

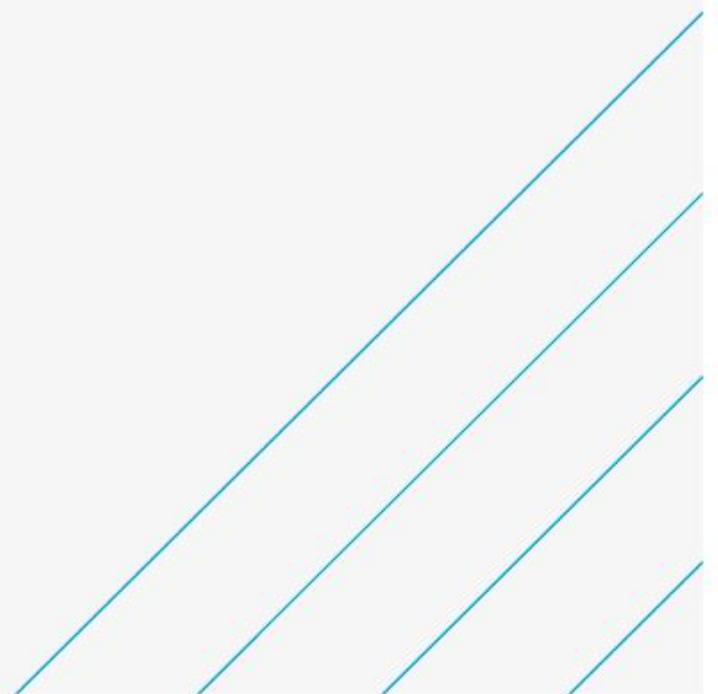
Bristol Bridge Signals Junction and Car Park VMS Project

Full Business Case

West of England Combined Authority

19th August 2022

FBC



Notice

This document and its contents have been prepared and are intended solely as information for West of England Combined Authority and use in relation to the delivery of cycling infrastructure at Bristol Bridge and as well as replacement of city centre Variable Message Signs.

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Contents

Chapter	Page
1. Introduction	6
1.1. Scheme overview	6
1.2. Report purpose	6
1.3. Report structure	6
2. Strategic Case	7
2.1. Introduction	7
2.2. Geographic and strategic context	7
2.3. Case for change	18
2.4. Objectives	26
2.5. Measures for success	27
2.6. Constraints	27
2.7. Interdependencies	27
2.8. Stakeholders	27
2.9. Option development	27
2.10. Options assessment	28
2.11. Environmental sustainability and climate change considerations	31
3. Economic Case	32
3.1. Introduction	32
3.2. Appraisal methodology	32
3.3. Demand forecast and economic impacts appraisal	34
3.4. Scheme costs	35
3.5. Economic appraisal summary	36
3.6. Value for Money Statement	36
3.7. Sensitivity testing	37
3.8. Unquantified impacts	37
4. Financial Case	39
4.1. Introduction	39
4.2. Chief Financial Officer sign-off	39
4.3. Scheme cost	39
4.4. Spend profile and funding source	41
5. Commercial Case	42
5.1. Introduction	42
5.2. Output-based specification	42
5.3. Procurement strategy	42
5.4. Sourcing options	42
5.5. Payment mechanisms	43
5.6. Pricing framework and charging mechanisms	43
5.7. Risk allocation and transfer	43
5.8. Contract length	43
5.9. Contract management	43
5.10. Social Value Act	44
6. Management Case	45
6.1. Introduction	45
6.2. Promoter and delivery arrangements	45

6.3.	Communications and stakeholder management	45
6.4.	Project governance and delivery	45
6.5.	Programme plan	47
6.6.	Risks, constraints and dependencies	47
6.7.	Land acquisition, planning and other consents	49
6.8.	Project assurance	50
6.9.	Benefit realisation	50
6.10.	Monitoring and evaluation	50

Appendices **54**

Appendix A.	Quantified Risk Assessment	55
Appendix B.	General Arrangement Drawings	57
Appendix C.	Distributional Impact Assessment Step 1 Screening	59
Appendix D.	Appraisal Summary Table	61
Appendix E.	Approvals timetables	64
E.1.	Bristol City Council	64
E.2.	West of England Combined Authority	64
Appendix F.	Bristol Bridge Programme	65

Tables

Table 2-1 - Proposed public transport corridors	9
Table 2-2 - JLTP4 objectives and outcomes	12
Table 2-3 - Summary of the Climate Emergency Action Plan actions	14
Table 2-4 - Scheme objectives	26
Table 2-5 - Measures of success	27
Table 2-6 - Criteria for Option Assessment	28
Table 2-7 - Multi Criteria Assessment of Options	30
Table 3-1 - Summary of data and assumptions driving walking and cycling forecasts	32
Table 3-2 - Summary of data and assumptions for VMS appraisal	34
Table 3-3 - Summary of forecast cyclist uplift	35
Table 3-4 - Breakdown of scheme costs	36
Table 3-5 - Quantified benefits	36
Table 3-6 - Benefit Cost Ratios	36
Table 3-7 - Overview of DfT Value for Money categories by scheme benefit-to-cost ratio	36
Table 3-8 – Sensitivity test 1: Benefit Cost Ratios	37
Table 3-9 – Sensitivity test 2: Benefit Cost Ratios	37
Table 4-1 - Sunk costs	39
Table 4-2 - Inflation index	40
Table 4-3 - Scheme costs net of sunk costs	40
Table 4-4 - Spend profile by source and financial year	41
Table 6-1 - Examples of BCC's previous successes in scheme delivery	47
Table 6-2 - Project milestones	47
Table 6-3 - Top risks and their proposed mitigations	48
Table 6-4 - Project dependencies	49
Table 6-5 - Evaluation data requirements	51

Table 6-6 - Data collection plan

53

Figures

Figure 2-1 - Proposed bus corridor network	9
Figure 2-2 - Scheme area	11
Figure 2-3 - Proposed Bristol Cycling Network (as per 2015 Bristol Cycle Strategy)	17
Figure 2-4 - Bristol Clean Air Zone	18
Figure 2-5 - NO2 diffusion tube data in the context of the scheme	20
Figure 2-6 - Bristol Bridge	21
Figure 2-7 - Pedestrian and cycling facilities on the A37/A4018 corridor (central section)	22
Figure 2-8 - VMS at Temple Meads	23
Figure 2-9 - VMS at The Grove	24
Figure 2-10 - VMS at Newfoundland Circus (inbound)	24
Figure 2-11 - VMS at Stokes Croft inbound	25
Figure 2-12 - Logic map	26
Figure 6-1 - Project governance structure	46

1. Introduction

1.1. Scheme overview

Bristol City Council (BCC) is currently working on proposals to improve public transport, walking, cycling and public realm along the A37 / A4018 corridor in north Bristol to the city centre. An opportunity has arisen to bring forward part of this corridor for early delivery at Bristol Bridge. This section of the corridor has been brought forward as the traffic signals at Bristol Bridge are at the end of their usable life, while the funding source, the Transforming City Fund (TCF), has limited spend stipulations (completion by April 1st 2023).

This package of works includes two components:

- Cycle infrastructure improvements and traffic signal replacements at Bristol Bridge.
- Replacement of four Variable Message Signs (VMS) in the city centre.

The Bristol Bridge Experimental Traffic Regulation Order (ETRO) project introduced restrictions on vehicles, which presented a considerable opportunity for mode shift. In 2021, this ETRO was made permanent resulting in the ban of through traffic on Bristol Bridge. However, the existing Bristol Bridge signals are at the end of their service life and are unable to extend green times to pedestrians and cyclists. The proposed design will introduce new signals and deliver enhanced cycling infrastructure. The design is provided in Appendix B.

The second element of the scheme is the renewal of VMS. Four locations require new VMS, as recent highway changes have made the existing signage obsolete. Improving VMS will better inform vehicle users on which car parks to travel to, reducing circulation of vehicles around Bristol city centre.

As a package, the two schemes will together encourage the uptake of walking and cycling and reduce the negative impacts of private vehicles.

1.2. Report purpose

This document and its appendices form the Full Business Case (FBC) for the improvements to Bristol Bridge and VMS. This FBC forms the submission through the West of England Combined Authority (the 'Combined Authority') approvals process to demonstrate Value for Money and the ability to successfully deliver the scheme.

1.3. Report structure

The FBC is structured in accordance with the Department for Transport's recommended five cases model for a Transport Business Case:

- **Strategic Case** (Section 2) sets out the problems that the scheme is intended to address and the case for intervention.
- **Economic Case** (Section 3) provides a Value for Money assessment of the scheme.
- **Commercial Case** (Section 4) provides details around the procurement aspects of the scheme.
- **Financial Case** (Section 5) provides details on the costs and funding aspects of the scheme.
- **Management Case** (Section 6) provides details on delivery of the scheme.

2. Strategic Case

2.1. Introduction

This section sets out the 'case for change', by explaining the rationale for making an investment and presenting evidence on the strategic policy fit of the proposed scheme. It also sets out the scheme options under consideration.

The Strategic Case establishes the:

- Context for the proposed interventions outlining the strategic aims and responsibilities of the Combined Authority and Bristol City Council.
- Transport-related problems that have been identified, using evidence to justify the proposed interventions and examining the impact of not changing.
- Specific, Measurable, Achievable, Realistic and Time-bound (SMART) objectives that solve the problem, identified through alignment with regional and local strategic aims and responsibilities.
- Measures for determining successful delivery of the objectives.
- Constraints and opportunities for investment.
- Interdependencies of the scheme options.
- Details of main stakeholder(s).
- Evaluation of the options considered.

Detailed information regarding the transport problems, transport needs, objectives and options for the wider A37/A4018 corridor is presented in its Options Assessment Report (OAR) and the forthcoming Outline Business Case (OBC).

2.2. Geographic and strategic context

The West of England Combined Authority is a Combined Authority consisting of the local authorities of Bristol, South Gloucestershire, and Bath and North East Somerset. Founded in 2017, the government's vision was to create a 'Western Powerhouse' analogous to the Northern Powerhouse concept designed to boost economic growth in the north of England.

The West of England outlined the Core Strategic Functions of the Combined Authority in a Constitution document, the Core Strategic Functions are as follows:

- Transport.
- Planning and housing.
- Skills.
- Employment.
- Finance.
- Governance and Other Administration.

The Combined Authority's objectives in relation to the Core Strategic Functions are:

- Contribute to providing strong collective leadership and strategic direction to realise the full economic potential of the West of England.
- Support the development and delivery of key strategies to improve the economic conditions across the West of England area.
- Contribute to the formulation and expression of joint views (of the West of England Mayor and the local authorities) to central government and other bodies and organisations in respect of legislation, proposed legislation and other matters of concern, interest or relevance to the West of England economy with a particular focus on removing barriers to growth and the delegation of additional powers and funding.
- Actively support the co-ordination of joint local authority activity across the West of England, including the activities of the Local Enterprise Partnership Business Board.

- Work with appropriate agencies and bodies both within and beyond the West of England in order to achieve any shared economic objectives.
- Ensuring arrangements are in place to report the proposals and activities of the Combined Authority to the constituent councils.
- Take any decisions required to deliver the West of England Devolution Deal(s) and the relevant Strategic Plans including additional funding, freedoms and flexibilities.
- Provide a formal and accountable forum for decision making relating to all relevant West of England Combined Authority functions.

2.2.1. A37 / A4018 corridor study

The City Region Sustainable Transport Settlement (CRSTS), announced in 2021 by the Department for Transport (DfT), is an unprecedented investment in local transport networks and a major driver for significant change to level up across England.

Furthermore, the West of England Bus Strategy sets out options to improve the bus network, and how further growth in bus usage can be encouraged, with the goal of doubling bus patronage by 2036.

The West of England Joint Local Transport Plan 4 sets out the required infrastructure investment required to deliver the region's ambitious growth targets, which includes the delivery of bus and active mode infrastructure including the measures being proposed in this FBC.

The West of England Local Cycling and Walking Infrastructure Plan also identifies significant investment required to enable further growth in the uptake of sustainable modes of transport including walking and cycling.

Improvements in public transport connectivity across Bristol and in particular along key corridors will therefore help to make it easier to connect people to employment, leisure opportunities and key public services such as education and medical care, and subsequently help in accommodating the city's growing population, and support its economic growth ambitions.

In response to the announcement of the CRSTS, the Combined Authority published its bid¹ to the central government in October 2021, which included their plans to develop a set of strategic public transport corridors across Bristol. The proposed public transport corridors have been identified based on existing highway congestion, connecting households with employment and education, current and future patronage, supporting areas of deprivation and deliverability, and have been categorised as 'City Corridors' and 'Town Corridors' (see Table 2-1 below).

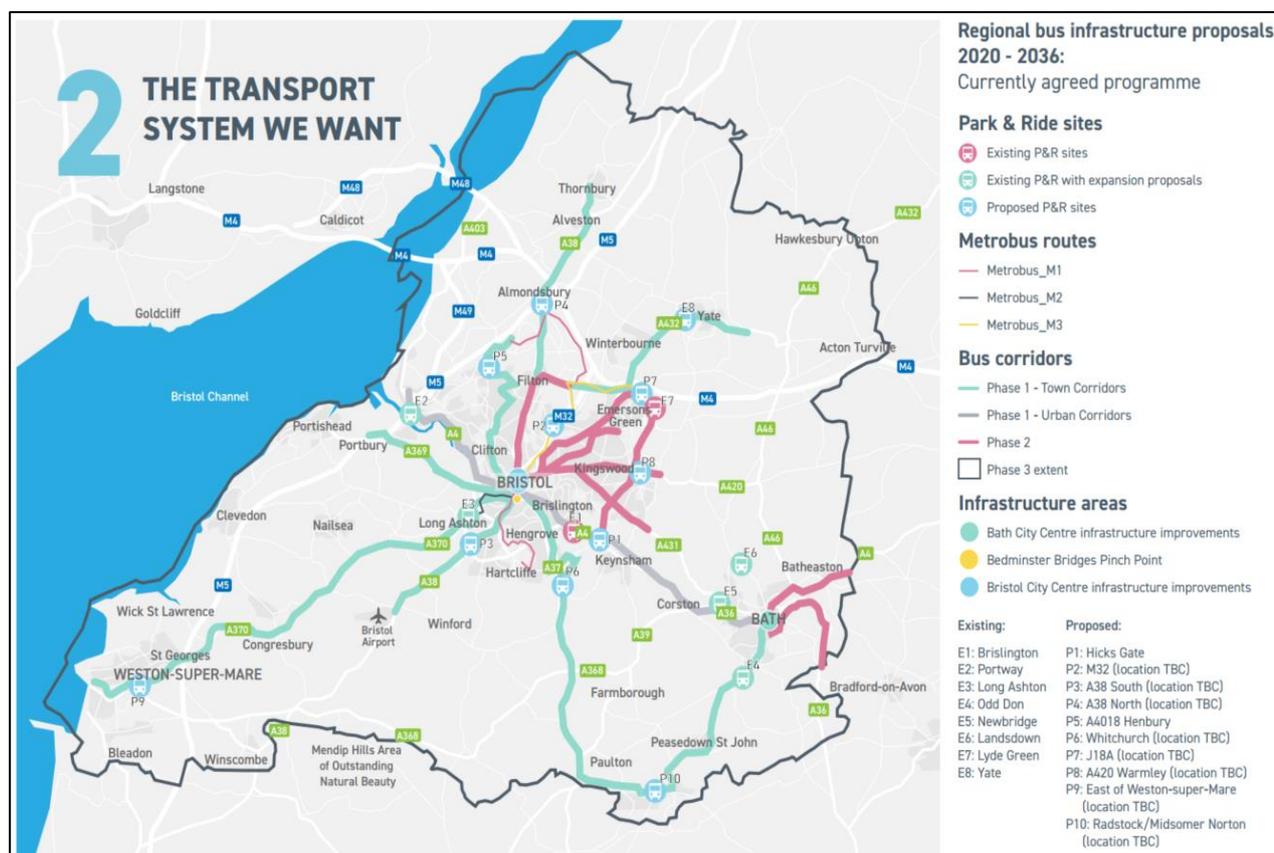
¹ <https://www.westofengland-ca.gov.uk/wp-content/uploads/2021/10/West-of-England-Combined-Authority-CRSTS.pdf>

Table 2-1 - Proposed public transport corridors

City Corridors	Town Corridors
High level of separation is possible and desired. The backbone of the bus network characterised by high frequency services connecting rural and suburban areas to the centre. Considerable opportunities for interchange between different modes.	Bus services connecting towns and suburbs with the high frequency City Corridor routes. Segregation where possible, especially in areas of frequent and significant congestion.
Bristol City Centre - Changes to facilitate priority access for other City Corridor routes.	A38 – Connections from Thornbury to the M32 and from Thornbury to Charfield.
A4 Portway – Including expansion of existing Park & Ride site to incorporate links to new rail station.	A432 – Connections from Yate to the M32.
A370 – Improved connections to existing Long Ashton Park & Ride site.	A37 – Improving access from the Somer Valley areas into central Bristol, which is included as part of this scheme.
M32 – Delivery of a new transport hub and changes to the corridor.	A367 – Improving access from the Somer Valley area into central Bath.
A4 Bristol to Bath – Segregated route between the two cities, with a new transport hub at Hicks Gate.	A4018 – Ensuring joined up connections between central Bristol and key residential, employment and retail developments in the North Fringe, which is included as part of this scheme.

The location of these proposed transport corridors is presented in Figure 2-1.

Figure 2-1 - Proposed bus corridor network²



² West of England Combined Authority Sustainable Transport Settlement, October 2021

The first corridor to be considered for improvement is the one considered in the wider OAR, that is the route between Stockwood in South Bristol (along the A37), and Cribbs Causeway in the north of the city (along the A4018). This route is the one followed by bus route 2 and is referred to as the A37/A4018 transport corridor. This FBC is focused on a section within the A37/A4018 transport corridor where an opportunity has arisen for the early delivery of several proposed interventions.

