A379 Bridge Road MRN Scheme

Strategic Outline Business Case November 2021

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1. Introduction

1.1. Purpose of the Report

1.1.1. This Strategic Outline Business Case (SOBC) details the case for a scheme to replace or refurbish the canal bridges and improve pedestrian and cycle facilities on and in the vicinity of the A379 Bridge Road. It supports a bid to the Department for Transport (DfT) for funding from the Major Road Network (MRN) fund.

1.1.2. As indicated in the DfT's Transport Business Case Guidance, the SOBC forms the initial Business Case, establishing the need and potential scope of the scheme.

1.1.3. Subject to approval, this SOBC will be followed by an Outline Business Case and Full Business Case.

Figure 1-1: Bridge Road canal bridges, with swing bridge in foreground and bascule bridge in background.

1.2. Structure of the Report

1.2.1. The SOBC's structure is based on the Five Case Model:

- The Strategic Case demonstrates that the scheme has a strong strategic fit with local and national priorities;
- The Economic Case demonstrates the scheme's value for money;
- The Commercial Case demonstrates that the scheme is commercially viable;
- The Financial Case demonstrates that the scheme is financially affordable; and
- The Management Case demonstrates that the scheme is deliverable.

1.3. Study Area

1.3.1. The study area comprises of the A379 Bridge Road, which forms part of the A379 Exeter Outer Ring Road MRN route, as shown in Figure 1-2 below. It also encompasses important walking and cycling routes in the vicinity of Bridge Road.

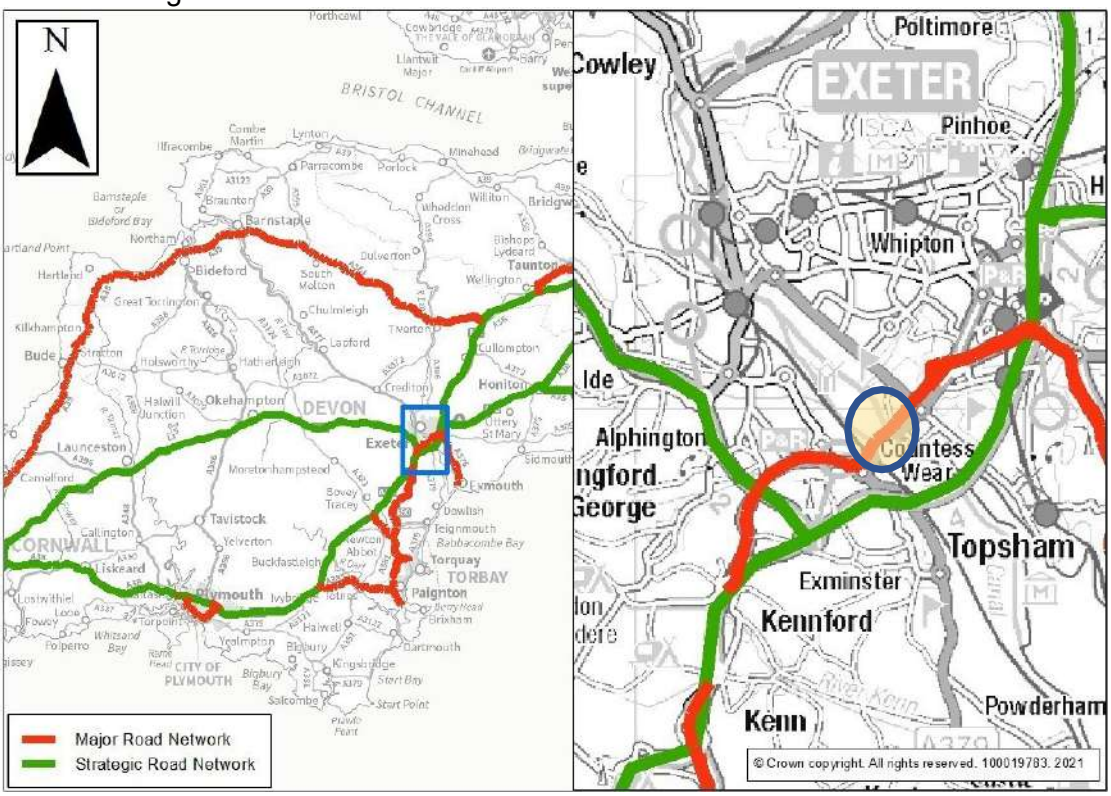

Figure 1-2: Study Area (circled) within Major and Strategic Road Networks.

1.4. Background

1.4.1. The A379 Bridge Road fulfils several strategic and local functions:

- A heavily used road in the local road network as one of the 3 main crossings of the river Exe;
- A "Main" road in the subregional network connecting to the Strategic Road Network, therefore classified nationally as part of the Major Road Network;
- An important diversionary and overflow route for the M5 viaduct between junction 30 and 31 of the M5;
- A key bus corridor carrying several bus routes connecting Exeter to local Market towns and Plymouth; and
- A component of several local and strategic cycle routes (both crossing the road and running parallel to it).

1.4.2. However, the bascule (lifting) and swing bridges carrying the road over the Exeter Ship Canal are very old, of limited width and are deteriorating, reducing the resilience of this key strategic link. When faults occur, or when the bridges are opened to allow vessels to travel along the canal, there is extensive disruption on the local road network, with associated social and economic impacts.

1.4.3. The Countess Wear pedestrian bridge across Bridge Road is also deficient in several respects, including its inability to accommodate cyclists and persons of reduced mobility. The other pedestrian/cycle crossings of Bridge Road are at-grade, causing delays to both non-motorised users and vehicular traffic, and creating road safety issues.

1.4.4. The Do Minimum (make do & mend) option will ensure the bridges are kept operation albeit there will be greater disruption due to planned and unplanned maintenance. Furthermore, it is predicted that the bascule bridge would have to revert to a single carriageway northbound. This would create a very congested network, divert traffic onto the M5 and reduce the resilience of the M5 strategic crossing over the river Exe. The County Council cannot afford a major refurbishment or replacement of the bridges.

1.4.5. The Refurbishment option (low-cost option) entails a cyclical process of major mechanical and structural proactive refurbishment. This will ensure the bridges remain operating with two lanes in each direction. Although the short-term cost is less it is predicted refurbishments will be needed every twenty years.

1.4.6. The Replacement option would be carried out in stages. As the swing bridge is too narrow to carry two-way traffic it would have to be replaced first with a full width bridge. The bascule bridge, which is the one most at risk, would be replaced second.

1.4.7. In summary, a scheme has been developed to replace or refurbish the canal bridges, to provide an operational lifespan of at least 60 years. It is also proposed to:

- Replace the Countess Wear pedestrian bridge with an accessible pedestrian/cycle bridge, and divert the Exe Estuary Trail via this bridge;
- Construct a pedestrian/cycle path between the new pedestrian/cycle bridge and the riverside pedestrian/cycle trails;
- Widen the existing pedestrian/cycle path alongside Bridge Road north of the Countess Wear Road junction; and
- Provide a bus stop on the northbound side of Bridge Road, approximately opposite to the existing southbound bus stop.

1.4.8. Under the Replacement option, it would also be possible to raise the height of the road over the canal, enabling the diversion of the canalside pedestrian/cycle path underneath the road and the removal of the existing signalised crossing. This would also reduce the number of times the bridges would need to open for vessels along the canal because of the increased headroom.

1.4.9. The scope of this scheme is summarised in Figure 1-3 below.

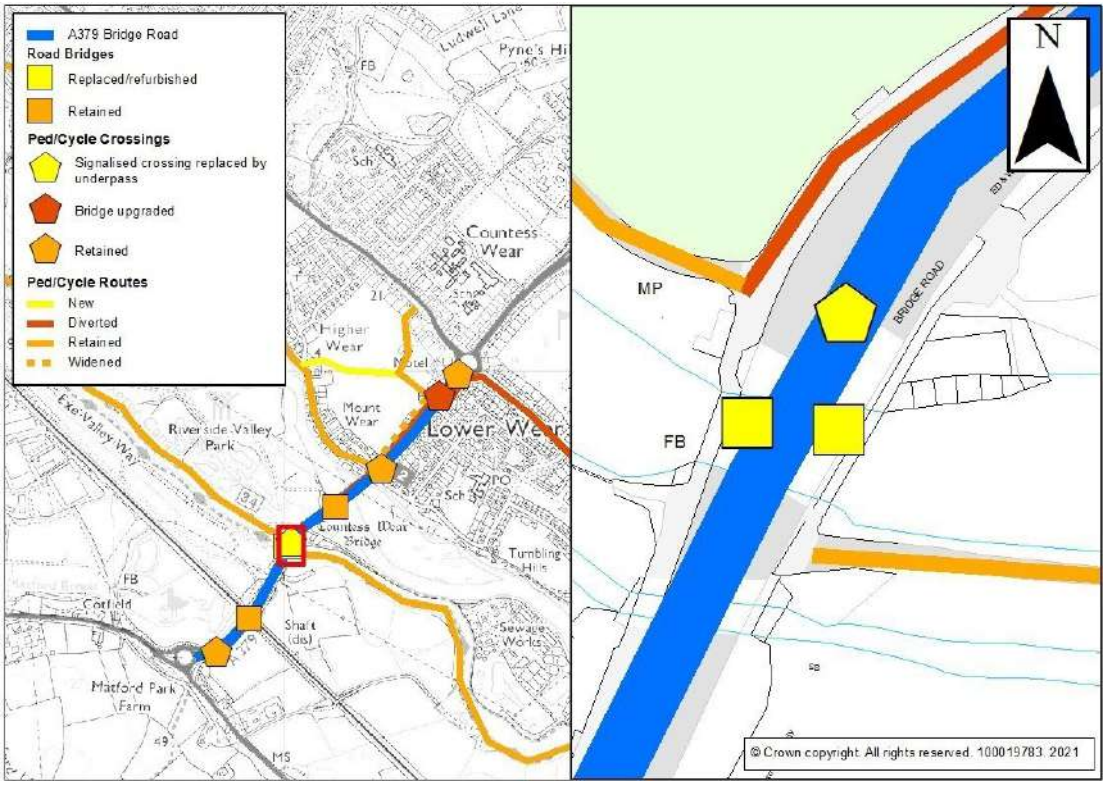

Figure 1-3: Scheme scope

1.4.10. It is intended that the scheme will achieve the following objectives:

a. Improve reliability and resilience of the bridges to provide 2 lanes of traffic flow in both directions to support development

b. Support the SRN as a diversion route for the M5 viaduct during incidents and when the M5 junction 29-31 get overwhelmed with tourist traffic

c. Maintain passage of vessels on the canal for leisure and ferry traffic;

d. Provide an affordable and economic solution that reduces ongoing maintenance costs;

e. Improve the safety and amenity for pedestrians/cyclists using the Exe Estuary Trail and other local routes;

f. Recognise and where possible enhance the environmental and cultural aspects of the bridges and the local environment; and

g. Minimise the net carbon impact of the Bridge Road River Exe crossing considering maintenance, construction, and operation.

1.5. Appraisal Principles

1.5.1. The scheme appraisal detailed in this SOBC is consistent with the DfT's Transport Analysis Guidance (TAG).

1.5.2. TAG is clear on the need for proportionality in the appraisal process, hence the methods adopted for each element of appraisal have been developed to provide output at a level of detail considered appropriate to inform decision making at this stage of the process. The work will be updated and refined for the Outline and Full Business Cases.

1.5.3. The scheme cost estimates for the two options vary from £20m to £30m taking account of risk and the need to include a carbon supplement. Devon County Council would provide a local contribution of 20%. In terms of ongoing maintenance costs to Devon County Council, the option with the lowest cost is the Replacement option.

1.5.4. There current exists a comprehensive traffic model for Greater Exeter. This was used to undertake the economic analysis. The results show that both options are likely to achieve a high value for money when taking account of all the benefits that can be attributed to them.

1.5.5. The scheme development process would be managed by Devon County Council with the assistance of consultants with the relevant specialist knowledge of mechanical bridges. Due consideration would be given to the sensitive environment including flood risk. To assist in the technical details of the scheme design and help with programming and cost estimating it is proposed to engage a contractor early in the OBC development.

1.5.6. Further detail on the strategic case, analytical methods and assumptions made are detailed in the relevant sections of this report.

2. The Strategic Case

2.1. Introduction

2.1.1. The A379 Bridge Road in Exeter fulfils several strategic and local functions:

- A heavily used road in the local road network as one of the 3 main crossings of the river Exe;
- A “Main” road in the subregional network connecting to the Strategic Road Network, therefore classified nationally as part of the Major Road Network (see Figure 2-1);
- An important diversionary route for the M5 viaduct between junction 30 and 31 of the M5;
- A key bus corridor carrying several bus routes connecting Exeter to local Market towns and Plymouth; and
- A component of several local and strategic cycle routes (both crossing the road and running parallel to it).

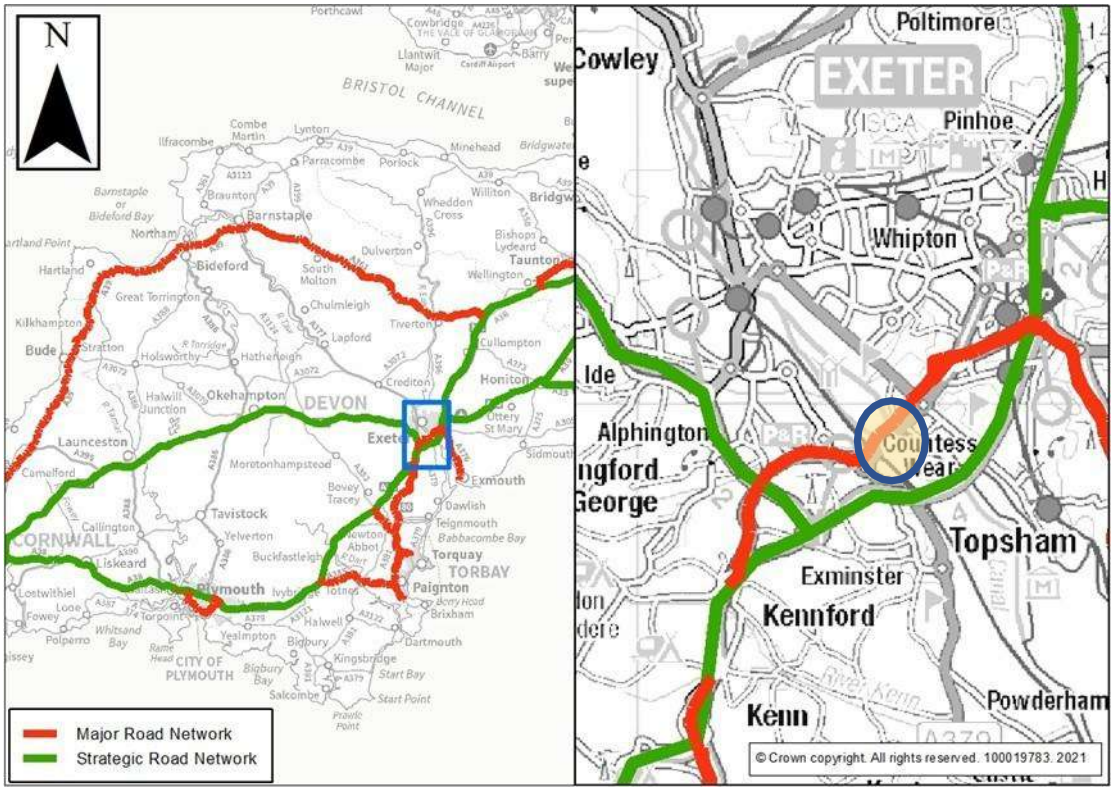

Figure 2-1: Study Area (circled) within Major and Strategic Road Networks.

2.1.2. Although a key transport corridor the nature of the 4 lane, 40mph heavily trafficked road creates significant severance to pedestrians as it passes through the urban area of Exeter, as Exeter continues to expand westwards.

2.1.3. As per the Department for Transport’s Transport Business Case Guidance, this chapter sets out the strategic context of the proposals, demonstrating how the proposal fits with the strategic priorities of the Department for Transport, wider government ambitions and local and regional strategies. It aims to demonstrate the case for change, outlining the current situation and

identifying a clear rationale for the proposed interventions, in line with the DfT publications set out below:

- The Transport Business Cases guidance – 2013, 2021
- Strategic Case Supplementary Guidance: Transport Investment Strategy – 2017
- Major Road Network and Large Local Majors Programmes: Programme Investment Planning – 2018
- Transport Decarbonisation Plan – 2021

2.1.4. This chapter explains the case for an intervention to address the gradual age-related decline in performance of the two mechanical bridges over the Exeter Ship Canal, and associated delays to bridge users.

2.1.5. The case is also made for improvements to the pedestrian and cycle facilities to reduce the severance effect of the road, improve road safety and encourage a greater use of active travel as a mode of transport for leisure and commuting trips.

2.1.6. The SOBC demonstrates the need for major renewal of the bridges, improvements to pedestrian/cycle provision, discusses the options available and sets out how the proposed investment fits with wider public policy objectives.

2.1.7. This chapter follows the format set out Transport Business Case Guidance (2013) and covers:

- The business strategy: that is, the strategic aims and objectives of both Devon County Council (DCC) and the Department for Transport (DfT);
- The extent of the problem identified and the evidence base underpinning it;
- The road's function as a diversionary route for the M5 Viaduct;
- The road's role in enabling the delivery of new housing and employment in the local area and subregion;
- The multiple users of the bridges, including pedestrians, cyclists, buses, private vehicles, and canal boats;
- The impact of 'no change';
- The objectives for solving the identified problems;
- The measures for success;
- The scope of the project: that is, the extent of problems to be solved and potential solutions explored;
- Constraints;
- Interdependencies;
- Stakeholders; and
- High level options considered to solve the identified problems.

2.2. Business Strategy

2.2.1. This section explains the strategic aims and responsibilities of DCC; the organisation responsible for this Strategic Outline Business Case (SOBC),

and references the aims of the DfT, who will be determining funding provision for the proposals in this SOBC. It also summarises the plans of Teignbridge District Council, East Devon District Council and Exeter City

Council, which are dependent on the continued performance of Bridge Road, and the strategies of the Heart of the South West[1] Local Enterprise Partnership (LEP) and Peninsula Transport[2], which set regional economic and transport priorities. The key documents are as follows:

- Devon County Council's strategic plan *Better Together*
- Devon County Council's *A Strategy for Growth*
- Devon County Council's Climate Emergency Declaration
- Devon County Council's *Exeter Transport Strategy*
- Teignbridge District Council, East Devon District Council and Exeter City Council's Local Plans
- Heart of the South West LEP's *Local Industrial Strategy*
- Peninsula Transport's *Vision*
- Department for Transport's *Transport Investment Strategy: Moving Britain Ahead*

Devon County Council (DCC)

2.2.2. DCC's strategic plan *Better Together* aims to improve prosperity for a range of businesses in Devon's diverse and dynamic economy. The document states that this goal can be achieved by focusing on improvements in productivity, skills, and connectivity. The plan recognises the need for good digital and transport connections. In particular, it identifies that Devon's links with the rest of the UK needs to be improved, and includes the following as a key strategic initiative to achieve this improvement:

- Work within the framework of the Local Enterprise Partnership and Subnational Transport Bodies to identify a pipeline of transport schemes aimed at strengthening the economy of the South West Peninsula.

2.2.3. The DCC document *A Strategy for Growth* identifies a total of seven main barriers to growth:

- Poor economic performance of Devon in terms of productivity;
- Significant differences at a district level in skilled workforce;
- Lower earnings than average in most of Devon;
- Failure to exploit better Devon's assets for high value economic growth;
- Towns and rural communities located in more peripheral areas falling behind;
- Rapid ageing of Devon's population; and
- The challenge of Devon's resilience to environmental changes.

2.2.4. The overarching vision for Devon is "to improve the quality of life for the people who live, work and visit the county". There is then a separate vision to create "a flourishing and balanced economy, with strong growth and

[1] This region encompasses Devon, Somerset, Plymouth, and Torbay.
[2] This partnership encompasses Cornwall, Devon, Somerset, Plymouth, and Torbay.

highquality employment". These are both underpinned by four values: enterprise, care, community, and value.

2.2.5. To realise the vision and address the seven barriers to growth, the aim is to secure the following strategic outcomes:

- A more productive economy;
- A higher wage economy;
- Employment opportunities for all and a workforce with the right skills for the future;
- A well-connected county; and
- A thriving business community.

2.2.6. As part of providing 'a well-connected county', DCC aims to improve connectivity (including road and rail) and help support businesses expand through reaching new markets and developing local supply chains. The strategy document also recognises that the parts of Devon with good access to the M5 and A38 corridor tend to perform better economically.

2.2.7. Maintaining capacity and connectivity over Bridge Road is an essential element of the strategy (both for the Exeter subregion and for the wider peninsula), due to its role as the only realistic diversion route when there are closures on the M5 viaduct.

2.2.8. DCC have declared a Climate Emergency, committing it to facilitating the reduction of Devon's carbon emissions to net-zero by 2050 at the latest. The Council also aims to reduce its corporate emissions (i.e. emissions directly or indirectly produced by its own activities) to net-zero by 2030.

2.2.9. The Interim Devon Carbon Plan sets out a pathway to achieve net-zero emissions across the county, an integral element of which is reducing emissions from transport. This will be one of the objectives of any proposed improvement to the Bridge Road corridor.

2.2.10. DCC's *Exeter Transport Strategy* focuses on improving travel choices, creating better places for people, and taking advantage of technology opportunities to influence travel behaviour in a positive way. The strategy is embodied in the following key themes:

- **Greater Connectivity** – providing a consistent standard of rail and interurban bus routes, delivering strategic cycle trails between key settlements, and protecting the reliability and resilience of the strategic road and rail connections with the rest of the country;
- **Greater Places for People** – enhancing pedestrian/cycling networks, reallocating road space for walking and cycling and creating more attractive public spaces; and
- **Greater Innovation** – working with private sector partners to test and implement innovative technology solutions to make travel easier and help the city's transport networks operate more flexibly and efficiently.

2.2.11. The strategy is informed by an assessment of the carbon savings from potential measures, supporting Exeter's transition towards Net Zero Carbon and tackling the Climate Emergency.

2.2.12. Due to Bridge Road being an essential multimodal connection for pedestrians, cyclists, buses, cars and freight, the strategy includes 'Bridge Road bridges renewal' as a priority transport project in the associated Action Plan.

Housing and Economic Development

2.2.13. The Local Plans for Exeter, Teignbridge and (to some extent) East Devon allocate large amounts of housing and employment development around the fringe of Exeter (see Figure 2-2). The ability to maintain the capacity of Bridge Road to accommodate this growth is essential to ensure the development does not stall.

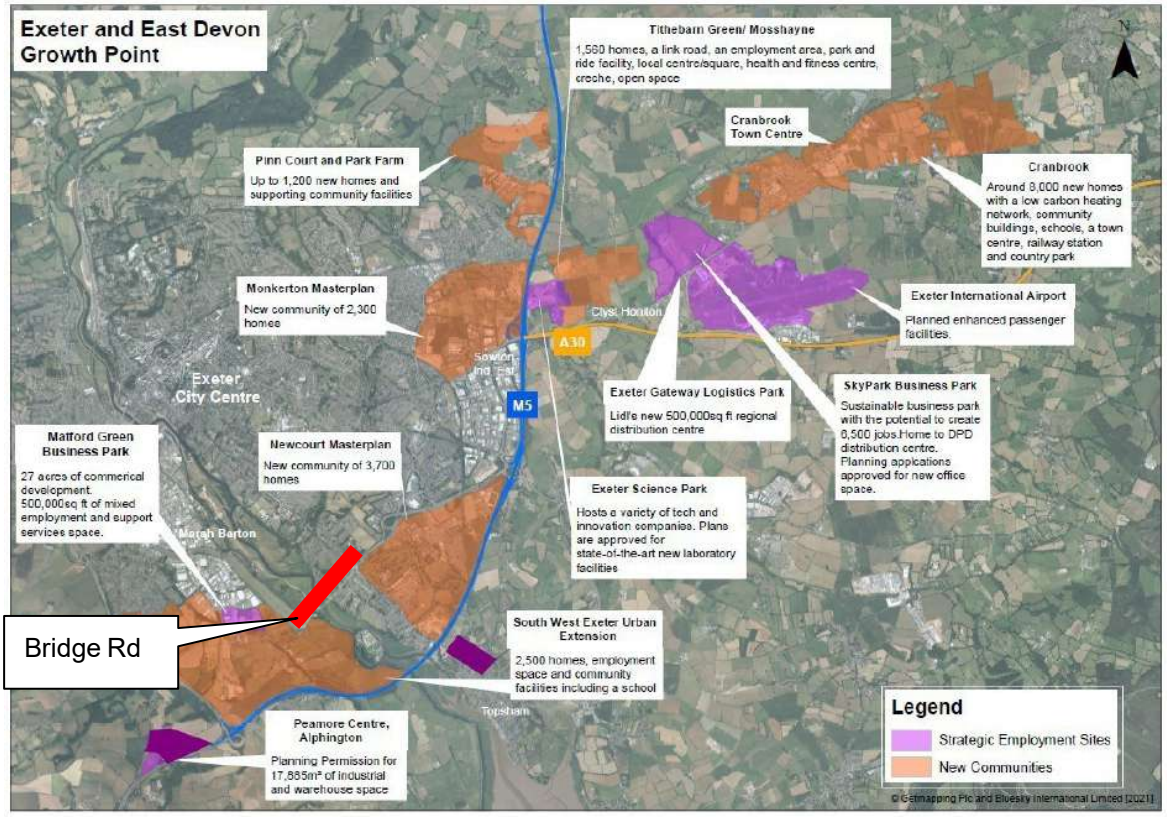

Figure 2-2: Planned development near Bridge Road.

2.2.14. The A379 Bridge Road has several pedestrian and cycle facilities both crossing and running parallel to the road. The nature of the road causes a significant severance and safety hazard to the surrounding area.

2.2.15. This growth in movement needs to be facilitated by maintaining the existing highway capacity and looking to enhance facilities for shorter distance cycling and walking.

Heart of the South West Local Enterprise Partnership (HotSW LEP)

2.2.16. The HotSW LEP's *Local Industrial Strategy* sets out aspirations to realise the region's potential by "capitalising on new and emerging technologies whilst reducing the area's carbon footprint; increasing social mobility; and protecting and enhancing the natural environment".

