

Structures Fund template

This template is for local authorities proposing schemes for investment from the Structures Fund. Before completing the template, local authorities should read the [Structures Fund guidance and associated documents](#). Alongside the template, local authorities must also complete the economic toolkit for the proposed scheme.

Part 1 – Details of the Structure Being Promoted

1.1 Scheme Information

This section captures the key information on the scheme that is being proposed to the Structures Fund.

a) Local highway authority (LHA) name: South Gloucestershire Council

b) Scheme / structure name and LHA bridges number: A4174 Avon Valley Bridge

c) Location (OS Grid Reference) of the scheme/structure (to identify location on map):

Easting: 364396

Northing: 170185

d) Name of Project Manager: Shaun Wilson

e) Email address: shaun.wilson@southglos.gov.uk

f) Phone number: 01454 86 4108

g) What type of eligible structure would your scheme address? (select all that apply)

☒	Bridges	☐	Cutting/embankment
☐	Fly-overs	☐	Tunnels
☐	Retaining walls	☐	Local highway repairs due to landslip
☐	Culverts	☐	Local highway repairs due to collapse
☐	Other structure type (please specify): Click or tap here to enter text.		

h) Provide an overview of the structure proposed for intervention and the nature of the problem. (Maximum 250 words)

This could include, for example, the age, construction type, feature carried and feature crossed of the relevant structure and if the structure has listed heritage status.

The bridge was constructed in 1994, with individual spans of 51m, 71m and 52m. The structure is located in the parishes of Hanham Abbots and Keynsham. The structure consists of a three-span composite deck which carries four lanes of the A4174 Avon Ring Road dual carriageway and foot/cycleway both in north and south directions, over the River Avon. The deck consists of an insitu reinforced concrete deck bearing on weathering steel plate girders. The deck is constructed of two

separate halves with an 80mm wide gap between them. Each half deck comprises 4No. girders supporting it, the girders are connected to one another with steel cross head girders over the piers and steel diagonal cross bracing. The steel main girders rest on concrete abutment diaphragms. There are 1400mm high aluminium P4 pedestrian parapets located on the outside edge of both decks with a P2/113kph vehicle parapet, clad with acoustic panels located between the footways and carriageways. The bridge has experienced multiple bearing failures since its opening in 1993/94. The eastmost bearing has a fracture 15mm wide on the north side and 30mm wide on the south. Above the bearing shelf to the north pitting and corrosion is present in most bolts. Above the bearing shelf to the south pitting and corrosion is present in most bolts. The southeast central bearing has experienced heavy corrosion which has caused a complete loss of section throughout the majority of the metal components.

i) Provide an overview of the proposed intervention and how the works will address the problem.

This should set out the method of resolving the issue that is to be addressed.

The bridge has experienced multiple failures in its supporting bearings since its opening in 1993/4, with the most recent failure reported in 2023. South Gloucestershire Council has already engaged Ramboll to investigate the cause of these failures and recommend remediation actions. Ramboll's investigation, initiated in September 2025, utilized information from documentation provided by South Gloucestershire Council, on-site inspections, publicly available information, industry specialist interviews, and analytical work including calculations and 3D modelling. The Key findings:

- **Bearing Configuration:** The fixed spherical bearings on the piers being located adjacent to one another were likely a significant factor in bearing failures. Replacing all pier fixed bearings with the outer bearings as guided is recommend. It may be a requirement to tie the upper area of pairs of piers together.
- **Material and Design Analysis:** Eccentric loading in the aluminium base plates accelerated failure. It is not confirmed that the casting procedure in itself is fundamentally flawed.
- **Structural Analysis:** Unexpected movements of the piers may have caused additional axial loads, contributing to bearing overstress.
- **Recommended Actions:** Proceed with the replacement design project, conduct an inspection to take detailed geometries to assist with the replacement process and assess for any further damages to the NE bearing. Replace all pier and abutment bearings. We have identified four potential bearing configurations and further analysis is required to finalize the optimal solution.

j) Is any part of the relevant structure owned by a third-party (e.g. the Canal and River Trust or Network Rail)?

This is a boundary structure jointly owned by South Gloucestershire Council (SGC) and Bath & North East Somerset Council (BANES). SGC is independently delivering this project as the lead authority. SGC has the support of BANES to deliver this project.

k) If the structure is on a diversion route for the SRN provide a clear description/commentary.
Not applicable.

1.2 Understanding the Condition of the Structure

Please set out the current condition of the structure in this section.

- a) Provide evidence that the relevant structure is in need of repair either now or by the end of the 2029/30 financial year. (Maximum 250 words)

Provide details of the process used for determining whether this structure is in need of repair and the timescale in which the repair is needed..

The structure has a BCI critical score of 58%. The previous principle inspection has identified multiple defects with the bridge bearings. The bridge has experienced multiple bearing failures since its opening in 1993/94. The eastmost bearing has a fracture 15mm wide on the north side and 30mm wide on the south. Above the bearing shelf to the north pitting and corrosion is present in most bolts. Above the bearing shelf to the south pitting and corrosion is present in most bolts. The southeast central bearing has experienced heavy corrosion which has caused a complete loss of section throughout the majority of the metal components. The fixed spherical bearings on the piers being located adjacent to one another were likely a significant factor in bearing failures. Replacing all pier fixed bearings with the outer bearings as guided is recommend. Structure overall fair but key bearing issues: 1) Span 1 NE pier bearing fractured (15–30 mm). 2) Span 3 SE central abutment bearing heavily corroded with section loss. 3) Widespread bolt corrosion above bearing shelves. There are significant concerns with a short-term course of action that involves doing nothing by 2030. The damage in the bearing likely accelerates to a point that the stresses and movements transfer to external connections and the concrete pier, as well as overloading to the adjacent bearing. Eventually serious damage may occur in which the bridge deck is unsupported. A similar but less severe damage mechanism is likely also to occur to the South abutment due to the failed pot bearing. It is generally accepted that this option is not viable.

- b) Please indicate if the relevant structure is **currently** subject to traffic restriction as a result of its condition.

