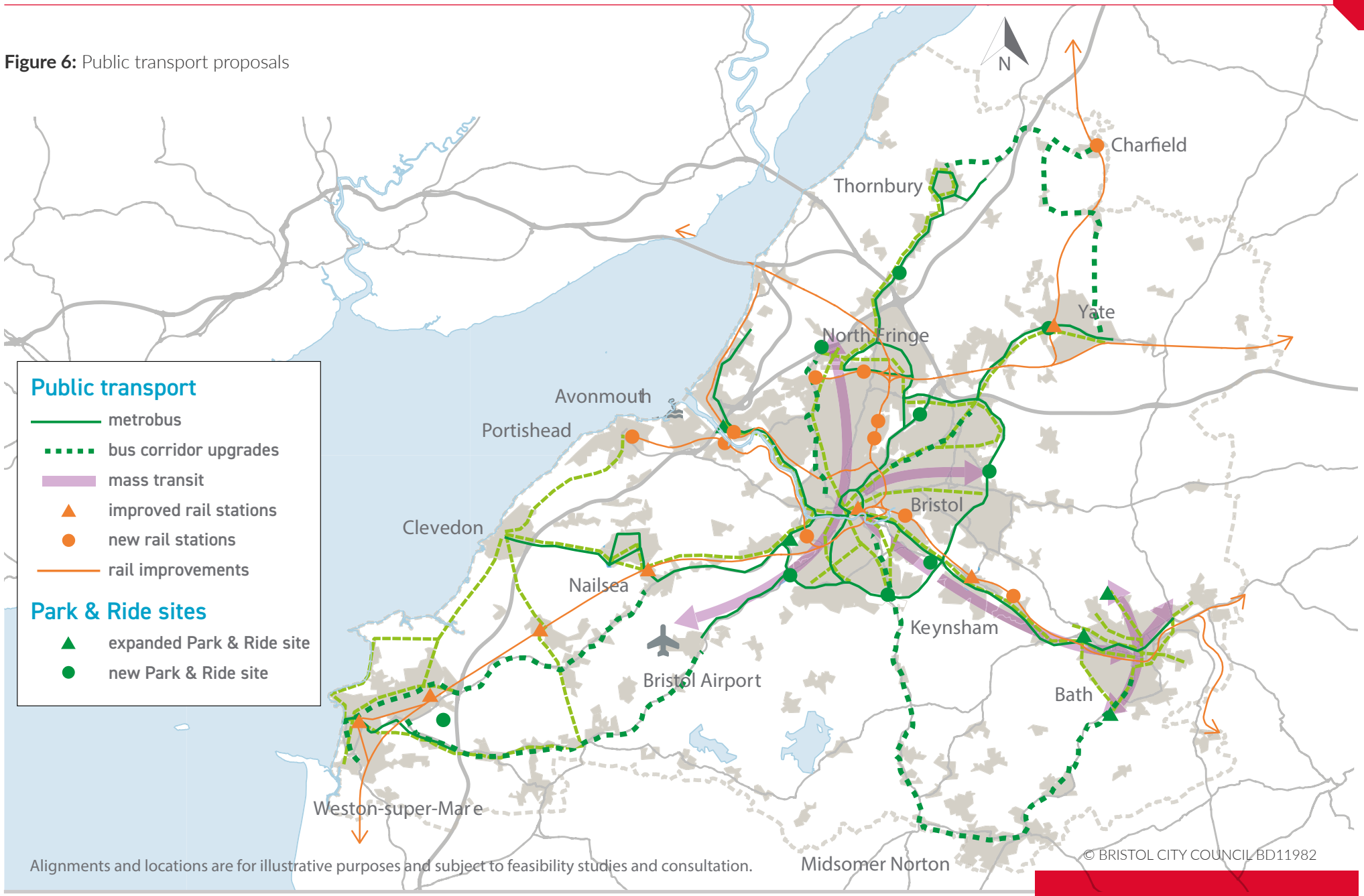
Along with our West of England partners, **Deliver strategic Park & Rides and multi-modal transport interchanges**, including new sites on the M32, A37 Whitchurch, and A38 South, expanded sites at Portway and Long Ashton, and relocation and expansion of the A4 Brislington site to the Hicks Gate roundabout to enable orbital Metrobus services. With changes to multi- modal hubs, we will consider changes in how users of the site are charged to use the hubs, as currently parking is free and passengers are charged on the bus.

You said in consultation...

There is strong support for investing in Park and Ride options. It is clear that our citizens understand the need for car trips to be intercepted at the edges of the city and transferred to more effective modes to reduce congestion.

Enable integration and promotion of the **use of ferries** as a mode of transport to increase options to move around the central areas of the city.

Figure 6: Public transport proposals



Alignments and locations are for illustrative purposes and subject to feasibility studies and consultation.

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Deliver, **Enable** & **Explore improved integration between transport modes** through interchange, ticketing, information, improving walking and cycling links, and **explore** bike hire opportunities. This includes improving connections by sustainable modes to local rail stations to increase catchment areas of local stations.

You said in consultation...

There is strong support to invest in better integration between all modes of transport, including clearer information, integrated ticketing and improved accessibility and safety at waiting areas. There is also strong support to improve the accuracy of real time information at public transport stops, which is referred to in a later section of this strategy.

Explore the use of technology to improve the seamless door-to-door journeys. Mobility as a service is an emerging transport sector that reduces the need for personally owned forms of transport by allowing citizens to plan order and pay transport services directly from smart phones through smart ticketing and apps.
We will ensure that we allow our data to be open to enable the development of these emerging options.

Explore opportunities to work with bus service operators to introduce **low emission buses**.

Deliver & **Enable continuing improvements in the taxi service**, by working with the taxi trade to make journeys safer, introduce an annual taxi fare review, ensure the switch to low and zero emission vehicles and ensure taxi ranks and bays are appropriately located.

Along with our West of England partners, **Explore** working with the taxi trade across the West of England to **increase technological offering** of existing taxis, such as booking and paying by app and taxi sharing.

Case Study: Mobility stations

The city of Cologne in Germany has implemented a number of multi-modal hubs across the city known as mobility stations, which is a concept that could be developed across the West of England. Mobility stations are multi-modal interchange points that provide first and last mile solutions to connect communities to frequent public transport services and provide integrated transport options.

We have frequent public transport services on our corridors but people not aware of or cannot easily access them. Currently the connections across the city are not legible, giving a poor perception of the public transport offer in Bristol.

Each neighbourhood could have a mobility station of varying scales containing clear branding, clear wayfinding and clear, integrated travel information. At larger interchange points such as P&R sites, metrobus stops, train stations and corridors with frequent bus services facilities at the mobility stations could include:

- Shared dockless bike hubs
- Micro freight consolidation centres
- EV charge points
- Shared car club vehicles
- Secure, pre-bookable cycle parking lockers
- Pre-bookable car parking
- Trailers or cargo bikes to hire to carry shopping
- Demand responsive transport, such as first/last mile taxi services to connect to neighbourhoods
- Combine 'mobility as a service' operators at mobility stations to ensure maximum usage and cluster mobility options for citizens

In every neighbourhood similar options could be provided at mobility stations, depending on the space available to provide variety to make it easier for residents to connect to frequent public transport services and to reduce car use for local trips.

In public consultation, there was strong support to improve the existing public transport offer and this could provide a solution to make the most of our existing infrastructure with little additional investment. Mobility stations can also address the lack of orbital connections between neighbourhoods by providing clear wayfinding to show options to connect easily to mobility stations in other neighbourhoods.

Make space and improve safety for movement by sustainable modes:

Outcome #5 | Walking to be safe, pleasant, accessible and the first choice for local journeys and combined with public transport for longer journeys.

Along with our West of England partners, **Deliver** the **Local Cycling and Walking Infrastructure Plan (LCWIP)** that sets out our priorities for key walking routes and core walking zones across the region.

Following the adoption of the LCWIP, **Deliver** & **Enable** the Bristol Walking Strategy (to be completed in the near future and appended to this document), including undertaking the following actions:

1. Deliver a strategic walking network
   Through the Local Cycling and Walking Infrastructure Plan currently being produced jointly with our West of England partners, identify and enhance the network of walking routes across the city.

2. Adopt design standards for inclusive walking infrastructure
   Ensure that these standards are inclusive, and integrate accessibility within them.

3. Develop walkable communities through planning and development
   Embed daily walking into new and existing communities to maximise health and socio-economic benefits.

4. Connect walking to public transport
   Improve walking links to rail stations and bus stops

5. Count walking
   Count, monitor, and share information about walking, exploring the use of new technologies

You said in consultation...

There is strong support from our citizens to increase investment in improving walking environments across the city.

Many citizens are keen to see more areas pedestrianised and would like to see a reduction in street clutter to enable clear movement on footways and paths. There is also strong support to improve accessibility of walking environments for disabled citizens and improve safety and security for all through better place making design.

6. Reduce obstructions to walking
   Enhance enforcement measures for issues that make walking difficult or unpleasant. These include bins on footpaths, parking on footpaths and across access points, overhanging vegetation, street clutter, litter and dog fouling.

7. Make walking safe
   Implement measures to ensure pedestrians are safe and feel safe. Key issues include footpath design and repairs, lighting, safe crossings, reducing conflict with other road users, air and noise pollution.

8. Make walking pleasant and comfortable
   Consider the aspects that make environments attractive for walking. Enable access to toilets, changing facilities, drinking water, benches and shaded areas and include this information on online maps that can be easily updated.

9. Provide walking information
   Provide comprehensive walking information and resources including maps and Bristol Legible City wayfinding.