2.2.17. The Strategy states that the HotSW will "future-proof its infrastructure to support long-term prosperity and clean and inclusive growth" by:

- Creating fast, resilient, and clean transport networks that connect people with opportunities;
- Delivering improved connectivity across the area by securing significant levels of gigabit-capable infrastructure;
- Accelerating housing delivery; and
- Ensuring there is sufficient employment land to support growth.

Peninsula Transport Sub-National Transport Body (STB)

2.2.18. The STB's *Vision* for transport across the South West Peninsula lays out 5 key goals:

- Improving connections between people, businesses, and places;
- Enhancing the resilience of the transport network;
- Delivering affordable, zero-emissions transport;
- Improving the health and wellbeing of local communities; and
- Helping make the Peninsula a great place to live and work.

Department for Transport (DfT)

2.2.19. The DfT's 'Transport Investment Strategy: Moving Britain Ahead' (2017) identifies the need for an integrated network to connect communities and drive growth across the whole country, taking account of spending between different regions. Key goals of the strategy are to:

- Create a more reliable, less congested, and better-connected transport network that works for users who rely on it;
- Build a stronger, more balanced economy by enhancing productivity and responding to local growth;
- Enhance our global competitiveness by making Britain a more attractive place to trade and invest; and
- Support the creation of new housing.

2.2.20. Delivery of these goals will further the Government's Industrial Strategy, the objective of which is "to improve living standards and economic growth by increasing productivity and driving growth across the whole country". They will also meet the objectives of the Housing White Paper which recognises that "transport infrastructure is one of the keys to unlocking development and delivering places people want to live".

2.2.21. The five central objectives of the Major Road Network (MRN) build on the commitments made in the Transport Investment Strategy (2017), as set out in Table 2-1 below. The MRN eligibility criteria specify that the types of schemes eligible for MRN funding include "major structural renewals on roads, bridges, tunnels and viaducts on MRN roads, where significant work needs to be done to renew the carriageway or prevent closure or weight restrictions".

2.2.22. The Transport Decarbonisation Plan (2021) lays out the DfT's pathway to delivering net-zero transport across the UK. In addition to setting commitments to decarbonise vehicle fleets, the Plan highlights the importance of increasing walking and cycling levels in reducing emissions from transport.

2.2.23. The DfT's 'Gear Change: A Bold Vision for Cycling and Walking' outlines aspirations to deliver "a step-change in cycling and walking" and improve public health, protect the environment, and reduce congestion. There are four key themes within this vision:

- Creating better streets for cycling and people, with direct routes for cycling physically segregated from pedestrians and motor traffic;
- Putting cycling and walking at the heart of transport, place-making, and health policy, including ensuring local and strategic A road schemes include provision for cycling;
- Empowering and encouraging local authorities to do more for cycling on their roads; and
- Enabling people to cycle and protecting them when they cycle.

2.2.24. The DfT's 'Bus Back Better: National Bus Strategy for England' lays out plans to make buses "the transport of choice", with bus operators and local government working together to deliver improvements for passengers. This involves making buses more frequent, faster, and more reliable.

2.2.25. It can therefore be seen that recent DfT publications demonstrate a multimodal approach to scheme development and assessment. It will be demonstrated that the proposals for Bridge Road are a prime example of this multi modal approach.

2.2.26. The DfT's key strategic objectives are summarised below.

	Major Road Network 2018	**Transport Investment Strategy 2017**
1.	Reduce congestion	
2.	Support economic growth and rebalancing	Build a stronger, more balanced economy by enhancing productivity and responding to local growth priorities
3.	Support housing delivery	Support the creation of new housing
4.	Support all road users	Create a more reliable, less congested, and better-connected transport network that works for the users who rely on it
5.	Support the Strategic Road Network	
6.		Enhance our global competitiveness by making Britain a more attractive place to trade and invest
Transport Decarbonisation Plan 2021		
7.	Decarbonise all forms of transport and deliver net-zero by 2050	

Table 2-1: Summary of key DfT objectives

2.3. The Problem Identified

<u>The Function of Bridge Road - M5 Diversion Route</u>

2.3.1. The A379 Bridge Road is a designated Major Road Network route (see Figure 2-1 above), and part of a diversionary route for the Strategic Road Network between M5 J30 and the A30 West and A38 (see Figure 2-3 below). Therefore, it supports the resilience of the SRN, by providing a suitable

alternative route in the event of planned or unplanned closures on the M5 Viaduct (J30-J31).

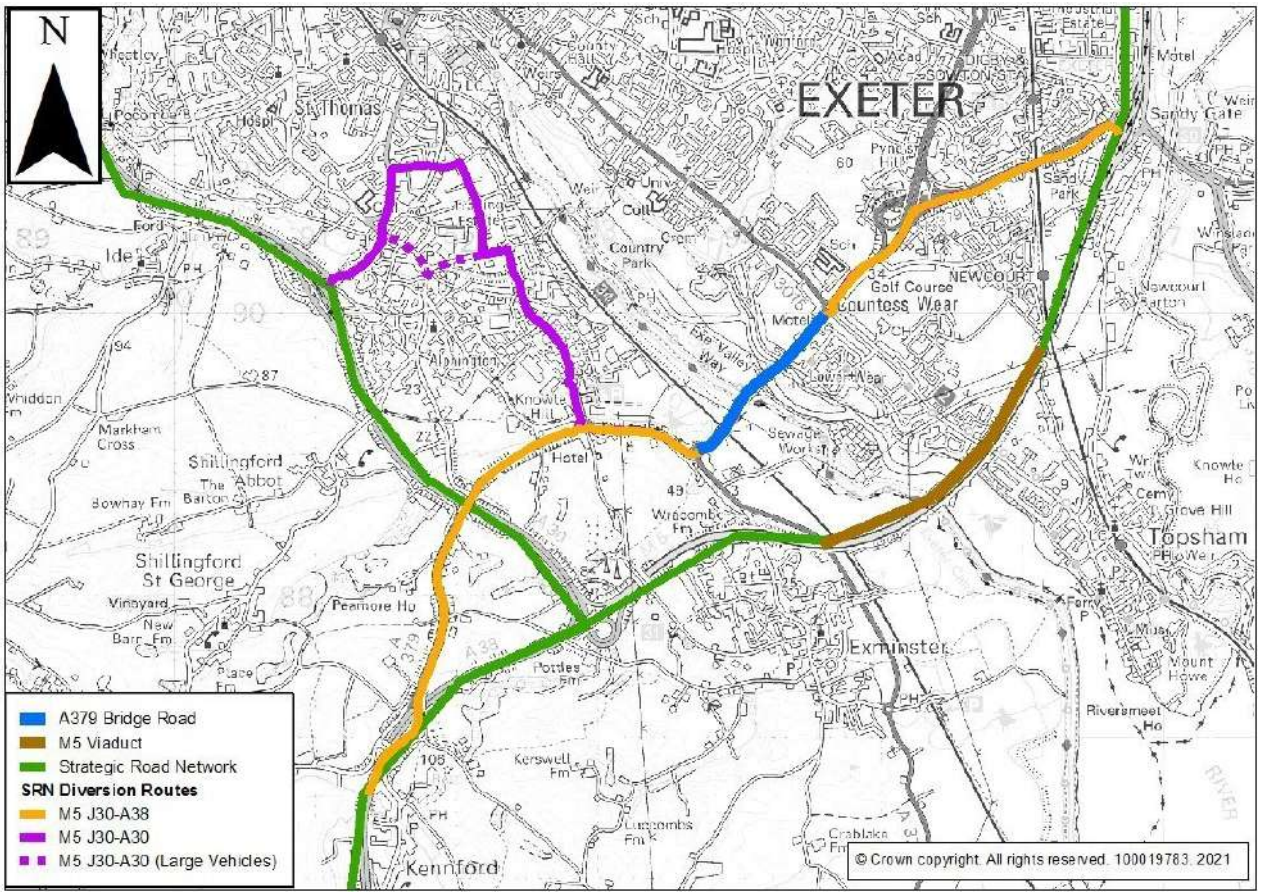

Figure 2-3: Bridge Road and Strategic Road Network diversion routes.

2.3.2. During the year ending 31st July 2021, there were 25 planned and 1 unplanned (incident-related) closures of the M5 which required the use of the A379 diversion route.

2.3.3. During peak tourist periods the M5 between junction 29 and 31 becomes overwhelmed; this results in traffic cascading onto the local MRN. It is most unlikely a case can be made for the further widening of the M5 for these peak periods. Consequently, it is reasonable for the SRN to rely on the MRN to accommodate this additional traffic for a short period of time. This requires the A379 to have two lanes of traffic in each direction.

2.3.4. As shown in Figure 2-4, the M5 viaduct is the confluence of several Strategic and Major roads:

- From the North and East:
- M5 (Bristol, the Midlands, and the North)
- A30 East (London and the Southeast)
- From the South and West:
- A30 West (West Devon and North Cornwall)
- A38 (Plymouth and Southwest Cornwall)
- A380 (Torbay and South Devon)

2.3.5. The performance of all these routes is dependent on the M5 viaduct which could be defined as the weakest point in the road transport in the South West.

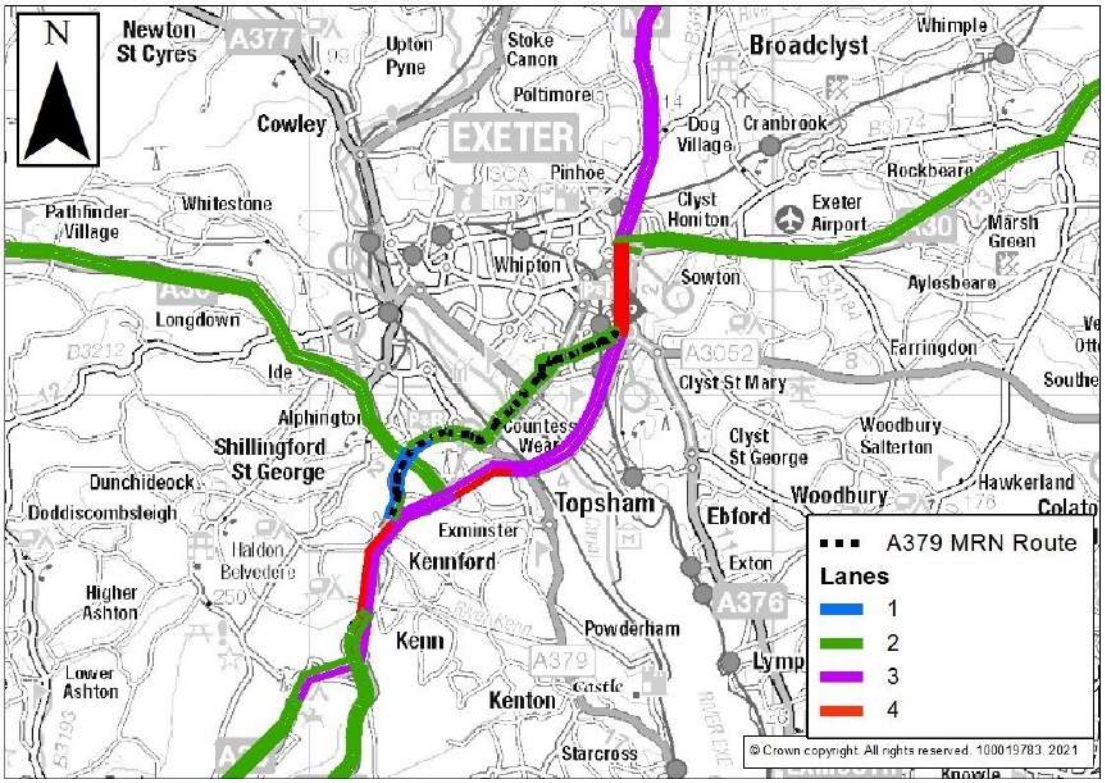

Figure 2-4: Schematic diagram of Strategic and Major roads around Bridge Road and M5 viaduct.

2.3.6. Surveys of the SRN were carried out at the locations shown in Figure 2-5 on 28th and 29th May and 4th and 5th June 2021, i.e. the Friday and Saturday at the beginning and end of the Summer 2021 school half-term.

2.3.7. As shown, delays were observed eastbound and southbound on the approaches to the M5 Viaduct. Further observations over the summer revealed significant congestion during the shoulders to what would normally be expected to be peak periods. This anecdotally showed congestion on the MRN as the network converges at Exeter.

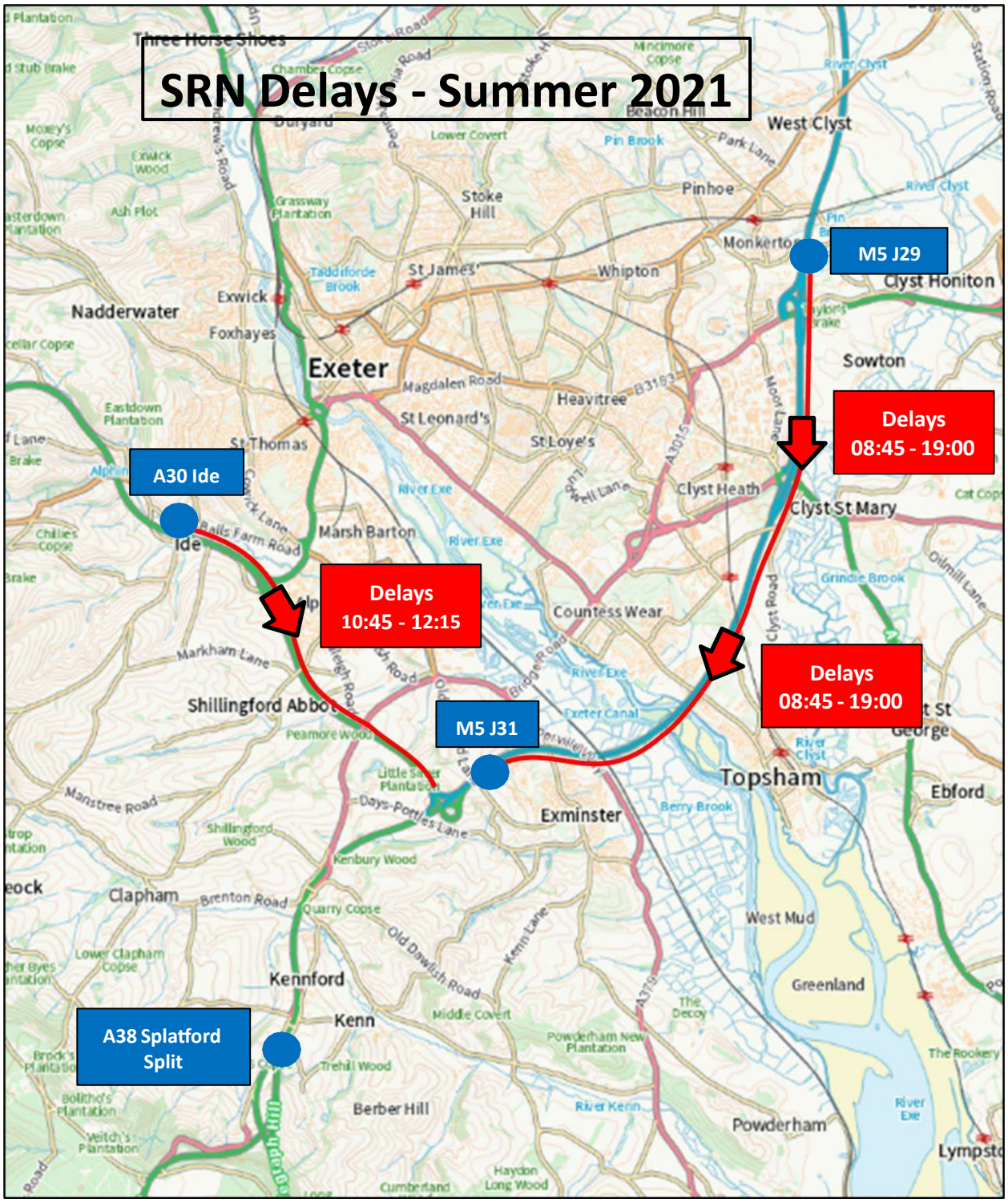

Figure 2-5: SRN survey locations and delays observed on 29th May 2021.

2.3.8. This is unsurprising as the combined capacity of the approach roads (5-6 lanes in each direction) is much greater than the viaduct itself (3 lanes in each direction), as illustrated in Figure 2-4.

2.3.9. The M5 Viaduct (shown in Figure 2-6) was built in 1977. According to correspondence from National Highways, a shortfall in the capacity of the structure was identified following a structural assessment, necessitating lane restrictions from August 2019 to June 2021.

2.3.10. A strengthening scheme has now restored the structure to full capacity. However, discussions with National Highways have confirmed the need for Bridge Road to continue to provide additional capacity for cross-river traffic and improve resilience in the event of further works on the viaduct. In its current, deteriorating state (detailed further below) the A379 Bridge Road does not provide this.

Figure 2-6: M5 Viaduct over River Exe

The Function of Bridge Road – Major Road Network

2.3.11. The A379 Exeter Outer Ring Road is designated as part of the Major Road Network, indicating its high usage and strategic importance. It is predominantly 2 lanes in each direction with a series of roundabouts, signalised junctions and pedestrian crossings which limit the capacity of the corridor. A recent improvement to the corridor removed a significant

constraint of a 2 lanes to 1 lane merge in the vicinity of the canal bridges, which had a capacity of approximately 1,300 vehicles per hour.

2.3.12. It forms part of the Exeter outer ring road, facilitating journeys in and around Exeter, and connecting major employment sites and development sites. Average two-way weekday flows are approximately 37,000 vehicles, and the peak one-way hourly flow is approximately 1,700 vehicles.

2.3.13. As shown in Figure 2-7 below, peak hour flows are relatively balanced between the inbound (north-eastbound) and outbound (south-westbound) directions, albeit the outbound AM Peak occurs slightly later than the inbound AM Peak, and the outbound PM Peak occurs slightly earlier.

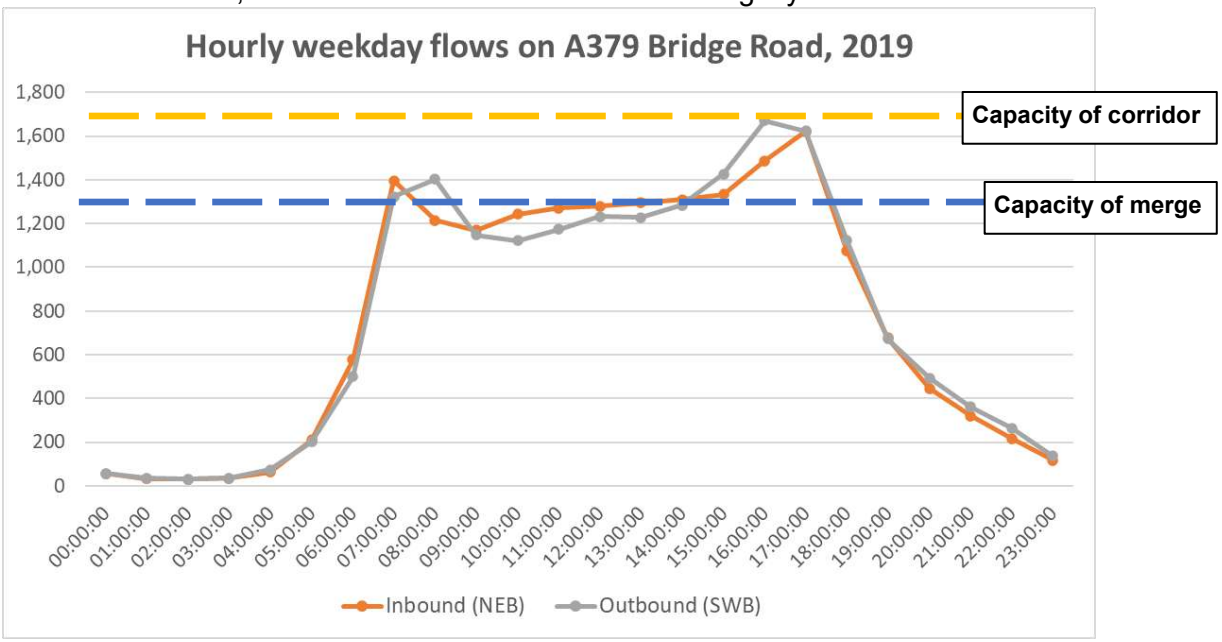

Figure 2-7: Hourly flow profile for A379 Bridge Road.

2.3.14. As shown in Figure 2-8, average daily flows on Bridge Road are highest in July and lowest in December. Using the methodology given in the COBA User Manual[3], the seasonality index (the ratio of the average August weekday flow to the average neutral month (April, May, June, September, and October) weekday flow) is 0.99, close to the typical value for built-up principal roads, 1.00.

[3] https://www.tamesoftware.co.uk/manuals/COBA_MANUAL/COBA2018%20Part%204.pdf

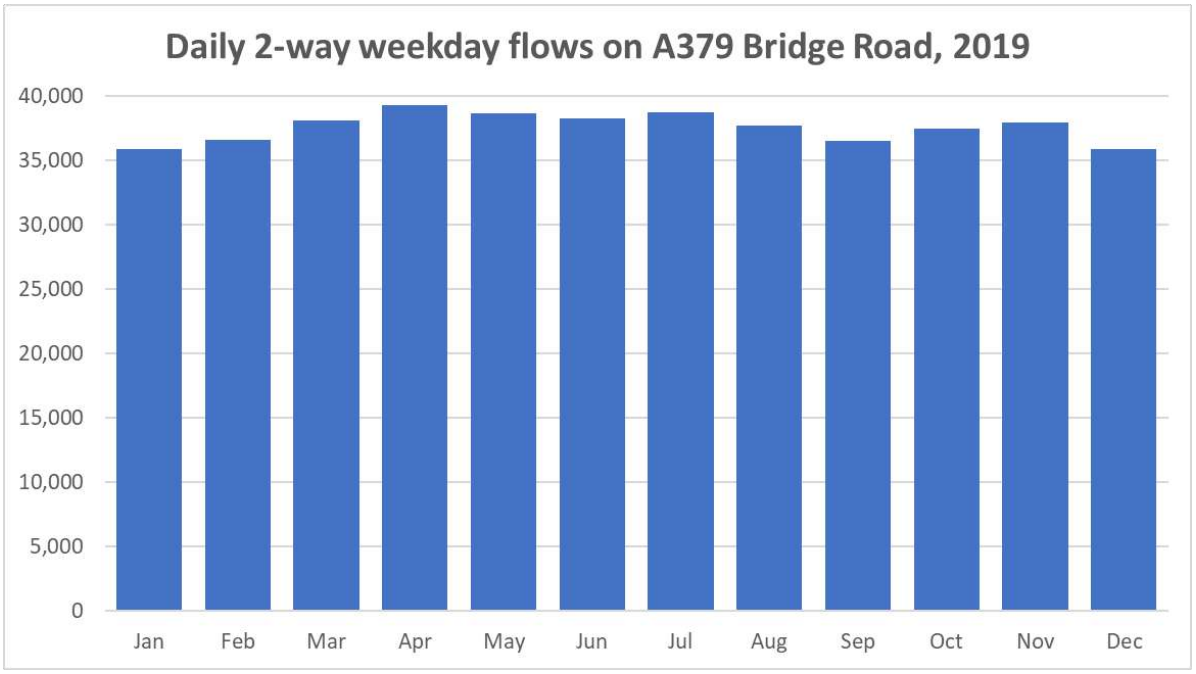

Figure 2-8: Daily weekday flows by month for A379 Bridge Road.

2.3.15. Bridge Road is an urban single carriageway road with 2 lanes in each direction (see Figure 2-9), i.e. an S4 road; it is approximately 1.5km in length. The north termination is the Countess Wear signalised roundabout and to the south is the Matford Roundabout. The junctions at both ends suffer from congestion during peaks periods, and hence limit the vehicular throughput possible on Bridge Road. The at-grade pedestrian/cycle crossings also restrict vehicular capacity.

Figure 2-9: Road layout on A379 Bridge Road.

2.3.16. Roadside Interview data for the A379 near Bridge Road (on the western exit and eastern approach to Matford Roundabout) shows a higher-than-average proportion of trips are for commuting or work (employer's business) purposes, particularly in the expanded AM Peak (0700-0959) and Inter-Peak (1000-1559). This is likely due to the road's proximity to the Marsh Barton trading estate and its role as a corridor for travel to employment within Exeter. Therefore, a significant proportion of trips on Bridge Road are important to the functioning of the local economy.

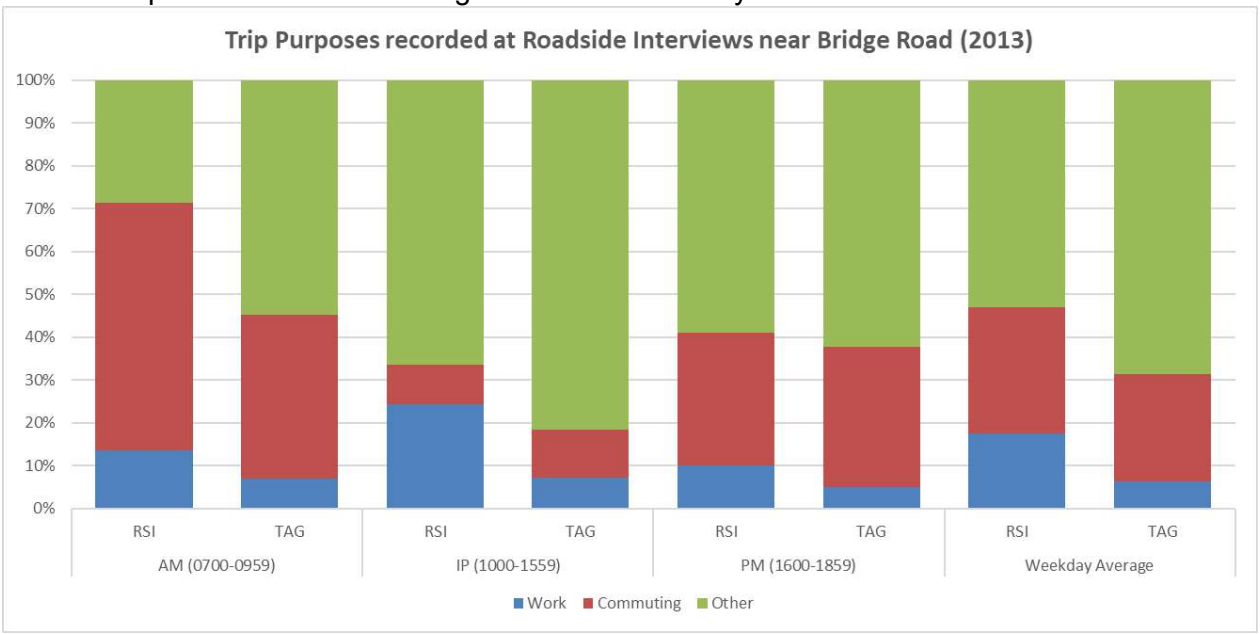

Figure 2-10: Trip purposes at 2013 Roadside Interviews (RSIs) near Bridge Road and national average values from TAG Data Book.

