Appendix A - Option Assessment Report

Hereford Eastern River Crossing (ERiC) (SOC)

Herefordshire Council

October 2023

Delivering a better world

Quality information

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Revision History

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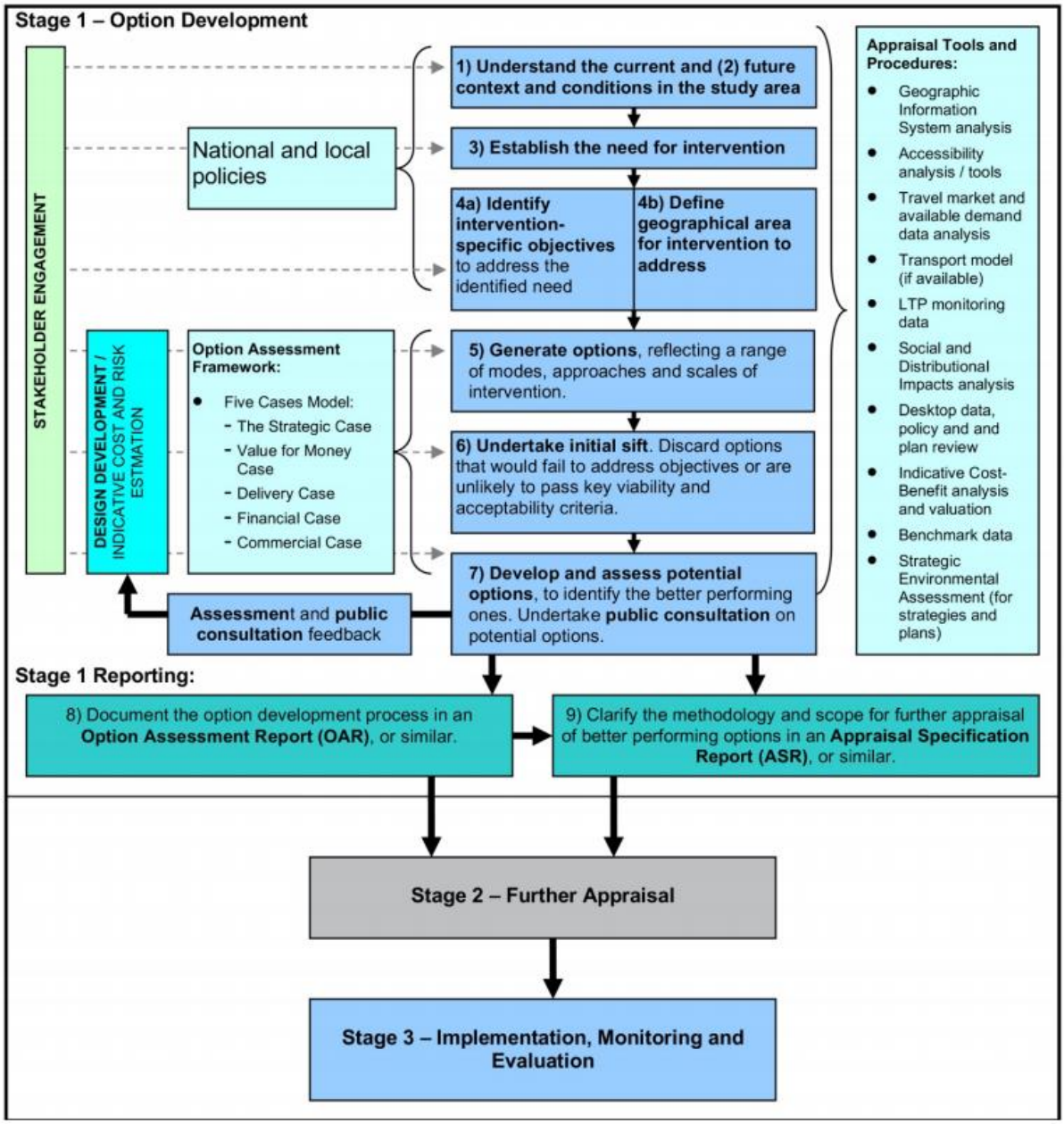
1. Introduction

1.1 Purpose of the OAR

1.1.1 This Option Assessment Report (OAR) outlines the first stage of identifying the need for intervention and developing options to address a set of locally developed objectives which express desired outcomes. The report outlines how these options have been sifted, developed and appraised, with the better performing options recommended to be taken forward to a more detailed appraisal. The report follows the Stage 1 Option Development process set out in the Department for Transport (DfT) Transport Appraisal Process, set out in **Figure 1-1.**

Figure 1-1 Steps in the DfT Stage 1 Transport Appraisal Process



1.2 Project Background

1.2.1 Hereford is a major employment area with a wide catchment area with in / out commuting flows that are heavily dominated by car trips. The city is located both to the north and south

of the River Wye, with only two bridges that carry road traffic. One bridge is the A49 – an urban dual-carriageway that is managed by National Highways and forms part of the Strategic Road Network (SRN). The other; known as the Wye Bridge, is a historic bridge carrying St Martin's Street – a narrow signal-controlled road carrying traffic in a one-way shuttle arrangement.

1.2.2 Herefordshire Council has recently undertaken a review of the Hereford Transport Strategy (2020), with a preferred strategy comprising of four packages of measures for the future Hereford transport system being identified:

- Walking and cycling measures;
- Improving public transport;
- Managing traffic demand; and
- Providing a new river crossing.

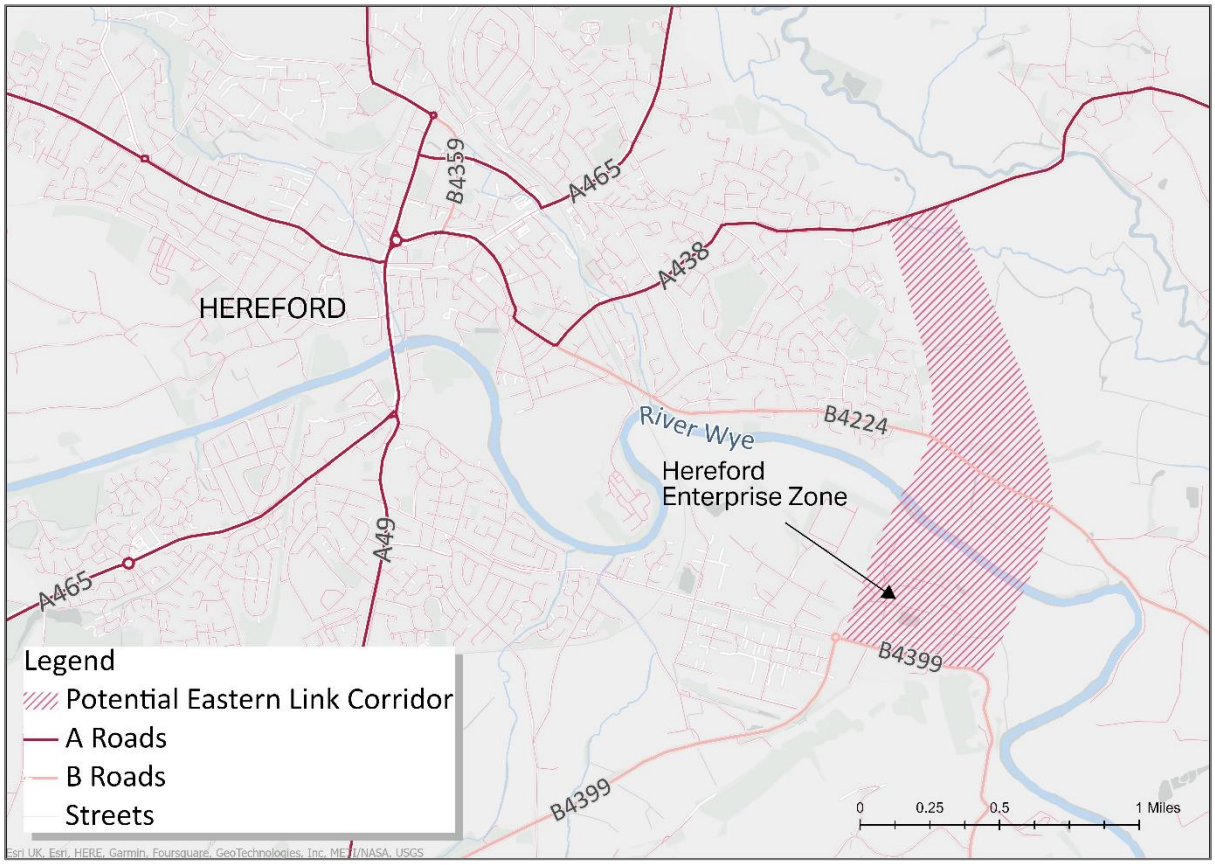
1.2.3 An additional river crossing is deemed as essential in providing an alternative route for addressing the resiliency issues across the city centre's transport network and facilitating the future growth of the city. Options for developing an additional river crossing form a key focus of this OAR.

1.2.4 A key output from the Hereford Transport Strategy Review (2020) was the resolution to stop progress with the western bypass and southern link road. Plans for this route would have included a crossing of the River Wye to the west of the city centre. Instead, the Review committed to develop further proposals for a river crossing to the east of the city, and this has shaped the location of the proposals being put forward as part of this study.

1.3 Study Area

1.3.1 The broad study area and potential location for the eastern river crossing (ERiC) is set out in **Figure 1-2**. It is expected that the crossing will be a multi-modal corridor which will include dedicated provision for active modes. As part of this OAR, a series of less capital intensive projects are also considered which include significantly less physical infrastructure works. The previously discounted western bypass and southern link road has also been considered as part of the long-list to provide a comparison of benefits and dis-benefits with the eastern alignments. The full list of options considered as part of this OAR is set out as part of the Long-List in Section 7.

Figure 1-2: Study area and broad location of eastern river crossing



2. Strategic Context

2.1 Policy Fit

2.1.1 A review of national, regional and local policy has been undertaken to establish how the project aligns with organisational priorities and key strategy and policy objectives (the "strategic fit"). Key policy documents and the scheme's contribution or alignment with them are discussed below.

National Policy

Decarbonising Transport Setting the Challenge (2020)[1]

2.1.2 The Decarbonising Transport Plan (DTP) aims to accelerate the decarbonisation of transport. The plan sets out in detail what government, businesses and society will need to do to deliver the significant reduction in emissions needed across all modes of transport, putting us on a pathway to achieving carbon budgets and net zero emissions across every single mode of transport by 2050.

2.1.3 The plan has been split into six strategic priorities. They are not aligned to particular modes of transport, instead they reflect the core areas needed for delivery of the aims of the DTP. These can be seen in **Figure 2-1.**

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/932122/decarbonising-transport-setting-the-challenge.pdf

Figure 2-1: Decarbonising Transport Plan – Strategic Priorities

The scheme will support the DTP by improving the resiliency of the road network which will lead to a reduction in congestion thus allowing more free flowing movements which will help to reduce road user emissions. The ERiC will further support the DTP as it is a multi-modal corridor which will provide provision for active modes and provide a free-flowing route for buses, thus offering alternative low carbon modes of travel for residents.

The UK's Industrial Strategy: Building a Britain Fit for the Future (2018)[2]

2.1.4 The industial strategy aims to create an economy that boosts productivity and earning power throughout the UK.

2.1.5 One of the five foundations aligning to the vision of a transformed economy is a major upgrade to the UK's infrastructure. A key policy from this foundation is to increase the National Productivity Investment Fund to £31bn, supporting transport investments.

[2] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf

2.1.6 The strategy states that we use around 40 per cent of the UK's total final energy use to move people and goods around. Therefore, it is a priority for the UK to develop leadership in low carbon transport and the UK will invest in innovation to develop clean technologies across road, rail, aviation and maritime transport.

The ERiC will increase the resiliency of the road network and will better support the movement of goods and people by providing an alternative route, which will help to safeguard journey time reliability. The scheme will also support low carbon transport by providing provision for active travel and public transport.

National Planning Policy Framework (2021)[3]

2.1.7 The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these should be applied. Local plans for development should be produced using the framework provided by the NPPF. The NPPF must be considered when preparing the development plan, required by planning law. Therefore, the transport proposals in this study must reflect the NPPF. Key paragraphs of the NPPF that are relevant to this project include:

- **Paragraph 82** highlights that planning policies should positively and proactively encourage sustainable economic growth.
- **Paragraph 104** expresses that transport issues should be considered at the earliest stages of plan-making and development proposals so that transport improvement opportunities are identified, and active travel and public transport are promoted.
- **Paragraph 106** states the importance of high-quality walking and cycling networks and supporting facilities.
- **Paragraph 112** specifies that developments should give priority to pedestrian and cycle movements and facilitate access to high quality public transport, providing layouts that maximise the catchment area for bus services and facilities that encourage public transport use

2.1.8 In attaining sustainable development, the NPPF sets out three key objectives, each of these being focused around economic, social and environmental factors.

The scheme reflects the NPPF by providing better provision for cyclists, pedestrians and by providing a free-flowing route for bus users. The scheme will also help to support the local economy and encourage growth in the city centre and east Hereford.

Gear Change: a bold vision for cycling and walking (2020)[4]

2.1.9 Gear Change is about creating a step-change in walking and cycling, transforming the role that these modes play in the transport system and supported by the biggest funding increase for cycling and walking there has ever been. The potential benefits of carrying out this vision can help to address the issues we have as a society such as improving health and wellbeing, air quality, congestion and tackling climate change and inequalities.

2.1.10 The vision for walking and cycling document focuses on 4 themes:

- Better streets for cycling and people.
- Cycling is at the heart of decision-making.
- Empowering and encouraging Local Authorities.
- Enabling people to cycle and protecting them when they do.

[3] https://www.gov.uk/government/publications/national-planning-policy-framework--2

[4] https://www.gov.uk/government/publications/cycling-and-walking-plan-for-england

2.1.11 A clear ambition has been set so that cycling, and walking will be the natural first choice for many journeys. The aim is for half of all journeys in towns and cities to be cycled or walked by 2030. A bold future vision of cycling and walking in England can be seen **Figure 2-2**.

Figure 2-2: Gear Change: a bold vision of walking and cycling in England

The ERiC supports the Gear Change vision to put cycling and walking at the heart of transport schemes, providing segregated facilities to help to increase safety for non-motorised users. Hereford is also characterised as having a significant volume of short distance trips (73% of commuter trips within Hereford are less than 5km versus a national average of 40%). Therefore, by extending the cycle network in Hereford, there is a significant opportunity for reducing the number of short journeys being made by car to create a cleaner, healthier, greener and less congested city.

Cycling and Walking Investment Strategy (CWIS) (2022)[5]

2.1.12 The Cycling and Walking Investment Strategy (CWIS) sets out the Government's strategies to make cycling and walking natural choices for shorter journeys or as part of longer journeys.

2.1.13 By 2040, the ambition is for the following to be realised:

- Better Safety – 'A safe and reliable way to travel for short journeys.
- Better Mobility - 'More people cycling and walking – easy, normal, and enjoyable'.
- Better Streets – 'Places that have cycling and walking at their heart'.

The scheme reflects the CWIS by providing better provision for cyclists, and pedestrians which will help to encourage an increase in active modes. It will also align with the aim to convert some of the

[5] https://www.gov.uk/government/publications/cycling-and-walking-investment-strategy

significant volumes of short journeys being made across Hereford by car, to be made by cycle or on foot.

Cycle Infrastructure Design: Local Transport Note 1/20 (2020)[6]

2.1.14 This Local Transport Note provides guidance and good practice in relation to the design for cycle infrastructure, in support of the CWIS. Building on the policy and goals outlined in 'Gear Change' and the Cycling and Walking Investment Strategy, LTN 1/20 provides updated guidance and good practice for the design of cycle infrastructure which should be used in the preparation of Local Cycling and Walking Infrastructure Plans (LCWIPs) and the design of cycling infrastructure.

A better deal for bus users (2020)[7]

2.1.15 This package of measures aims to boost patronage by making travelling by bus an attractive option. The plan states that the government is committed to achieving more reliable services that arrive on time, good value for money, take people where they want to go to encourage more people to use the bus. This package is promoted by the National Bus Strategy; an ambition to achieve a sustained improvement to bus services, focusing on the needs of the passengers.

2.1.16 There are multiple investments set out as part of A Better Deal for Bus Users 2020:

- There will be £20 million invested into the West Midlands bus priority measures.
- £50 million will be invested for Britain's first all-electric bus town or city.
- £30 million additional funding for buses to go direct to local authorities, enabling improvements to current bus services or the introduction of new or lost services.
- £20 million to support demand in rural and suburban areas.
- A review will be carried out for the £250 million grant for bus service operators.

2.1.17 This guidance states that government funding for new road investments must address bus priority measures to enable improvements to bus journey times and reliability. The deal includes improvements to information for bus users through providing new digital services at bus stops, in addition to the ambition to accept contactless payment on all buses and investments in lower fares through multi-operator ticketing.

National Bus Strategy – Bus Back Better (2021)[8]

2.1.18 The Bus Back Better national strategy sets out the vision and opportunity to deliver better bus services for passengers across England, through ambitious and far-reaching reform of how services are planned and delivered.

2.1.19 The strategy's central aim is to get more people travelling by bus – first, to get overall patronage back to its pre-COVID-19 level, and then to exceed it. To achieve the goal, this strategy will make buses more frequent, more reliable, easier to understand and use, better co-ordinated and cheaper: in other words, more like London's, where this level of service contributes to higher passenger numbers, reduced congestion, carbon and pollution, helped the disadvantaged and got motorists out of their cars.

The ERiC will improve bus reliability in the study area by providing a free-flowing route with limited junctions along its stretch. The scheme will also reduce congestion on the road network within the city centre which will improve the reliability of buses.

[6] https://www.gov.uk/government/publications/cycle-infrastructure-design-ltn-120
[7] https://www.gov.uk/government/publications/a-better-deal-for-bus-users/a-better-deal-for-bus-users
[8] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/980227/DfT-Bus-Back-Better-national-bus-strategy-for-England.pdf

The Clean Growth Strategy (2018)[9]

2.1.20 Clean growth means growing our national income while cutting greenhouse gas emissions. Achieving clean growth, while ensuring an affordable energy supply for businesses and consumers, is at the heart of the UK's Industrial Strategy. The key transport relevant policies and proposals in the strategy are:

- Accelerating Clean Growth.
- Accelerating the Shift to Low Carbon Transport – 24% of UK Emissions come from transport.

2.1.21 To achieve the clean growth the UK wants, low carbon technologies will need to be nurtured. 33% of the £2.5 billion allocated to low carbon innovation investments is going toward the transport sector, supported by the fact that 24% of the UK emissions is attributed to Transport.

The scheme will contribute to the Clean Growth Strategy through encouraging uptake of active modes such as cycling and walking. This will be done through improvements to the walking and cycling network by providing improved facilities for these modes through a multi-modal corridor. This will encourage mode shift away from private cars which will reduce carbon emissions from the transport system.

Regional Policy

The Marches LEP Strategic Economic Plan (2019)[10]

2.1.22 This plan outlines the strategy for the Marches to adopt in order to build on their existing economic strengths, sectoral specialisms, and demographic characteristics to meet their potential. The key part of this plan which has relevance to the scheme is how the Marches are investing in their key transport links to the North West, West Midlands, South West, and Wales.

2.1.23 The plan highlights that there are several issues with the Marches' road network which cause poor average speeds, long journey times, poor reliability, and urban centres to experience congestion. The plan aims to improve public transport links to address accessibility issues to key training and employment sites, and to reduce 1990 carbon emissions by 57% by 2032.

The scheme will support this plan as the ERiC will help to ease the congestion experienced on the network around the A49 and help to improve the resiliency of the city centre's transport network. It will also improve connectivity to the Hereford Enterprise Zone at Skylon Park which should help to increase the attractiveness of the site for inward investment and bolster future economic productivity.

Local Policy

Herefordshire Joint Local Health and Wellbeing Strategy 2023-2033 (2023)[11]

2.1.24 This ten-year strategy seeks to achieve long term changes in the overall health and wellbeing of the population through an incremental transformational approach. The strategy focuses on four ambitions: thriving communities, healthy and sustainable places, opportunity for all, and healthy people. The core priorities of the strategy are to provide the best start in life for children and good mental wellbeing throughout life. In addition to the core priorities, six supporting priorities have been identified as they are critically important in achieving the core priorities:

- Improving access to local services.
- Support people to live and age well.

[9] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf

[10] https://www.marcheslep.org.uk/downloads/the-marches-lep-strategic-economic-plan-2019/

[11] https://www.herefordshire.gov.uk/family-support/health-wellbeing-strategy/2

- Good work for everyone.
- Support those with complex vulnerabilities.
- Improve housing/ reduce homelessness.
- Reducing our carbon footprint.

2.1.25 The strategy states that over half of the residents in Herefordshire live in rural areas and that the COVID-19 pandemic has highlighted that it is important to have support locally or online. It also states that smoking, poor diet, inactivity, and harmful alcohol use are the leading causes of preventable ill health as well as being key drivers of the life expectancy gap between people living in the most and least deprived areas in Herefordshire. It also mentions that the county has a higher level of child and adult obesity compared to the national average.

The scheme will contribute to the Local Health and Wellbeing Strategy through encouraging increased up-take of active modes such as walking and cycling through the provision of dedicated facilities for these modes along the ERiC. Promotion of active modes will help to reduce the inactivity of residents and the levels of child and adult obesity in the region. ERiC will also provide an additional river crossing which will increase connectivity within Hereford and provide new links for residents to access local services.

Herefordshire County Plan 2020-2024 (2020)[12]

2.1.26 The County plan was developed following consultation and engagement events with the public and key stakeholders across the county. From these events, the areas to prioritise investment are:

- More affordable housing.
- Maintenance of our existing highways network and public spaces.
- Specialist care home facilities and accommodation for vulnerable people of all ages.
- Improved public transport across the county.
- Action to tackle the climate emergency.

2.1.27 As part of these investment areas the plan aims to improve and extend active travel options throughout the county. As part of this, the plan highlights a desire for Herefordshire to be the destination of choice for walking and cycling tourism and significantly increase the use of these active means of travel by local residents.

The scheme will support the County Plan by increasing the resilience of the road network and reducing congestion in Hereford. This reduction in congestion will help to ensure public transport runs efficiently in Hereford. The ERiC will also improve active travel options by providing a new route and dedicated facilities across the River Wye. Increasing use of these modes will help to tackle the climate emergency by reducing car usage in the county.

Herefordshire Council Local Transport Plan 2016 – 2031 (2016)[13]

2.1.28 The Local Transport Plan (LTP) is a plan to ensure the council has a clear plan for investment in the transport network. The LTP has five key objectives:

- Enable economic growth – building new roads linking new developments to the transport network and by reducing short distance car journeys.
- Provide a good quality transport network for all users – being proactive in asset management and by working closely with the public, National Highways, and rail and bus companies.

[12] https://www.herefordshire.gov.uk/directory-record/3131/corporate_plan
[13] https://www.herefordshire.gov.uk/travel-transport/local-transport-plan

- Promote healthy lifestyles – making sure new developments maximise healthier and less polluting forms of transport including walking, cycling, and bus use, by delivering and promoting active travel schemes and by reducing short distance single occupant car journeys on roads.
- Make journeys safer, easier, and healthier – making bus and rail tickets compatible and easier to buy and use, by providing 'real time' information at well-equipped transport hubs, by improving signage to walking and cycling routes, and by helping people feel safe during their journeys.
- Ensure access to services for those living in rural areas – improving the resilience of the road network and by working closely with all transport operators to deliver a range of transport options particularly those without access to a car.

2.1.29 The Plan outlines several policies to support the delivery of these objectives such as active travel policies which aim to maintain and extend the current active travel infrastructure.

2.1.30 The LTP is currently in the process of being updated, however it is expected that the overarching premise of the Plan and its key objectives will remain the same.

Building ERiC will help to improve the resilience of the network by providing an alternative crossing over the River Wye. The scheme will also improve the quality of the existing active travel infrastructure in Herefordshire by providing improved facilities for making active travel more attractive to residents. The ERiC will also improve access to employment areas including the Hereford Enterprise Zone at Skylon Park which will be conducive to facilitating economic growth.

Herefordshire Local Plan Core Strategy 2011 – 2031 (Adopted in 2015)[14]

2.1.31 As part of the Local Plan, Herefordshire Council produced a Core Strategy which provides the strategic planning framework. As per government guidelines Herefordshire Council are in the process of updating the current Core Strategy that was adopted in October 2015.

2.1.32 Reducing reliance on private cars, meeting the challenge of climate change, and promoting healthy lifestyles were some of the key issues the Council wanted to respond to over the next 20 years.

2.1.33 The strategy notes that the A49 through Hereford is a key route which experiences capacity issues and that congestion is problematic in the area. The A49 corridor through Hereford has been identified as an Air Quality Management Area. The strategy further identifies a vision to:

- Reduce reliance on private cars.
- Promote active modes such as walking and cycling.
- Improve accessibility to public transport.

2.1.34 Policy HD3 in the Strategy proposes a package of transport improvements for the city to help meet the vision outlined above.

The ERiC will help to reduce the reliance on private cars by including dedicated facilities for active modes such as walking and cycling. This in turn will help to promote the adoption of healthy lifestyles across Hereford. The ERiC will also provide an alternative route for crossing the River Wye which will help to reduce vehicular flows along the A49 which will reduce congestion and contribute to reducing emissions within the Air Quality Management Area.

Herefordshire Bus Service and Improvement Plan (2021)[15]

2.1.35 The Herefordshire Bus Service Improvement Plan (BSIP) covers Herefordshire only to reflect the inward-facing bus network. The BSIP outlines five objectives to improve and develop bus service provision:

[14] https://www.herefordshire.gov.uk/downloads/download/123/adopted_core_strategy

[15] https://www.herefordshire.gov.uk/downloads/file/23031/herefordshire-bus-service-improvement-plan

- Establish a coherent, consistent, and integrated bus network that is well understood and easy to use.
- Offer a quality service that is attractive to use and portrays a positive image.
- Provide a service that offers value for money.
- Contribute positively towards Herefordshire's ambitions for decarbonisation and environmental improvement.
- Support the wellbeing of Herefordshire residents, enabling people to access key services and live independently.

2.1.36 Herefordshire is the county with the lowest population density in England, with 53% of the population living in rural areas. In the DfT's Index of Accessibility, it is the lowest ranking authority in terms of access to key services. The BSIP highlights the Herefordshire Enterprise Zone (HEZ) at Skylon Park as the largest employment area in Hereford and when employees in the HEZ were surveyed on their commuting behaviours, only 1% used the bus. Surveys with Herefordshire residents highlighted more frequent services, evening services, information that is easier to obtain and use, and more destinations reached by bus as priorities for the BSIP.

2.1.37 The plan further highlights issues with journey times as a result of congestion and lack of bus priority measures in Herefordshire (there is only one bus lane in Herefordshire currently). The BSIP plans to tackle the bus priority issue by reviewing congestion hotspots for potential intervention.

The scheme will contribute to the plan by providing a free-flowing route for bus users with limited junction connection points, which will help to improve journey-time reliability and increase the attractiveness of travelling by bus. The route will also improve the connectivity of Skylon Park by bus which should help to increase the proportion of commuters using the bus to access the site.

Hereford City Masterplan (Consultation Draft, Spring 2023)

2.1.38 Herefordshire Council is currently preparing a detailed masterplan for Hereford which aims to make the city a greener, healthier, and safer place to live, work and visit, with better connections to nearby villages, towns and counties by all transport modes.

2.1.39 A series of strategic objectives have been established which underpin the masterplan; one of which relates to Movement and expanding choice for moving around, using an integrated transport network with better provision for active travel and public transport. It is intended that that this will help to reduce carbon emissions, improve air quality, tackle congestion, encourage healthier lifestyles and better meet the needs of different demographic groups.

The ERiC scheme will provide a safe and desirable connection for pedestrians and cyclists which will help to promote active travel and healthy lifestyles, while reinforcing the concept of Hereford as an 'outdoor city'. It will thereby play a key role in supporting and complementing the city masterplan, specifically by:

- Improving options for active travel and encouraging healthy lifestyles
- Improving public transport options and reducing reliance on private vehicles
- Reducing congestion on the existing river crossing and in Hereford city centre and providing additional network capacity to support economic growth
- Minimising the impact on the environment and contributing towards net zero objectives

Big Economic Plan 2023-2050 (2023)[16]

2.1.40 The Big Economic Plan sets out the steps to make Herefordshire a vibrant, healthy, zero carbon, and inclusive place to live, work, study, and visit at all stages of life by 2050. The plan outlines six elements of the Herefordshire economy where actions will be taken to meet the vision of the Economic Plan.

[16] https://www.herefordshire.gov.uk/business-1/invest-herefordshire

2.1.41 One of the elements that the Plan focuses on is surrounding infrastructure and making Herefordshire in 2050 better connected and more accessible, underpinned by a new river crossing in Hereford. The Plan also aims to achieve improved public transport from and between rural communities and higher levels of active travel in Hereford city with fewer short car journeys. The Big Economic Plan specifically mentions progressing the eastern link road and river crossing to improve transport time reliability, network resilience, and capacity within and into the county and in particular, access in and out of Hereford.

As mentioned in the Plan, the ERiC scheme will provide a new river crossing for movements into and out of Hereford which will improve network resilience while also making Hereford more connected. ERiC will also provide an alternative crossing over the River Wye thus helping to reduce congestion on the existing A49 crossing and improve public transport travel times. The dedicated facilities for active modes provided on ERiC will help to encourage residents to use active modes for their journeys which will help to decrease the number of short car journeys in Hereford.

