

FULL BUSINESS CASE (FBC)

A. GENERAL INFORMATION

A1. General

Project Title <i>(as per Voyager)</i>	A38(M) Aston Expressway Tame Valley Viaduct Strengthening Works		
Voyager code	CA - 02718		
Portfolio /Committee	Transport and Environment	Directorate	Inclusive Growth
Approved by Project Sponsor	Kevin Hicks – Assistant Director, Highways & Infrastructure	Approved by Finance Business Partner	Simon Ansell – Finance Business Partner

A2. Outline Business Case approval *(Date and approving body)*

The interim management strategy for the A38(M) Tame Valley Viaduct was approved through the following reports;

- 'A38(M) Tame Valley Viaduct - Approval of Full Business Case for Implementation of Management Strategy' submitted to the former Cabinet Committee (Procurement) on 2nd August 2011
- 'A38(M) Tame Valley Viaduct Management Strategy - Implementation of Phase 2' submitted to Cabinet on 19 May 2014

A3. Project Description

1. The A38(M) Aston Expressway, which carries a weekday two-way 12 hour (07:00 to 19:00) traffic flow in excess of 90,000 vehicles, forms an integral part of the West Midlands motorway network providing vital connectivity between Birmingham, the M6 motorway and wider strategic road network. Its current unrestricted use supports the creation of 40,000 new jobs in the City Centre Enterprise Zone, the successful delivery of the 2022 Commonwealth Games, the new HS2 Curzon Street Station, the Aston Advanced Manufacturing Hub and a number of other key regeneration sites based on a study undertaken for the production of the Major Scheme Business Case (MSBC) required by Department for Transport (DfT).
2. Tame Valley Viaduct (TVV) forms the northern end of the A38(M) Aston Expressway between Birmingham city centre and Junction 6 (Spaghetti Junction) of the M6 motorway. The viaduct, which opened to traffic in 1972, is 620m long and comprises 21 spans. The structure passes over a number of businesses, roads, electrified railway lines and the River Tame. Drawing no. TVV/001 in Annex 1 provides the location plan and a typical cross section of the viaduct.
3. Detailed assessments of the viaduct have revealed it to have a zero rated theoretical carrying capacity representing a significant structural risk which would require the imposition of a weight and/or width restriction or the closure of the viaduct if strengthening measures are not undertaken.
4. To date, the imposition of a weight and or width restriction on TVV has been avoided through implementation of a comprehensive and innovative three-phased structural management strategy involving adoption of a detailed risk management regime, robust live monitoring, structural inspections and testing, rigorous analytical assessments and design supplemented by strengthening of a trial span. Details of the TVV management strategy are provided in Annex 2.

5. Whilst there are no visible signs of immediate structural distress, the unrestricted use of the viaduct, hence the A38(M) Aston Expressway, is not sustainable in the long term without major capital investment.
6. It is therefore proposed to undertake major strengthening and refurbishment works on the viaduct to enhance its carrying capacity to current standards and extend its life span at an estimated overall cost of £93.460m. The site works are expected to commence in February 2021 with works duration estimated at 4 ¾ years.
7. In July 2014, DfT provisionally approved funding for the TVV strengthening scheme in the value of £72.110m, subject to completion of a trial span strengthening scheme and a full MSBC justifying the overall benefits of the project. The trial span strengthening works were completed in May 2015 as part of the Phase 2 of the management strategy. The MSBC requires the actual tendered sums for the cost benefit analysis and can only be completed once the tender submissions for the main works have been evaluated.
8. In addition, as part of the provisional allocation of £72.110m, DfT confirmed the award of a £0.900m grant under section 31 of the Local Government Act 2003 (s31) in the 2019/20 financial year to cover detailed testing activities associated with the viaduct.
9. In March 2019, DfT advised that it was seeking confirmation from the HM Treasury that any unspent grant allocation (estimated at £68.521m based on the current project delivery programme) may be carried forward beyond the current spending review period which ends in March 2021. It may however take some time before the formal position is known by DfT, pending the outcome of the next proposed spending review expected to be completed by December 2019.
10. Tenders for the main strengthening works are to be sought in January 2020 following confirmation of budget availability from DfT. The City Council will not award the main works contract and the associated professional services commission for site management until DfT's funding has been confirmed.

