

Birmingham City Council

Report to Cabinet

30th July 2019



Subject: A38(M) Aston Expressway Tame Valley Viaduct Strengthening Works

Report of: Strategic Director - Inclusive Growth

Relevant Cabinet Member: Councillor Waseem Zaffar – Transport and Environment
Councillor Tristan Chatfield – Finance and Resources

Relevant O &S Chair(s): Councillor Liz Clements – Sustainability and Transport
Councillor Sir Albert Bore - Resources

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Are specific wards affected?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No – All wards affected
If yes, name(s) of ward(s):		
Is this a key decision?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
If relevant, add Forward Plan Reference: 005708/2018		
Is the decision eligible for call-in?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Does the report contain confidential or exempt information?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Commercially sensitive information is provided in the exempt Annex 5 of Appendix A to this report in accordance with Paragraph 3 - Schedule 12A Local Government Act 1972: Information relating to the financial or business affairs of any particular person (including the Council).		

1 Executive Summary

- 1.1 The Tame Valley Viaduct (TVV) forms part of the A38(M) Aston Expressway, the primary route connecting Birmingham to the M6 motorway and the wider strategic road network. As such, the use of the structure to carry traffic is critical to the economy of Birmingham which contributes over £40bn to the UK economy each year.

- 1.2 The current theoretical load carrying capacity for the structure is rated as zero which represents a significant risk to its operations that would require the imposition of a weight and/or width restriction or the closure of the viaduct if strengthening measures are not undertaken. To date the need to restrict or close the viaduct has been avoided through the implementation of a comprehensive structural management strategy involving inspections, assessments, detailed structural strengthening designs, live monitoring and testing aimed at ensuring the viaduct's operational safety.
- 1.3 The deployment of the management strategy is a short term solution and is only acceptable whilst long-term plans for strengthening and maintenance of the viaduct have been devised. A well planned investment programme commencing within the next 18 months offers overall value for money whilst avoiding the potential risk and cost of associated with the potential failure of this vital part of our transport infrastructure.
- 1.4 The purpose of this report is;
- To seek approval to the Full Business Case (FBC) for the implementation of the A38(M) Aston Expressway TVV Strengthening Works detailed in Appendix A of this report with an estimated overall capital cost of £93.460m,
 - To seek approval to the proposed procurement strategy for the works and services for the project as detailed in Annex 3 of Appendix A,
 - To seek approval to the allocation of up to £15.341m additional funding from the Council's Highways and Infrastructure resources as part of the City Council's contribution towards the cost of the viaduct strengthening scheme.

2 Recommendations

2.1 That Cabinet

- 2.1.1 Approves the Full Business Case (FBC) for the implementation of the A38(M) Aston Expressway Tame Valley Viaduct Strengthening Works detailed in Appendix A of this report at an estimated overall capital cost of £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 in 2.1.4 below, £15.341m of the Council's Highways and Infrastructure resources.
- 2.1.2 Notes that to date the sum of £6.009m has been approved for the implementation of the management strategy of the viaduct using the Council's ITB resources.
- 2.1.3 Notes that the contribution from the DfT's LGF to the scheme is expected to be capped at £72.110m leaving the Council with a balance of further £15.341m to fund the project.

- 2.1.4 Approves the allocation of up to £15.341m of the Council's Highways and Infrastructure resources towards the cost of the strengthening scheme.
- 2.1.5 Notes that DfT has agreed to make an advance payment of £0.900m towards the scheme development from the allocated LGF resources in the financial year 2019/20.
- 2.1.6 Approves the release of £0.900m of the LGF resources as described in 2.1.5 above and, subject to approval sought in 2.1.4 above, £0.843m of the Highways and Infrastructure resources to progress the project.
- 2.1.7 Approves, in accordance with the requirements and approach outlined in Annex 3 of Appendix A, the commencement of the following activities for the A38(M) Aston Expressway Tame Valley Viaduct scheme::
 - 2.1.7.1 Procurement of Strengthening Works
 - 2.1.7.2 Procurement of Testing Works
 - 2.1.7.3 Entering into single contractor negotiations for the procurement of Structural Monitoring Service
 - 2.1.7.4 Entering into single contractor negotiations for the procurement of design, technical and commercial advice, independent checking and the fulfilment of the Principal Designer role under the Construction (Design and Management) Regulations 2015
 - 2.1.7.5 Procurement of Contract Management and Site Supervision Service
- 2.1.8 Delegates the award of contracts for the A38(M) Aston Expressway Tame Valley Viaduct Strengthening Works and Contract Management and Site Supervision as detailed in paragraphs 2.1.7.1 and 2.1.7.5 to the Strategic Director - Inclusive Growth in conjunction with the Assistant Director, Development and Commercial (or their delegate) and the Chief Finance Officer (or their delegate) subject to formal DfT approval of the final business case confirming allocation of the DfT's grant totalling £72.110m towards the scheme and the works costs being within the pre-tender estimate.
- 2.1.9 Delegates the award of a contract for the A38(M) Aston Expressway Tame Valley Viaduct services as detailed in paragraphs 2.1.7.4 to the Strategic Director - Inclusive Growth in conjunction with the Assistant Director, Development and Commercial (or their delegate) and the Chief Finance Officer (or their delegate). It is noted that expenditure associated with services supporting the delivery of the strengthening works contract will be subject to the award this contract.
- 2.1.10 Delegates the award of contracts for the A38(M) Aston Expressway Tame Valley Viaduct as detailed in paragraphs 2.1.7.2 and 2.1.7.3 to the Strategic Director - Inclusive Growth in conjunction with the Assistant

Director, Development and Commercial (or their delegate) and the Chief Finance Officer (or their delegate).