The A37/A4018 City Centre Junctions scheme will aid in meeting a number of aims of the wider A37/A4018 project, which focuses on reducing car use by offering residents alternative modes of transport which are more sustainable. The wider scheme will incorporate bus priority measures, as well as cycling and walking infrastructure. Key congestion hotspots that will be addressed are the A37 Wells Road, A4018 Whiteladies Road and key pinch points in the city centre. The outcomes of the project will be to provide:

- An improved pedestrian experience including a reduction in severance and a more attractive public realm.
- Reducing road capacity for car users and reallocating this space for bus and active mode users (e.g., cyclists) in order to promote use of these modes.
- Bus prioritisation measures to reduce bus journey times, and improve punctuality and reliability, therefore making this a more attractive mode compared to car use.

Consequently, the outcomes from this project will support the outcomes from the wider scheme to lead to an improvement in air quality, a reduction in carbon emissions, health benefits from an increase in walking and cycling, as well as benefits from a modal shift from car to bus use which include decongestion and journey time savings.

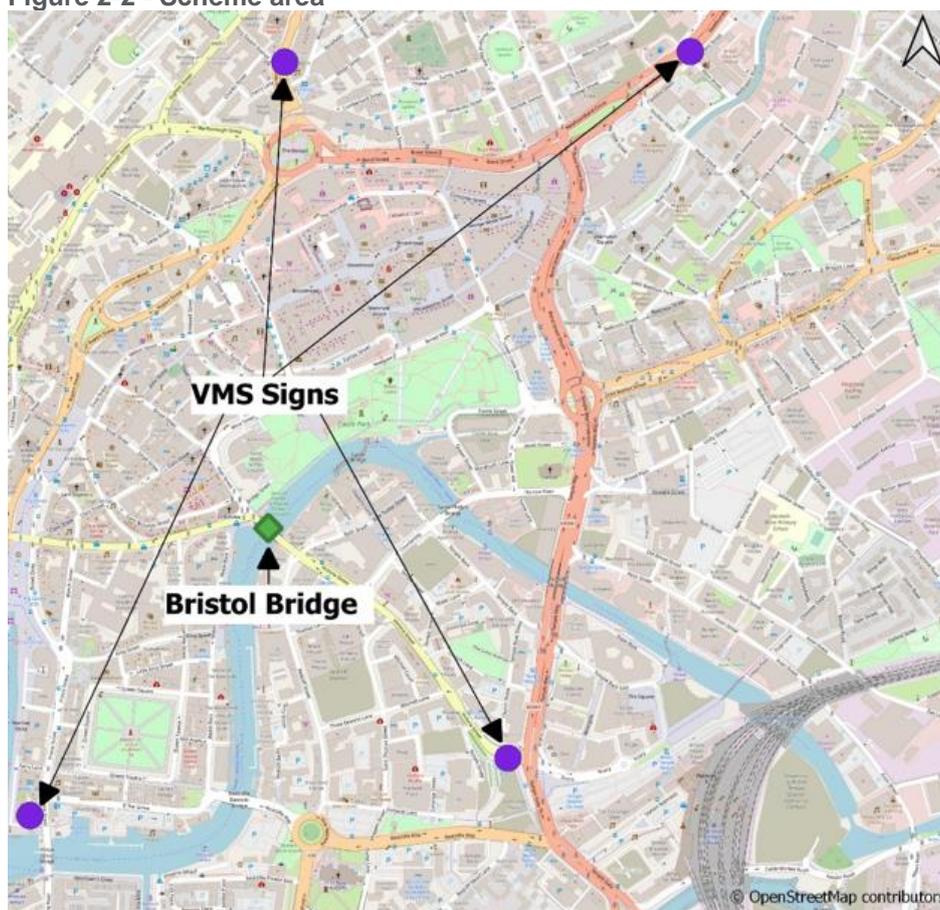
2.2.2. Scheme area

The scheme area is presented in Figure 2-2, highlighting the two elements of the scheme: Bristol Bridge cycle scheme as well as the location of the four VMS signs that will be replaced.

Closely related to the evolution of the Bristol Bridge junction projects was the preceding Bristol Bridge Experimental Traffic Order project. This established the current Traffic Regulation Order that underpins the bus gate system now in operation at the Bristol Bridge junction and Victoria Street, St Augustine's Parade and Union Street.

Following this change to the road network four VMS signs are no longer appropriate and need replacing as a consequence of the Bristol Bridge ETRO to TRO project. The Bristol Bridge ETRO to TRO project removed general traffic, thus making possible the proposed new Bristol Bridge junction design. The proposed design will introduce new signals and deliver enhanced cycling infrastructure.

Figure 2-2 - Scheme area



2.2.3. Strategic fit

The Business Case is being submitted by the Combined Authority and Bristol City Council. The Combined Authority controls the strategic planning including transport, setting the policy direction for the region, while Bristol City Council are the Highway Authority for the proposed scheme.

The project aligns with the following strategic documents:

Regional policies

Joint Local Transport Plan 4 (2020)

The JLTP 4³ was published in March 2020 and outlines the plans for the West of England Region from 2020-2036. The document sets out how the region will meet the key challenges that will appear during this time.

The A37/A4018 corridor improvements will help contribute to each of the objectives set out above. The scheme will improve signals at Bristol Bridge and aid in reducing vehicle circulation around the city centre by removing outdated VMS signs, which will support JLTP4 in addressing the issues of climate change and poor air quality, as well contributing to better health, wellbeing, safety and security.

Table 2-2 below sets out the objectives and outcomes that the JLTP4 seeks to achieve by 2036. **Bold font represents outcomes directly relating to the scheme.**

³ [Joint Local Transport Plan - Combined Authority \(westofengland-ca.gov.uk\)](https://www.westofengland-ca.gov.uk/jltp4)

Table 2-2 - JLTP4 objectives and outcomes

Objective	Outcome
Take action against climate change and address poor air quality	Reduce carbon emissions to net zero by 2030.
	NOx, particulates and carbon emissions are reduced.
	Air quality in the AQMAs is improved.
	Air quality remains better than national standards outside the AQMAs.
	The transport network is resilient and adaptable.
	Technological advances to improve air quality and monitoring are embraced.
Support sustainable and inclusive economic growth	Improved efficiency and reliability on local, national and international transport networks.
	Delivery of new housing and jobs is supported.
	Access opportunities to employment growth areas and education is provided for all.
	Transport assets are maintained and managed, and demonstrate value for money.
	The high-quality transport network generates inward investment.
	Congestion and demand on the network is better managed through technological changes.
Enable equality and improve accessibility	Connectivity is increased and transformed, enabling seamless “door-to-door” movements of people and goods.
	Access for those with both visible and hidden disabilities is improved.
	Access to services and opportunities for residents in rural, remote and deprived areas is improved.
	Better information to aid travel decisions is provided.
	Low carbon transport and opportunities for reducing the need to travel are maximised.
	New public transport systems, smarter ticketing and faster payment options are enabled.
Contribute to better health, wellbeing, safety and security	There is a step change in the number of healthy, low carbon walking and cycling trips.
	There is a continued reduction in the number of road casualties on the transport network.
	Road safety for transport users is improved, particularly for those most at risk.
	Personal safety on the transport network is improved and there is less crime and fear of crime.
Create better places	Journey experience is enhanced through an integrated and connected transport network.
	The impact of the transport network on the built, natural and historic environment is minimised.
	Streetscape, public spaces and urban environments are enhanced.
	The transport network support neighbourhood renewal and the regeneration of deprived areas.

The JLTP4 also includes ambitions for the provision of an attractive, safe and usable walking and cycling network.

The JLTP4 sets out a number of ambitious targets for the period to 2036, which the A37/A4018 corridor improvements will help contribute towards. These targets include:

- **Modal shift:** to reduce single-occupancy car commuting from 59% to 45% against a backdrop of forecast growth in housing and employment.
- **Air quality:** to ensure levels of NO₂ across all of the West of England monitoring sites are below the annual mean air quality objective of 40µg/m³. There are two monitoring stations close to the corridor – one on Colston Street and another on Bond Street South.
- **Carbon emissions:** to ensure that transport in the West of England is carbon neutral by 2030.
- **Bus passenger satisfaction:** to increase overall levels of passenger satisfaction in the overall journey from a base of 85% (2018) to 95% (2036).

Climate Emergency Action Plan (2020)

The Combined Authority published its Climate Emergency Action Plan⁴ in September 2020. The document re-affirmed its commitment to achieving net zero (carbon neutrality) by 2030. The Climate Emergency Action Plan identified five challenge areas, the most relevant to this scheme being a 'low carbon transport system' – Decarbonisation of transport system, increase in use of PT alongside walking and cycling. The report found that:

- Transport emissions account for 32% of all greenhouse gas and CO₂ emissions in the region and emissions from transport are likely to grow in the absence of intervention as population growth in the region is likely to increase car trips.
- The COVID-19 pandemic has demonstrated that social change (e.g., working from home, air quality improvements) can have a significant impact on individuals travel behaviour (decreased car trips, increase in cycling and walking). However, as the number of car trips return to normal following the relaxation of lockdown measures the number of trips made by walking and cycling could potentially fall, as well as leading to a reduction in patronage levels on public transport.

The Action Plan identified a number of measures that were key to achieving decarbonisation goals for the transport sector. These were:

- Reducing the number of car trips.
- Increasing active travel.
- Increasing the uptake of low carbon vehicles.
- Increasing the uptake of public transport.

Table 2-3 sets out the actions that will be taken to enable low carbon transport.

The A37/A4018 City Centre Junctions scheme supports this action plan as it will contribute to reduction of CO₂ emissions from transport by providing infrastructure which will encourage the uptake of walking and cycling.

⁴ [CE-Action-Plan.pdf \(westofengland-ca.gov.uk\)](#)

Table 2-3 - Summary of the Climate Emergency Action Plan actions

Theme	Action or opportunity	Description
Reduce the number of car trips	Take steps towards implementing the demand management measures within JLTP4 [as appropriate] and ensure that they are a central feature of JLTP5.	Suggestions for demand management within JLTP4 include management of parking provision, reallocation of road space to sustainable transport, road user charging, workplace parking levy. Revenue raised from demand management measures could be reinvested in active travel & public transport.
	Use appropriate levers that local authorities have to make it less attractive for cars to enter the city centre.	This could include measures such as speed limits, traffic calming, pedestrianisation, fewer routes and parking charges, whilst also making it more attractive to use alternative travel options.
Increase active travel across the region, capitalising on recent behaviour change (created by the covid-19 lock down period)	Work with the unitary authorities to take steps towards implementing cycling and walking lanes and improve maintenance (raising additional funds where necessary).	The Local Cycling and Walking Infrastructure Plan covers some of this but there is a funding shortfall to deliver all improvements to cycle routes detailed in the plan.
	Work with unitary authorities to support the pedestrianisation of streets (potentially including mixed mode street use) building on the social distance measures put in place as a result of the COVID-19 pandemic.	Pedestrianisation of the streets for local shopping areas could encourage more people to leave their car at home and walk or cycle instead.
Increase the uptake of public transport	Consider how to support the development of better transport interchanges and bus prioritisation including the reallocation of road space, enhanced local rail services and the development of smart ticketing / journey planning tools.	To make people's journeys easier, transport interchanges should facilitate the easy transfer of one mode to another. Reallocating road space to buses will improve the reliability and speed of services and increase their attractiveness over car use.
	Continue to develop mass transit proposals.	Continue to plan a mass transit system, other public transport improvements and consider the expansion of metro bus.
	Continue to work with providers to improve and promote reliability to increase uptake.	Work with bus and rail operators to promote reliability, accessibility and convenience to increase uptake.

City Region Sustainable Transport Settlement (2021)

The Combined Authority Sustainable Transport Settlement⁵ was published in 2021. The document describes a programme of investment in public transport, cycling and walking between 2022 and 2027 with the aim of decarbonising transport and driving growth and productivity through infrastructure investment.

The Settlement notes a number of challenges faced by the region and suggests that it is estimated that the region experiences a £300m annual loss as a result of congestion. The document outlines that Bristol was ranked as the 6th most congested city in England, as of 2019.

The CRSTS sets out a number of objectives that the improvements to Bristol Bridge junction and the VMS replacements will help to deliver. These objectives centre around:

⁵ [West-of-England-Combined-Authority-CRSTS.pdf \(westofengland-ca.gov.uk\)](https://www.westofengland-ca.gov.uk/wp-content/uploads/2021/06/West-of-England-Combined-Authority-CRSTS.pdf)

- Carbon emissions: to secure the region's future with a 30% gross reduction in carbon emissions by 2027, measured against a 2021 baseline, leading to a carbon net zero position by 2030.
- Air quality: to achieve legal air quality across the West of England by 2025, measured by the requirements in the EU Directive 2008/50/EC.
- Strategic investment: to deliver 100 additional miles of strategic public transport corridors by 2027, measured against a 2021 baseline.

Further to this, the wider A37/A4018 corridor is a key corridor identified in the CRSTS of which the A37/A4018 City Centre Junctions scheme is an integral part of that corridor. Therefore, the delivery of this scheme will support the delivery of the aforementioned objectives by contributing to improvements along the wider A37/A4018 corridor.

West of England Combined Authority Transport Delivery Plan (2021)

The Combined Authority Transport Delivery Plan⁶ was published in February 2021. The document outlines the current funded transport projects that will be progressed over the next five years across the West of England region. The programme of transport delivery has been developed to address challenges set out in JLTP4.

The document focuses on delivering a post-COVID recovery of the transport system, addressing climate change, reducing car dependency, reducing congestion and addressing poor air quality.

The Transport Delivery Plan's five objectives are to:

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

The FBC scheme will support the delivery of all objectives mentioned above. This is because the improvements to walking and cycling infrastructure will improve accessibility for pedestrians and cyclists and make the public realm more attractive which in turn will contribute to reduced carbon emissions and better air quality. Further to this, the anticipated update in active travel will bring health benefits to users. Additionally, the removal of outdated VMS around the city is anticipated to reduce vehicle circulation around the city centre which is also anticipated to result in health benefits in terms of better air quality.

Combined Authority Local Cycling and Walking Infrastructure Plan (2020-2036)

The Combined Authority's Local Cycling and Walking Infrastructure Plan (LCWIP)⁷ was published in March 2020 and outlines how the West of England authorities will aim to boost the infrastructure surrounding local walking and cycling. This is with the goal to make walking and cycling the preferred travel modes for all short journeys and as a part of longer journeys. The key targets of the policy are to:

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

The Bristol Bridge scheme will contribute to health and wellbeing, improved air quality as well as higher quality public space through the anticipated uptake of walking and cycling as a result of the improvements which will be implemented.

⁶ [TRANSPORT DELIVERY PLAN \(westofengland-ca.gov.uk\)](https://www.westofengland-ca.gov.uk/transport-delivery-plan)

⁷ [Full-LCWIP-Jan-2021.pdf \(westofengland-ca.gov.uk\)](https://www.westofengland-ca.gov.uk/full-lcwip-jan-2021.pdf)

Local policies

Bristol Transport Strategy (2019)

Bristol Transport Strategy⁸ was adopted in July 2019 following a public consultation in Autumn 2018. It sets out a vision for a city that is well-connected, and which enables people to move around efficiently with increased transport options that are accessible and inclusive to all.

The Strategy sets out six key challenges which the city faces and which the A37/A4018 bus corridor will help to address. These are:

- **Housing, jobs and regeneration:** over 100,000 new homes and new jobs needed across the region by 2036.
- **Equality:** Bristol has some of the most deprived areas across 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 and around 300 deaths a year due to air pollution.
- **Better places:** the city needs to address 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.
- **Sustainable growth:** the city needs to support economic growth and accommodate emerging technologies while cutting carbon emissions.

The Strategy sets out a number of outcomes which the scheme may help to deliver. The scheme will help to deliver outcomes 1,2,5 and 6 as set out below

- **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 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.

The Transport Strategy is relevant to this scheme, as the scheme will help to promote health and better spaces, and by increasing active travel infrastructure capacity will help to support sustainable growth.

Bristol Cycle Strategy (2015)

The Bristol Cycle Strategy⁹ was published in 2015 and sets out the Council's commitments to investing in cycling. It sets out the following objectives that should be met from any future investments in sustainable travel.