2.3.17. Select link analysis of traffic using Bridge Road in the Greater Exeter Strategic Plan Base SATURN model suggests that:

- Over 50% of traffic to/from the north uses the A379 Rydon Lane to/from Countess Wear Roundabout, with roughly equal proportions of this traffic coming from the directions of M5 J30 and Sowton/Pinhoe;
- Some 25% of traffic to/from the north uses the A3015 Topsham Road West (i.e. to/from Exeter City Centre), and a further 10-20% uses Topsham Road East (for Topsham);
- Approximately two thirds of traffic to/from the south uses the western arm of Matford Roundabout, with the remaining third using the eastern arm (for Exminster and Dawlish);
- Of the traffic using the western arm of Matford Roundabout, the majority comes from/heads towards Bad Homburg Way, and onto Marsh Barton and the A30 (via Alphington interchange), with a smaller proportion coming from the A38 (for South Devon & Plymouth);
- These proportions vary by time period, with, for example, a higher proportion (40%) of traffic heading towards the City Centre in the AM Peak, and a lower proportion heading towards Topsham (5%). There are also significant flows towards Marsh Barton in the AM Peak and from Marsh Barton in the PM Peak.

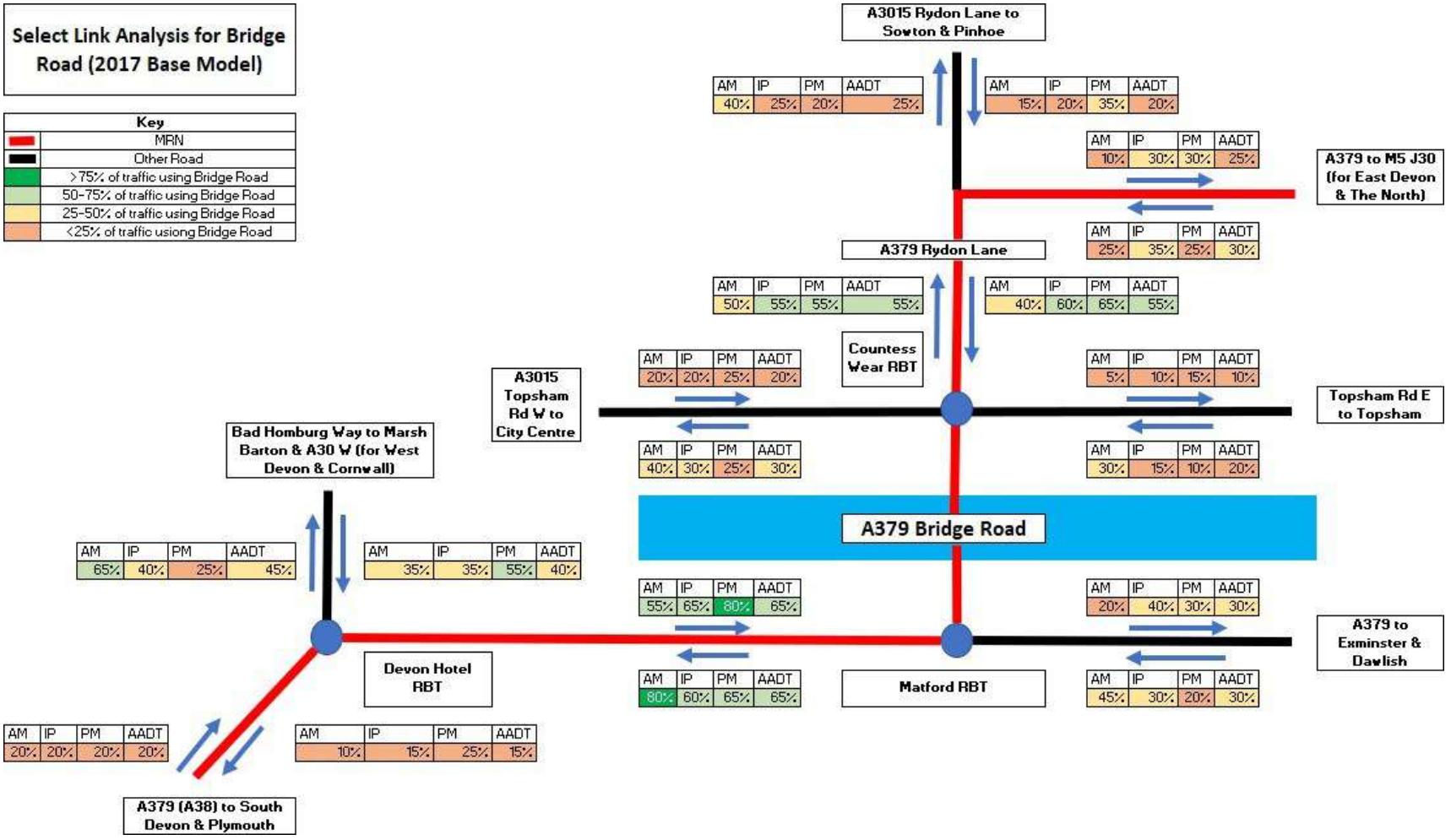

Figure 2-11: Select Link Analysis for Bridge Road, from 2017 Greater Exeter Strategic Plan Base Model.

The Function of Bridge Road – Bus Corridor

2.3.18. As identified in Devon County Council's Bus Service Improvement Plan, Bridge Road is a key corridor for bus routes between Exeter and South Devon, including:

- Stagecoach South West (SSW) route 2 (Exeter-Dawlish-Newton Abbot)
- SSW route 7 (Exeter-Newton Abbot-Totnes)
- SSW route X38 (Exeter-Ashburton-Plymouth)
- SSW route 39 (Exeter-Bovey Tracey-Newton Abbot)

2.3.19. The overall inter-peak frequency is 4 buses per hour in each direction, but in the AM Peak inbound, there are up to 8 buses per hour.

2.3.20. The nature of the road means buses experience the same delays as other vehicular traffic during peak periods, which is detrimental to journey time reliability. As evidence of this, the SSW route 39 timetable allows 3-4 minutes between Matford and Topsham Road in the off-peak, but up to 8 minutes in the AM Peak, an increase of approximately 4 minutes. This occurs for the peak hour in the inbound direction (see Figure 1.5) for the 8 buses that use the route. Any intervention to reduce the level of delay would have to be proportionate to the cost of the intervention.

The Function of Bridge Road – Pedestrian and Cycle Routes

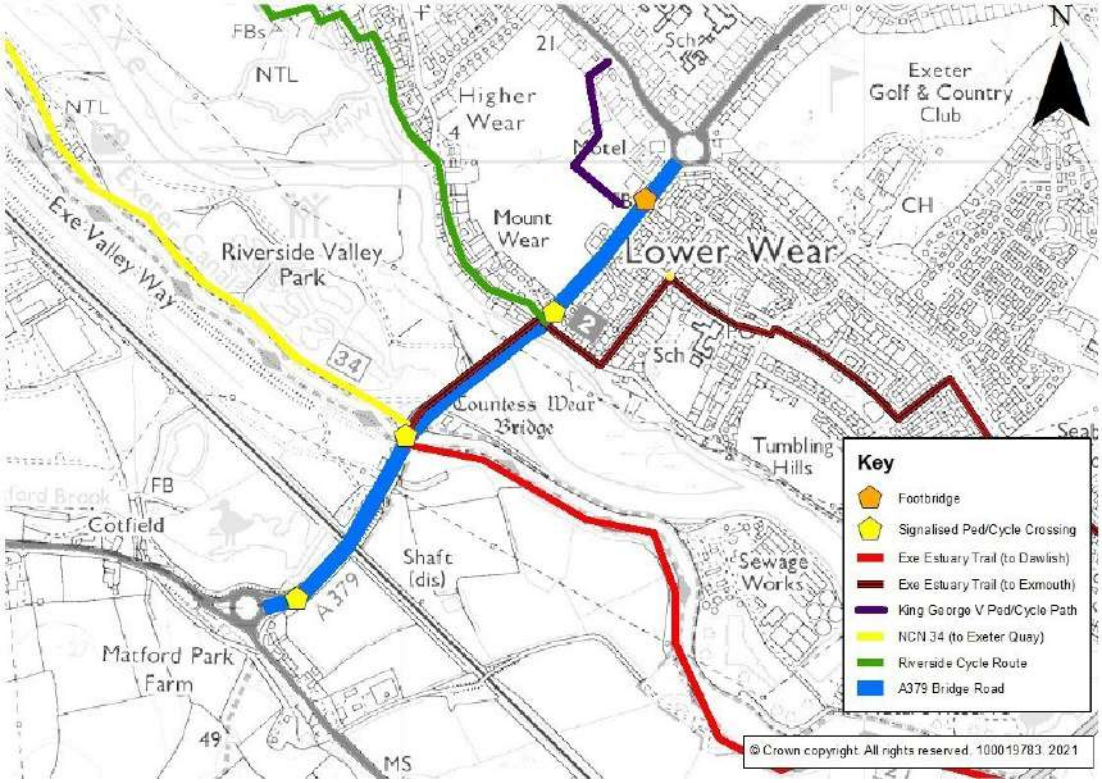

Figure 2-12: Existing pedestrian and cycle routes and crossings near Bridge Road.

2.3.21. As shown in Figure 2-12, several pedestrian and cycle routes cross and run parallel to Bridge Road. These generate significant pedestrian and cycle flows, including:

- Approx. 100 pedestrians and 200 cyclists per day crossing the road at the bascule/swing bridges
- Approx. 100 pedestrians and 600 cyclists per day crossing the road at Glasshouse Lane
- Approx. 150 pedestrians per day crossing the road via the Countess Wear pedestrian bridge
- Pedestrians and cyclists using the parallel pedestrian/cycle path on the western side of the road

2.3.22. The first two crossings above are part of the Exe Estuary Trail, a mostly traffic-free route between Exmouth and Dawlish carrying up to 1,200 cyclists per day. At 22.5 miles in length, the route caters for both commuters and leisure users, and is well-connected to public transport interchanges. It also forms part of National Cycle Network route 2.

2.3.23. The four formalised crossings of Bridge Road between Countess Wear and Matford roundabouts take the following forms:

- Signalised crossings with staggered central refuges at the bascule/swing bridges and at Matford roundabout
- Signalised crossing without central refuge at Glasshouse Lane. This means pedestrians must cross 14metres of highway in one movement.
- Footbridge with steps at Countess Wear Footbridge.

2.3.24. The signalised crossings at the bascule/swing bridges and at Glasshouse Lane cause delays to pedestrians and cyclists as well as vehicular road users. Furthermore, the Glasshouse Lane crossing does not have a central refuge, meaning pedestrians must cross 14m of highway in one movement. The lack for a central island also means vehicular traffic in lane two has no nearside signal head although there is a high mast signal head. The crossing's linkages to infrastructure on the Exeter side of Bridge Road are poor.

2.3.25. The footbridge does not conform to modern standards and does not cater for cyclists or persons of reduced mobility. As a result, it does not form part of the Exe Estuary Trail.

2.3.26. There is no signalised crossing of Bridge Road at Countess Wear junction.

2.3.27. In summary, therefore, the pedestrian and cycle crossing facilities on Bridge Road are not in keeping with the high standard of the adjacent routes, such as the Exe Estuary Trail. They also give rise to potential conflicts between pedestrians/cyclists and vehicular traffic, the road safety implications of which are discussed further below. <u>The Function of Bridge Road – Canal Users</u>

2.3.28. The Exeter Ship Canal, which passes under Bridge Road at the bascule/swing bridges, provides a navigable route between Exeter Quay and the English Channel (the River Exe cannot be used for such journeys, due to the presence of weirs). It is used frequently by waterborne traffic, including recreational users.

2.3.29. Large boats require the canal bridges on Bridge Road to open to pass along the canal, and this facility must be maintained in perpetuity.

2.3.30. In the last decade, there have been at least four instances of the canal bridges being stuck in the open or closed positions, due to:

- Burst pipes on the bascule bridge (2 instances)
- Sensor failure on the bascule bridge (1 instance)
- Thermal expansion (1 instance)

2.3.31. There have been numerous other instances when Devon County Council's structures engineers have been required to intervene to close the bridges, due to sensor/operating system problems.

The Location of Bridge Road

2.3.32. Bridge Road is one of the major road crossings of the River Exe in and around Exeter, as shown in Figure 2-13 and Figure 2-14. As the southernmost road crossing of the river Exe for non-motorway traffic, it plays a key strategic role in facilitating travel between Exeter city centre and the numerous market towns and villages within its economic catchment area.

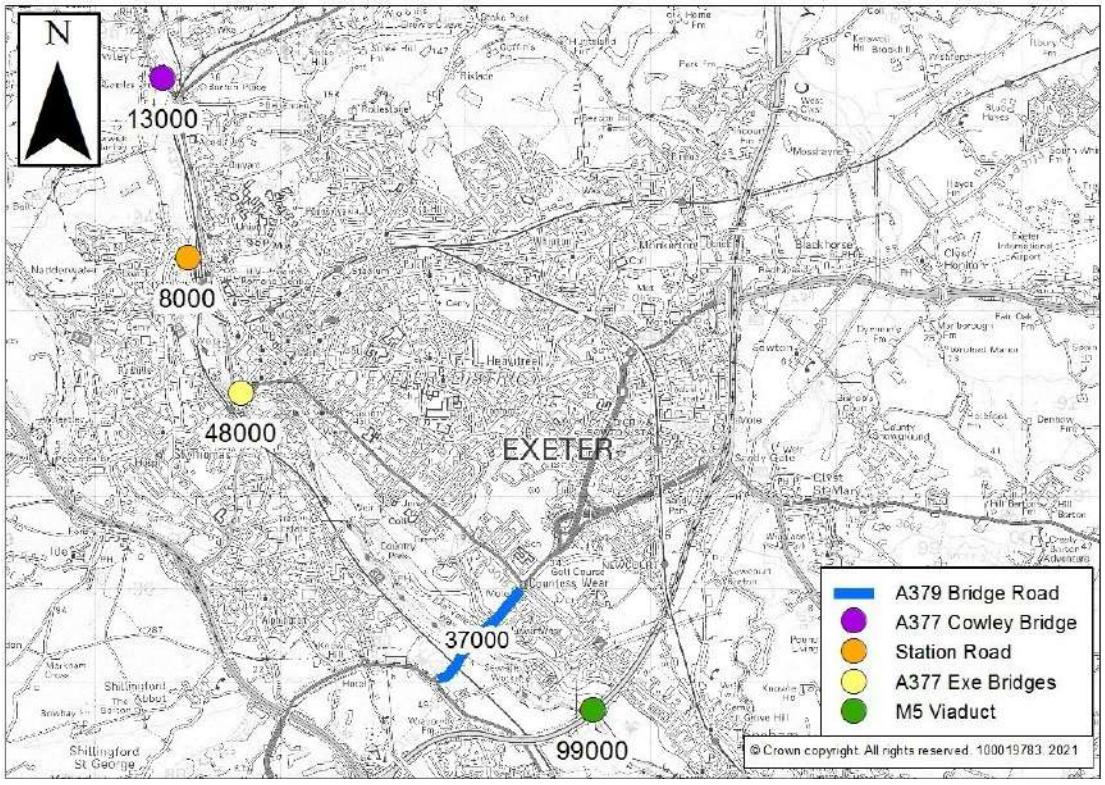

Figure 2-13: Map of road crossings of River Exe, with modelled 2017 Annual Average Daily Traffic flows.

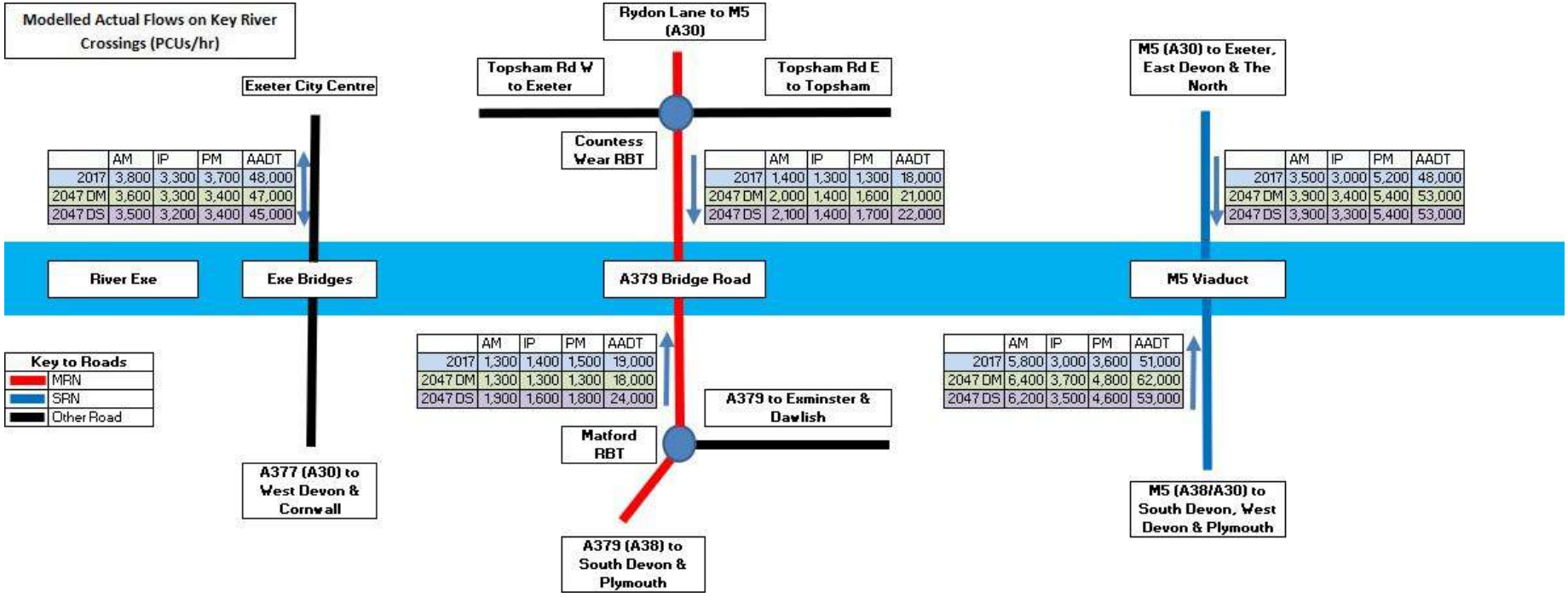

Figure 2-14: Modelled flows on key crossings of the River Exe, for 2017 Base, 2047 Do Minimum (without Scheme) and 2047 Do Something (with Scheme) scenarios.

2.3.33. The A379 Bridge Road was originally the bypass for Exeter and the main route into the South West Peninsula. Since the M5 was built its function has changed as Exeter has expanded westwards. There has been significant housing and employment growth accessing the corridor. As a result it forms an essential housing and economic corridor for both Exeter and the subregion in terms of employment.

2.3.34. In the current Local Plan Bridge Road provides access to:

- South West Exeter, where 2,500 dwellings and 5ha of employment are proposed; and
- Newcourt & Monkerton, where 6,000 dwellings and 8ha of employment are proposed.

2.3.35. It also supports wider development around the eastern fringes of Exeter, within Teignbridge, Exeter, and East Devon (see Figure 2-15).

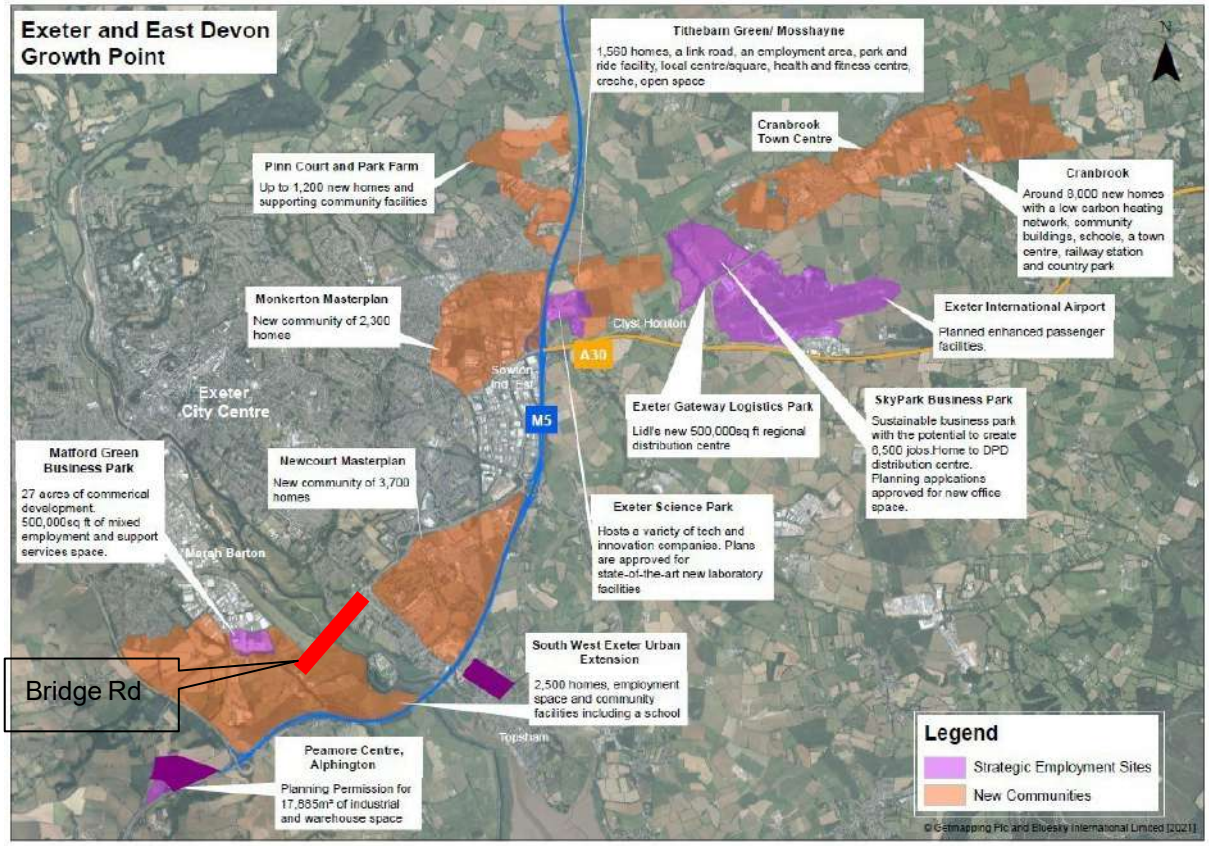

Figure 2-15: Planned development near Bridge Road.

Road Safety

2.3.36. As shown in Table 2-2, there were a total of 23 collisions on Bridge Road and at the adjacent junctions (Matford and Countess Wear Roundabouts) in the 5-year period 2016-2020. 4 of these collisions were classified as 'serious' and 19 were classified as 'slight', and altogether these resulted in 29 casualties.

2.3.37. Approximately 50% of these collisions occurred on Bridge Road itself (including the Glasshouse Lane junction), with the other ~50% occurring at the adjacent junctions.

2.3.38. No fatal collisions were recorded in the study area within this 5-year period. However, a subsequent single-vehicle fatal (passenger) collision occurred on Bridge Road on 14th July 2021.

Link/Junction	Name	Collisions				Casualties			
		Fatal	Serious	Slight	Total	Fatal	Serious	Slight	Total
Junction	Matford RBT	0	0	4	4	0	0	6	6
Link	A379 Bridge Road	0	3	9	12	0	3	13	16
Junction	Countess Wear RBT	0	1	6	7	0	1	6	7
Total		**0**	**4**	**19**	**23**	**0**	**4**	**25**	**29**

Table 2-2: Collision and casualty data for Bridge Road and adjacent junctions, 20162020.

2.3.39. The average daily traffic over the 5-year period 2016-2020 was approximately 30,000 vehicles, hence, with a route length of 1.5km, approximately 81,000,000 vehicle kms were driven on Bridge Road over the period. This yielded a collision rate of approximately 0.15 per million vehicle kilometres (mvkm) on the link section alone, and approximately 0.28 per mvkm when collisions at the adjacent junctions are also considered.

2.3.40. Therefore, the link-only collision rate is in line with the COBALT/TAG data book default for Modern WS2 Roads with 30/40mph speed limits, which is considered to be the closest match to Bridge Road (S4 collision rates are not specified). The combined link and junction rate was approximately half the national average (see Table 2-3).

2.3.41. However, the proportion of collisions on Bridge Road resulting in serious injury was higher than the national average, both for the link-only and combined link and junction data. Conversely, the proportion of slight collisions was below the national average.

	Collision Rates (per million vehicle kms)		Collision Proportions					
			Fatal		Serious		Slight	
	Observed	COBALT	Observed	COBALT	Observed	COBALT	Observed	COBALT
Link only	0.148	0.148	0%	1%	25%	10%	75%	89%
Link and junctions	0.283	0.592	0%	1%	17%	9%	83%	91%

Table 2-3: Comparison of collision rates and proportions with national averages (from COBALT/TAG data book) for 'Modern WS2 Roads' with 30/40mph speed limit.

2.3.42. As noted above, existing pedestrian/cycle crossings of Bridge Road are predominantly at-grade, giving rise to potential conflicts between crossing users and vehicular traffic. Therefore, pedestrian/cyclist casualty data for the link section has been interrogated further below.

2.3.43. In total, 4 pedestrians/cyclists were injured on Bridge Road between 2016 and 2020, 1 seriously, as shown in Table 2-4. The casualties include a cyclist who was crossing the road at the Glasshouse Lane signalised crossing when a car went through a red light and a pedestrian who was struck by a car and seriously injured when crossing the road near Countess Wear footbridge.

Section of A379 Bridge Road	Pedestrian/Cyclist Casualties			
	Fatal	Serious	Slight	Total

Matford RBT - Glasshouse Ln Junction	0	0	1	1
Glasshouse Ln Junction	0	0	2	2
Glasshouse Ln - Countess Wear RBT	0	1	0	1
Total	**0**	**1**	**3**	**4**

Table 2-4: Pedestrian/cyclist casualty data for Bridge Road, 2016-2020

2.3.44. As shown in Table 2-5, the proportion of casualties on Bridge Road that were pedestrians/cyclists (25%) was greater than the Devon average for the 5-year period 2015-2019[4] (16%), but less than the Exeter average (38%). Similarly, the proportion of serious casualties that were pedestrians/cyclists was greater than the Devon average but less than the Exeter average.