A4. Scope

To implement the full structural strengthening scheme of the viaduct incorporating works to all of the 21 spans that compromise the structure. These include the following ;

- Preparation of the final Major Scheme Business Case (MSBC) and submission to the DfT's Major Transport Schemes Portfolio for approval to secure the DfT's capped contribution of £72.110m towards the scheme;
- Strengthening of the steel box girders carrying the viaduct deck to enhance their carrying capacity and overall longevity;
- Painting of the entire external and internal surfaces of the steel box girders;
- General refurbishment of the viaduct's deck components, piers and abutments;
- Supporting the delivery of the above activities through the use of professional services.

A5. Scope exclusions

Elements of work that have already been strengthened and refurbished as part of the Phase 2 of the current structural management strategy of the viaduct, detailed in Annex 2, have been excluded from the scope of the works.

B. STRATEGIC CASE

This sets out the case for change and the project's fit to the Council Plan objectives

B1. Project objectives and outcomes

The case for change including the contribution to Council Plan objectives and outcomes

The scheme aims at ensuring the unrestricted use of the A38(M) Aston Expressway and maintaining access and efficient connectivity between Birmingham city centre and the strategic road network.

The project supports the following City Council, DfT and West Midlands Combined Authority key objectives and outcomes;

City Council Objectives

The strengthening scheme fully supports the Council Plan 2018 - 2022 priorities. In particular, the scheme underpins the following;

- Birmingham as an entrepreneurial city to learn, work and invest in
- An aspirational city to grow up in
- A fulfilling city to age well in
- A great city to live in
- Birmingham residents gain the maximum benefit from hosting the Commonwealth Games
- Compliance with the Birmingham Business Charter for Social Responsibility

DfT Objectives

An MSBC comprising the Strategic, Economic, Financial, Commercial and Management cases is required to be submitted to DfT. The business case is to;

- Set out the strategic importance of the viaduct to Birmingham and the West Midlands conurbation
- Demonstrate value for money
- Evidence affordability and funding arrangements
- Provide evidence of the scheme's commercial viability and to identify the proposed procurement strategy used to engage with the market
- Set out the project planning, governance structure, risk management, communications and stakeholder management, benefits realisation and assurance arrangements for the scheme.

The scheme contributes to the following DfT objectives as set out in DfT's Single Departmental Plan;

- Support the creation of a stronger, cleaner, more productive economy
- Help to connect people and places, balancing investment across the country
- Make journeys easier, modern and reliable
- Make sure transport is safe, secure and sustainable
-

West Midlands Combined Authority Objectives

The project supports the targets set out in the West Midlands Local Transport Plan 2011-2026 (LTP3) in terms of improving the economy, reducing emissions, providing equality of opportunity, and improving the local environment.

The project will contribute to the following objectives in the West Midlands Combined Authority -

Strategic Economic Plan (SEP):

- Economic Growth 'To improve Gross Value Added (GVA) for the region in line with the UK average' by improving accessibility to unlock and remove barriers to growth, encouraging regeneration enabling job creation and economic development.
- Employment and Skills 'To improve the balance between the skills that businesses need and the skills of local people so that they have the skills and qualifications to access jobs' by improving access to key services including education and training and helping people access jobs by sustainable travel.
- Accessibility 'To improve the connectivity of people and businesses to jobs and markets respectively' by improving access to reducing congestion and delay in the area's transport system and encouraging greater use of the most sustainable and low-carbon transport options.

B2. Project Deliverables

These are the outputs from the project eg a new building with xm2 of internal space, xm of new road, etc

Strengthening and refurbishment of entire viaduct resulting in a fully strengthened and refurbished structure capable of safely carrying unrestricted traffic on the A38(M) Aston Expressway.

The outline implementation plan is summarised in Section D2 and Annex 4.

B3. Project Benefits

These are the social benefits and outcomes from the project, eg additional school places or economic benefits.

Measure	Impact
<i>List at least one measure associated with each of the objectives and outcomes in B1 above</i>	<i>What the estimated impact of the project will be on the measure identified – please quantify where practicable (eg for economic and transportation benefits)</i>
Implementation of the viaduct strengthening and refurbishment works	<ul style="list-style-type: none"> • These major strengthening and refurbishment works are aimed at ensuring public safety and maintaining asset integrity of the viaduct. • A fully strengthened TVV will continue to provide efficient connectivity between Birmingham city centre and the strategic motorway network serving commuters and businesses. It continues to offer a vital part of the City's highway infrastructure serving over 90,000 vehicles per day. • The works will support the City Council's strategic vision by ensuring that the City's infrastructure can support its future growth, economic development and regeneration. • The scheme supports the Birmingham Development Plan 2031 through maintaining the essential A38 corridor and contributing towards the city's growth agenda.