10. Support walking through travel planning and enabling behaviour change
    Encourage and help make walking the easy transport choice for businesses, schools, communities and local high streets. Deliver & Enable measures to separate pedestrians and bikes wherever possible and fix problem areas, as set out in our shared space policy.

The Influence of Built Environment on Walking

A study was carried out by UWE in 2015 to compare how people felt when walking through 5 different central areas of Bristol. Participants reported higher levels of stress and fatigue when walking through retail areas with motor-traffic (The Horsefair) than pedestrianised areas and preferred to be in areas with green elements, such as Castle Park and College Green. Elements relating to stress and therefore a negative walking experience included motor traffic interrupting walking flow, noise and fumes, crowds of people and lack of aesthetics. Elements that contribute towards a positive walking experience included variety in building types, mixes of uses, historical elements, nature and social activity. As a result, the recommendations are to reduce physical barriers to walking, particularly to reduce traffic, enhance the connection with the place by enhancing the historical and community elements and incorporate nature in cities through parks, vegetation and water features [49].

Deliver & **Enable** measures to **separate pedestrians and bikes** wherever possible and fix known areas of conflict.

Deliver & **Enable new developments that are permeable and accessible** to all users and secure funding for off-site improvements through the development management process.

Enable innovation and partnership working by collaborating with **organisations** that promote walking

Outcome #6 | Cycling to be safe, segregated from other modes wherever possible, simple, accessible and convenient, either as an option for the whole journey or as part of a journey combined with public transport.

Along with our West of England partners, **Deliver** the **Local Cycling and Walking Infrastructure Plan (LCWIP)** that sets out our priorities for improving cycling across the region.

Following the adoption of the LCWIP, **Deliver & Enable** the Bristol Cycling Strategy (to be completed in the near future and appended to this document), which will include the following principles for Bristol:

- Connect the city for cycling

  Build a comprehensive cycle network accessible for all and segregated wherever possible, meaning free from motorised vehicles and to reduce conflict with pedestrians. The network should reduce barriers for all types of bike including cargo bikes, bikes with trailers and adapted bikes for disabled cyclists.

  Adopt a simple and intuitive approach to cycle maps and signs and regularly audit

  Ensure quality facilities are in place at the beginning and end of journeys, including secure cycle parking to match the growth of cycling in the city

  Fully integrate cycling into the wider transport network, connecting citizens from where they live to jobs, schools, leisure and everyday facilities

  Adopt design standards for cycling infrastructure and ensure that the standards are inclusive, accessible and safe.

- Make cycling simpler and safer

  Adopt a simple and intuitive approach to cycle maps and signs and regularly audit

  Reduce and enforce motor traffic speeds to create a safer environment

  Regularly maintain the cycle network, especially in winter months, ensuring safe cycling surfaces and well lit corridors

  Make cycle training available to all citizens

You said in consultation...

There is strong support from our citizens to increase investment in improving cycling infrastructure across the city.

Many citizens comment that they currently feel unsafe to cycle in Bristol and need better segregation from motorised traffic and increased levels of cycle training made available. There is strong support for more promotion and engagement to encourage people to cycle and our citizens want to see more secure cycle parking and facilities such as showers at workplaces.

'I think if all drivers had to have a go at cycling then they would learn a whole lot about what goes on and why people do things the way they do and you will know to give people a wide berth'.

Resident - Shirehampton

Make cycling inclusive and accessible

Enable and encourage a new wave of people to cycling through use of loan bikes including e-bikes

Enable and develop projects that use cycling as a means to transport parcels and goods for the first or last mile of journeys around the city, using cargo bikes and electric bikes.

Extensive promotion of cycling, including people at a point of transition e.g. new job, new school year, new university students

Use innovative technology to help encourage new people to cycle and support those who cycle regularly

Continue to research the different needs and motivations that may affect levels of cycling and seek ways to enable cycling for all, recognising that cycling may not be practical for all types of trips.

Continue to work closely with organisations that encourage cycling

Recognise and support leisure and recreational cycling as a way to inspire more people to cycle and promote Bristol as a lively and attractive city

Enable & **Explore** ways to enhance **cycle hire schemes**. Bristol has been approached by a number of companies offering dockless cycle hire schemes and we will work with them to provide services that benefit the city.

This is a graphic representation of our aspirational cycle network for Bristol.

Freeways: direct and continuous routes on main roads with extensive segregation

- F1 The Portway
- F2 Whiteladies/Westbury Road A4018
- F3 Gloucester Road A38
- F4 Fishponds/Stapleton Road A432
- F5 F5 Two Mile Hill A420
- F6 F6 Bath Road A4
- F7 F7 Wells Road A37
- F8 F8 Bishopworth/Hartcliffe A38
- F9 F9 Coronation Road A370
- F10 F10 Inner Loop Orbital
- F11 F11 Inner Middle Orbital
- F12 F12 Outer Middle Orbital
- F13 F13 Northern Loop Orbital
- F14 F14 Outer Ring Orbital

Quietways: pleasant and well signed traffic free or low traffic routes

- Q1 Downs Way
- Q2 Concorde Way
- Q3 Frome Greenway
- Q4 Bristol Bath Railway Path
- Q5 Wesley Quietway
- Q6 Whitchurch Railway Path
- Q7 Malago Greenway
- Q8 Festival Way
- Q9 Pill Path – River Avon Trail
- Q10 River Avon Trail
- Q11 North Fringe Quietway
- Q12 Yate Quietway
- Q13 Knowle Quietway
- Q14 St Anne's Quietway
- Q15 Purdown Quietway
- Q16 Trym Quietway

Deliver & **Enable new developments that are accessible by safe and attractive cycling infrastructure** and seek contributions towards off-site improvements to better connect the development as part of the development management process.

'It is safe to cycle because I cycle on the track. I can take the track from here and go to Fishponds. I can take it from here and go to Bath. I can take the family to go anywhere I want to go and town. It keeps us safe on the track.'
Resident - Barton Hill

Case Study: Family Cycling Centre

The Family Cycling Centre in Hengrove was set up using Central Government funding in 2016 and is run in partnership with British Cycling. The Centre is a traffic-free site that provides entry level cycling to a new generation of cyclists – starting with balance bikes of different sizes, through to 2 , 3 and 4 wheelers, companion bikes, wheel chair bikes and hand-cycles, making cycling accessible to all.

The Centre is fully accessible in terms of the Equalities Act 2010 and has a Changing Places Toilet facility with Changing table and Hoist. Our Special needs schools come to ride at the Centre for their Bikeability training. Other disabled individuals come to experience the benefits of cycling.

The Centre also provides Bikeability training out of schools to allow all new cyclists to learn and develop confidence on bikes and there is also sports coaching for cycling.

The Centre's success continues to grow, with 12, 355 people attending sessions at the Centre in 2017-18.

Outcome #7 | A resilient, safe and well-maintained network to enable continuous movement of people and goods, using smart technologies.

Deliver & **Enable** a new **Transport Asset Plan** linked to a **Maintenance Manual**, setting out 2-3 year programme of maintenance and prioritising spending ensuring that road specification takes into account climate change impacts e.g. flood and heatwave risks. Use maintenance works to implement change and also identify where transport projects can contribute to maintenance.

Explore opportunities to **use emerging technologies to monitor our transport assets** and to help priorotise and co-ordinate works on our network.

Explore opportunities for **mutually beneficial flood risk management, environmental and transport schemes**, including the development of monitoring networks which provide information on the state of the urban environment and implementing flood schemes that improve the urban realm and deliver walking and cycling infrastructure.

Deliver key transport routes that are **sequentially located to avoid high flood risk areas** and ensure flood risk and subsequent diversionary routes are duly considered from the outset of a project.

Deliver & **Enable** others to build in **co-benefits to transport projects**, such as Sustainable Drainage Systems, by producing and promoting a design guide in line with the existing West of England Sustainable Drainage Developers Guide, as well as improving wildlife resilience and contributing to urban cooling through vegetation and street trees.

Deliver & **Enable** energy infrastructure networks **through collaboration with infrastructure providers** where it supports the carbon neutrality targets.

Deliver & **Enable** a **Safe Systems Approach to Road Safety in Bristol**, (appended to this document) by reducing traffic volumes and speeds and making changes to the highway to reduce road danger.

You said in consultation...

There is strong support amongst our citizens for projects that seek to reduce the speed of traffic on our roads. Our citizens also want to see more investment in road safety education.

A culture change is needed in order to achieve objectives of eradicating deaths and life changing injuries on the road. The term Safe System now represents the current consensus of what constitutes best practice strategic thinking in road safety and is recognised as such by international organisations including the World Health Organisation, the OECD, and World Bank. A Safe Systems approach to road safety is based on the principle that life and health should not be compromised to meet the demands of mobility. Safe Systems Road Safety requires a truly inter-disciplinary approach including that of public health[50]. Bristol should be a city where it is safe for a 10 year old child to walk independently to school. The aims of the Safe Systems Approach to Road Safety run throughout the Bristol Transport Strategy, and include:

- Safer Speeds – establishing and enforcing appropriate speed limits to create a road network that protects vulnerable road users and separates fast moving traffic where appropriate
- Safer Roads – improving road layouts to improve our network
- Safer vehicles – working with partners to improve the safety of the vehicle fleet
- Safer Road Use – education, training, and enforcement to influence road user behaviour

Case Study: Safe Systems Approach in Bristol

In 2015 the City Council published its Safe Systems Road Safety Plan. This demonstrated that poorer communities are at disproportionate risk of injury, most especially children, being up to six times more likely than children from the wealthiest communities. Efforts therefore need to be focused especially on reducing injuries within poorer communities. Lower traffic speeds are a key given the steep increase in risk of death as speed increases above 20mph. Targeted traffic-law enforcement effectively reduces the frequency of fatal motor-vehicle crashes and so working with the Police and other services, but also with communities, will be important in delivering multi-faceted interventions to reduce both the risk of road traffic injury and the fear which itself acts a deterrent to healthier and inherently safer modes of travel. A Safe Systems principle must be applied to all transport interventions; however we are carrying out specific road safety activities that include:

- Speed management (setting of speed limits, designing for those speed limits, enforcement and education) – particularly 20mph
- Community speed watch
- Safety cameras – speed & red light
- Specific campaigns, behaviour change activity – e.g. mobile phone use, drink driving, drug driving etc
- Driver training / education (including fleet training for 20mph)
- Road safety training – e.g. pedestrian skills for schoolchildren, cycle training – adult & schools
- School Crossing Patrols
- Safer routes to School
- Specific engineering schemes – casualty reduction
- Improving quality of scheme design and fully embedding safety into all schemes,
- Segregated cycle ways at high conflict / busy locations
- Filtered permeability, where routes are made circuitous for motor traffic but direct for pedestrians and cyclists

Encourage the use of sustainable modes and embed a sustainable transport ethos to help achieve our vision:

Outcome #8 | More people making sustainable and healthy transport choices by improving engagement with communities, schools and businesses.