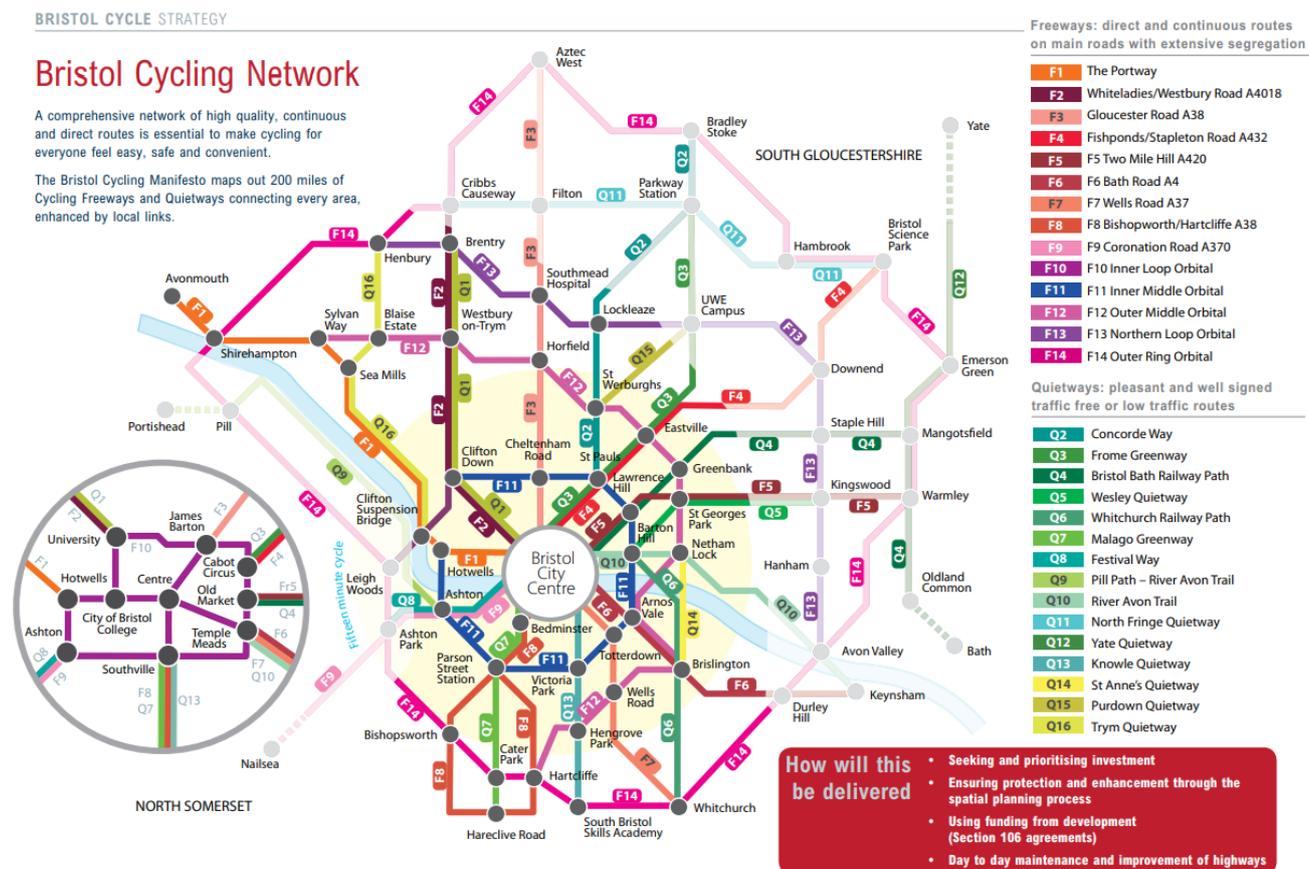
- **Sustainable economy:** 20% of commuter trips to city centre by bicycle.
- **Laboratory for change:** delivery of cutting-edge cycle projects.
- **Healthy children:** 20% of children cycling to secondary school.
- **Normalising cycling:** progressing delivery of attractive, safe, 8 to 80 cycle networks.
- **Increasing confidence and safety:** 75% of pupils to have completed Level 2 Bike ability training by end of primary school. Increasing number of adults taking up training year on year.

Figure 2-3 below provides an overview of the Bristol Cycling Network that the Bristol Bridge scheme will help contribute towards.

⁸ [383a996e-2219-dbbb-dc75-3a270bfce26c \(bristol.gov.uk\)](https://www.bristol.gov.uk/383a996e-2219-dbbb-dc75-3a270bfce26c)

⁹ [Bristol-Cycle-Strategy-Jan2015.pdf \(bristolcycling.org.uk\)](https://www.bristolcycling.org.uk/Bristol-Cycle-Strategy-Jan2015.pdf)

Figure 2-3 - Proposed Bristol Cycling Network (as per 2015 Bristol Cycle Strategy)

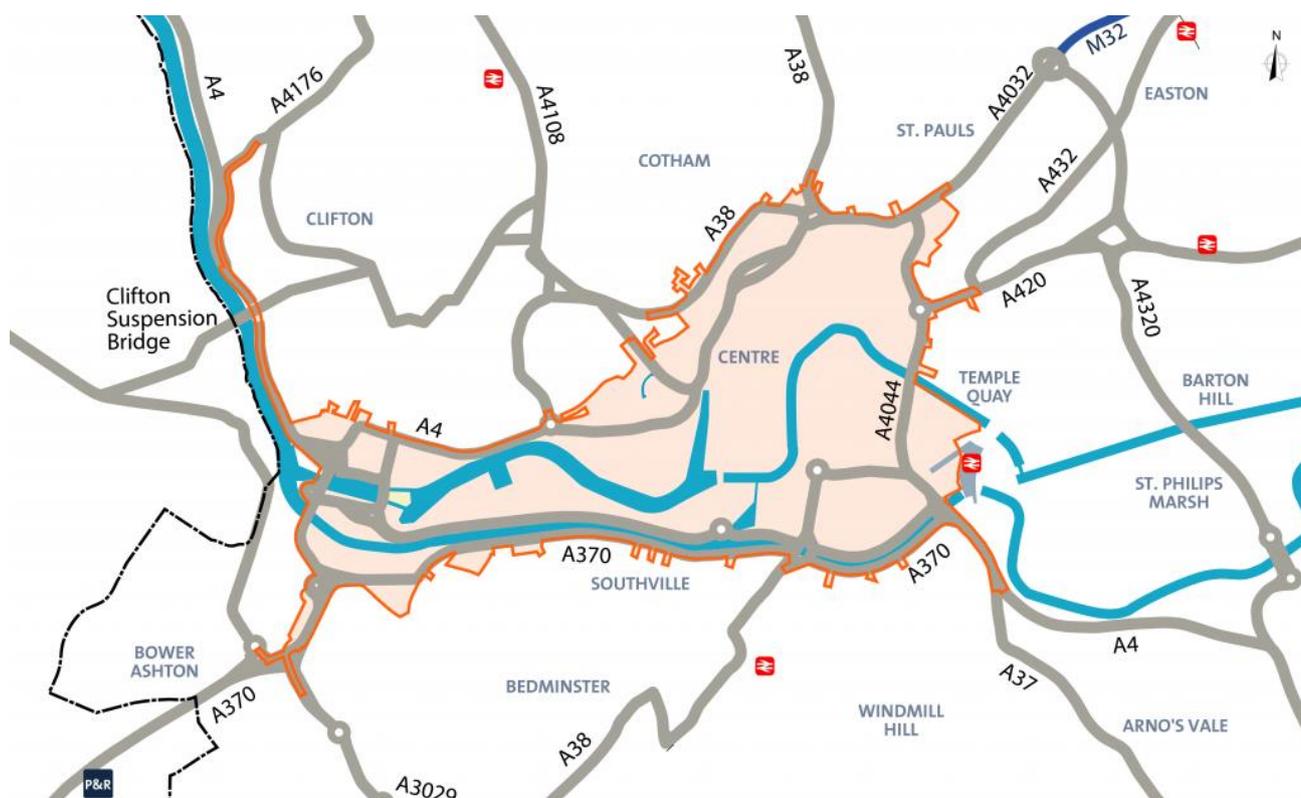


Bristol Clean Air Zone (2022)

The Bristol Clean Air Zone¹⁰ (outlined in Figure 2-4), which is due to be introduced in late 2022, will aim to improve air quality by discouraging vehicles which significantly contribute to harmful air pollution levels through daily user charging. This revenue will then be reinvested back into the local community, supporting individuals and businesses to switch to less-polluting modes, such as walking and cycling, and to switch to cleaner vehicles for both personal and public transport.

¹⁰ [Bristol's Clean Air Zone - bristol.gov.uk](http://bristol.gov.uk)

Figure 2-4 - Bristol Clean Air Zone



The scheme will help to deliver the Clean Air Zone as the improvements to walking and cycling infrastructure will provide local residents with an alternative means of accessing the city centre. The removal of outdated VMS signs around the city centre will also help in reducing car circulation for those still using private vehicles as a mode of transport.

2.3. Case for change

In this section, the case for change is presented, evidencing what the proposed scheme seeks to achieve through consideration of its strategic alignment, an analysis of contemporary transport issues along the A37/A4018 and through a clear identification of the impacts of not changing. SMART objectives are then identified, rooted in the identification of transport problems. The risks and constraints to the scheme are then presented.

2.3.1. Identified problems and evidence

A number of transport issues have been identified along the Bristol Bridge section of A37/A4018 transport corridor:

- Issue 1: Outdated signals at risk of failing.
- Issue 2: Air quality issues in Bristol city centre.
- Issue 3: Unattractive public realm which is car dominated.
- Issue 4: Lack of continuous cycling infrastructure.
- Issue 5: Vehicle circulation when looking for car parks.

Issue 1: Outdated signals at risk of failing

The traffic signals at Bristol Bridge are old and are at risk of falling and/or having to be condemned. The signals on this site are 29 years old. Traffic signals equipment has a design life of around 15 years; therefore the signals have long surpassed their design life and need to be replaced with modern standards in order to cater for current demand of increased active travel users.

Further to this, the signals no longer reflect their current usage due to their outdated design. The existing junction configurations and signal sequences have been designed to control large volumes of traffic, where the conflicting movements for vehicles, pedestrians and cyclists need to be separated out in order for them to be safely made. The signal sequence then has to run minimum green times (7 seconds) and minimum all-red clearance times (5 to 10 seconds), which are currently overly generous due to the Bristol Bridge ETRO restricting vehicle movement. As such, the junction at Bristol Bridge is already running on minimal signal timings but still takes over a minute to complete a whole cycle, catering for each turn and crossing, thus making the offer for pedestrians and cyclists inadequate.

Issue 2: Air quality issues in Bristol City Centre

Congestion continues to impact on air quality in Bristol, with the city centre being designated as an Air Quality Management Area (AQMA), and a Clean Air Zone will be introduced in 2022. The Government set legal limits for pollution, which means that Bristol City Council needs to ensure those limits are met within the shortest possible time. Figure 2-5 shows the NO₂ diffusion tube data for 2020. It can be seen that there are number of sites across the city centre which exceed the legal limit of nitrogen oxide (40ugm).

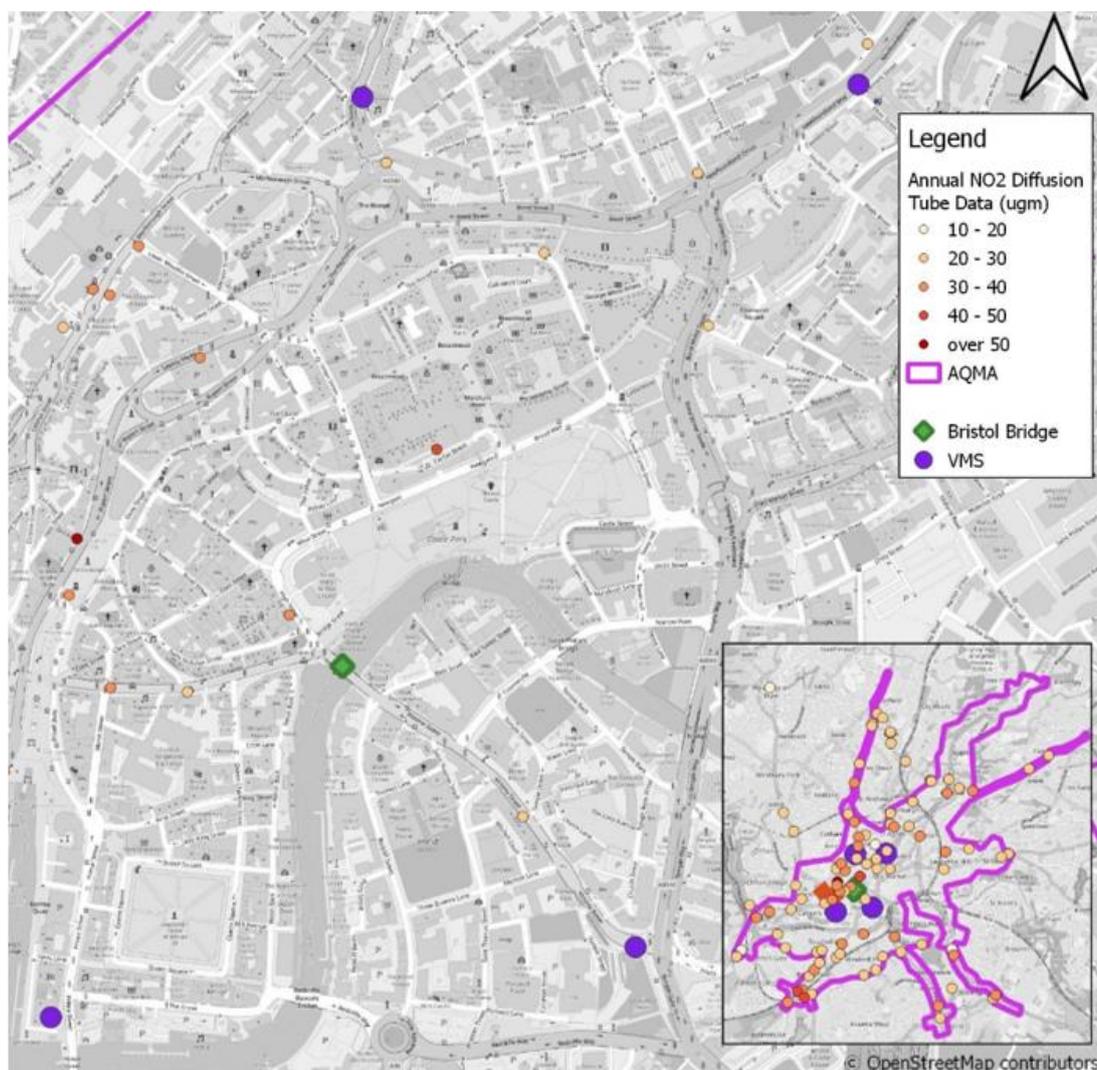
Road traffic is a major source of air pollution in towns and cities, particularly diesel engines. Poor air quality has an adverse effect on the population, in particular older people, children and those with certain underlying health conditions. Toxic air pollution contributes to 300 deaths per year in Bristol¹¹.

Transport is also the second largest source of carbon emissions in the UK, accounting for about 27% of greenhouse gas emissions. Within domestic transport the car accounts for 55% of the GHG emissions so cars are therefore a main target for reducing GHG emissions in order to achieve net zero³.

The proposed cycling scheme will help to deliver the city council's climate emergency agenda by helping to increase the uptake of walking and cycling, and consequently encourage a mode shift away from private vehicles which is anticipated to improve air quality within the city centre.

¹¹ <https://www.cleanairforbristol.org/caz/>

Figure 2-5 - NO2 diffusion tube data in the context of the scheme



Issue 3: Unattractive public realm which is car-dominated

Pedestrians suffer from an unattractive public realm in the City Centre. The key problems at Bristol Bridge include:

- Outdated traffic signals which disadvantage pedestrians.
- Poor signposting.
- Narrow footpaths.
- Lack of convenient crossing points leading to severance.
- Lack of a segregated cycle lane.

As illustrated in Figure 2-6, in general, the environment for pedestrians is hostile with limited crossing points given a historic tendency to prioritise motorised traffic over pedestrians.

Figure 2-6 - Bristol Bridge¹²



Issue 4: Lack of continuous cycling infrastructure

Cyclists suffer from poor cycling conditions at Bristol Bridge. The key challenges cyclists are faced with are:

- A lack of a segregated cycle lane which makes the environment for cyclists less safe.
- A lack of pedestrian and cycle priority at Redcliff Street Junction which creates a hostile environment for active travel users.
- A lack of connection crossing for pedestrians and cyclists which result in increased severance.

Further to this, desktop analysis using the CrashMap platform¹³ has revealed that a serious collision involving a pedal cycle occurred in 2021 on Bristol Bridge.

Figure 2-7 illustrates the current provision of lack of segregated cycling facilities pedestrian and cycling facilities on the A37/A4018 corridor.

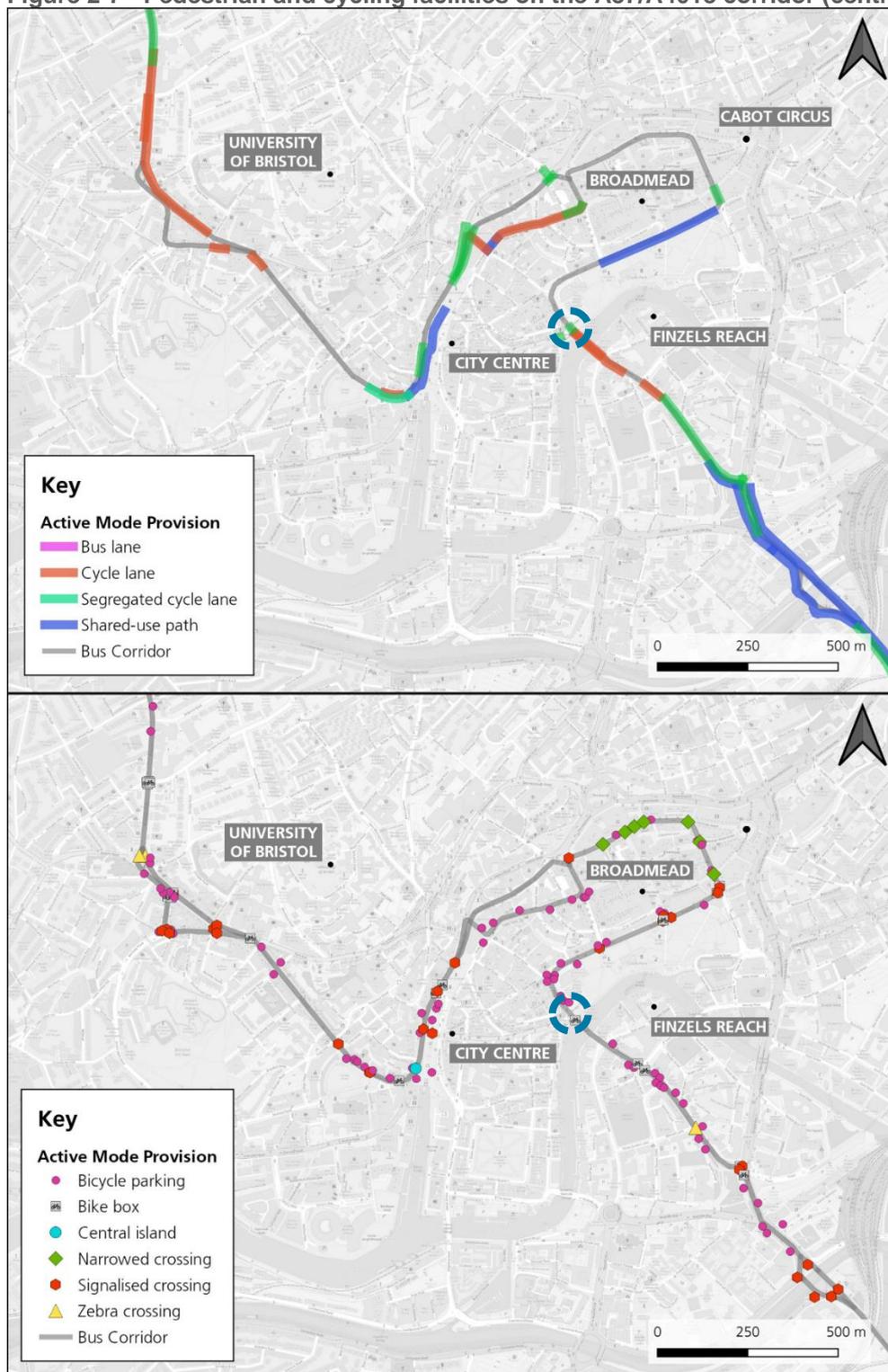
The proposed improvements would help to fulfil the council's agenda to provide continuous cycling facilities throughout the city and ensure cyclist priority at Bristol Bridge. Furthermore, a report published from Vivacity¹⁴, a provider of traffic count data for BCC, finds that Bristol Bridge serves as a major connector for cyclists through the city and an evident surge in cyclists has been observed since 2021. This highlights the importance of Bristol Bridge in connecting key routes through the city and thus the need for dedicated cycle infrastructure to make it easier and safer for cyclists to cross the bridge.