	Proportion of Casualties Pedestrians/Cyclists			
	Fatal	Serious	Slight	**Total**
Bridge Road	0%	33%	23%	**25%**
Exeter	56%	56%	34%	**38%**
Devon	18%	24%	15%	**16%**

Table 2-5: Proportion of casualties that were pedestrians/cyclists on Bridge Road, compared with Exeter and Devon averages for 2015-2019.

2.3.45. To gain a more complete understanding of road safety issues affecting pedestrians and cyclists, collision records for the period 2011-2015 have also been reviewed. These revealed a further collision involving a cyclist at the Glasshouse Lane signalised crossing, and 3 collisions where pedestrians and cyclists were hit whilst crossing at the canal bridges (during this period, users had to cross all four lanes at once, whereas it is now a staggered crossing).

2.3.46. Site visits have also revealed evidence of cars going through red lights at the signalised pedestrian/cycle crossings, as shown below.

Figure 2-16: Photograph of car running red light at Canal Bridge signalised crossings.

Structures on Bridge Road

2.3.47. There are numerous structures on Bridge Road, including bridges and culverts. As shown in Figure 2-17, these include:

- Canal Bascule Bridge, carrying the northbound carriageway over the Exeter Ship Canal (constructed 1972);
- Canal Swing Bridge, carrying the southbound carriageway over the Exeter Ship Canal (constructed 1936); and

[4] 2020 Devon-wide data was not available at the time of writing

- Countess Wear pedestrian bridge, carrying pedestrians over the road (constructed 1973).

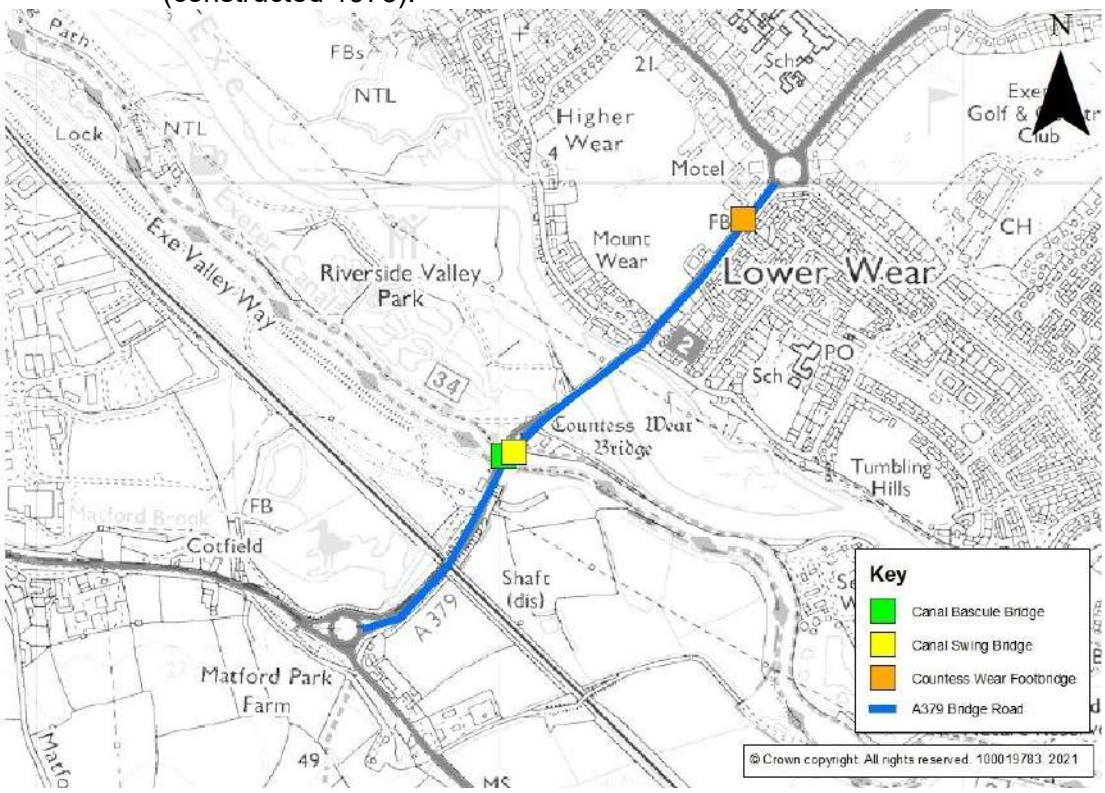

Figure 2-17: Bridge Road bridges.

2.3.48. Due to the age and condition of the mechanical swing and lifting canal bridges, faults occur relatively frequently, requiring lane closures and implementation of traffic management. Given the high traffic flows and strategic importance of Bridge Road, this can cause extensive disruption to the road network. The various issues with the bridges are discussed further below.

Canal Bascule Bridge

2.3.49. The bridge (shown in Figure 2-18) is a single span bascule bridge fixed at the north end. The deck is a ladder type with two steel beams spanning longitudinally and 18 transverse steel beams.

Figure 2-18: Canal bascule bridge

2.3.50. The bridge was intended to be a temporary measure prior to the construction of the M5 motorway, and hence did not undergo full fatigue load spectrum checks. However, it has now been in operation for approximately 50 years.

2.3.51. The latest Principal Inspection, carried out by Jacobs UK Ltd in 2018, reported the structure to be in 'fair' condition, but raised numerous concerns regarding safety aspects:

- Vertical hanger rods are positioned directly behind the bridge parapets, which do not provide adequate protection from vehicle impacts. As these hangers are connected to the counterweight, there is a high risk of uncontrolled collapse of the counterweight, possibly onto oncoming traffic.
- Due to the problems with the original design it has not been possible to prevent water ingress at the transverse deck joints and at the kerb line. There has consequently been significant deterioration of the steel deck members below at these points.
- Similarly, due to problems with the original design it has not been possible to prevent galvanic corrosion between the aluminium section deck planks and the steel transverse beams. As a result, there has been significant section loss to the aluminium, and deterioration to the adjacent supporting steelwork, creating a risk of deck failures.
- There is evidence that the nose pins are holding the deck down in the closed position, suggesting the counterweight is too heavy and is acting to open the bridge.

2.3.52. In addition to the galvanic corrosion referenced above, there is heavy corrosion under the bridge, some of which is very difficult to address whilst

the bridge is in service. Therefore, there is an ongoing risk of the corrosion becoming critical and elements collapsing.

2.3.53. The paint system of the bascule bridge has failed extensively around the edges of the deck, where it is exposed to surface run-off containing road salt.

2.3.54. The bascule bridge has two narrow traffic lanes (carriageway width 6.7m) and no safe refuge area for operatives. Hence it does not allow traffic management systems compliant with Chapter 8 of the Traffic Signs Manual. The lanes on the bascule bridge are wide enough to accommodate two-way traffic at a reduced speed.

2.3.55. Additionally, both canal bridges are currently operated and maintained by Devon County Council engineers, with the continued operation of the bridges being heavily reliant on the engineers' skill and experience. Therefore, there is a risk that staff turnover could reduce Devon County Council's ability to respond to issues with the bridges, causing longer delays to road users.

Canal Swing Bridge

2.3.56. The bridge (shown in Figure 2-19) is of riveted steel through girder construction, with secondary and tertiary steel beams supporting sagging buckle plates. The bridge pivots about a pintle bearing on the north side of the canal and is supported by wedges on roller bearings when in the closed position. A rack and pinion system provides the means to open and close the structure as required.

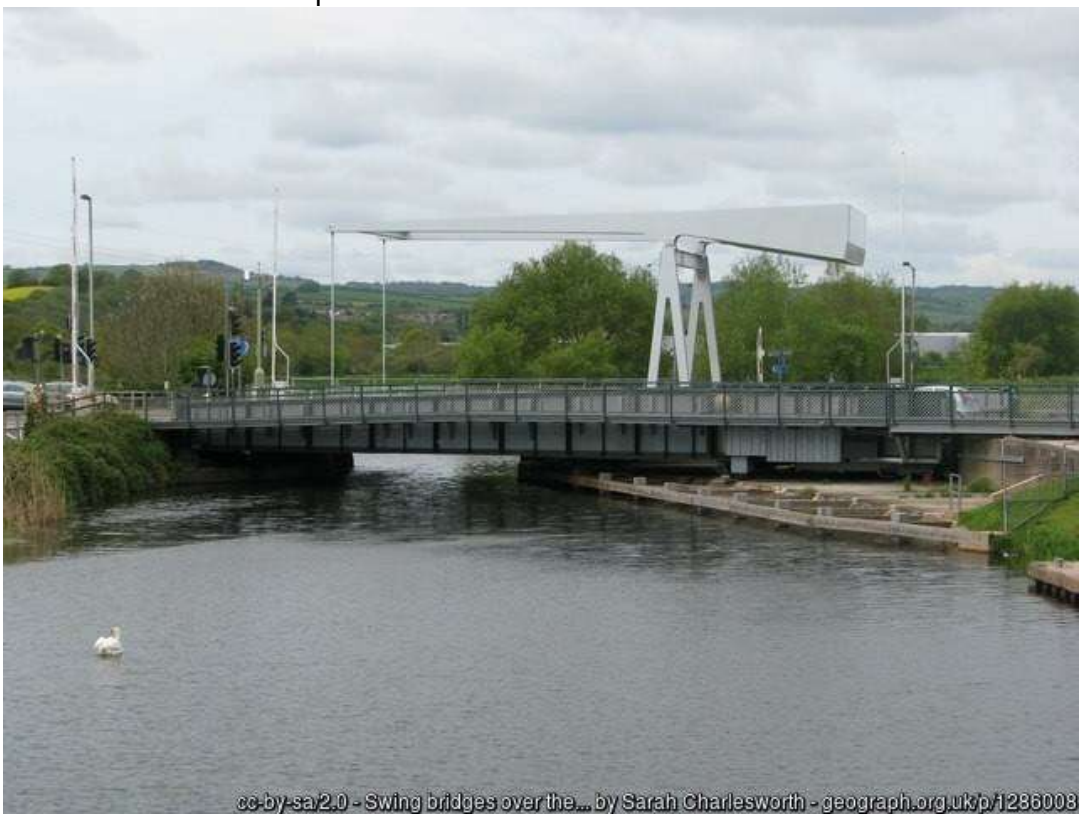

Figure 2-19: Canal swing bridge can we get a better photo

2.3.57. The latest Principal Inspection, carried out by Devon County Council in 2015, reported the structure to be in good condition considering its age (approximately 80 years at the time of inspection). Despite this, there were

several areas of significant section loss and corrosion, caused by water ingress.

2.3.58. During operation, the pedestrian walkway (which was retrofitted on the south side of the structure) is lifted vertically, to enable the swing bridge to open. This increases the time required to open the bridge and increases the risk of malfunction during the opening/closing procedure.

2.3.59. In the event of a failure in the open position, the bridge would have to be manually winched closed, after undoing around 40 bolts with very difficult access. This process would take a minimum of 6 hours once a suitable plant had been brought to site, so there would likely be a total delay of 8-12 hours before the road could be reopened.

2.3.60. The swing bridge has narrow lanes, with a carriageway width of 6.1m. This makes it very difficult for operatives during maintenance. In the event of a closure of the bascule bridge, contraflow working is not possible for HGVs on the swing bridge, due to the narrow road width. Consequently, an HGV diversion route is required.

2.3.61. Additional issues with the structure include:

- The nosing fixed to the curtain wall at the north end of the deck is loose.
- A pit containing the hydraulic pump and control equipment for the lifting span of the walkway is filling with water, potentially causing premature deterioration of the equipment.

Countess Wear Pedestrian Bridge

2.3.62. The pedestrian bridge (shown in Figure 2-20) carries pedestrians over Bridge Road some 150m south of Countess Wear Roundabout.

Figure 2-20: Countess Wear pedestrian bridge

2.3.63. Access to the bridge is via steps, hence it is not usable by cyclists or persons of reduced mobility. The narrow width of the bridge would preclude

its conversion to shared use, even if ramps were provided, and it does not meet several other requirements given in the Design Manual for Roads and Bridges:

- DMRB CD 127, Clauses 4.1 and 4.3 – the headroom over the road is insufficient;
- DMRB CD 353, Clause 3.3 – no vehicle impact protection measures are present;
- DMRB CD 353, Clause 5.12 – landings are less than 2m in length;
- DMRB CD 353, Clause 5.17 – geometry of steps is not as per requirement;
- DMRB CD 353, Clause 6.10 – handrails are not provided.

2.3.64. The latest General Inspection, carried out in August 2019, noted the following:

- Corrosion to some of the connection elements of the deck and stairs;
- Severe localised deterioration of the paint system;
- Wear and weathering to the surfacing;
- Cracks in the concrete of one of the pad foundations.

Summary of Problems

2.3.65. The A379 Bridge Road is a strategically important corridor, for pedestrians, cyclists, buses, and private vehicular traffic. It is a diversionary route for the M5 motorway, forms part of the Exeter outer ring road and is designated as part of the Major Road Network. The continued operation of the corridor is essential to the delivery of thousands of dwellings around the eastern fringes of Exeter.

2.3.66. However, the canal bridges are both deteriorating due to age, water ingress and corrosion, creating a risk of failure. When faults occur, due to the lack of suitable alternative routes, extensive disruption occurs on the local road network, with associated social and economic impacts.

2.3.67. The Countess Wear pedestrian bridge across Bridge Road is also deficient in several respects, including its inability to accommodate cyclists and persons of reduced mobility. The other pedestrian/cycle crossings of Bridge Road are at-grade, causing delays to both non-motorised users and vehicular traffic, and creating road safety issues.

2.4. The Impact of Not Changing

2.4.1. In the absence of intervention, the canal bridges would likely continue to deteriorate, resulting in increasing disruption to traffic due to the increasing need for planned and unplanned maintenance. Initially it is expected that emergency closures would be required approximately every 2 years, increasing to every year in the coming decades.

2.4.2. As noted in the KGAL report on Maintenance and Refurbishment Strategies (Annex 1), without significant refurbishment (both structurally and mechanically), it is unlikely the bascule bridge would be able to continue operating as now for more than 20 years. It is therefore inevitable that in a ‘Do Minimum’ situation, the bascule bridge would have to be reduced to one lane after approximately 20 years.

2.4.3. Further deterioration would likely necessitate the imposition of a 20T weight limit northbound after 30 years, with the weight limit then being reduced in subsequent years. This would force HGV traffic to divert via alternative river crossings, most likely the M5 Viaduct or Exe Bridges. The former would adversely impact the functioning of the Strategic Road Network, due to the capacity constraints at this location (see Figure 2-4), whilst the latter would likely cause severe disruption to traffic in Exeter, as well as likely having adverse environmental impacts. Bridge Road's ability to provide additional capacity during tourist peaks would also be reduced.

2.4.4. The lane drop northbound at the bascule bridge would likely cause similar issues to those observed prior to the removal of the lane drop southbound through the Bridge Road Widening scheme[4]. The capacity of the merge is estimated to be 1,300 PCUs/hour (equivalent to some 1,270 vehicles/hour), hence it would be unable to accommodate current peak flows, let alone future growth (see Figure 2-21 below). This would create a bottleneck and potentially cause blocking back to Matford Roundabout at peak times, impairing the performance of the roundabout and causing significant delays across the wider local road network.

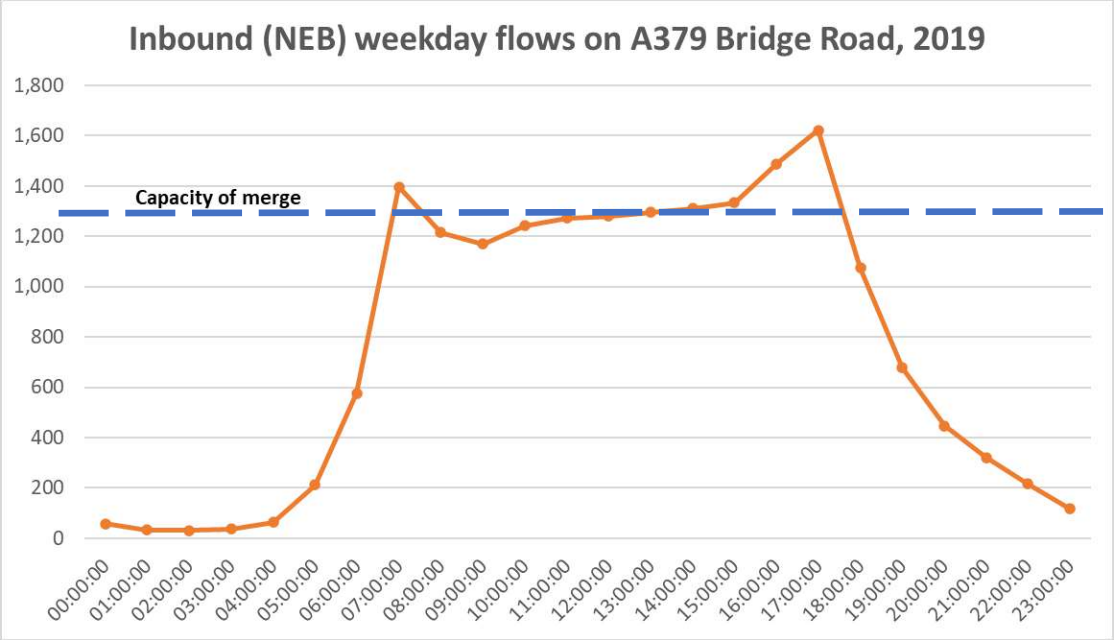

Figure 2-21: Comparison of current inbound flows with merge capacity.

2.4.5. Because of this, the local road network would be unable to accommodate traffic from proposed developments, meaning development would likely stall. This would in turn hamper local planning authorities' attempts to deliver upon their Local Plan commitments.

2.4.6. As shown in Figure 2-14 above, the combination of the HGV ban and the reduction to one lane northbound is expected to displace some 3,000 PCUs/day onto the M5 Viaduct (200 PCUs/hour during peak times).

2.4.7. The constrained transport network would reduce local firms' access to potential customers and employees, reducing their economic performance. In the longer term, firms may choose to relocate out of Exeter, reducing

[4] See https://www.devon.gov.uk/bridgeroad/

opportunities in the Exeter area and potentially increasing deprivation among Exeter residents.

2.4.8. Buses using Bridge Road and the wider local road network would also be affected by the likely increases in delays, increasing bus journey times and making the bus a less attractive option. This would hamper Devon County Council's efforts to encourage greater use of public transport and deliver upon the emerging Bus Service Improvement Plan.

2.4.9. The deterioration of the structures would also likely require Devon County Council to expend increasing officer time and money on the structures, as they would likely require fixing increasingly frequently. It is estimated that annual maintenance costs would be in the region of £45k, 45% of the revenue budget of £100k/year for all Devon County Council bridges. This would reduce the resources available to proactively manage other structures across the county, meaning other structures may also deteriorate, causing issues elsewhere on the road network.

2.4.10. Without intervention, the existing issues with the at-grade pedestrian/cycle crossings would persist and likely be exacerbated by demand generated by local development. For example, the longer pedestrians continue to cross the road at the canal bridges, the more likely it is that a serious collision will occur. Additional pedestrians will also result in the crossings being called more frequently, reducing road capacity.

2.4.11. Furthermore, without upgrades or replacement, the Countess Wear pedestrian bridge would continue to be unable to accommodate cyclists or persons of reduced mobility. This would make walking and cycling less attractive than if more suitable facilities were available, hampering Devon County Council's efforts to encourage modal shift to active travel and address the Climate Emergency.

2.4.12. Canal users would also likely experience increasing disruption, as the deterioration of the bridges would increase the likelihood of them getting stuck in the closed position.

2.5. Objectives

2.5.1. The **Objectives** of the Bridge Road scheme are to:

a. Improve reliability and resilience of the bridges to provide 2 lanes of traffic flow in both directions to support development

b. Support the SRN as a diversion route for the M5 viaduct during incidents and when the M5 junction 29-31 get overwhelmed with tourist traffic

c. Maintain passage of vessels on the canal for leisure and ferry traffic;

d. Provide an affordable and economic solution that reduces ongoing maintenance costs;

e. Improve the safety and amenity for pedestrians/cyclists using the Exe Estuary Trail and other local routes;

f. Recognise and where possible enhance the environmental and cultural aspects of the bridges and the local environment; and

g. Minimise the net carbon impact of the Bridge Road River Exe crossing considering maintenance, construction, and operation.

2.5.2. The correspondence of the scheme objectives to the DfT's objectives and criteria is detailed in Table 2-6 below.

Objective	**Criterion**	**Correspondence with scheme**
Reduce congestion	Alleviate congestion	The scheme will maintain 2 lanes of traffic in both directions (**Objective a**), reducing congestion compared to the Do Minimum scenario.
	Take account for impacts on air quality, biodiversity, noise, flood risk, water quality, landscape, and cultural heritage sites	The scheme will "recognise and where possible enhance… the local environment" (**Objective f**). Without the scheme, air quality within Exeter would worsen, due to traffic diverting via Exe Bridges.
Support economic growth and rebalancing	Industrial strategy: supports regional strategic goals to boost economic growth	The scheme will support development (**Objective a**) around the eastern fringes of Exeter (see Figure 2-15). It will also support regional strategic goals laid out in the HotSW LEP's *Local Industrial Strategy* and Peninsula Transport STB's *Vision*, such as creating more resilient transport networks (see Section 2.2).
	Economic impact: improve ability to access new or existing employment sites	
	Trade and gateways impact: improve international connectivity, for example access to ports and airports	The scheme will improve the resilience of links to international gateways (such as Exeter Airport) via the wider MRN and SRN (**Objectives a and b**).
Support housing delivery	Support the creation of new housing developments by improving access to future development sites and boosting suitable land capacity	The scheme will support development (**Objective a**) around the eastern fringes of Exeter (see Figure 2-15).
Support all road users	Delivering benefits for public transport and non-motorised users, including cyclists, pedestrians, and disabled people	The scheme will improve the safety and amenity for pedestrians/cyclists using local routes (**Objective e**) and maintain the passage of waterborne vessels (**Objective c**). Improving the resilience of the bridges (**Objective a**) will improve the reliability of bus services.

	Safety benefits: Ability to reduce the risk of deaths/serious injuries for all users of the MRN	There is concern that there have been several incidents at the pedestrian/cycle crossings. The scheme will improve the safety for pedestrians/cyclists using local routes (**Objective e**). Refurbishment or replacement of the bridges may enable
Objective	**Criterion**	**Correspondence with scheme**
		defects posing a threat to the safety of users to be addressed.
Support the Strategic Road Network	Improved end to end journey times across both networks	The scheme will maintain 2 lanes of traffic in both directions (**Objective a**), improving journey times and journey time reliability compared to the Do Minimum scenario. It will also support the resilience of the SRN diversion route via the A379 and provide capacity to accommodate tourist traffic (**Objective b**).
	Improved journey time reliability	
	Improved SRN resilience	
Enhance our global competitiveness by making Britain a more attractive place to trade and invest		Maintaining the existing capacity across the River Exe (**Objective b**) will enhance the resilience of the corridor, both for the local population and the wider South West peninsula. Exeter has a strong local economy which provides an attractive environment for global companies, and this scheme will help safeguard this.
Decarbonise all forms of transport and deliver net-zero by 2050		The scheme will seek to minimise the net carbon impact of the Bridge Road River Exe crossing, considering emissions arising from maintenance, construction, and operation (**Objective g**). Maintaining the existing capacity will avoid any increase in carbon associated with rerouting and increased journey distances due to the introduction of a merge. Improving pedestrian and cycle routes will encourage greater use of active travel modes, and the County Council are looking closely at the embedded carbon of new infrastructure. This will be addressed further in the Outline Business Case and in the Procurement Strategy.

Table 2-6: Correspondence of scheme with MRN objectives and criteria.

2.6. Measures of Success

2.6.1. The measures of success for the scheme are related to the individual Objectives and are detailed in Table 2-7 below.

Objective	Measures of success
Improve reliability and resilience of the bridges to provide 2 lanes of traffic flow in both directions to support development	Provision of 2 lanes of traffic for 60-year period post-scheme (except during temporary closures) Reduced rate of unplanned road closures compared to baseline Delivery of local development in line with Local Plan projections
Support the SRN as a diversion route for the M5 viaduct during incidents and when the M5 junction 29-31 get overwhelmed with tourist traffic	Availability of A379 diversion route for 60-year period post-scheme (except during temporary closures)
Maintain passage of vessels on the canal for leisure and ferry traffic	Ability of canal bridges to open when required for 60-year period post-scheme
Provide an affordable and economic solution that reduces ongoing maintenance costs	Reduced maintenance costs compared to Do Minimum forecast over 60-year period postscheme
Improve the safety and amenity for pedestrians/cyclists using the Exe Estuary Trail and other local routes	Reduced frequency of collisions involving pedestrians/cyclists on Bridge Road compared to baseline Increased usage of Exe Estuary Trail and other local walking/cycling routes compared to baseline
Recognise and where possible enhance the environmental and cultural aspects of the bridges and the local environment	Delivery of environmental net gain Ability of canal bridges to open when required for 60-year period post-scheme
Minimise the net carbon impact of the Bridge Road River Exe crossing considering maintenance, construction, and operation	Reduced net carbon impact compared to Do Minimum forecast over 60-year period postscheme

Table 2-7: Scheme measures of success

2.7. Scope

2.7.1. The project will deliver:

- Refurbishment or replacement of the canal (bascule and swing) bridges;
- Replacement of Countess Wear footbridge with accessible pedestrian/cycle bridge;
- Diversion of Exe Estuary Trail via new Countess Wear pedestrian/cycle bridge;
- Construction of pedestrian/cycle path between new Countess Wear pedestrian/cycle bridge and riverside pedestrian/cycle trail;
- Widening of existing pedestrian/cycle path alongside Bridge Road north of Countess Wear Road junction; and

- Provision of bus stop on western (northbound) side of Bridge Road, approximately opposite to existing southbound bus stop.

2.7.2. If the canal bridges are replaced rather than refurbished, the project could also deliver:

- Raising of the road over the canal, to increase headroom for waterborne vessels;
- Diversion of canalside pedestrian/cycle path underneath road at canal bridges; and
- Removal of existing signalised pedestrian/cycle crossing at canal bridges.