Along with our West of England colleagues, **Deliver transport information** via TravelWest and other portals. Use social media platforms to improve the user experience and make it easier to access high quality transport information through the development of digital services and personalised information.

You said in consultation...

Similar numbers of citizens support investment in technology measures as those that said this is not a priority for them. As referred to in an earlier section, there is however strong support to improve the accuracy of real time information at bus stops.

Many felt as though innovation in technology needs to be led by the private sector, however it is in the city's interest to work closely with the private sector to develop ideas in partnership.

Deliver & **Enable** developers, schools and businesses to produce and implement **travel plans** to encourage the use of sustainable and healthy transport.

Explore working with businesses to **encourage flexible working patterns** that reduce the need for employees to travel to work, such as flexible hours and working from home.

Deliver & **Enable** information and engagement to **raise awareness of new infrastructure projects**. Engaging with communities from the start on transport projects and setting out how our projects fit in to the overall strategy for the city.

Along with West of England partners, **Enable** increased use of **car sharing and Mobility as a Service** options, including promoting car sharing and car clubs. Continue to deliver, enable and explore the use of new technologies that promote home working and reduce the need to travel.

Enable innovation and research, improving the openness and quality of our transport data, and linking better with our local universities.

You said in consultation...

There is support amongst our citizens to increasingly encourage employers to offer flexible working patterns. There is also support for opening up transport data for all to use.

Outcome #9 | New developments to be innovative in their approach to prioritise sustainable transport options and address the impact on the existing network.

Deliver & **Enable** a new **Transport Development Management Guide** to assist developers and internal colleagues through the process of delivering safe and accessible development in the interests of future health of the new and existing population.

Deliver requirements for the submission of **robust assessments** to ensure we are correctly determining planning proposals in the interests of providing a credible evidence base upon which to input to the land use planning process

Deliver requirements for new development to **maximise the use of sustainable travel** by locating within convenient access to high quality public transport, walking and cycling opportunities in turn enabling optimum density development.

Deliver requirements to **integrate land use planning and transport through effective masterplanning** and uphold our obligation as Highway Authority to technically scrutinise and supervise the construction of new streets and improvements to existing streets undertaken as part of development proposals in the interests of permeability and delivering safe and direct routes and facilities for pedestrians, cyclists, and public transport users. This includes removing physical barriers for cyclists and ensuring footways are wide enough for wheelchairs and buggies to pass each other.

Deliver requirements for **funding of new transportation infrastructure** to ensure that harmful impacts of development are minimised through the delivery of sustainable travel infrastructure and the effective incentivisation of active travel through the travel planning process. Secure investment from developers towards infrastructure either delivered by the council through S106 or by the developer through S278 agreements.

Deliver requirement for **oversight of the construction of new streets and transport improvements** by developers in the interests of avoiding safety risks and maintenance liabilities during and after construction.

Deliver requirements for **appropriate parking standards** by rationalising parking requirements for new development, with different levels depending on the accessibility of areas by alternative modes to the car, as well as deliver appropriate levels of Electric Charge points and disabled parking.

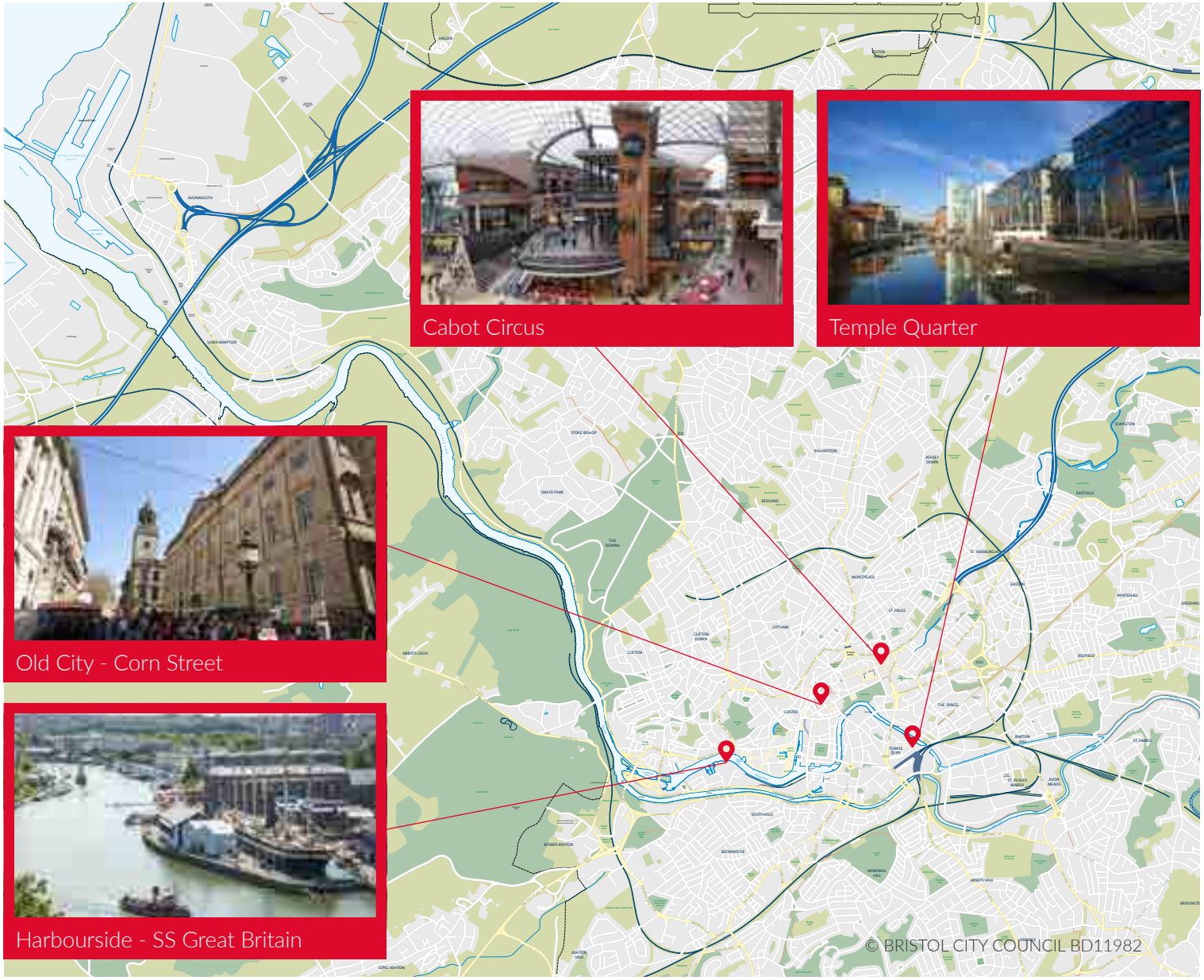
Deliver requirement to **incorporate appropriate SuDS techniques** into new developments based on ground investigations.

We will work with developers to ensure planning proposals meet the above criteria and actively encourage mode shift away from the private motor car.

City Centre

The How Bristol Works section highlighted that Bristol City Centre is a series of multiple centres, each with differing functions, which include the following areas:

- The enterprise area and transport hub at Temple Quarter;
- The shopping focus of Cabot Circus and Broadmead;
- The leisure and heritage focus of the Harbourside;
- The historical and cultural focus of the Old City



Bristol city centre is undergoing a transformation brought about by changes in how we shop and work and we are investing in public transport and public realm. There is growing demand for residential and student accommodation in the in the city centre that needs to be balanced alongside other uses. The development of Temple Quarter, with around 22,000 jobs is also shifting the centre of gravity of the city centre to the south-east. Although the city centre continues to be successful, there is a need to proactively plan for these changes and create places that can accommodate and provide for all the different needs of people living, working, and visiting the city. The city centre is a focus for economic regeneration, and as such changes faster than many other parts of Bristol.

Bristol is viewed as one of the UK's most liveable cities. People are attracted to live in the centre due to the excellent employment opportunities, education establishments, accessibility and the amenities on offer – shopping, parks and open spaces, culture and events. The population of the centre doubled to around 30,500 between 2001 and 2014, with the largest increase in the 18-24 age group. However, a lack of housing supply and affordability is becoming an ever increasing issue. Although overall the centre is prosperous, there are large parts which suffer from high levels of deprivation, especially to the east.

The majority of people who live in the city centre do not travel to work by car, but congestion impacts everyone, causing delays and unreliable bus services, and worsening conditions for walking and cycling. Many bus routes across the city travel through the centre, with delays causing knock on effects across the city.