¹² Google Streetview

¹³ [CrashMap](#)

¹⁴ [Bristol is Using Vivacity Labs Sensors to Monitor Cycling Trends - Vivacity Labs](#)

Figure 2-7 - Pedestrian and cycling facilities on the A37/A4018 corridor (central section)



Issue 5: Vehicle circulation when looking for car parks

Closely related to the evolution of the Bristol Bridge junction project was the preceding Bristol Bridge Experimental Traffic Order (ETRO) project. The Bristol Bridge ETRO predicated the current Traffic Regulation Order which introduced the current Bus Gate system now in operation at the Bristol Bridge junction, Victoria Street, St Augustine’s Parade and Union Street.

Following this change to the road network four VMS signs are no longer appropriate and need replacing as a consequence of the Bristol Bridge ETRO to TRO project. The Bristol Bridge ETRO to TRO project removed general traffic thus making possible the proposed new Bristol Bridge junction design.

The Traffic Control Service has identified that a leading cause of congestion in the city centre on weekends and during school holidays is circulating traffic looking for parking, or queuing outside of car parks, awaiting entry.

A commonly implemented solution to this is a car park guidance system. A car park guidance system is a dynamically updated roadside signage system, which routes drivers to available parking spaces around the city network. These systems can reduce congestion in the vicinity of car parks by effectively routing drivers to car parking with available spaces. They can also reduce the instances of drivers queuing on the highway for entry to full car parks.

The Traffic Control Service therefore manages a car park guidance system for the larger city centre car parks and will continue to maintain and develop this system for the foreseeable future. As the city centre road network has changed, it is necessary to alter the car park guidance system to accommodate those changes. The VMS and reasons for why they are no longer appropriate are detailed below:

- VMS 1: Temple Meads – the facing is no longer appropriate due to altered road layout.
- VMS 2: The Grove - the facing is no longer appropriate; it is not possible to access Broadmead car parks from this road anymore.
- VMS 3: Newfoundland Circus inbound - the facing is no longer appropriate, the centre can only be accessed by turning right, not left with the new road layout.
- VMS 4: Stokes Croft inbound – the facing is no longer appropriate, ‘Centre’ can only be accessed by turning right, not left with the new road layout.

These existing VMS result in circulating vehicles which in turn led to longer travel distances. Consequently, this has contributed to increased carbon emissions and depleted air quality. Figure 2-8 to Figure 2-11 identify the locations where the VMS are in need of replacement.

Figure 2-8 - VMS at Temple Meads

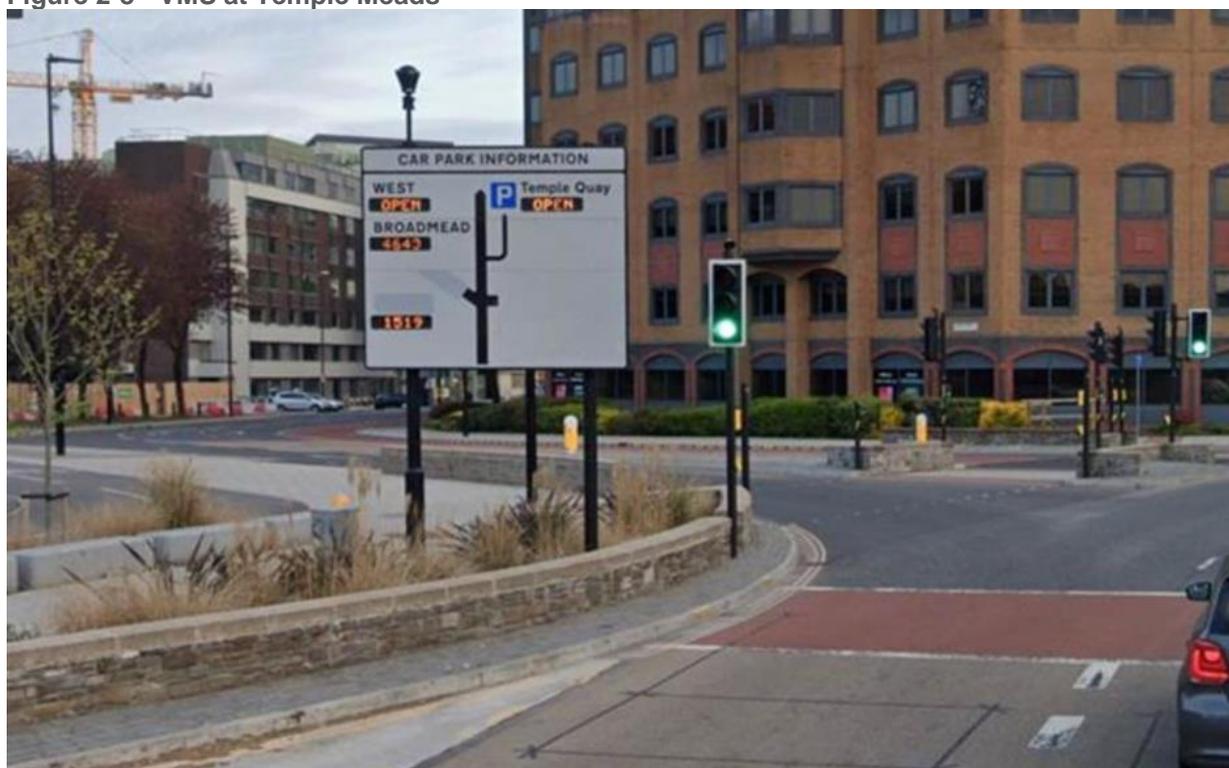


Figure 2-9 - VMS at The Grove



Figure 2-10 - VMS at Newfoundland Circus (inbound)



Figure 2-11 - VMS at Stokes Croft inbound



2.3.2. Impact of not changing

The lack of intervention at Bristol Bridge junction is anticipated to result in **traffic signals failing**. This would create an unsafe road environment for pedestrians and cyclists due to the uncertainty around safe crossing times.

In addition, the lack of improvements to active travel infrastructure could result in **low levels of cycling** uptake. This would have a negative impact on the city and Combined Authority's aim to decrease carbon emissions in the city centre and as a result BCC and the Combined Authority may not meet their committed Net Zero targets and CAZ agenda. Further to this, cycling has the potential to bring physical and mental health benefits therefore the lack of cycling uptake could impede the Combined Authority's objective of improved wellbeing.

Furthermore, **air quality** would continue to suffer. The city centre includes a number of sites which are routinely in excess of legal air quality limits. A continuation of traffic circulating would negatively impact Bristol City Council's ability to meet the aims of its prospective CAZ.

Mode shift targets from car use to more sustainable modes of transport would not be achieved. Data from Vivacity¹⁵ shows that cyclist counts are higher along routes that have a shared cycle path or a protected cycle lane, highlighting the importance of dedicated active travel infrastructure in achieving a mode shift.

Without change, the **public realm** quality on key urban arteries will continue to be sub-par. Improvements in the public realm have the potential to spur growth in particular sectors of the economy such as local retail. High streets and urban centres are more likely to thrive if people find it more attractive to walk and cycle to them. This applies to residents as well as visitors, who are more likely to have a positive. Public realm improvements which benefit walking and cycling can increase retail sales by up to 30%¹⁶. Hence, the lack of walking and cycling infrastructure improvements could contribute to a negative impact on the city centre's economy.

¹⁵ [Bristol is Using Vivacity Labs Sensors to Monitor Cycling Trends - Vivacity Labs](#)

¹⁶ Pedestrian Pound (2018)

2.4. Objectives

Following the identification of the transport problems, the scheme objectives are identified as follows, with their measures of success identified in Table 2-5.

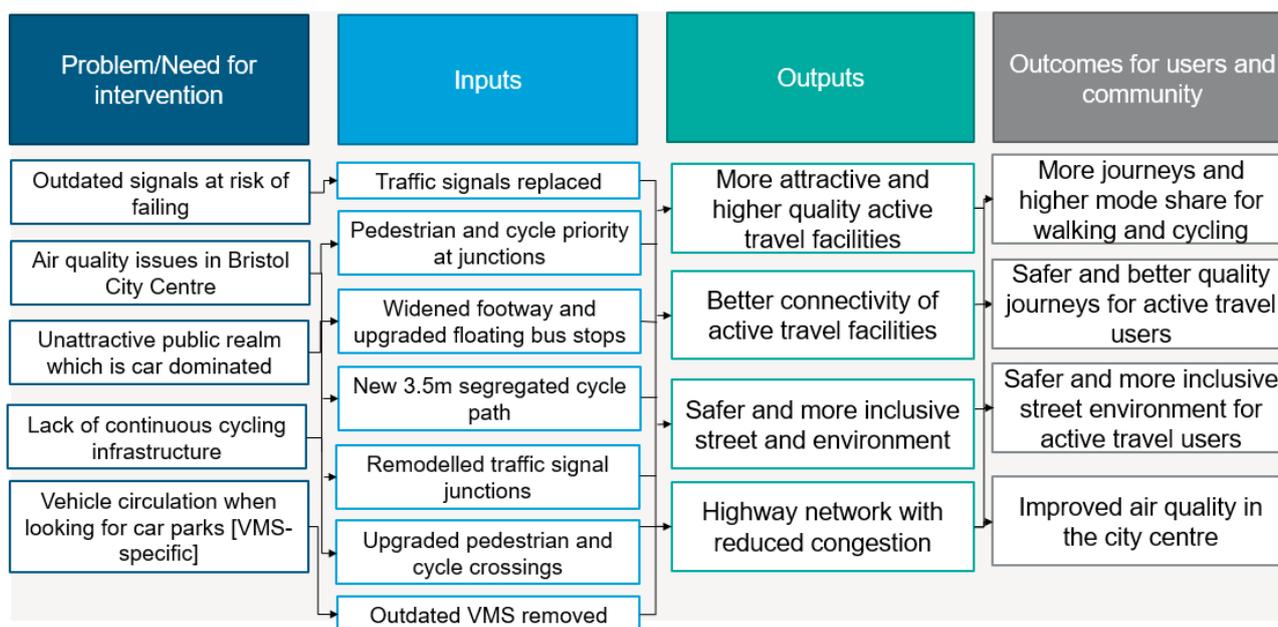
Table 2-4 - Scheme objectives

Theme	Objective
Mode shift	Increase the proportion of journeys undertaken by walking and cycling along Bristol Bridge.
Environment	Reduce levels of air pollution and CO ₂ emissions at Bristol Bridge.
Urban realm	Enhance streetscape, public spaces and urban environment at Bristol Bridge.
Safety	Improve road safety at Bristol Bridge for active travel users through the provision of segregated cycleways.
Circulation	Making sure the VMS signs are up to date with the existing traffic arrangements to avoid unnecessary circulation of traffic around the city centre.

2.4.1. Logic map

Problems, inputs, outputs and outcomes for users are identified in the logic map in Figure 2-12.

Figure 2-12 - Logic map



2.5. Measures for success

Table 2-5 - Measures of success

Objective	Measure
Mode shift: Increase the proportion of journeys undertaken by walking and cycling along Bristol Bridge.	An observed increase in walking and cycling levels at Bristol Bridge.
Environment: Reduce levels of air pollution and CO2 emissions at Bristol Bridge.	Reduction in NO2 emissions observed at diffuser tubes
Urban realm: Enhance streetscape, public spaces and urban environment at Bristol Bridge.	Provision for walking, cycling and wheeling journeys consistently meets standards in LTN 1/20 including i) separation of cyclists/wheelers from other vehicles and pedestrians and ii) continuity within the A37/A4018 corridor.
Safety: Improve road safety at Bristol Bridge for active travel users through the provision of segregated cycleways.	The impact on the risk of collision that involves active mode users should be neutral or improved based on casualty data collected 5 years on from the scheme.
Circulation: Making sure the VMS signs are up to date with the existing traffic arrangements to avoid unnecessary circulation of traffic around the city centre.	Routing surveys before and after the scheme to ensure car park users travel using shorter and more efficient routes

2.6. Constraints

With Transforming City Fund (TCF) having restricted spend stipulations (completion by April 1st 2023), the main constraint to this project is the short timescale as there is little room for delays. Additionally, there are implications of the short timescale on the affordability of this project as the failure to complete the project by the set deadline could result in the lack of funding.

2.7. Interdependencies

The delivery of the Bristol Bridge scheme is related to the wider A37/A4018 bus corridor project. The success of the scheme and, in regard to city-wide objectives, is dependent on the completion of the wider A37/A4018 corridor project. This is particularly relevant as both schemes are aiming to provide continuous walking and cycling infrastructure across Bristol. Therefore, the successful completion of both schemes is necessary to ensure such continuity.

2.8. Stakeholders

A range of stakeholders have been identified throughout the development of the A37/A4018 City Centre Junctions scheme, as well as the wider corridor study. Key partners that have been involved to date include:

- Bristol City Council.
- The Combined Authority.

A public consultation was held in early 2022 on the proposed improvements for the number 2 bus route (A37/A4018). The Bristol Bridge scheme formed part of the proposed improvements. The public were asked to provide their feedback on the proposals.

2.9. Option development

This section provides an introduction to the different options which have been identified as being potentially able to meet the objectives identified above. Although the study is focussed on providing improvements to Bristol Bridge junction in Bristol City Centre, as per the DfT's guidance, alternative options to the proposed interventions are also presented.

Option 1: Do Nothing

A Do Nothing scenario would result in the scheme not being brought forward. Therefore, the traffic signals at Bristol Bridge junction would not be replaced, along with no improvements being introduced to the walking and cycling infrastructure. Additionally, the outdated VMS signs would not be replaced.

This option would not generate any improvements to walking, cycling, and consequently would not contribute to addressing the climate emergency, as outlined in section 2.3.2. Furthermore, it would not support the delivery of objective outlined in section 2.4. Therefore, this option is deemed as not acceptable.

Option 2: Do Minimum

The Do Minimum would encompass the replacement of traffic signals at Bristol Bridge only. This option would result in slight improvements of crossing facilities for cyclists and pedestrians, but it would not address the lack of continuous cycling infrastructure and lack of priority for cyclists at Bristol Bridge. The outdated VMS would not be replaced and therefore the problem of vehicle circulation would not be addressed. Consequently, this option would not support the delivery of all objectives outlined in section 2.4.

Option 3: Do Something

The Do Something entails the replacement of traffic light signals at Bristol Bridge junction. Additionally, this option involved the provision of a dedicated and segregated cycleway as well as the expansion of footways. Crossing facilities would also be changed to make them more favourable for pedestrians and road layout would be changed to give priority to cyclists. VMS would be removed the address the problem of vehicle circulation around the city centre.

This option would align with the objectives of the wider corridor study and contribute towards the climate emergency agenda.

2.10. Options assessment

A tailored high-level Multi-Criteria Assessment Framework (MCAF) has been developed to assess the three scheme options against the project's Critical Success Factors (CSFs), which are the attributes essential for the successful delivery of the project. The CSFs cover a breadth of considerations across the Business Case appraisal process and are well-aligned with DfT and HM Treasury Guidance, as well as with the scheme's objectives.

In line with the guidance for this stage of assessment, the MCAF scoring has been undertaken using a 3-point qualitative scoring system with all the criteria given the same weighting. Table 2-6 sets out the alignment of the assessment criteria with the specific components of the objectives, and the data and rationale used for the judgement of scoring. The assessment is then presented in Table 2-7.