2.7.3. The following are currently **outside** the scope of the project:

- Upgrades to other structures on Bridge Road, e.g. the Countess Wear Bridge and railway bridge;
- Improvements to terminal junctions (Countess Wear and Matford Roundabouts), including changes to pedestrian/cycle facilities at these junctions;
- Provision of additional lanes of traffic over and above existing provision;
- Reallocation of existing road capacity on Bridge Road, e.g. conversion of lane(s) to bus/cycle lanes; and
- Improvements to Glasshouse Lane signalised pedestrian/cycle crossing.

2.7.4. The scope of the project is summarised in Figure 2-22 below.

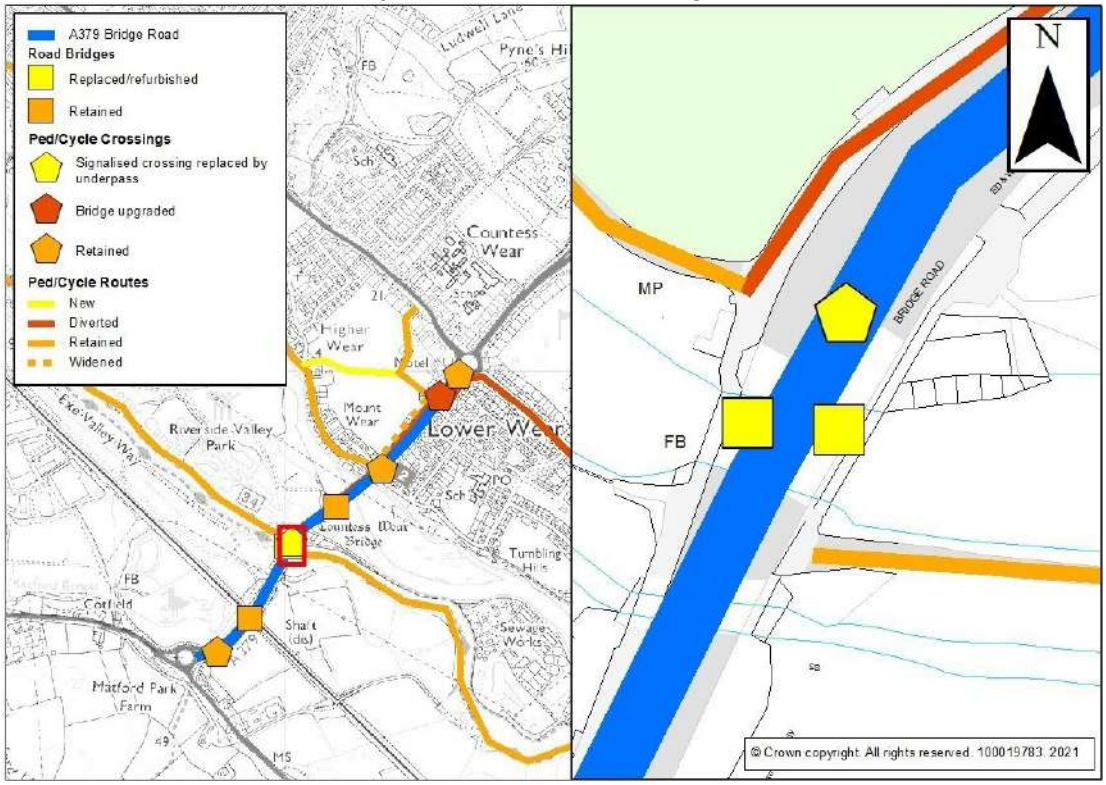

Figure 2-22: Scheme scope

2.8. Constraints & Dependencies

2.8.1. Potential constraints to delivery of this scheme can be grouped into the following categories: Physical Barriers; Environmental; Public Support; Affordability; and Deliverability.

Physical Barriers

2.8.2. Bridge Road follows a historic road alignment, crossing the River Exe via a bridge (Countess Wear Bridge) constructed in 1774 and subsequently widened to accommodate increased traffic flows. The road slopes downhill from north to south, descending from an altitude of some 20m at Countess Wear Roundabout to approximately 5m at Matford Roundabout. The average gradient is therefore about 1 in 300 (0.3%).

2.8.3. The southern section of Bridge Road (south of Glasshouse Lane) is relatively undeveloped, but there is considerable residential development alongside the northern section, particularly on the eastern side of the road. A service road giving access to these properties abuts the main carriageway of Bridge Road for much of this section.

2.8.4. The various structures on Bridge Road outside the scope of this project, such as the Countess Wear Bridge and the railway bridge, impose constraints on the extent to which the orientation and height of the road bridges within the project scope (the canal bridges) can be altered, if unacceptably sharp turns/steep gradients are to be avoided on the connecting sections of road. They also effectively limit the number of lanes which could be provided over any replacement bridges, as providing additional lanes over the replacement bridges would necessitate merges on the approaches to the other existing bridges.

Environmental

2.8.5. Bridge Road forms the northern boundary of the Exe Estuary Ramsar Site, Site of Special Scientific Interest and Special Protection Area, whilst the Matford Marshes Nature Reserve lies to the northwest of the road. Therefore, any construction works would need to comply with the protections afforded to these sensitive environmental sites.

2.8.6. The southern section of Bridge Road crosses several watercourses, including the Alphin Brook, the Exeter Ship Canal, River Exe and a disused leat. Consequently, much of this section of the road is classed as being in a ‘Medium Probability’ Flood Zone, indicating land with between a 1 in 100 and 1 in 1,000 annual probability of flooding. Therefore, any works would also need to avoid causing unacceptable increases in flood risk, either on Bridge Road itself or further afield.

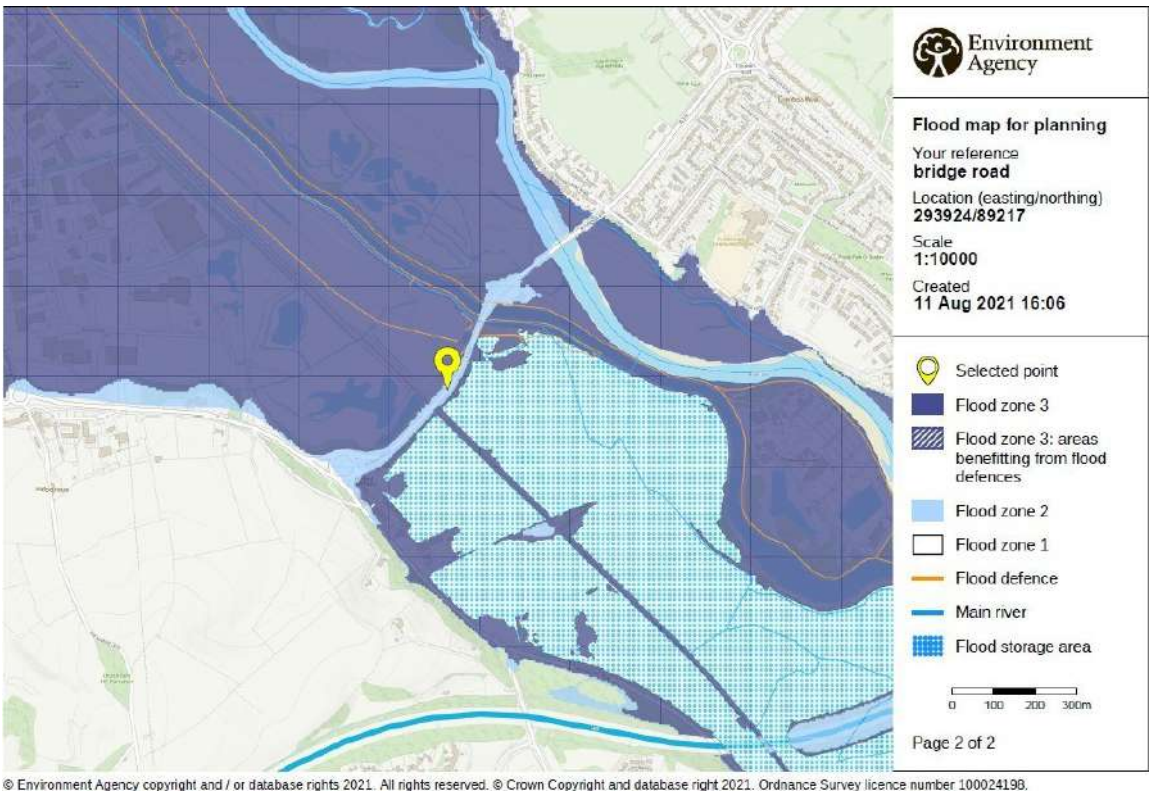

Figure 2-23: Flood risk map for Bridge Road[5].

2.8.7. As the Countess Wear Bridge is designated as a Grade II Listed Building[6], listed building consent would be required for any changes that would affect the structure.

Public Support

2.8.8. As the project is principally concerned with the repair or replacement of the existing canal bridges, rather than the creation of new roads or additional road capacity, any adverse impacts of the scheme are expected to be modest, and therefore securing public support may be less challenging than for other transport schemes. However, it will be necessary to ensure the project is sufficiently balanced in terms of its impacts on the various user groups, including:

- Pedestrians and cyclists;
- Canal users;
- Public transport users; and
- Drivers/passengers in private vehicles.

Affordability

2.8.9. The cost of refurbishing or replacing the canal bridges would be unaffordable to Devon County Council without additional funding from the DfT. Therefore, the delivery of the project is contingent upon the latter's ability to make funding available.

[5] https://flood-map-for-planning.service.gov.uk/
[6] https://historicengland.org.uk/listing/the-list/list-entry/1390895

Deliverability

2.8.10. The development of the project to Full Approval stage is contingent on Devon County Council having sufficient resources (staff and funding) to progress the business case and other activities, such as securing any necessary consents from statutory bodies. To help mitigate the risk of resource issues, Devon County Council has a framework agreement with WSP, enabling it to draw upon additional support when required.

2.8.11. If the bridge replacement option is progressed (see Section 2.10 below), the new bridges would be constructed in situ, meaning no additional land would be required. However, some additional land may be required to construct the replacement Countess Wear pedestrian/cycle bridge, and to widen the pedestrian/cycle path parallel to Bridge Road north of Countess Wear Road. Therefore, there is the potential for the project to stall if this land proves difficult to assemble.

2.8.12. Delivery of the construction works will be dependent on generating sufficient interest from contractors to attract competitive tenders. Completion of the works could be impacted by skills shortages or supply chain issues.

Interdependencies

2.8.13. The delivery of this project is not dependent upon the delivery of any other infrastructure. As the railway bridge has been excluded from the scope of this project, it will not be impacted by any activities of Network Rail or train operating companies.

2.8.14. However, to minimise impacts on the wider transport network, the works will need to be programmed to avoid overlapping with works on the M5 Viaduct, to ensure the SRN diversion route remains available when required.

2.9. Stakeholders

Key Stakeholders

2.9.1. Key stakeholders within local government include:

- Devon County Council – the local highway authority and project sponsor, and local planning authority for applications for the authority's own use. Delivery of the project would improve the performance and resilience of the authority's highway network, and reduce demands on the authority's structures team, due to reduced ongoing maintenance requirements. The authority would determine any planning applications required to upgrade or replace transport infrastructure as part of this project (though it is currently assumed that planning permission will not be required for the canal bridge replacement)..
- Exeter City Council – the local planning authority for residential and employment developments for the project area. Delivery of the project would improve the performance and resilience of links into the city and facilitate planned development. The authority also owns the Exeter Ship Canal, hence could benefit if the project improves the attractiveness of the canal by providing more headroom below the road. A Letter of Support from the City Council is included in Annex 2.
- Teignbridge District Council and East Devon District Council – neighbouring local planning authorities. Delivery of the project would

facilitate planned development within these district council areas (see Figure 2-15).

2.9.2. Key statutory bodies with interests in the project include:

- Natural England – the public body responsible for ensuring England's natural environment is protected and improved. Any works impacting the Exe Estuary Site of Special Scientific Interest, which abuts Bridge Road to the south, would require approval from the body.
- Historic England – the public body responsible for ensuring England's historic environment is protected and improved. The body would advise Devon County Council regarding determining applications for listed building consent, should the project impact the Grade II Listed Countess Wear Bridge (though this is considered unlikely at this stage).
- Environment Agency – the principal flood risk management operating authority. The body would advise Devon County Council regarding the potential impacts of the project on flood risk.

2.9.3. Within central government, the Department for Transport (DfT) is a key stakeholder, as DfT funding will be required to deliver the project. Therefore, it will be necessary for the project to align with the department's objectives, and for the department to have confidence the project will deliver value for money.

Other Stakeholders

2.9.4. The project is supported by the Member of Parliament (MP) for Exeter, Ben Bradshaw, as well as the MPs for the neighbouring constituencies of Central Devon and Newton Abbot (Mel Stride and Anne Marie Morris, respectively). In their letters of support (see Annex 2), the MPs cite the importance of Bridge Road as a route into Exeter, and the need to improve active travel links to support transport decarbonisation.

2.9.5. The Heart of the South West Local Enterprise Partnership (LEP) provided funding for a previous scheme on Bridge Road. It is likely to be supportive of the project, as it would enable the benefits of the previous scheme to be cemented and enhanced, improving the value for money of the investment in the longer term. The project would also support the LEP's strategic objectives (see Section 2.2), including future-proofing the region's transport infrastructure.

2.9.6. The Peninsula Transport Sub-National Transport Body identifies improvements to the A379 Exeter Outer Ring Road as one of its five priority Major Road Network schemes[7]. As such, it is supportive of this project (see Letter of Support in Annex 2).

2.9.7. National Highways (formerly Highways England), the body responsible for managing the Strategic Road Network, are supportive of the project. The project would enhance the resilience of the A379 SRN diversion routes (see Figure 2-3), thus increasing the ability of the SRN to cope with incidents and periods of high demand. It would also reduce the frequency of disruption on Bridge Road, reducing the frequency of traffic being displaced from Bridge Road onto the SRN.

[7] https://www.peninsulatransport.org.uk/major-road-network/

2.9.8. The Friends of the Exeter Ship Canal and the Inland Waterways Association both support the scheme, particularly in relation to the proposal to increase the headroom between the canal and the road. In their letter of support (see Annex 2), the Friends of the Exeter Ship Canal state that this would radically change the outlook for the canal's future and bring benefits to the region's economy and environment.

2.9.9. Network Rail own and manage the British rail network, and hence would be impacted by any proposals affecting the railway bridge carrying Bridge Road over the Exeter-Plymouth mainline. However, this bridge has been excluded from the project scope (see Section 2.7).

Consultees

2.9.10. Other consultees with potential interests in the project include:

- Neighbouring town and parish councils
- Emergency services
- Statutory undertakers
- Bus and coach operators
- Local businesses
- Disability groups
- Walking and cycling groups
- Residents and landowners

2.9.11. It is proposed that full consultation will be undertaken with these consultees once this SOBC has been approved and the proposals have been more fully developed.

2.10. Options Assessment

2.10.1. There are three high-level options for addressing the problems identified above:

- Do Minimum – conducting essential maintenance and repairs as and when required;
- Refurbishment – replacement of most electrical and mechanical bridge components to prolong the bridges' operational lifespans; and
- Replacement – replacement of the existing bridges with new structures.

2.10.2. These are described further below and assessed against the objectives according to the scale detailed in Table 2-8 below.

Assessment	Description
✓✓	Strong positive impact on likelihood of satisfying objective
✓	Slight positive impact on likelihood of satisfying objective
-	Little impact on likelihood of satisfying objective
X	Slight negative impact on likelihood of satisfying objective
XX	Strong negative impact on likelihood of satisfying objective

Table 2-8: Scale used for assessment of options against objectives.

Do Minimum (Make do & mend)

2.10.3. Under a Do Minimum scenario, essential maintenance and repairs would be conducted as and when required, i.e. in a reactive rather than a proactive manner. It is therefore expected that the deterioration of the Canal Swing Bridge and Canal Bascule Bridge (discussed further above) would continue in this scenario, with gradually increasing impacts on road users.

2.10.4. No changes would be made to pedestrian/cycle infrastructure in this scenario, apart from essential maintenance and repairs.

2.10.5. Under this scenario, there would be a monthly night-time test of the bridge opening/closing procedure, along with planned maintenance of the paint system every 2 years. There would also be a major refurbishment of the paint system approximately every 20 years, necessitating 2 weeks of nighttime closures of each bridge, and replacement of major mechanical components every 25 years, necessitating 1 week of 24-hour closures and 2 weeks of night-time closures of each bridge.

2.10.6. However, due to structural issues and faults with the mechanical systems, there would also be a need for emergency (unplanned) closures of Bridge Road. It is expected that the frequency of these closures would increase in later years.

2.10.7. It is expected that the deterioration of structural elements of the Bascule Bridge would necessitate reducing traffic to one lane northbound after approximately 20 years. After a further 10 years, it would likely be necessary to impose a weight limit of 20 tonnes for northbound traffic, reducing to 7.5 tonnes after another 10-year period.

2.10.8. During periods when one of the bridges is closed to traffic, either due to planned maintenance or an emergency closure, northbound traffic would be diverted through Exeter city centre, via the A377 Exe Bridges. Northbound HGV traffic would also be diverted via this route following the imposition of the weight limit on the Bascule Bridge.

2.10.9. The extent to which this option is likely to satisfy the objectives is summarised in Table 2-9 below. The option generally performs poorly, particularly in relation to supporting the SRN.

Objective	**Assessment**	**Comments**
Improve reliability and resilience of the bridges to provide 2 lanes of traffic flow in both directions to support development	XX	The condition of the bridges would continue to deteriorate, necessitating a reduction to one lane NB and leading to increased unplanned closures, reducing the resilience of the route.
Support the SRN as a diversion route for the M5 viaduct during incidents and when the M5 junction 29-31 get overwhelmed with tourist traffic	XX	As above, the resilience of the SRN would be reduced due to Bridge Road's deteriorating performance as a diversionary route.
Maintain passage of vessels on the canal for leisure and ferry traffic	X	The passage of vessels on the canal would likely be impeded with increasing frequency, due to the bridges increasingly becoming stuck in the closed position.

Provide an affordable and economic solution that reduces ongoing maintenance costs	X	Repairs and maintenance would require increasing resources due to the deterioration of the bridges.
Improve the safety and amenity for pedestrians/cyclists using the Exe Estuary Trail and other local routes	X	Pedestrian and cycle facilities would not be improved.
Recognise and where possible enhance the environmental and cultural aspects of the bridges and the local environment	-	The lack of construction works required should minimise environmental impacts. However, there would not be any opportunity to enhance the local environment.
Minimise the net carbon impact of the Bridge Road River Exe crossing considering maintenance, construction, and operation	X	The reduction of Bridge Road to one lane NB would lead to traffic re-routing via longer routes, increasing emissions. Pedestrian and cycle facilities would not be improved, discouraging modal shift to active travel.

Table 2-9: Assessment of Do Minimum option against objectives.

Refurbishment

2.10.10. Under this option, the canal bridges would be substantially strengthened, and electrical and mechanical components would be replaced. Some repairs would be made within the next 5-10 years, including:

- Dismantling, inspection, and refurbishment (as required) of swing bridge main drive gearbox;
- Removal and inspection of swing bridge main drive pinion;
- Refurbishment of swing bridge back span lifting and stabilising wedge systems;
- Replacement of swing bridge hydraulic power unit;
- Design and fitting of new bridge main trunnion bearings and balance beam bearings to bascule bridge;
- Replacement of main lifting and cam lock system hydraulic cylinders of bascule bridge;
- Replacement of bascule bridge shock absorbers; and
- Refurbishment of bascule bridge nose locks.

2.10.11. Following this, a long-term maintenance regime (detailed in the KGAL report on Maintenance and Refurbishment Strategies, Annex 1) would be followed to extend the bridges' operational lifespans. It is expected that by doing so, two lanes of traffic could be maintained on both bridges for the next 60 years, except during temporary closures.

2.10.12. This option would incorporate the replacement of the Countess Wear footbridge with an improved pedestrian/cycle bridge usable by persons of reduced mobility. The improved bridge would take place together with improvements to access the bridge. This would provide an option to allow pedestrians and cycles to avoid the controlled and uncontrolled crossings of

Bridge road at Glasshouse Lane and Countess Wear. A reduced demand at this crossing would also increase road capacity.

2.10.13. As the alignment and height of the canal bridges would remain the same as at present, it would not be possible to divert the pedestrian/cycle path under the bridges, hence the existing signalised crossings at the canal would be retained.

2.10.14. The proposed pedestrian/cycle improvements under this option are summarised in Figure 2-24.

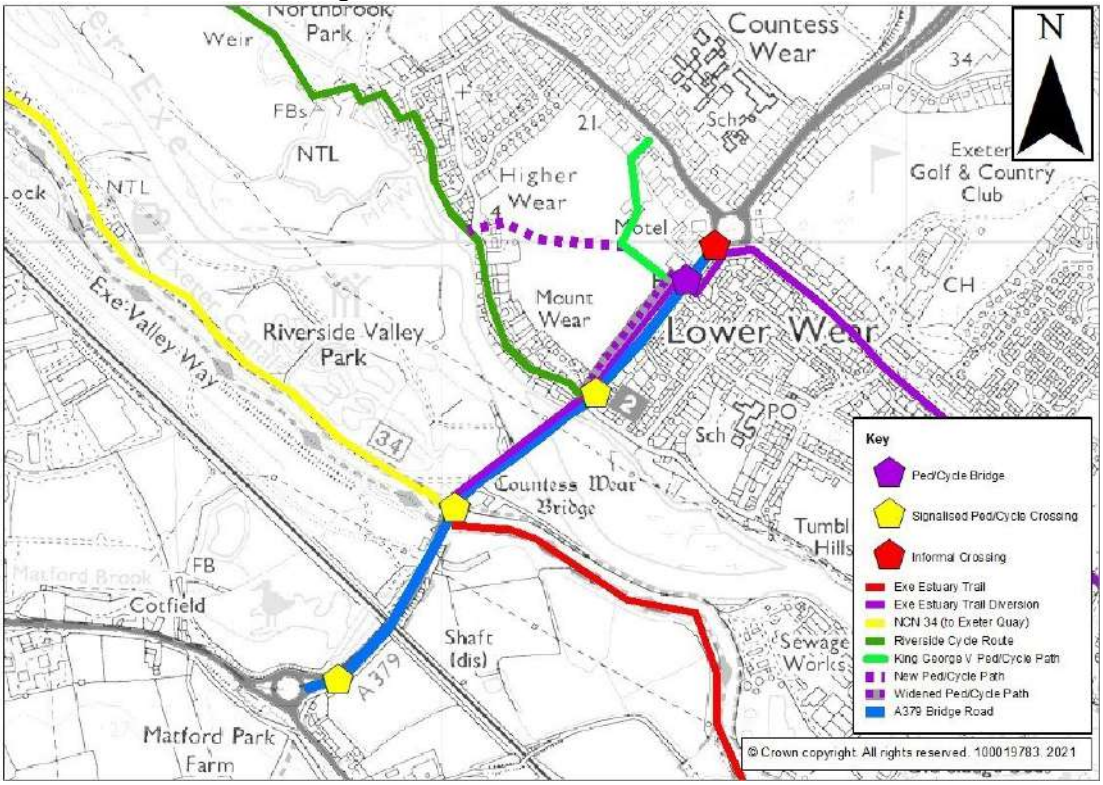

Figure 2-24: Proposed pedestrian/cycle improvements under Refurbishment option (changes shown in purple).

2.10.15. Providing bus lane(s) on Bridge Road has also been considered and discounted as part of the option development process:

- Reallocating one or more lanes of traffic for the exclusive use of buses has been discounted due to the bus flows (and thus bus passenger volumes) on Bridge Road being insufficiently high to generate benefits proportionate to the disbenefits that would accrue to other road users.
- Constructing additional bus lane(s) offline would be infeasible on affordability grounds and would likely have unacceptable impacts on the sensitive environments detailed in Section 2.8 above.

2.10.16. However, it is proposed to install a bus stop on the northbound side of Bridge Road, approximately opposite the existing southbound bus stop, which would increase the ease of use of bus services by enabling passengers to alight at the same place as they board. Furthermore, the improved journey time reliability on Bridge Road resulting from the proposals would benefit bus users as well as private car users, so the proposals are considered to satisfy the MRN objective of benefitting all road users.

2.10.17. Under this scenario, the planned closures would be similar in frequency to those in the Do Minimum scenario, although some closures would be extended in duration to enable more thorough refurbishment. There would be 9 weeks of night-time closures every 20 years (5 weeks on the swing bridge, and 4 weeks on the bascule bridge) and 2 weeks of 24-hour closures every 25 years. There would also be a monthly night-time test of the bridge opening/closing procedure, and planned maintenance of the paint system every 5 years.

2.10.18. If the recommended refurbishment strategy is followed, there should be no emergency (unplanned) closures of Bridge Road. The closures could therefore be programmed to minimise disruption to traffic, and maximise the resilience of the SRN, by avoiding closures when there are works on the SRN.

2.10.19. The same diversionary route would apply as for the Do Minimum option. However, it would not be necessary to apply a weight limit on the bascule bridge under this option, hence HGV traffic would not need to be diverted via Exe Bridges (except for during temporary closures).

2.10.20. The extent to which this option is likely to satisfy the objectives is summarised in Table 2-10 below. The option is generally well-aligned with the objectives, insofar as Bridge Road would be able to continue to fulfil its functions in relation to waterborne vessels, pedestrians, cyclists, and vehicular traffic.

Objective	Assessment	Comments
Improve reliability and resilience of the bridges to provide 2 lanes of traffic flow in both directions to support development	✓	2 lanes of traffic would be maintained in both directions, apart from during temporary closures.
Support the SRN as a diversion route for the M5 viaduct during incidents and when the M5 junction 29-31 get overwhelmed with tourist traffic	✓	2 lanes of traffic would be maintained in both directions, with temporary closures planned to minimise impacts on the SRN (i.e. outside of tourist peaks).
Maintain passage of vessels on the canal for leisure and ferry traffic	✓	The refurbishment of the bridges would reduce the risk of them becoming stuck in the closed position.
Provide an affordable and economic solution that reduces ongoing maintenance costs	✓	By conducting refurbishment according to a planned programme, ongoing maintenance costs would be reduced compared to the Do Minimum option.
Improve the safety and amenity for pedestrians/cyclists using the Exe Estuary Trail and other local routes	✓	Replacement of the Countess Wear footbridge could be incorporated, enabling improvements for pedestrians and cyclists.