3. Understanding the Current Situation

3.1 Introduction

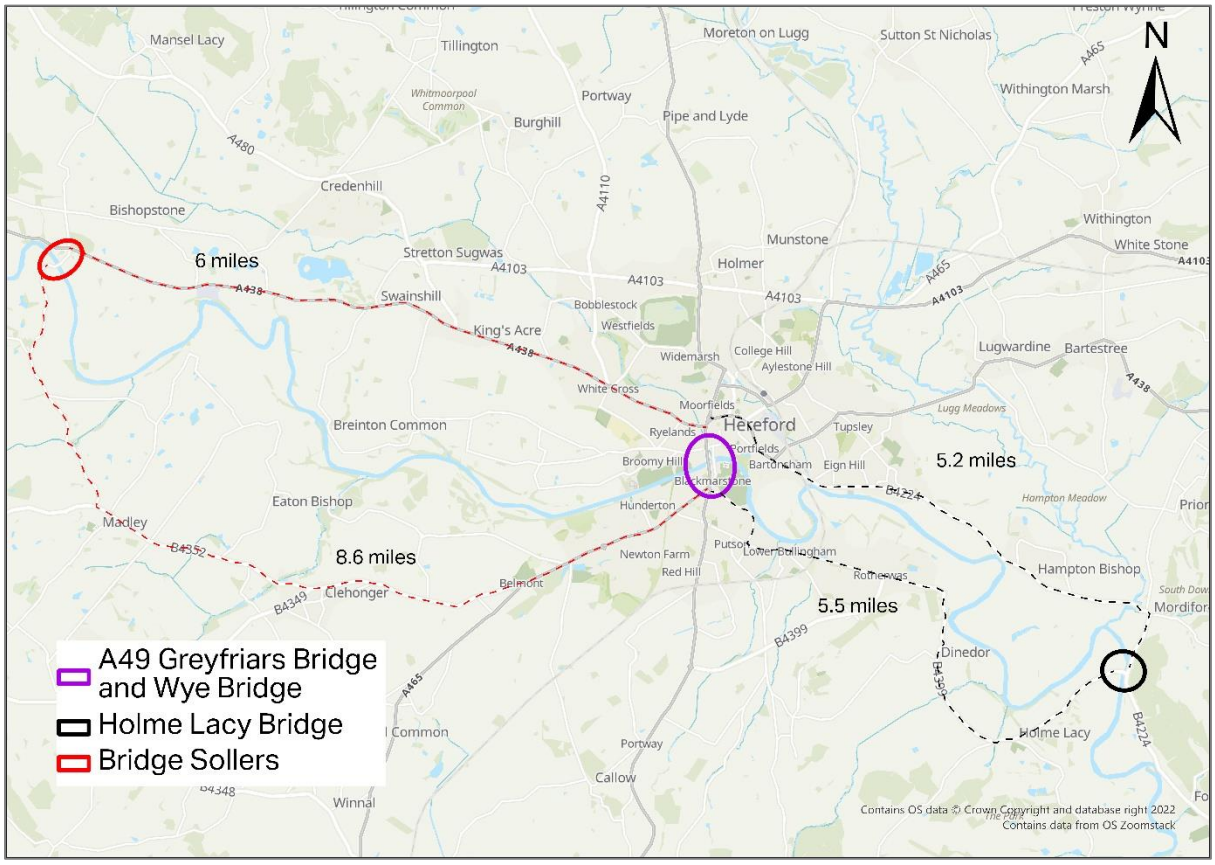
3.1.1 This section outlines the current transport situation in the study area utilising available data to gain an understanding of current issues.

3.2 Network Resiliency

3.2.1 Hereford's city centre is dissected by the River Wye, with key services, employment opportunities and residential areas located both to the north and south of the river. This acts as a barrier to movement across the city, with only two bridges carrying road traffic over the river. One bridge is the A49 – an urban dual-carriageway that is managed by National Highways and forms part of the SRN. The other; known as the Wye Bridge, is a historic bridge carrying St Martin's Street which is a narrow signal-controlled road carrying traffic in a one-way shuttle movement.

3.2.2 The nearest alternative river crossing by road to the west of the A49 is Bridge Sollers, which is a 6-mile drive along the A438. To the east, the nearest road crossing is along the Holme Lacy bridge, which is over 5 miles away from the A49 crossing. The locations of the city centre crossings and their comparative distances from the nearest alternative crossings are set out in **Figure 3-1**.

Figure 3-1: River Wye crossings and comparative locations



3.2.3 The existing infrastructure in place for crossing the river causes a number of issues, including:

- As demonstrated in the above figure, there are a lack of suitable alternatives for crossing the River Wye to the west or east of the city centre, with the nearest alternative crossing over 5 miles away. This leads to traffic having to route through the city centre and causes additional and potentially avoidable traffic flows through the centre. The knock-on impact is increased congestion, and longer journey times and vehicle kilometres travelled by road users looking to cross the river to the east and west of the city centre (with associated economic and environmental disbenefits)
- The A49 bridge is located within an Air Quality Management Area (AQMA), and therefore the high volumes of traffic being required to use the bridge is not conducive to meeting air quality objectives
- The reliance on the A49 and the Wye Bridge for crossing the River Wye by road goes against the Hereford City Masterplan's vision for this part of the city with its focus on leisure and hospitality interventions and its concept of Hereford as an 'outdoor city'
- During times of an incident along the A49 (whether that be a vehicle collision or maintenance works), the resiliency of the road network across Hereford is severely threatened, with the Wye Bridge being unsuitable in accommodating the volumes of traffic that the A49 would normally carry and there being a lack of alternative options.

3.2.4 It is therefore clear that an alternative crossing of the River Wye is essential to improve the resilience of the transport network in Hereford alongside contributing to local air quality objectives and delivering the vision of the Hereford City Masterplan.

3.3 Journey to Work

3.3.1 2011 Census data includes journey to work data which allows for an understanding of the origins and destinations of commuters and provides an insight in to commuting behaviour.

3.3.2 A range of analysis has been undertaken to determine travel patterns. **Table 3-1** indicates that 83% of people who have a job in Herefordshire also live in Herefordshire with much smaller proportions of people residing in locations outside of the area.

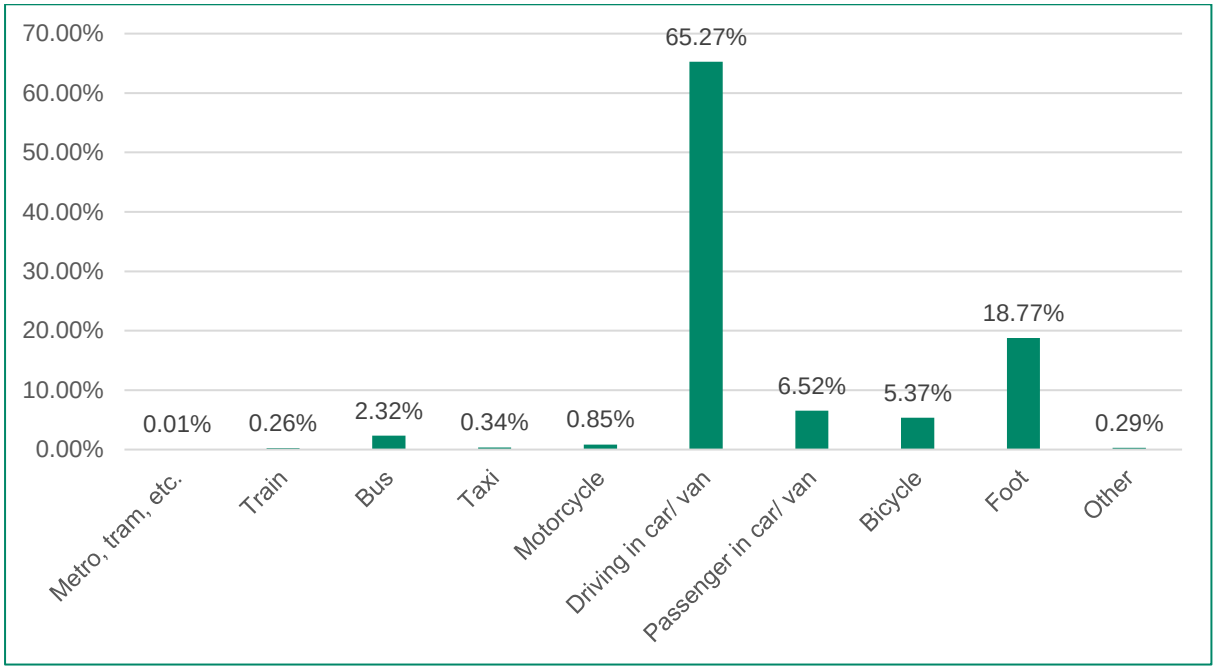
Table 3-1: Percentage of People Who Work in Herefordshire by Residence

Residence	Percentage
Herefordshire	83.25%
Forest of Dean	2.60%
Malvern Hills	2.08%
Powys	1.84%
Shropshire	1.82%
Monmouthshire	1.30%
Worcester	1.04%
Telford and Wrekin	0.57%
Gloucester	0.36%
Wychavon	0.32%

3.3.3 This indicates that a very high proportion of commuting trips remain within the county and thus it is essential to maintain resiliency of the road network in the area to provide reliable journey times for local traffic and facilitate future economic growth in the county.

3.3.4 **Figure 3-2** shows the mode of choice of the 83% of people who live and work in Herefordshire.

Figure 3-2: Mode share by people who live and work in Herefordshire



3.3.5 A significant proportion of people (71.8%), either as a driver or passenger, commute by car or van which highlights the reliance on the private car and the need for a well-functioning road network in Hereford. The delivery of ERiC will help to relieve congestion on the road network by providing an alternative route that does not go through Hereford city centre. Instead, it would provide an important link between the B4399 and A438 and to the Hereford Enterprise Zone and allows for greater route choice which avoids the city centre.

3.3.6 Active modes make up 24.1% of the commuting modes for people who live and work in Herefordshire. Walking is the second most used mode to commute to work at 18.8% while cycling is third most common mode at 5.4%.

3.3.7 2.3% of journeys are made by bus which represents a low proportion of total mode share. However, it is expected that ERiC will provide an attractive option for journeys. It will provide a direct connection across the River Wye for public transport, with limited junction connection points, helping to improve journey time reliability and providing a free-flowing route for public transport users. This will help to improve other issues faced by Hereford such as the resilience of the network in the city centre and help to achieve some of the wider objectives of the Local Transport Plan (adopted in 2016).[17]

3.3.8 In addition, the provision of an alternative route across the River Wye other than the A49 will help to reduce traffic demand in the city centre. This will have a knock-on effect of reducing congestion and improving the reliability of bus services serving the centre of Hereford, thereby increasing the attractiveness of the bus as an alternative mode of travel.

3.3.9 2011 census data also indicates that there are a significant number of short commuter trips being made by car in Hereford. Indeed 73% of commuter trips within Hereford are less than 5km which is significantly higher than the national average at 40% (excluding London). This is indicative of the high proportion of people who live and work in Herefordshire and who travel by car (**Table 3-1** and **Figure 3-2**). A 5km distance can be cycled in 20 minutes. Therefore, through the provision of improved active travel infrastructure (which the ERiC scheme will help to achieve) there exists an opportunity to convert many of the less than 5km car journeys into cycle trips.

3.3.10 Further analysis of the 2011 census journey to work flow data by mode (using Data Shine) has been undertaken to establish key travel movements along key corridors for journeys to and from Hereford city centre. **Figure 3-3** shows the key travel movements made by car users while **Figure 3-4** shows the pattern of commuting movements for bus journeys.

[17] https://www.herefordshire.gov.uk/travel-transport/local-transport-plan

3.3.11 The data is presented for LSOA areas with centres represented by orange dots. The red lines represent where residents from the chosen LSOA are leaving for work while the blue lines are the number of residents arriving from other LSOAs to the chosen LSOA for work. The most frequent movements are highlighted by the thicker blue lines.

Figure 3-3: 2011 Census Journey to Work Data: Car Journeys to/from Hereford City Centre

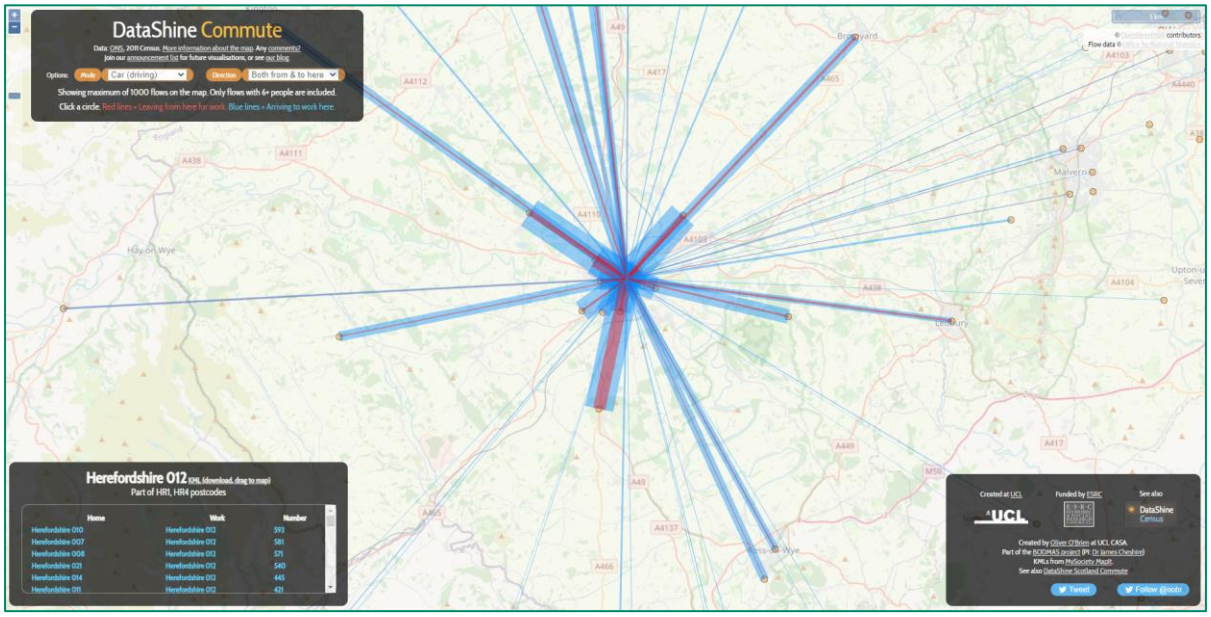
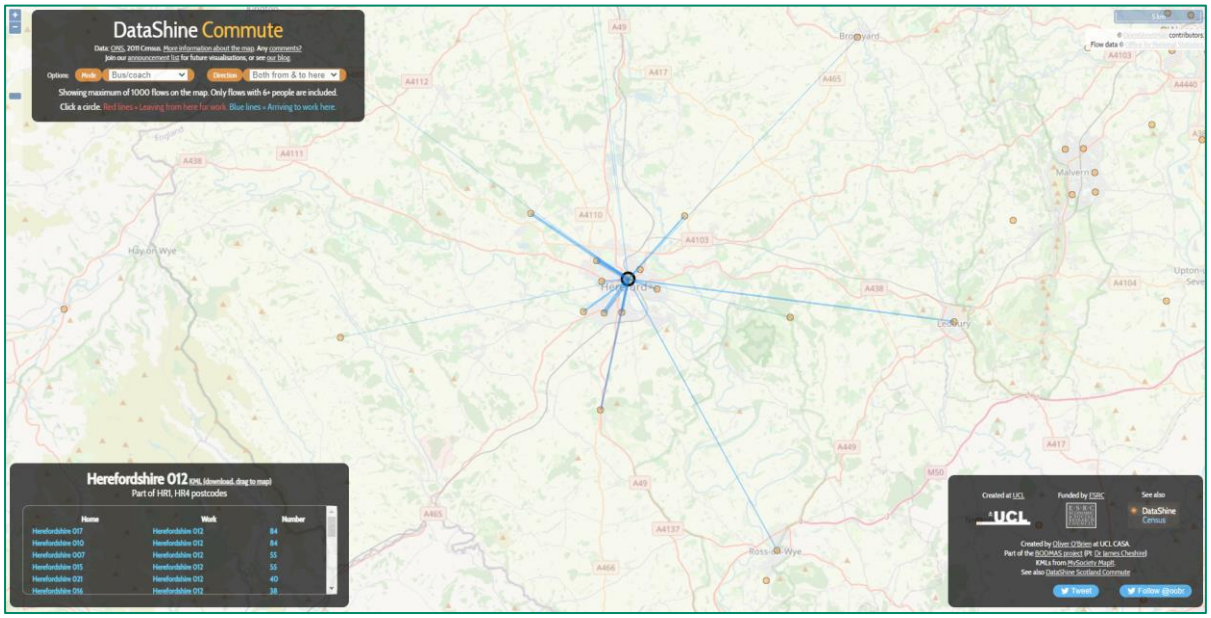


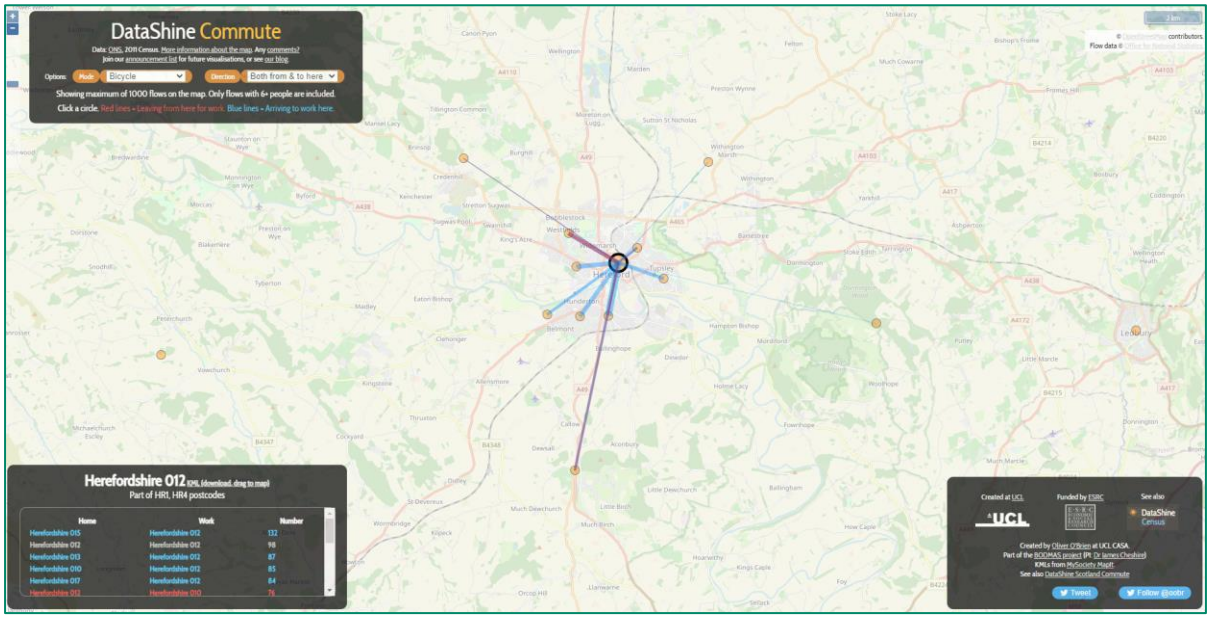
Figure 3-4: 2011 Census Journey to Work Data: Bus Journeys to/ from Hereford City Centre



3.3.12 The maps underline the fact that car use is the predominant mode used by commuters and that most of the trips to Hereford city centre for work are made from LSOAs in Hereford, further demonstrating the short distance of many commuter journeys within Hereford. Bus journeys are also generally shorter than car journeys.

3.3.13 **Figure 3-5** shows the pattern of commuting movements for cycle journeys to and from Hereford city centre. Like car journeys most commuting movements are made within Hereford are short distances (less than 5 miles).

Figure 3-5: 2011 Census Journey to Work Data: Cycle Journeys to/ from Hereford City Centre

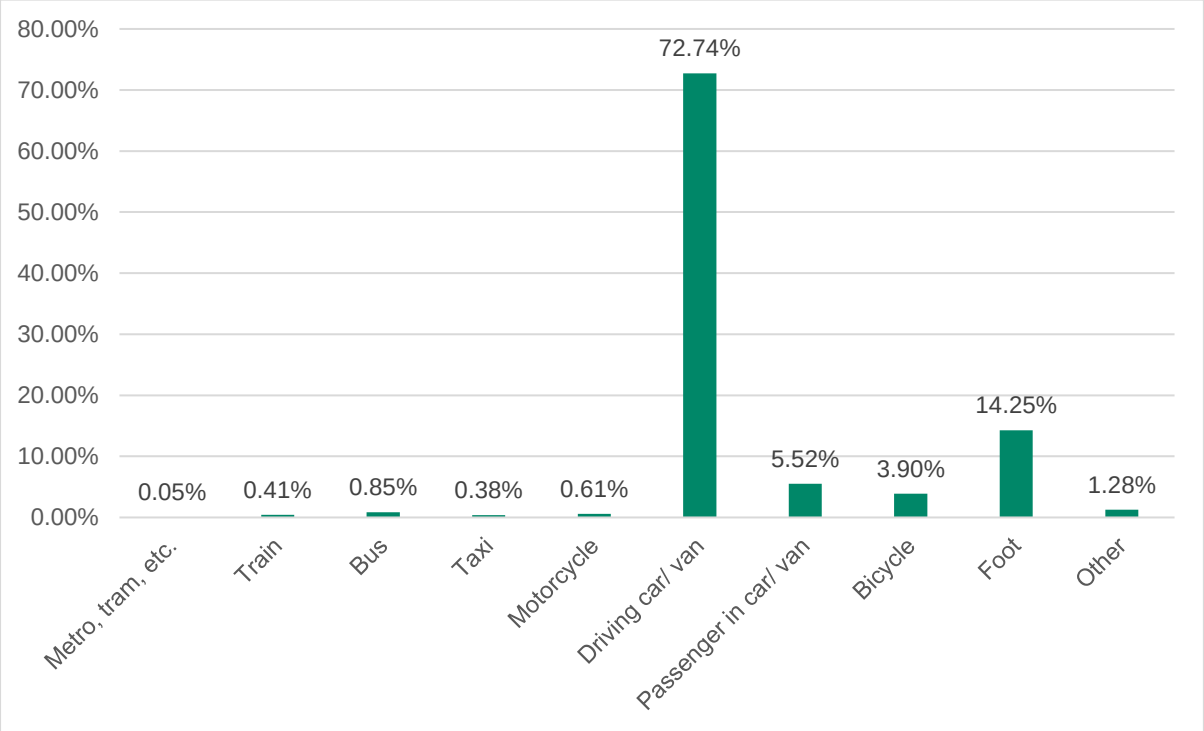


3.3.14 2021 Census data has also been reviewed however at the time of this OAR being produced (July 2023), this data only outlines how people who live in Herefordshire travel to work, so they may travel outside of Herefordshire for work. This will likely make usage of private cars higher as this data includes Herefordshire residents who travel long distances for work, so they are unlikely to use active modes or public transport. It is important to note that the 2021 Census took place during the Covid-19 pandemic so care is required when interpreting the results of the analysis.

3.3.15 26% of Herefordshire residents worked mainly from home which is a 20% increase from the 2011 Census where 6% of residents worked mainly at or from home.

3.3.16 **Figure 3-6** shows the mode choice of the 74% of Herefordshire residents who do not work mainly work from home.

Figure 3-6: Mode share by people who live in Herefordshire and do not work from home



3.3.17 78.3% of people commute by car or van (either as a driver or passenger) which highlights the continued reliance on private vehicles and the importance of an efficient and reliable road network in Hereford. ERiC will help to relieve congestion on the road network by providing an

alternative route that avoids the city centre. This will increase the route choice for users and provide greater access to the Hereford Enterprise Zone.

3.3.18 18.2% of participants used active modes to commute to work with walking being the second most used mode (14.3%) and cycling being the third most used (3.9%). By incentivising walking and cycling through the provision of improved infrastructure for these modes, this will help to increase the proportion of people travelling to work through active modes.

3.3.19 Bus trips make up a low percentage of total mode share with the percentage of trips being 0.9%. This is likely as a result of the Covid-19 pandemic restrictions contributing to the low usage; however, it highlights a need to incentivise bus usage to recover from the Covid-19 pandemic. ERiC will help to incentivise bus usage by increasing the route choice of buses, and improving their reliability through reduced congestion in the city centre.

Summary

3.3.20 Analysis of the journey to work movements highlights how most commuting trips to and from Hereford city centre are short journeys (approximately 5km or less). This further underlines the importance of ensuring a resilient road network in Hereford to ensure reliable journey times for commuters by all modes and highlights the opportunity for modal shift if improved cycling facilities were provided.

3.3.21 The ERiC would help to improve the resiliency of the road network and reduce congestion in the city centre by providing an alternative route over the River Wye which will help to relieve pressure on the existing road network, including the A49. It will also provide a desirable connection for pedestrians and cyclists which would promote active travel and enable more of the short journeys in Hereford to be made by bike.

3.4 Traffic Flow Data

3.4.1 Traffic flow data for key routes into and out of Hereford and across the River Wye on the A49 have been collated from Automatic Traffic Count (ATC) data. The data has been obtained from the C2 Drakewell system which holds the data for various ATC sites across Hereford. However, the data for the site on the A49 has been obtained from WebTRIS due to no data being available on the C2 Drakewell system for this location.

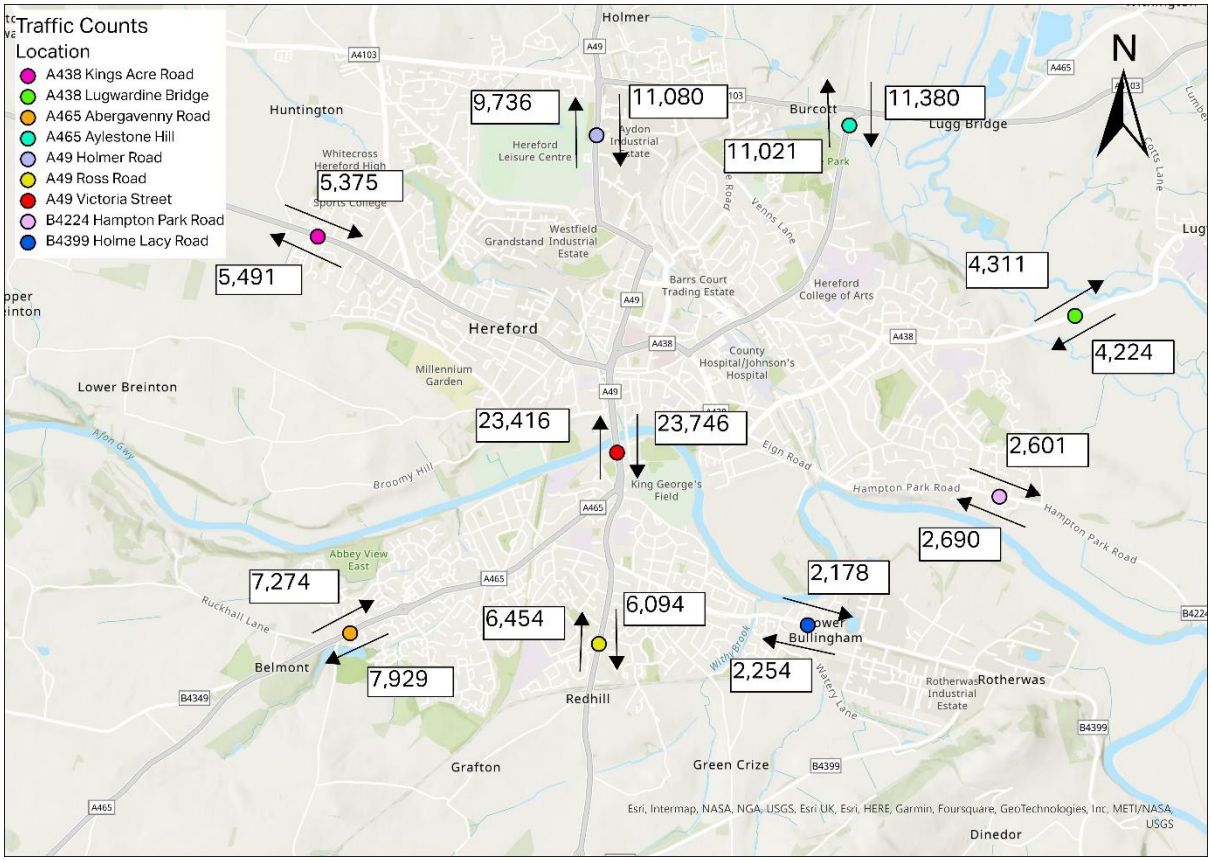
3.4.2 This analysis closely followed Transport Analysis Guidance (TAG) Unit M1.2 Data Sources and Surveys. Consequently, neutral months were chosen and days during school holidays and bank holidays were removed. It is also important to note that the weekends either side of a school holiday were also removed to ensure data neutrality. Collectively, this data cleaning has helped to ensure both the validity and reliability of the traffic flow data that has been analysed and presented in this report. **Table 3-2** shows the years and months in which data was obtained for each count site (data used excludes school holidays and bank holidays). While most of the count data has been taken from May 2022, some sites did not have newly available data and consequently, older neutral months were selected.

3.4.3 A summary of the average daily traffic flows (ADTF) at each count analysed is presented in **Figure 3-7**, whilst **Figure 3-8** and **Figure 3-9** demonstrate the distribution of the average daily flows at each count site.