Table 2-6 - Criteria for Option Assessment

Critical Success Factors	Aligned Scheme Objectives	Source of Data Used for Assessment	Rationale for Scoring
Policy Fit	Alignment with policy	Professional judgement of alignment to objectives	<p>+1 – the intervention is aligned with a lot of policy.</p> <p>0 – the intervention is aligned with some policy.</p> <p>-1 – the intervention has little or no alignment with policy.</p>
Contribution to Improved Transport Network	Provide improved walking and cycling facilities	Provision of new traffic lights at junctions	<p>+1 – the intervention improves crossing facilities for pedestrians and cyclists.</p> <p>0 – neutral impact, the intervention improves crossing facilities for pedestrians or cyclists.</p> <p>-1 – the intervention does not improve crossing facilities for pedestrians or cyclists.</p>
	Provide a safer transport network for cyclists and pedestrians	Provision of a segregated cycle path and crossing facilities	<p>+1 – the intervention provides a dedicated, segregated cycling infrastructure.</p> <p>0 – neutral impact, the intervention provides dedicated cycling infrastructure.</p>

Critical Success Factors	Aligned Scheme Objectives	Source of Data Used for Assessment	Rationale for Scoring
			-1 – the intervention does not provide dedicated or segregated cycling infrastructure.
	Address congestion in the City Centre.	Demand for scheme option	+1 – the intervention would reduce delays. 0 – neutral impact, the intervention will have minimal delay change impacts. -1 – the intervention will increase delays.
Contribution to Quality of Life	Address carbon emissions and air quality	Demand for scheme option	+1 – the intervention would significantly encourage modal shift away from private cars. 0 – neutral impact, the intervention would have a small impact on modal shift away from private cars. -1 – the intervention would have no impact on modal shift away from private cars.
	Affordability	Initial cost brackets	+1 – the intervention’s capital costs are expected to be below £2m. 0 – the intervention’s capital costs are expected to be between £2m and £2.5m. -1 – the intervention’s capital costs are expected to be more than £2.5m.
Scheme Deliverability	Engineering and environmental constraints	Professional judgement and knowledge of the scheme and local area, and scheme drawings and design	+1 – the intervention’s delivery faces no key constraints. 0 – the intervention’s delivery faces some constraints which may be mitigated. -1 – the intervention’s delivery faces key constraints and other constraints which cannot be mitigated.
	Risks and uncertainties	Professional judgement as to the key delivery risks	+1 – the intervention’s delivery faces limited delivery risks. 0 – the intervention’s delivery faces some delivery risks which may be mitigated. -1 – the intervention’s delivery faces some key delivery risks.
	Project delivery timescales	Professional judgement as to how long the project might take to deliver	+1 – the intervention can be delivered in under 10 months. 0 – the intervention can be delivered in between 10 and 12 months. -1 – the intervention is unlikely to be delivered in over 12 months.

Table 2-7 - Multi Criteria Assessment of Options

Interventions		Policy Fit	Contribution to Improved Transport Network			Contribution to Quality of Life	Scheme Deliverability				Total Score
		Alignment with key policies and strategies	Provide improved walking and cycling facilities	Provide a safer transport network for cyclists and pedestrians	Address congestion in the City Centre	Address carbon emissions and air quality	Affordability	Engineering and environmental constraints	Risks and uncertainties	Project delivery timescales	
Do Nothing – Option 1	Score	-1	-1	-1	-1	-1	1	1	1	1	-1
	Summary of performance and key constraints	A Do Nothing scenario would not deliver any of the necessary improvements, and as a result it would not contribute to the delivery of the policy objectives. It scored positively in terms of scheme deliverability as a Do Nothing scenario would essentially result in business as usual and no additional funding would be required.									
Do Minimum- Option 2	Score	0	1	-1	-1	0	1	1	1	1	3
	Summary of performance and key constraints	Solely replacing the traffic lights at Bristol Bridge would address the imminent problem of traffic lights failing, and it would consequently provide improved crossing facilities for pedestrians and cyclists, as new signals will be able to extend green lights to active travel users. However, this option is anticipated to have a very slight impact on active travel uptake. Hence, it would not have significant impact on delivering policy objectives. This option would perform well in terms of timescales and affordability, but it would not deliver the necessary improvements to address the wider transport and environmental issues.									
Do Something- Option 3	Score	1	1	1	1	1	0	1	1	1	8
	Summary of performance and key constraints	Replacing the traffic lights and delivering improvements to walking and cycling infrastructure at Bristol Bridge, as well as removing outdated VMS around the city centre would help to deliver a number of policy objectives. Additionally, it would support the delivery of the wider A37/A4018 corridor improvements. There are minimal constraints associated with this option, and the deadline set by TCF of scheme completion by 1 st April 2023 should be considered as the scheme progresses to ensure timely delivery.									

As outlined in Table 2-7, the MCAF has showed that a Do Nothing scenario (option 1) scored the least (-1), Do Minimum scenario (option 2) scored 3 overall, and a Do Something scenario (option 3) scored the highest (8). For this reason, option 3 is brought forward.

2.11. Environmental sustainability and climate change considerations

Environmental sustainability has been considered throughout the scheme development process, primarily by ensuring the scheme objectives align with the overarching ambitions and existing policies of both BCC and the Combined Authority with regards to environmental sustainability. By encouraging further use of sustainable means of travel, the scheme supports the Combined Authority and BCC objectives.

3. Economic Case

3.1. Introduction

The purpose of the Economic Case is to demonstrate the Value for Money (VfM) of the scheme through an assessment of the scheme's likely costs and benefits. A VfM assessment typically includes assessing all the economic, environmental, social and distributional impacts of a proposal, using either qualitative, quantitative or monetised information. These impacts are not limited to those directly impacting on the measured economy, nor to those which can be monetised. The TAG Databook Nov 2021 is the source of values used throughout the subsequent appraisal. The Economic Case covers the following topics as part of the overall VfM assessment:

- Appraisal methodology.
- Demand forecast and economic impacts appraisal approach.
- Economic appraisal summary.
- Unquantified impacts.
- VfM assessment.

3.2. Appraisal methodology

The appraisal methodology is split into active modes and VMS to provide a distinction between the two different types of schemes that make up the project. The scope of the appraisal was led by the identified objectives and outcomes from the Strategic Case.

3.2.1. Active modes

The scheme entails the improvement of active travel infrastructure at Bristol Bridge, as well as the replacement of four VMS across the city centre. The economic appraisal of cycling and walking infrastructure has been appraised using the Active Model Appraisal Toolkit (AMAT).

The VMS economic appraisal used a different methodology. Google Maps were used to calculate current and future travel times to car parks from the four VMS locations. Analysis using a spreadsheet matrix was then undertaken to calculate the Value for Money of this intervention.

Table 3-1 - Summary of data and assumptions driving walking and cycling forecasts

	Future impacts or benefits quantified	Methodology	Relevant parameters and assumptions and sources
1	Future cycling demand	Analysis of forecast increase in cycling using DfT's PCT tool. Active Mode Appraisal Toolkit.	Existing traffic counts at Vivacity sensors and MCC locations.
2	Benefits of higher quality public realm on pedestrians	Analysis of scheme drawings to identify improved public realm elements. Active Mode Appraisal Toolkit.	Scheme drawings.

The Active Mode Appraisal Tool (AMAT) is a spreadsheet model developed within the Department for Transport to estimate key economic impacts from cycling and walking interventions. It follows the appraisal guidance consistent with that set out in TAG Unit A5.1 Active Mode Appraisal (May 2022 version). The Propensity to Cycle Tool (PCT) was used to forecast the increase in the number of pedestrians and cyclists on account of the proposed scheme.

AMAT assessments were completed for Bristol Bridge and weekend monetised benefits which were later combined to provide overall annual scheme impacts. Following this, the outputs are then totalled to provide the PVB/PVC and subsequently the BCR.

Benefits have been assumed to accrue from 2024 over a period of 20 years, based on the design life of the investments. Application of growth in parameters such as values of time and of discounting to 2010 is carried out as part of the AMAT function.

A range of inputs and parameters are required in order to undertake the relevant economic assessment using AMAT, these primarily include:

- The pre-scheme and post-scheme level of walking and cycling infrastructure along the route.
- The number of walking/cycle trips per day within the scheme area before and after the introduction of the proposed scheme.
- The length of the improved walking/cycle route as a percentage of the average length of a walking/cycle trip which travels through the infrastructure.

Due to the lack of continuous and segregated cycling infrastructure at Bristol Bridge, for the purpose of appraisal, the parameter for current level of provision within the AMAT was input as 'on-road non-segregated cycle lane', and the post-scheme infrastructure was categorised within AMAT as an 'on-road segregated cycle lane', reflecting the segregation of cyclists.

The improvement in the quality of the environment for pedestrians was also inputted into AMAT, with the introduction of benches, pavement evenness and reduced crowding at the location recorded. During the appraisal, it was assumed that the scheme would not lead to an uplift in the number of pedestrians in the intervention area, which is a conservative assumption.

3.2.2. VMS

Spreadsheet appraisal was undertaken for the assessment of the impacts of replacing the four VMS. Table 3-2 sets out the methodology for the VMS appraisal.

A spreadsheet-based appraisal has been used to monetise the expected benefits of VMS replacements. The appraisal establishes the size of travel market to identify travel demand and the number of users that may be impacted by VMS.

The impacts of upgraded VMS are assessed based on journey times and distance travelled. Journey planning data has been used to establish:

- Current time and distance taken from VMS sign to destinations marked on the existing VMS.
- Future time and distance taken from the VMS to destinations marked on the proposed VMS.
- Most direct route time/distance vs. current route time/distance.

An assumption is that VMS will not change demand for car parking in Bristol city centre, while induced demand is beyond scope.

Table 3-2 - Summary of data and assumptions for VMS appraisal

	Future impacts or benefits quantified	Methodology	Relevant parameters and assumptions and their sources
1	Journey time savings	Analysis of journey times using routing advised by existing VMS against routing advised by the new VMS	Google Maps journey planner at AM peak weekday and IP weekend
2	Distance travelled savings	Analysis of journey distances using routing advised by existing VMS against routing advised by the new VMS	Google Maps route planner
3	Percentage of users needing the VMS	Derive the number of drivers that are reliant on the existing VMS signs for directions to the listed car parks	Assumption that 10% of drivers require VMS signage for directions
4	Car park information	Information on car park capacity and usage per day of car parks signed by the four VMS	Parkopedia for car park capacities
5	Origin of trips	How many people are driving past the VMS sign to get to that car park	Analysis of WERTM sector maps
6	Estimation of flows using VMS	Estimate the daily number of people expected to benefit from VMS sign	
7	Quantification of impacts	Generate value of time and vehicle operating cost benefits. Annualised and discounted across the 20-year scheme lifecycle	2010 Market prices and values TAG Data Book v1.18

3.3. Demand forecast and economic impacts appraisal

3.3.1. Active Mode Appraisal Toolkit

Analysis of future walking and cycling demand is documented in this section. Recent traffic counts were used to establish a baseline for the demand. The PCT was then used to estimate future forecast flows for economic appraisal.

Baseline conditions

Traffic counts were used to establish baseline conditions for the pedestrian and cyclist demand. Vivacity sensor data was used to calculate the average 24-hour pedestrian and cyclist flows on weekdays for Bristol Bridge. The baseline flows do not consider future growth (without the scheme), therefore the approach undertaken is conservative.

Scheme element	Baseline conditions (trips per day)
Bristol Bridge	2,042

Future changes in cyclist demand - Propensity to Cycle Tool

The Propensity to Cycle Tool¹⁷ (PCT), funded by the Department for Transport (DfT), provides an evidence base and future projections of what walking and cycling uptake could be achieved in England and Wales given various policy scenarios in line with the Government's target to double cycling nationally by 2026¹⁸. Data from the PCT is available as Origin to Destination trips based on Census 2011 Journey to Work data between Lower

¹⁷ <https://www.pct.bike/m/?r=avon>

¹⁸ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/364791/141015_Cycling_Delivery_Plan.pdf

Layer Super Output Areas (LSOA). The PCT then estimates for each Origin-Destination trip the potential pedestrian and cycle mode share for each of the different policy scenarios profiles given the characteristics of the Origin-Destination trip. The four profiles provided in the PCT are as follows:

- Government Target (Equality) - doubling of cycling nationally, corresponding to the target in DfT's draft Cycling Delivery Plan 2014. Increase occurs solely as a function of trip distance and hilliness equitably across age, sex, and socio-economic groups.
- Government Target (Near Market) - doubling of cycling nationally, corresponding to the target in DfT's draft Cycling Delivery Plan 2014. Increase occurs as a function of trip distance, hilliness, plus several socio-economic and geographical characteristics.
- Go Dutch - what would happen if English and Welsh people were as likely as Dutch people to cycle a trip of a given distance and hilliness. Captures proportion of commuters that would be expected to cycle if all areas of E&W had the same good cycle infrastructure and cycling culture as Netherlands.
- E-bike - Additional cycle above Go Dutch if there was widespread uptake of electric bikes.

For the purpose of this appraisal the PCT profile of Government Target (Equality) was used to calculate the percentage increase in uplift of cyclists. The economic appraisal can be considered to be conservative given that the most conservative PCT profile has been selected.

Table 3-3 - Summary of forecast cyclist uplift

Scheme element	Number of cyclists with scheme (trips per day)	Uplift
Bristol Bridge	2,613	570 (27.9%)

3.4. Scheme costs

A certain amount of costs has already been incurred prior to the submission of the FBC. These costs are regarded as 'sunk costs', which is not taken into account in the economic assessment. These costs total £36,820. Details of the sunk costs are set out in the Financial Case.

In addition to the sunk costs, the scheme's base costs are estimated to be **£1,068,884** as provided by BCC. Appropriate inflation and contingency have been considered leading to a total estimated outturn cost of **£1,652,646** (including sunk costs). Details of the breakdown are presented in the Financial Case and are summarised in Table 3-4.

The estimate for capital cost was developed by the BCC design team in 2022. The Bill of Quantities (BoQ) for the construction work was produced by the Bristol City Council Engineering and Design team in parallel with the designs for the works. The designs are construction standard and the BoQ is considered to be reflective of this. The BoQ was used along with the latest rates in the new BCC Framework (released in late 2021). These rates reflect up-to-date costs for materials, supplies, resources and already include allowance for potential inflation within 2022.

To estimate the Present Value of Cost (PVC) for appraisal, the estimated base cost was taken through the standard process recommended in TAG A1.2. Consideration of inflation was applied between 2022 and scheme opening in 2024. Section 4.3 discusses how the inflation has been arrived at and applied.

A contingency allowance of £412,183 was estimated based on an QRA exercise following the single probabilistic approach in the Green Book. Details of the QRA exercise are presented in Appendix A. After reviewing Table 8 of TAG Unit A1.2, 20% Optimism Bias (OB) is used in this FBC. As per TAG guidance, this 20% OB figure has been used for the economic appraisal rather than the quantified risk figure.

All the usual treatment of cost such as rebasing and discounting to 2010 and conversion to market price unit of account were all undertaken following TAG to arrive at a PVC of £848,491 for the combined scheme.

Operating costs are forecast to be net zero for the scheme as the cycling scheme will see reduced maintenance cost through use of more modern materials at signals (e.g. LED) which will generate fewer faults. The change of use from road to footway and public realm will generally incur less maintenance costs given that there is a slower rate of wear from pedestrians and cyclists rather than vehicles.

The costs are annual and have been profiled over the 20-year appraisal period, taking into account of real cost increase, price base adjustment to 2010 and discounting to 2010 as per the guidance in TAG.

Table 3-4 - Breakdown of scheme costs

	Bristol Bridge	VMS	Total
Sunk costs	£26,820	£10,000	£36,820
Base costs	£924,767	£144,117	£1,068,884
Inflation	£118,906	£15,853	£134,759
Risk			£412,183
Outturn cost (excluding sunk cost)			£1,615,826
Present Value of Costs (PVC)	£720,868	£114,596	£835,463

3.5. Economic appraisal summary

The Present Value of Benefits (PVB) is the summation of two benefit streams discussed in Section 3.2. Quantified benefits for the period from 2022 to 2041 are summarised in Table 3-5 below. Breakdowns are provided to demonstrate the PVBs and BCRs for the three individual scheme elements as well as the overall scheme package.

Table 3-5 - Quantified benefits

	Bristol Bridge	VMS	Combined scheme package
Present Value of Benefits (PVB)	£3.85m	£0.20m	£4.05m

Table 3-6 applies the PVB with the calculated PVC for both the overall scheme package and its individual elements.

Table 3-6 - Benefit Cost Ratios

	Bristol Bridge	VMS	Combined scheme package
Present Value of Benefits (PVB)	£3.85m	£0.20m	£4.05m
Present Value of Costs (PVC)	£0.72m	£0.12m	£0.84m
Benefit Cost Ratio (BCR)	5.3	1.8	4.8

3.6. Value for Money Statement

TAG guidance provides a framework for categorising and ranking projects by the perceived value-for-money they potentially offer the taxpayer. This allows funding bodies to compare projects against each other on a like-for-like basis when making investment decisions. The DfT's Value for Money Framework sets out each of the VfM categories that projects should be categorised into. These are set out in Table 3-7.

Table 3-7 - Overview of DfT Value for Money categories by scheme benefit-to-cost ratio

VfM Category	Implied by....
Very High	BCR greater than or equal to 4
High	BCR between 2 and 4
Medium	BCR between 1.5 and 2
Low	BCR between 1 and 1.5
Poor	BCR between 0 and 1
Very Poor	BCR less than or equal to 0

Based on an indicative BCR of 4.8 presented in Table 3-6, the scheme can be considered as having a Value for Money rating of 'very high'.

3.7. Sensitivity testing

The appraisal of walking and cycling scheme using the methodology outlined in TAG A5.1 – Active Mode Appraisal is recognised as being sensitive to forecasts and assumptions used. It is therefore recommended to undertake sensitivity tests based on the core scenario to increase the robustness of the analysis.

Sensitivity test 1: Increased scheme cost

In order to indicate the potential impact of a cost run, a test has been performed of the impact on the BCR should the eventual spend be higher than forecast. For instance, inflation may be higher than forecasted which would impact on the overall scheme cost. A 20% increase to the base cost (or PVC) has been selected. Table 3-8 highlights that the BCR would reduce to 4.0.