Reference should be made to closures, weight limits, width restriction, limits on use.

No restrictions are currently in place pending review of an inspection that is planned for July 2026.

- c) Please indicate if the relevant structure is **not currently** but **by the end of the 2029/2030 Financial Year is expected** to be subject to traffic restriction as a result of its condition.

Reference should be made to closures, weight limits, width restriction, limits on use that are anticipated.

If no intervention is made by the end of the 2029/2030 financial year then it is foreseeable that in each direction there will be a need for a lane closure accompanied with a 40mph speed restriction and an 18T weight limit. Enabling conversations with Avon & Somerset Police have already begun on enforcement of such measures to ensure continuing safety of the structure.

- d) If the answer to c) above is yes, then please estimate the likelihood of this occurring: (select box that applies):

- ☐ Low confidence in restriction occurring
☐ Medium confidence in restriction occurring
☒ High confidence in restriction occurring

- e) Please indicate if the relevant structure is **currently** subject to other temporary measures to manage risk.

Reference should be made to measures such as propping, etc.

No other physical temporary measures are currently in place.

- f) Please indicate if the relevant structure is **not currently** but **expected by the end of the 2029/2030 Financial Year** to be subject to temporary measures to manage risk.

Reference should be made to measures such as propping, etc. that is anticipated.

No other physical temporary measures are currently foreseen.

- g) If the answer to f) above is yes, then estimate the likelihood of this occurring:

- ☐ Low confidence in temporary measures being required
- ☐ Medium confidence in temporary measures being required
- ☐ High confidence in temporary measures being required

- h) If available and applicable, what is the current Bridge Condition Indicator score (average and critical) of the relevant structure?

BCI Crit: 58

BCI Ave: 89

- i) Which elements of the structure are negatively contributing to the BCI scores and how has this changed in the last 5 years.

Reference should be made to recent inspections and highlight the type and extent of the defects.

The eastmost bearing has a fracture 15mm wide on the north side and 30mm wide on the south. Above the bearing shelf to the north pitting and corrosion is present in most bolts. Above the bearing shelf to the south pitting and corrosion is present in most bolts. The southeast central bearing has experienced heavy corrosion which has caused a complete loss of section throughout the majority of the metal components.

- j) Submit, alongside this submission template, the most recent, dated copy of the structural inspection proforma or a report summarising this.

Part 2 – Understanding the Case for Investment

2.1 Strategic Case

This section of the template captures the wider need for the scheme and how it aligns to the objectives of the Structures Fund.

a) Provide a summary of how this scheme contributes to the Government's economic growth mission (Maximum 250 words)

Describe how the proposal will support economic growth (e.g. by creating jobs, attracting investment, improving productivity, or enabling new business activity) and set out the mechanisms through which these benefits will be delivered.

- The scheme directly supports the Government's economic growth mission, as set out in the Plan for Change (2024), by improving the performance, reliability and resilience of strategic local transport infrastructure.
- The scheme will protect and enhance business productivity by maintaining full capacity on the A4174 ring road, a critical regional route for freight and commuting. Avoiding weight restrictions or closures on Avon Bridge ensures reliable journey times, reduces congestion and prevents costly disruption to supply chains, labour markets and service access. This reliability is essential for business efficiency and competitiveness.
- The scheme will enable and unlock regional growth, particularly in the Bristol East Fringe. The A4174 provides a key connection between major housing growth areas (including Emersons Green and Lyde Green), strategic employment sites (including the Bristol & Bath Science Park, University of West of England and MoD), western innovation arc and the wider motorway network. Maintaining network capacity supports the delivery of planned housing and employment growth not only in South Gloucestershire but also Bath and North East Somerset, helping to realise investment and job creation aligned with national objectives.
- The scheme contributes to raising productivity and supporting labour market accessibility. By maintaining connectivity between residential areas and employment centres, it reduces travel time variability and supports access to jobs and active travel routes carried by the corridor.
- Finally, the scheme represents sound economic stewardship of public assets, intervening early to prevent more costly structural failure and disruption, thereby protecting long-term economic value.

b) Explain how the scheme supports other Government policy objectives. (Maximum 250 words)

Provide a summary of the scheme's alignment to UK Government policy objectives as represented by the remaining missions.

- The scheme supports the Government's wider policy objectives in the Plan for Change (2024).
- It contributes to building an NHS fit for the future, The A4174, including Avon Bridge, provides a critical route linking large parts of South Gloucestershire, Bristol and Bath to major hospitals including Southmead, BRI and RUH. These facilities operate as key centres for emergency care, serving a wide catchment across the West of England. Maintaining full highway capacity on this corridor is essential to ensuring reliable ambulance response times, particularly during peak periods when congestion is acute. Any reduction in highway capacity, such as weight restrictions or closure, would result in extended journey times, increased congestion on alternative routes, and reduced resilience, directly affecting the ability of emergency services

to meet response targets and compromising access to urgent care. By maintaining a dependable transport link to these hospitals, the scheme contributes to improved health outcomes and supports the NHS in delivering timely care.

- It supports safer streets by addressing deterioration before it presents a safety risk. Maintaining the bridge avoids the need for diversion onto less suitable and safe routes and ensures the network continues to operate as designed.
- The scheme helps break down barriers to opportunity by preserving connectivity between major housing areas and employment. By maintaining active travel links and highway capacity, the scheme ensures access to jobs, education and services, particularly for those without a car.
- By extending the life of existing infrastructure the project preserves embodied carbon, aligning with net zero objectives.

c) Explain why this scheme is a local priority. (Maximum 250 words)

Provide a summary of the scheme's alignment to local priorities and policies.