Recognise and where possible enhance the environmental and cultural aspects of the bridges and the local environment	✓✓	By reducing the need to divert HGV traffic through Exeter city centre, environmental impacts would be reduced compared to the Do Minimum option. The option has the potential to deliver a biodiversity net gain. By maintaining the existing bridges there is a small heritage benefit
Minimise the net carbon impact of the Bridge Road River Exe crossing considering maintenance, construction, and operation.	✓	By reducing the need to divert via longer routes, operational carbon emissions would be reduced compared to the Do Minimum option. However, there may be greater carbon impacts from maintenance, and there would be no improvement in pedestrian/cycle facilities on the canal

Table 2-10: Assessment of Refurbishment option against objectives.

Replacement

2.10.21. Under this option, the existing canal bridges would be replaced with entirely new structures (the form of the structures has yet to be determined).

2.10.22. The possibility of changing the road alignment and constructing the new bridges offline was considered in the Options Assessment Report (Annex 3). However, this would have the following implications:

- Increased incursion into the local environment compared to construction in situ, including impacts on the Exe Estuary Special Protection Area, Ramsar site and Site of Special Scientific Interest;
- Increased land requirements, with associated cost increases and risks to deliverability; and
- Increased risk of public/stakeholder opposition, due to the abovementioned factors.

2.10.23. Therefore, it is proposed to construct replacement bridges in the same location as the existing bridges.

2.10.24. This option would enable the road to be raised across the canal, enabling the pedestrian/cycle path alongside the canal to be diverted under the road. This would improve safety and reduce delays for pedestrians and cyclists, as they would no longer be required to use the signalised crossing and would also reduce disruption to vehicular traffic. Furthermore, the increased headroom for canal users would reduce the frequency with which the bridges would need to be opened, increasing journey time reliability for both canal and road users.

2.10.25. This option would also incorporate the replacement of the Countess Wear footbridge with an improved pedestrian/cycle bridge usable by persons of reduced mobility. The improved bridge would take place together with improvements to access the bridge. This would provide an option to allow pedestrians and cycles to avoid the controlled and uncontrolled crossings of

Bridge road at Glasshouse Lane and Countess Wear. A reduced demand at this crossing would also increase road capacity.

2.10.26. The proposed pedestrian/cycle improvements under this option are summarised in Figure 2-25.

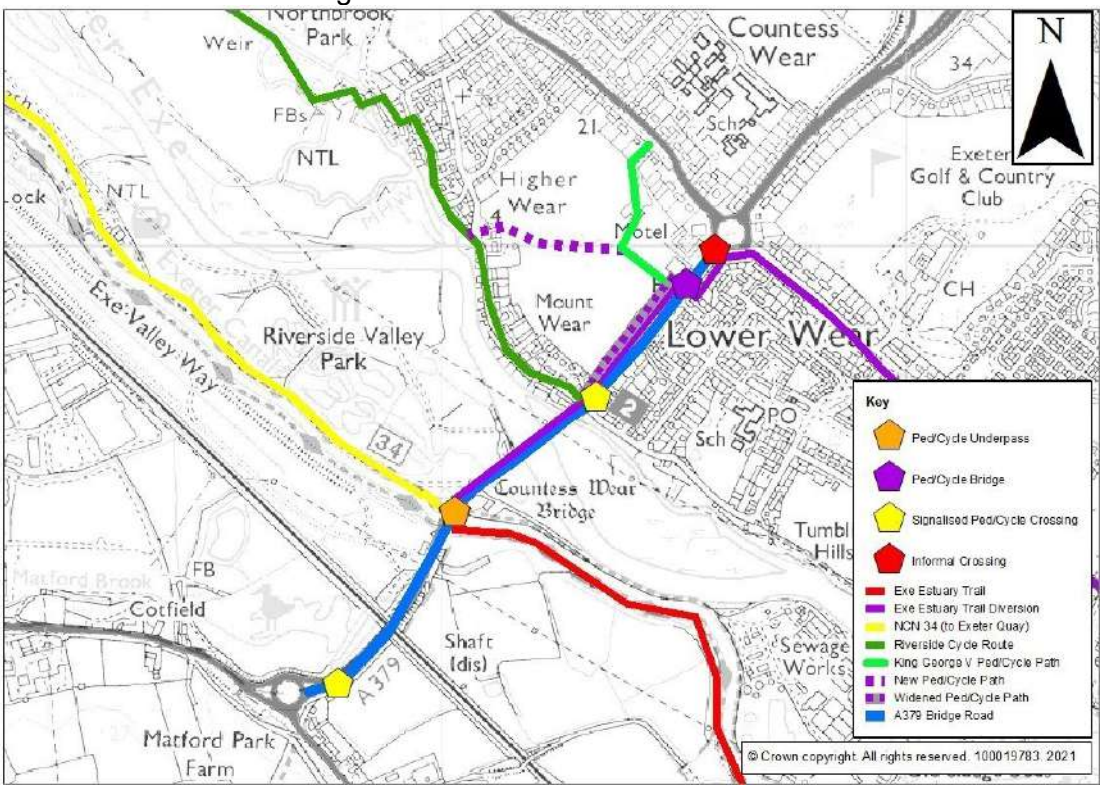

Figure 2-25: Proposed pedestrian/cycle improvements under Replacement option (changes also included in refurbishment option shown in purple and additional improvement in replacement option in gold).

2.10.27. As with the refurbishment option, a new bus stop would be installed on the northbound side of Bridge Road. This would increase the ease of use of bus services by enabling passengers to alight at the same place as they board.

2.10.28. The frequency and duration of the temporary closures under this option would be largely as described for the refurbishment option, with planned repairs and maintenance but no emergency closures. However, traffic would also need to be restricted to one lane in each direction during the first year of works, to enable replacement of the bridges.

2.10.29. This option would offer several additional benefits compared to the refurbishment option:

- Increased longevity of structures due to the use of new components/operating systems;
- Reduced ongoing maintenance costs following construction of new bridges;
- Potential to address vulnerability of bascule bridge to impacts; and
- Reduced reliance on experience and knowledge of Devon County Council engineers, and thus increased resilience to staff turnover.

2.10.30. The extent to which this option is likely to satisfy the objectives is summarised in Table 2-11 below. This option is also generally well-aligned

with the objectives, particularly in relation to improvements for canal vessels and pedestrians and cyclists. However, the construction works would likely have some impact on the local environment.

Objective	Assessment	Comments
Improve reliability and resilience of the bridges to provide 2 lanes of traffic flow in both directions to support development	✓	2 lanes of traffic would be maintained in both directions, apart from during temporary closures.
Support the SRN as a diversion route for the M5 viaduct during incidents and when the M5 junction 29-31 get overwhelmed with tourist traffic	✓	2 lanes of traffic would be maintained in both directions, with temporary closures planned to minimise impacts on the SRN (i.e. outside of tourist peaks).
Maintain passage of vessels on the canal for leisure and ferry traffic	✓✓	The replacement of the bridges would reduce the risk of their becoming stuck in the closed position. Additionally, raising the height of the road would reduce the required frequency of bridge openings.
Provide an affordable and economic solution that reduces ongoing maintenance costs	✓✓	The initial costs of this option would be significant, but the ongoing maintenance costs would be lower than for the Do Minimum and Refurbishment options
Improve the safety and amenity for pedestrians/cyclists using the Exe Estuary Trail and other local routes	✓✓	Replacement of the Countess Wear footbridge could be incorporated, enabling improvements for pedestrians and cyclists. The pedestrian/cycle path along the canal could also be diverted under Bridge Road.
Recognise and where possible enhance the environmental and cultural aspects of the bridges and the local environment	✓	By reducing the need to divert HGV traffic through Exeter city centre, the environmental impacts of traffic would be reduced compared to the Do Minimum option. However, the construction works would have some impact on the local environment.
Minimise the net carbon impact of the Bridge Road River Exe crossing considering maintenance, construction, and operation.	✓✓	Encourages more active travel, and provides greater reliability and resilience for vehicular trips, thus reducing operational carbon emissions compared to the Do Minimum option. Potentially increased embedded carbon from construction, to be considered at the Outline Business Case stage.

Table 2-11: Assessment of Replacement option against objectives.

2.11. Summary

2.11.1. This chapter of the SOBC has set out the strategic case for an intervention to enhance the resilience of and improve the pedestrian/cycle facilities on the A379 Bridge Road, part of the A379 Exeter Outer Ring Road Major Road Network route.

2.11.2. It has explained the various functions Bridge Road performs in supporting all road users and users of the Exeter Ship Canal and highlighted the road's importance as a diversionary route for the Strategic Road Network. Without intervention, the canal bridges will continue to deteriorate, likely leading to increased unplanned closures and causing significant disruption to the local road network. This will ultimately necessitate the reduction of Bridge Road to one lane northbound over the canal bridges, followed by the imposition of weight limits as the bascule bridge becomes increasingly fragile.

2.11.3. This chapter has detailed the scheme objectives, which include consideration of the Climate Emergency and the need to promote sustainable modes of travel and explained how success in relation to these objectives will be measured. The objectives are well aligned with local and national strategic priorities, including the overarching objectives of the Major Road Network.

2.11.4. Finally, this chapter has assessed the three main options for interventions: the Do Minimum, Refurbishment and Replacement options. The Do Minimum scores poorly against most of the objectives, whereas the Refurbishment and Replacement options both appear capable of delivering the scheme objectives. It is therefore proposed to take these options forward for further assessment, before a preferred option is identified at the Outline Business Case stage.

3. The Economic Case

3.1. Introduction

3.1.1. The Economic Case seeks to demonstrate that the proposals represent value for money in terms of those impacts which can be monetised. The appraisal also considers the impacts which cannot be monetised.

3.1.2. The methodology used is consistent with TAG guidance but is proportionate to the stage of the project. More detail will be provided in the Outline and Full Business Cases if the scheme is successful at SOBC stage.

3.1.3. The results are presented in the Appraisal Summary Table (AST) in Annex 4, along with the Analysis of Monetised Costs and Benefits (AMCB) Table, Transport Economic Efficiency (TEE) Table and Public Accounts (PA) Table which are included in the Forecasting and Economics Report in Annex 5. A summary of the methodology and results are described below, with reference to more detailed reports where appropriate.

3.2. Longlist Appraisal

3.2.1. As per the Options Assessment Report (Annex 3), a range of options for replacing the canal bridges were considered in addition to the Do Minimum (conducting maintenance and repairs as and when required) and Refurbishment (replacement of most electrical and mechanical bridge components) options. However, as noted in the Strategic Case (Section 2.10), the various options involving construction of bridges offline were discounted due to the likely unacceptable environmental impacts.

3.2.2. Solely replacing the canal bascule (lifting) bridge would be infeasible, as the canal swing bridge is of insufficient width to accommodate two-way traffic. Therefore, northbound traffic would have to divert (either via the M5 Viaduct or Exe Bridges) during construction works, which would cause severe disruption on the local road network.

3.2.3. Solely replacing the swing bridge would be technically feasible but would not address many of the problems identified in the Strategic Case (Section 2.3), as the condition of the bascule bridge poses the greatest risk to the resilience of Bridge Road.

3.2.4. Therefore, the following options have been taken forward for economic appraisal against the Do Minimum option:

- Refurbishment
- Replacement of both bridges in situ

3.3. Methodologies, Assumptions and Data

3.3.1. An existing traffic model covering Exeter was adjusted to address the economic impacts of the Bridge Road scheme. A Do Something scenario was created keeping 2 lanes in both directions along Bridge Road with appropriate crossing facilities to model the proposals. This was compared to a Do Minimum scenario which kept the crossings as they currently are and reduced Bridge Road northbound to one lane in 2047 and imposed an HGV ban in 2057.

3.3.2. More details of the data used to develop the traffic model and the calibration and validation processes are included in Annex 6: Local Model Validation

Report (LMVR). The model forecasting and economic assessment is detailed in Annex 5: Forecasting & Economics Report.

3.3.3. Disbenefits relating to the impact on traffic of construction and maintenance have not been included because an assessment of this revealed that even under the Do Minimum scenario, the bridges would be open 99% of the year. These will be evaluated in more detail at the next stage of the scheme.

3.4. Economic Impacts

3.4.1. The majority of the TEE benefits of the scheme will come from the decreased journey times along Bridge Road as a result of maintaining 2 lanes open in each direction for the full 60-year appraisal period.

Business Users & Transport Providers

3.4.2. The scheme will reduce journey times and congestion by maintaining 2lanes of traffic over the canal bridges and removing a bottleneck of reducing the crossings to one-lane which would occur under the Do Minimum scenario. This will reduce transport costs for businesses in Exeter.

3.4.3. TUBA v1.9.15 was used to assess the monetised benefits of the scheme on business users and the results are in Table 3-1 below. These have been discounted to 2010 prices.

Business user benefits	***Total***	***0 to 2 min***	***2 to 5 min***	***> 5 min***
Travel time	£16,696,000	£11,898,000	£2,828,000	£1,970,000
Vehicle operating costs	£7,456,000			
User charges	£0			
During Construction & Maintenance	£0			
Total	£24,152,000			

Table 3-1: Business Users & Transport Provider Benefits

Reliability Impact on Business Users

3.4.4. The reduced congestion and reduction in times the bridge is closed due to ongoing maintenance will improve journey time reliability across the study area. This will aid businesses in the area as they will be able to predict lengths of journey times much more accurately. The improvement scheme will also prevent vehicles diverting onto the M5 for short-distance trips, improving reliability on the busy M5 viaduct between J30 and J31. A monetised score of **Slight Beneficial** has been calculated at this stage of the project.

Regeneration

3.4.5. The Marsh Barton area is proposed for redevelopment as part of the Liveable Exeter programme, with central government recently awarding funding for a regeneration scheme[8]. As Bridge Road provides a key route to Marsh Barton (via Matford Roundabout, the Devon Hotel Roundabout and

[8] See https://www.devon.gov.uk/news/2-3-million-for-council-partnership-to-deliverregeneration-schemes/

Bad Homburg Way), the scheme will improve the resilience of local transport links and thus facilitate the regeneration of the area. This will result in a **Slight Beneficial** impact on regeneration.

Wider Impacts

3.4.6. The scheme will increase the resilience and attractiveness of transport routes, including active travel and bus links, to existing employment sites and proposed residential and employment development. These latter include some 2,500 homes at South West Exeter, along with several thousand dwellings and jobs to the East of Exeter. There is therefore expected to be a **Slight Beneficial** impact in terms of Wider Impacts.

3.5. Environmental Impacts

Noise & Air Quality

3.5.1. Without improvements made to the canal bridges, capacity will need to be restricted to one lane northbound in future. This will result in traffic diverting through the City Centre or onto the M5. Both these routes are closer to residential properties than Bridge Road and will result in noise and air quality disbenefits for a large number of dwellings.

3.5.2. The improvement scheme will allow noise and air pollution levels to remain close to existing levels and only changing as a result of development in the area such as South West Exeter. This will result in an overall **Slight Beneficial** impact on noise and air quality as a result of the scheme.

Greenhouse Gases

3.5.3. Greenhouse gas emissions were monetised as part of the TUBA assessment. The reduced congestion and shorter journey times in the Do Something scenario provide £2.2m of benefits over the 60-year appraisal period, discounted to 2010 prices.

Landscape, Townscape, Historic Environment, Biodiversity & Water Environment

3.5.4. All other environmental benefits are assumed to be neutral at this stage of the project given it replaces the existing bridges as opposed to providing new infrastructure on a different alignment. Mitigation measures will be included to minimise impacts on the existing canal. These impacts are considered to be **Neutral** at this stage but will be assessed in more detail as the project moves to the Outline Business Case stage.

3.6. Social Impacts

Commuting and Other Users

3.6.1. Commuters and other users will also benefit from the reduced congestion and improved journey times. This will make transport along Bridge Road and around Exeter cheaper for all users.

3.6.2. TUBA v1.9.15 was used to assess the monetised benefits of the scheme on commuting and other users and the results are in Table 3-2 below. These have been discounted to 2010 prices.

Commuting & other user benefits	***Total***	***0 to 2 min***	***2 to 5 min***	***> 5 min***
Travel time	£9,004,000	£3,846,000	£4,558,000	£600,000
Vehicle operating costs	£398,000			
User charges	£0			
During Construction & Maintenance	£0			
Total	£9,401,000			

Table 3-2: Commuting & Other User Benefits

Reliability Impact on Commuting and Other Users

3.6.3. The reduced congestion along Bridge Road as a result of maintaining two lanes in each direction will improve reliability for all users. Increasing the height of the bridge over the canal will result in it being opened less frequently in future under the replacement option, improving reliability further and reducing the chance for the bridge being stuck in the open position. An overall score of **Slight Beneficial** has been calculated at this stage.

Physical Activity

3.6.4. The improvements to crossing facilities for walking and cyclists will make the route more attractive in future, encouraging people to use more sustainable modes. The wider improvements to walking and cycling facilities will provide further benefit. A score of **Slight Beneficial** has been calculated at this stage but monetised benefits through AMAT will be calculated at OBC stage.

Journey Quality

3.6.5. The reduced congestion in the Do Something scenario will improve the journey quality for road users while the improvements to walking and cycling facilities will also improve journey quality of sustainable transport users. An overall score of **Slight Beneficial** has been calculated to reflect the benefits to all users.

Accidents

3.6.6. The grade separating of the canal crossings under the replacement option and improvements to the Countess Wear footbridge to accommodate cyclists and disabled people will reduce the potential for conflict between motor vehicles and pedestrians/cyclists. This will improve road safety for all users, especially pedestrians and cyclists, who are more vulnerable to serious injury in the event of accidents. This will result in **Slight Beneficial** benefits to accidents in future. Monetised impacts using COBALT will be calculated at the OBC stage of the project.

Security

3.6.7. It is unlikely that the scheme will affect the elements of personal security discussed in TAG (such as isolated car parking, emergency call facilities, lighting, etc.). The impact is therefore assumed to be **Neutral**.

Access to Services

3.6.8. Access to service mainly relates to public transport. The provision of a bus stop in the northbound direction along Bridge Road (opposite an existing bus stop in the southbound direction) will enhance the attractiveness of bus services for those travelling to or from the vicinity of Bridge Road. Additionally, the reduced congestion and reduction in times the bridge is closed should improve journey time reliability on this key bus corridor, so overall there is expected to be a **Slight Beneficial** impact on access to services.

Severance

3.6.9. The existing road already severs the communities on either side of Bridge Road. The improvements to crossing facilities along the route will provide **Slight Beneficial** impacts as a result of the scheme.

Option Values

3.6.10. Option and non-use values are only assessed where the scheme will substantially change affordability of transport services in the area (i.e. there is a step change in provision). This is not the case with these proposals, so the impact is assumed to be **Neutral**.

3.7. Costs

3.7.1. The costs of the scheme have been calculated in line with TAG guidance. These are broken down into more detail in the Financial Case (Section 5.2). For the Economic Case, inflation has been removed but Optimism Bias of 55% has been included given the scheme includes new bridges and is only at SOBC stage.

3.7.2. The costs of each Do Something option over and above the Do Minimum cost are detailed in Table 3-3 below. These have been discounted to 2010 prices.

Refurbishment	Replacement
£7,511,000	**£10,602,000**

Table 3-3: Scheme Costs to Transport Budget.

3.8. Distributional Impacts

3.8.1. Insofar as this scheme incorporates a range of measures to benefit all road users, it is expected that this scheme will have a balanced impact on the various socio-economic groups.

3.8.2. For example, providing improved pedestrian crossing facilities is expected to particularly benefit lower-income groups and ethnic minorities, who typically make a higher proportion of trips on foot than those from higher-income groups and people of White ethnicity, respectively[9]. Similarly, although increasing the reliability of private car journey times may particularly benefit higher-income groups, among whom car ownership is higher than in

[9] Based on National Travel Survey data.

lowerincome groups, the improved resilience of the Bridge Road corridor will also benefit bus passengers using the road, who are likely to be disproportionately from lower-income groups and older age groups.

3.8.3. It is expected that disabled people who are reliant on wheelchairs, mobility scooters or similar will particularly benefit from this scheme, as the replacement of the Countess Wear footbridge will enable the incorporation of ramps in place of the existing stairs. People with sensory disabilities may also particularly benefit, as the grade-separation of the canal bridge pedestrian crossing proposed under the Replacement option would eliminate any difficulties these individuals may experience when crossing roads at-grade.

3.8.4. The distributional impacts of the scheme will be considered in greater detail at the Outline Business Case stage.

3.9. Place-Based Impacts

3.9.1. The objectives of the scheme are concerned with improving a specific transport corridor, namely the A379 Bridge Road corridor, for the various users of the corridor.

3.9.2. As demonstrated by the Select Link Analysis presented in the Strategic Case (Figure 2-11), some 20% of traffic using Bridge Road originates from/travels towards the A38, which connects Exeter to South Devon, Plymouth, and Cornwall. The road also forms a diversionary route to the Strategic Road Network and provides additional capacity during tourist peaks. Therefore, in addition to benefitting Exeter residents, the improved resilience of Bridge Road will deliver significant benefits across the wider South West Peninsula.

3.9.3. By definition, the pedestrian/cycle traffic on Bridge Road is more local in nature, hence most of the benefits of the pedestrian/cycle improvements will accrue to those living and working locally. However, as one of the South West's flagship walking and cycling trails, the Exe Estuary Trail (which crosses Bridge Road) has a large economic pull and so there may also be benefits to those living further afield.

3.9.4. The place-based impacts of the scheme will be considered in greater detail at the Outline Business Case stage.

3.10. Value for Money Statement

3.10.1. The above costs and benefits have been calculated using TUBA 1.9.15 and discounted to 2010 prices. Initial BCRs for the refurbishment and replacement option are 4.50 and 3.19, respectively. Therefore, the refurbishment represents **Very High** value for money, whilst the replacement is **High** value for money.

3.10.2. This does not include any accident, environmental or health related benefits which will be included at OBC stage. Consequently, the BCRs presented here represent conservative assessments, and it is predicted that the replacement option will increase to **Very High** value for money once these additional benefits have been included at OBC stage.

3.11. Summary

3.11.1. This chapter has demonstrated that the proposals are likely to offer good value for money, with the Refurbishment option appraised as being Very High value for money whilst the Replacement option fell into the High value for money category. Once additional benefits which were not monetised at this stage, including accident, environmental and health related benefits, are included, it is predicted that the Replacement option will also represent Very High value for money.

3.11.2. This chapter has also explained some of the potential environmental benefits of the scheme, which principally arise due to the scheme ensuring two lanes of traffic remain open on Bridge Road in each direction, reducing the need for traffic to divert via longer routes and thus consume more fuel. The scheme should reduce traffic flows crossing the River Exe at Exe Bridges, reducing traffic volumes in more noise- and pollution-sensitive areas around Exeter city centre.

3.11.3. Finally, this chapter has outlined that the scheme is expected to benefit all road users and is thus expected to have a balanced impact on the various socio-economic groups. Whilst significant benefits are likely to accrue to those living or working in the vicinity of Bridge Road, it will also benefit the wider South West Peninsula, by increasing the resilience of the Major and Strategic Road Networks, particularly during tourist peaks.

4. The Commercial Case

4.1. Introduction

4.1.1. This Commercial Case sets out the procurement approach that is likely to be adopted to ensure that the Bridge Road improvements are commercially viable, deliverable within the scheme budget and can achieve value-formoney. The case details the specific outputs that the scheme must deliver in order to achieve the objectives as set out in the Strategic Case (Section 2.5).

4.1.2. At this stage, the preferred procurement approach has been identified as a Design and Build contract with some Early Contractor Involvement (ECI). However, through working with the Council's procurement team, this will be developed as the scheme is progressed. This offers the opportunity either to run a full procurement exercise for the project, or to commission it through an existing framework, depending on which approach is considered to maximise value and minimise risk.

4.1.3. Whichever of the above approaches is adopted, the procurement strategy is likely to be to have ECI through the outline design stage and then to develop the design with the chosen Contractor. This approach would ensure that the scheme is well developed at the outline business case stage ahead of submission of the full business case, ensuring that it is deliverable, giving greater cost certainty and securing contractor involvement in value management throughout the design phases.

4.1.4. Buildability and value management will be continuously considered throughout the design process, with best value being achieved through the commissioning process and contractor supply chain.

4.1.5. The Commercial Case describes the items required to be procured to deliver the scheme and identifies the means of procurement and any partnerships or other contractual relationships that will be entered into to deliver the programme.

4.2. Output Based Specification

4.2.1. This section of the Commercial Case describes the scheme in terms of specific outputs and considers what skills and services are required to develop and deliver the scheme.

4.2.2. To support the key objective of the project to maintain a 40T weight limit for vehicles travelling along Bridge Road and to improve traffic flow and reduce journey times, the scheme will provide the following outputs / deliverables:

- Replacement of the Bridge Road Canal Bascule Bridge;
- Replacement of the Bridge Road Canal Swing Bridge.
- Diversion of the National Cycle Network Route 2 from Dawlish to Exeter to pass under Bridge Road;
- Diversion of the National Cycle network Route 2 from Exmouth to Exeter to pass over Bridge road vis a new pedestrian/cycle bridge;
- Provision of additional public transport infrastructure;

4.2.3. There are several essential key success factors that must be achieved in order to ensure the scheme can deliver the objectives and outcomes. These key critical success factors are:

- Production of a clear and effective scheme brief and employer's requirements documents to steer the overall project
- Effective project planning to identify key milestones and lead in times
- Effective project management procedures followed throughout the project
- Effectiveness of the design and quality control
- Contractor involvement in the design phase
- Robustness of the procurement processes
- Value management and cost minimisation
- Cost certainty
- Adequacy of risk allowance
- Effective risk management and appropriate risk transfer
- Capability / capacity of contractors and supply chains
- Effective traffic management plan reducing the effect of the works on the M5 and Exeter city highway network
- Effective consultation and communication

4.3. Procurement Strategy

4.3.1. The Bridge Road scheme is a package of works that have been developed in order to achieve improvement to the A379 Bridge Road in Exeter, improving its operation, resilience, and ability to support future growth. Due to the different elements involved, it is likely that different procurement strategies may be adopted for some elements and work stages to provide best value under the umbrella of a single overall project. For example, the provision of the new pedestrian/cycle Bridge works are likely to require a different procurement approach to the specialist installation of the two new moveable bridges.

4.3.2. The following sections outline potential procurement approaches that could be adopted, along with their advantages and disadvantages. This is then followed by a discussion of how contracts might be procured under these overall approaches.