For major projects and programmes over £20m:

A detailed Benefits Register is attached at G5 below.

B4. Benefits Realisation Plan

Set out here how you will ensure the planned benefits will be delivered

The works will be managed and administered by the Highways Services Manager through a professional project management team comprising a project manager, site supervisory teams, including testing and monitoring experts, and a commercial team assisting in the project's financial control and management. Technical design support, checking and continuous monitoring will also be provided as appropriate.

The contractor's performance will be monitored and measured against the full set of contractual requirements as set out in the contract documents including the agreed programme of deliverables, quality of works, scheme costs, stakeholder liaison and customer care.

Similarly, the performance of the consultants providing the professional services will be monitored and measured against the quality, cost and their responsiveness as set out in their terms of appointment.

B5. Stakeholders

A stakeholder analysis is set out at G4 below. A summary of consultation responses is in the covering Executive report.

C. ECONOMIC CASE AND OPTIONS APPRAISAL

This sets out the options that have been considered to determine the best value for money in achieving the Council's priorities

C1. Summary of options reviewed at Outline Business Case

(including reasons for the preferred option which has been developed to FBC)

If options have been further developed since the OBC, provide the updated Price quality matrix and recommended option with reasons.

- This scheme is aimed at managing a major substandard viaduct that needs to remain open to traffic due to its strategic location and importance to the West Midlands conurbation. As a result, the current interim management strategy, described in Annex 2, was devised and formally approved by the former Cabinet Committee (Procurement) in August 2011.

There are four alternative approaches which could be adopted for the structure;

- Option 1 – Do Nothing
- Option 2 - Complete Replacement
- Option 3 - Continuous Monitoring, Inspection and Assessment
- Option 4 - Viaduct Strengthening

Option 1 – Do Nothing

This is not a viable option as the current theoretical live (traffic) load capacity for the structure is rated as zero representing a serious structural risk which would require the imposition of a weight and/or width restriction or the ultimate closure of the viaduct if strengthening measures are not undertaken. The consequences would be significant for the region's economy and potentially the health and safety of those using the A38(M) Aston Expressway and those living and working on adjacent corridors.

Option 2 – Complete Replacement

The structure is considered to be repairable and as such its complete replacement would not be a viable solution due to significant additional costs and disruptions for no additional benefit (when compared to the proposed strengthening solution) as demonstrated by a comparative economic appraisal.

Option 3 - Continuous Monitoring, Inspection and Assessment

This involves continuation of the current management strategy of monitoring, inspection and assessment. Given that this approach does not reduce the safety risks, it is not considered to be a viable long term solution. The viaduct's condition will continue to deteriorate to the point that the current safety factors, that are already substandard, would become critical necessitating lane or width restrictions with significant detrimental impact on the region's economy and growth.

Option 4 - Viaduct Strengthening (Recommended)

The full strengthening of the viaduct is the only viable solution that would secure operational safety, longevity and functionality of the viaduct whilst removing the potential risk of failure of the viaduct.

C2. Evaluation of key risks and issues

The full risks and issues register is included at the end of this FBC

The major key risks and issues include;

1. Uncertainty around market rates, contractors' availability and interest in the scheme may lead to tender sums exceeding the estimated works costs. This may also result in a reduction in the level of competition and commercial tension at the procurement stage of the scheme.
2. Cost / time overruns due to unforeseen circumstances.
3. DfT assigning the provisional allocation of £72.110m to other schemes outside Birmingham.
4. Non availability of DfT funding beyond March 2021 (the current spending review period).
5. Impact on Commonwealth Games if weight and / or width restrictions are imposed on the viaduct.
6. Non availability or cancellation of railway possessions and compliance with Network Rail's operational requirements.
7. Flooding of the site.
8. Impact on businesses in the immediate locality of the viaduct affected by the works and levels of compensation.

C3. Other impacts of the preferred option

Describe other significant impacts, both positive and negative

1. The works would ensure public safety and structural integrity of the viaduct whilst maintaining uninterrupted access to the A38(M) corridor at all times.
2. The viaduct spans over a number of commercial premises which will be temporality affected by the works.