- The scheme is a local priority as it underpins the delivery of the South Gloucestershire Local Plan spatial strategy and the West of England Combined Authority (WECA) Growth Strategy, which together identify the East Fringe as a key focus for regionally significant growth.
- The Local Plan directs a substantial proportion of housing and employment growth to the North and East Fringe of Bristol, reflecting environmental constraints elsewhere, including Green Belt and flood risk, and prioritises locations with the greatest potential for sustainable, infrastructure-led development.
- This local strategy aligns with the WECA Growth Strategy, which identifies a network of regionally significant growth zones, including the West Innovation Arc in South Gloucestershire and the Bristol to Bath Corridor within the Central Bristol and Bath Growth Zone. These areas are expected to deliver nationally significant levels of housing, employment and innovation-led growth over the next decade.
- The A4174 ring road is a critical corridor linking these growth zones, enabling connectivity between major employment locations, innovation assets, and new residential communities. It supports access to key sites including the West Innovation Arc (with major investment at Brabazon and the Science Park) and the Bristol–Bath corridor, with significant new homes and jobs.
- Maintaining the capacity and resilience of Avon Bridge is therefore essential not only to local connectivity but to the functioning of the wider regional growth network. Without intervention, reduced capacity or closures would sever this strategic link, undermining the coordinated delivery of housing, employment growth and investment across the West of England.

d) Summarise engagement with local stakeholders, any joint-owners, levels of support for the scheme and explain any controversial elements. (Maximum 250 words).

Summarise support from relevant stakeholders such as the Local MP, Elected Members relevant combined authorities, National Highways, Network Rail, neighbouring LHAs, or important utility providers.

- ‘Well managed highway infrastructure’ advises that maintenance on structures that straddle authority boundaries necessitates an especially high level of consultation, communication and joint planning of operations between the authorities

- Avon Bridge is on the boundary between Bath and NE Somerset. The proposed scheme has been discussed in person with BANES's bridge manager who is in support of the scheme.
 - Discussions are imminent with the Environment Agency due to the likely need for temporary works within the corridor of the River Avon.
 - The West of England Combined Authority, whom members are South Gloucestershire Council, Bristol City Council and Bath & North East Somerset Council have been made aware of the scheme and a letter of support is enclosed representing the MCA and its members.
- e) Provide a summary of the local approach to prioritisation of structural maintenance work. (Maximum 250 words)

Set out any weighting, scoring or other methodology which explains why this scheme has not been subject to work prior to this point.

- The highway infrastructure including structures is managed in accordance with 'Well-Managed Highway Infrastructure 2016'. Condition is assessed and reviewed via a regular programme of General and Principal Inspections and BCI scores are updated via the AMX asset management system.
 - Fitness for purpose is the standard against which risk and need for maintenance is judged. Risk management and acceptability is assessed and reviewed in line with approved Corporate guidance from South Gloucestershire Council.
 - Risk based approach which prioritises critical infrastructure - asset where failure results in significant impact to the local and potentially national economy. Critical infrastructure is prioritised in terms of maintenance,
 - The resilient network receives priority maintenance. Decision on resilience not just based on road category but includes key business and interest groups.
 - Risks are weighed with consideration being given to route capacity, deterioration of the structure and scour risk,
 - Risk based approach also is applied to the BCI / BCI crit scores, also risk assessed and combined with route importance to evaluate priority for maintenance,
 - Risk based approach: significant defects may lead to structural assessment, leading to weight limits / lane closures / bridge closures, on a resilient network it is likely that repair of such defects will be prioritised in order to maintain fitness for purpose for these critical routes.
 - Several works programmes are maintained, short and 5 year and 10 year. These are reviewed annually, with schemes being reprioritised based on the most up to date condition information, and changing future demand, by the Bridge Manager.
- f) Provide a summary of why this scheme has been selected for this application to the Structures Fund. (Maximum 250 words)

Provide a brief summary of the specific need for this structure is advanced to the Structures Fund.

- The A4174 Avon Valley Bridge is a strategically critical asset within the West of England transport network, forming a key arterial link on the Avon Ring Road. It provides essential connectivity between South Gloucestershire, Bristol, and Bath, enabling the efficient movement of high volumes of commuter, business, and freight traffic. The bridge underpins regional economic activity by supporting reliable journey times for goods and services, while also linking communities to employment, education, and healthcare opportunities across the sub-region. Any disruption to this structure would have significant network-wide impacts,

diverting traffic onto less suitable local routes, increasing congestion, and affecting the resilience of the wider highway network.

- This scheme has been prioritised because it has a BCI Crit score of 58%. The route is part of the resilient network and the consequences of not delivering this scheme would have a significant negative effect on both wider Government and local missions for growth and connectivity.
- The Options Feasibility Study for the scheme is already complete and site investigations are already underway. It is planned that the scheme should be complete by the end of March 2029.
- The current capital budget for SGC's Structures maintenance is £1.6m (26/27 allocation). In order to address the defects on Avon Valley Bridge the Council would need to neglect all other structural maintenance for 3 years.
- Other funding streams have already been explored but our understanding is the draft Memorandum of Understanding between WECA and DfT around how TCR funding is to be spent, means that this maintenance scheme would not be eligible for funding under TCR.

g) Summarise the impacts of not delivering this scheme (Maximum 250 words).

The response should consider the impact of not delivering the scheme, such as community severance, lengthy diversion routes or impacts on other infrastructure.

The impacts of non-delivery are likely to include:

Short term

Increased special inspections on bearings, deck and piers to mitigate structural risk and look for progressive failure,

Traffic restrictions including 40 mph limit, lane closure and an 18T restriction on the remaining lane in order to mitigate structural risk, leading to:

- Increased congestion, compounded by increased amount of new homes in this region,
- Decreased air quality,
- Increased journey times,
- Disincentivising local business investment and consequential economic growth,
- Increasing structural distress to piers and deck, leading to medium term measures.

Medium term

Structural assessment,

Ongoing structural monitoring of the bridge at significant extra cost,

Bridge closure, leading to:

- Diversion routes increasing journey times, increased traffic in rural areas, disincentivising local business investment and consequential economic growth,
- Further increased congestion on other routes including the A4,
- Further decreased air quality,
- Loss of a critical cycle route, possibly increasing the amount of people driving,
- Possible closure of footpath under the bridge.

h) If applicable, explain how the scheme helps prevent the likelihood of community severance for all transport modes and the impact that this severance would have or already has. (Maximum 250 words)

Answers should explain the impact on connecting local people to facilities, services, employment, education and local communities. The response should also summarise the extent of diversions for communities, which modes are impacted and how. Applicants may wish to use the guidance in TAG A4-4 Social Impact Appraisal.