Table 3-8 – Sensitivity test 1: Benefit Cost Ratios

	Bristol Bridge	VMS	Combined scheme package
Present Value of Benefits (PVB)	£3.85m	£0.20m	£4.05m
Present Value of Costs (PVC)	£0.87m	£0.14m	£1.00m
Benefit Cost Ratio (BCR)	4.4	1.5	4.0

Sensitivity test 2: Changes to AMAT uplift approach

The AMAT approach presented in section 3.3.1 outlined the approach to calculating the uplift in the number of cyclists generated by the Bristol Bridge scheme. PCT's Government Target (equality) factor was selected. For this sensitivity test, the Government Target (near market) factor was instead selected. Consequently, the uplift at Bristol Bridge increases from 28% to 36%.

The results of the change to the PVB and BCR are presented below.

Table 3-9 – Sensitivity test 2: Benefit Cost Ratios

	Bristol Bridge	VMS	Combined scheme package
Present Value of Benefits (PVB)	£4.95m	£0.20m	£6.42m
Present Value of Costs (PVC)	£0.72m	£0.12m	£0.84m
Benefit Cost Ratio (BCR)	6.9	1.8	7.7

3.8. Unquantified impacts

As well as the monetised economic benefits, the scheme will also deliver several non-quantifiable benefits. In the interests of proportionality, the environmental, social and distributional, construction and maintenance impacts have been considered qualitatively. An Appraisal Summary Table (AST) is provided in Appendix D which summarises all benefits.

An increase in footfall and cycling levels

Whilst the economic benefits relating to ambience and health improvements is captured in AMAT there is a further benefit of the economic activity of increasing these trip numbers which will also be realised. The scheme will create and enhance a safer, more welcoming environment for people including the most vulnerable road users. These regenerative measures will encourage those that can, to travel across the city using sustainable modes, increasing footfall in key retail and leisure areas, subsequently increasing economic expenditure within the city.

Increased reliability for bus users

The scheme will reduce congestion as VMS users are guided in a corrected and more appropriate manner. This will reduce circulation of vehicles in Bristol city centre. A reduction in congestion will also lead to increased reliability for bus users as well as those that have a legitimate reason to travel through the centre, such as emergency service vehicles.

Air quality and noise

The scheme encourages and protects mode shift away from the use of motorised vehicles for commuting journeys, in favour the use of walking and cycling around Bristol city centre. This mode shift protected (through the provision of increased capacity) would avoid an increase in vehicle km travelled in the highway network. This reduction would therefore have a beneficial impact on noise, air quality and greenhouse gases.

Social and distributional impacts

The proposed intervention is not expected to disadvantage the sensitive groups (such as people with reduced mobility, older people, and people experiencing higher levels of deprivation) as it facilitates equitable access to walking and cycling. More detailed assessment is covered in a step one distributional impact screening (Appendix C) undertaken following the guidance in TAG unit A4.2. No further assessment was needed following the findings of the step one screening process.

4. Financial Case

4.1. Introduction

The Financial Case discusses the costs and affordability of works to deliver the City Centre Junctions package of schemes. The capital costs are presented by scheme element; and any potential additional operational, maintenance and renewals costs associated with the scheme are also considered. This section is structured as follows:

- Chief Financial Officer sign-off.
- Scheme costs.
- Spend profile and funding sources.

4.2. Chief Financial Officer sign-off

Although BCC is responsible for the delivery of the proposed intervention, the Combined Authority is the promoting body of the scheme and therefore the financial sign-off will be required from the Combined Authority. This business case also needs to obtain BCC's cabinet or delegated approval. Therefore, it will go through the BCC's internal assurance process in parallel with the grant assurance review. Both the BCC approval and the Combined Authority approval (at joint committee) is anticipated to be obtained in September 2022.

4.3. Scheme cost

The sunk cost occurred before the submission of the FBC is outlined in Table 4-1.

Table 4-1 - Sunk costs

Item	Cost
Engineering Design Fees Bristol Bridge	£14,608
C4 Design Fees Bristol Bridge – Open Reach	£9,712
C4 Design Fees Bristol Bridge - Vodafone	£2,500
Traffic Signals Design Fees	£10,000
Total sunk cost	£36,820

The total estimated scheme outturn cost is £1,652,646 which includes a sunk cost of £36,820 and further £1,615,826 for the remainder of the delivery. The estimate for capital cost was developed by the BCC design team in 2022. The Bill of Quantities (BoQ) for the construction work was produced by the Bristol City Council Engineering and Design team in parallel with the designs for the works. The designs are construction standard and the BoQ is considered to be reflective of this.

The BoQ was used along with the latest rates in the new BCC Framework (released in late 2021). These rates reflect up-to-date costs for materials, supplies, resources and already include allowance for potential inflation within 2022.

Inflation from September 2021 to March 2022 is based on ONS Construction Output Price Indices¹⁹. Inflation in subsequent years is based on the Faithful and Gould Quarterly Intelligence report²⁰ which provides a forward look on expected inflation in the construction industry. Table 4-2 shows the inflation index that has been used; inflation has been applied based on the spend profile of the scheme.

¹⁹ <https://www.ons.gov.uk/businessindustryandtrade/constructionindustry/datasets/interimconstructionoutputpriceindices>

²⁰ <https://www.fgould.com/perspectives/uk-construction-intelligence-report-q2-2022/>

Table 4-2 - Inflation index

Year	Inflation Index
Sep 2021	1.00
2022/23	1.11
2023/24	1.15
2024/25	1.18
2025/26	1.22
2026/27	1.25

Contingency was estimated through a separate Quantified Risk Assessment (QRA) exercise, which has considered the potential project risks, their likelihood, and their potential cost implications. Preparation of the QRA following the single probabilistic approach documented in the Green Book. The outcome of the QRA was an estimated contingency of £412,183. Risks considered are discussed in more detail in Section 6.4 and Appendix A.

A breakdown of the costs that yet to occur (excluding sunk costs) is provided in Table 4-3 below.

Table 4-3 - Scheme costs net of sunk costs

Infrastructure		Total	Total
Construction works and other	Civils works	£546,593	£887,954
	Site investigations	£2,800	
	Bus stops	£21,000	
	Traffic signals	£30,500	
	Street lighting and signage	£18,500	
	Landscaping and SUDS	£28,500	
	CCTV	£2,000	
	C4 estimates	£16,713	
	C3 estimates	£221,348	
Preparation and project fees including PM	PM fees	£78,158	£180,930
	Supervision fees	£85,395	
	Communications fees	£6,918	
	Monitoring and evaluation	£3,459	
	Legal fees	£7,000	
	Inflation	£134,759	
	Contingency	£412,183	
	Outturn costs (excluding sunk costs)	£1,615,826	

OPEX costs (Operational, maintenance and renewal costs) are not included in the table above. They will be funded through BCC's existing maintenance budget. Operating costs have been forecast to be net zero for the scheme as the cycling scheme will see reduced maintenance cost through use of more modern materials at signals (e.g. LED) which will generate fewer faults. The change of use from road to footway and public realm will generally incur less maintenance costs given that there is a slower rate of wear from pedestrians and cyclists rather than vehicles.

4.4. Spend profile and funding source

The spend profile for the scheme is presented in Table 4-4. It is noted that this includes a nominal allowance for monitoring and evaluation. The funding source for scheme delivery is anticipated to be the West of England Combined Authority. The scheme opening is assumed to be September 2023.

Table 4-4 - Spend profile by source and financial year

Cost heading	2022/23	2023/24
West of England Combined Authority	£509,755	£1,106,071

*Sunk cost already covered by the Combined Authority through a different funding pot

5. Commercial Case

5.1. Introduction

The Commercial Case covers the following topics which consider the operational and commercial viability of the proposed scheme, sets out the process that BCC will take in procuring services and materials to deliver the project. It also covers the approach for contract and risk management to ensure the achievement of the commercial outcome.

5.2. Output-based specification

The outputs of this scheme are as described in the Strategic Case with the scheme drawings presented in Appendix B. The cost of its implementation is set out in the Financial Case.

In summary, the scheme will deliver:

- Cycle infrastructure improvements and traffic signal replacements at Bristol Bridge.
- Replacement of four Variable Message Signs (VMS) in the city centre.

5.3. Procurement strategy

Bristol City Council operates a Framework Contract for Procuring Highway Works – BHAMaAWF (Bristol Highway Assets and Associated Works Framework). The contract runs between 2021 and 2024. The contract consists of several lots. The lots which will be used to procure the goods and services required to deliver this project are:

- Lot 1 – Machine Laid Surfacing Framework.
- Lot 4 – High Friction Surfacing Framework.
- Lot 5 – Highway Works Framework (for works under £150K).
- Lot 6 – Highway Works Framework (for works over £150K) - open competition between pre-approved contractors.
- Lot 12 – Traffic Management Framework.

BCC also appoints contractors through long-term maintenance contracts for the supply and installation of signalling equipment and the supply and installation of street lighting equipment (Including illuminated signs and other electrical connections such as bus shelters).

The contracts operate under NEC4 Terms and Conditions with a Schedule of Rates other than Lot 6. Lot 6 is open competition and Option B is generally used (Priced Bill of Quantities). There is the flexibility to use Option A or any other option, but Option B is preferred. Inflation indices are applied to the Schedules of Rates in year 2 of the contract.

5.4. Sourcing options

5.4.1. Bristol Bridge cycle scheme

The winning contractors operating on the Schedule of Rates Contracts will all be selected based on price, quality and social value. BCC goes to the first placed contractor (the 'preferred contractor' approach) and if they turn down the work there is a process in place for offering the work to the contractor in second place and so on. Tenders are evaluated based on Price, Social Value and Quality.

Lot 6 is normally awarded based on price and quality. The price is based on the tender price and an assessment of the contractor's approach to a typical compensation event. Quality is assessed by a panel. Attached is a worked example of a Lot 6 Tender Evaluation.

This goes into a tender report and is signed off by the BCC business partner and the director.

5.4.2. VMS replacements

The VMS replacements will be procured using a different route to the cycling scheme due to the different nature of the scheme. VMS replacements will be procured using a sole source framework.

BCC selected the supplier, as the signs have the lowest whole life costs. The signs have reputation of being very reliable, and for their green credentials. They are the only sign type that has water absorbant mats inside rather than heaters, so they use approximately 10x less power than the existing VMS used across Bristol.

5.5. Payment mechanisms

Contractors submit monthly accounts based on a measure of the work that has been carried out. Variations may be costed based of the Contractors submitted Framework rates, unless there is a reason why these would not be applicable. The contracts are managed in line with the NEC4 contract with the use of Early Warning Notices and Performance Measurement Indicators.

To measure performance of contractors against targets, monthly progress meetings are held, often with key stakeholders such as Network Management and the Signals Team and a culture of mutual co-operation is fostered to successfully complete contracts. There is also the threat of delay damages written into the tender in order to incentivise suppliers to deliver on-time.

5.6. Pricing framework and charging mechanisms

The form of Tender spells out the contract period, boundaries of the site, that we operate under English Law, the name of the Adjudicator, that we will communicate in English and use GBP, the contract period. The Contractor signs, BCC signs, a Purchase Order is sent (as the mechanism for payment through BCC's finance system). Cost and programme are monitored through the contract period and BCC works with the contractor to identify any potential cost or time savings as the project progresses.

The contractor submits monthly remeasure accounts which are checked by the BCC site team and a payment certificate is issued against which the contractor invoice sums due.

BCC will have a single specification, form of tender and contract for the Bristol Bridge cycling scheme and a bill of quantities and monthly accounts from the contractor for the junction. The contractor will make a payment application based of remeasured works and our site team will issue a payment certificate.

For VMS, the signs will be bought and installed through use of the approved suppliers.

5.7. Risk allocation and transfer

BCC projects are well planned and supervised to ensure that the projects are well co-ordinated and risk reduced.

Many of the risks (such as working around buried services) are apportioned to the contractor via the contract.

The selected construction company and its supply chain work in accordance with the principles as set out in NEC3/NEC4. The standard NEC3/NEC4 approach to risk will be utilised. The NEC3/NEC4 operates an early warning system where both parties notify each other of any matter that could increase the prices, interfere with the timescales or impair the effectiveness of the works. An Early Warning Register shall be maintained during the construction phase. Where change occurs these are recorded as compensation events and the Contractor maybe entitled to additional payment and extension to the programme. A Compensation Event Register shall be maintained during the construction phase.

As the project progresses it shall maintain a Project Risk Register, which includes items to do with funding, planning, legal, environmental, political and construction phase risks. It shall be maintained by the Project Manager, Principal Designer and the Principal Contractor, with appropriate support where required by the wider project team.

5.8. Contract length

BCC plans to have one contract for the Bristol Bridge cycling scheme, while the VMS can be delivered on a sole source framework, speeding up its delivery by delivering it separately.

For the delivery of the Bristol Bridge cycling scheme, BCC have allowed four months for the main civils work. The resurfacing will follow on.

BCC will maintain a high-level programme of all the projects within the programme and bring schemes forward in a timely manner.

5.9. Contract management

The project will be resourced with an NEC4 project manager and also site for larger contracts. Design support will also be offered by BCC Engineering Design.

A tender report will be prepared for each contract in the programme and signed for acceptance by the relevant BCC Director under Delegated Authority. The level of authority is dependent on the size of the contract and will be in line with BCC Financial Regulations.

It is too early to name people who will be responsible for administering contracts and will depend on the level of internal resource available and workload. This is a task that could be brought in from the private sector.

BCC's Design team will manage the contract, supervise the quality of the works, deal with accounts and undertake design support. They will also co-ordinate the third-party dependencies e.g. signals contractor, lighting contractor, utilities companies.

5.10. Social Value Act

BCC notes the importance of the Social Value Act and wishes to demonstrate its commitment to the principles of the Act and to achieving the top ten priorities listed below:

1. Promote the local economy through the use of local suppliers and the voluntary and community sector in order to create and sustain new local jobs and apprenticeships.
2. Contribute to carbon reduction targets and use resources wisely.
3. Conserve and enhance the environment, supporting biodiversity, minimising pollution and waste and making best use of the environmental opportunities of work undertaken by our suppliers.
4. Promote the personal and physical health and the mental and emotional well-being of people within Bristol and the rest of West of England.
5. Support schools and colleges e.g., through new work placement schemes, providing mentors or assisting in mock interviews.
6. Increase participation in the Children's Commissioner Takeover Challenge, find details here: <https://www.childrenscommissioner.gov.uk/takeover-challenge/>
7. Provide training, workplace experience and/or employment opportunities for:
 - People with Disabilities.
 - People with Learning Difficulties.
 - Care Leavers.
 - Young People who are not in Education, Employment or Training, or Others who may find access to employment more challenging or who may be under-represented in the workforce e.g., ex-offenders.
8. Support schools through the provision of business support services.
9. Reduce health and social care inequalities across the Bristol area.
10. Achieving a service delivery model which uses, engages, or supports the local community and voluntary sector including ideas such as adopting a local voluntary organisation as the provider's 'charity of the year'.

During the construction of the scheme, it has been agreed that the framework sourced contractors will:

- Continue to achieve priority 1 through its procurement framework - any commissions or purchases for this project will contribute to priority 1, however these could not be easily quantified.
- Continue to achieve priority 2 through its day-to-day operations – meaning that activities under this project will contribute to this priority, however these could not be easily quantified.
- Continue to achieve priority 3 through its day-to-day operations - so activities under this project will contribute to priority 3, however these could not be easily quantified.

6. Management Case

6.1. Introduction

The Management Case covers the following topics which concern how the project will be delivered. – The chapter discusses the proposed governance structures, delivery programme with key dependencies and milestones, how the project's risks will be managed, plans for effective communications and stakeholder engagement, as well as plans for monitoring and evaluation.

- Promoter and delivery arrangements.
- Project governance and delivery.
- Programme plan.
- Risks, constraints, and dependencies.
- Land acquisition, planning, and other consents.
- Project assurance.
- Monitoring and evaluation.

6.2. Promoter and delivery arrangements

The Combined Authority has secured funding for the delivery of this scheme from the Transforming Cities Fund (TCF). Bristol City Council is the organisation with responsibility for the development of this FBC and ensuring that the funds allocated for this scheme are managed effectively to ensure that the benefits of the scheme are realised.

BCC has the responsibility to deliver the scheme, which will include responsibilities for development of the designs, technical approvals and cost estimates. The BCC lead will also act as the interface between this scheme and the wider corridor study, which is currently at OBC stage.

6.3. Communications and stakeholder management

In terms of engagement for the scheme, the Bristol Bridge cycling scheme design was included in a recent public consultation on the wider A37/A4018 public consultation (29th November to 28th January 2022).

The following milestones are anticipated for the communications aspect of the project:

- Press release: announcement of successful funding bid (post the Combined Authority Committee meeting of 29th September 2022).
- Press release: announcement of works beginning. Post contractor appointment and programme agreement.