D. COMMERCIAL CASE

This considers whether realistic and commercial arrangements for the project can be made

D1. Partnership, Joint venture and accountable body working

Describe how the project will be controlled, managed and delivered if using these arrangements

TVV is owned by the City Council who remains the Accounting Body for the scheme.

D2. Procurement implications and Contract Strategy:

What is the proposed procurement contract strategy and route? Which Framework, or OJEU? This should

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generally discharge the requirement to approve a Contract Strategy (with a recommendation in the report).

The procurement strategy for the delivery of the scheme will cover the following six areas;

- Works Contract
- Testing Service
- Structural Monitoring
- Design, Technical, and Commercial Advice, Independent Checking and fulfilling the role of the Principal Designer under the Construction (Design and Management) Regulations 2015
- Contract Documentation and Risk Review
- Contract Management and Site Supervision

The procurement strategy is detailed in Annex 3.

D3. Staffing and TUPE implications:

Additional staff resources will be procured through the contractual arrangements detailed in Annex 3 to ensure successful delivery of the project.

There are no TUPE implications.

E. FINANCIAL CASE

This sets out the cost and affordability of the project

E1. Financial implications and funding

A detailed cost estimate based on construction activities, stakeholder requirements, operational risks, cost inflation and uncertainties within the construction industry has been developed. This has been used to establish the funding mechanism and financial resources required by the City Council to cover its contribution towards the scheme. A copy of the cost estimate is provided in Annex 5 with a summary provided below:

TVV - Scheme Outturn Summary	Total Cost	To 31.03.2019	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
	£m	£m	£m	£m	£m	£m	£m	£m	£m	£m
Design Refinements, Consultation, Investigations, Surveys, Testing Tender Preparation & Procurement	2.657	0	1.997	0.370	0.060	0.060	0.060	0.060	0.050	0
Site Works, Professional Fees (post- contract award), Compensation and Site Compound Costs	85.148	0	0.100	2.789	18.327	18.057	17.307	19.824	6.424	2.320
Costs already Incurred for Phase1	5.655	5.655								
Total Cost	93.460	5.655	2.097	3.159	18.387	18.117	17.367	19.884	6.474	2.320

Table 1 -Estimate Scheme Outturn Summary

TVV Funding Profile	Total	To 31.03.2019	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
	£m	£m	£m	£m	£m	£m	£m	£m	£m	£m
BCC's Integrated Transport Block (ITB) - Allocation Already Approved	6.009	5.655	0.354							
DfT's Local Growth Fund (LGF) - Subject to DfT's final approval	72.110		0.900	2.689	17.927	17.657	17.030	15.907		
Highways & Infrastructure Resources	15.341		0.843	0.47	0.46	0.46	0.337	3.977	6.474	2.32
Total Funding	93.460	5.655	2.097	3.159	18.387	18.117	17.367	19.884	6.474	2.320

Table 2 - Funding Profile

E2. Evaluation and comment on financial implications:

Capital Funding:

The overall capital cost of the scheme is estimated at £93.460m funded from a grant of £72.110m from the Local Growth Fund (LGF) of Department for Transport (DfT), £6.009m of Council's Integrated Transport Block (ITB) resources and, subject to approval detailed within the cabinet report, £15.341m of the Council's Highways and Infrastructure resources.

DfT's LGF contribution of £72.110m is a provisional capped allocation based on approval of the outline business case which was granted by DfT as part of the Greater Birmingham and Solihull Local Enterprise Partnership (GBSLEP) Local Growth Fund (LGF) programme of transport and connectivity projects in July 2014.

DfT has confirmed the award of a £0.900m from the provisional LGF allocation of £72.110m, under section 31 of the Local Government Act 2003 (s31), in the 2019/20 financial year to cover project development activities. Final confirmation of the total LGF allocation will be subject to DfT's approval of the Major Scheme Business Case (MSBC) which can only be completed once the tender submissions for the main works have been evaluated.

In March 2019, DfT advised that it was seeking confirmation from the HM Treasury that, subject to approval of the MSBC, the unspent grant allocation, estimated at £68.521m based on the project delivery programme, may be carried forward beyond the current spending review period which ends in March 2021. This confirmation is anticipated following completion of the next proposed spending review in December 2019.

The approvals sought in the cabinet report relating to expenditure funded from provisional LGF allocation are subject to DfT's approval of the MSBC and funding confirmation.