- The scheme is critical to preventing community severance by maintaining access to key services and destinations especially those located at Longwell Green.
 - Longwell Green Retail Park and the adjacent Aspects Leisure Park form a major sub regional centre for retail, leisure and health-related activity, serving communities across South Gloucestershire, East Bristol and Keynsham. The area includes a concentration of essential retail (including supermarkets, pharmacies and major comparison retail), alongside leisure and social facilities such as a cinema, restaurants and bowling, and health and wellbeing provision including a leisure centre, gym and pharmacy services.
 - The A4174, via Avon Bridge, provides a primary route to these facilities for communities on both sides of the River Avon. In the absence of the scheme, any partial or full closure of the bridge would divert significant volumes of traffic (AADT is xxxxx) onto a limited number of alternative crossings. Given existing congestion and limited network capacity, this would result in substantial increases in journey times and reduced reliability, effectively reducing access to this important service hub.
 - In line with TAG guidance, this represents a form of community severance, whereby transport conditions act as a barrier to access. This would extend across all modes, affecting access to essential services (such as pharmacies), everyday retail, and leisure opportunities that support social interaction and wellbeing.
 - By maintaining this key cross-river link, the scheme ensures continued access to a wide range of vital community facilities and prevents significant severance.
- i) Summarise the volumes of traffic by mode that are impacted as a result of any community severance (Maximum 250 words).

Explain the impacts on non-motorised and motorised traffic flow. Describe how diversions may differ by mode.

Closure of the A4174 Avon Valley Bridge to OGV1 and OGV2 traffic would remove a critical route for approximately 586 heavy goods vehicles per day, fundamentally disrupting established freight movements across the West of England. While representing only 1.9% of overall traffic, these vehicles are disproportionately important to economic activity, and their displacement would force HGVs onto longer, less suitable diversion routes.

This would not only increase journey times and operating costs for the freight sector, but would also transfer large volumes of heavy vehicles onto lower-class roads and through smaller urban and residential communities, where the highway network is not designed to accommodate such traffic. The resulting impacts would include increased congestion, road safety risks, noise, vibration and air quality deterioration, alongside accelerated wear to local infrastructure.

Crucially, this would lead to community severance, as higher volumes of HGV traffic and associated traffic management measures reduce the ability of residents to safely cross roads, access local services, and move freely within their neighbourhoods. In combination, these effects would significantly reduce network resilience, undermine the function of local communities, and create wider social and environmental impacts well beyond the immediate diversion routes.

Overall flow = AADT in 2025 = 30850

Mode	Mode Share
Car	84%
LGV	14%
PSV	0.2%
OGV1	1.4%
OGV2	0.5%
Total	100%

2.2 Economic Case

This section sets out the assessment for Value for Money of the project. Applications must use the provided economic toolkit, but if alternative methods have also been used to support the economic case, this section provides the opportunity for the results to be reported.

- a) Set out the key sources for the economic benefits (e.g. journey-time savings, carbon, etc.) of the scheme. (Maximum 250 words)

Describe the main benefits the scheme is expected to deliver.

The largest source of benefit is journey-time savings, with a Present Value (PV) of £226.5 million (2023 prices). These benefits arise from avoiding delays associated with bridge restrictions and maintaining efficient travel for all vehicle types. A further £15.1 million PV is generated through vehicle operating cost savings, reflecting reduced fuel consumption, maintenance and other running costs.

The scheme also avoids the need for HGVs to divert onto longer alternative routes if Avon Bridge becomes restricted, which generates substantial freight user benefits and reduces wear and maintenance requirements on the wider network. This contributes to a negative infrastructure maintenance cost within the appraisal, helping to lower overall Present Value Costs.

The scheme also delivers significant wider transport and environmental benefits, including:

Decongestion benefits: £20.2 million PV, reflecting reduced delay across the wider network.

Greenhouse gas benefits: £5.5 million PV, due to reduced vehicle kilometres and improved operating conditions.

Noise benefits: £3.2 million PV.

Accident benefits: £1.3 million PV.

Local air quality benefits: £0.3 million PV.

A small disbenefit is associated with indirect taxation (-£3.2 million PV), reflecting reduced fuel duty revenues, while infrastructure carbon impacts (-£0.015 million PV) are included as a cost.

Overall, the scheme generates Present Value Benefits of £269.0 million against Present Value Costs of £1.2 million, resulting in a Net Present Value of £267.8 million and a Benefit-Cost Ratio (BCR) of 222.5, representing exceptionally high value for money.

- b) Summarise the estimate of the present value of costs and benefits (in 2023 present values, market prices) and the benefit cost ratio of the scheme from the economic toolkit.

Present Value Costs (PVC)	£1,208,878
Present Value Benefits (PVB)	£268,961,695
Benefit to Cost Ratio (BCR)	222.5

- c) Explain assumptions used in the economic toolkit to estimate the present value scheme costs. (Maximum 250 words)

Describe the basis of the costs input to the economic toolkit and provide justification for the risk and optimism bias values that have been used.

The costs have been derived from the Council's own in-house delivery model using their own internal procurement and operational experience of these projects and have validated those assessments against a similar structures project being delivered locally by our supply chain partner Tarmac. The project is already underway with the failure mechanism already being identified (substantiated by reports) and early design work already in progress. Detailed design is yet to commence and this is therefore reflected in both the level of risk and the level of optimism bias provided in the assessment. 55% optimism bias that has been included, this has been assumed using TAG unit A1.2 - cost estimation, table 7, fixed links, stage 1 which in turn produces an optimism bias of 55%.

- d) Explain the sources of data and assumptions used to complete the Scheme Details section of the economic toolkit. (Maximum 250 words)

Provide details of the source of all data and associated assumptions (e.g. provenance, data checks, etc).