Table 3-2: Traffic Count Data Locations and Data Periods

Location	Period
A438 Kings Acre Road	May-22
A438 Lugwardine Bridge	May-22
A465 Abergavenny Road	May-22
A465 Aylestone Hill	Sep-21
A49 Holmer Road	May-22
A49 Ross Road	Oct-21
A49 Victoria Street	May-22
B4224 Hampton Park Road	Oct-21
B4399 Holme Lacy Road	May-22

Figure 3-7: ADTFs at sites around Hereford



Source: C2 Drakewell and WebTRIS

Figure 3-8: ADTF profiles for vehicles heading to Hereford

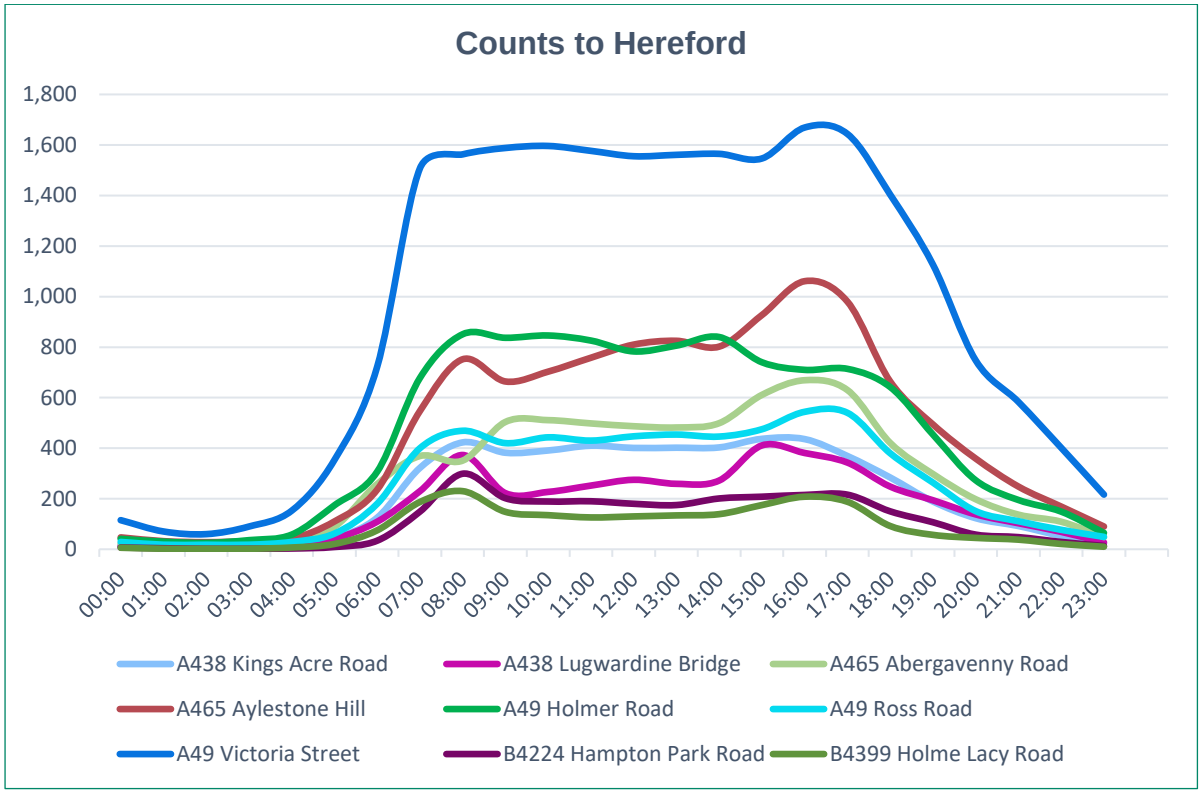
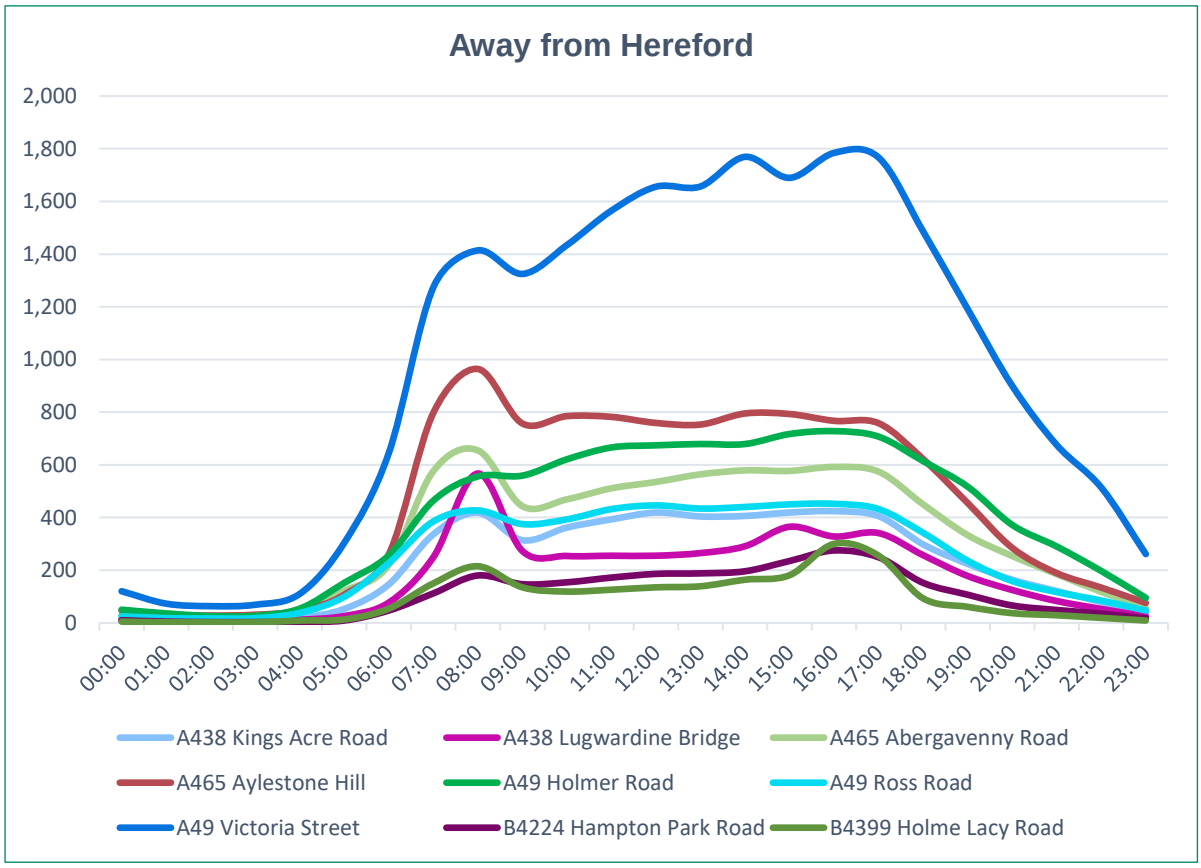


Figure 3-9: ADTF profiles for vehicles heading from Hereford



3.4.4 The above figures clearly demonstrate that the A49 Victoria Street experiences significantly higher traffic flows when compared to the rest of the network in Hereford city centre. This in part is to be expected given that it operates as part of the SRN and is a dual carriageway route through the heart of the city centre. As previously outlined, there are also a significant

lack of alternative routes for vehicles routeing across the River Wye which further increases traffic demand along the route.

3.4.5 To understand the volume of flows experienced along the A49 in relation to its overall theoretical capacity, guidance from the Design Manual for Roads and Bridges (DMRB) Volume 5, Section 1: Assessment and Preparation of Road Schemes, Part 3. TA 79/99 Amendment No 1 has been used.

3.4.6 According to the DMRB, the maximum capacity of a two-lane dual carriageway spanning 6.75m wide is 2,300 vehicles per hour (this width is akin to the width of the A49 Victoria Street). This assumes a Road Type of UAP3 which is defined in the DMRB as a "variable standard road carrying mixed traffic with frontage access, side roads, bus stops and at-grade pedestrian crossings". It states that the speed limit is usually 30-40mph which aligns with the 30mph speed limit restrictions in place along this section of the A49.

3.4.7 85% of the full capacity of a UAP3 road is 1,955 vehicles – any flow levels above 85% of road capacity are considered to be representative of a non-free flowing and congested link and therefore this figure is considered to be a useful proxy for understanding the performance of the route.

3.4.8 **Figure 3-10** and **Figure 3-11** set out the volume of average weekday flows recorded along the A49 in May 2022.

Figure 3-10: Volume over Capacity A49 Victoria Street (Northbound)

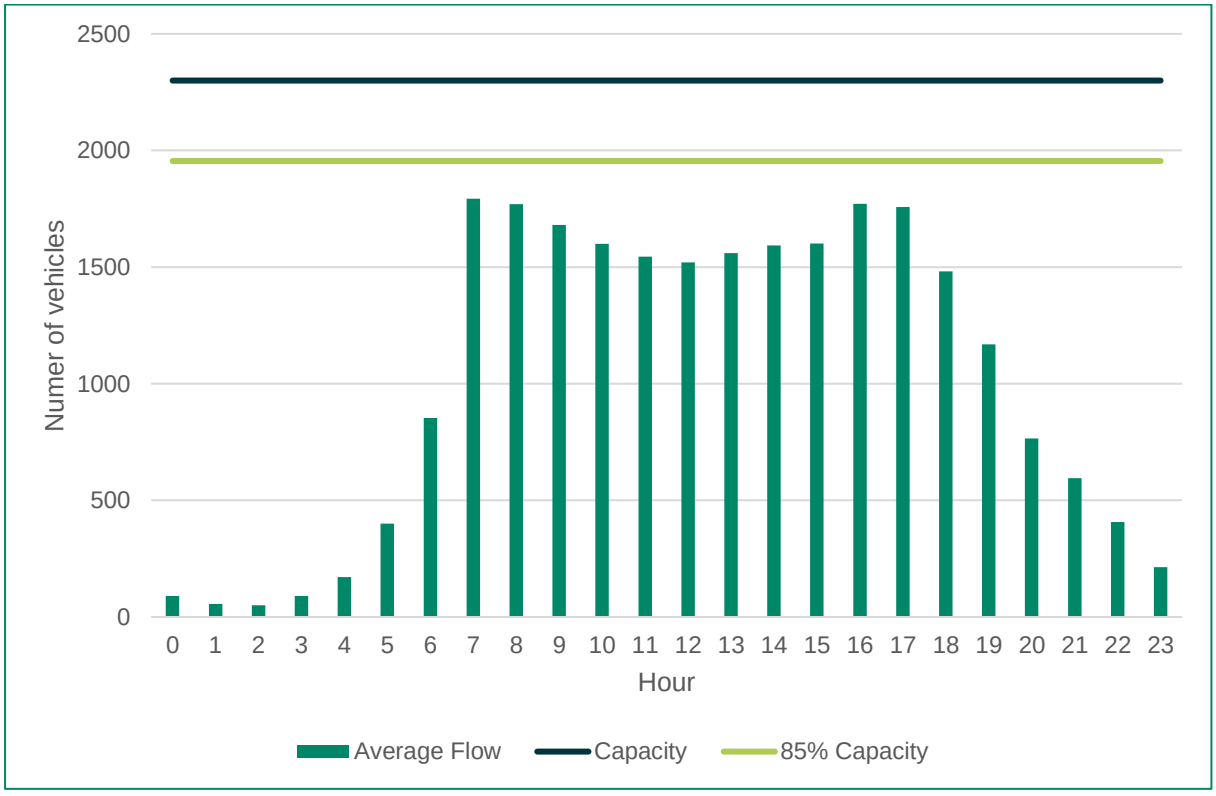
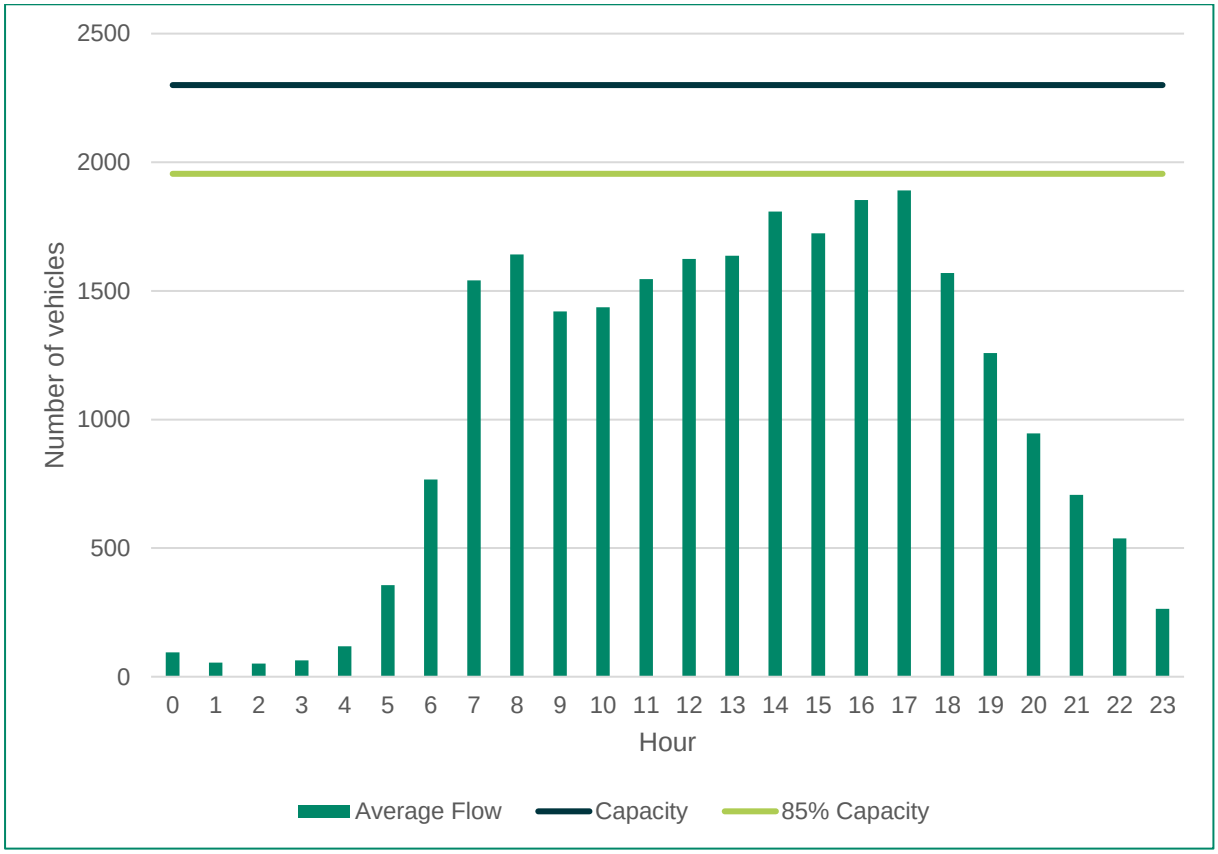


Figure 3-11: Volume over Capacity A49 Victoria Street (Southbound)



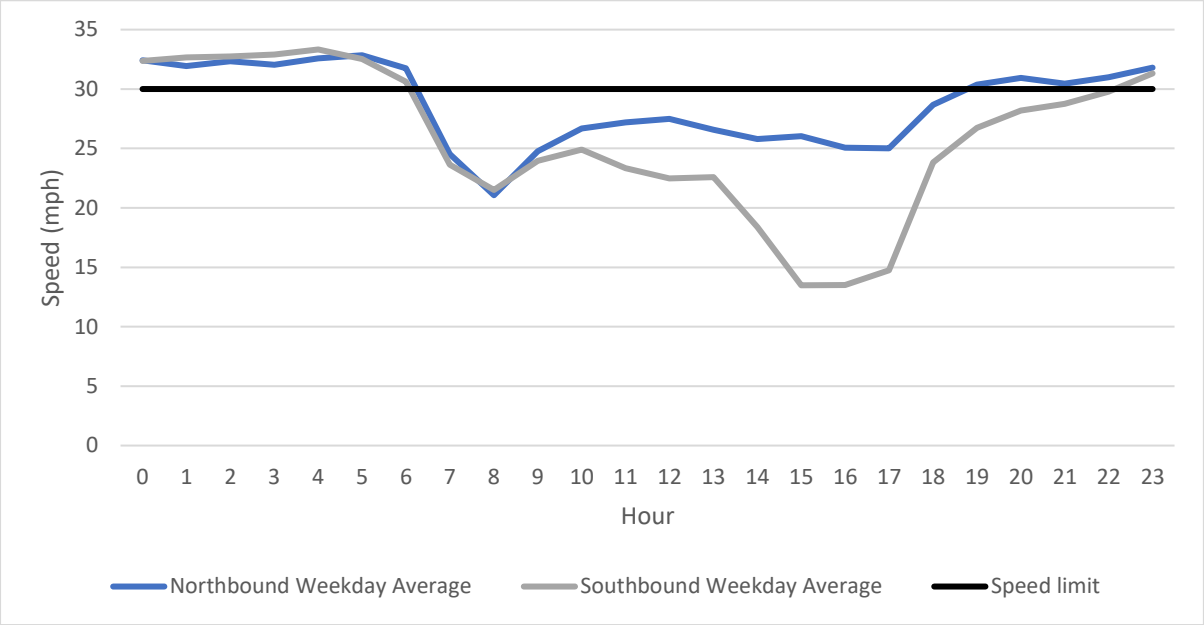
3.4.9 Whilst the volume of average weekday flows on the A49 does not exceed theoretical capacity at any times of the day, during the PM peak period flows are very close to the 85% capacity threshold, particularly in the southbound direction.

3.4.10 This indicates that there is very limited spare capacity along the existing river crossing. With significant development growth planned to come forward across Herefordshire (as set out in Section 4), it is likely that, without the proposed new bridge, the performance of the A49 will worsen and movements over the bridge crossing will become more constrained if no interventions come forward. An alternative bridge crossing would provide additional routeing choice and reduce demand on the A49 which would help to ensure that the Volume over Capacity (VoC) remains lower than 85%.

3.5 Speed Data

3.5.1 Analysis of average hourly speeds demonstrates a variability in journey times along the A49, especially during peak hours. Speed data has been derived from the same counter in WebTRIS along the A49 Victoria Street, with the outputs from the data highlighted in **Figure 3-12**.

Figure 3-12: Average weekday speeds along the A49 Victoria Street



3.5.2 It can be seen that during the AM peak period on a weekday, average speeds drop below the 30mph speed limit by approximately 8-9mph. In the PM peak the drop in speeds is even more pronounced with average speeds as low as 13mph which is more than 50% lower than the speed limit. This indicates that there are performance issues along this section of the network which is contributing to unreliable journey times. This significant reduction in speeds could also in part be attributed to the relative proximity of the counter to the A49 / A465 signalised junction and could suggest capacity issues at this junction at peak times which is causing traffic to tail back and slower speeds along the A49 mainline.

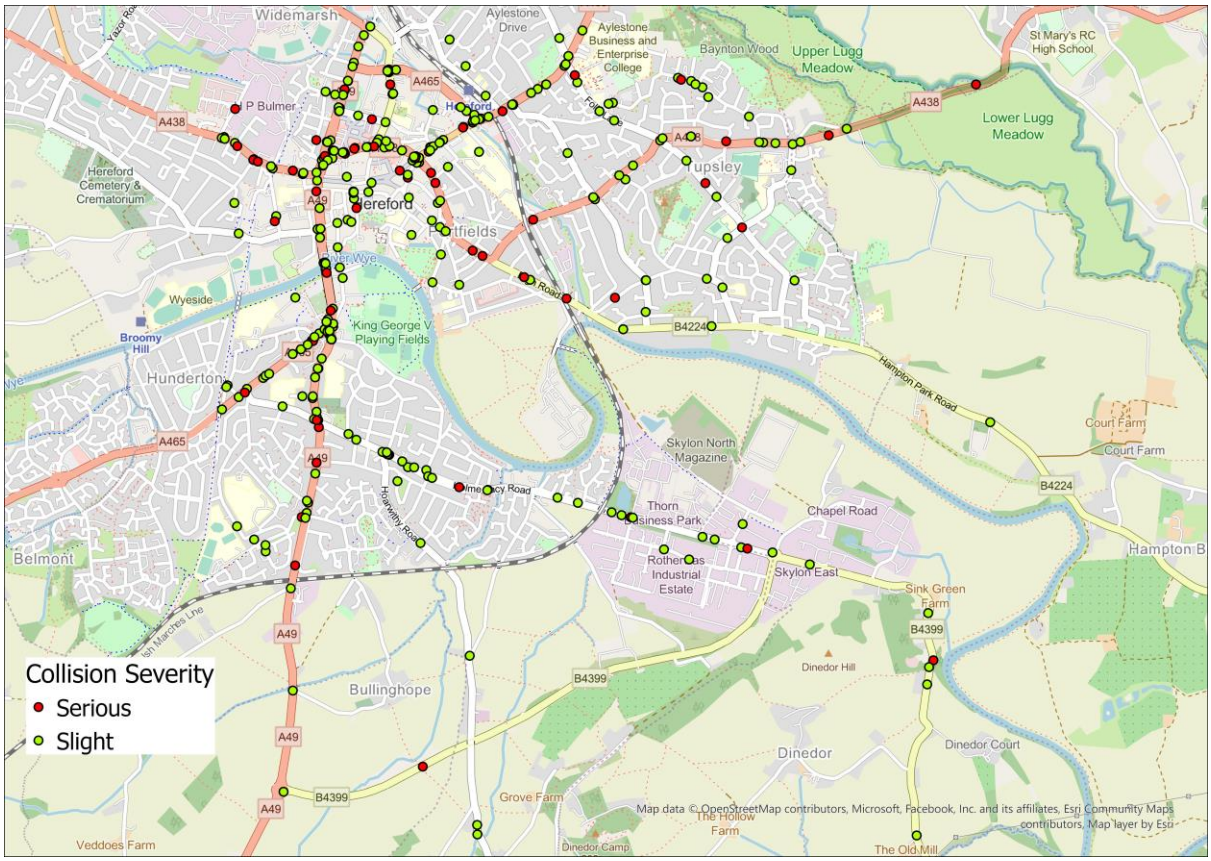
3.5.3 The lower speeds during peak periods also indicates that the bridge crossing is used as an important route for commuter traffic and therefore safeguarding its performance is paramount in harnessing business productivity and economic growth in the city centre.

3.5.4 If an alternative river crossing was constructed, this would be helpful in providing additional routeing choice for vehicle users, particularly those seeking to access employment opportunities in the east of Hereford such as at Hereford Enterprise Zone. This would help to relieve demand on the A49 and would therefore help to improve journey time reliability and average speeds during the peak hours.

3.6 Collision Data

3.6.1 In order to understand the existing road safety across the study area, reported collision data has been received from Herefordshire Council over the period January 2017 to November 2022. The locations of all reported collisions and their severities are highlighted in **Figure 3-13**.

Figure 3-13: Locations and severity of collisions recorded across the study area between January 2017 - November 2022



3.6.2 The number of collisions by year, and severity type are set out in **Table 3-3**.

Table 3-3: Total number of collisions by year and severity

	01/01/2017 - 31/12/2017	01/01/2018 - 31/12/2018	01/01/2019 - 31/12/2019	01/01/2020 - 31/12/2020	01/01/2021 - 31/12/2021	01/01/2022 – 20/11/2022	Total
Fatal	0	0	0	0	0	0	0
Serious	7	9	12	15	10	10	63
Slight	61	49	53	26	48	29	266
Total	**68**	**58**	**65**	**41**	**58**	**39**	**329**

3.6.3 As can be seen from **Table 3-3**, across the period January 2017 – November 2022, there have been no fatal collisions across the study area, with over 80% of the total collisions (266) being recorded as Slight in severity.

3.6.4 The Killed or Seriously Injured (KSI) Severity Ratio (the proportion of collisions resulting in either serious or fatal injuries) is 19% for the study area, with 63 of the recorded Personal Injury Collisions (PICs) having resulted in serious injury. This is slightly lower than compared to the national average of 22% for A, B & C roads in England as set out in Road Casualties Great Britain 2021 (RCGB 2021).

3.6.5 In terms of the collisions along the existing A49 river crossing, these incidents are set out in **Table 3-4**. This includes the number of collisions reported along an approximately 850m stretch along the A49 up to the junction with the A438 (E) in the north and down to the junction with the A465 in the south.

Table 3-4: A49 Victoria Street collisions by year and severity

	01/01/2017 - 31/12/2017	01/01/2018 - 31/12/2018	01/01/2019 - 31/12/2019	01/01/2020 - 31/12/2020	01/01/2021 - 31/12/2021	01/01/2022 – 20/11/2022	Total
Fatal	0	0	0	0	0	0	0
Serious	0	1	0	1	1	0	3
Slight	6	2	4	1	3	0	16
Total	**6**	**3**	**4**	**2**	**4**	**0**	**19**

3.6.6 The KSI Severity Ratio is 15.8% for this short stretch of the A49, with three of the recorded PICs having resulted in serious injury. This is lower than the national average of 21% for A-roads in England (RCGB, 2021).

3.6.7 However, in total there have been 19 reported collisions across the surveyed period. It is likely that for each time there has been a collision (regardless of the severity), this would lead to diversions and/or reduced throughput on the bridge. Given the lack of alternative crossings over the River Wye, each time there is an incident along this section of the A49, this poses a significant challenge to the resilience of the transport network across Hereford.

3.6.8 Collisions along this section of the A49 have been broken down by type to understand any particular trends as set out in **Table 3-5.**

Table 3-5: Collision type along the A49

	01/01/2017 - 31/12/2017	01/01/2018 - 31/12/2018	01/01/2019 - 31/12/2019	01/01/2020 - 31/12/2020	01/01/2021 - 31/12/2021	01/01/2022 – 20/11/2022	Total
Rear End Shunt	1	1	2	1	3	0	**8**
Side Swipe	4	1	0	0	0	0	**5**
Medical Episode	0	0	1	0	0	0	**1**
Pedal Cycle	0	1	1	1	0	0	**3**
Pedestrian	1	0	0	0	1	0	**2**
Total	**6**	**3**	**4**	**2**	**4**	**0**	**19**

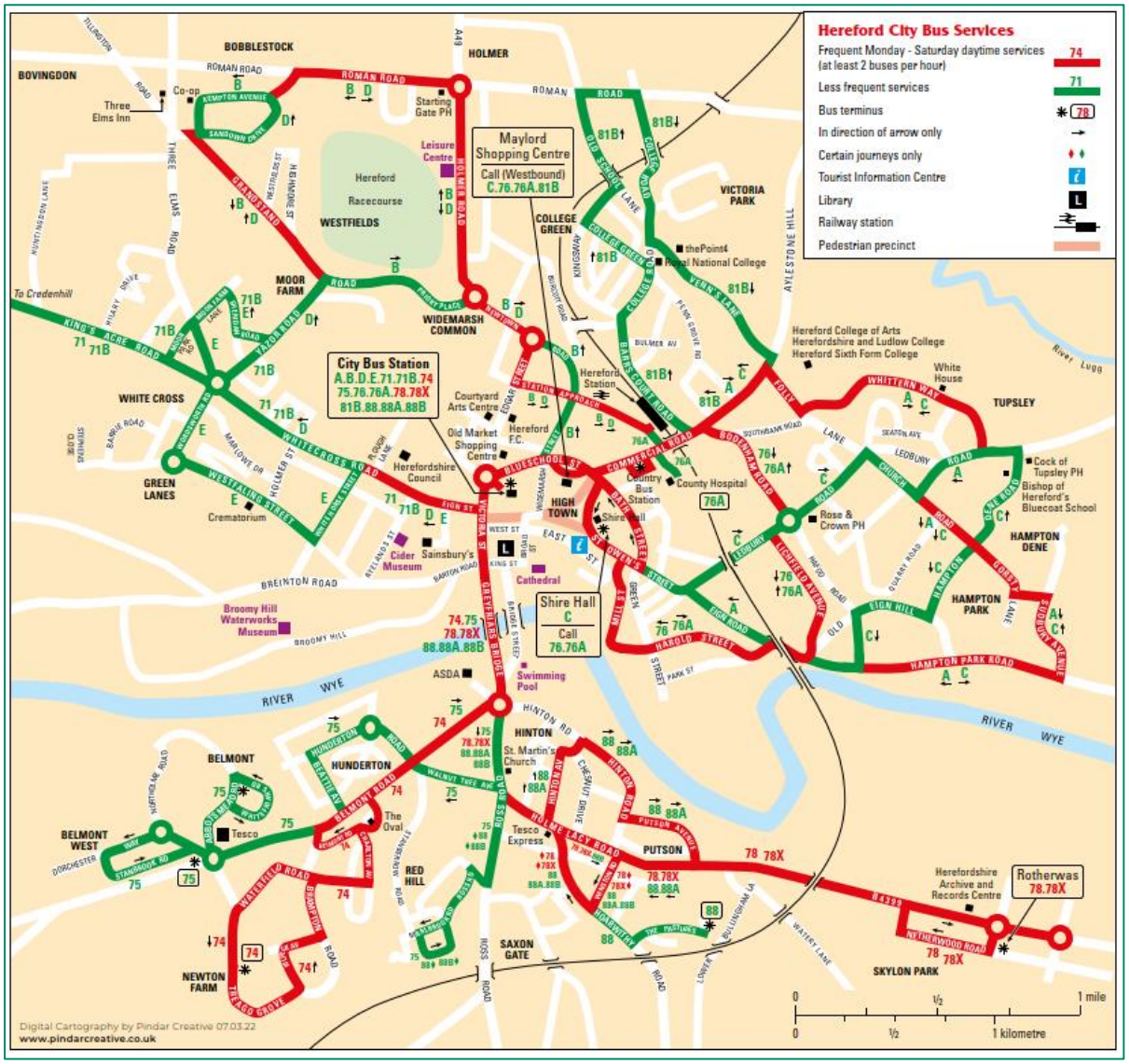
3.6.9 The majority of collisions (42%) were the result of rear end shunts. These types of collisions are most commonly observed along sections of the network when drivers fail to stop in time in slow-moving traffic, which is often observed along the bridge crossing, particularly during peak hours.

3.6.10 It should be noted that along the stretch of the A438 in proximity to where the northern extent of the ERiC is planned to tie-in, there have been 8 collisions between January 2017 – November 2022 of which 4 of them (50%) have involved cyclists, which suggests a safety issue for cyclists along the A438. In advance of the ERiC scheme being delivered, there are plans for improvements to be made to the active travel infrastructure along the A438 which should help to improve safety for cyclists before greater numbers of cyclists begin to use the route as a connection point from the ERiC.

3.7 Public Transport

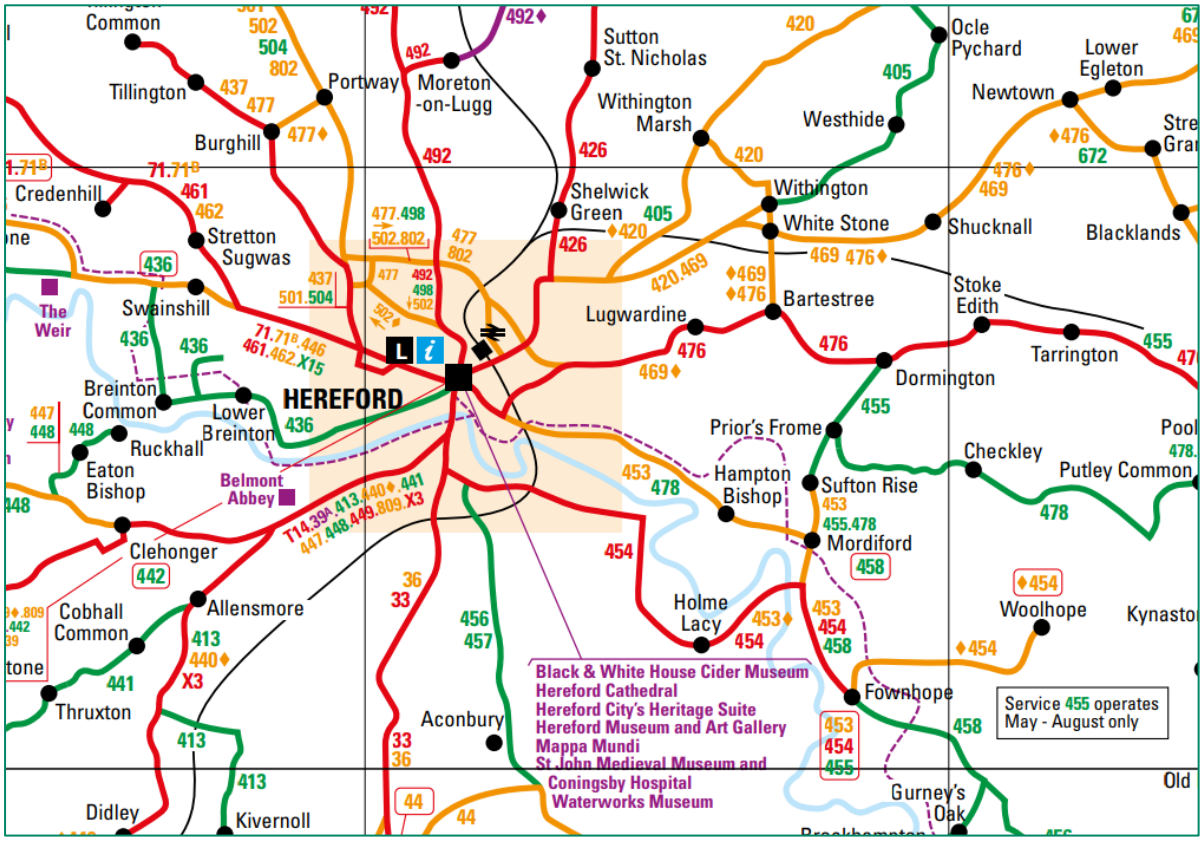
3.7.1 A review of existing bus service provision has been undertaken across Hereford, with a particular focus on existing services in the vicinity of the study area for this project. As demonstrated in **Figure 3-14** there are a number of frequent bus services (at least 2 buses per hour) connecting eastern parts of Hereford with the city centre.