To date £6.009m ITB funding has been allocated to the management strategy of the viaduct.

To mitigate the escalation of the construction costs arising from latent defects and to achieve cost certainty, it is proposed to undertake additional project development activities including testing work prior to inviting tenders for the strengthening scheme. The cabinet report seeks approval to release of the £0.900m LGF grant and also £0.843m from Highways and Infrastructure resources (subject to of paragraph 2.1.4 of the cabinet report) to progress the scheme.

Asset Management / Maintenance Implications

The project underpins a robust asset management strategy aimed at ensuring public safety, asset integrity, value for money and whole life cycle planning. As part of the City Council's obligations under the HMMPFI contract, the Service Provider, Amey, has been consulted and will ensure close coordination between its programmed routine maintenance works for the non-structural elements of the viaduct and the proposed strengthening works as described in this document. This will avoid duplication and enable better overall use of resources and improve value.

Revenue Consequences

Maintenance Costs

This project involves the strengthening of an existing viaduct. No new assets will be created as a result of the scheme. The longevity and service life of the structure however, will be extended. It is therefore not anticipated that there will be any additional ongoing revenue repairs and maintenance implications to those already budgeted for.

E3. Approach to optimism bias and provision of contingency

Given the structural form and the nature of the scheme, a combined optimism bias and contingency factor of 21% has been applied to the estimated cost of the works.

E4. Taxation

Describe any tax implications and how they will be managed, including VAT

There should be no adverse VAT implications for the City Council in this scheme as the maintenance of highways is a statutory function of the City Council such that any VAT paid to contractors will be reclaimable.

F. PROJECT MANAGEMENT CASE

This considers how project delivery plans are robust and realistic

F1. Key Project Milestones

The summary Project Plan and milestones is attached at G1 below

Planned Delivery Dates

Commencement of the procurement Process	September 2019
DfT approval of the MSBC and confirmation of funding	September 2020
Main contract award	December 2020
Planned start date on site	February 2021
Practical completion	November 2025
Post implementation review	November 2026

F2. Achievability

Describe how the project can be delivered given the organisational skills and capacity available

The proposed procurement methodology through the OJEU compliant two stage process will ensure competitive tension between tenderers with proven track record of delivery of schemes of similar complexity.

The Council has experience and proven track record of successfully delivering multi-million pound annual work programmes for bridge strengthening and maintenance programmes on time and within budget whilst achieving the desired outcomes.

The Council has retained in-house structural engineering expertise within Highways Service Area for the management of this type of scheme. The team has successfully delivered the trial span works, carried out as part of the viaduct's current management strategy, and is fully conversant with design, delivery and commercial aspects of this project. It is also proposed to procure additional specialist resources from external consultants to assist project and commercial management, site supervision, monitoring and specialist testing.

F3. Dependencies on other projects or activities

Delivery of the strengthening works will depend on completion of the procurement process and appointment of a suitably qualified and experienced contractor to deliver the strengthening works subject to DfT's approval of the final MSBC submission and confirmation of funding expected in September 2020.

The implementation of the proposed works is not dependent on other schemes.

F4. Officer support

Project Manager: Kamyar Tavassoli - Highways Services Manager
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Project Accountant: Andy R Price - Finance Manager
0121 303 7701 andy.price@birmingham.gov.uk

Project Sponsor: Kevin Hicks - Assistant Director, Highways and infrastructure
0121 303 7329 kevin.hicks@birmingham.gov.uk

F5. Project Management

Describe how the project will be managed, including the responsible Project Board and who its members are

The experience and expertise of the Council's project management team has been described under Section F2 above.

The existing robust and professional project management will extend to the strengthening phase of the scheme. The Council's project manager will be supported by additional specialist resources from external consultants to assist project and commercial management, site supervision, monitoring and specialist testing, as detailed within this report.

The Project Board will consist of;
Council Project Manager; Kamyar Tavassoli (Highways Services Manager)
Project Accountant; Andy R Price (Finance Manager)
Project Sponsor; Kevin Hicks (Assistant Director, Highways and Infrastructure)

In addition, other professional support in connection with procurement, legal, commercial, contract management and site supervision matters will be sought as appropriate.

G. SUPPORTING INFORMATION

(Please adapt or replace the formats as appropriate to the project)

G1. PROJECT PLAN

Detailed Project Plan supporting the key milestones in section F1 above

The project Plan is provided in Annex 4.