The economic assessment is underpinned by observed and modelled traffic evidence for the A4174 corridor. Existing journey times and route lengths were derived from TomTom analysis between Hicks Gate Junction and Kingsfield Roundabout, using October 2025 data excluding the school half-term period and distinguishing northbound and southbound movements. Existing traffic demand was based on South Gloucestershire's Vivacity permanent count data, which continuously records and classifies traffic by vehicle type. The assessment uses 2025 observed flows averaged over the year, giving a total 24-hour AADT of 30,837 vehicles, including 25,910 cars, 4,286 LGVs, 569 HGVs and 72 PSVs. The HGV composition was also derived from the observed count data, with around 75% of OGVs classified as OGV1 rigid vehicles. Diversion route journey times are not available through this dataset and therefore have been extracted from Google, using the without traffic journey time of 9 minutes.

Two toolkits are provided, one covering cars and LGVs and the second covering HGVs and PSVs. These have been separated due to different diversion impacts and then added together to obtain the overall benefits.

A scheme opening year of 2030 has been included, once the bearings have been replaced and project completed.

Data has not been provided to account for the congestion band. In the absence of supporting data, the authority's default congestion band has been assumed. This is between band 3 and 4, and this is in line with the expected levels of traffic known to officers.

e) Describe significant non-monetised impacts of the scheme. (Maximum 250 words)

Consider any economic, environmental and social impacts that have not been monetised to fully describe the impacts of delivering the scheme.

The scheme delivers a range of non-monetised impacts across economic, environmental and social objectives. Key beneficial impacts arise from improved network resilience, journey time reliability and connectivity, alongside reductions in traffic—particularly HGVs—on diversion routes, which is expected to improve environmental conditions, severance and local amenity in affected communities. While traffic and HGV flows are re-concentrated on the A4174 corridor, leading to some localised adverse effects, the overall impact reflects a redistribution of traffic onto a more appropriate strategic route. The scheme therefore provides broader benefits to network efficiency, freight movements and community conditions that are not fully captured within the monetised appraisal framework.

f) Where an alternative economic assessment has been undertaken to support a case for investment, please summarise the data used, the assumptions made and the results obtained (in 2023 present values, market prices). (Maximum 250 words)

Some schemes may have been subject to economic assessment to support previous cases for investment. Summarise the key details of these here, including details of the data, assumptions and results (e.g. present value of costs and benefits and benefit cost ratio).

No alternative economic assessment has been used.

Present Value Costs (PVC)	N/A
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Present Value Benefits (PVB)	N/A
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Benefit to Cost Ratio (BCR)	N/A
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To enable the assessment of the economic case, please submit the supporting information listed below to StructuresFundTAB@dft.gov.uk

- Economic Toolkit
- Any supplementary reports which support the economic case

2.3 Commercial Case

This section captures information on the commercial viability and procurement strategy for the planning and delivery of the scheme being promoted.

a) Explain the LHA capacity and experience delivering comparable schemes. (Maximum 250 words)

Where capacity is challenging for local authorities, explain how any capacity gaps may be addressed to ensure delivery of the scheme.

South Gloucestershire Council's Structures Team has the capability, capacity and proven experience to successfully deliver the proposed A4174 Avon Valley Bridge bearing replacement scheme. The team manages a substantial and diverse structural asset portfolio and has demonstrated its technical competence and project delivery expertise through the ongoing A38 Patchway Flyover scheme.

The A38 Patchway Flyover project provides a strong, directly comparable example, involving complex structural maintenance on a critical section of the strategic road network, delivered while maintaining traffic flows and minimising disruption to the travelling public. This scheme requires detailed planning, stakeholder coordination, traffic management design, and specialist engineering oversight—skills that are equally essential for the Avon Valley Bridge bearing replacement.

The Structures Team combines in-house engineering expertise with robust programme and contract management, ensuring schemes are delivered safely, efficiently and in accordance with DMRB standards and industry best practice. The team has established relationships with specialist contractors and supply chains, enabling the effective delivery of technically complex works such as bearing replacement, including jacking operations, temporary works design, and sequencing under live traffic conditions.

Importantly, the team has demonstrated its ability to manage risk, communicate effectively with stakeholders, and maintain network resilience during construction. Drawing on the lessons learned and delivery model from the A38 Patchway Flyover scheme, the Council is well positioned to deliver the A4174 Avon Valley Bridge works with confidence, ensuring a safe, durable and value-for-money outcome.

The project is being led by Shaun Wilson our Operations & Highway Maintenance Manager for the Council. He has over 20 years experience in local government and has worked across all spectrums including Client, Designer and Contractor. He has a BSc in Civil Engineering with first class honours and is the Structures lead for the authority. The Council's delivery function is also within Shaun's portfolio and therefore responsibility from client management, to design to contracting are all within the same portfolio. Existing governance arrangements of both project team, project board and programme board provide suitable and sufficient scrutiny.

b) Explain the delivery plans and procurement strategy for the scheme. (Maximum 250 words).

This section should include explanation of the various stages of the scheme that are required for completion. This may include design, consents and construction processes.

The Council has already taken proactive steps to advance the A4174 scheme, having completed a detailed feasibility and options appraisal in 2025, ensuring that the preferred solution is evidence-based, deliverable, and aligned with asset management priorities. In addition, Ramboll has been engaged as Principal Designer, bringing nationally recognised expertise in bridge engineering and temporary works, while Tarmac has been appointed as Principal Contractor, providing an experienced delivery partner with a strong track record in complex highway and structures schemes. Our delivery partner Tarmac is already engaged through a NEC4 Option C Target Cost contract.

c) Describe the delivery risks associated to the project delivery. This should include risks which may challenge the end date for the Structures Fund.

Explain what risks have been identified and how might these be mitigated.

Structural maintenance schemes on the highway carry a range of delivery risks due to their technical complexity, live traffic environment, and reliance on specialist operations. Key risks include:

- Traffic management and network disruption – Works will require lane closures, contraflows and full closures on a critical route, creating a high risk of congestion, reputational impact and stakeholder

pressure if not carefully planned and managed. Route space has already been allocated on the Councils forward network management road space allocation plan.