Figure 3-14: Hereford City Bus Services Map (Source: herefordshire.gov.uk, last updated April 2023[18])



[18] https://www.herefordshire.gov.uk/downloads/download/78/bus_maps

Figure 3-15: Herefordshire County Bus Services Map (source: herefordshire.gov.uk, last updated April 2023[19])



3.7.2 Key services which would be likely to connect with the potential ERiC alignment are set out in **Table 3-6**, along with their respective frequencies. This includes services at both the proposed northern and southern connection points of the new route and therefore any services routeing along the new alignment would be part of a coherent network. The most frequent service (78 / 78X) is at the southern end of the proposed ERiC alignment between Hereford and Rotherwas where the Industrial Estate and Enterprise Zone are located.

Table 3-6: Bus Services (source: bustimes.org[20])

Service Number / Provider	Origin-Destination	Route	Frequency
469 DRM Bus	Hereford - Bromyard	A438	Twice Daily
476 DRM Bus	Hereford - Ledbury	A438	60 minutes
453 Yeomans Travel	Hereford Country Bus Station - Court Orchard	Eign Road / Hampton Park Road	60 – 90 minutes
78 / 78X Yeomans Travel	Hereford - Rotherwas	Holme Lacy Road / The Straight Mile / B4399	15 – 30 minutes
454	Hereford Country Bus Station - The Nurdens	Holme Lacy Road / The Straight Mile / B4399	60 minutes

[19] https://www.herefordshire.gov.uk/downloads/download/78/bus_maps
[20] https://bustimes.org/localities/hereford

Service Number / Provider	Origin-Destination	Route	Frequency
Yeomans Travel			

3.7.3 Despite the frequent services in this part of Hereford, the Herefordshire Bus Service Improvement Plan (BSIP) highlighted that according to a survey of employees working at the Enterprise Zone, only 1% commuted to work by bus. Therefore this reflects the fact that further improvements are required to the public transport infrastructure to increase user uptake. The ERiC will improve access to the Enterprise Zone by bus which should help to encourage more people to use the bus to travel to work.

3.7.4 At a national level, the Bus Fare Cap Grant scheme, is a government funded scheme introduced in January 2023 which caps most single bus journeys across England at £2. The scheme is set to run through to end of June 2023. According to surveys undertaken by Transport Focus, more than one in 10 people said they were using the bus to travel more[21], indicating that the potential for increasing bus patronage and encouraging mode shift is there if the appropriate level of service and pricing strategy is in place.

3.7.5 The implementation of ERiC would support in improving the infrastructure to accommodate free-flowing bus journeys as part of a coherent network of services which would encourage more people to shift to more sustainable modes.

3.8 Active Travel

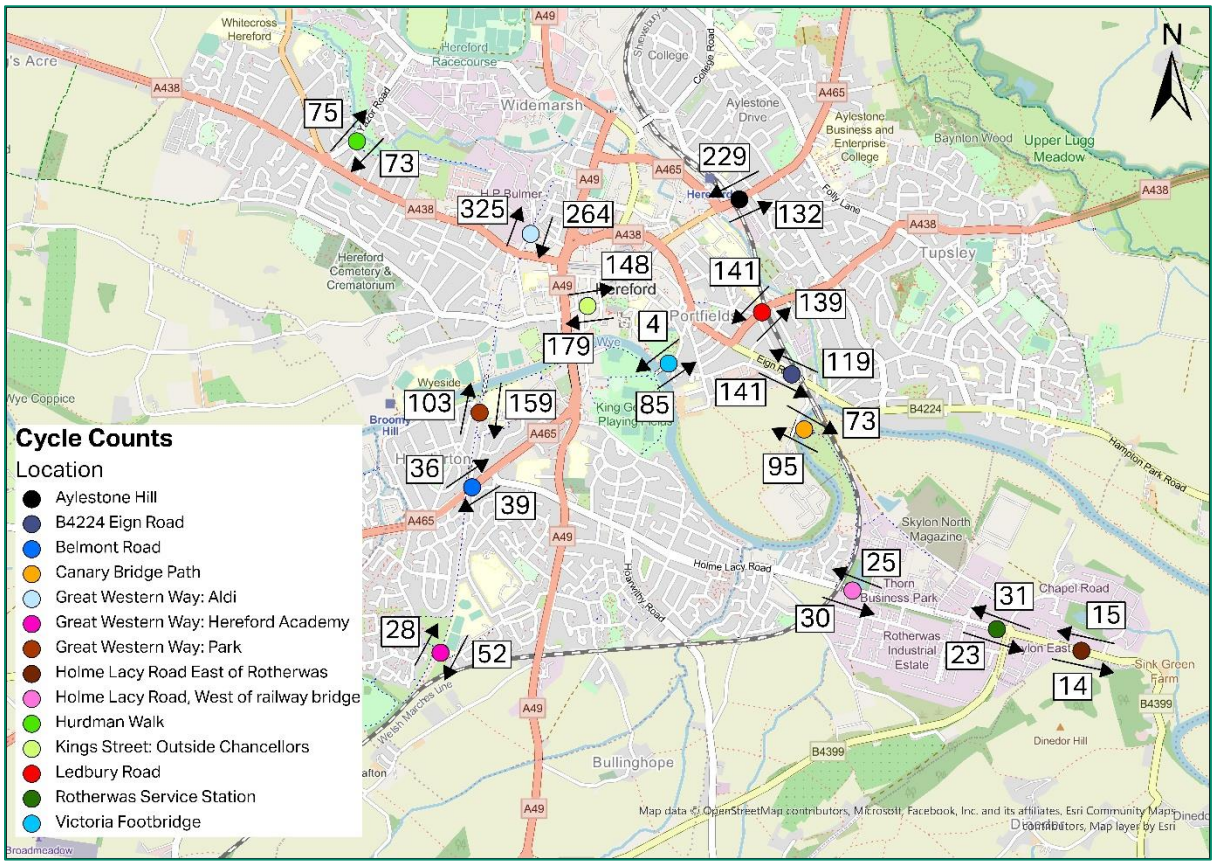
3.8.1 A summary of the annual daily traffic flows (ADTF) at each cycle count site analysed is presented in **Figure 3-16**, whilst **Figure 3-17** and **Figure 3-18** show the distribution of the average daily cycle flows at each count site. **Table 3-7** shows the years and months in which data was obtained for each count site (data used excludes school holidays and bank holidays).

Table 3-7: Cycle Count Data Locations and Data Periods

Location	Period
Great Western Way: Aldi	March-22
Great Western Way: Hereford Academy	March-22
Kings Street: Outside Chancellors	Oct-22
Great Western Way: Park	March-22
Hurdman Walk	Oct-22
Victoria Footbridge	March-22
Belmont Road	March-22
Holme Lacy Road East of Rotherwas	March-22
Rotherwas Service Station	March-22
Holme Lacy Road, West of railway bridge	March-22
Canary Bridge Path	March-22
B4224 Eign Road	March-22
Ledbury Road	March-22
Aylestone Hill	March-22

[21] https://www.bbc.co.uk/news/business-65177420

Figure 3-16: ADTF of cyclists around Hereford



Source: C2 Drakewell

Figure 3-17: ADTF profiles for cyclists heading away from Hereford

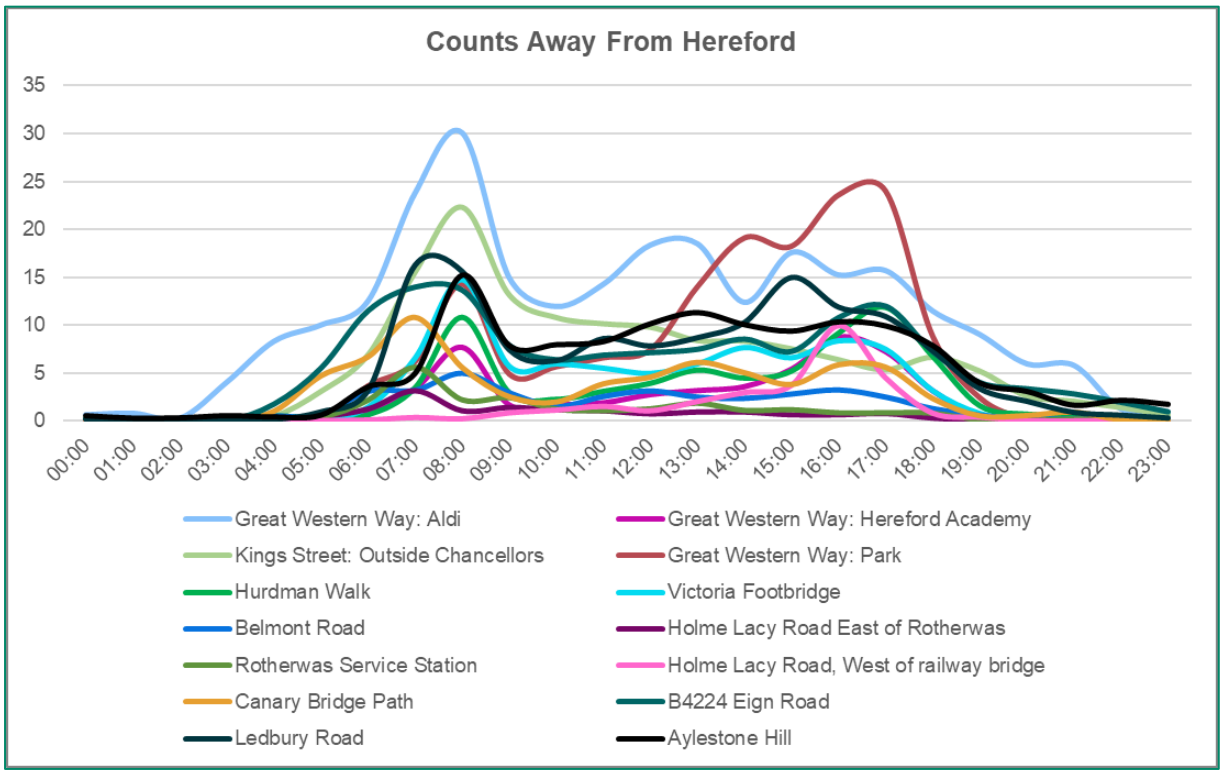
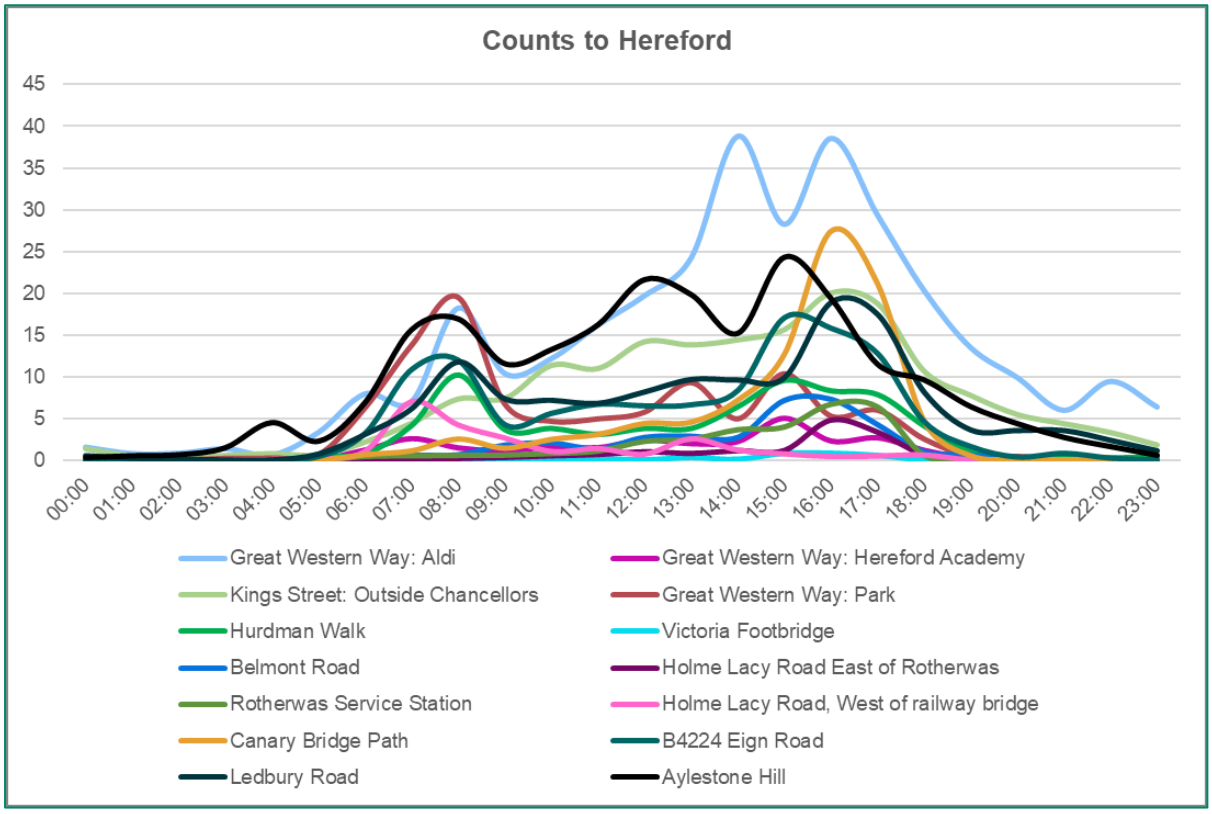


Figure 3-18: ADTF profiles for cyclists heading to Hereford



3.8.2 As can be seen from **Figure 3-16,** cycle flows in the vicinity of the proposed ERiC corridor are currently low, with counts of between 14-31 cyclists per day being recorded at the sites along Holme Lacy Road and at Rotherwas Service Station, which is close to where the southern connection of the ERiC route is likely to be.

3.8.3 With the implementation of the ERiC scheme and the provision of LTN 1/20 compliant cycle facilities along its route, this is likely to encourage cycling up-take in this part of Hereford.

3.8.4 Alongside this, Herefordshire Council has plans to deliver segregated walking and cycling infrastructure and improvements to crossings along Holme Lacy Road between Hereford Enterprise Zone and the A49 junctions, through the use of funding awarded as part of the Levelling Up Round 2 programme. The implementation of these improvements along with the construction of the ERiC will help to significantly improve cycling infrastructure to the east of Hereford and provide a more coherent network that is likely to be better used by cyclists than in the current situation.

3.8.5 The highest cycle counts are recorded at a site along the Great Western Way near to Aldi, which is a dedicated pedestrian footpath and cycleway. This indicates that if suitable infrastructure is in place then it is likely to be well-used by cyclists.

3.9 Health

3.9.1 To determine levels of physical activity across Herefordshire, data has been sourced from an Active Lives survey carried out by IPSOS-MORI on behalf of Sport England between May 2017-2018[22]. The survey was carried out across Herefordshire and Worcestershire (H&W), with key outputs from the survey displayed in **Figure 3-19** below.

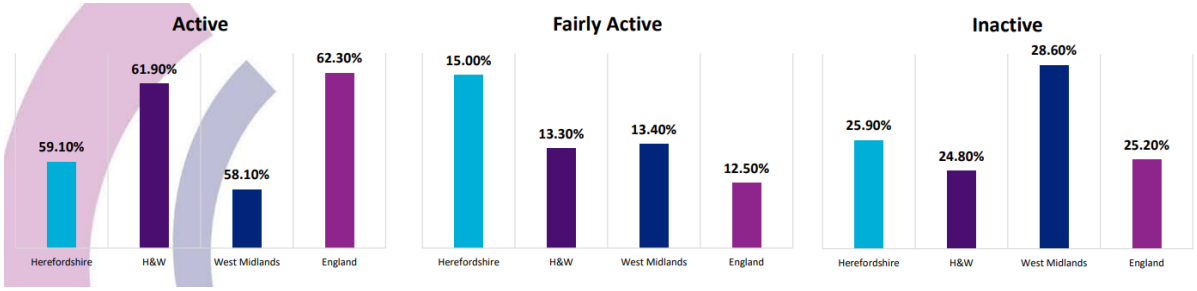
3.9.2 Depending on the number of minutes of moderate intensity equivalent (MIE) physical activity, people are described as being:

- Inactive – Doing less than 30 minutes a week
- Fairly active – Doing 30-149 minutes a week

[22] https://www.activehw.co.uk/uploads/sport-england-active-lives-survey-may-1718.pdf

- Active – Doing at least 150 minutes a week

Figure 3-19: Physical activity levels in Herefordshire compared to regional and national averages



3.9.3 It can be seen that across Herefordshire 25.9% of the population are inactive which is higher than the national average. Whilst it has the highest amount of people who are "fairly active", it has the lowest proportion of people who are active across the H&W area at 59.1% which is over 3% lower than the national average.

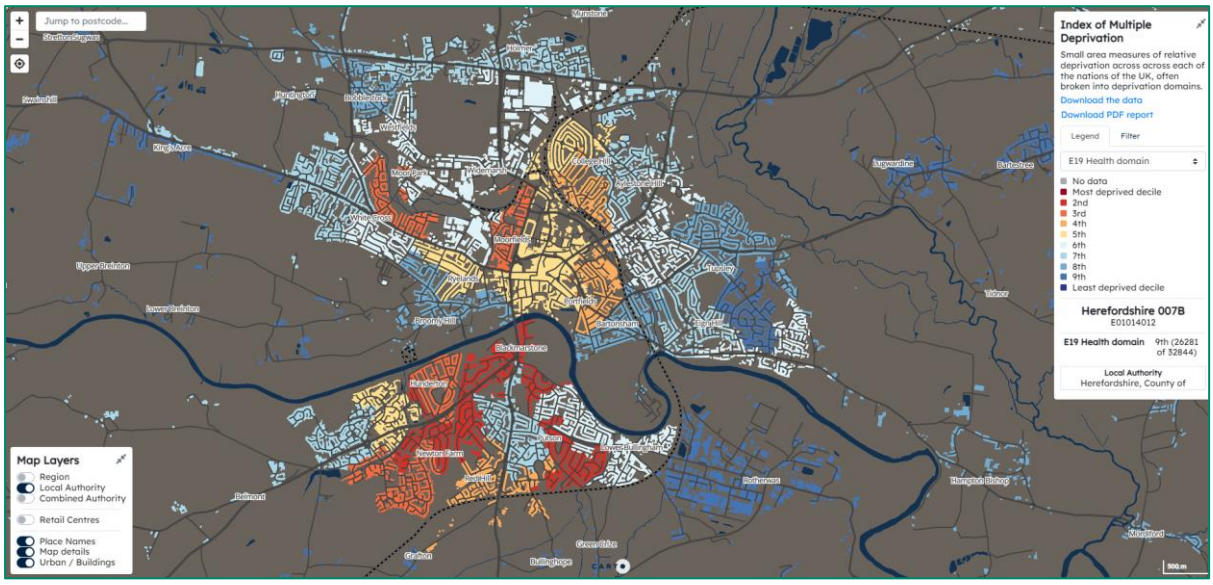
3.9.4 In addition to this data, the Herefordshire Health and Wellbeing Strategy (2017) has highlighted that the county faces an epidemic of inactivity, with low fitness levels resulting in more deaths than from smoking, diabetes and hypertension combined.

3.9.5 This indicates the need for improved active travel infrastructure to be implemented across Hereford in order to encourage more people to take up walking or cycling and engage in more regular physical activity. The proposed ERiC scheme would help in this respect through its provision of dedicated, LTN 1/20 cycle facilities along the length of the route.

3.9.6 Alongside analysis of physical activity levels across Herefordshire, the Index of Multiple Deprivation (IMD) in terms of health deprivation and disability for Hereford has been analysed. The IMD provides a measure of the relative deprivation in England based on a number of different domains including, but not limited to, income, employment, health and disability, crime and the living environment.

3.9.7 The 2019 IMD for health deprivation and disability decile for Hereford is set out below in **Figure 3-20**.

Figure 3-20: Index of Multiple Deprivation (England 2019 Health Domain)



Source: Consumer Data Research Centre

3.9.8 **Figure 3-20** gives an indication of which LSOAs have the highest risk of premature death and the impairment of quality of life through poor physical and mental health. LSOAs ranked in the 1st decile have the highest risk and those in the 10th decile have the lowest risk.

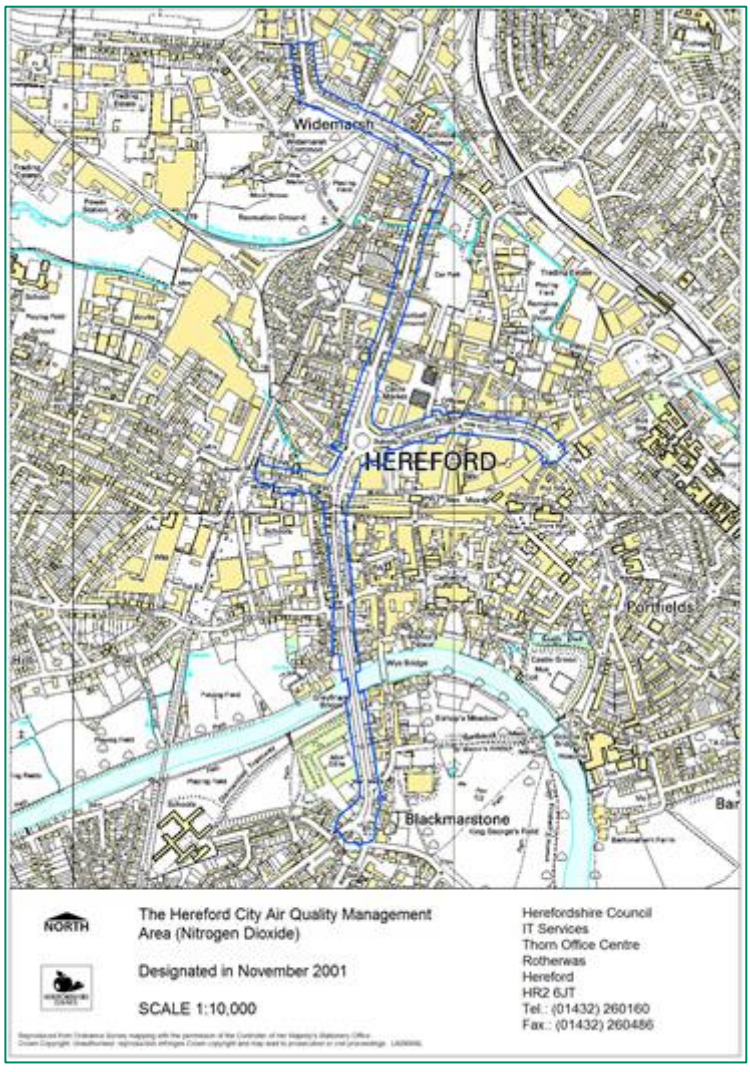
3.9.9 Analysis of the map indicates that LSOAs that are located in proximity to the proposed ERiC in the eastern part of Hereford are ranked in the 6th decile or higher in health, with Rotherwas being ranked 9th. This suggests that people living near the ERiC are in good health and would likely make use of the active travel provisions along the new river crossing.

3.9.10 It can also be seen that people living in LSOAs in the vicinity of the existing A49 bridge crossing are in poor health, particularly to the south of the river. If an alternative river crossing was implemented, this could help to reduce traffic demand on the A49, which would have associated benefits in terms of improving air quality and the potential to improve the overall health and quality of life of residents living close to the A49.

3.10 Air Quality

3.10.1 The Hereford Air Quality Management Area (AQMA) was declared in November 2011 for Nitrogen dioxide (NO2). The AQMA extends from Holmer Road in the north to Belmont Road in the south, east along New Market / Blue School Street and west along Eign Street as far as Barton Yard as demonstrated in **Figure 3-21**.

Figure 3-21 Hereford AQMA



3.10.2 One of the main sources of NO2 emissions is from vehicles and given the AQMA has been in place for over 20 years this suggests the high traffic volumes and congestion in this area are likely a key contributing factor. An additional river crossing is required to provide an alternative routeing option over the River Wye, which will help to re-assign traffic away from the AQMA in the city centre. The scheme would also help to encourage the use of sustainable transport modes and thus helping to reduce the overall impact of road user emissions on air quality in the area.

3.11 Constraints

3.11.1 A number of environmental and engineering constraints associated with the study area have been identified. These constraints relate to the broad location of an eastern river crossing (outlined in **Figure 1-2**).

Environmental

3.11.2 Environmental constraints have been identified with regard to the environmental disciplines included within Transport Analysis Guidance (TAG) Unit A3: Environmental Impact Appraisal and DMRB LA 105 to LA 114, these include:

- air quality
- cultural heritage
- landscape (including townscape) and visual impacts;
- biodiversity;
- geology and soils;
- material assets and waste;
- noise and vibration;
- population and human health;
- road drainage and the water environment; and
- climate (greenhouse gases).

3.11.3 Constraints are illustrated in Appendix A and described in detail in Appendix B. Key constraints identified within the corridor for the potential ERiC alignment include the following.

- The presence of two Grade II Listed Buildings, including the Whistle Field 18th Century House, and 'Milepost at SO538403', a Scheduled Monument at 'Ring ditches and rectilinear enclosures east of Tupsley' and Rotherwas Chapel. Any new highway infrastructure within the proposed corridor highlighted in **Figure 1-2** has the potential to impact upon the setting of these designated assets.
- The open agricultural landscape and flat topography on a wide flood plain means that visual implications will be felt across a wide area and could bring intrusion to the residential areas on the outskirts of Hereford.
- The proposed ERiC corridor crosses the River Wye Special Area of Conservation (SAC) which would result in a Habitats Regulation Assessment (HRA) being carried out. It may also cause indirect impacts on two nearby ancient woodlands. Dependent on the alignment of the route, there could also be indirect impacts on the Lugg and Hampton Meadows Site of Special Scientific Interest (SSSI).
- The corridor would also permanently seal land classified as Agricultural Land Classification (ALC) Grades 1 to 3a for agricultural use, whilst three nearby historic landfills pose a potential ground contamination risk.
- The corridor crosses a Minerals Safeguarding Area (MSA) for superficial sand / gravel, and a strong case would need to be made for the benefits of the route outweighing the impact of sterilisation.
- The crossing of Ordinary Watercourses and the River Wye could result in adverse impacts upon these watercourses and increase flood risk. The corridor would fall within Flood Zones 2 and 3 and as such would require a Flood Risk Assessment (FRA). It would also lead to an increase in impermeable area and subsequently increase surface runoff and flood risk and therefore a drainage strategy would be required.

Engineering

3.11.4 Potential engineering constraints that will need to be considered in the next design stages and/or during construction include:

- The broad corridor for the ERiC encroaches on third-party land therefore the feasibility of the scheme is dependent on successful land acquisition.
- Any across the River Wye will likely need to extend across Flood Zones 2 & 3 which will result in longer span and thus higher construction costs. Further flood mitigation assessment will need to be investigated and assessed in the next design stage.
- The existing topography in the study area, as obtained from LIDAR data publicly available online, appears to be hilly with several hills and steep slopes that exceed 10% in several locations. Therefore, the proposed road vertical design will not match the existing topography since the maximum recommended longitudinal gradient for a single carriageway is 6-8% as per DMRB CD109. This would result in considerable cut/fill sections which would have consequences in both construction costs and construction difficulties. A topographical survey is recommended in the next design stage to confirm the existing ground topography. Additionally, Ground Investigation is recommended in the next design stage to further assess the challenges related to cutting within the existing hills. Early Contractor Involvement will be useful to advise on construction difficulties and challenges related to cut/fill sections construction.
- Two existing public footpaths run both sides of the river. These will need to be continued and integrated into the proposed bridge design potentially by enabling them to continue beneath the proposed bridge across the river.

4. Understanding the Future Situation

4.1 Introduction

4.1.1 This section outlines the anticipated changes in Hereford including any potential schemes and land-uses as well as changes in travel demand.

4.2 Future Land-Uses

4.2.1 **Table 4-1** summarises the proposed land-use developments in the Hereford area as outlined in the Herefordshire Local Plan / planning application portal[23] while **Figure 4-1** shows the location of the proposed developments.