G2. SUMMARY OF RISKS AND ISSUES REGISTER

Risks should include Optimism Bias, and risks during the development to FBC

Grading of severity and likelihood: High – Significant – Medium - Low

		Risk after mitigation:	
Risk or issue	mitigation	Severity	Likelihood
<p>1. Uncertainty around market rates and contractor availability and interest in the scheme</p> <p>The potential impact;</p> <ul style="list-style-type: none"> - <i>Tender returns substantially exceed the works cost estimate</i> - <i>Reduced competition level</i> 	<ul style="list-style-type: none"> • The scope of the project fully defined. • Further site investigation carried out to remove uncertainties. • Final design refined to incorporate lessons learnt from the trial span strengthening works improving buildability. • A detailed cost estimate allowing for quantitative and qualitative risks has been prepared. • OJEU compliant two stage procurement process proposed. 	High	Low
<p>2. Cost / time overruns due to unforeseen circumstances</p> <p>The potential impact;</p> <ul style="list-style-type: none"> - <i>Actual costs exceed budget</i> 	<ul style="list-style-type: none"> • A robust cost estimate is prepared and the optimism bias used reflects the nature of the proposed works. • Testing and investigatory work carried out to identify defects. • The Council will employ an experienced and professional site and contract management team who will implement a robust management and commercial system. • All variations and changes will be fully reviewed and cost increases verified as soon as possible. • Should there be an indication that the costs are likely to increase to a level beyond the available budget, the scope of the refurbishment works will be reviewed and prioritised in 	Medium	Low

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	order to remain within available budget. Any remaining works may have to be undertaken at a later date.		
<p>3. Delays to approval of the WebTAG Business Case by DfT</p> <p>The potential Impact;</p> <ul style="list-style-type: none"> - <i>DfT funding delayed leading to an implementation delay or the scheme put on hold</i> 	<ul style="list-style-type: none"> • The project team has been in regular dialogue with the DfT whilst preparing the Business Case in accordance with the WebTAG guidance on traffic modelling and appraisal. • DfT are fully aware of the strategic importance of the viaduct to Birmingham and the West Midlands conurbation and support the scheme. • To ensure DfT funding, the scheme is to commence as soon as possible in 2020. 	High	Low
<p>4. Non availability of DfT funding beyond the current governmental spending review period which ends in March 2021</p> <p>The potential Impact;</p> <ul style="list-style-type: none"> - DfT funding delayed leading to the scheme being put on hold resulting in continuous structural deterioration and ultimately imposition of weight or width restrictions 	<ul style="list-style-type: none"> • DfT have made the HM Treasury aware of the strategic importance of the viaduct to Birmingham and the West Midlands conurbation and support the scheme. • Tenders for the main works to be sought in January 2020 once availability of funding has been confirmed by DfT. 	High	Medium
<p>5. Introduction of weight or width restrictions on the viaduct before or during Commonwealth Games.</p> <p>The potential impact;</p> <ul style="list-style-type: none"> - Significant adverse impact on accessibility to Birmingham and reputational damage to the City. 	<ul style="list-style-type: none"> • Implementation of the ongoing structural management strategy as detailed in Annex 2. • The works, which are planned to commence in Feb. 2021, are programmed to address the critical structural components at the start of the project hence arresting their further deterioration and avoiding the need for introduction of restrictions. 	High	Low

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<p>6. Delays arising from Network Rail requirements These include;</p> <ul style="list-style-type: none"> - Non availability of railway possessions, - Working methods needed for dealing with overhead line electrification (OLE) equipment currently attached to the viaduct <p>The potential impact;</p> <ul style="list-style-type: none"> - <i>Implementation delays and increased costs</i> 	<ul style="list-style-type: none"> • Basic Asset Protection Agreement with Network Rail is in place. • Detailed dialogue and early engagement with Network Rail agreeing methodologies and safe working methods. 	Medium	Low
<p>7. Disruption to businesses affected by the works during construction stage</p> <p>The potential impact;</p> <ul style="list-style-type: none"> - <i>Contractor access to the bridge interrupted</i> - <i>Loss of income by the businesses resulting in compensation claims</i> 	<ul style="list-style-type: none"> • Consultation carried out with all businesses in the vicinity of the viaduct and the site works will be programmed and carefully sequenced to minimise disruption. • A parcel of land in the vicinity of the viaduct to be rented to accommodate alternative parking and storage for businesses affected by the works. • Compensation to be paid to businesses where appropriate following formal assessment process. 	Medium	Low
<p>8. Flooding of the Site</p> <p>The potential impact;</p> <ul style="list-style-type: none"> - <i>Programme delays as a result of flooding</i> 	<ul style="list-style-type: none"> • A flood risk assessment of the area has been carried out and agreed with the Environment Agency. 	Medium	Low
<p>9. Disruption to road users during execution of the works</p> <p>The potential impact;</p> <ul style="list-style-type: none"> - Delays to traffic on the Highway 	<ul style="list-style-type: none"> • Careful planning and sequencing required to ensure disruption is kept to a minimum. • A stakeholder communication plan will be developed to ensure timely and regular updates are provided. 	Medium	Low