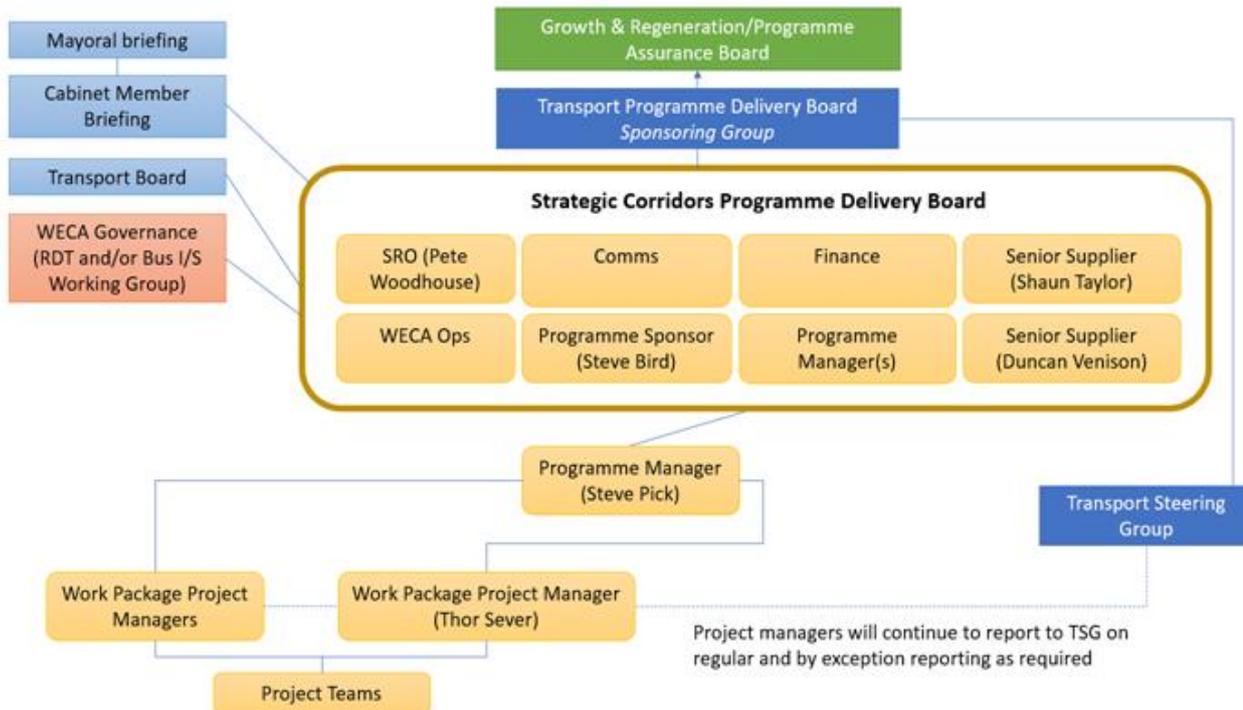
6.4. Project governance and delivery

6.4.1. Governance

Bristol Bridge Cycling scheme

Figure 6-1 illustrates the project governance structure. This integrates the Transport Programme Delivery Board with the Strategic Corridors Programme Delivery Board.

Figure 6-1 - Project governance structure



BCC has established a Strategic Corridors Programme Delivery Board which is responsible for overseeing the delivery of projects along the strategic corridors. The programme board is led by Senior Responsible Officer, Pete Woodhouse, who is responsible for the achievement of benefits identified within the business case and in alignment with the Combined Authority’s strategic objectives. The Programme Manager, Steve Pick, is responsible for the delivery of the project and is accountable to the SRO and the Programme Delivery Board. The appointed Work Package Project Manager (PM) is Thor Sever. The primary focus of the PM will be to define the Project Plan and to ensure that the project is delivered on time and within specification and budget, seeking additional financial authorities as necessary. In addition, the PM will be responsible for reporting back on progress, resolving any problems that arise and responding to changes throughout the lifecycle of the project delivery. The PM will further be responsible for the monitoring and evaluation stages of the project.

VMS scheme

Due to the basic nature of the scheme delivery, no full governance structure is required. The scheme will be delivered according to the normal practices of the department, and the signs will be bought and installed through use of the approved suppliers.

The signs will be ordered and commissioned from Swarco, with civils, poles and traffic management and project management from Yunex. The VMS signs will be delivered, and Yunex booked for traffic management and sign installation.

BCC will raise orders, inspect the installation quality and ensure it is adopted into the maintenance programmes.

6.4.2. Delivery

BCC has a proven track record of delivering major transport infrastructure alongside considerable experience in:

- Delivering major transport schemes.
- Successfully obtaining consents for major infrastructure schemes.
- Developing and maintaining good working relationship with key partners and stakeholders.
- Internal resourcing and governance requirements for major schemes.

A few examples of BCC’s successes in delivery transport infrastructure schemes are outlined in Table 6-1.

Table 6-1 - Examples of BCC's previous successes in scheme delivery

Schemes	Summary
Baldwin Street (2016)	BCC delivered a segregated bidirectional cycle lane from Bristol Bridge through the harbourside fountains linking the bottom of Park Street. This cycling infrastructure resulted in a 231% increase over 5 years.
Prince Street (2018)	A segregated bidirectional cycle lane linking Cumberland Rd across Prince St bridge to join the Baldwin Street works (as part of Metrobus). This saw a 146% increase over 5 years.
Whitehouse Street (2018)	Whitehouse Street segregated bidirectional cycle lane was installed to link Windmill Close with York Road. This particular length of cycle infrastructure is an exemplar example of continuous crossings over side roads.

Between August 2020 and July 2021 BCC implemented an Experimental Traffic Regulation Order (ETRO) at the Bristol Bridge Junction funded by Emergency Active Travel Funding. The scheme objectives were focused on the reallocation of road space to sustainable transport modes by prioritising buses, cycling and walking through a series of Bus Gates located at either end of Baldwin Street and Bristol Bridge. The effect of the Bus Gates was to remove through traffic from key corridors between the Shopping District, Temple Meads and the City Centre. These key corridors could then be utilised for sustainable transport purposes with reduced impediment from general traffic. The ETRO was made permanent in July 2021 after the results of the experimental period concluded that the road network continued to function well, taking into account the new restrictions, and that bus journey times and the conditions for active travel had improved.

6.5. Programme plan

Key project milestones are shown in Table 6-2, and a distinction between the delivery of the cycling scheme and VMS. The milestones have considered the constraints and dependencies listed in Section 6.6.2. The full programme is set out in Appendix F.

Table 6-2 - Project milestones

Item	Milestone date
BCC cabinet approval	September 2022
Funding decision in Joint Committee meeting	September 2022
Tender awarded (cycling scheme)	October 2022
VMS signs ordered (VMS scheme)	December 2022
Contractor mobilisation (cycling scheme)	December 2022
Contractor mobilisation (VMS scheme)	March 2023
Completion (VMS scheme)	May 2023
Completion (cycling scheme)	September 2023

6.6. Risks, constraints and dependencies

6.6.1. Risks

Bristol City Council's Risk Management Assurance Policy²¹ sets out the framework for the council's approach to systematic management of risk. The council is committed to maintain effective control of public funds and efficient deployment and use of resources achieving value for money.

A risk register and Quantified Risk Assessment (QRA) has been completed for the scheme, following the single point probability analysis documented in Section A5.14 of the Green Book. This approach is focused on deriving the 'expected value' of a risk by multiplying the probability of this risk occurring by the costs associated with the risk materialising. Output from the assessment is contained in Appendix A.

²¹ [10 - Appendix A - Risk Management Assurance Policy 2019.pdf \(bristol.gov.uk\)](#)

The main purpose of a QRA is to support the scheme costing to cover the construction of the scheme, by predicting the level of risk contribution, having a defined level of confidence. QRA allows for uncertainty in unplanned and unforeseen additional cost items that cannot be included in the project costs. It helps focus attention on priority areas. Consideration is given to both cost risks (financial) and schedule risks (delay).

The project risk register has identified the main risks, mitigation measures and owners. The risk register was reviewed by BCC's design and costing teams and the QRA updated accordingly on a regular basis. The management strategy will enforce a systematic approach to responding to the various risks during the project lifecycle and will continuously look to avoid, mitigate, transfer, or accept risks. In many cases, additional technical work or surveys, or early discussions with partners, will reduce or mitigate risks. Risk control measures, such as preventive, corrective, directive or detective measures will be in place to treat risks. Delivery and contractor teams will be responsible for managing their risks and reporting any newly identified risks to the PM. Risks escalated to Medium or High which could impact on the progress or financial position of the project will be referred by the BCC PM.

Several top risks identified in the risk assessment are illustrated in Table 3-3 along with their ratings before and after the proposed mitigation measures. Full details of the assessment are in Appendix A.

Table 6-3 - Top risks and their proposed mitigations

Top risks	RAG rating	Proposed mitigation measures	RAG rating (post mitigation)
High levels of inflation nationally impacts the delivery of the project	Red	An inflationary uplift has been applied to the base case cost, while an additional risk budget for inflation has been set aside at 10% of the scheme cost	Amber
TCF spend deadline of March 31st 2023 for project completion missed	Red	Project is being submitted on the basis it will be funded by TCF until March 23 or later subject to DfT confirmation, any outstanding budget required will be funded through CRSTS allocation to be considered as the process unfolds	Amber
Inflation in the construction sector impacts the construction costs of the project	Red	An inflationary uplift has been applied to the construction cost	Amber
Network availability to carry out the required delivery of the project. Bristol Bridge signal junction is located at a critical node within the Bristol central area. A full closure of the junction would need to be minimised given the long alternative routes required.	Amber	Highways works will be carefully managed by the BCC Network Management Team and any full closures would be kept to a minimum. The BCC Network Management Team co-ordinates planned highways works and events on the network and will ensure minimum disruption. The Redcliffe Bridge works are due to complete three months before the project delivery	Green
BCC and/or the Combined Authority no longer see the project as necessary in the delivery of long term aims for the region and consequently halt proceedings	Amber	Project has a strategic fit within a wider programme of corridor investment. The project is coherent with the objectives as set out in the Joint Local Transport Plan 4. Ongoing dialogue with BCC management and the Combined Authority colleagues to ensure that strategic alignment is clear. Time contingency placed at the end of the programme to allow for delay.	Green
A delay in the Combined Authority assurance process could result in a late submission of the	Amber	Ongoing communication with the Combined Authority regarding the requirements. Atkins Appraisal Specification Note (business case methodology) shared with the Combined	Green

FBC, again this could push the project back to the next Combined Authority Joint Committee date		Authority, while time contingency placed at the end of the programme to allow for delay.	
The submission of a late FBC could mean that the project is pushed back to the next the Combined Authority Joint Committee	Amber	Ongoing communication with the Combined Authority regarding the requirements. Time contingency placed at the end of the programme to allow for delay.	Green

6.6.2. Constraints and dependencies

The project is largely a standalone scheme and is not dependent on any other scheme.

Table 6-4 - Project dependencies

Dependency	Information	Owner
Approvals	Approvals are required from BCC and the Combined Authority. A BCC and the Combined Authority approvals timetable is provided in Appendix E.	BCC / the Combined Authority
Backing from political stakeholders	A programme for meetings with key decision makers is provided in Appendix E.	BCC / the Combined Authority
Delivery of project within agreed TCF funding timescales	The original deadline for TCF funding to be spent is end of FY 2022/23, however, given that the soonest funding can be agreed (30th September 2022) and taking into account tendering processes and contractor lead in times to immediately follow it is realistic to think that the project may not begin until December 2022.	BCC / the Combined Authority
BCC procurement processes	BCC's procurement team provide scrutiny to the procurement process. This is to enable the tendering and appointment of the contract can take time. Preparation of the required information will be carried out as much as possible to enable this process to hit the ground running once funding is approved.	BCC
Materials availability	The materials identified for use on the project are varied including high quality stone as well as traffic signals equipment. Ordering of materials can only begin once the contractor has been appointed and availability of such materials can only be confirmed at that time.	BCC / Contractor
Contractor Lead In time	The programme has given over 3 months for the appointed contractor to mobilise.	BCC / Contractor
Network availability	The Bristol Bridge signal junction is located at a critical node within the Bristol central area. Full closure of the junction would need to be minimised given the long alternative route required. Key events and other planned highway works within the city will need to be considered. A full closure of Redcliffe Bascule Bridge is planned from September to December 2022 to enable repairs. If this does not complete on time this may have a bearing on when works take place at the Bristol Bridge traffic signals junction given its relationship on the traffic network.	BCC

6.7. Land acquisition, planning and other consents

All interventions in the proposed package are contained within the highway boundary. Therefore, the proposed interventions do not require any land acquisition or planning permission. There will be no requirement for

planning consent, conservation area consent or specific approvals for materials other than BCC's internal assurance and signoff.

Furthermore, there are no outstanding Traffic Regulation Order (TRO) processes to complete. Any TRO work necessary for the project has already been carried out at Bristol Bridge.

6.8. Project assurance

The project board will provide project assurance for the whole project. The project will be subject to BCC's own internal audit processes as well as the Combined Authority's audit processes in accordance with the funding requirements.

Regular reviews of the risk register will be undertaken, and lessons learnt sessions are held from other similar projects and the information from these is disseminated to the project team.

6.9. Benefit realisation

The anticipated benefits of the scheme, as set out in the logic map (Figure 2-12 from Strategic Case) are:

- More attractive and higher quality active travel facilities.
- Better connectivity of active travel facilities.
- Safer and more inclusive streets and environments.
- Highway network with reduced congestion.

In order to ensure these benefits have indeed been realised, post scheme opening monitoring and evaluation must be undertaken. This evaluation will allow the identification of the extent to which the scheme objectives have been met. Based on DfT monitoring and evaluation guidance, and the requirement to undertake 'standard evaluation' for this scheme, the key types of questions to be addressed through this process are:

- How was the scheme delivered?
- What difference did the scheme make?
- Did the benefits justify the costs?

The anticipated benefits set out above pose a challenge when it comes to quantifying them and as a result any future monitoring and evaluation framework must target a different set of metrics which are expected to reflect changes in the aforementioned benefits. Thus, the monitoring and evaluation will assess the scheme impacts on:

- Walking and cycling levels.
- Collisions.
- Levels of congestion for journeys using VMS.
- Levels of collisions for pedestrians and cyclists.

6.10. Monitoring and evaluation

6.10.1. Rationale and logic model

The development of a monitoring and evaluation plan is informed by the benefit realisation plan above and the logic map of the proposed intervention. A copy of the logic map is presented in Figure 2-12 of the business case document.

6.10.2. Evaluation design and methodology

The design of the evaluation process is focused on the three questions set out in the section above.

To enable evaluation to take place, a monitoring framework needs to be in place. The data requirements of the 'standard monitoring' outlined in the September 2012 DfT guidance and the key objectives of the proposed intervention have been used as a guide. The requirements are:

- Scheme build.
- Delivered scheme.
- Costs.

- Travel demand and time.
- Scheme objectives.

6.10.3. Data requirements

As part of the programme of monitoring, data will be collected (before and after scheme construction), to assess how the impacts of the scheme are progressing in relation to predictions. This data will be analysed to better understand the consequences and causality of the scheme measures.

The data required as part of this monitoring programme is set out in Table 6-5 below.

Table 6-5 - Evaluation data requirements

Item	Content	'One year after' report	Final report (opening + 5 years)
Scheme build	<ul style="list-style-type: none"> • Programme/project plan assessment, including measures of delivery at key milestones (e.g., implementation log). • Risk management effectiveness (assessing impacts from the risk register). • Assessment of whether the scheme is on track to the anticipated benefits and details of any benefits realised. 	✓	
Delivered scheme	<ul style="list-style-type: none"> • Full description of implemented scheme outputs including a clear plan of the overall scheme. • Identification of any changes to the scheme since funding approval. • An assessment of whether the scheme has reached the intended beneficiaries. 	✓	
Outturn costs	<ul style="list-style-type: none"> • Outturn investment costs. • Analysis of manifestation of identified risk in the elements of investment costs. • Identification of cost elements where cost savings were achieved and the reasons for cost savings. • Analysis of cost elements with overruns and identification of causes for overruns. • Outturn operating costs; including evidence of differences between outturn and forecasts and identification of any reasons for the differences. • Outturn maintenance or other capital costs compared with forecasts and any unanticipated costs identified. The causes of any variations from forecast costs should be analysed. 	✓	
Walking and cycling levels	Survey to assess walking and cycling levels at Bristol Bridge.	✓	✓
Routing at VMS locations	Survey to assess routing of traffic from VMS locations to car parks.	✓	✓
Collisions frequency and severity	Monitoring of collisions involving pedestrians and/or cyclists.	✓	✓
Air quality	Reduction in NO2 emissions observed at diffuser tubes at Bristol Bridge.	✓	✓

6.10.4. Data collection methods

The data collection methods adopted for the evaluation activities are set out below.

Outturn costs

Information around the outturn costs can be obtained from relevant departments within Bristol City Council and / or the Combined Authority.

Specifically, outturn cost data will be obtained from primarily from supplier and / or BCC invoices to the Combined Authority, project manager input and yearly grant claims. Where there are any cost savings / cost overruns the reasons for these will need to be identified and reported within the relevant documentation.

The outturn data collection will cover both the operation costs and the capital cost, the exercise will involve comparing the forecasted costs with the outturn position following the scheme delivery.

This data will be collected throughout the construction stage, until the completion of the scheme. It will feature within the “One Year After” report and the 5 Years After report.

Scheme build

Information around the scheme build activities will be obtained from the relevant departments within Bristol City Council and \ or the Combined Authority. This will also be presented within the construction programme. The project programme will contain scheme build information, outlining the key milestones. Further, the risk register and benefits realisation plan will be used to report on the scheme build phase. Any benefits that materialise within the construction stage period will also be reported. This data will be collected throughout the construction stage, until the completion of the scheme. This data will feature within the “One Year After” report.

Walking and cycling levels

In order to determine the levels of walking and cycling at Bristol Bridge, traffic count data will be recorded before and after the scheme delivery. This data will show whether walking and cycling schemes have increased following the delivery.

Congestion at VMS locations

In order to assess the impact of the VMS replacements, routing surveys should be undertaken before and after the scheme to ensure car park users travel using shorter and more efficient routes

Collision frequency and severity

Collision data will be evaluated to assess the frequency and severity of collisions before and after the cycling scheme is delivered.

6.10.5. Data collection and establishing the baseline

A summary of the data collection plan for the scheme is provided in Table 6-6.

Table 6-6 - Data collection plan

Metric	Unit	Frequency	Data source and responsibility	Baseline date	Reporting to
Inputs					
Construction costs (forecast and outturn)	£, by source	Annual until scheme completion	Project Team (BCC and the Combined Authority)	2024	BCC, One year after report 5 years after report
Outputs					
Walking and cycling levels	Number of pedestrians and cyclists	Monthly	Surveys	2022 / 2024	BCC, One year after report 5 years after report
Congestion at VMS locations	Journey time	Monthly	Surveys	2022 / 2024	BCC, One year after report 5 years after report
Collision frequency and severity	Number of collisions by severity	Monthly	BCC / STATS19	2022 / 2024	BCC, One year after report 5 years after report

6.10.6. Delivery plan

Three reports are proposed:

- Baseline report (due 2023): this report will present data recorded along the corridor before the scheme is opened to the public.
- ‘One year after’ report (due 2025): this report will be completed approximately 1 year after the scheme is opened
- Final report (due 2029): this report will be completed approximately 5 years after the scheme is opened. It will build upon the ‘One Year After’ report.