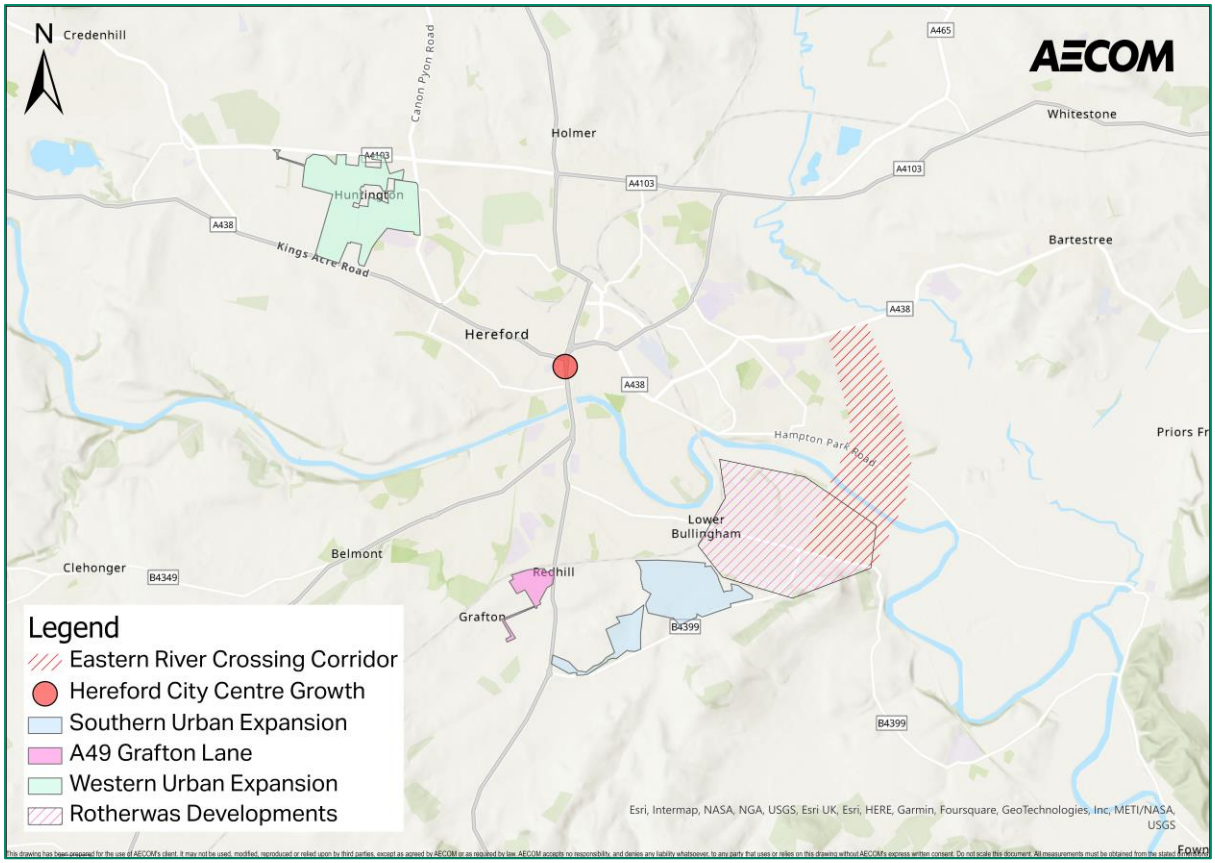
Table 4-1: Proposed Land-use Development in Hereford

Name / Planning Application Reference	Details
Hereford City Centre Growth – Policy HD2 in the Core Strategy	800 new homes across the city centre, with a majority located within a new urban village. New pedestrian and cycle links, transport interchange, and green spaces within the urban village. Redesign of Newmarket Street, Blue School Street, and Commercial Square to improve public transport facilities and improve routes for pedestrians and cyclists. New commercial and office spaces in appropriate locations in the city centre, and new leisure facilities. Status: Local Plan
Southern Urban Expansion – Policy HD6 in the Core Strategy (P194402/O)	To provide up to 1,300 dwellings, B1, B2 and B8 employment uses, a Neighbourhood Community Hub, a new primary school, a Park and Choose, and a country park. Status: In progress
A49 Grafton Lane (P193042/O)	Residential development to provide around 300 dwellings, footway/ cycleway, and vehicle turning head. Status: Approved on 4th May 2023
Western Urban Expansion – Policy HD5 in the Core Strategy (P162920/F)	To provide up to 1,200 homes, employment development, a neighbourhood centre comprising a mix of retail, health provision and leisure uses, a new one form entry primary school, park and choose interchanges, open and play space, and highways. Status: In progress

[23] https://www.herefordshire.gov.uk/info/200142/planning_services/planning_application_search

Name / Planning Application Reference	Details
Rotherwas Industrial Estate	There are several developments planned in Rotherwas Industrial Estate such as the construction of new office buildings, warehouses, parking, and loading areas (area shown in **Figure 4-1**). Status: In progress

Figure 4-1: Proposed land-use developments in Hereford



4.2.2 **Figure 4-1** highlights that there is a significant amount of development planned to come forward across Hereford which is likely to increase demand on the existing network, and could exacerbate the existing issues relating to resiliency and congestion in the city centre.

4.2.3 The proposed eastern river crossing corridor would link directly in to the Rotherwas Industrial Site where new developments are proposed and where the Skylon Park Enterprise Zone is located. It is considered to be the most strategically important employment areas in Herefordshire offering 48,000m2 of workplace land with over 200 companies employing in excess of 3,500 employees on site.

4.2.4 There remains a significant amount of developable land on the site thus suggesting that access to this site will become ever important to help facilitate economic growth in the area and to allow the area to thrive. The scheme is strategically placed to connect to this site, allowing direct access to it by a range of modes. Increased accessibility will support growth at this site and help to meet the economic related objectives and targets set out for the county.

4.2.5 To the southwest of the site is the Southern Urban Expansion, a mixed use site proposing 1,300 dwellings alongside B1, B2 and B8 employment land and a range of local facilities.

4.2.6 It is likely that the construction of an ERiC scheme will provide a key and alternative route for vehicle users accessing these sites, with all traffic travelling west via the A438 being able to

use the new link road without being required to route through the city centre (and vice versa for traffic leaving the sites and heading east). This will help to significantly alleviate flows in the city centre and along A49 bridge over the River Wye.

4.2.7 Sites proposed to the west of Hereford include the Western Urban Extension (1,200 dwellings), and Grafton Lane (300 dwellings). Whilst the positive impacts of an ERiC on these sites is likely to be less pronounced, the scheme will provide additional network capacity and will reduce demand on key routes through the city centre. This in turn will help to free-up capacity on existing routes which will be required to support the additional vehicular demand derived from the new developments to the west of the city and safeguard the operation of the network.

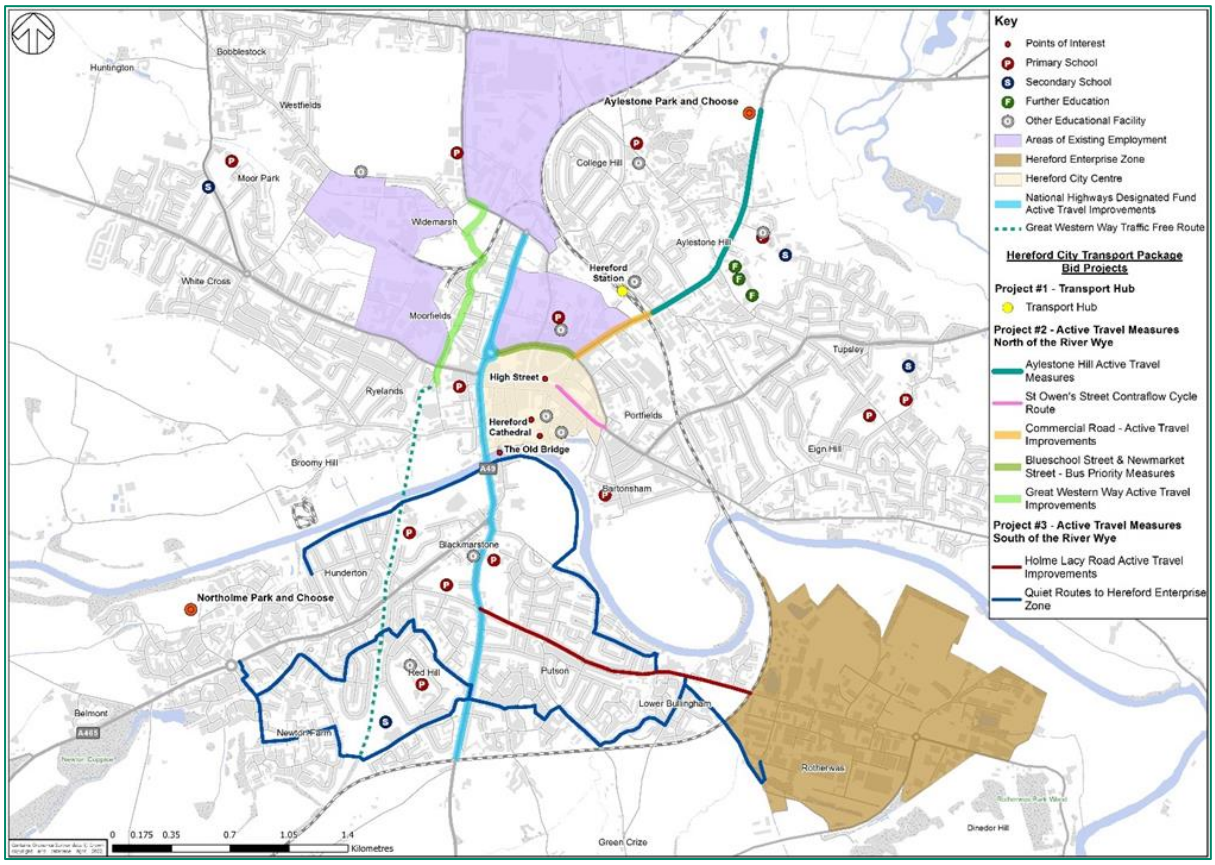
4.3 Infrastructure Proposals

4.3.1 Herefordshire Council has been awarded capital funding through the 'Levelling Up' fund (LUF) to deliver the Hereford City Transport Package. The Hereford LUF Programme has 3 overarching projects:

- Project 1 - Transport Hub
- Project 2 - Active travel measures north of the River Wye
- Project 3 - Active travel measures south of the River Wye

4.3.2 **Figure 4-2** sets out the location of the planned improvements

Figure 4-2: Hereford LUF programme of infrastructure improvements



Project 1 – Transport Hub

4.3.3 This includes the development of a new integrated Transport Hub at Hereford railway station, which will link cycling, walking, bus and rail transport in Hereford city centre. The Hub is expected to encourage a modal shift away from a reliance on cars, providing an easy-to-use, reliable link to alternative modes of transport. This will include covered cycle facilities and lockers to encourage commuter cycle parking, bus stands and layovers, commuter and short stay parking and welfare facilities.

Project 2 – Active travel measures north of the River Wye

4.3.4 Areas North of the River will benefit from a cycle scheme from Aylestone Hill along the A465 and Commercial Road, linking the north and east of the county to the Transport Hub, the city centre, and routes south of the river. Enhancements to St Owen Street one-way cycle scheme will improve access to the city centre and links to Rotherwas; Blueschool Street and Newmarket Street will see new bus priority measures; and there will be improvements to the Great Western Way off-road walking & cycling path.

Project 3 – Active travel measures south of the River Wye

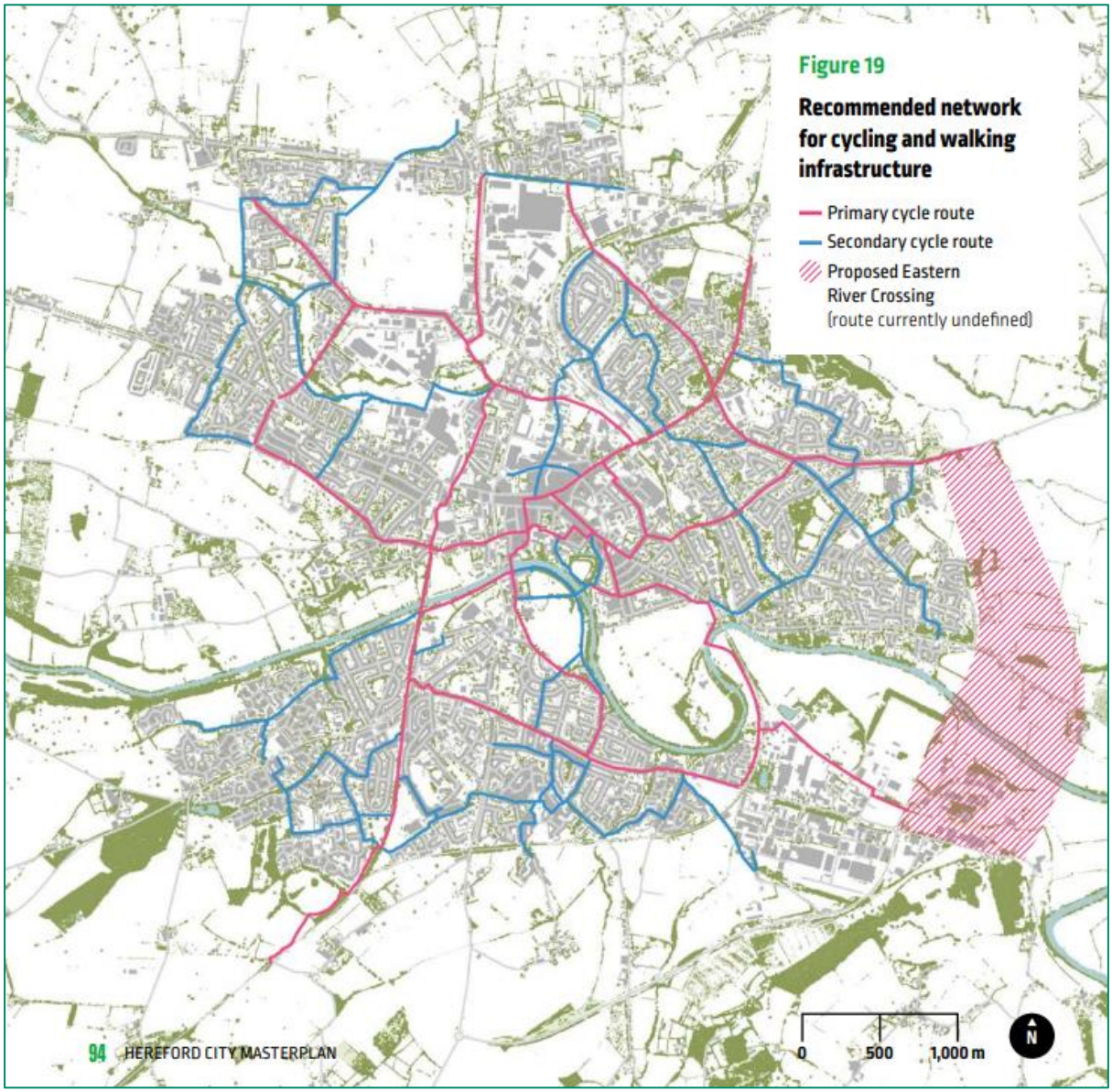
4.3.5 South of the River, the LUF programme of improvements includes the introduction or improvement of informal 'Quiet Routes' to the Hereford Enterprise Zone to encourage more of the people who work there and who live in neighbouring housing to walk or cycle to work. To complement this work, there will be a series of improvements along the Holme Lacy Cycleway to encourage more and safer active travel to work and local services. These improvements along Holme Lacey Road would tie in with the proposed ERiC corridor and therefore help to provide a coherent network for active travel in the south and east of Hereford.

4.3.6 In addition to the LUF programme, Herefordshire Council has also secured ATF4 funding for further active travel improvements, including:

- Aylestone Hill Railway Bridge LTN 1/20 compliant scheme
- Barton Road / A49 junction LTN 1/20 compliant scheme
- School streets at Trinity & Lugwardine Primary schools
- Drop Crossings

4.3.7 The implementation of these measures will help to support the vision of the Hereford City Masterplan and ties in with the Council's emerging local cycling and walking infrastructure plan. **Figure 4-3** highlights those routes which will be the major focus for improved infrastructure, in relation to the proposed ERiC corridor.

Figure 4-3: Herefordshire Council's recommended network for cycling and walking infrastructure (source: Hereford City Masterplan)



4.3.8 **Figure 4-3** demonstrates that the ERiC corridor would be connected by primary cycle routes at both ends of its alignment, and these routes would provide a direct connection into Hereford city centre. This helps to further underline the fact that a LTN 1/20 cycling route along ERiC would be delivered as part of a coherent network for walking and cycling which would help to increase its usage and encourage a shift to more sustainable modes.

4.4 Travel behaviours following Covid-19

4.4.1 To compare how the use of transport modes has changed since the pandemic, and how these changes may be enduring in a future situation, data from the Department for Transport (DfT) has been analysed. The DfT produces daily statistics on road traffic, rail journeys in Great Britain, Transport for London tube and bus routes, bus travel in Great Britain, and cycling in England[24]. These statistics are indexed against pre-pandemic data to see how usage has changed.

4.4.2 The change in the level of vehicle travel for all road types is based on 275 automatic traffic count sites across Great Britain. These sites are used for DfT's Quarterly Road Traffic National Statistics series to estimate traffic change and as such the samples of automatic traffic counters are stratified by area, road classification, and road management and have been

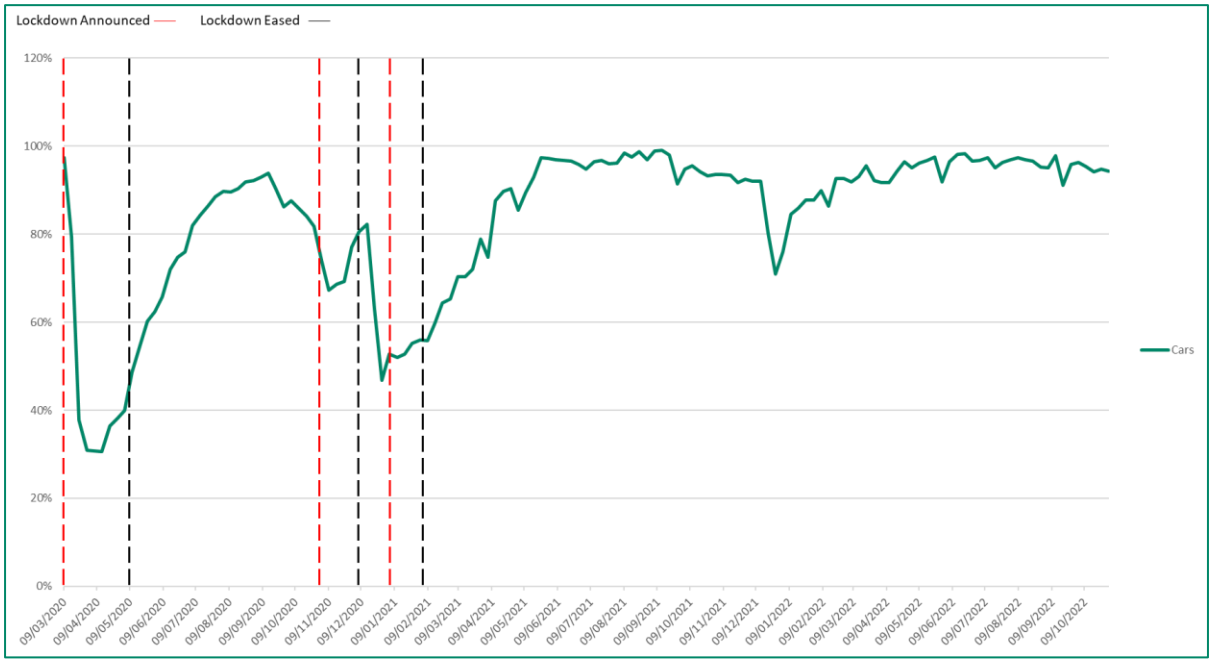
[24] https://www.gov.uk/government/statistics/transport-use-during-the-coronavirus-covid-19-pandemic

designed to be representative of national traffic. Traffic has been classified between cars, LGVs and HGVs[25].

Car Usage

4.4.3 **Figure 4-4** shows the weekly average usage of cars from March 2020 to October 2022.

Figure 4-4: Weekly Average Car Usage (March 2020 – October 2022)



Source: Department for Transport

4.4.4 The data shows that car usage dropped to around 30% of pre-pandemic levels after the first lockdown in March 2020. The levels of car usage steadily increased to around 90% of pre-pandemic levels by the summer of 2020. However further lockdowns from winter 2020 and into the early part of 2021 led to a significant drop in car usage again, down to about 50% of pre-pandemic levels in January 2021.

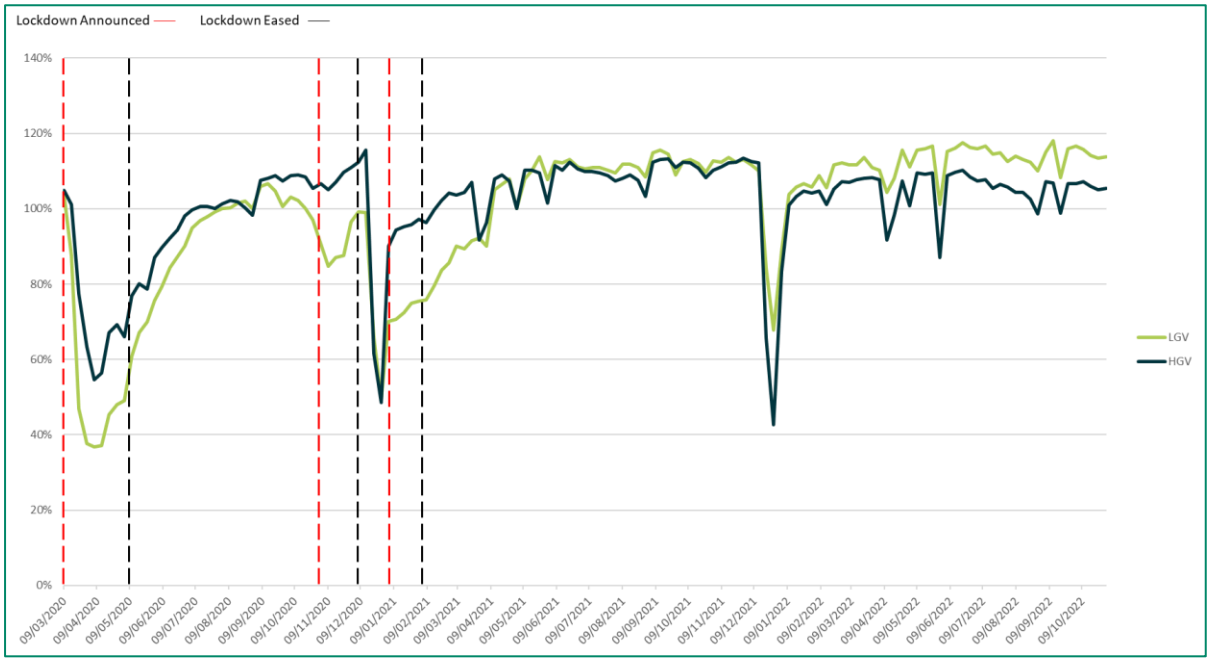
4.4.5 Since then, following the relaxation of all restrictions car usage is almost back to pre-pandemic levels although is still tracking just below the March 2020 average. This is likely as a result of changed behaviours including the rise of homeworking and reduced demand on the network. Given the limited fluctuation in car usage in 2022 since the relaxation of restrictions, it is likely that car usage levels have stabilised and current trends will continue to be witnessed in the future situation.

HGV/LGVs

4.4.6 **Figure 4-5** shows the weekly average usage of LGVs and HGVs from March 2020 to October 2022.

[25] https://www.gov.uk/government/statistics/transport-use-during-the-coronavirus-covid-19-pandemic/covid-19-transport-data-methodology-note#road-traffic

Figure 4-5: Average Weekly LGV and HGV Usage (March 2020 – October 2022)



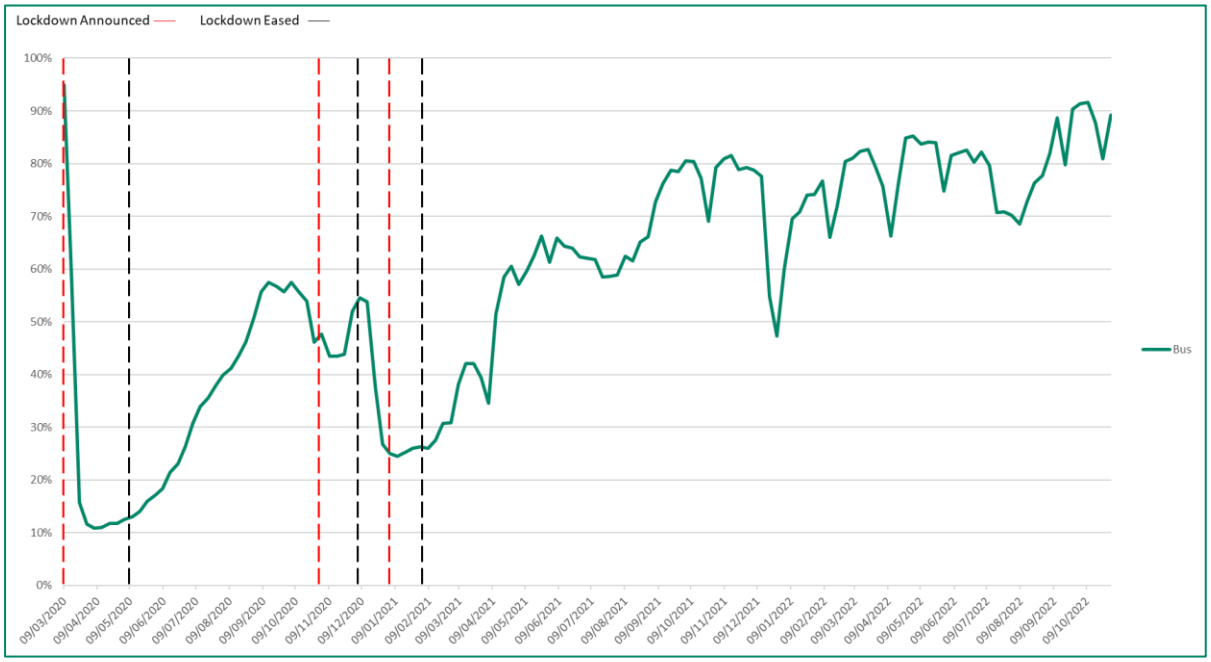
Source: Department for Transport

4.4.7 The data reveals that LGV and HGV flows both dropped following the announcement of the first lockdown in late March 2020. However usage quickly returned to pre-Covid levels and exceeded them by 2021. As of 2022, LGV and HGV usage is greater than pre-Covid-19 levels with LGV usage 10-20% greater than the baseline and HGV usage 10% greater than the baseline. This is likely to due to changes in consumer behaviours during lockdown periods (such as a shift to increased online shopping) remaining prevalent post lockdown.

Public Transport

4.4.8 **Figure 4-6** shows the weekly average level of bus patronage from March 2020 to October 2022.

Figure 4-6: Weekly Average Bus Usage (March 2020 – October 2022)



Source: Department for Transport

4.4.9 The change in the level of bus travel is based on data for all passenger boardings (e.g. purchasing of a ticket, including smart payment options) of approximately half of all bus

services in Great Britain (excluding London). This data has been provided by Ticketer, based on operators which were using Ticketer in the January 2020 reference week (3rd week of January). Data from other sources (including non-Ticketer operators) has been used to validate these figures and is generally consistent with the trends presented[26].

4.4.10 The data reveals that the onset of the pandemic caused bus patronage to reduce to approximately 10% of the pre-pandemic levels in April 2020. Bus patronage slowly increased during 2021, and as of 2022 bus usage is 80 – 90% of the pre-pandemic levels. Trends suggest that bus patronage could continue to increase to pre-pandemic levels.

4.4.11 Policy documents such as Bus Back Better highlight that the aim is to get bus patronage back to pre-Covid levels and then exceed it. This is also highlighted in local policy documents like Herefordshire's Local Plan which states the desire to reduce reliance on private cars and improve accessibility to public transport.

4.4.12 Government initiatives such as the £2 cap on all single bus journeys throughout the first half of 2023 will also play a key role in encouraging more people to use bus services and could lead to long-lasting behaviour change and a shift to more sustainable modes. The ERiC will provide a reliable route for bus journeys and improve accessibility to public transport in the east of Hereford. This will also help to promote public transport usage and make it a more attractive option, therefore helping to increase bus patronage in Hereford.

Active Travel

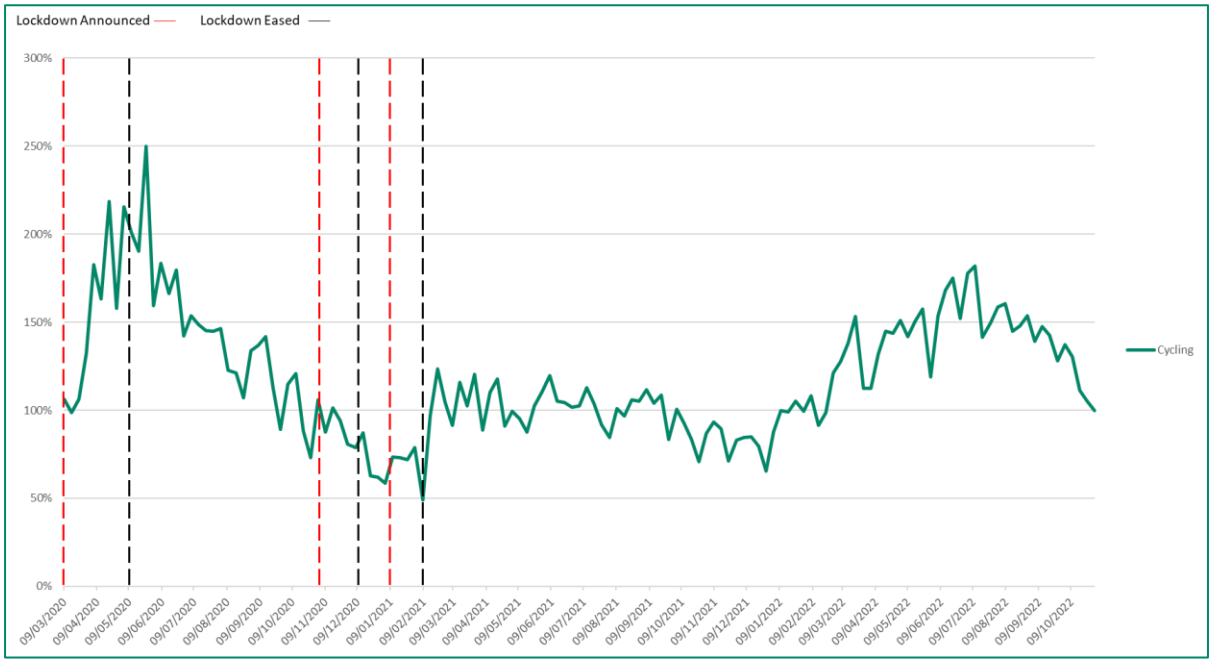
4.4.13 The change in the level of cycling was estimated from the following data sets[27]:

- Telecommunications data constituting anonymised and aggregated data from O2, as a measure of total trip numbers. Short trips of less than 1km in urban areas and 5km in rural areas has been excluded. This disproportionately affects walking trips, as a greater proportion of walking trips will be missed, compared to other modes.
- National Travel Survey (NTS) results provide a pre-Covid-19 baseline for mode split for all trips.
- DfT Roads automatic traffic count index data, as an indication of changes to road users.
- LENNON rail data, as an indication of changes to rail usage. The difference between total trips for each day (from telecommunications) and total trips for road and rail users gives an estimate to the number of active trips.
- Sources of cycling use data including automatic cycling counters and camera-based estimates. These are used to confirm and validate the changes observed in cycling.

4.4.14 **Figure 4-7** shows the weekly average cycling usage from March 2020 to October 2022.