G3. EXTERNAL FUNDING AND OTHER FINANCIAL DETAILS

Description of external funding arrangements and conditions, and other financial details supporting the financial implications in section E1 above (if appropriate)

Details of external funding arrangements and conditions are described under Capital Funding in Section E2 (Evaluation and Comment on Financial Implications) of this Appendix.

G4. STAKEHOLDER ANALYSIS		
Stakeholder	Role and significance	how stakeholder relationships will be managed
Cabinet Member, elected members, MP's	City Council Governance	Through briefing notes, reports, meetings and regular updates
Network Rail	Agreement to railway possessions and safe systems of work	Compliance with the existing Basic Asset Protection Agreement, detailed engagement aimed at early approval of the proposals
Environment Agency	Agreement to proposals and safe systems of work	Early engagement including undertaking flood risk assessments
Land owners and businesses affected by the works	Allowing contractor access to the viaduct through their land	Detailed engagement and liaison to determine their requirements, evaluate and agree compensation payments
HS2, Highways England, Common Wealth Games 2022 Planners	Sponsors of major current infrastructure schemes in Birmingham. undertakers of	Engagement and coordination
Statutory undertakers	Utility service providers	Consultation carried out at the design stage and continuous engagement at the implementation stage
Emergency Services, Transport for West Midlands	Police, Fire and Ambulance services	Early consultation and engagement to establish requirements
Transport for West Midlands	Public transport	Consultation on traffic management issues

A stakeholder liaison and communication plan has been developed and will be updated throughout the procurement and delivery stages of the scheme to ensure proactive engagement with stakeholders.

G5. BENEFITS REGISTER

For major projects and programmes over £20m, this sets out in more detail the planned benefits. Benefits should be monetised where it is proportionate and possible to do so, to support the calculation of a BCR and NPSV (please adapt this template as appropriate)

As part of the DfT's Major Scheme Business Case (MSBC) development an interim traffic and economic assessment has been undertaken. Realistic scheme costs have been estimated and a Present Value of Costs (PVC) has been calculated.

The Transport Economic Efficiency (TEE) benefits have been calculated using TUBA, the preferred software package for assessment of highway schemes. TUBA calculates monetised benefits based on changes in travel times, vehicle operating costs, user charges and private sector revenues, presented in 2010 prices and values.

The scheme has been forecast to deliver total TEE benefits of £315.1m. The majority of these savings are derived from travel time savings, with further savings resulting from private sector provider revenues. £5.6m of indirect tax revenues are also recorded, which, when combined with the above TEE benefits, provides an overall Present Value of Benefits (PVB) of £320.7m.

Comparing the PVB with the PVC gives a Net Present Value (NPV) of £278m, and Benefit to Cost Ratio (BCR) of 7.48. This indicates the scheme will provide very high value for money, according to DfT guidelines. Sensitivity tests were conducted, varying scheme costs and mitigation measure implementation year. These showed that either a very significant increase in costs (by a factor of four), or delay in mitigation measure implementation (beyond 2046) would have to occur for the scheme to not provide high value for money.

Other Attachments <i>provide as appropriate</i>	
<ul style="list-style-type: none"> • Location Plan and Typical Cross Section • Tame Valley Viaduct - Management Strategy • A38(M) Tame Valley Viaduct Procurement Strategy • A38(M) Tame Valley Viaduct Strengthening - Works Delivery Programme • Scheme Outturn, Funding Profile and Construction Cost Estimate 	Annex 1 Annex 2 Annex 3 Annex 4 Annex 5 (Exempt)