6.10.7. Resourcing and governance

A BCC Officer will be appointed to carry out the reports, with potential consultant support. Pre-scheme data should be collected once Full Scheme Approval has been granted. BCC will provide the contact details of the nominated officer once the project has received funding approval. BCC will be responsible for risk management and quality assurance.

6.10.8. Dissemination

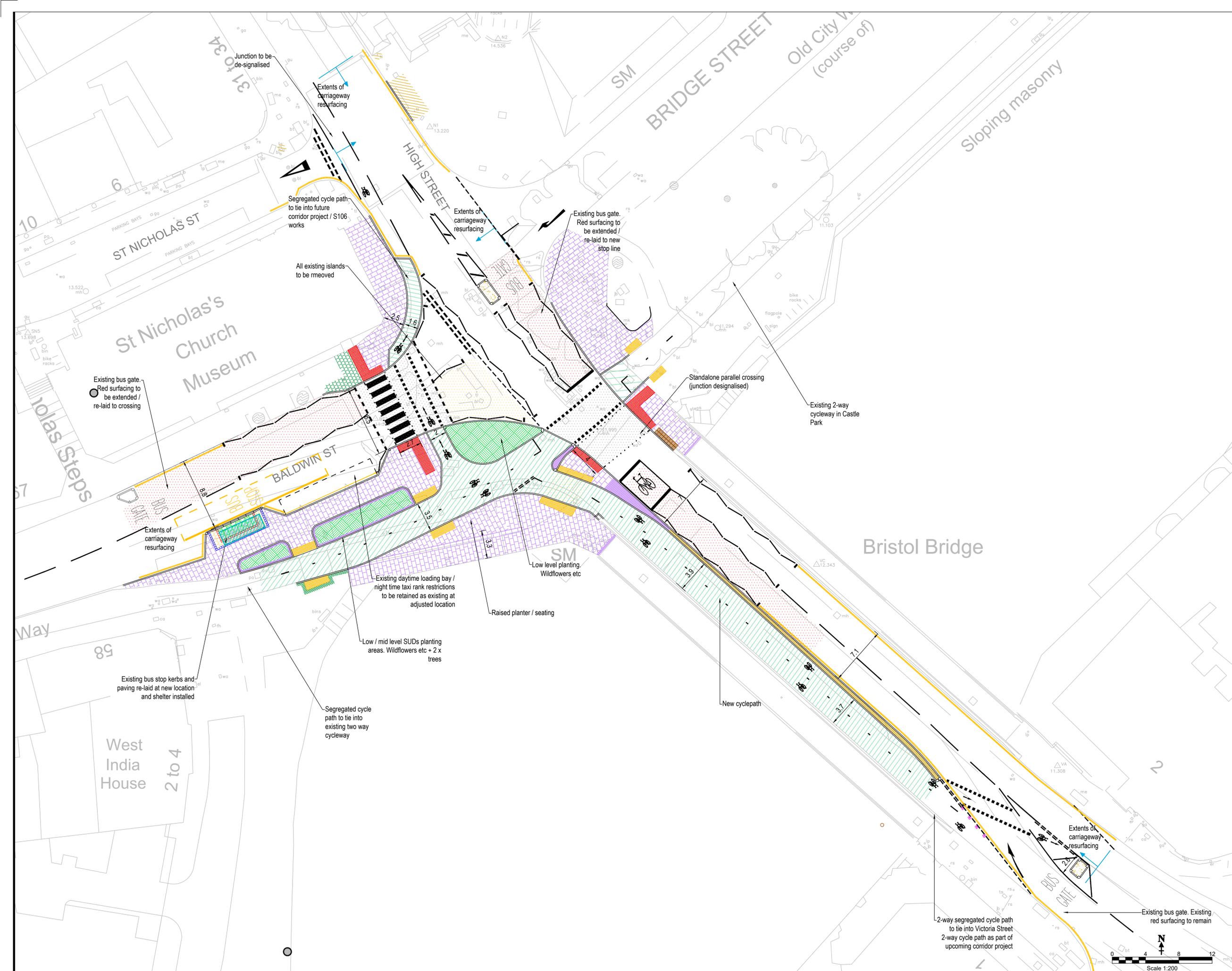
Report will be shared with stakeholders and decision-makers via email, meetings, and briefings. The documents will be disseminated to the public via the BCC.

Appendices



Appendix A. Quantified Risk Assessment

Appendix B. General Arrangement Drawings



- GENERAL ARRANGEMENT KEY**
-  Pennant stone footpath construction
 -  Pennant stone block pavers/sets
 -  Concrete block paving
 -  Existing Pennant stone flag paving to be relaid
 -  Separated/ segregated cycle path
 -  Proposed SUDs / landscaped area
 -  Proposed tactile paving buff / red
 -  Proposed / upgraded bus stop
 -  Red surface treatment
 -  Buff surface treatment
 -  Existing yellow or white road marking
 -  Proposed yellow road marking
 -  Proposed white road marking
 -  Cyclelane separator bollards

BRISTOL CITY COUNCIL

**CITY DESIGN
ENGINEERING
DESIGN**

PO Box 3399, Bristol City Council, Bristol BS1 9NE

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Rev.	Date	Description	By
A	15/08/2022	Taxi / loading bay note	JGM

Project
TCF Bristol Bridge junction
Permanent works

Title
General Arrangement

Client
Local and Sustainable Transport
Management of Place - Growth & Regeneration

Drawn by JGM	Checked by
Date Drawn 19/05/2022	Date Issued
Status PRELIMINARY	Issued by

Scale
1:200 @ A1

Project Number E20014-TCF-	Drawing P02	Revision A
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Appendix C. Distributional Impact Assessment Step 1 Screening

Distributional Impact Appraisal Screening Proforma

Scheme description: The scheme will replace traffic light signals at College Green and Bristol Bridge junctions, deliver segregated cycling infrastructure and expansion of footways at the locations. Crossing facilities would also be changed to improve crossings for pedestrians and cyclists. Four VMS signs will be replaced to correct existing

Indicator	(a) Appraisal output criteria	(b) Potential impact (yes / no, positive/negative if known)	(c) Qualitative Comments	(d) Proceed to Step 2
User benefits	The TUBA user benefit analysis software or an equivalent process has been used in the appraisal; and/or the value of user benefits Transport Economic Efficiency (TEE) table is non-zero.	Yes, positive	Journey times are expected to be reduced as replaced VMS directs traffic in a more effective manner, reducing excess vehicle kilometres. The cycling schemes will lead to a modal shift towards walking and cycling, which will generate decongestion benefits	Not deemed necessary. User benefits as a result of decongestion involves a large urban area with a catchment that cannot be readily identified, nor is this modelled in a spatially disaggregate tool.
Noise	Any change in alignment of transport corridor or any links with significant changes (>25% or <-20%) in vehicle flow, speed or %HDV content. Also note comment in TAG Unit A3.	Yes, positive	The scheme will protect a mode shift from private car to walking and cycling. This would reduce traffic flow within the vicinity of the schemes and Bristol City Centre, hence, lead to reduced noise.	Not deemed necessary. Noise benefits as a result of decongestion involves a large urban area with a catchment that cannot be readily identified, nor is this modelled in a spatially disaggregate tool. Therefore, the distributional impact can only be qualitatively assessed.
Air quality	Any change in alignment of transport corridor or any links with significant changes in vehicle flow, speed or %HDV content: • Change in 24 hour AADT of 1000 vehicles or more • Change in 24 hour AADT of HDV of 200 HDV vehicles or more • Change in daily average speed of 10kph or more • Change in peak hour speed of 20kph or more • Change in road alignment of 5m or more	Yes, positive	The scheme will protect a mode shift from private car to walking and cycling. This would reduce traffic flow within the vicinity of the schemes and Bristol City Centre, hence, lead to improved air quality.	Not deemed necessary. Air quality benefits as a result of decongestion involves a large urban area with a catchment that cannot be readily identified, nor is this modelled in a spatially disaggregate tool. Therefore, the distributional impact can only be qualitatively assessed.
Accidents	Any change in alignment of transport corridor (or road layout) that may have positive or negative safety impacts, or any links with significant changes in vehicle flow, speed, %HGV content or any significant change (>10%) in the number of pedestrians, cyclists or motorcyclists using road network.	Yes, positive	The scheme will deliver segregated cycling infrastructure which will enhance safety for cyclists. The replaced VMS will reduce traffic flow in Bristol City Centre, leading to reduced overall number of accidents	Not deemed necessary. Accident benefits as a result of decongestion involves a large urban area with a catchment that cannot be readily identified, nor is this modelled in a spatially disaggregate tool. Therefore, the distributional impact can only be qualitatively assessed.
Security	Any change in public transport waiting/interchange facilities including pedestrian access expected to affect user perceptions of personal security.	No	The impact is deemed very marginal	Not deemed necessary
Severance	Introduction or removal of barriers to pedestrian movement, either through changes to road crossing provision, or through introduction of new public transport or road corridors. Any areas with significant changes (>10%) in vehicle flow, speed, %HGV content.	Yes, positive	The scheme will encourage an uptake in walking and cycling which will have a positive impact on congestion / traffic levels in Bristol City Centre. A reduction in traffic where a significant proportion of vulnerable people live, such as children and elderly people, could have a very slight but positive impact on them and how they can access amenities.	Not deemed necessary. Such impacts as a result of modal shift involves a large area with a catchment that cannot be readily identified, nor is this modelled in a spatially disaggregate tool. Therefore, this can only be qualitatively assessed
Accessibility	Changes in routings or timings of current public transport services, any changes to public transport provision, including routing, frequencies, waiting facilities (bus stops / rail stations) and rolling stock, or any indirect impacts on accessibility to services (e.g. demolition & re-location of a school).	Yes, positive	The scheme will enhance accessibility to the public transport network through providing dedicated cycling infrastructure	Not deemed necessary. Such impacts as a result of modal shift involves a large area with a catchment that cannot be readily identified, nor is this modelled in a spatially disaggregate tool. Therefore, this can only be qualitatively assessed
Affordability	In cases where the following charges would occur; Parking charges (including where changes in the allocation of free or reduced fee spaces may occur); Car fuel and non-fuel operating costs (where, for example, rerouting or changes in journey speeds and congestion occur resulting in changes in costs); Road user charges (including discounts and exemptions for different groups of travellers); Public transport fare changes (where, for example premium fares are set on new or existing modes or where multi-modal discounted travel tickets become available due to new ticketing technologies); or Public transport concession availability (where, for example concession arrangements vary as a result of a move in service provision from bus to light rail or heavy rail, where such concession entitlement is not maintained by	No	The impact is deemed very marginal	Not deemed necessary

Appendix D. Appraisal Summary Table

Appraisal Summary Table

21 July 2022

Contact:

Name of scheme:		A37 / A4018 City Centre Junction FBC			Name				
Description of scheme:		The scheme put forward by BCC and the Combined Authority is for replacement of traffic signals at College Green and Bristol Bridge junctions, delivery of segregated cycling infrastructure and expansion of footways at the locations. Crossing facilities would also be changed to improve crossings for pedestrians and cyclists. Four VMS signs will be replaced to correct existing outdated directions to car parks that the existing VMS provide			Organisation		West of England		
					Role				
Impacts	Summary of key impacts	Assessment							
		Quantitative			Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp		
Environmental Economy	Business users & transport providers	The scheme is expected to provide overall benefits to business users as the both the VMS and cycling scheme elements will reduce congestion leading to road users' journey time benefits. It is forecast to achieve this by promoting mode shift, and better directing users of VMS with corrected directional signage.			N/A		Beneficial	N/A	N/A
	Reliability impact on Business users	The scheme, through its decongestion impact will make journeys more efficient and desirable for the public through improved journey time reliability. This benefit is not quantified.			Not assessed				
	Regeneration	The scheme will support regeneration as the cycling elements will create and enhance a safer, more welcoming environment for people including the most vulnerable road users.			Not assessed		Slight Beneficial	N/A	
	Wider Impacts	In general, the scheme would improve transport accessibility for all users including businesses and business travellers.			Not assessed		Slight Beneficial	N/A	
	Noise	Encouraging mode shift from private car to walking and cycling will lead to marginal external impacts including highway decongestion, which in turn leads to incremental reductions in noise due to the reduction in highway traffic (i.e. vehicle*km travelled).			Active Mode Appraisal Toolkit		Beneficial	£ 1,835	N/A
	Air Quality	Encouraging mode shift from private car to walking and cycling will lead to marginal external impacts including highway decongestion, which in turn leads to incremental reductions in road vehicle emissions due to the reduction in highway traffic (i.e. vehicle*km travelled).			Active Mode Appraisal Toolkit		Beneficial	£ 3,791	N/A
	Greenhouse gases	Encouraging mode shift from private car to walking and cycling would lead to marginal external impacts including highway decongestion, which in turn leads to incremental reductions in vehicles' greenhouse gas emissions due to the reduction in highway traffic (i.e. vehicle*km travelled).			N/A		Beneficial	N/A	
	Landscape	No impacts on landscape identified.			Not assessed				
	Townscape	The scheme will enhance townscape through use of higher quality materials for the public realm. This will improve user perception at Bristol Bridge / Baldwin Street junction.			Not assessed		Slight Beneficial	N/A	
	Historic Environment	No impacts on historic environment identified.			Not assessed		Neutral	N/A	
	Biodiversity	The proposed interventions are considered to result in an overall slight positive effect on biodiversity as the scheme proposes planting at Bristol Bridge/Baldwin Street junction.			Not assessed		Slight Beneficial	N/A	
	Water Environment	No impacts on water environment identified.			Not assessed		Neutral	N/A	
Social	Commuting and Other users	The scheme is expected to provide more reliable journey times leading to road users' journey time benefits. It is forecast to achieve this by reducing improving directional guidance to car parks which will reduce circulating traffic looking for car parks.			N/A		Beneficial	N/A	N/A
	Reliability impact on Commuting and Other users	No impacts on reliability identified.			Not assessed				
	Physical activity	The scheme is expected to increase levels of active travel and physical activity due to the improved cycling infrastructure and crossing facilities.			Active Mode Appraisal Toolkit		Neutral	£ 3,651,987	
	Journey quality	The introduction of segregated cycling infrastructure will reduce stress for the journey and will lead to better quality and improved user experience. The VMS replacements will provide corrected navigation instructions, which will also improve journey quality.			Active Mode Appraisal Toolkit		Beneficial	£ 1,358	
	Accidents	Mode shift from private car to walking and cycling will lead to reductions in car-miles driven and statistical reductions in road traffic accidents.			Active Mode Appraisal Toolkit		Slight Beneficial	£ 27,521	N/A
	Security	No impacts on security identified.			Not assessed		Neutral	N/A	N/A
	Access to services	The scheme will enhance accessibility to the public transport network through providing dedicated cycling infrastructure.			Not assessed		Slight Beneficial	N/A	N/A
	Affordability	No impacts on affordability identified.			Not assessed		Neutral	N/A	N/A
	Severance	The scheme will encourage an uptake in walking and cycling which will have a positive impact on congestion / traffic levels in Bristol City Centre. A reduction in traffic where a significant proportion of vulnerable people live, such as children and elderly people, could have a very slight but positive impact on them and how they can access amenities.			Not assessed		Slight beneficial	N/A	N/A
	Option and non-use values	No impacts on option and non-use identified.			Not assessed		Neutral	N/A	
Accounts	Cost to Broad Transport Budget	Estimated costs for scheme implementation are adjusted to DfT's 2010 price base, including market price adjustment, Optimism Bias and discounting to 2010 prices.			Assessed following TAG Unit A1.2 Scheme Costs		N/A	£0.84m	
	Indirect Tax Revenues	Mode shift from private car to walking and cycling would result in proportionate reductions in vehicle fuel consumption, which would translate into a marginal reduction in revenues from fuel duties.			Active Mode Appraisal Toolkit		Slight Beneficial	-£ 15,328	

Appendix E. Approvals timetables

E.1. Bristol City Council

Item	Date
Attend Economy of Place DMT	Report author to contact Anne Addison for dates in advance of the below dates
Attend G&R EDM with report and appendices.	Wednesday 13 July 2022 (deadline for papers Friday 8 July)
Attend Capital and Investment Board	Tuesday 19 July 2022 (deadline for papers Weds 13 July after EDM)
Attend Cabinet Member briefing	Thursday 21 July 2022 (deadline for papers Friday 15 July)
Report author to send report and all appendices to Louise Baker & Beth Williams for proof reading	No later than 12 noon on Monday 18 July 2022
Report author to send report, background papers and appendices to mayor@bristol.gov.uk copy in Simon Cowley, Jonathan Downing, Fiona Gilmour, Louise Baker & Beth Williams	No later than 12 noon on Monday 25 July 2022
Forward Plan published by Mayor's office	Monday 8 August 2022
Report author to send report and appendices to Dems Services by 12 noon	Thursday 11 August 2022
Draft Report Review Meeting 1pm – 3pm	Monday 15 August 2022
Report review period	15 – 19 August 2022
Report author to send final report and appendices to Dems Services (Wednesday)	Wednesday 24 August 2022
Final report review with Mayor's Office, Legal, Finance, Press and ESM'	Thursday 25 August 2022
Publication of papers (Monday)	Friday 26 August 2022 (early because of B/H)
Cabinet	Tuesday 6 September 2022

E.2. West of England Combined Authority

Item	Date
Highlight reports due out	1 st July 2022
Submission of Full Business Case for review	22 nd July 2022
Submission of highlight reports and funding applications	29 th July 2022
Combined Authority and Joint Committee Meeting	30 th September 2022

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