[26] https://www.gov.uk/government/statistics/transport-use-during-the-coronavirus-covid-19-pandemic/covid-19-transport-data-methodology-note#bus-travel-in-great-britain-excluding-london
[27] https://www.gov.uk/government/statistics/transport-use-during-the-coronavirus-covid-19-pandemic/covid-19-transport-data-methodology-note#cycling

Figure 4-7: Weekly Average Cycling Usage (March 2020 – October 2022)



Source: Department for Transport

4.4.15 It is important to be aware that the baseline is from March 2020 which means that seasonal variations in cycling may be exaggerated i.e., increased cycling in the summer months may be exaggerated when compared to the baseline data.

4.4.16 Data shows that following the first lockdown in 2020 and throughout the summer months, cycling levels were significantly higher than pre-pandemic. There was a significant drop in cycling levels during the autumn and winter months of 2020 which coincided with further lockdowns before a recovery in early 2021. Whilst cycling levels hovered around the pre-pandemic baseline for much of 2021, since the beginning of 2022 there has been a marked increase in cycling activity compared to March 2020.

4.4.17 Increased levels of cycling are likely due to behaviour change following Covid-19, whilst measures such as the Emergency Active Travel Funding helped to promote cycling through the implementation of temporary active travel infrastructure to support walking and cycling, with some measures being made permanent post Covid-19.

4.4.18 This suggests that by providing the infrastructure to accommodate cycling activity, the ERiC will help to facilitate the upward trend in cycling and also help to support the vision of the Hereford City Masterplan by improving options for active travel and encouraging healthy lifestyles.

4.5 Propensity to Cycle Tool

4.5.1 The Propensity to Cycle Tool (PCT) is a cycle planning tool which offers various scenarios of change to determine where cycling is currently common practice and where it could grow. The tool is particularly useful in identifying key demand corridors or specific origin-destination trips.

4.5.2 **Figure 4-8** demonstrates the propensity to cycle based on the 2011 Census. **Figure 4-9** and **Figure 4-10** demonstrate two propensity to cycle scenarios, the former based on the UK Government targets for cycling and the latter on Go Dutch targets (this scenario uses Dutch likelihoods of cycling trips of particular length and topography and applies this to English commutes).

4.5.3 The general corridors and arterial routes in the network stay the same throughout each scenario however the number of cyclists change quite significantly between the two scenarios.

Figure 4-8: PCT based on 2011 census data

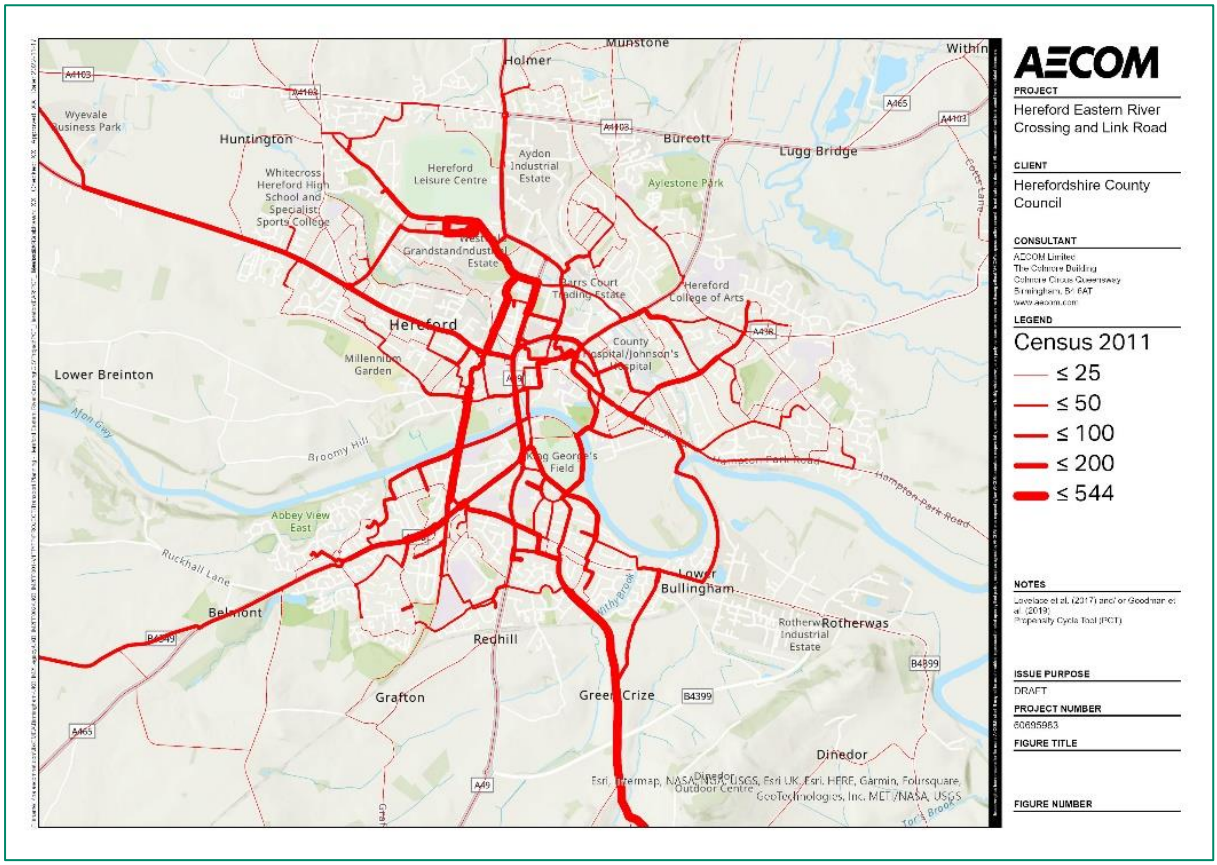


Figure 4-9: PCT based on Government targets

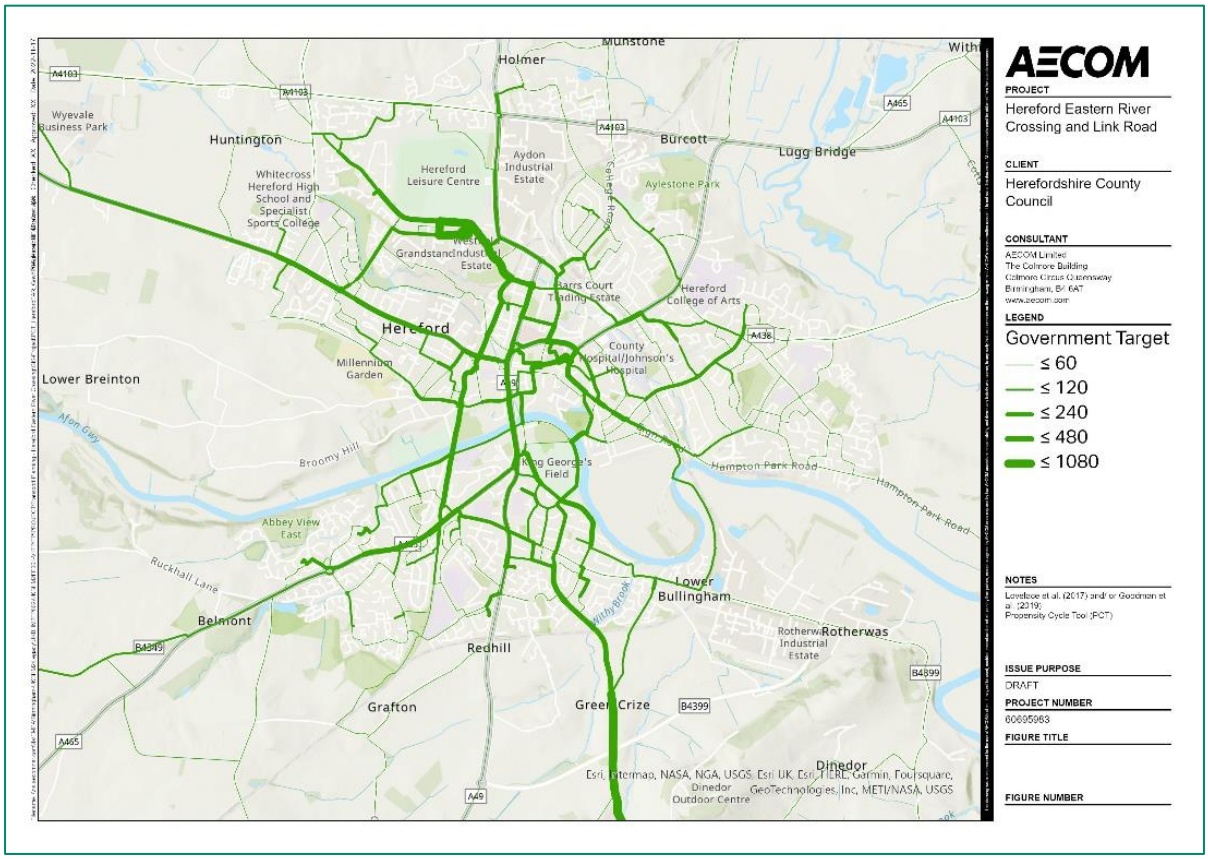
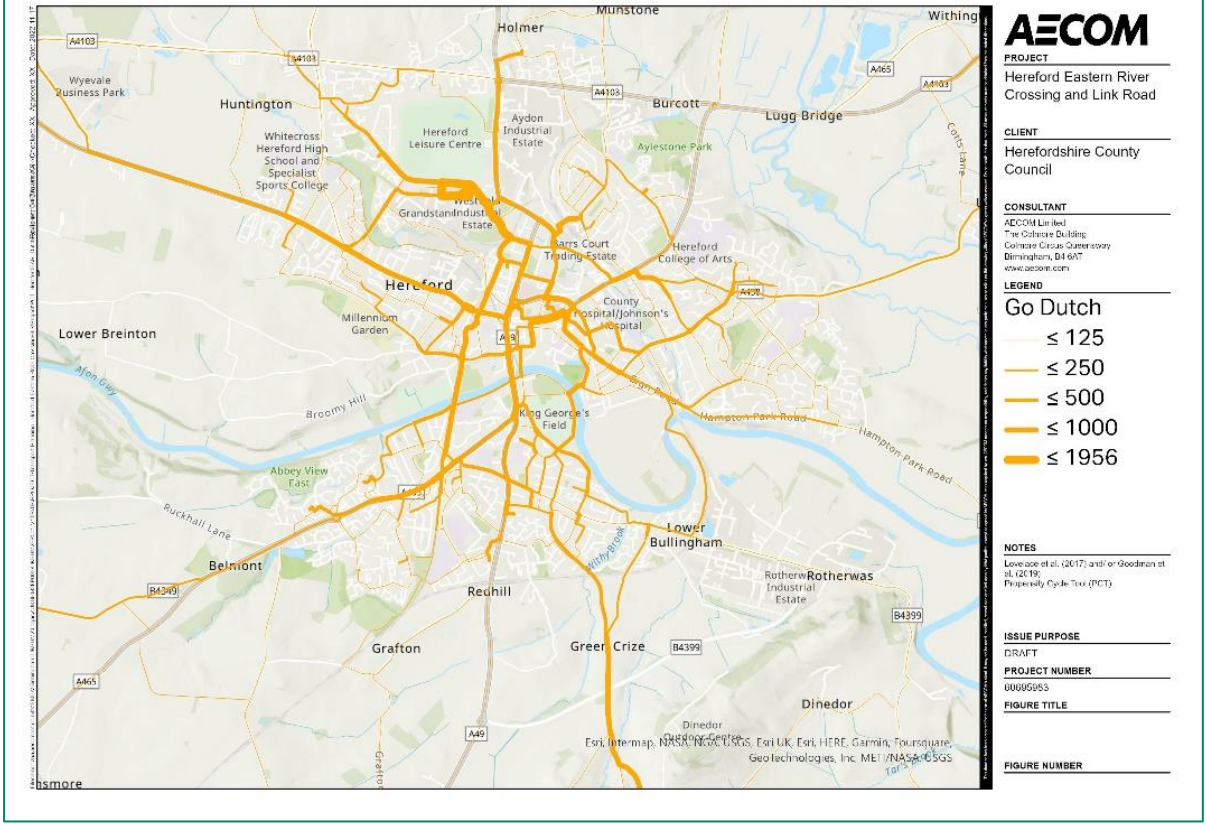


Figure 4-10: PCT based on Go Dutch targets



4.5.4 As can be seen from **Figure 4-8**, cycling is low based on the 2011 census data on the network connecting to the proposed ERiC. Cycling levels increase significantly under the government targets and as part of the Go Dutch scenario, particularly along the network in the city centre. There is an increase in cycling levels along the roads connecting with the ERiC corridor under these scenarios although the number of cyclists is still forecast to be significantly lower than in the city centre.

4.5.5 The provision of cycling infrastructure as part of the ERiC scheme (combined with the LUF programme of active travel interventions) could provide the catalyst for improving the coverage of the cycling network in this part of Hereford and thereby helping to increase cycling up-take.

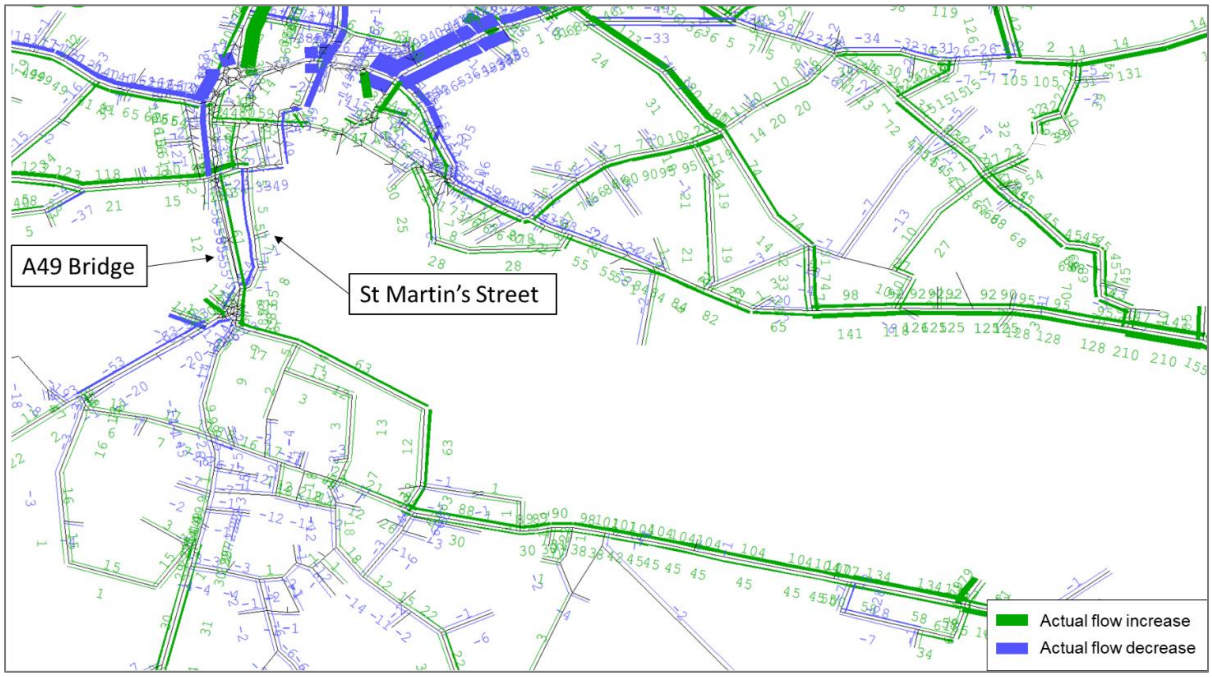
4.6 Future Year Traffic Flows

4.6.1 Outputs from the Hereford Transport Model have been used to demonstrate the need for intervention and what a future situation could look like on the network in Hereford if a scheme did not come forward. The model forecasts the change in vehicle flows between the base year of 2016 and forecast year of 2032 in a Do Minimum scenario.

4.6.2 The plots from the model below show how flows change between 2016 and 2032 with the green bands showing an increase in flows in 2032 and the blue bands showing a decrease in flows. The thicker the band the greater the increase/ decrease on that link.

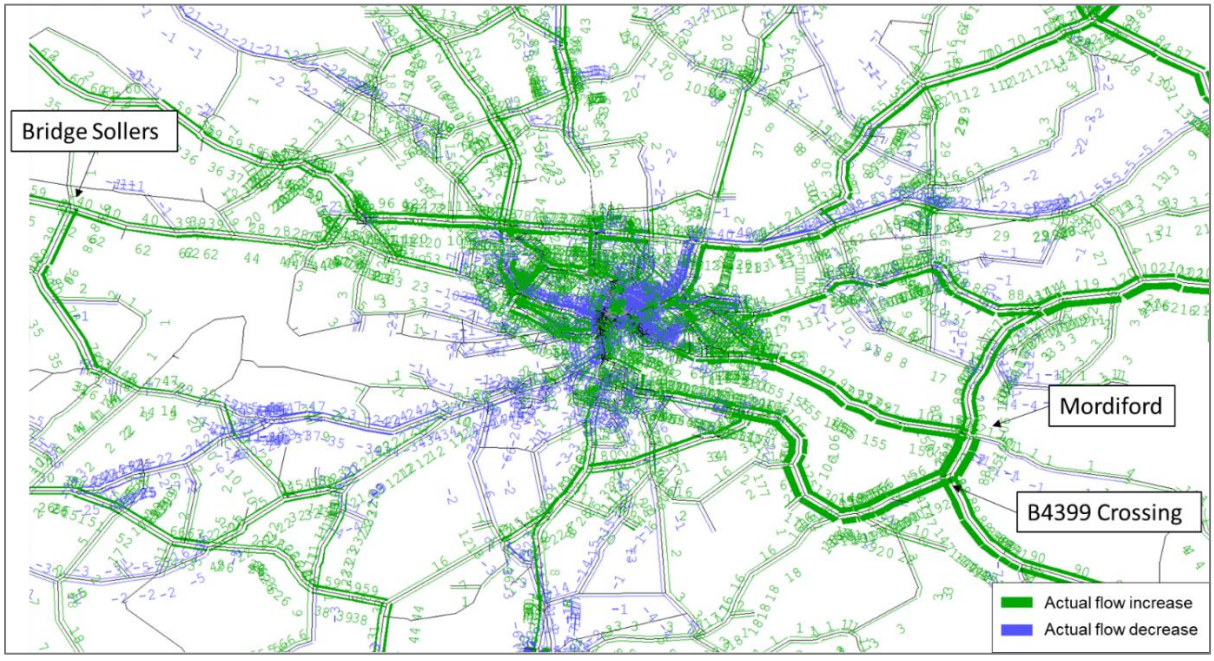
4.6.3 **Figure 4-11** shows the difference in flows between the 2016 base year and 2032 forecast year in the AM peak (08:00 – 09:00). The figure shows that there is a slight increase in vehicles using the A49 in 2032, however most notable is that there is an increase in traffic flows along roads adjacent to the A49 such as the B4399 and Hampton Park Road (to the east) as well as roads to the west such as Barton Road. It is likely that the flows will also have been impacted by the opening of the Hereford City Link Road in 2017, which will be causing the large reduction in flows along Commercial Road (demonstrated by the thick blue line).

Figure 4-11: 2016 vs 2032 AM actual flows



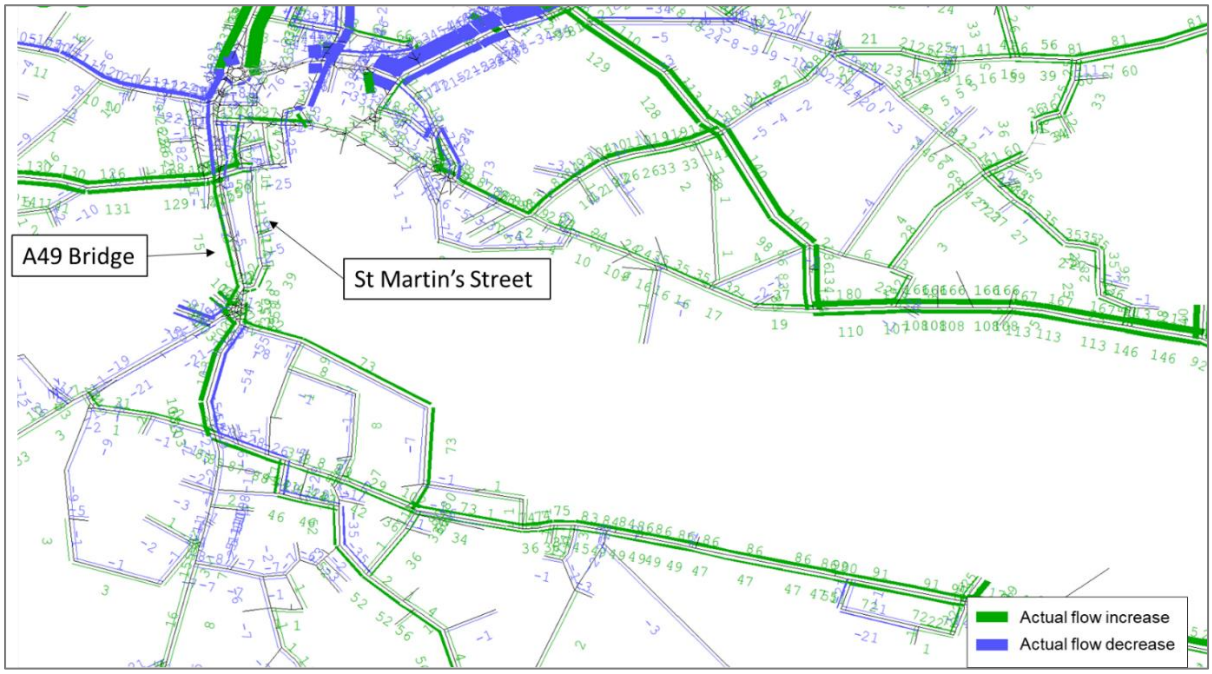
4.6.4 **Figure 4-12** shows the change in flows on the network across a wider area. From this plot, it is clear that in 2032 there is a large increase in vehicles using alternative crossings over the River Wye such as Bridge Sollers and the B4399 crossing by Mordiford (Holme Lacy), rather than using the A49 crossing in both directions. The increased usage of other crossings in the forecast year suggests that the A49 crossing has become too congested with vehicles being forced to re-assign along alternative routes. This has the effect of increasing the vehicle kilometres travelled, resulting in longer journey times and increased road user emissions.

Figure 4-12: 2016 vs 2032 AM actual flows (wider area)



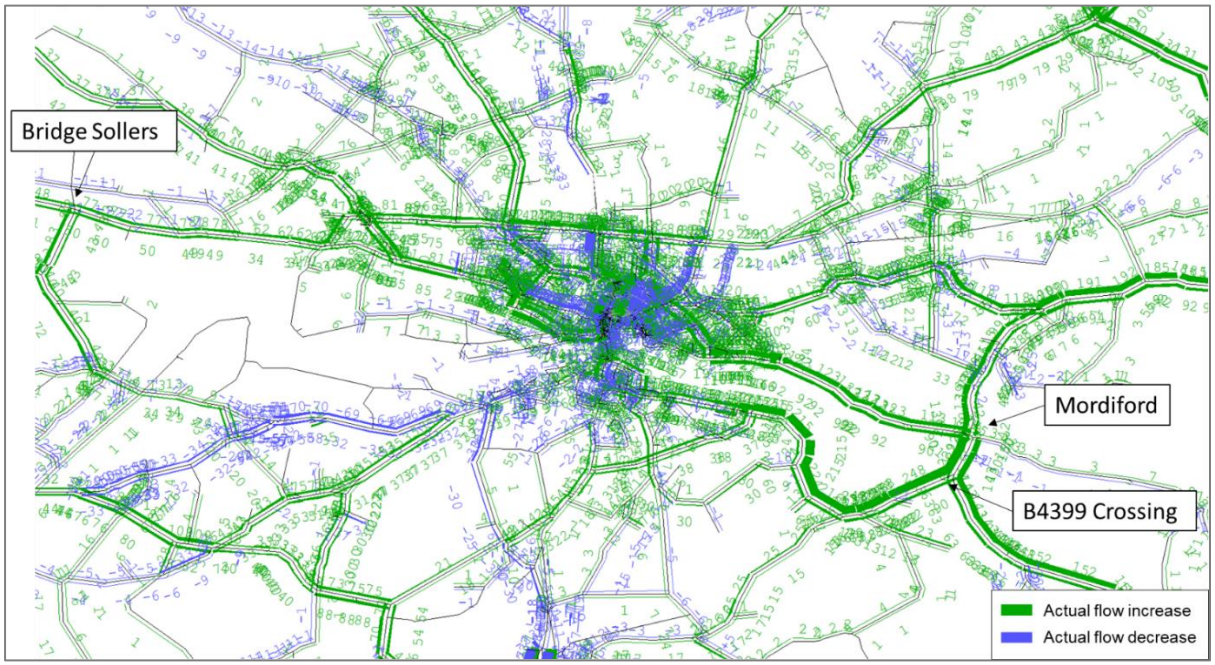
4.6.5 **Figure 4-13** shows the change of vehicle flows between the 2016 base year and 2032 forecast year for the PM peak (17:00 – 18:00). The changes in PM peak flows between the base and forecast years are similar to the AM peak with there being a slight increase in flows along the A49 bridge but the most notable increase being along the B4399, Hampton Park Road and Barton Road.

Figure 4-13: 2016 vs 2032 PM actual flows



4.6.6 **Figure 4-14** shows a similar trend to the AM where the largest increases in flow across a wider area are largely as a result of vehicles re-assigning along alternative routes and river crossing points, rather than using the A49. This is most likely due to the A49 being too congested in a future year situation, without any interventions coming forward.

Figure 4-14: 2016 vs 2032 PM actual flows (wider area)



4.6.7 Analysis of outputs from the Hereford Transport Model reveals that, in the Do Minimum 2032 forecast year, there is a large increase in vehicles using alternative crossings to the A49, compared to the base year. The crossing with the largest increase in flows is the B4399 crossing to the east of Hereford which is most likely due to congestion on the A49 and the fact that the B4399 crossing is closer to the A49 than the crossing at Bridge Sollers.

4.6.8 The crossings points at Bridge Sollers and the B4399 are over 6 miles and over 5 miles respectively away from the A49 crossing. Therefore, in making a north-south movement across the River Wye, vehicle users are required to significantly increase their vehicle kilometres travelled, with associated negative impacts on journey times and road user emissions.

4.6.9 Furthermore, the alternative crossings to the A49 are of lower quality and may struggle to accommodate large volumes of vehicles which could cause them to deteriorate faster, resulting in increased maintenance costs and further resiliency issues. The character of villages such as Holme Lacy and Mordiford may also be negatively impacted, along with other environmental effects, as a result of a large increase in demand along the network in these villages to access the river crossing. Furthermore, there could also be an increase in collisions, with these roads not being designed to carry large volumes of traffic.

4.6.10 From this analysis, it is clear that an additional river crossing is required to be delivered to provide a more resilient network, reduce future demand on the A49 and avoid significant re-assignments of traffic as forecast to occur by 2032 if a scheme did not come forward.

5. Establishing the need for intervention

5.1 Impact of not changing

5.1.1 If an alternative river crossing did not come forward, the resiliency issues across Hereford city centre would persist, with the A49 remaining as the main route for north-south movements. During times of an incident along the A49, vehicle users would be required to travel over 5 miles to access the nearest alternative bridge to cross the river.

5.1.2 Traffic demand along the A49 and through the city centre would remain high, with local traffic travelling from the north and seeking to access employment opportunities at the Skylon Enterprise Zone (to the south east of the city) being required to route through the city centre and use the A49.

5.1.3 If no action were to be taken to alleviate traffic flows along the A49 and through the city centre, this would also conflict with the Hereford City Masterplan's vision for this part of the city with its focus on leisure and hospitality interventions and its concept of Hereford as an 'outdoor city'. It would also do nothing to help to improve air quality in this area of Hereford which is currently designated as an AQMA.

5.1.4 In fact, if no scheme were to come forward, it is likely that the current situation would deteriorate further in the future situation. There is already limited spare link capacity along the A49, with slow average speeds and unreliable journey times. With significant development growth planned to come forward across Herefordshire, the performance of the A49 is likely to worsen and air quality issues will be exacerbated.

5.1.5 Outputs from the Hereford Transport Model have indicated that by 2032, if no scheme were to come forward, the A49 would be constrained to such an extent that traffic would be forced to re-assign out to the Bridge Sollers crossing 6 miles to the west of the city, or to the Holme Lacy bridge crossing over 5 miles to the east of the city centre. This would significantly increase vehicle kilometres travelled, increasing journey times and also leading to significantly greater road user emissions being produced.

5.1.6 A constrained network would also have negative impacts on the economic growth of the city, in terms of reducing its attractiveness for inward investment and as a place to visit. Productivity of existing businesses is also likely to decline as a result of a poorly-performing network.

5.1.7 Finally, if a scheme did not come forward with active modes provision (such as what an ERiC scheme would provide) this would do nothing to encourage modal shift or in helping to build a coherent cycle network in the east of Hereford. Hereford is currently facing an "epidemic of inactivity" and the benefits that an LTN 1/20 compliant cycle route could bring in terms of improving physical fitness and health & wellbeing would be lost.