<u>Design and Build Contract</u>

4.3.3. A Design and Build (D&B) contract would involve going to tender based on the outline scheme design. A D&B contract would allow a 'sense check' of the scheme costs from the market at an early stage and would allow contractors to input into the scheme design, and potentially in the buildability and value engineering, at an early stage. However, contractors would be likely to cost risks involved in the design not being at a more detailed stage and hence a higher price might be received. The advantages and disadvantages of a D&B contract are as follows:

Design and Build	
Advantages	**Disadvantages**

Specialist Design – The design of movable bridges is a specialist design which a specialist D&B contractor may be able to provide.	Scheme costs – the contractor would be likely to price the risks in the design not being at a more detailed stage which could be likely to result in higher tender prices.
Speed of delivery – the D&B approach would allow a shorter programme, due to the contractor being involved at an earlier stage and the level of design control that is given to the contractor.	Inflexibility – there would be only limited scope for DCC to make changes to the requirements once the contractors' proposals have been agreed; this would require a firm and robust set of client requirements, otherwise there may be significant costs in changing the design.
Reduction in risk – the contractor would be responsible for the design and construction of the scheme, meaning DCC would be able to more effectively transfer some risks to the contractor, and would have a single point of responsibility rather than the design and construction elements being commissioned separately.	Design quality – there is often a perception that a contractor may be driven by price, and hence a D&B route might not be appropriate if a high-quality design is required.
Contractor acceptance of design – given that the contractor would be responsible for producing the detailed design, the contractor will 'buy in' to the scheme and the detailed design is more likely to be buildable.	Loss of control – the ability to influence the design will be given up by the Client at an earlier stage in the design process.
Client management – a D&B contract can involve lower client management costs given the reduced programme and that the design and construction elements are not commissioned separately.	
Value Engineering – earlier involvement of contractors, potentially through ECI in the design process would allow their involvement in value engineering if needed.	

Table 4-1: Advantages and disadvantages of Design and Build contract.

Traditional Construction Only Contract

4.3.4. In a Traditional Construction Only (CO) contract, the design process is kept separate from the construction process, meaning that tendering would be carried out following the detailed design stage. This would mean that tender prices would be based on more detailed scheme designs, which could result in lower prices as risks should be reduced. However, a CO contract would limit contractor involvement in value engineering and buildability and may reduce time available for design modifications. It would also require an extension of the project programme, as a robust scheme price would only be achieved once the contract had been priced by contractors.

4.3.5. The advantages and disadvantages of a CO contract are set out below:

Traditional Construction Only Contract	
Advantages	**Disadvantages**

Potential lower scheme costs – tender prices would be produced based on detailed designs, which should result in lower risks being costed and hence lower tendered prices being received.	Fragmented responsibility – given that the design and construction elements are commissioned separately, this can result in disputes over whether construction defects are really construction defects or design defects. This process does not effectively allow for the allocation of risks, or risk transfer to the contractor.
Simpler tender process – there should be a simpler tendering and evaluation process, as all prices are based on the same information and there is less need for contractors to build in risk elements.	Contractor 'buy-in' – the contractor is not involved in the design process and is not required to 'buy in' to the design; there is also limited opportunity for the contractor to be involved in value engineering.
Design process – as the design would be separately commissioned, DCC would retain responsibility and control of the design team.	
Specialist Design – DCC will be able to procure specialist design support directly and will be able to consider options from numerous suppliers.	

Table 4-2: Advantages and disadvantages of Traditional Construction Only contract.

Discussion

4.3.6. When compared with the CO approach the D&B option will provide greater cost certainty and reduce the risk at construction stage and allow specialist contractors who have experience in movable bridge construction to be part of the design process and consider the buildability. It also allows the contractor to develop the detailed design post tender which could potentially reduce the project programme and allow tendering at an earlier stage in the project.

4.3.7. The CO option could potentially reduce the construction tender cost as risk of design will not be included in the tender cost. The CO route would also allow the Client to have greater influence in the design throughout the process. DCC do not have the in-house design skills to design a movable bridge but these services could be provided by WSP UK Ltd, the Council's Transportation and Engineering Professional Services partner.

4.3.8. There are two separate elements of this project: one element is the design and construction of two movable bridges, and the other is the design and construction of the replacement of an existing pedestrian bridge to a Equality Act compliant pedestrian cycle bridge. A separate procurement route could be chosen for the different elements.

Conclusion

4.3.9. Due to the specialist nature of the works, and the value that an experienced contractor can bring to such a specialist project, it is recommended that the D&B route is chosen for the procurement of the works. It is also proposed that contractors will be engaged early on in the design process through ECI in order to ensure buildability and cost certainty. Although the project is to be split into two separate contracts, one for the delivery of the movable bridges and the other for the replacement of the existing pedestrian bridge.

However, to reduce cost and ensure delivery of the right solution, the design will be progressed to a stage that allows the outcomes to be clearly defined within the works information before the tender.

Form of Contract

4.3.10. The form of contract will be from well-established contract forms. The infrastructure contract is likely to use New Engineering Contract NEC4 Option A or Option C payment mechanisms. The NEC4 is now considered to be the standard form of contract for civil engineering works within the UK and can be used for both D&B and CO type projects. It is also flexible enough to accommodate the M&E works that will be associated with a movable bridges scheme.

4.4. Sourcing Options

Professional Services

4.4.1. DCC also has an internal Engineering Design Group (EDG) function which specialise in the design, project management, procurement, contract management and site supervision of buildings, highways, and structural engineering works.

4.4.2. EDG is responsible for delivering DCC's capital investment. It has recently undertaken both the Project Manager and Supervisor roles for the £14m Bridge Road Widening scheme, the £110m South Devon Link Road project and has undertaken the role of Employer's Agent for the delivery of the £75m North Devon Link Road. EDG are also responsible for the day-to-day management of the existing Bridge Road structures.

4.4.3. EDG is supported by two contracts for the provision of professional services:

- Transportation and Engineering Professional Services – Contractor: WSP UK Ltd
- Multidisciplinary Property consultancy services – Contractor: NPS SW

4.4.4. The Transport and Engineering Professional Services contract, which is based on the New Engineering Contract NEC3, is currently with WSP UK Ltd and runs until March 2025. WSP UK Ltd (WSP) is one of the world's leading engineering professional services firms and has led on the design of structures improvement schemes across the UK.

4.4.5. The Multidisciplinary Property consultancy services contract is currently with NPS SW. NPS SW is part of NPS Group, a national property consultancy to a range of public and private sector clients across the UK.

4.4.6. To maintain progress on critical path activities, DCC has already engaged WSP to provide support to the Bridge Road project. It is currently planned that WSP will support DCC in the post SOBC submission stages being responsible for:

- project management support;
- design development of the proposed options including ground investigation;
- environmental consents;

- obtaining the necessary statutory approvals albeit some (e.g. associated with temporary works) would be reserved for the contractor; and
- tender preparation, procurement, and contract management.

4.4.7. EDG are already managing the existing structures and will continue to lead on elements of the project including:

- Overall project management
- Client requirements and financial control

Construction

4.4.8. A review of the procurement strategy has identified that there are essentially two potential options for procuring a construction project of this type:

4.4.9. **Gen4-3 Framework** - which is managed by Hampshire County Council and is for High value and large-scale civil engineering, structural, infrastructure and highway works of significant complexity, up to the value of £150,000,000. The geographical area for this Framework covers the South of England. It is available for use for the Unitary, District and other public bodies within these areas. This Framework offers the benefits of Early Contractor Involvement (ECI) and D & B options, as well as a works contract. The works form of contract is the NEC4 Engineering and Construction Contract, with the NEC4 Professional Services Short Contract (PSSC) used for ECI Time Charge Orders. Both works and ECI are procured via a mini competition between the 4 suppliers.

4.4.10. **Open or Restricted Tender** – DCC could choose to tender the works in accordance with the Public Procurement Regulations 2020 as either an open tender available to the open market with an unlimited number of tenderers or through a restricted process whereby a pre-qualification process will restrict the number of tenderers who are chosen on the basis of financial standing and technical and professional capability

4.4.11. Further assessment of the potential procurement routes will be undertaken at the next stage of the project, the design will be developed with the support of specialist designers engaged through WSP and contractors through ECI most probably engaged through the GEN4 framework. This will inform the OBC which will include the preferred procurement option for construction.

4.5. Payment Mechanism

Professional Services

4.5.1. The use of DCC internal design group EDG is paid through a wellestablished internal recharge system, whilst the services for WSP are charged through NEC3 Option G of the Professional Services Contract. In both cases the professional fees are paid for on a monthly basis on a time and expenses valuation procedure.

Construction

4.5.2. The NEC4 has six main contract options the choice of which option to use depends on the type of contract and the level of risk that the Client wishes to maintain or the price certainty. The Construction contract is likely to use either:

- Option A: Priced contract with activity schedule; or

- Option C: Target Cost contract with activity schedule.

4.5.3. **Option A** – Priced Contract with Activity Schedule: in this option, the Contractor prepares an activity schedule which contains a list of activities that it expects to undertake in providing the works. The Contractor prices each activity and is paid upon completion of each. This option is comparatively simple to administer and is suitable for both D&B and traditional approaches. It offers the Employer the greatest cost certainty whilst posing the greatest risk to contractors. This option is well known to DCC who have used it to deliver a range of works including large D&B and smaller traditional designed schemes.

4.5.4. **Option C** – Target Cost with Activity Schedule: in this option the Contractor tenders a target cost for the works in the form of an activity schedule. During the works the Contractor is paid for the cost incurred (Defined Cost plus fee) and the target cost is adjusted for the effects of compensation events. At the end of the works the amount paid to the Contractor is adjusted according to the "pain/gain" mechanism included within the contract. This option can be appropriate where the extent of the work to be done is not fully defined but would offer DCC less certainty of outturn cost as the financial risk is shared between both parties. This option has been used by DCC, but the necessary management and supervision has been found to be more time consuming. The option will, however, give an incentive to the Contractor to identify efficiencies within the design.

4.5.5. The choice of which option to use will be considered further as the project is developed and in discussion with DCC's procurement team.

4.6. Risk Allocation

4.6.1. The Council has a robust Risk Management Strategy which will be used to manage risks within this project by wherever possible eliminating these risks or providing mitigation to reduce them as far as possible. The delivery strategy is designed to maximise the use of the Council's in-house skills and where appropriate pass risk on scheme construction and delivery to those best placed to deal with such risks. This will be fundamental in the decision of which option to use under the NEC4 contract.

4.6.2. A risk workshop would be held early in the project and regularly repeated throughout its delivery. These workshops would include discussion of all elements of the scheme development and delivery, with the objective of updating the existing risk registers to ensure that all project risks are captured and addressed. This process ensures a comprehensive review of risks throughout the project, leading to the development of an extensive risk register.

4.6.3. Further details on the management of risks are included in the Management Case (Section 6.9).

4.7. Contract Length

4.7.1. The preferred procurement approach will determine to some degree the contract length. It is still too early to identify the contract length with any certainty, but an outline programme has been prepared which is outlined below in Figure 4-1. The current early indicative programme allows for a construction period for a D&B contract of 15 months and allows a 6-month

period for advance detailed design and mobilisation. This programme will be developed as the project is progressed to the Outline Business Case stage.

4.7.2. To mitigate risk and reduce lead in times, the programme allows for all ecological surveys and detailed structural surveys to be carried out in the summer of 2022. There is also the potential for advance ecological

mitigation works to take place in 2025 with construction commencing in Q3 2026.

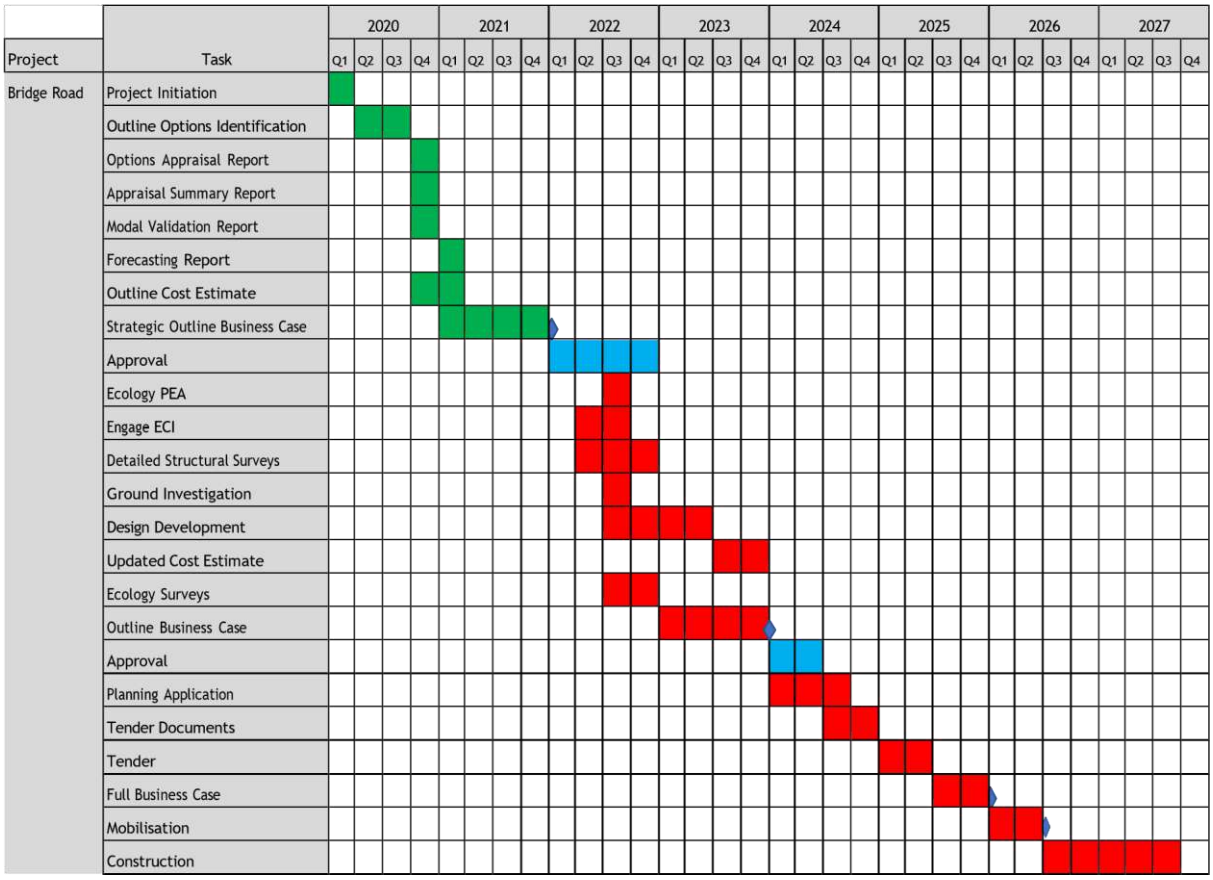

Figure 4-1: A379 Bridge Road MRN Scheme – SOBC Indicative programme

4.8. Human Resources

4.8.1. No human resource issues have been identified.

4.8.2. Devon County Council has allocated sufficient resources to manage the development of the scheme and technical resources required to deliver the design, planning and contract management would be drawn from DCC's existing pool of staff or from their professional service partner, WSP. The Council are committed to providing the required resources as the scheme is delivered. The governance arrangements for the project are set out in the Management Case (Section 6.4).

4.8.3. There are no resource issues that have been identified, and no TUPE related issues.

4.9. Contract Management

4.9.1. Devon County Council already has a robust contract management process in place. If required, this would be supplemented by external Contract Management support through its Professional Services Partner, WSP (procured under an existing contract) to assist in the tender documentation preparation, evaluation of bids and administration of the contract during construction. This partnership approach has been successful on numerous previous projects. Recent D&B examples include the £110m South Devon Link Road, £75million North Devon Link Road (currently being constructed) and the £42m Barnstaple Western Bypass.

4.9.2. For the D&B contract, a dedicated joint team of DCC Officers and staff from their Professional Services Partner, WSP, will be established to undertake the contract roles of Project Manager and Supervisor. Most of the team will be site-based during construction to maximise opportunities for collaborative working with the Contractor. Specialist project management and design support will be available from the DCC and WSP Design offices which are both situated close to the proposed site in Exeter.

4.9.3. Contract change management will be overseen by Devon County Council. The contract will have a nominated Project Manager who would be responsible for managing the contract in accordance with the NEC4. Both DCC and WSP have accredited NEC4 project managers available locally to manage the contract.

4.10. Summary

4.10.1. This chapter of the SOBC has considered a range of high-level procurement options, forms of contract and procurement procedures.

4.10.2. It is planned that the main contract will be let under the NEC4 form of contract and will be based on a D&B concept with ECI to maximise the potential for specialist contractors to inform the design and buildability of the structures. The option under the NEC4 will be either Option A or Option C and this will be decided as the project develops based on the risk allocation. As the design is developed the risk register will continue to be assessed and updated and mitigation measures put in place. Delivery and management of the contractor will be provided jointly from in-house DCC resources and specialist support from the Councils Professional Services Partners, WSP.

4.10.3. This Commercial Case demonstrates that the scheme is commercially viable and has a robust procurement and contract management strategy. The design will be developed through the next stage of the project in advance of the OBC with the support of specialist designers and specialist contractors engaged through either WSP or the GEN4 Framework. This allows the design to be progressed to a sufficiently detailed stage to ensure buildability and cost certainty at the OBC stage, the preferred construction procurement route will be confirmed at the OBC stage.

5. The Financial Case

5.1. Introduction

5.1.1. The Financial Case set out below provides a detailed breakdown of the scheme cost estimate and sets out the proposed funding breakdown to deliver the scheme. It sets out the financing arrangements, and how funding

will be secured, including how local contributions will be provided and underwritten by Devon County Council (DCC).

5.2. Costs

5.2.1. Table 5-1 provides a cost breakdown of the estimated out turn cost of the three alternative scenarios, Do Minimum, Refurbishment and Replacement. Table 5-2 and Figure 5-1 provide a forecast of the options' whole life cost, over a 60-year design life.

	Do Minimum	Refurbishment	Replacement
Design and Procurement	£350,603	£1,254,935	£2,086,045
Main Works	£1,562,400	£5,592,400	£9,296,100
Ancillary Works	£499,968	£1,789,568	£2,974,752
Supervision	£61,871	£221,459	£368,126
Land and Compensation	£24,748	£442,918	£736,251
Sub Total	**£2,499,590**	**£9,301,280**	**£15,461,274**
Inflation	£524,914	£3,218,243	£5,349,601
Base Cost Estimate	**£3,024,504**	**£12,519,523**	**£20,810,875**
Allowance for Risk	£453,676	£4,381,833	£5,202,719
Risk Adjusted Base Cost Estimate	**£3,478,180**	**£16,901,356**	**£26,013,594**
Carbon Supplement	£347,818	£3,380,271	£5,202,719
Overall Scheme Cost	**£3,825,998**	**£20,281,627**	**£31,216,313**

Table 5-1: Scheme Cost Breakdown

Year	Do Minimum	Refurbishment	Replacement
2025	3.8	20.3	31.2
2030	3.8	1.0	1.0
2035	3.8	1.0	1.5
2040	3.8	1.0	1.5
2045	2.4	1.0	1.5
2050	2.4	8.0	1.5
2055	2.4	1.5	1.5
2060	2.4	1.5	1.5
2065	2.4	1.5	1.5
2070	2.4	8.0	1.5
2075	2.4	1.5	1.5
2080	2.4	1.5	1.5
Whole Life Cost	**34.4**	**47.8**	**47.2**

Table 5-2: Whole life Costs over 60 years (£m)

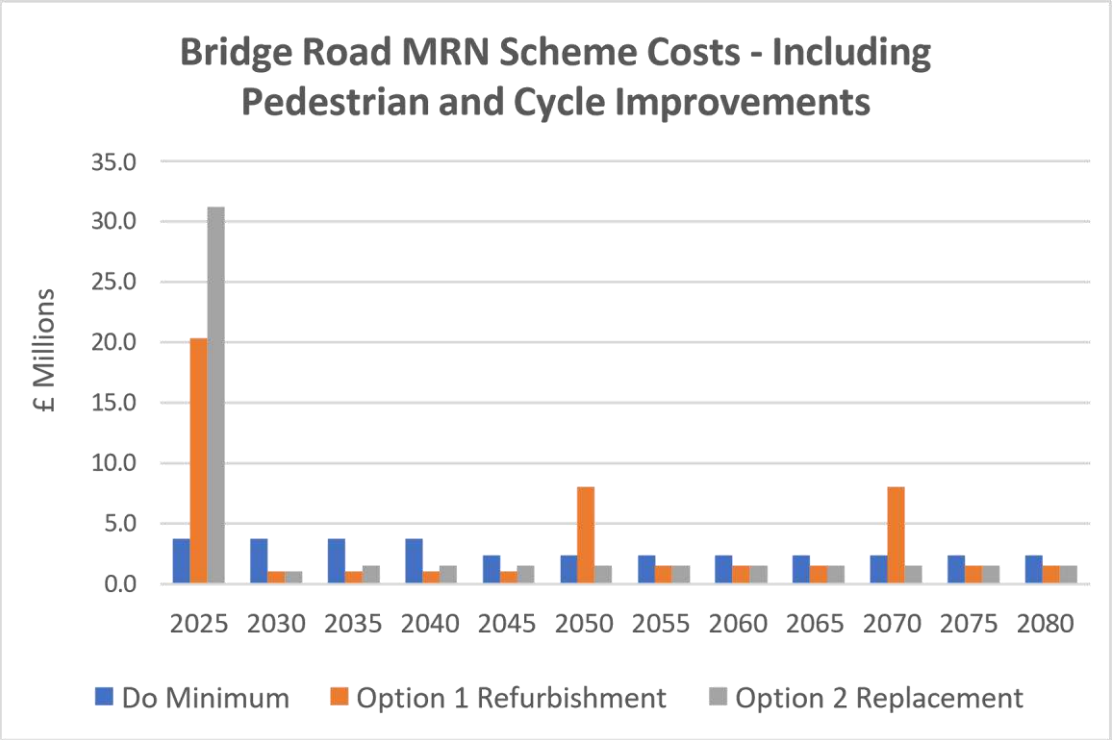

Figure 5-1: Spend Profile of Options

Basis of Construction Costs

5.2.2. The estimates have been calculated for 2021 with an allowance for inflation added separately based on the spend profile. Inflation has been assumed on a mid-point of construction of Q1 2027 for the replacement option. Cost estimates are exclusive of VAT and include land acquisition and any legal costs.

5.2.3. The estimates are based on construction rates from a combination of sources. These include:

- Previous DCC projects such as bridge replacement schemes and current maintenance costs for the Bridges
- Costs provided by a Mechanical and Electrical (M&E) and moving bridge specialists
- Costs provided by specialist bridge suppliers
- DCC Minor Engineering Works Framework 2018-2022 (High) framework rates, and
- Spon's Civil Engineering and Highway Works Price Book.

5.2.4. For the Do Minimum option the maintenance costs over the next 60 years have been based on a "no better, no worse" maintenance regime and estimated using existing maintenance costs with an allowance for a steady decline in the basic condition of the structure leading to an increase in the number of inspections, unplanned repairs, and additional costs for the replacement of consumables. As part of the review an M&E specialist, KGAL Consulting Engineers Ltd, have surveyed the structure and provided advice on the optimum maintenance regime with costs estimates to maintain the structure. It is also expected that as the main structure degrades over time due to corrosion that weight restrictions may have to be imposed.

5.2.5. For the Refurbishment option a cost estimate has been provided by WSP UK Ltd on the structural elements, with the support of M&E specialist KGAL Consulting Engineers Ltd. The required refurbishment works were established with cost estimates provided from similar projects. The costs have been estimated over 60 years with an allowance for an additional refurbishment of the two bridges after 20 years and 40 years. As part of the estimate some additional maintenance costs are included which are associated with the structure continuing to degrade over the next 60 years, as per the KGAL report on Maintenance and Refurbishment Strategies (Annex 1).

5.2.6. Replacement costs have been provided from similar projects delivered nationally and high-level estimates of quantities priced using the Spon's Civil Engineering and Highway works Price Book. In addition to this the costs for the replacement of the Countess Wear pedestrian bridge have been estimated using budget costs estimates provided by suppliers. For all three options the professional fees have been assumed at 20%

5.3. Risk

5.3.1. An allowance has been made for the risk of unknown events occurring during the maintenance and construction of the works. For the Do Minimum the risks are relatively low; as there is a good embedded knowledge, risk has been set to 15%. For the refurbishment, the risk of cost increases is considered to be high. Once the existing historic bridges are dismantled and works begin, it is very likely additional defects will be found, hence risk has been set to 35%. For the replacement option risk should be well known although projects such as this do experience unknown problems, so risk has been set to 25%.

5.3.2. The Council has a robust Risk Management Strategy which will be used to manage known risks within this project by eliminating these risks where possible, or by providing mitigation to reduce them as far as possible. This is outlined within the Management Case (Section 6.9).

5.3.3. The scheme Risk Register is summarised in Table 5-3 below.

Risk Description	Risk Consequence	Mitigation Measures
Proposed solution is not agreed/object during consultation. i.e. Height of the bridge or alternative crossing.	Delay in the design, consultation, additional design costs	Liaise with necessary stakeholders, set up Board to manage the projects, ensure proposals agreed in advance with Cabinet
Cost of scheme increases significantly, increasing budgetary requirements	Scheme cost exceeds funding envelope	Reduce scope of scheme and/or progress lower cost option
Cost of scheme increases significantly, increasing Present Value of Costs in economic analysis	Benefit to Cost Ratio reduces, lowering value for money of scheme	Review scope of scheme to remove elements with lower value for money
Manufacturer cannot be engaged for the works, lack of supply chain or competition	Increased cost or noncompliance with procurement regulations	Potential soft market testing. Consider alternative designs

Project does not receive planning permission or delay in approval process	Delay in the design and programme, potential additional cost.	Assumed the Bridge replacement will not require planning permission. Early engagement with planning authority
Additional land required outside adopted highway	Delay due to need for Compulsory Purchase Order & Public Inquiry	Early engagement with landowners and negotiate. Allow time for land acquisition
Presence of birds or protected species.	Delay, potential to require license and translocation or mitigation	Carry out ecology surveys in 2022 in order to identify potential issues.
Historic England, Environment Agency, Natural England, or other statutory body raise an objection	Delay to design process. Potential need for Secretary of State decisions	Early engagement in design process. Design workshops. Recognition of regional/national importance of bridges in term of natural and historic environment
Traffic Management required proves to be more complicated than envisaged during scheme preparation. Political/public pressure during construction	Additional cost / delay to scheme if night working is required	Early engagement with Street works co-ordinator to fully understand constraints and ensure sufficient information contained within the tender package. Early TM plan. Tender to allow for high quality public engagement
Road safety audit identifies issues during design process that require design changes	Alterations during design impact on the programme. Cost increase due to changes in design	Early engagement with road safety audit team so that there are no surprises at audit. Allow sufficient time and resources to make any necessary modifications to design
Unforeseen ground conditions – i.e. contaminated ground conditions or poor ground conditions	Possible increase in programme duration and risk to achieving the client's affordability cap.	Early Geotechnical Investigation in design process. Consider alternative design options where appropriate.
Potential for flooding during construction	Programme delay, additional costs	Risk of flooding to be identified and mitigated in design where possible, risk to be passed to the Contractor

Table 5-3: Summary of scheme Risk Register

5.4. Budget and Funding

5.4.1. Table 5-4 identifies the sources of funding for this project.

Funding Source	**Refurbishment**	**Replacement**
Local Contribution – DCC (Secured)	£4m (20%)	£6m (20%)
DfT Major Road Network Renewals Main Contribution	£16m (80%)	£25m (80%)
Total	**£20m**	**£31m**

Table 5-4: Scheme Funding Sources

5.4.2. The funding profile sets out details of the proposed level of local contribution, and the funding required from the DfT to provide funding to

deliver the scheme. The local contribution as set out amounts to 20% of the overall scheme costs.