The success of the city centre is generating large volumes of travel demand, that are set to increase in future, causing congestion problems during the peak periods and increasingly throughout the day. The majority of congestion in the city centre in the morning peak is caused by commuting trips. The evening peak is caused by a mix of commuting and leisure trips.

Sustainable modes of transport such as walking, cycling, bus, and trains already play a vital role in the success of the city centre, and their role is set to increase in future with intensified urban living and improved public transport connections.

The city centre is also home to one of the region's major hospitals, the Bristol Royal Infirmary, as well as the Bristol Children's Hospital. Movement to and from the hospitals needs careful consideration, not only for emergency vehicles but also for patients for whom travel by walking or cycling may not be possible. The Joint Bus Strategy as referred to in the Citywide movement section will explore opportunities to improve the network to enable better access to hospitals by bus. We must keep the network flowing to enable access for emergency vehicles and for patients who have no realistic alternative to the car by encouraging the use of sustainable transport to those who can use it.

Transport needs to respond to these changes and the way we plan transport for the city centre must take into consideration the impact of transport and movement on place making. The draft City Centre Framework due to be published at the end of 2018 sets out the design and high level movement principles for the city centre to help shape future development. It is important that future area-specific plans such as the City Centre Framework covers multiple disciplines including transport, movement, urban design and planning to ensure there is a holistic approach to place making.

Making better places where people want to spend time means increasing access by sustainable transport modes and reducing the negative impact of motor traffic, such as noise and pollution, which costs and estimated £83m per year (2013 prices)[51].

As mentioned in the City wide movement section, our approach to reducing unnecessary traffic travelling to the city centre to improve connections to the city by sustainable transport and to intercept traffic travelling from further afield on the edges of the city and then switching to an alternative mode of transport. This can enable spaces in the city centre to be re-purposed for people to spend time, which enhances the city's economy. This has previously been achieved in Queen Square and College Green.

You said in consultation...

There is very strong support amongst our citizens to create more pedestriansed areas in the city centre to encourage more people to visit and spend time.

Outcome #10 | A city centre that is accessible by active and sustainable transport and attractive to live, work and visit, enhancing its status as the foremost shopping and cultural centre in the South West.

Deliver & **Enable** a City Centre Transport Package, as set out in the City Centre Framework (2018) that sets out the following aims for movement in the city centre:

1. New and expanded pedestrian priority areas
2. Complete a network of high quality public realm corridors
3. Complete the All Ages and Abilities (AAA) cycle network in the city centre
4. Complete the city centre bus lane network
5. Enable the transformation of Broadmead
6. New and expanded Park & Ride services
7. Improvements to interchange, coach parking, taxi ranks, and ferry services
8. Smarter motor traffic management
9. Parking strategy
10. Simplify the highway network

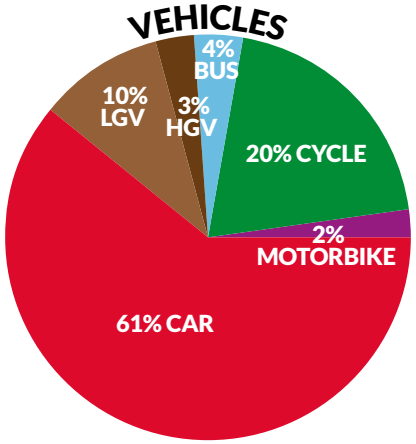
Enable the **regeneration of Temple Meads station** and additional **transport schemes linked to Temple Quarter**, improving connectivity to and through this expanding area.

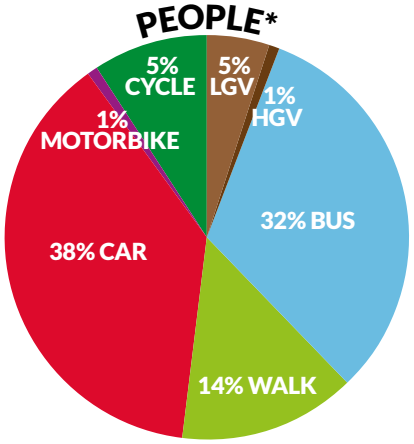
Corridors

Bristol has many major transport corridors that stretch from beyond the city boundary to the city centre. There is very high demand on these corridors and they transport thousands of people travelling from with wider area daily. The A38 North, comprising Stokes Croft, Cheltenham Road, and Gloucester Road best highlights some of the key issues facing our transport corridors across the city.

As many of our transport corridors are, the A38 North is a major attraction and destination in itself, with a large number of independent traders, cafes, bars and restaurants. However, it is also a key route into the city carrying at least 40,000 people per day between 7am and 7pm[52]. It is the most popular cycle route in the city, with 3,500 bikes a day on the busiest sections.

The graphs below show that although private cars account for the highest number of vehicles on the corridor, the majority of people travel by sustainable modes, which is similar on many of our corridors.





*figures calculated using actual bus occupancy data and Bristol average Car, LGV, and HGV figures

The main challenges for the A38 North, but are replicable in many transport corridors include:

- Reliable transport: average inbound speeds in the morning peak are 9 mph for motor traffic, and just 6 mph for buses[53] (although average cycling speed is 9mph). While there are some bus lanes on the route, these are not continuous and buses are still delayed in congestion. The large numbers of people boarding buses also contributes to these low bus speeds.
- Improved safety, health, and security: during the last three years there were approximately 135 reported road collisions, with 43% causing injury to cyclists and 27% injury to pedestrians. The majority of collisions involved vehicles turning to/from side roads[54]. The corridor also suffers from air pollution and is within the Bristol Air Quality Management Area.
- Better places: the corridor is dominated by motor traffic and there is a need to enhance the public realm and support local retailers.

Finding solutions to these issues is not easy, particularly given a lack of road-space which, on the A38 North narrows to just 13 metres between buildings at its narrowest. Bus priority has already been implemented where possible along most of the route and there is limited room for further public transport priority without extremely radical measures. Local rail infrastructure has limited coverage to serve as alternatives to the corridors.

The Joint Transport Study explored potential options to enable movement along corridors more efficiently. These included gating corridors to general traffic to prioritise traffic for access to local areas only, with through traffic guided to use alternative routes, however this is likely to result in local and unsuitable streets being used as alternative routes. Other options explored included on-street trams, however, without a significant reduction in traffic, trams would likely be stuck in congestion. Construction of a tram would also mean several years of disruption and road closures. As such, we have to look at more radical ways to use our corridors to move more people more efficiently.

The impacts of movements on our transport corridors are felt at a local level, however the strategic nature of these linking routes need a co-ordinated approach for improvements from our West of England colleagues and are therefore part of larger transport proposals in the emerging Joint Local Transport Plan.

Outcome #11 | More efficient transport corridors to move the largest number of people in the space available.

Along with our West of England partners, **Deliver** & **Enable** the **proposals outlined in the Joint Transport Study that benefit movement on Bristol's corridors.** The Joint Transport Study has informed the emerging Joint Local Transport Plan, which sets out the detail of how these schemes have been scored for prioritisation along with all other major transport schemes across the West of England. The following schemes all scored highly and are of high priority for delivery but given the scale of each project delivery will be in the medium to longer terms of this strategy. We will carry out feasibility studies where necessary to identify the most efficient option for each route. The routes identified in the Joint Transport Study and the proposals that we will investigate are:

- City Centre to North Fringe: Due to the lack of highway space and other constraints on much of this route we will consider various options including exploring **underground options**. the exact route alignment is subject to further feasibility studies but could follow the A38 North and serve Southmead Hospital, Cribbs Causeway and Aztec West.
- City Centre to East Fringe: Various options to be considered including exploring **underground options**. The exact route alignment is subject to further feasibility studies but could follow the A420 and A4174 ring road serving destinations including Emersons Green and a new M4 Junction 18a.
- City Centre to Keynsham/Bath: The construction of the **Callington Road Link** will help to divert through traffic away from the city centre and unlock road space on the A4 Bath Road that can be reallocated to create a rapid transit link to serve Bristol, Keynsham, Saltford and Bath.
- City Centre to Airport: There are various options available for this route, including **tram and underground options**. An underground option could divert to serve south Bristol, linking to a new Park & Ride on the A38, before emerging overground along the A38 to the Airport.

You said in consultation...

There is very strong support amongst our citizens to explore mass transit options. The public are keen to see trams and an underground metro in the city and these will be considered as part of the overall feasibility work.

Despite this support, many of our citizens commented that an underground metro would be too expensive and disruptive to deliver and would prefer to see improvements made to the existing public transport offer.

Some of our citizens are keen to see more ambitious approaches taken to improve efficiency of movement on our corridors such as removing general traffic lanes to provide bus and cycle lanes.

Besides the four corridors identified for improvements in mass transit, other options identified in the Joint Transport Study that have scored highly for prioritisation in the Joint Local Transport Plan for improving movement along corridors to be explored are:

- Enhanced metrobus routes, including connecting the Portway Park & Ride site in to Severnside, new routes to Thornbury, Yate, and Clevedon, and an orbital route on the ring road connecting the East Fringe to key destinations on the route and other rapid transit routes to the city centre and beyond.
- Road improvements, mentioned above which include the Callington Road Link and A4-A37 link, which will enable mass transit routes, and also improve the flow of traffic throughout south-east Bristol and remove unsuitable through traffic from the city centre.
- Cycle superhighways to provide direct, continuous and safe cycle routes on key corridors, as part of wider ambitions to deliver 200 miles of all ages and abilities cycle network.
- Local bus improvements including increased bus priority and extended bus lanes as part of a Great Bristol Bus Network 2 project.
- As part of the delivery of the Local Cycling and Walking Infrastructure Plan (LCWIP), improvements will be made to the flow and feel of the walking environments of our corridors, recognising that many are shopping destinations as well as movement corridors.
- Local rail improvements to increase the number of stations and frequency of services will help to alleviate pressure on our corridors.