- 2.1.11 Delegates authority to the Strategic Director - Inclusive Growth and the Chief Finance Officer to submit the major scheme business case (MSBC) and funding bid to the DfT's Major Transport Schemes Portfolio for approval following the outcome of the tender evaluation process.
- 2.1.12 Delegates authority to the Assistant Director of Property Services to agree rental charges for the site compound and alternative storage and car parking for the businesses affected by the works and agree the level of compensation payable to those impacted by the scheme,
- 2.1.13 Authorises the Assistant Director, Highways and Infrastructure to make payments, with an aggregate value of up to £1.518m, to cover expenditure agreed under Section 2.1.12, and all fees and charges including those payable to Network Rail, Environment Agency and statutory undertakers. A breakdown is provided in the Exempt Annex 5 of Appendix A.
- 2.1.14 Authorises the City Solicitor to negotiate, execute and complete any necessary legal documentation to give effect to the above recommendations.

3 Background

- 3.1 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 MSBC required by DfT.
- 3.2 TVV forms the northern end of the A38(M) Aston Expressway between Birmingham city centre and Junction 6 (Gravelly Interchange/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 to Appendix A of this report provides the location plan and a typical cross section of the viaduct.
- 3.3 The City Council has retained responsibility for the overall load carrying capacity and strengthening of this major asset whilst only the routine operational maintenance, such as carriageway resurfacing, lighting and parapet maintenance, of the viaduct is delivered through the Highway Maintenance and Management Private Finance Initiative (HMMPFI) Service Provider.

- 3.4 The current theoretical live (traffic) load capacity for the structure is rated as zero representing a significant risk to its continued operation and use. The proactive approach to the management of the structure by the Council however, has prevented the necessity to take any drastic actions (such as the imposition of a weight and/or width restriction or the ultimate closure of the viaduct) to control the risk. The managed approach to mitigating the risk has been met through the implementation of a comprehensive and innovative three-phased structural management strategy 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
- 3.5 Details of the management strategy are provided in Annex 2 of Appendix A and are summarised as follows;
- 3.5.1 **Phase 1 - Monitoring, Inspection, Assessment and Design;** This phase involved the development and installation of a robust system of continuous live monitoring, detailed surveys, non-destructive testing, rigorous assessments and detailed strengthening design to enhance the carrying capacity of the entire viaduct to current standards.
- 3.5.2 **Phase 2 – Trial Span Strengthening, Design Refinements, Testing, Contract Documentation and Stakeholder Liaison;** The aims and objectives of this phase were to;
- a) Undertake part strengthening of one of the substandard spans of the viaduct on a trial basis and to incorporate the experience gained and lessons learnt from the trial to refine and improve the final design of the full viaduct strengthening scheme;
 - b) Enhance buildability, develop a procurement and project risk management strategy, prepare detailed cost estimates and improve construction and operational safety;
 - c) Engage with the affected stakeholders including Network Rail, Environment Agency and businesses impacted by the works;
 - d) Coordinate works with programmed activities within the City.
- 3.5.3 **Phase 3 – Delivery of Strengthening Works;** This phase, which is **the subject of this report**, involves the implementation of the full structural strengthening scheme incorporating works to all of the 21 spans that compromise the TVV structure. These works will include

- a) Strengthening of the steel box girders carrying the viaduct deck to enhance their carrying capacity and overall longevity;
- b) Painting of the entire external and internal surfaces of the steel box girders;
- c) General refurbishment of the viaduct's deck components, piers and abutments;
- d) Supporting the delivery of the above activities including preparation of the business case required by DfT to confirm allocation of the LGF grant funding for the scheme.

3.6 The overall cost of the strengthening works is estimated at £93.460m. This includes £6.009m of expenditure already incurred as part of Phases 1 and 2 of the management strategy.

3.7 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 business case justifying the overall benefits of the project. The trial span strengthening works were completed as part of its Phase 2 of the management strategy. The full business case 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. 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.

3.8 In March 2019, DfT advised that it was seeking confirmation from HM Treasury that any unspent grant allocation estimated at £68.521m (based on the current outline project delivery programme) can 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.

3.9 Tenders for the main strengthening works are to be sought in January 2020 following confirmation of budget availability from DfT. The delivery programme is provided in Annex 4 of Appendix A to this report.