5.4.3. Of the local contribution, of potentially £6m has been allocated by DCC as a secured local contribution. The funding breakdown will be confirmed at OBC stage.

5.5. Scheme Funding Profile and Affordability

5.5.1. Progression of the scheme to the Outline Business Case stage requires a shared contribution from both Devon County Council and the DfT (from the MRN Fund) of £0.75million amounting to a total of £1.5m.

	22/23	23/24	Total
DCC Contribution	£0.25m	£0.5m	**£0.75m**
DFT Contribution	£0.25m	£0.5m	**£0.75m**
Total	**£0.5m**	**£1.0m**	**£1.5m**

Table 5-5: Spend Profile for progression to Outline Business Case.

5.5.2. The figures provided in the Table 4.4 above are based on the following key milestones in the delivery of the projects:

- Submission of SOBC – November 2021
- Approval of the SOBC – June 2022
- Development of improvements and submission of the Outline Business Case – December 2023
- Issue of tender – January 2025
- Submit Final Business Case – December 2025
- Award Contract – January 2026
- Commence Construction – July 2026

5.5.3. The scale of the works required to refurbish or replace the two bridges and to provide the additional improvements to Bridge Road are outside of the affordability of the County Council and its current Highway Structural Maintenance Capital allocation. The scheme costs are in the order of £2030m and the average annual capital funding for major bridge repairs and replacement works are £6.5m. If the Council contributed all of its bridge maintenance allocation for 6 years on this single project, the condition of the remaining 3,500 bridges that Devon maintains would deteriorate significantly. The scale of the investment identified cannot be funded from other sources.

5.5.4. The total maintenance costs for the 60-year period from 2025 are forecast to be £34m, £27m and £16m under the Do Minimum, Refurbishment and Replacement options, respectively. Thus the Do Minimum option would consume nearly 10% of the County Council's bridge maintenance allocation over this period, whereas the Replacement option would require less than 5% of this budget. The Replacement option would therefore be the most affordable long-term option for the County Council, despite the higher initial costs.

5.6. Summary

5.6.1. This chapter has demonstrated that there is a sound financial understanding of the options for proceeding with a Scheme and has set out a case to develop the proposals to the Outline Business Case.

5.6.2. The estimated outturn cost for the scheme is likely to be in the range £2030m. These costs will be refined and reviewed as part of the OBC.

5.6.3. The project risks have been identified and are managed through a project risk register. This will be developed into a Quantified Risk Register for the Outline Business Case stage.

5.6.4. The level of funding required is in excess of the Council's highway structural maintenance capital funding and diverting this funding would have a significant detrimental effect on the Council's bridge assets. Consequently, for the scheme to be certain of achieving the objectives outlined in the Strategic Case (Section 2.5), including maintaining 4 lanes over the Bridge Road bridges, a DFT contribution from the MRN Fund is required.

6. The Management Case

6.1. Introduction

6.1.1. To date, Devon County Council (DCC) has completed the Pre-Strategic Outline Business Case. Upon approval of this SOBC, DCC would undertake an Outline Business Case (OBC) to determine the preferred option.

6.1.2. This Chapter addresses the management case for the high-level options showing how the proposals are deliverable. It sets out how delivery would be planned; the governance structure; strategy for risk management and stakeholder and communications management

6.2. Evidence of Similar Projects

6.2.1. DCC has significant experience of delivering major highway infrastructure projects. The Full Business Case for the A361/A39 North Devon Link Road (NDLR) South Molton to Bideford Scheme was approved by the Department for Transport in November 2020. Other recent major projects include Barnstaple Western Bypass (BWB) and South Devon Link Road (SDLR), both of which were delivered within budget. DCC has also significant experience of delivering smaller projects, typical of which is the new junction for Tiverton Eastern Urban Extension.

<u>A361/A39 North Devon Link Road (NDLR) South Molton to Bideford</u>

6.2.2. The NDLR scheme was a £68m scheme comprising of 7.7km of widening to WS2+1 between South Molton and Barnstaple, along with 8 junction improvements between South Molton and Bideford. This included 3 additional bridges and an underpass to reduce severance for walking and cycling trips.

6.2.3. DCC gained £2.7m from the DfT towards the development of the Business Cases along with a further £57.6m towards construction of the scheme. DCC also contributed £3.2m towards construction with the remaining £4.1m being acquired form developer contributions.

6.2.4. The scheme includes planting 50,00 trees and environmental offsetting to minimise the impacts and provide net environmental benefits. The scheme was strongly supported by both the general public and local politicians.

6.2.5. The strategic aims of the scheme were to:

- **Enhance** the **economic prosperity** and **competitiveness** of **northern Devon**, both nationally and in line with other areas of Devon; and
- Support **housing** and **employment development** opportunities in northern Devon.

6.2.6. This would be achieved by:

- **Reducing journey times** for commercial and non-commercial journey purposes between: ○ Barnstaple and Bideford ○ M5 and Barnstaple
- **Improve highway safety** through reducing the rate of fatal and serious accidents on the NDLR.
- **Improve network resilience** through reducing the effects of accidents and incidents on the NDLR.
- **Minimising adverse social and environmental impacts** and, where possible, achieving **net environmental benefits**
- Where possible, **reducing the severance** caused to **pedestrians** and **cyclists** by the existing NDLR and mitigating against any increase in severance that may occur as the above objectives are achieved.

<u>Barnstaple Western Bypass (BWB)</u>

6.2.7. The BWB was a £42 million project comprising 3.7km of single two-lane carriageway with associated footways/cycleways, a 409m long five-span bridge over the River Taw, a 60m long three span viaduct and several underpasses, culverts, and mammal tunnels. The bypass included the construction of three new junctions, the most significant of which is an elevated signal-controlled roundabout.

6.2.8. DCC spent £2 million getting the BWB through the design, planning, and public inquiry process. In a cost-sharing agreement with the DfT, DCC contributed a further £2 million, with DfT funding the remaining costs of £38 million.

6.2.9. Uniquely, in an era of environmental awareness, construction of the BWB achieved almost total support from both the general public and local politicians and it was this support which ensured that the project retained its place as the number one priority major road improvement scheme in Devon.

6.2.10. It was designed to reduce, as far as possible, any damage to the environment including:

- Prohibiting of construction traffic through the town centre;
- Minimising noise levels by installing environmental barriers;
- Protecting the Taw Estuary Site of Special Scientific Interest (SSSI);
- Implementing protection measures to reduce the impact of the bypass on protected species;
- Habitat creation; and
- Ecological Monitoring.

6.2.11. The management and delivery of this project was undertaken by DCC as the lead authority and tendered as a Design and Build project based on the Highways Agency Conditions of Contract.

South Devon Link Road (SDLR)

6.2.12. DCC formed a partnership with Torbay Council to deliver the SDLR. This was a £110 million project to provide a 5.5km dual carriageway between Newton Abbot and Torbay bypassing the former A380. The DfT paid £76 million towards the project. The balance was shared equally between Torbay Council and DCC, with Teignbridge District Council making a £500k contribution.

6.2.13. The management and delivery of this project was undertaken by DCC as the lead authority using PRINCE2[10] methodology.

6.2.14. The contract for the main works was Design and Build using NEC3 Option A: Lump Sum Priced Contract with Activity Schedule.

6.2.15. The Conditions of Contract contained incentivisation clauses, in particular:

- A 'value engineering' clause which incentivised the contractor to look for innovation and savings in outturn cost through acceptable revisions to the Employer's Requirements; and
- A 'statutory undertaker's management' clause which incentivised the contractor to seek savings in the quoted statutory undertaker C4 estimates.

6.2.16. Construction of the SDLR started in October 2012 and was completed in December 2015.

6.2.17. The improved access to Torbay and South Devon is expected to bring lasting economic benefits, leading to the creation of nearly 8,000 jobs in South Devon, with around 3,500 of these in Torbay. It was predicted that the new road would remove 95% of traffic away from Kingskerswell, restoring and revitalising the village.

A361 North Devon Link Road – new junction for the Tiverton Eastern Urban Extension (Tiverton EUE)

6.2.18. A new junction on the A361 has been built to provide access to the Tiverton Eastern Urban Extension residential development.

6.2.19. Construction of Tiverton EUE started in September 2017 and is split into several phases. Phase one, which was the construction of the £5.7 million westbound left-in left-out junction, including on-slip and off-slip roads, was completed in Summer 2018.

6.2.20. The Scheme was funded through a combination of Challenge Funding, Heart of the South West Local Enterprise Partnership Funding, and developer contributions.

6.2.21. The management and delivery of this project was undertaken by DCC as the lead authority using the Council's Corporate Project Management methodology.

[10] PRINCE2 (an acronym for PRojects IN Controlled Environments) is a de facto process-based method for effective project management

6.2.22. The contract type was Generation 3 Civil Engineering, Highways and Transportation Infrastructure Works Framework Two 2016 to 2020 NEC 3 Engineering and Construction Contract (April 2013) Option B: Priced contract with bill of quantities.

Lessons Learnt

6.2.23. Opportunities would be taken, wherever possible, to improve delivery processes by acting upon the lessons learnt from recent schemes. For example:

- Maintaining good stakeholder consultation and engagement, including setting up and maintaining the Scheme website;
- Maintaining close links and communications with local communities and businesses in the area to ensure that they are kept informed and can raise any questions or points of concern. On the SDLR and NDLR community liaison groups were formed which proved invaluable in getting feedback and opinion from residents, as well as enabling information to be given to the wider community.
- Value management through environment, engineering, and stakeholder engagement at an early stage in the project;
- Encourage value engineering by incentivising the Contractor to look for innovation and savings in outturn cost; and
- DCC officers would undertake the contract roles of Project Manager and Supervisor. A team would be site based during the construction phase to maximise opportunities for collaborative working with the Contractor.
- Use DCC funds at risk to forward fund advance works such as utility diversions, land purchase and fulfil planning obligations.

6.3. Programme/Project Dependencies

6.3.1. If funding for the preferred option does not come forward the two bridges over the canal will be maintained as much as possible but without a significant improvement in the near future, the northbound Bascule Bridge will need to be closed to one lane and an HGV ban implemented in the next 20-30 years.

6.3.2. DCC only has limited budget to maintain all the bridges across the County and a significant proportion of this would be required to maintain the structures along Bridge Road if no investment is provided. This will result in other less significant bridges deteriorating and some smaller ones may have to be closed in future.

6.4. Governance, Organisational Structure & Roles

6.4.1. DCC has set up the project governance structure as identified in Figure 6-1, and Figure 6-2 below. To ensure that key partners are fully involved, and that effective decision making is streamlined the following has been considered:

- The Project Delivery Board includes senior officers to make decisions on the project as it develops
- The Project Delivery Team provide all the necessary information to the Delivery Board to enable them to make decisions

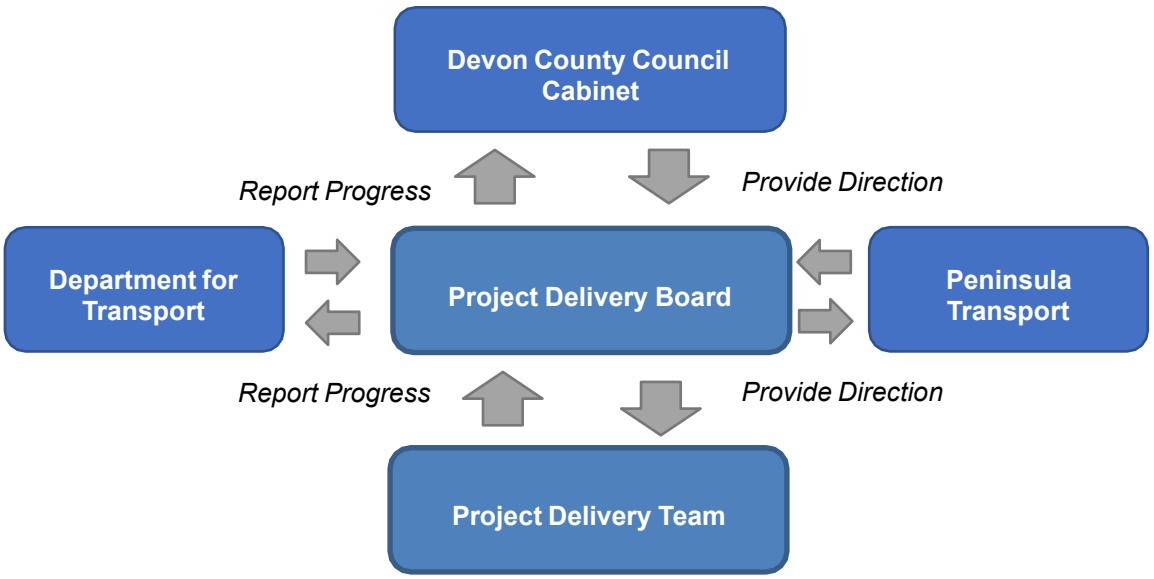

Figure 6-1: Project governance structure

Cabinet

6.4.2. The County Council's Cabinet is responsible for most day-to-day decisions and has responsibility for the delivery of the council functions in its statutory role as:

- Education Authority
- Social Services Authority
- Highway Authority
- County Planning Authority
- Waste Disposal Authority
- Public Transport Authority
- Traffic authority

6.4.3. It is made up of a Leader and no more than nine other members (Cabinet Members), all appointed by the County Council from amongst its membership.

6.4.4. The Cabinet is responsible for the development and approval of any policy, strategy, operating procedure, or criteria and/or plan of the Council within and to deliver the budget and policy framework approved by the County Council.

Project Delivery Board and Project Delivery Team

6.4.5. Figure 6-2 below illustrates the inter-relationship between the parties to the Project Delivery Board and the Project Delivery Team

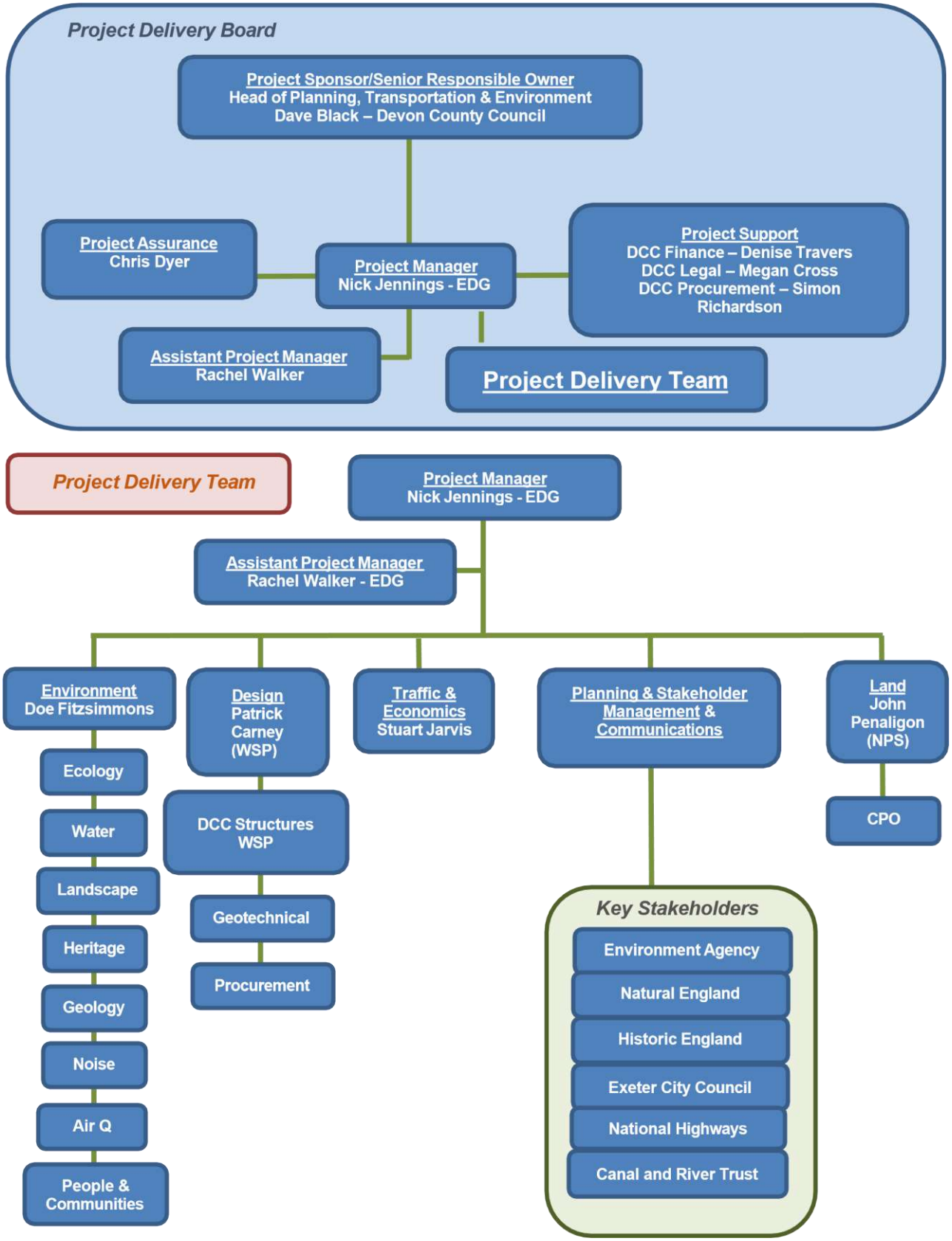

Figure 6-2: Inter-relationship between the parties to the Project Delivery Board and the Project Delivery Team

Project Delivery Board

6.4.6. The Project Delivery Board provides the strategic platform for key decision making and guidance on exceptional issues to the Delivery Team.

6.4.7. The Project Delivery Board is responsible for managing the project and identifying work streams for each of the disciplines. Its objectives are:

- Scope the direction of work required under each discipline;
- Agree and monitor a programme for delivery of the Project;
- Ensure financial control of budgets;
- Review the risk register/issue log and take corrective action as necessary.

6.4.8. The Project Delivery Board meets monthly and receives updates from the Project Team members on progress and current issues and risks to the project.

Project Delivery Team

6.4.9. The Project Delivery Team is responsible for the following:

- Delivering the work packages assigned by the Project Delivery Board;
- Preparing scoping briefs for each work package;
- Procuring, liaising, and monitoring work packages from third parties;
- Programming delivery of works in accordance with the overall project plan;
- Providing and monitoring expenditure within own discipline;
- Coordinating and sharing details to aid others workflow; and
- Informing the Project Manager, via the Risk Register, of project and design risks.

6.4.10. Project Delivery Team meetings would be held at a frequency determined by the Project Manager and throughout the programme.

6.4.11. The key roles within DCC's governance structure are as follows:

Project Sponsor

6.4.12. The Project Sponsor is the Head of Planning, Transportation and Environment. The Project Sponsor has overall accountability for the success of the project and would ensure it meets the outcomes defined in the business case. The project sponsor would also represent the needs of DCC. Specific roles include:

- Chairing both the Project Steering and Project Delivery Boards;
- Making sure there is a balance between user and supplier interest;
- Constantly assessing business benefits and value for money;
- Approving any significant changes to the project;
- Approving level of risks to the project;
- Recommending future action on the project to the Project Steering Board and DCC Cabinet; and
- Authorising project closure.

6.4.13. The Project Sponsor has delegated authority from the DCC's Cabinet to allow effective management and delivery of the project, normally only

returning to the Cabinet for key decisions or approvals related to DCC's Financial Regulations.

Project Manager

6.4.14. The Project Manager manages all aspects of the delivery of the programme, including the progress of activities within the Council and its partners and acts as the primary contact between the Project Delivery Board and the Delivery Team. The Project Manager is responsible for:

- Programme management and reporting to the Project Delivery Board;
- Financial management and reporting to the Project Delivery Board;
- Communications and liaison between stakeholders, including the Key Stakeholders, organisations, landowners, and general public;
- Supplying regular progress reports to the Project Delivery Board;
- Management of the interface between all disciplines;
- Ownership of the risk register; and
- Ownership of the issue log.

Delivery Team

6.4.15. The Delivery Team comprises staff representing each of the work packages or technical disciplines.

6.5. Programme/Project Plan

6.5.1. The Project Manager has ownership of the overall project plan. Team plans are made against the project plan and escalated to the Project Manager as soon as estimates fall outside agreed tolerances. Critical path activities have been carefully examined to ensure timescales are based on both recent experience and an examination at the risk workshops.

6.5.2. On approval of the SOBC a detailed project plan will be provided with the critical path outlined in red. It will show dates for each of the milestones and identifies those areas where key decision points are to be taken by DCC's Cabinet. The project plan will be developed to maximise the opportunities for parallel working in order to minimise the risk of individual activities impacting on the overall project plan.

6.5.3. Table 6-1 below provides details of future milestones for the replacement option. These milestones are based on a presumption that approval of this SOBC is made in Summer 2022.

Milestone	**Start Date**
Commence Outline Business Case	Summer 2022
Submit Outline Business Case to DfT	Winter 2023/24
Submit planning application	Summer 2024
Commence construction procurement	Summer 2025
Submission of Full Business Case	Winter 2025/26
Award Contract	Spring 2026
Commence Works	Summer 2026

Scheme Open	Autumn 2027

Table 6-1: Schedule of key milestones for the replacement option

6.6. Assurance & Approvals Plan

Project Assurance

6.6.1. Project assurance is carried out by the Head of Built Environment, who reviews and agrees all project procedures and processes. Project Assurance is split between technical and management level assurance.

6.6.2. The technical assurance is necessary to ensure the project makes best use of its resources to reach the level of quality expected by the Project Delivery Board, using specified service guidelines.

6.6.3. Management assurance is responsible for ensuring the project is managed to the appropriate standards.

6.6.4. In addition, DCC would follow PRINCE2 methodology, and a series of Gateway Reviews (peer reviews) would be carried out at defined points. These reviews would provide assurance that:

- Suitable skills and experience are deployed on the project;
- All stakeholders understand the project status and issues;
- There is assurance that the project can progress to the next phase;
- Time and cost targets have a realistic basis;
- Lessons are learned; and
- The project team are gaining input from appropriate stakeholders.

6.7. Communications and Stakeholder Management

6.7.1. DCC is responsible for public relations, communications, and stakeholder engagement. Methods of communications are through a combination of meetings, email, and value management workshops. Wider public engagement will begin at OBC stage as carrying these out now will only raise expectations prematurely.

6.7.2. A Stakeholder Management and Communications Plan will be produced to meet the communications needs of all stakeholders and consultees, to ensure that stakeholders are involved, managed and that their feedback is considered throughout the lifecycle of the project. The Plan will detail the Key Stakeholders and Statutory Consultees and how they would be engaged throughout the life of the project.

Public Consultations

6.7.3. Public consultations have not been held at the SOBC stage but will take place at OBC stage to consult on the options and detailed proposals.

6.7.4. The public consultations will include an online survey, leaflet, and public exhibitions.

Key Stakeholders

6.7.5. Consultations with the Key Stakeholders include meeting with individuals and seeking comment on the suggested scheme.

Future Engagement

6.7.6. As detailed in section 6.7.3 above, public consultations will take place at OBC stage.

6.7.7. Key Stakeholders will be further engaged through attending value management workshops, which will be held at OBC stage.

6.7.8. A scheme website will be produced at OBC stage on the DCC news centre website to keep interested parties updated on project progress, in particular key milestones.

6.8. Programme/Project Reporting

6.8.1. The Project Manager is responsible for co-ordinating the delivery of the Scheme elements, identifying key interdependencies and ensuring that the overall project is delivered to programme, quality, and budget.

6.8.2. Reporting is in accordance with PRINCE2 methodology and is via:

- **Project Delivery Board Report** (every 4 weeks) – the Project Manager would produce a detailed Project Delivery Board Report that summarises progress across all work streams, key risks and issues and programme costs to date. The report also provides details of the upcoming deliverables, as well as key decisions and actions to be made by either the Delivery Teams or to be escalated to the Project Steering Board.

6.9. Risk Management Strategy

6.9.1. A Risk Management Plan would be produced at OBC stage to identify and manage risks and opportunities. The plan would explain how risks are managed, monitored and reported on the project. The main project risks are identified in the Financial Case in Table 5-3.

6.9.2. The Risk Register is owned by the Project Manager. It provides a tabulated summary of the risks and opportunities that may affect the project, their categories, impact in terms of cost and time, and actions that are proposed to mitigate them. Where necessary, it identifies the need for an individual risk action plan. This is to demonstrate that risks are being actively managed and mitigating actions are being progressed. It is regularly updated and reviewed at the Project Board meetings, monthly at the Project Delivery Team progress meetings and risk review meetings and workshops.

6.9.3. Risk workshops are convened during the project development, specifically at key milestones prior to the project progressing to the next stage of delivery, to ensure the register encompasses all residual risks.

6.9.4. The date of the risk is the date the risk is reviewed. Expired risks are removed from the register and logged in a removed risk register with their original numbering system and latest review date.

6.9.5. Risks are grouped under the following categories:

- Management (MG)
- Consultation/Stakeholder (CS)
- Procurement/Tender (PR)
- Planning/Statutory Process (PS) • Landowners (LD)

- Environmental Assessment (EA)
- Traffic and Economics (TE)
- Engineering/Design (EG)
- Construction (CN)

6.9.6. The Scheme is subject to the normal engineering and assessment risks.

6.10. Summary

6.10.1. This chapter has demonstrated that there is a clear Management Case to deliver the Bridge Road improvement scheme through to the Outline Business Case. Planning the delivery of the Scheme; the governance structure; strategy for risk management; and stakeholder and communications management have been explained.