Enable improvements in the bus service, including reducing boarding times through integrated smart ticketing and prioritising movement of buses through use of the urban traffic control centre and traffic signal improvements. These measures will be covered by delivering a Joint Bus Strategy (see City wide movement section)

Deliver a **review of the road network** to ensure key routes are appropriately classified and have appropriate waiting and loading restrictions.

Explore, **deliver** and **enable changes in parking provision**, including removal and/or relocation of on-street parking in the city centre and on key corridors to provide space for other uses and improve journey time reliability. Explore the potential for new off-street public car parks at local centres to replace lost spaces on corridors.

Explore, **deliver** and **enable use of technology to improve corridor efficiency**, including improving links to corridors where bus services are frequent. This could be through 'Mobility as a Service' options such as bike hire or shared taxi to connect the first or last mile from corridors with frequent services.

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Case Study: Exploring underground metro options

Given the restraints on many of our corridors, along with our West of England partners we are currently looking into the feasibility of many options including exploring going underground for mass transit.

The feasibility study will explore many options for underground systems, including the Automatic Light Vehicle system in operation in Rennes, Turin, Toulouse, Lille, Taipei and other cities outside the UK. This system is the latest generation of Light Automatic Vehicle and is marketed as the backbone of the transport system in medium sized cities such as Bristol. The advantages of this system are:

- Automated operation with no drivers reduces costs and allows for more frequent trains with very short headways. Trains can be as often as every 60 seconds. This reduces crowding at stations.
- Short trains reduce costs as smaller tunnels and small stations can be used. This would allow the use of modern cheaper tunnelling techniques and prefabricated stations.
- The rubber wheels allow for tighter curves, and steeper gradients than conventional metro systems, which is well suited to Bristol's topography.
- Sections of track can be elevated or run at grade to reduce costs, although the system needs to be 100% segregated because there are no drivers.

The feasibility study is looking into various options and a system similar to this case study could be transformational for the region, cutting peak journey times from Aztec West, Emerson's Green, and the Airport to the City Centre to under 25 minutes, with increased capacity and reliability with services every couple of minutes. An underground system would enable the removal of some above ground infrastructure, and streets could be redesigned to improve the public realm. While an underground system is technically deliverable, the costs are significant, at around £3-4bn needed for three lines.

The planning horizon for underground schemes is also long, with most schemes taking around 20 years to deliver. A key part of ongoing feasibility work will be exploring how future trends could impact on the feasibility of such a system. Initial feasibility work is currently underway to explore underground options in more detail, exploring construction and operation costs, ground conditions, patronage forecasts, future trends, and other considerations.

Local Centres

Many of Bristol's local centres and high streets are located along key transport corridors into the city centre. The A420 Church Road is a local centre for residents living in Redfield, St George, Lawrence Hill, Barton Hill and Easton. The A432 Fishpond Road and Stapleton Road serves the neighbourhoods of Fishponds, Hillfields, Greenbank and Easton. The A37 Wells Road is a local centre serving residents of Totterdown and Knowle. Gloucester Road, Cheltenham Road and Stokes Croft together are located on the A38 one of the major transport corridors into the city.

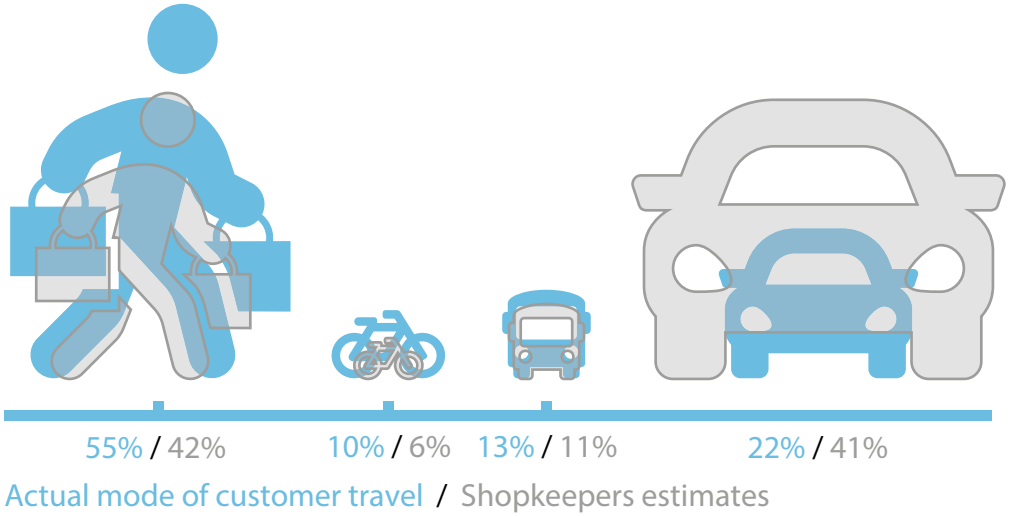
This stretch of road has the largest number of independent shops in the UK (Visit Bristol, 2018) and therefore provides a key local centre for residents living in Horfield, Bishopston, Redland, St Andrews, Montpelier, Cotham and St Pauls, but is also an attractive destination point for many travelling from across the city and wider region.

Given their positions on a main transport corridor into the city, many bus services travel through these local centres, with buses every couple of minutes. The Showcase Bus Route project improved access for buses by creating bus lanes that operate at peak times of the day. This meant that on street parking had to be limited to off peak hours only.

Sustrans carried out a study in 2006[55] in light of the Showcase Bus Route project to find out whether removing parking would affect the economy and viability of businesses along corridors in Bristol, as some business owners originally raised concerns about this. The study found that business owners overestimated the amount of trade they thought arrived by car and underestimated the number of people who arrived on foot, bike and bus.

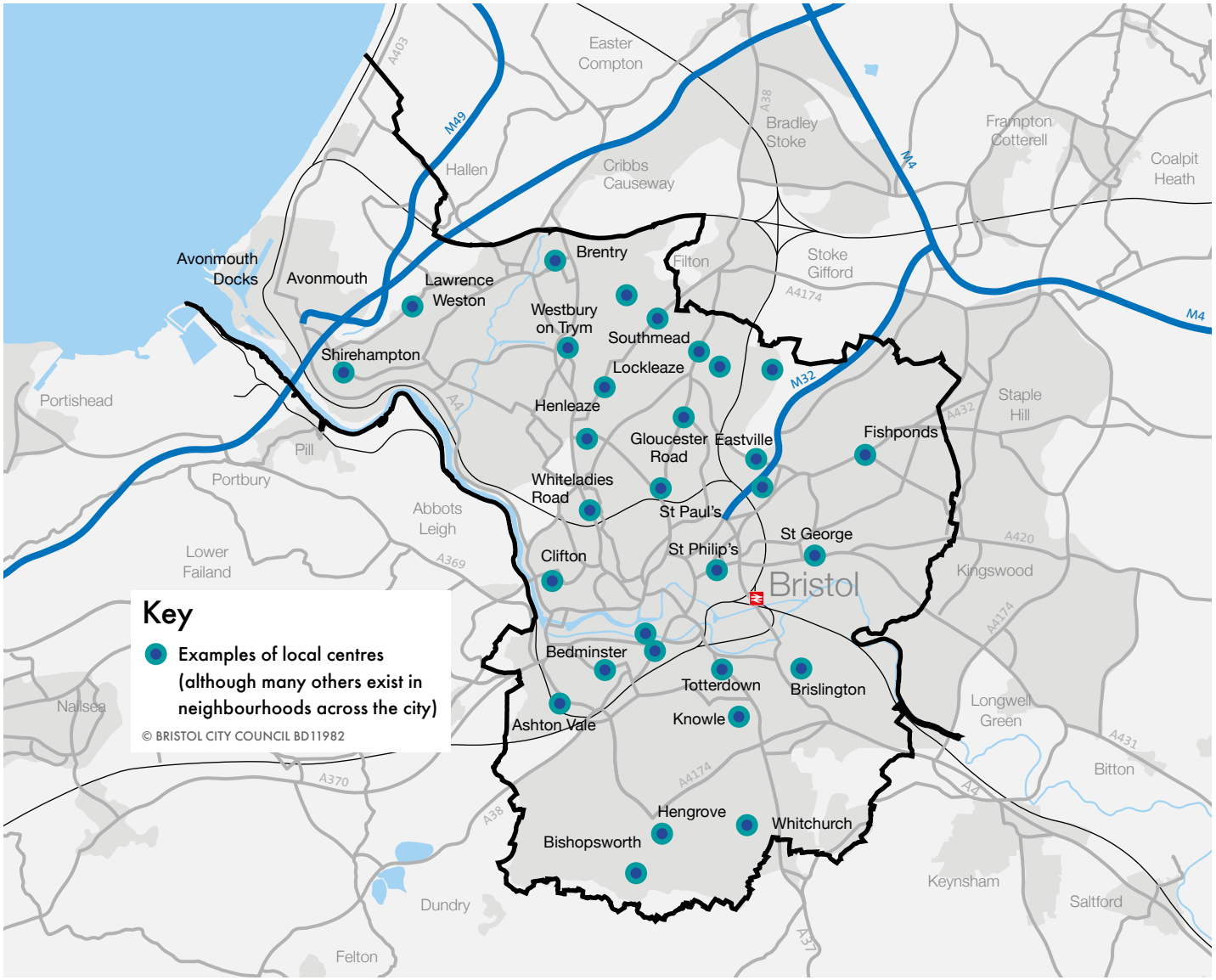
Bus priority measures can facilitate better parking, delivery and drop off arrangements for local shops to enhance the local centre, while functioning as key transport corridors[56].