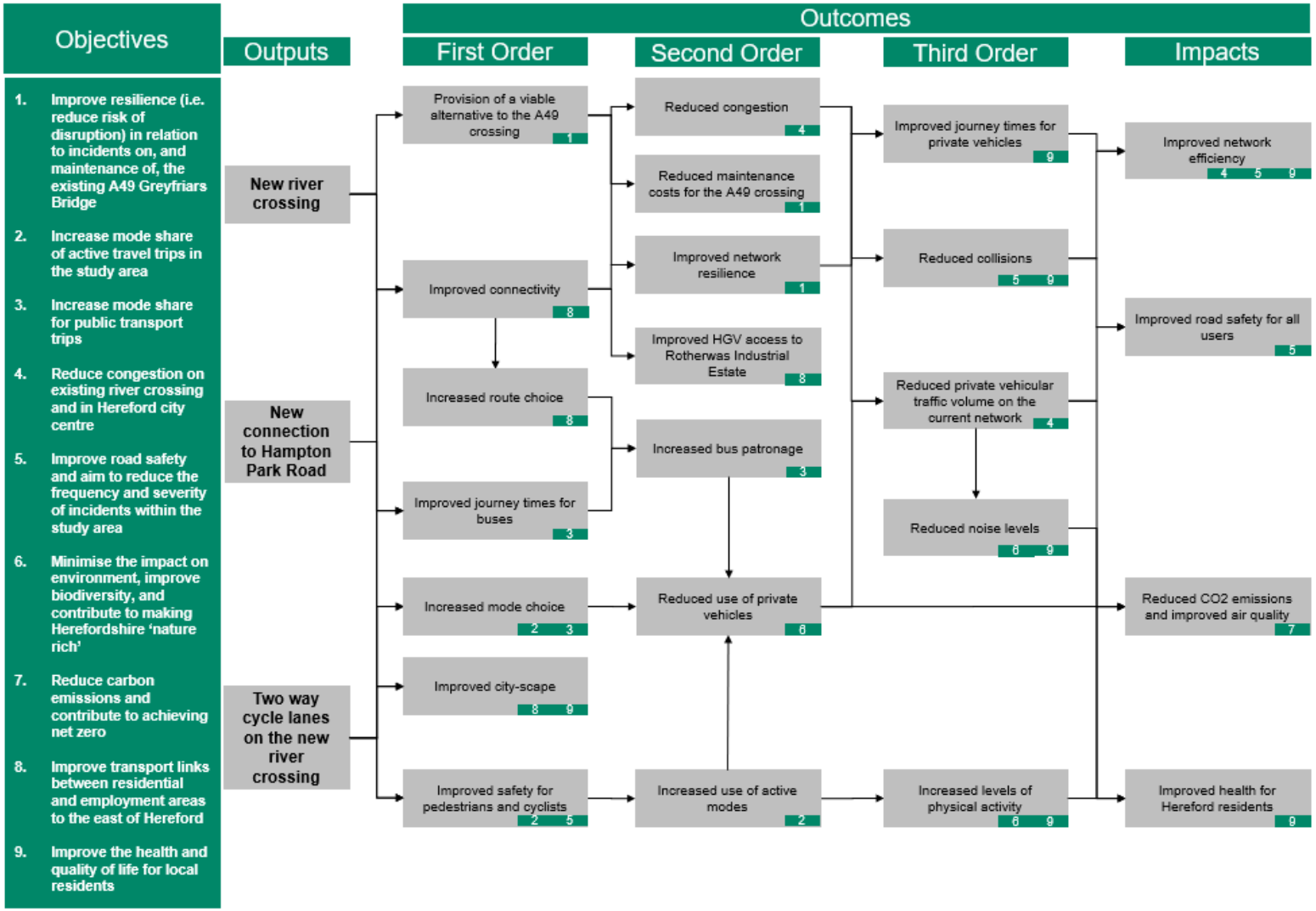
6. Objectives

6.1.1 The objectives shown below have been established following a review of the problems and need for intervention described above and through liaison with Herefordshire Council and elected Councillors. As the project develops consideration will be given to setting SMART (Specific, Measurable, Achievable, Realistic and Timebound) targets to sit under these objectives.

- **Resilience:** Improve resilience (i.e. reduce risk of disruption) in relation to incidents on, and maintenance of, the existing A49 Bridge.
- **Active travel:** Increase mode share of active travel trips in the study area.
- **Public transport:** Increase mode share of public transport trips.
- **Congestion:** Reduce congestion on existing river crossing and in Hereford city centre.
- **Safety:** Improve road safety and aim to reduce the frequency and severity of incidents within the city.
- **Environment:** Minimise the impact on the environment, improve biodiversity, and contribute to making Herefordshire 'nature rich'.
- **Carbon:** Reduce carbon emissions and contribute to achieving net zero.
- **Growth:** Improve transport links between residential and employment areas to the east of Hereford.
- **Health & Well-being:** Improve the health and quality of life for local residents.

6.1.2 Based on these objectives, a logic map has been produced which sets out key outcomes which are likely to be derived from the implementation of an eastern river crossing if all of the objectives were to be achieved. This is set out in **Figure 6-1**.

Figure 6-1: Logic Map

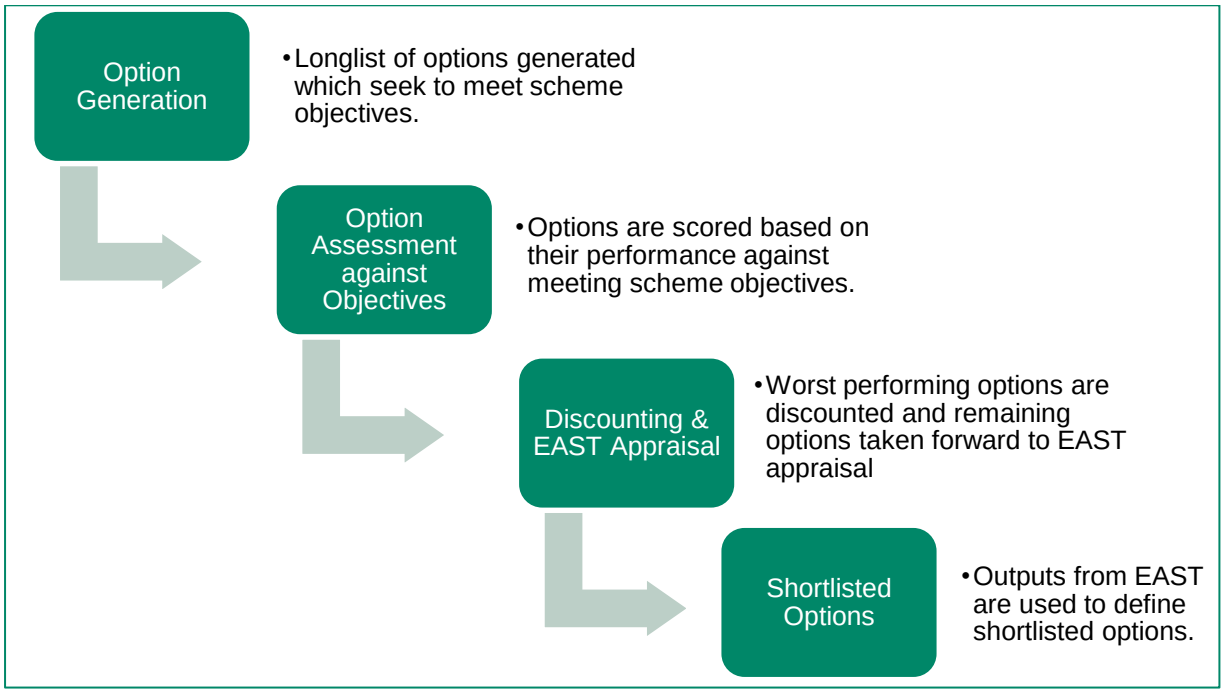


7. Option Identification & Shortlisting

7.1 Process

7.1.1 A four-stage process has been followed in the identification of shortlisted interventions which are to be taken forward for appraisal as part of the business case. This process is set out in **Figure 7-1.**

Figure 7-1: Option Assessment Process



7.2 Option Generation

7.2.1 Plans for an eastern river crossing have been taken forward following the Hereford Transport Strategy Review (HTSR) (2020), which highlighted the lack of river crossings as a key concern and a threat to the resilience of the transport system in Hereford.

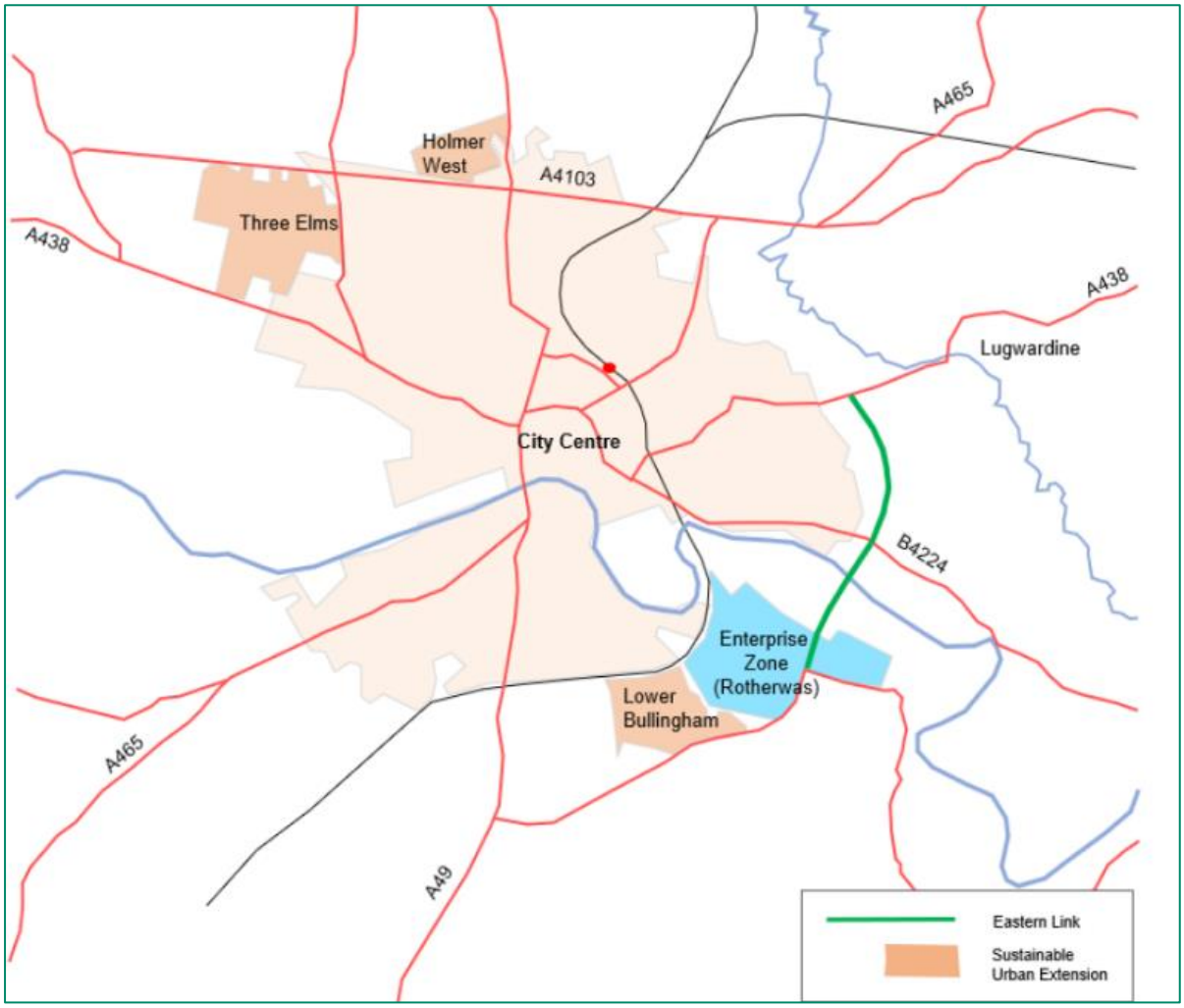
7.2.2 Prior to the HTSR, the relative merits and feasibility of a new eastern route were last reviewed in detail in the 'Hereford Relief Road – Study of Options' (Herefordshire Council) in 2010[28] and the 'Hereford Eastern Links Study' (AMEY) in 2012[29].

7.2.3 The HTSR led to cabinet identifying a preferred strategy comprising four key packages of measures for the future Hereford transport system; one of which involves the development of an eastern access road providing a second crossing for the River Wye.

7.2.4 A broad route, connecting the B4399 (south) and the A438 (north) was identified as part of a Feasibility Study undertaken by AECOM in 2022, the alignment of which is set out in **Figure 7-2** below.

[28] Relief Road – Study of Options. Herefordshire Council. 2010.
https://www.herefordshire.gov.uk/downloads/download/592/relief_road_-_study_of_options_documents_and_maps
[29] Hereford Eastern Links Study. AMEY. 2012.

Figure 7-2: Indicative ERiC alignment following 2022 Feasibility Study



7.2.5 As part of the development of a SOC for the scheme, a series of alternative proposals have been considered which has helped to generate a longlist of options. This includes a number of different alignments crossing the river to the east of the city, variations of those options in terms of their speed limits and consideration of the western bypass and southern link road which had previously been included as part of HC's adopted polices before a decision was made in February 2020 to cease further work on a scheme to the west of the city. A couple of other transport measures are also considered including the provision of an active travel and public transport corridor between the B4399 and Hampton Park Road which crosses the River Wye via a new bridge structure, and widening of the existing Bridge Sollers crossing to the west of the city centre.

7.2.6 In identifying potential alignments for the ERiC, a number of factors were taken into account including potential environmental and archaeological constraints, the interaction with existing properties and engineering feasibility. This included the development of different cross sections to determine different highway widths required to accommodate varying vehicle speed limits.

7.2.7 Alongside this, a series of non-transport options have also been considered as part of the longlist to determine if the issues and challenges confronting Hereford could be addressed without the construction of a large-scale capital infrastructure project.

7.2.8 Based on this, a total of 18 options have been identified as part of this study. These options have been agreed with Herefordshire Council and elected Councillors. Each of the options, and a brief description of its scope are set out in **Table 7-1**.

Table 7-1: Longlist of Options

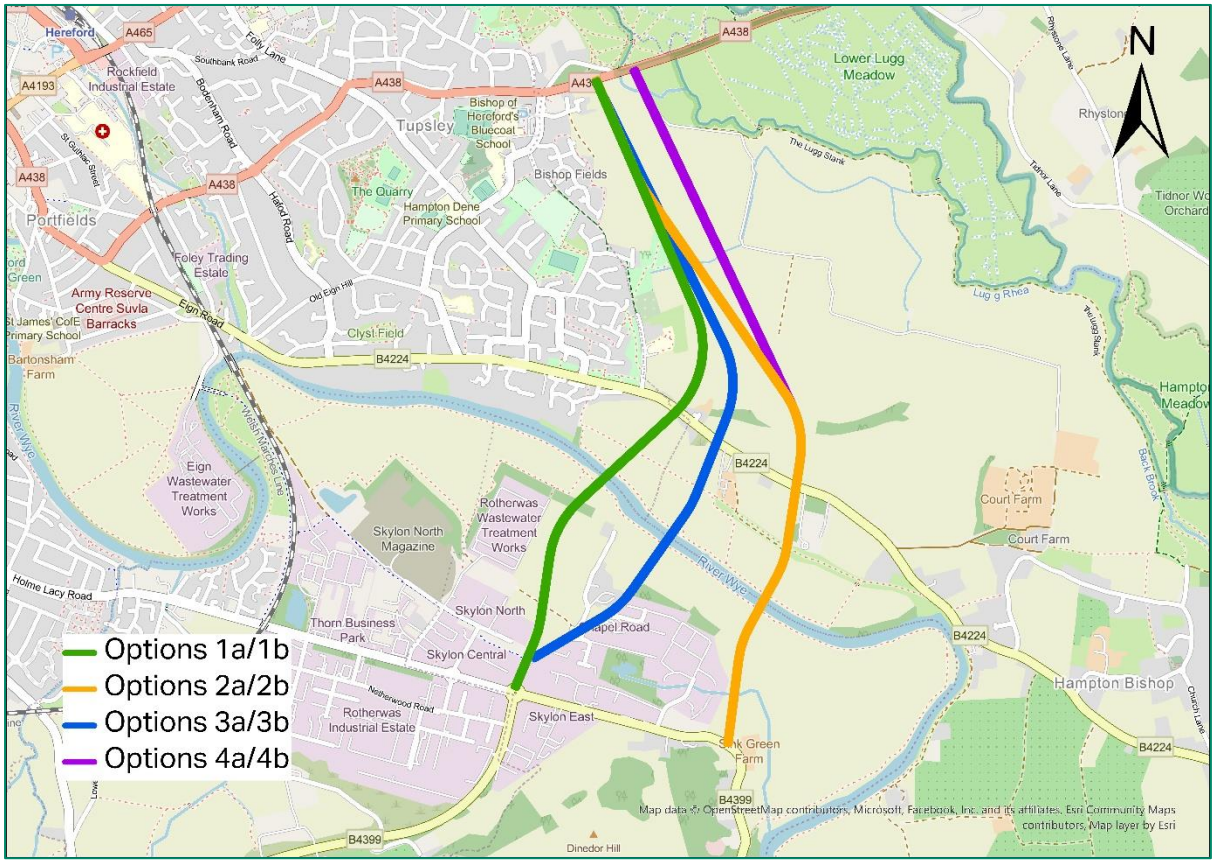
#	Option	Description
1a	ERiC Alignment 1 (30mph)	Both Options 1a and 1b connect to the B4399 at the Chapel Road roundabout around the west of Rotherwas Chapel to an at-grade crossing at Hampton Park Road. They then skirt closely to residential receptors and connect to the A438 to the west of the access road to the A&D plant. This requires a structure to be built over the River Wye as well as two public footpaths. The alignment for Option 1b would be wider to accommodate the faster speeds. LTN 1/20 cycling infrastructure is included as part of these alignment.
1b	ERiC Alignment 1 (40mph)	Both Options 1a and 1b connect to the B4399 at the Chapel Road roundabout around the west of Rotherwas Chapel to an at-grade crossing at Hampton Park Road. They then skirt closely to residential receptors and connect to the A438 to the west of the access road to the A&D plant. This requires a structure to be built over the River Wye as well as two public footpaths. The alignment for Option 1b would be wider to accommodate the faster speeds. LTN 1/20 cycling infrastructure is included as part of these alignment.
2a	ERiC Alignment 2 (30mph)	Both Options 2a and 2b connect to the B4399 at a tight horizontal curvature nearby a bend. It connects to Hampton Park Road at an at-grade crossing to the east of Field Farm House Residential Home. It then connects to the A438 at the same point as Options 1a/1b. This requires a structure to be built over the River Wye as well as two public footpaths. The alignment for Option 2b would be wider to accommodate the faster speeds. LTN 1/20 cycling infrastructure is also included as part of this alignment.
2b	ERiC Alignment 2 (40mph)	Both Options 2a and 2b connect to the B4399 at a tight horizontal curvature nearby a bend. It connects to Hampton Park Road at an at-grade crossing to the east of Field Farm House Residential Home. It then connects to the A438 at the same point as Options 1a/1b. This requires a structure to be built over the River Wye as well as two public footpaths. The alignment for Option 2b would be wider to accommodate the faster speeds. LTN 1/20 cycling infrastructure is also included as part of this alignment.
3a	ERiC Alignment 3 (30mph)	Both Options 3a and 3b connect to the B4399 at the Chapel Road roundabout around the east of Rotherwas Chapel to an at-grade crossing at Hampton Park Road. This partly utilises Chapel Road existing carriageway and alignment however an additional junction would be required where Options 3a/3b deviate from Chapel Road's existing alignment. The route then connects to the A438 at the same point as Options 1a/1b. Options 3a/3b are similar to Options 1a/1b except the crossing at Hampton Park Road is more to the east and the option is further away from residential receptors. This requires a structure to be built over the River Wye as well as two public footpaths. The alignment for Option 3b would be wider to accommodate the faster speeds. LTN 1/20 cycling infrastructure is included as part of these alignments.

3b	ERiC Alignment 3 (40mph)	Both Options 3a and 3b connect to the B4399 at the Chapel Road roundabout around the east of Rotherwas Chapel to an at-grade crossing at Hampton Park Road. This partly utilises Chapel Road existing carriageway and alignment however an additional junction would be required where Options 3a/3b deviate from Chapel Road's existing alignment. The route then connects to the A438 at the same point as Options 1a/1b. Options 3a/3b are similar to Options 1a/1b except the crossing at Hampton Park Road is more to the east and the option is further away from residential receptors. This requires a structure to be built over the River Wye as well as two public footpaths. The alignment for Option 3b would be wider to accommodate the faster speeds. LTN 1/20 cycling infrastructure is included as part of these alignments.
4a	ERiC Alignment 4 (30mph)	Both Options 4a and 4b are similar to Options 2a/2b as they connect to the B4399 and Hampton Park Road at the same points. However, Options 4a/4b connect to the A438 to the east of the other options, crossing a drainage watercourse. This requires a structure to be built over the River Wye as well as two public footpaths. As Options 4a/4b also cross the watercourse an additional structure or mitigation work may also be required. The alignment for Option 4b would be wider to accommodate the faster speeds. LTN 1/20 cycling infrastructure is also included as part of this alignment.
4b	ERiC Alignment 4 (40mph)	Both Options 4a and 4b are similar to Options 2a/2b as they connect to the B4399 and Hampton Park Road at the same points. However, Options 4a/4b connect to the A438 to the east of the other options, crossing a drainage watercourse. This requires a structure to be built over the River Wye as well as two public footpaths. As Options 4a/4b also cross the watercourse an additional structure or mitigation work may also be required. The alignment for Option 4b would be wider to accommodate the faster speeds. LTN 1/20 cycling infrastructure is also included as part of this alignment.
5	ERiC 50/ 60mph	Option 5 considers any alignment with a 50/ 60mph speed limit. This option would be wider than those of Options 1a – 4b in order to accommodate the much faster speeds. LTN 1/20 cycling infrastructure is also included as part of this alignment.
6	New bridge and travel corridor (Hampton Park Road to B4399 Rotherwas) for public transport and active travel	A river crossing that connects to the B4399 and Hampton Park Road that is only accessible by public transport and active modes. This requires a structure to be built over the River Wye as well as two public footpaths.
7	A438 to B4352 online improvements from 4.5m to 6.5m utilising existing Bridge Sollers	A438 to B4352 online improvements to the existing river crossing Bridge Sollers from 4.5m country lane to 6.5m road with minor alignment improvements and priority junctions at either end.
8	Western Bypass and Southern Link Road	Option 8 is comprised of the Western Bypass and Southern Link Road (SLR). The Bypass connects the A49 (Holmer Road) and A465 (Abergavenny Road). The SLR connects the A465 (Abergavenny Road) to the A49 (Ross Road). This will require a structure to be built over the River Wye.
9	Increase broadband accessibility	Increase broadband accessibility to all residents in Hereford, so residents can be informed on the traffic

		conditions as well as access alternative methods to get goods and services that do not require road usage.
10	Improve urban planning	Improve urban planning by brining key trip attractors closer to users and assessments of land use to prevent urban sprawl within the city. The aim is to shorten the length of trips users have to make and help to encourage mode shift away from private vehicles.
11	Mobility as a Service (MaaS) apps	A MaaS app that facilitates real time information, multi-modal ticketing, and integration of transport services. A MaaS app would help to reduce private car usage by making alternative methods of transport easier to use.
12	Advertise and promote active travel corridors	Advertisement and promotion of existing active travel corridors to promote their use and help encourage mode shift.
13	Demand Management/ Charging	Demand Management consists of a series of schemes such as a clean air zone, congestion charging, increase city centre parking charges, and introduce bridge tolls. These measures aim to reduce private vehicle usage and promote mode shift.
14	Do Nothing (Making the best use of the existing network)	This option would see no further changes being made to the network in the Hereford area, over and above committed schemes as set out as part of the Uncertainty Log for the Hereford Transport Model.

7.2.9 Each of the four different alignments which have been identified for the ERiC (Options 1a – 4b) are set out in **Figure 7-3**.

Figure 7-3: Proposed alignments of the ERiC



7.2.10 The location of the western bypass and southern link road is demonstrated in **Figure 7-4** and the locations of the new bridge and travel corridor and improvements at Bridge Sollers are highlighted in **Figure 7-5**.

Figure 7-4: Proposed alignment of the Hereford western bypass

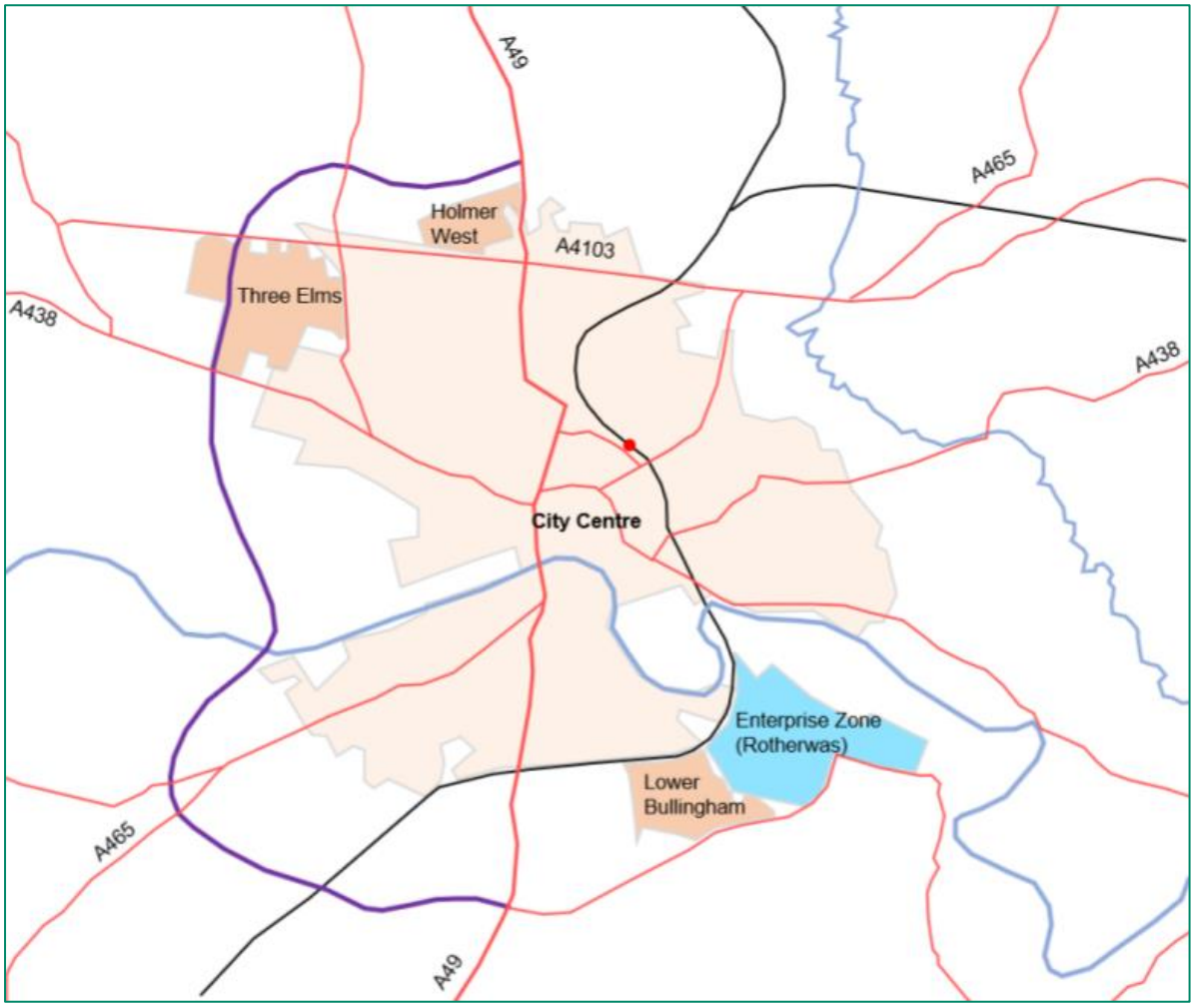
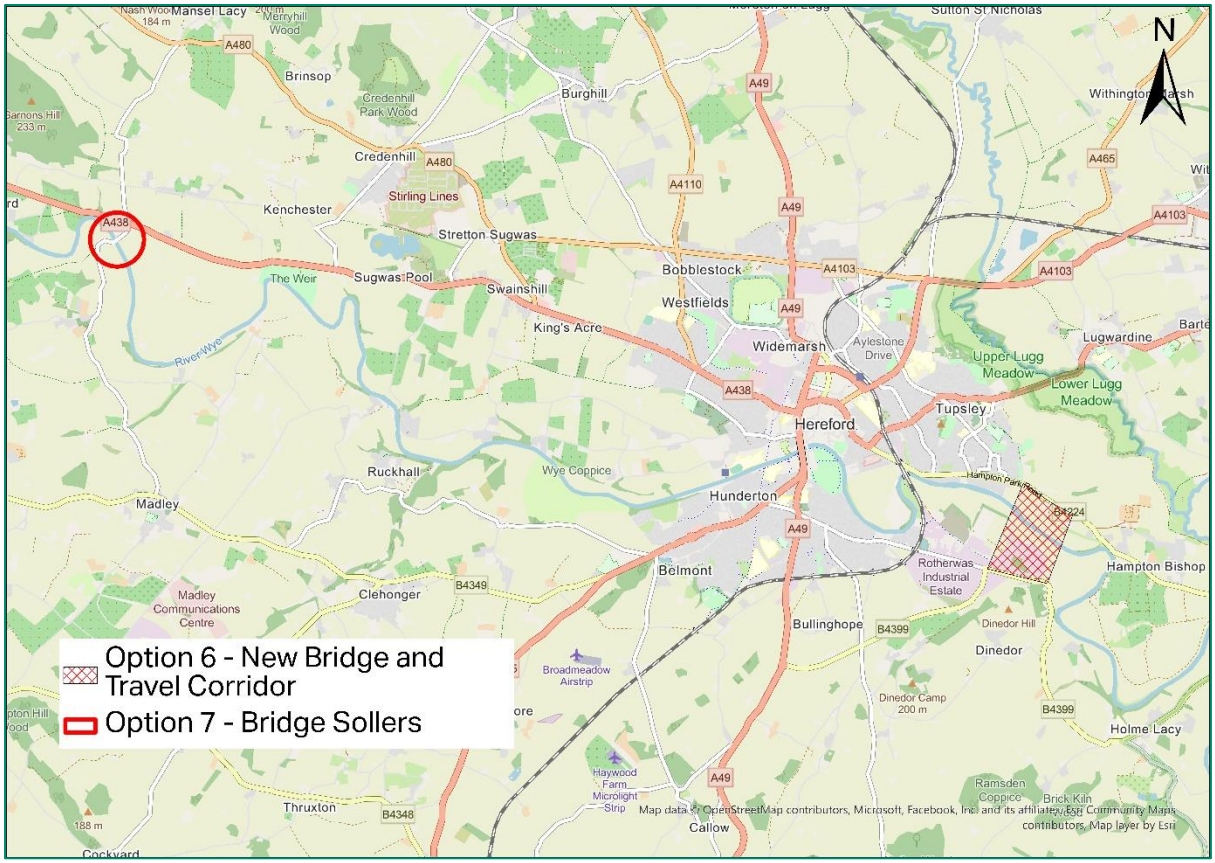


Figure 7-5: Location of Bridge Sollers and the proposed travel corridor



7.3 Option Assessment against Objectives

7.3.1 Once the longlist had been consolidated, an optioneering process could commence whereby each of the options was assessed in terms of its performance against the objectives. An 11-point scoring system was used, ranging from -5 to +5 which allowed for more granular details and differences to be captured between the options than if a narrower range had been used.

7.3.2 **Table** 7-2 outlines the scoring system which has been applied. Given the significant number of environmental designations and challenges in the study area, each of the options was also scored based on its impact against a range of different environmental considerations including air quality, cultural heritage, landscape & visual impacts, biodiversity, geology & soils, material assets & waste, noise & vibration and population & health.