- Complex construction and temporary works – Activities such as jacking, bearing replacement, and structural interventions introduce significant engineering risk, including potential instability, unforeseen structural behaviour, or failure of temporary works. Design works are already underway on the bearing replacement and how these works can be executed above the River Avon.
- Unknown or deteriorated asset condition – Hidden defects, corrosion, or deviations from original design can emerge once works commence, leading to programme delays, cost increases, and scope changes. A new inspection is already planned for July 2026.
- Health and safety risks – Working at height, over a live water source, with complex temporary works. A local SME temporary works contractor with in-house design capacity is already appointed to the supply chain team.
- Stakeholder and public interface – High public sensitivity, particularly on strategic routes, can lead to complaints, political pressure, and reputational risk if impacts are not effectively communicated and mitigated.
- Environmental constraints – erecting temporary works in close vicinity to the River Avon is likely to require ordinary water course consent. The Council has already engaged the Environment Agency as a key stakeholder to the scheme.

Overall, these risks require robust planning, experienced delivery teams, and proactive risk management to ensure safe, efficient, and reliable scheme delivery while maintaining network resilience.

- d) Explain whether liaison with any applicable third-party organisations present a particular risk to delivery and whether those organisations have agreed to support the scheme's delivery.
(Maximum 250 words)

In this section set out if the scheme requires support from other organisations, and the nature of any engagement undertaken to date.

The structure is a jointly owned structure with BANES and the Council has already has permission from BANES to deliver this scheme. South Gloucestershire has been the responsible authority for delivering the options feasibility study to date.

Erecting temporary works in close vicinity to the River Avon is likely to require ordinary water course consent. The Council has already engaged the Environment Agency as a key stakeholder to the scheme.

2.4 Financial Case

- a) Provide estimated outturn costs (£million) for the scheme in the table below. The table should be completed with total costs, requested DfT investment, LHA contribution and third-party contributions. Only capital funding costs should be included in the table.

To note, the prospectus sets out that:

- schemes should be delivered by end-2029/30.
- schemes with early delivery (i.e. in 2026/27) may be prioritised.
- schemes should not be affordable from existing LA budgets.
- local contributions are required for proposed schemes.
- preference will be given to schemes with higher local contributions and/or those where there is a high percentage of local contribution.
- preference will also be given where the local contribution is:

- not from other central government funding sources.
- partially funded from other third-party sources.

	2026/27	2027/28	2028/29	2029/30	Total
Requested DfT investment	£0	£334,000	£4,084,000	£82,000	4,500,000
LA contribution	£0	£166,000	£166,000	£168,000	£500,000
Other contribution	£0	£0	£0	£0	£0
Total costs	£0	£500,000	4,250,000	£250,000	£5,000,000

b) Outline how the LHA has sought to manage this scheme from existing budgets and why that has been unsuccessful.

Explain the local approach to managing the existing DfT contribution across its highway assets and what specific challenges have meant that this structure was not repaired earlier.

The Council currently operates with an annual capital allocation of approximately £1.6 million to manage and maintain its entire structures portfolio across South Gloucestershire. Against this constrained funding position, the estimated £5 million investment required for the A4174 Avon Valley Bridge scheme represents a significant financial commitment, equivalent to several years of the existing budget.

As a result, delivering this scheme solely from the Council's baseline allocation would necessitate the deferral or suspension of other planned structural maintenance works across the network for a number of years, increasing the risk of further asset deterioration, higher long-term costs, and reduced network resilience.

c) Describe the whole life costs anticipated without the proposed scheme. Explain how the proposed scheme mitigates costs from a whole life perspective. (Maximum 250 words)

Explain maintenance considerations for maintaining the structure and compare these to the scheme cost to demonstrate the financial benefit of delivering this scheme.

The early design work already completed by our professional services consultant Ramboll has identified potential issues with the bearings since the structure was built and they have already been replaced short of their intended service life. The work completed has identified potential issues in the design and also we cannot rule out issues with the casting of the existing bearings. If we replace the single broken bearing in isolation under current funding streams it is unlikely to correct the design defects as this cannot be achieved without replacing all the bearings. The detailed design phase will look to correct these issues so that the replacement bearings fulfil their 20 + year design life. By correcting the problem now we can also avoid unnecessary future traffic mitigations along with their associated costs.

d) Summarise how the cost estimate for the scheme has been developed.

Set out the basis for the estimate. For example, is it based on an estimate from similar work, developed by a quantity surveyor or a contractor quotation. Describe the inflation assumptions used and the rationale for these.

The costs have been derived from the Council's own in-house delivery model using their own internal procurement and operational experience of these projects and have validated those assessments against a similar structures project being delivered locally by our supply chain partner Tarmac. The estimate has been developed by a qualified estimator and has been peer reviewed by a qualified quantity surveyor. Inflation is committed through a contractual pricing mechanism and is supported by an extra ordinary inflation tool in the event of extreme events such

as a public health outbreak or war. The mechanism for both is through the BCIS Civil Engineering indices. Predictions of future inflation are supported through the use of the BCIS future inflation forecasting module.

- e) Explain the financial risks that have been considered and factored into the estimate and what contingency is allowed for.

Explain the key risks and their impact on the cost and programme, including how these link to the overall contingency allowed for in the estimate.

The financial risks are linked to any increased scope of works, which has been minimised by this proposal which seeks to replace all the bearings rather than individual bearings in isolation. The risks around replacing the bearings are those around inaccessible areas beneath the current bearings which once jacked could reveal corroded bearing plints, damaged concrete around the bearings, reinforcement deterioration and unexpected distortion. The temporary works also represent a financial risk but the Council has significant experience in these, most recently with the A38 Flyover bearing replacement and prior to this the A4174 Bromley Heath Viaduct bridge refurbishment scheme, which involved significant temporary works from the river bed beneath the structure. The final risk is associated with the detailed design and the need to correct the current design defects with the risk that more fundamental design changes to the entire bearing shelf. The Council plans to fund any unforeseen overspend from its own capital programme allocation.