Figure 7: Shoppers' choice of travel modes in Bristol study



Many other local centres are located across the city, although not all are on main transport corridors. Local centres in Shirehampton, Westbury on Trym, Southmead, Easton, Bedminster, Hartcliffe and many others provide essential services, facilities and jobs for many residents who live nearby, which means residents do not have to rely on a car for many every day needs.

Local centres also provide places for people to meet and interact, and the influence of transport can have large impacts on creating a sense of place. As referred to in the City Centre section, it is important that we reduce the negative impacts of traffic in order to encourage more people to spend time in their local areas, not only as a functional space for shopping and services, but to increase social interaction, build communities and increase residents' wellbeing.



By increasing options of access by sustainable modes of transport and reducing the amount traffic passing through local centres to reach other destinations, local centres can begin or continue to thrive as focal points of the community and provide a function to ensure all citizens have equal access to services and are not reliant on a car for every day needs.

Outcome #12 | Transport to support and enhance local centres and high streets by recognising that they provide key services and facilities for citizens to access and can also be transport corridors and destination points for visitors.

Outcome #13 | Reduced impact of motorised traffic on local centres creating better public spaces that are more accessible by walking, cycling and reliable public transport.

Deliver & **Enable** continuing improvements for pedestrians, to make walking the first choice for local journeys and connecting to transport hubs, as outlined in the **Bristol Walking Strategy** action plan (see City wide movement section).

Deliver & **Enable** continuing improvements to access local centres by bike, through the provision of safe routes and secure cycle storage, as outlined in the **Bristol Cycling Strategy** action plan (see City wide movement section)

Explore, **Deliver** & **Enable changes in parking provision**, including removal and/or relocation of on-street parking on high streets that are congested transport corridors and explore the potential for new off-street public car parks at local centres to replace lost spaces.

Deliver & **Enable** better **connectivity and reliability around the city by bus and community transport**, working with bus operators to investigate new services, improve information and explore options for transport on demand and community transport services. This will be addressed in the Bus Strategy (see City wide movement section).

Deliver & **Enable improvements in road layouts** including reducing the width of junction mouths, enforcing appropriate speeds and improving access points to improve safety, create a more attractive walking and cycling environment.

Explore, **Deliver** & **Enable innovations in freight movements** to seek to reduce the impact of heavy freight vehicles and provide appropriate loading arrangements as outlined in the freight strategy (see City wide movement section).

Neighbourhoods and residential streets

Bristol is made up of a number of neighbourhoods that each has its own identity. Besides the corridors and local centres, the neighbourhoods contain residential streets where our citizens live. The neighbourhoods and residential streets
are designed differently as a result of the different eras in which housing has been developed.

This ranges from narrow, Victorian streets where houses do not have off street parking to wide modern streets, shared spaces and home zones. It is important that citizens feel safe and confident to walk and cycle in their neighbourhoods to access local services and connect by public transport to other parts of the city to access jobs, education, leisure and health care without relying on a car.

Outcome #14 | Key facilities and services increasingly accessible to all citizens without the need to rely on a car.

Outcome #15 | Safer places to live by working with citizens to design and deliver measures to improve movement and liveability in our neighbourhoods.

Along with our West of England partners, **Deliver & Enable** the design and development of **communities that promote sustainable and healthy transport**, supported by high housing densities, with the highest densities around public transport facilities.

Along with our West of England partners, Explore **opportunities for releasing land currently used for transport infrastructure to support housing growth**, including exploring opportunities at Cumberland Basin and Lawrence Hill roundabout

Deliver & **Enable mixed use development** in co-operation with colleagues in housing and major projects to provide a range of amenities within a short distance of where people live and reduce the need to travel by car.

Deliver & **Enable** neighbourhoods to **reduce the negative impact of through traffic** and ensure through routes are appropriate to improve local air quality.

Deliver & **Enable** improvements to footways and road crossings to **improve pedestrian safety** and enable residents of all ages and abilities to access their neighbourhood, including safe routes to school.

You said in consultation...

There is support amongst our citizens to provide 'low traffic neighbourhoods' where walking and cycling is prioritised and movement by motorised vehicles is more circuitous, making neighbourhood roads less attractive to motorists to use as rat-runs.

There is also support amongst residents to improve safety of walking and cycling environments in our neighbourhoods to connect to schools to encourage more children and parents to actively travel for this journey.

Deliver & **Enable** the development of the all ages and abilities cycle network, helping to develop a child friendly city **cycle network**. Develop cycling quietways through neighbourhoods, connecting to wider cycle network.

Deliver & **Enable improvements in bus services** to better serve neighbourhoods with poor public transport provision, working with bus operators to explore new service options and community transport.

Enable community involvement in street design and use. Community led transport projects need to be safe and adopted and maintained by the community in conjunction with the Council. The Council needs to be mindful of its legal responsibilities as the highways authority.

Deliver appropriate **SuDS schemes** to be incorporated into any local transport and public space improvements, based on ground investigations.

Enable communities to report transport issues, through promoting and improving the existing **Fix My Street website and open up data** to allow more efficient and demand responsive services.

Explore methods to **communicate and engage with communities** at a local level to encourage use of sustainable transport

Explore refining existing Residents' Parking Schemes and extend only where there is demand from residents, and investigate alternative approaches.

Deliver & **Enable improved compliance with 20mph limits** with more awareness raising and streets designed for appropriate speeds and investigate introducing new 20mph limits where there is local demand.

Deliver routine maintenance works and other projects to **improve the layout of residential areas** to create better places.

Implementing and Funding the Bristol Transport Strategy

The Bristol Transport Strategy covers up to 2036. There are outcomes that can be implemented in the short term and others that will require longer term planning. All outcomes are dependent on available funding. There are a range of sources that we will explore to fund the outcomes to deliver our objectives and ultimately our vision. This section takes each outcome and sets a timescale for delivery and possible funding sources.

Implementation

First, it is important to set out the process by which projects and schemes are delivered. Each scheme will take different amounts of time to complete this cycle depending on the scale. In addition, with technology changes, things can happen quickly and we need to be able to respond to and embrace new technologies as required, therefore in some cases we will need to be flexible to grasp opportunities when they arise. However, this demonstrates the steps that are generally required to implement transport projects.

1. Schemes and projects identified in Bristol Transport Strategy (or for schemes affecting the West of England as a whole, the Joint Local Transport Plan, as informed by the Joint Transport Study)
2. Plan is adopted by senior management, Members and Mayor
3. Work with community, residents and stakeholders to shape initial plans, gaining valuable insight on existing local transport situation
4. Further detailed work is carried out in the form of feasibility studies or detailed strategies to identify the deliverability of projects
5. Funding required for options and concept preliminary design work to develop a robust business case
6. Relevant funding sources identified to bid for funding
7. Gain approval to bid for funding through internal decision making process
8. Win funding- draft up detail of the project
9. Consult on the detail of the project
10. Make any changes as a result of consultation
11. Deliver project
12. Monitor outcomes of the project, refining schemes and learning lessons for the future

Funding

The projects and schemes identified in this plan can help to deliver a step change in how people move around the city. Along with our West of England partners, we are planning transformative changes that will benefit Bristol and the region as set out in the emerging Joint Local Transport Plan and this strategy. We have also set out projects and actions that we will take forward as a city to achieve our vision.

It is clear that the major projects, schemes and actions outlined in the Bristol Transport Strategy and in the emerging Joint Local Transport Plan for the West of England all add up to a large price tag, which is significantly more funding than has historically been available. Historically as a city and region we have been successful in bidding for funding from Central Government, however funding has been of a piecemeal nature, limiting our ambition to deliver transformative transport measures.

To date, our funding has come from a range of sources including:

- Local Transport Planning maintenance and block grant from Central Government
- Major scheme bids to the Department for Transport (DfT) and other national bidding opportunities
- Council resources including parking income
- Bids for grants from Local Enterprise Partnership including Revolving Infrastructure Fund and Local Growth Fund
- Community Infrastructure Levy and s106 contributions
- Devolution gain share
- Other bids and funding sources such as Innovation Funding
- Private investment

Much of the existing funding is already earmarked for schemes and essential operation of Council transport services, so additional funding sources are likely to be needed to deliver our vision.

As of March 2017 the West of England Combine Authority (WECA) was established as part of devolution deal from Central Government. This includes a devolved budget of £30m per year for the next 30 years to include funding towards transport. This funding will be focused on large strategic transport projects that contribute to our vision and connect housing with employment sites and services across the sub-region.

Smaller transport projects that contribute to achieving our vision will continue to be funded through Local Growth Deal allocations from the Local Enterprise Partnership and bids to Central Government, of which we have a very successful track record of winning and delivering.

All measures outlined in this strategy are high priority in order to achieve our vision, however we will seek to package schemes together to achieve maximum impact from any bids we make. This could mean working in partnership with colleagues from housing, flood risk management, innovation or air quality to make bids that achieve our joint objectives. In terms of meeting a 2030 carbon neutrality target as set out in the One City Plan, a project was completed in partnership with the University of Bristol to identify the measures in the Bristol Transport Strategy that need to be prioritised to meet the target. The outcomes of this project can be found in the appendix.

However, even with existing sources of funding, in order to deliver the ambition and vision of the Bristol Transport Strategy, and the wider major projects that will benefit the West of England region there will be a large funding gap and new sources of funding will be required. As already mentioned, a mass transit system alone could cost up to £4bn, which cannot be covered by existing sources of funding. The measures proposed in this strategy could transform the way we move around, therefore we need to invest as a city to make these changes to revolutionise our transport system and meet our vision.