Table 7-2: Scoring Criteria Based on Alignment of Each Option with the Objectives

+5	Considerable fit with objectives
+4	
+3	
+2	
+1	
0	Negligible/ no impact against the objectives
-1	
-2	
-3	
-4	
-5	Little to no fit with the objectives

7.3.3 The scoring matrix (including against the environmental criteria) can be seen in Appendices C & D, which contain justification for how scores were awarded for each option and its performance against each of the individual objectives. The outcomes of the objective scoring can be seen in **Figure 7-6.**

Figure 7-6: Scores and Rankings of each option based on performance against objectives

	Ranked Options	Score
1	Option 3b - Eastern River Crossing and Link Road (40 mph)	**22**
=2	Option 1b - Eastern River Crossing and Link Road (40 mph)	**21**
=2	Option 3a - Eastern River Crossing and Link Road (30 mph)	**21**
4	Option 1a - Eastern River Crossing and Link Road (30 mph)	**19**
=5	Option 2b - Eastern River Crossing and Link Road (40 mph)	**16**
=5	Option 4b - Eastern River Crossing and Link Road (40 mph)	**16**
=7	Option 2a - Eastern River Crossing and Link Road (30 mph)	**15**
=7	Option 4a - Eastern River Crossing and Link Road (30 mph)	**15**
=7	Option 5 – Eastern River Crossing and Link Road 50/ 60mph	**15**
10	Option 8 - Hereford Western Bypass (A49 Holmer Road to A465 Abergavenny Road and A465 Abergavenny Road to A49 Ross Road)	**14**
11	Option 13 - Demand Management/ Charging - Clean air zone, congestion charging, increase in city centre parking charges, and introduce bridge tolls	**11**
12	Option 6 - New bridge and travel corridor (Hampton Park Rd to B4399 Rotherwas) for public transport and active travel	**10**
=13	Option 9 - Increase broadband accessibility	**9**
=13	Option 10 - Improve urban planning	**9**
15	Option 11 - Mobility as a Service (MaaS) apps	**8**
16	Option 12 - Advertise and promote active travel corridors	**7**
17	Option 7 - A438 to B4352 online improvement from 4.5m to 6.5m utilising existing Bridge Sollers	**0**
18	Option 14 – Do Nothing	**-8**

7.3.4 Based on the analysis of the performance of each option against the strategic objectives, Option 1a, 1b, 3a and 3b have been identified as the best-performing options. These options are all variations of the ERiC alignment and include either a 30 or 40mph speed limit.

7.3.5 From this assessment, a number of options can be discounted from further appraisal as set out in the following section.

7.4 Discounting of Options

7.4.1 Following the objectives assessment, 11 options were identified for taking forward to the next stage of assessment, with the remaining options being discounted, with justifications provided in **Table 7-3**.

Table 7-3: Discounted options

#	Option Name	Justification
6	New bridge and travel corridor (Hampton Park Road to B4399 Rotherwas) for public transport and active travel	Whilst this option helps to encourage public transport and active travel usage, its effect is small-scale and it does not score well against the other objectives such as improving resiliency or reducing congestion, as private vehicles are not able to access the corridor. It would also have a negative impact on the environment due to a structure needing to be built over the River Wye.
7	A438 to B4352 online improvements from 4.5m to 6.5m utilising existing Bridge Sollers	This option performs poorly against the objectives with its location a significant distance to the west of Hereford meaning that it is unlikely to have any fundamental impact on resolving any of the transport issues or challenges currently facing Hereford.
9	Increase broadband accessibility	This option would provide social benefits and help to encourage mode shift through greater exposure to information related to public transport and active modes. Increased broadband accessibility could also facilitate remote working and use of online goods and services to help reduce the number of private vehicles on the network. However, its impact in comparison to some of the other physical infrastructure projects is likely to be small-scale.
10	Improve urban planning	This option can help to encourage mode shift by reducing trip lengths to key attractors by reducing urban sprawl. However, these benefits are likely to be minimal and it would not resolve the resiliency issues associated with crossing the River Wye.
11	Mobility as a Service (MaaS) apps	This option was deemed to have a positive impact against some of the objectives such as reducing congestion by encouraging mode shift to public transport however the overall impact of this option was minimal, and it did not score effectively against other key objectives such as resiliency.
12	Advertise and promote active travel corridors	This option was deemed to have a positive impact against some of the objectives such as reducing congestion by encouraging active travel mode shift to public transport however the overall impact of this option was minimal, and it did not score effectively against other key objectives such as resiliency.
14	Do Nothing	This option would fail to address any of the existing issues in Hereford or provide mitigation against future issues from future growth and does not score positively against any of the strategic objectives.

7.5 EAST Sifting

7.5.1 The 11 options which were ranked the highest based on the assessment against the objectives were taken forward for further appraisal using the DfT's Early Assessment Sifting Tool (EAST). This process helped to validate the outcomes from the objectives scoring, and help to further define the shortlist for taking forward for appraisal as part of the SOC.

7.5.2 The 11 options taken forward to EAST include all of the ERiC alignments (including the different speed limit variations), the Hereford Western Bypass (Option 8) and one of the 'non-transport' options, namely Demand Management (Option 13).

7.5.3 The DfT developed its appraisal tool, EAST, in order to provide consistent assessments of interventions during the early stages of scheme development. The assessment requires high level details of each option to be input to the tool for comparison. EAST focuses on the following criteria:

- Strategic: including fit with transport and other government objectives.
- Economic: considering the economy, society, and the environment, along with the value for money.
- Managerial: looking for acceptability, feasibility, and risk.
- Financial: both capital and revenue costs.
- Commercial: assessing option flexibility, funding, and revenue generation.

7.5.4 A summary of the outputs for the scoring of each option against the criteria can be found in Appendix E.

7.5.5 Based on the assessment of the options against the objectives and in the EAST tool, it was deemed that all of the ERiC options would have a number of benefits and strong strategic fit with the objectives including:

- Improved resiliency in the transport system
- Increased mode share of both public transport and active travel trips
- Reduced congestion in Hereford city centre
- Improved transport links between the residential and employment areas in east Hereford
- Improved health and quality of life of local residents

7.5.6 However, a key differentiator between the ERiC options was related to the safety of the alignments and how they would impact the frequency and severity of collisions. Whilst the options are expected to have a slight positive impact on road safety by reducing congestion in the city centre and providing fully LTN 1/20 compliant facilities for cyclists, it is considered that the tie-in of Options 2a/2b and 4a/4b to the B4399 at a tight horizontal curvature with limited visibility would pose safety concerns and require a significant Departure from Standards.

7.5.7 Furthermore, whilst all of the nine ERiC options are likely to face a number of environmental constraints and have negative impacts on many environmental criteria, Options 2a/2b and 4a/4b are expected to have a larger negative environmental impact. These options will have a greater impact on the flood zones than Options 1a/1b and 3a/3b and will require greater land take due to their longer length.

7.5.8 The 40/ 50/ 60mph variations of the ERiC options will require additional land take due to the wider cross sections and larger bridge structure needed to support the road. Options 4a/4b also have an additional crossing over a drainage watercourse which would likely require another bridge or mitigation work to the existing watercourse and may have greater adverse impacts on the Lugg Meadow SSSI than the other options.

7.5.9 Whilst the 50/ 60mph option would bring additional benefits in terms of reducing congestion in Hereford city centre and increasing the attractiveness of public transport through improved journey time reliability, such a high-speed route would likely increase the severity of collisions

along the route and would not be in keeping with speeds along connecting roads, which could contribute to further safety issues.

7.5.10 Options 2a/2b and 4a/4b are likely to be more expensive to construct than Options 1a/1b and 3a/3b due to the greater length of the route which will require greater material and the increased land acquisition which would be required. The 50/60mph option is also likely to be more expensive with greater road width required to accommodate the faster speeds (including a widened bridge structure over the River Wye).

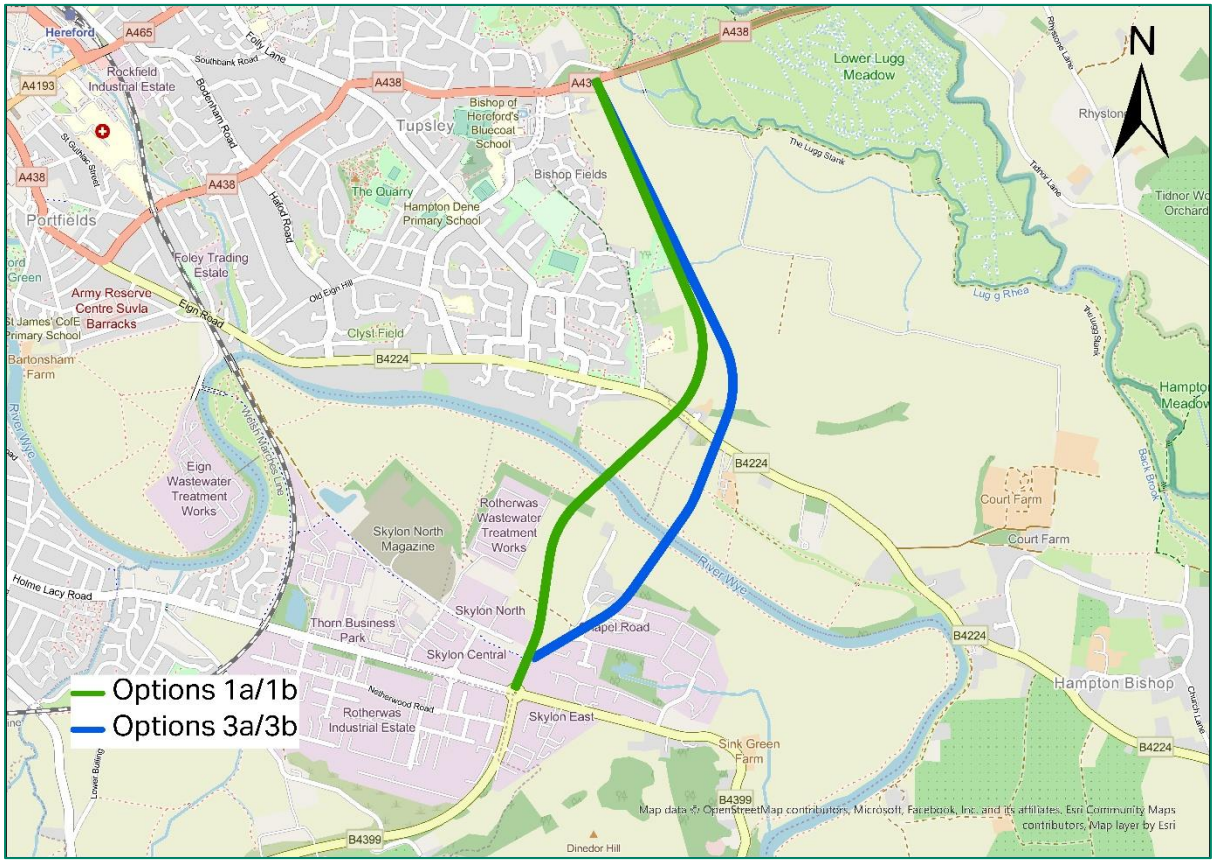
7.5.11 The Hereford Western Bypass (Option 8) has a number of benefits, particularly in terms of improving resilience and reducing congestion in Hereford city centre. However, this option would fail to have any impact in improving the transport links between residential and employment areas to the east of Hereford and would also have a number of adverse environmental impacts, with a larger amount of land take required due to the length of the route.

7.5.12 Demand Management (Option 13) would provide disincentives to private vehicle usage and help to promote mode shift towards public transport and active modes. This would have positive environmental impacts in relation to carbon emissions, however these impacts are likely to be minimal and this option would not help to promote economic growth or provide as many socio-distributional benefits as the ERiC options.

7.6 Shortlist

The EAST assessment has helped to reinforce the findings from the objectives assessment and confirms that Options 1a/1b and 3a/3b are the best performing options. These options will comprise the shortlist and be taken forward for further appraisal as part of the business case process. This shortlist (and the process for arriving at the shortlist) has been determined in close coordination with both Herefordshire Council and elected Councillors. The alignments of the shortlisted options (which include speed limit variations) are set out in **Figure 7-7**.

Figure 7-7: Shortlisted options



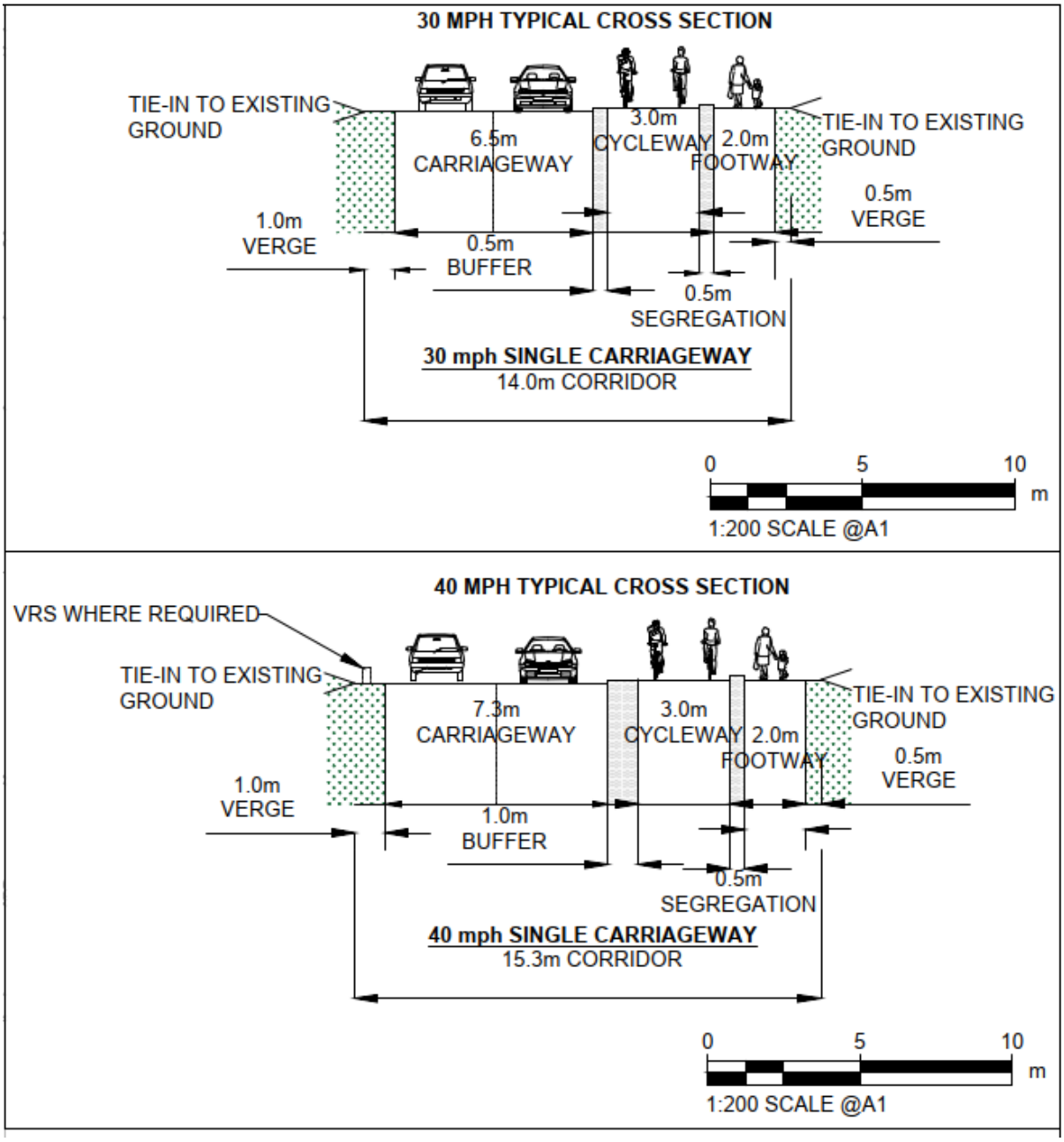
7.6.1 A typical cross section was designed for Options 1a/1b and 3a/3b where the speed limit is 30mph (**Figure 7-8**). This comprises 6.5m carriageway width, 3m two-way segregated cycle

track and 2m footway on one side of the cross section. The 6.5m carriageway would meet Manual for Streets advice and accommodate two buses to pass each other as per LTN 1/20 recommendations as well as Stagecoach published advice[30] whilst the 3m two-way cycle track complies with LTN 1/20 minimum cycle track recommendations for up to 300 cycle flow per hour. 2m wide footway width meets DfT Inclusive Mobility Guidance recommendations which would accommodate two wheelchair users to pass each other.

7.6.2 Where the speed limit is 40mph, the carriageway width is increased to 7.3m to comply with DMRB CD 127 recommendations. The proposed alignments radii and forward visibility were designed in accordance with DMRB CD 109.

7.6.3

Figure 7-8: Cross sections for the shortlisted options



[30] https://www.stagecoachgroup.com/~/media/Files/S/Stagecoach-Group/Attachments/pdf/bus-services-and-new-residential-developments.pdf (Accessed 24 April 2023)

8. Conclusion

8.1.1 This OAR has identified a number of key issues and opportunities which require to be addressed through the delivery of an eastern river crossing. These issues and opportunities can be summarised by theme as below:

- *Resilience* – the lack of alternative river crossings across Hereford creates a significant resiliency issue, especially during times when there are incidents along the existing crossing along the A49. There is significant demand on the A49 to accommodate north-south traffic for both strategic and local traffic, with alternative road crossing points being at least over 5 miles away
- *Performance of the A49* – the A49 already has limited spare capacity and experiences slow average speeds along the river crossing during peak times, leading to journey time unreliability. The Hereford Transport Model forecasts that the A49 is likely to be significantly constrained by 2032 without any scheme interventions, leading to traffic having to re-assign along alternative routes (with significantly increased vehicle kilometres, journey times and road user emissions) to access the other bridge crossings at Holme Lacy and Bridge Sollers
- *Accessibility* – access to key employment sites such as Skylon Enterprise Zone is constrained, with traffic from the north having to route through the city centre to access the site.
- *Air quality* – the A49 river crossing is currently designated as an AQMA and increased demand along the network will do nothing to improve air quality in this area
- *Physical inactivity* – according to the Herefordshire Health and Wellbeing Strategy, Herefordshire currently faces an epidemic of inactivity with low fitness levels resulting in more deaths than from smoking, diabetes and hypertension combined. The proportion of people who inactive in Herefordshire is higher than the national average.
- *Cycling* – a significant proportion of commuter journeys made across Herefordshire by car are short distance trips which could easily be converted to more sustainable modes such as by bike. Furthermore, there are significant improvement works being made to the active travel network in the east of Hereford through LUF2 and ATF4 funds and therefore a new scheme with LTN 1/20 compliant cycle facilities would complement the other schemes and provide a coherent network for cyclists that is likely to be well-used.

8.1.2 A number of options have been considered for addressing these issues and providing a better-functioning transport network across Hereford. Following completion of a two-stage optioneering sifting process, four options have been shortlisted for further appraisal as part of the SOC. These options comprise of two eastern river crossing alignments, with differing speed limits, as outlined below:

- Option 1a – ERiC Alignment 1 (30mph)
- Option 1b – ERiC Alignment 1 (40mph)
- Option 3a – ERiC Alignment 3 (30mph)
- Option 3b – ERiC Alignment 3 (40mph)

8.1.3 Due to the location and nature of the scheme, there will be a number of significant environmental and engineering constraints and challenges which will need to be overcome or mitigated against in order for the scheme to come forward. These will be considered further as the design for the scheme is developed.

Appendix A – Environmental Constraints Plan

Appendix B – Environmental Constraints Report

Appendix C – Option Scoring against Objectives

Appendix D – Option Scoring against Objectives (Environment)

Appendix E - Summarised EAST Outputs

E.1 Strategic

In terms of strategic fit, the EAST assessment categorises the impact that the option may have on a scale of 1 (small impact) to 5 (significant impact). The assessment found that the options would have the following impacts:

Option 1a: 4. Building a new crossing will help alleviate the resiliency issues in Hereford as well as congestion issues which will help to reduce emissions from traffic queueing. The segregated facilities for active travel users will also have an impact on increasing active mode share. However, the route is relatively short in length and is not targeted at accommodating strategic through-traffic and more so focused on providing resilience and linking areas north and south of the river to the east of Hereford.

Option 1b: Same as Option 1a.

Option 2a: Same as Option 1a

Option 2b: Same as Option 1a.

Option 3a: Same as Option 1a.

Option 3b: Same as Option 1a.

Option 4a: Same as Option 1a.

Option 4b: Same as Option 1a.

Option 5: Same as Option 1a.

Option 8: Building the relief road will improve the resilience of the road network and provide a viable alternative to the A49. However, it will involve the construction of a significant section of highways infrastructure, which would have a range of environmental impacts.

Option 13: These measures provide a disincentive for using private vehicles in Hereford city centre and would help to encourage mode shift to alternative modes. By reducing the number of private vehicles on the network this will help to meet NetZero objectives and reduce congestion. It is not known how successful the scheme would be in promoting mode shift.

E.2 Economic

The EAST assessment considers the economic fit of each option, with regard to economic growth, carbon emissions, socio-distributional impacts, local environment, wellbeing and expected value for money category. These are scored on a scale of 1 (“red”) to 5 (“green”), with a score of 6 indicating “no impact”. A summary of the results is presented in this section.

Option 1a: This option scores well in terms of economic growth with a score of 5 as it improves transport connectivity by linking Rotherwas Industrial Estate (a large employment area) with residential areas in the east. It will also decrease journey times through Hereford and help to make public transport faster therefore promoting mode shift to public transport, as it is a more attractive option to residents. In terms of carbon emissions, this option scores a 3 as it involves construction of a bridge and road which will produce lots of carbon, but the reduced congestion and active mode provisions (which will help to promote mode shift), will reduce carbon emissions. This option has strong benefits for the residents of Hereford as the improved connectivity will provide additional opportunities for residents as well as promote healthy lifestyles through the active mode provision. The reduced congestion will also lower driver stress, improve air quality, and reduce low-speed collisions. The 30mph speed limit will reduce the magnitude of collisions when compared to a higher speed road. The option does not score well on

local environment with a score of 2 as it has potential adverse effects on biodiversity on the River Wye, landscape views from PRoW, sterilisation of ALC Grade 1-3a land, sterilisation of MSA, and increased flood risks. Option 1a is closest to a large number of visual receptors and may have adverse impacts on Rotherwas Chapel (a heritage site).

Option 1b: This scores the same as Option 1a in all areas however it is worth noting that a 40mph option will have better impacts in terms of journey times which will bring additional economic benefits as well as helping to make public transport trips more reliable and appealing to residents. But it will have worse impacts on the local environment due to more land take and construction of larger structures to accommodate an increased speed. The severity of collisions is also likely to be worse on a 40mph road than a 30mph one.

Option 2a: This option scores similarly to Option 1a in terms of carbon emissions, economic growth, and social impacts. However, for local environment it scores a 1, as it has similar effects on the environment as Option 1 but it is a longer route so it will require more land take and has a higher impact on flood zones. It also scores lower in terms of well being at a 3, as Option 2a/2b connects to the B4399 at a tight horizontal curvature with limited visibility and requires a significant departure from standards and could pose further safety issues. The 30mph speed limit is likely to reduce the severity of collisions than a higher speed route, although the road width will be narrower which could increase the number of incidents along the network.

Option 2b: This option scores the same as option 2a but it has slight differences due to this option being a 40mph route as opposed to a 30mph route. These differences will be the same as mentioned in option 1b.

Option 3a: This options scores the same as option 1a in all areas however it is worth noting the impact on local heritage sites such as Rotherwas Chapel is less than option 1a/b.

Option 3b: This option scores the same as option 1b.

Option 4a: This option scored the same in all areas as option 2a. It is worth nothing that the impact on the local environment and carbon emissions are likely to be worse as this option crosses a drainage watercourse so an additional structure or mitigation work may be needed to resolve this. It will also adversely impact the heritage sites Ring Ditches and rectilinear enclosures of E of Tupsley.

Option 4b: This scores the same as option 4a but has the different impacts that a 40mph route has when compared to a 30mph route (as stated in option 1b).

Option 5: The 50/ 60mph ERiC option scores the same in terms of economic growth, carbon emissions, and social impacts as option 1a. However, it scores a 1 for local environment due to the impacts that were mentioned in option 1a as well as the increased land take that would be required for a higher speed option (more so than the 30/ 40mph options). This option will help to reduce congestion more than the 30/ 40mph routes due to the increased speeds lowering journey times. However, this option scores a 2 on wellbeing as the severity of collisions will be significantly higher on a 50/ 60mph road than a 30/ 40mph one. Also, the 50/ 60mph speed will encourage less mode shift to active modes than the 30/ 40mph routes as users may feel less safe using active modes on a higher speed road.

Option 8: The relief road scores well for economic growth as it has the potential to deliver a variety of economic impacts like improving the productivity of existing jobs, encouraging inward investment, accelerating development of employment land, and creating new jobs, by improving the flow of strategic traffic movements. The option scores a 2 for carbon emissions due to the large amounts of carbon to be produced during construction and the induced demand/ greater vehicle-kilometres travelled that would likely occur. It scores a 4 for both social impacts and wellbeing as it would increase connectivity and opportunities for residents in the west of Hereford and provide a more pleasant environment in the city centre due to the alleviation of traffic congestion. The alleviation of congestion would also help to reduce collisions and journey times. Due to the significant land take required and the demolition of numerous residential properties, there are likely to be a number of environmental challenges including impacts on biodiversity on the River Wye. SAC and greater flood risks would also mean that extensive mitigation is required. The significant length of the scheme would also mean that a greater number of habitats are affected. For these reasons the western bypass scored a 1 against local environment.

Option 13: Demand Management will help to reduce the number of private vehicles on the network which will help to reduce congestion and enhance the reliability of journeys. It will also provide income for Herefordshire Council. However, this option does nothing to improve resiliency issues caused by a lack of an alternative river crossing or support economic growth through inward investment. The charges could also deter visitors from visiting the city centre which could negatively impact businesses. For these reasons Demand Management scores a 2 for economic growth. It scores a 4 for carbon emissions due to the impact it will have on reducing private vehicles, which will reduce emissions produced. The scheme scores a 1 for social impacts as it will disproportionately affect those on a lower income who may not have a viable alternative to travel into the city centre and would be subject to higher charges, which could cause them to miss opportunities, and create a regional imbalance. This scheme has no negative impacts on the local environment, and the reduction in private vehicles will reduce noise and emissions in the city centre. However, the charges could displace traffic to other local centres without charges and could negatively impact upon the local environment in those areas. The mode shift will also provide many benefits for the physical health of the population and the clean air zone will help to improve the quality of life for the local population. For these reasons this option scores a 4 for local environment and wellbeing.

E.3 Managerial

The EAST assessment includes scoring options based on managerial factors, including implementation timetable, public acceptability, practical feasibility, and key risks. The performance of each option in this respect is summarised in this section.

Option 1a: The delivery timescale of this option is likely to be 5-10 years due to the complexity of the scheme, and it is unlikely the scheme will be delivered before 2031. This option addresses the congestion and resiliency issues in the city, but further consultation activities need to be undertaken to better understand public acceptability of the scheme. A number of environmental challenges need to be better understood and mitigated against in order for the scheme to be practically feasible. Further work also needs to be done to understand the land acquisition required and full impacts of the traffic modelling.

Option 1b: Same as option 1a however more land acquisition would be required as result of the higher speeds
Option 2a: Same as option 1a except it would be less practicably feasible due to the departure from standards needed for the B4399 tie-in, and the increased land take needed as it is a longer route than option 1a/b.

Option 2b: Same as option 2a, except less practicably feasible due to the increased land take needed as it is a higher speed route.

Option 3a: Same as option 1a.

Option 3b: Same as option 1b.

Option 4a: Same as option 2a except it is less practicably feasible as this option crosses an additional drainage watercourse so another structure will need to be built or mitigation work.

Option 4b: Same as option 4a, except increased land take due to the higher speed route.

Option 5: Same as option 1a, except the practicable feasibility is much lower than the other ERiC options as it will require greater land take than the 30/ 40mph routes due to the increased speeds.

Option 8: Due to the complexity of the scheme, this option is likely to take up to 10 years for the scheme to be delivered. The western bypass has faced criticism from environmental campaigners and funding for the scheme was withdrawn after councillors had voted to reject the scheme so public acceptability is likely to be low. The scheme would face a number of practical challenges including its impacts in relation to the environment. Whilst detailed work has already been done on the scheme it is at least 5 years old now so much of this work would need to be re-visited to determine its robustness.

Option 13: The scheme should be quick to implement (1-2 years) after an assessment of the benefits/ disbenefits and public consultation has been conducted. It is unlikely to be popular with most vehicle

user groups due to the increased costs and is also unlikely to be welcomed by businesses within Hereford city centre due to the potential for it to impact upon footfall within the city due to the increased costs.

E.4 Financial

The EAST assessment includes a section relating to financial impacts. This provides scores for factors such as affordability, capital cost, revenue costs and overall cost risk. These scores are summarised in this section.

Option 1a: Initial costings are likely to be between £150-200 million and construction costs are likely to be incurred over a 2–3-year period.

Option 1b: Same as option 1a.

Option 2a: Construction costs are likely to be £200m+ and construction costs are likely to be incurred over a 2-3 year period.

Option 2b: Same as option 2a.

Option 3a: Same as option 2a.

Option 3b: Same as option 2a.

Option 4a: Same as option 2a.

Option 4b: Same as option 2a.

Option 5: Same as option 2a.

Option 8: According to Amey's "Hereford Relief Road Study of Options" report in 2010, this scheme would likely cost approximately £82 million. These costs are significantly old and need to be revisited.

Option 13: The scheme should be very affordable and only cost £0-5 million. It should also generate income for Herefordshire Council.

E.5 Commercial

The EAST assessment takes into account a brief commercial impact review, which considers funding sources and the flexibility of the option. The results of this are outlined in this section.

Option 1a: There could be some limited flexibility with the alignment of the route and funding could be derived from a variety of sources including from the DfT, DLUHC, LEP funding, and Herefordshire Council through its Capital Programme.

Option 1b: Same as option 1a.

Option 2a: Same as option 1a.

Option 2b: Same as option 1a.

Option 3a: Same as option 1a.

Option 3b: Same as option 1a.

Option 4a: Same as option 1a.

Option 4b: Same as option 1a.

Option 5: Same as option 1a.

Option 8: Same as option 1a.

Option 13: There could be flexibility in terms of the measures that are included / excluded as part of the overall demand management package. It is not known where the funding would come from however as it would generate income for Herefordshire Council it would be best placed for them to fund the scheme.