- f) Provide details of the local and other contributions, including the relevant funding sources and the certainty of whether these contributions are available. (Maximum 250 words)

Describe the various sources of funding and their availability.

The Council is funding its contribution to the scheme through its LTP Capital Programme Structural Maintenance allocation. No other contributions are being relied upon.

2.5 Management Case

Outlines how the project will be delivered and managed effectively.

- a) Select the option which best describes the current stage of the project:

- ☐ No design, benchmarked against other schemes only
- ☐ Design concept only, no supplier yet engaged
- ☒ QS estimate / early supplier engagement, stable design

- b) What is the anticipated start date for construction for the scheme?

01/04/2028

- c) What is the anticipated end date for construction for the scheme?

31/03/2029

- d) Summarise the approach to the management of the delivery of the scheme. This should be from the current point of development to completion.

This should include the management of resources, including the supply chain, to ensure delivery and an explanation of any evidence that provides certainty of delivery within the timescale.

South Gloucestershire Council has adopted a structured and delivery-focused approach to the A4174 Avon Valley Bridge bearing replacement scheme, underpinned by proven capability, early-stage

planning, and a strong supply chain. The Council's Structures Team provides experienced in-house resources covering engineering design management, asset knowledge, and programme delivery, supported by lessons learned from comparable schemes such as the A38 Patchway Flyover. A feasibility and options appraisal completed in 2025 has already established a clear, evidence-based preferred solution, reducing design and delivery uncertainty. Design development is being led by Ramboll as Principal Designer, ensuring robust technical assurance, compliance with DMRB standards, and a buildable solution that carefully considers temporary works, traffic management, and sequencing. This is complemented by the early involvement of Tarmac as Principal Contractor, enabling a collaborative approach to buildability, risk reduction, and efficient construction planning. The Council's established supply chain relationships and experience in delivering complex structural works under live traffic conditions provide confidence in managing specialist operations such as jacking and bearing replacement. With design progress, contractor engagement, and delivery strategy already in place, the scheme benefits from a mature project foundation, clear governance, and realistic programming. This provides strong confidence that the works can be delivered safely, efficiently, and no later than March 2029, while maintaining network resilience and minimising disruption.

- e) Explain the key delivery risks and challenges and how the local authority intends to address them. Answers should also explain any financial risks and how any cost overruns will be addressed by the local authority. (Maximum 250 words)

Explain how key financial risks are being managed and mitigated. Explain how other risks are being managed (e.g. are there any points of complexity or requirements regarding planning or land ownership?).

The principal financial risks associated with delivering the scheme relate to cost uncertainty, market conditions, and delivery complexity:

- Unforeseen structural condition:** Hidden defects, deterioration, or deviations from original design may only become apparent once works begin, leading to scope change, additional works, and cost escalation. Mitigation that feasibility study has already been completed and delivery options identified.
- Extraordinary inflation and market volatility:** Construction inflation, particularly for specialist bearings could increase scheme costs. Mitigation that the type of bearing arrangement has already been identified.
- Temporary works and construction complexity:** Specialist activities such as jacking, propping and sequencing under live traffic carry a higher risk of cost growth if designs evolve or require additional measures during delivery. Mitigation that temporary works is already being considered including specialist underslung scaffolding arrangements.
- Traffic management costs:** Extended lane closures, contraflows, or diversion routes can significantly increase costs, particularly if programme delays occur. Mitigation the Council already has a long term supply chain arrangement with a specialist temporary traffic management contractor.
- Supply chain risk:** Dependence on specialist suppliers for bearings and equipment introduces risk around lead times, availability, and price certainty, which may drive variation costs. The Council's Principal Contractor Tarmac is already engaged and we are already in the construction phase of a similar bearing replacement project nearby.
- Risk transfer and contract mechanisms:** The contracting arrangements shall be NEC4 Option C Target Cost contract. Mitigation that the Council has a long-standing supply chain relationship with Tarmac where both parties truly harbour the core of the contract to work in the spirit of mutual trust and collaboration and where the senior leadership team of both parties have an open and collaborative relationship.

- f) Describe the key project controls that will be employed by the local authority to ensure that schemes are delivered on time and in budget. (Maximum 250 words)

Provide details of the methods that the authority uses to ensure timely delivery within budget.

South Gloucestershire Council operates a structured and well-established project management system to ensure the effective delivery of major highway infrastructure schemes such as the A4174 Avon Valley Bridge works. This approach is underpinned by clear governance, defined roles, and robust oversight at each stage of the project lifecycle. At an operational level, delivery is led by dedicated project teams comprising multidisciplinary officers, including structures engineers, project managers, commercial specialists, and communications leads. These teams are responsible for day-to-day management, programme control, risk management, and stakeholder coordination. Oversight is provided through a formal Project Board, which brings together senior officers and key stakeholders to provide strategic direction, review progress, manage risks and issues, and ensure that the project remains aligned with its objectives, budget, and programme. The Project Board provides a key decision-making forum, ensuring that challenges are addressed promptly and escalated where necessary. At a higher level, the scheme sits within a wider Programme Board, which oversees the Council's broader portfolio of capital infrastructure projects. This ensures alignment with corporate priorities, effective resource allocation, and consistency in governance and reporting across multiple schemes. It also provides an additional layer of assurance around delivery confidence and risk management. This tiered governance structure ensures clear accountability, robust decision-making, and effective escalation routes. Combined with established project controls and reporting processes, it provides confidence that the Council can manage complex infrastructure schemes in a controlled, transparent, and outcomes-focused manner.

- g) Set out if the scheme requires permission from other bodies, and how this permission can be obtained to ensure delivery.

Provide details of the permission required, the likely timescale for obtaining permission and any potential barriers to obtaining that permission.

The Council will be required to obtain flood defence consent from the Environment Agency in order to erect a temporary works structure beneath the structure over the River Avon. Detailed design work is due to commence early next year and with a supply chain contracting partner already on-board it is envisaged that the temporary works designs can commence in tandem with design development. We have allowed a realistic 12 month period in the programme for both development of temporary works design and obtaining approval from the Environment Agency and thus we have not been over optimistic or over promised our approach.