Potential new funding sources could include:

- Workplace Parking Levies
- Road user/Congestion Charging
- Council tax increases
- Business rate increases

Workplace Parking Levy

A Workplace Parking Levy can be applied by a highway authority under the 2000 Transport Act, where employers are charged a fee per private parking space on their site. Employers may choose to pass this charge on to their staff, which can encourage staff to consider alternative ways of travelling to work if they have to pay to park. The employer may choose to pay the charge themselves, which could in turn encourage the employer to consider reducing the number of parking spaces they have on their site (and potentially expand their business premises without acquiring more land), which is therefore a measure of parking control to influence how staff choose to travel to work.

Previous assessments undertaken for the West of England show that there is a potential for a workplace parking levy to deliver an estimated 2% reduction in private car trips.

Case Study: Nottingham workplace parking levy

Nottingham introduced a Workplace Parking Levy in 2011. It levies a charge to employers that have 11 or more private parking spaces on their site. The levy is charged at £379 per annum per space, which is around £1.50 per work day. Over £44m has been raised in revenue since charging began. The administrative costs of running the scheme take less than 5% of the revenue raised, meaning a large amount is reinvested in transport improvements in the city as identified in the Local Transport Plan. This has led to doubling the size of the tram network and redeveloping the city's rail station to support the electric bus network. The revenue raised has also been used as match funding to bid for external funding. Workplaces that are required to pay the charge are offered grants to enable staff to cycle to work. The levy scheme has resulted in a 4.5% increase in bus and tram patronage. Many employers in Nottingham were sceptical of the scheme before it was implemented, however, discussion with Nottingham Council suggests it is now accepted as a part of doing business in the city. No major employers left the city and inward investment has increased since the scheme was introduced, with businesses taking advantage of the improved transport infrastructure, creating 2,000 new jobs since 2012.

To fund transformational transport improvements such as a light metro system, a Bristol scheme would need to cover the wider urban area and have a higher rate than the Nottingham scheme. This could potentially unlock up to £1.5bn of transport investment over 30 years[57].

Road user charging

Road user charging has been implemented in various locations around the world; the most applicable location for comparison purposes is the congestion charge in London. The London scheme is an area based scheme operating for 12 hours per day on weekdays only and uses cameras to record number plates of vehicles entering and leaving the zone.

Road user charging in Bristol was first suggested in the 1975 Land Use Transportation Study and has appeared in several local transport plans since then. An assessment carried out in 2013[58] proposed a central area zone. A fee of £5 per day for all users was proposed, operational between 7am and 10am Monday to Friday. The expected annual income after operating costs were removed was between £5m and £20m per year dependent on the size of the zone and the number of people avoiding the zone. To fund transformational transport schemes such as a light metro system, a wider area scheme could be considered, and could potentially raise a similar amount to an area wide Workplace Parking Levy. Previous assessments undertaken by the West of England show that there is the potential to deliver a significant impact on demand for travel by car - an estimated 6-8% reduction of private car trips.

You said in consultation...

In order to raise funding for large transport infrastructure projects to transform how we move around the city, there is strong support to amongst our citizens to implement a congestion charge or a workplace parking levy, although many comment that good alternatives need to be in place to provide options to those who currently have to drive.

Funding methods that involve raising taxes for people of Bristol, such as increasing council tax or business rates, were not supported and many commented to say that as current congestion is largely caused by people traveling into the city from other areas, Bristol citizens should not be penalised to reduce levels of congestion, especially if they already use sustainable transport modes.

Implementation Plan

Figure 8: Stategy Timeline

Outcome	Partnerships and stakeholders to be involved for delivery	Implementation timescale	Potential funding sources
Citywide: Outcome #1 | Efficient movement of traffic around the city, with increased resilience of the network and minimised impacts of congestion and air pollution.	WECA, air quality colleagues, Highways England	Medium	Devolution gain share, parking income, workplace parking levy, congestion charging
Citywide: Outcome #2 | On and off street parking managed efficiently to encourage use of sustainable transport and tackle congestion, while providing options that support the city's 24 hour economy.	Destination Bristol, business improvement districts, car park operators	Medium	Parking income

Citywide: Outcome #3 | Reduced excess lorry and van travel in the city (especially during peak hours), working with industry to find cleaner alternatives for the movement of goods.	Freight operators, train operators, WECA	Medium	Devolution gain share, workplace parking levy, congestion charging, private investment, S106 contributions
Citywide: Outcome #4 | Public transport to be visibly integrated, convenient and reliable to enable people to move around the city in a more efficient way.	Bus operators, Transport Focus, train operators, WECA	Medium	Devolution gain share, workplace parking levy, congestion charging, private investment
Citywide: Outcome #5 | Walking to be safe, pleasant, accessible and the first choice for local journeys and combined with public transport for longer journeys.	Bristol Walking Alliance, Living Streets	Short to Medium	Local Growth Fund, DfT funding, S106/278 agreements
Citywide: Outcome #6 | Cycling to be safe, simple, accessible and convenient, either as an option for the whole journey or as part of a journey combined with public transport.	Sustrans, Bristol Cycling Campaign	Short to Medium	Local Growth Fund, DfT funding, S106/278 agreements
Citywide: Outcome #7 | A resilient, safe and well-maintained network to enable continuous movement of people and goods, using smart technologies.	WECA, developers	On going	Local Transport Planning maintenance and block grant from Central Government, S106 contributions, community infrastructure levy
Citywide: Outcome #8 | More people making sustainable and healthy transport choices by improving engagement with communities, schools and businesses.	Community groups, schools, businesses	Short to Medium	DfT funding, S106 contributions, workplace parking levy. Also, proportion of infrastructure funding to be allocated for promotion.

Citywide: Outcome #9 | New developments to be innovative in their approach to prioritise sustainable transport options and address the impact on the existing network.	Developers, WECA	On going	S106 contributions, community infrastructure levy
City Centre: Outcome #10 | A city centre that is accessible by active and sustainable transport and attractive to live, work and visit, enhancing its status as the foremost shopping and cultural centre in the South West.	WECA, Network Rail, train operators, bus operators, retail and leisure operators	Medium to Long	Devolution gain share, parking income, workplace parking levy, congestion charging
Corridors: Outcome #11 | More efficient transport corridors to move the largest number of people in the space available.	WECA, Network Rail, train operators, bus operators, retail and leisure operators	Medium to Long	Devolution gain share, parking income, workplace parking levy, congestion charging
Local Centres: Outcome #12 | Supported and enhanced local centres and high streets, recognising that they provide key services and facilities, and can also be transport corridors and destination points for visitors.	Business improvement districts, bus operators, neighbourhood groups, transport stakeholders	Medium	Bids for grants from Local Enterprise Partnership including Revolving Infrastructure Fund and Local Growth Fund, Community Infrastructure Levy and s106 contributions, private investment
Local Centres: Outcome #13 | Reduced impact of motorised traffic on local centres creating better public spaces that are more accessible by walking, cycling and reliable public transport.	Bus operators, freight operators, transport stakeholders	Medium to Long	Workplace parking levy, congestion charging, Bids for grants from Local Enterprise Partnership including Revolving Infrastructure Fund and Local Growth Fund, Community Infrastructure Levy and S106/278 agreements, private investment

Neighbourhoods: Outcome #14 | Key facilities and services increasingly accessible to all citizens without the need to rely on a car.	Neighbourhood groups, bus operators, transport stakeholders	Short to Medium	Local Growth Fund, DfT funding
Neighbourhoods: Outcome #15 | Safer places to live by working with citizens to design and deliver measures to improve movement and liveability in our neighbourhoods.	Neighbourhood groups	Short to Medium	Local Growth Fund, DfT funding, S106/278 agreements

Timescales:

Short term: < 5 years

Medium term: 5-10 years

Long term: >10 years

Key:

WECA: West of England Combined Authority

DfT: Department for Transport

How will we measure success?

In order to know whether we are achieving success with our approaches as set out in this plan, it is important to understand whether we are meeting our objectives. As a reminder, the objectives of the Bristol Transport Strategy are:

- Provide transport improvements to accommodate increased demand from growth in housing, jobs & regeneration on an already congested network with complex movements from within and outside the city boundary.
- Promote equality with an inclusive transport system that provides realistic transport options for all
- Create healthy places, promoting active transport, improving air quality, and implementing a safe systems approach to road safety
- Create better places that make better use of our streets and enable point to point journeys to be made efficiently
- Enable reliable journeys by minimising the negative impacts of congestion and increasing network efficiency and resilience
- Support sustainable growth by enabling efficient movement of people and goods, reducing carbon emissions and embracing new technologies.

The success against the objectives can be measured in a number of ways using known data sources, and we will work closely with colleagues in academic institutions to identify methods to measure success for those that do not have clear data sources. We will need to establish a baseline from which to begin measuring our success and this will be within the first year of adoption of the plan. From then on, monitoring of the Bristol Transport Strategy will be reported annually online on the Bristol City Council website.