- j) If applicable, explain how the scheme development has included consideration of climate adaptation and ensures the future resilience of the highway network (Maximum 250 words).

Describe how climate related risks (e.g., flooding, heat, extreme weather) have been assessed and incorporated into design measures to improve the long term resilience of the highway network. This may include evidence of risk assessments, adaptive design features, and how the scheme will maintain network performance under future climate conditions.

Climate projections indicate greater temperature variability, including hotter summers and wider annual temperature ranges. This can increase bridge deck movements and stresses with the movement system. As the scheme is replacing all the bearings, these can be designed to accommodate greater thermal movements than the original arrangement, reducing the risk of overstressing the bearings, decks and substructures as temperatures rise. The importance of understanding future thermal effects and bridge

movements is highlighted within the bearing replacement study already reviewed for the Avon Valley Bridge. A new modern bearing system will benefit greatly from improved materials, coatings and sealing systems compared with the older arrangement. These will improve resilience against increased rainfall, higher humidity, wind-driven salt contamination and more frequent wetting-drying cycles, ultimately resulting in a longer service life and reduced whole life cost.

- h) Explain the considerations have been made or will be developed to account for the management of carbon for the development of the scheme.

This may include development of a carbon management plan dealing with whole life carbon (e.g. using low carbon construction measures to deliver the scheme or reducing emissions through reducing vehicle miles).

Replacing all the bridge bearings in a single intervention rather than undertaking multiple future schemes that are within the range of affordability will provide the primary significant carbon savings. Importantly this will also correct the existing design defects therefore designing out known failure mechanisms and we would also be selecting bearings with the longest practical design life as access to this structure is ordinarily difficult. In delivering the scheme now this will reduce the future possible temporary traffic management arrangements if the scheme were not delivered and interventions were required. It is of note that the HGV diversion route if a weight limit were required is through a busy urban residential area. During delivery a carbon management plan would be created to ensure delivery of low carbon measures such as HVO (already in place across a number of schemes), solar powered welfare facilities and electric vehicles for supporting staff that includes temporary charging facilities within the site footprint.

- i) What statutory undertakers affect the proposed scheme? Has any engagement been undertaken and how has this been accounted for within the delivery approach?

Set out the relevant statutory undertakers, the impacts they may have on the programme – including planning – and how this part of the programme will be managed. If applicable, describe how deterioration of the structure has or may impact utilities services and the extent of this disruption.

It is not envisaged that any statutory undertakers will be affected by the proposed works as most do not pass over the structure. Street lighting is powered by the Council's own local authority powered electric network. There are four number Openreach ducts in the eastern service strip and the only measures envisaged are a watching brief during the jacking and de-jacking of the structure.

Part 3 – Governance and Declarations

3.1 Equality Analysis

a) Has analysis of the equality impacts of the scheme been undertaken by the LHA in line with the Public Sector Equality Duty? Select below:

☒ Yes

☐ No

b) Explain how the equality impacts of the scheme have been considered or will be considered. Identify the relevant affected groups with protected characteristics, and any planned measures to mitigate these impacts. (Maximum 250 words)

From an Equality Impact Assessment (EqIA) perspective, a bridge bearing replacement scheme is unlikely to have any significant adverse equality impacts in its own right, as the works are focused on maintaining existing infrastructure rather than changing how people access services. The bridge bearing replacement scheme overall is expected to have a neutral to positive impact on equality. Whilst temporary construction activities may result in short-term inconvenience for some users, these impacts can be mitigated through appropriate traffic management, accessible diversion routes and effective communication. In the longer term, the scheme will help maintain a critical transport link that provides access to employment, education, healthcare and community facilities for all residents. By reducing the risk of future restrictions or closure, the scheme supports network resilience and helps prevent community severance, benefiting a wide range of protected groups and vulnerable users. A full EqIA assessment is planned to be undertaken upon completion of the detailed design phase of the project before it enters the delivery phase to ensure any temporary adverse effects are mitigated.

3.2 Public Sector Transparency

When LHAs submit proposals for funding to DfT, as part of the Government's commitment to greater openness in the public sector under the Freedom of Information Act 2000 and the Environmental Information Regulations 2004, they must also publish a version excluding any commercially sensitive information on their own website within two working days of submitting the final proposal to DfT.

a) Please specify the weblink where this proposal will be published.

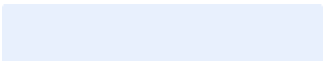
<https://beta.southglos.gov.uk/road-and-street-maintenance/>

3.3 Declarations

Senior Responsible Owner declaration

As Senior Responsible Owner for [A4174 Avon Valley Bridge Bearing Replacement Scheme], I hereby submit this request for approval to DfT on behalf of [South Gloucestershire Council] and confirm that I have the necessary authority to do so.

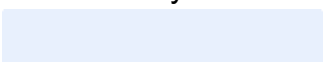
I confirm that [South Gloucestershire Council] will have all the necessary statutory powers and other relevant consents in place to ensure the planned timescales in this proposal can be realised.

- a) Name: Shaun Wilson
- b) Signed: 
- c) Date: 03.08.2026
- d) Email: shaun.wilson@southglos.gov.uk

Section 151 Officer declaration

As Section 151 Officer for [South Gloucestershire Council], I declare that the scheme cost estimates quoted in this proposal are accurate to the best of my knowledge and that [South Gloucestershire Council]:

- has allocated sufficient budget to deliver this scheme on the basis of its proposed funding contribution.
- accepts responsibility for meeting any costs over and above the DfT contribution requested, including potential cost overruns and the underwriting of any funding contributions expected from third parties.
- accepts responsibility for meeting any ongoing revenue requirements in relation to the scheme.
- accepts that no further increase in DfT funding will be considered beyond the maximum contribution requested and that no DfT funding will be provided after 2029/30.
- confirms that the authority has the necessary governance and assurance arrangements in place and that all legal and other statutory obligations and consents will be adhered to.

- e) Name: Joss Convey
- f) Signed: 
- g) Date: 03.08.2026
- h) Email: joss.convey@southglos.gov.uk