Objective	What to measure	Data source
Provide transport improvements to accommodate increased demand from growth in housing, jobs & regeneration on an already congested network with complex movements from within and outside the city boundary	Number of houses delivered	Planning applications
	Number of people who are homeless	Data from housing teams
	Number of jobs created	Economic development records and data from housing team
	Number of people who are unemployed	Data from employment and skills team
	Occupancy rates of buildings, both residential and commercial	Economic development records
	Percentage of S106 agreements invested in sustainable transport	Data from planning colleagues
	Percentage of people travelling to work by sustainable modes	Journey to work data
Promote equality with an inclusive transport system that provides realistic transport options for all	For each neighbourhood, provide walking and cycling routes connecting to schools, employment areas and services	Data collected when projects are delivered
	For each neighbourhood, proximity of a bus stop with high frequency services (10 minutes or less)	TravelWest journey planner
	Level of use of sustainable transport services	Modal split monitoring
	Awareness of transport options	Qualitative data- will need input from academic colleagues
	Affordability of transport options	Bus fare data
	Satisfaction of transport options	Quality of Life survey. Transport Focus data

Objective	What to measure	Data source
Create healthy places, promoting active transport, improving air quality, and implementing a safe systems approach to road safety	Percentage of people travelling to work by active modes	Journey to work data
	Percentage of children traveling to school by sustainable modes	Modal split monitoring
	Percentage of people travelling on corridors by active modes	Modal split monitoring on key corridors
	Number of people killed or seriously injured on roads	KSI data
	Levels of air pollution, compliance with air quality standards, particularly along corridors and around schools	Air quality monitor data
	Levels of EV take up	DfT figures
	Perception of safety	Bike Life report
Create better places that make better use of our streets and enable point to point journeys to be made efficiently	Number of point to point options	Modal split monitoring
	Satisfaction of local area	Quality of Life survey
	Level of walking and cycling	Quality of Life survey and modal split monitoring
	Percentage of new schemes introducing SuDS	Flood risk management data
Enable reliable journeys by minimising the negative impacts of congestion and increasing network efficiency and resilience	Journey time reliability	National Bus/Rail satisfaction surveys
	Levels of bus and rail patronage	Bus/rail operator data
	Punctuality of services	Bus/rail operator data
Support sustainable growth by enabling efficient movement of people and goods, reducing carbon emissions and embracing new technologies	Journey time to measure congestion levels as development grows	ANPR data to time journey across city centre cordon
	Percentage of people travelling to work sustainably	Journey to work data
	CO2 emissions	Data from sustainability team

List of contributors

The transport policy and strategy team at Bristol City Council has worked in partnership with the Mayor's Congestion Task Group to agree the outcomes for the Bristol Transport Strategy. The Congestion Task Group consisted of key stakeholders and influencers across the city, covering a range of differing interests in transport. Here is a list of members of the Congestion Task Group and therefore contributed to this Strategy:

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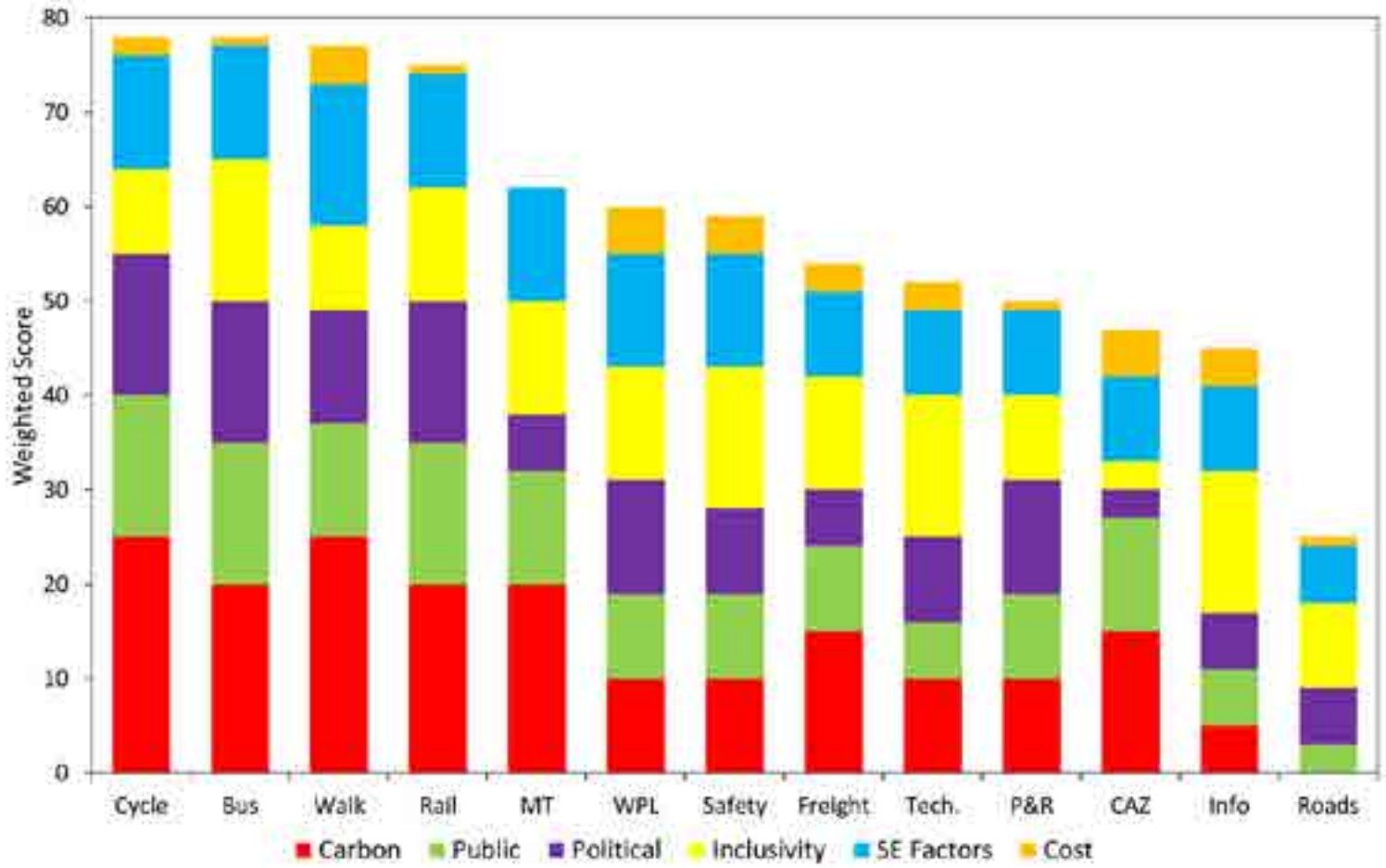
Appendix of the exec summary of the UoB report

Figure 9: Summary chart of weighted elements considered to achieve 2030 carbon neutrality target for measures of the Bristol Transport Strategy



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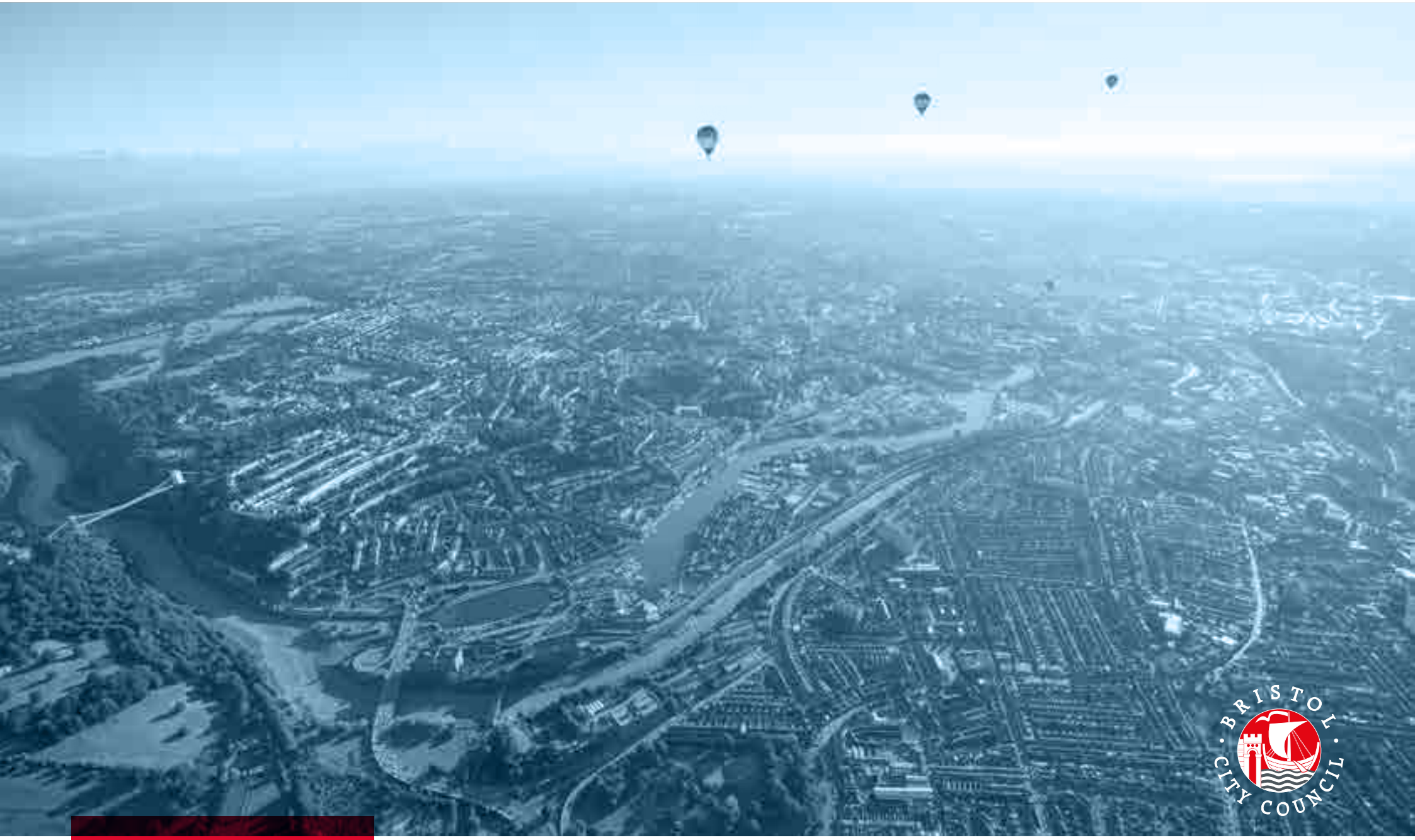

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