4 Options considered and Recommended Proposal

4.1 This is a strengthening scheme for a major viaduct currently open to traffic.. 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

4.2 **Option1 – Do Nothing**

4.2.1 This is not a viable option for the reasons set out in Section 3.4 of this report. The consequences of imposing vehicle traffic restrictions the viaduct would be significant for the region's economy and potentially have a detrimental impact on the health and safety of those using the A38(M) Aston Expressway and those living and working on adjacent corridors.

4.3 **Option 2 – Complete Replacement**

4.3.1 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.

4.4 **Option 3 - Continuous Monitoring, Inspection and Assessment**

4.4.1 This option involves continuation of the current management strategy of monitoring, inspection and assessment. This approach does not reduce the risks (i.e. it only manages and maintains those risks at an acceptable level) and it could never be considered a completely failsafe or appropriate long-term measure. The risks of needing to implement vehicle restrictions or closing the viaduct to traffic will only increase by deferring the implementation of the strengthening works.

4.4.2 With over 90,000 vehicles per day (including around 8,000 heavy goods vehicles) travelling over the viaduct, its condition is certain to continue to deteriorate. The current factors of safety, that are already substandard, will reduce to the level where they become critical. At this point, the implementation of lane and weight restrictions, or a full closure would become necessary.

4.4.3 The current monitoring regime only serves to detect failures and provide early warnings, enabling restrictions to be implemented, before there is any danger to the public. The continual monitoring is costly and given the scale and complexity of the structure, with around 3km of box girders to manage, monitoring cannot be considered as a viable long-term solution.

4.4.4 Any lane and weight restrictions or closures will have a serious impact on the capacity of the A38(M) at this critical section of the regional transport network leading to additional congestion on the A38(M) and a re-routing of traffic onto the local road network. Restrictions and closures will also cause severe delays and inconvenience to the M6 traffic with a significant adverse impact on the economy of Birmingham and the entire West

Midlands. Accessibility and journey time reliability will suffer restricting future growth and prosperity.

4.4.5 The Council's air quality management area includes the corridors parallel to the A38(M). If a significant proportion of traffic and Heavy Good Vehicles (HGVs) were to use these parallel corridors, there could be a serious worsening of air quality posing a risk to health.

4.5 Option 4 - Viaduct Strengthening (Recommended Proposal)

4.5.1 This option would secure operational safety, longevity and functionality of the viaduct through enhancing its carrying capacity and service life by implementing a strengthening and refurbishment programme.

4.5.2 The option will also result in the removal of safety risks including the need for the imposition of any future weight and/or width restrictions. The potential risk of failure of the viaduct will also be completely removed.

The consequences of not strengthening the viaduct 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.

5 Consultation

5.1 As part of the project delivery process the Cabinet Member for Transport and Environment, Cabinet Member for Finance and Resources, City Finance team, Legal & Governance and Procurement Services have been consulted. In addition, other internal and external stakeholders including ward councillors, businesses directly affected by the proposed works, the Council's City Centre Management and Traffic Management Services, Commonwealth Games Organising Committee, Highways England, Network Rail, Environment Agency, the Police and emergency services, have been informed of the proposed works and their requirements have been taken into account and will be incorporated into the contract documents and works delivery programmes.

5.2 The Birmingham Highway Maintenance Service Provider (Amey) has been consulted and all site activities will be coordinated to minimise disruption to the network.

6 Risk Management

6.1 The current three-phased structural management regime set out in 3.5 of this report has been pivotal in ensuring public safety and unrestricted use of the viaduct, and thereby the whole of A38(M) Aston Expressway, during the development of the proposed strengthening design and refurbishment programme.

6.2 Through implementation of the trial span strengthening as part of this management strategy, valuable data on structural deficiencies, access

limitations, latent defects and buildability issues has been gathered and incorporated into the final strengthening design. This will lead to a much greater control and certainty over the delivery and financial outturn of the scheme.

- 6.3 A comprehensive review of the delivery mechanism including project and financial risks based on the key scheme objectives has been undertaken leading to the recommended procurement process summarised in Annex 3 of Appendix A of this report..
- 6.4 A detailed project cost estimate incorporating a review of the construction programme and stakeholder requirements, quantitative and qualitative risk evaluation and market interest in the scheme has been undertaken. This should improve cost certainty and programme achievability whilst also mitigating the risk of cost and programme over-runs as far as reasonably practicable.
- 6.5 A copy of the project risk register covering the salient risks and issues is provided in Appendix A.

7 Compliance Issues:

7.1 How are the recommended decisions consistent with the City Council's priorities, plans and strategies?

7.1.1 Through ensuring the unrestricted use of the A38(M) Aston Expressway and maintaining access and efficient connectivity between Birmingham city centre and strategic road network, 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
- 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

7.1.2 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.

7.1.3 Compliance with the Birmingham Business Charter for Social responsibility (BBC4SR) is a mandatory requirement that will form part of the conditions of the contracts. The successful suppliers will be required to sign up to the BBC4SR and to provide a detailed action plan which will be managed and monitored as part of the project management delivery plan on a regular basis to ensure the commitments are delivered. In addition, verifiable social value outcomes, promoting the delivery of the wider

community benefits whilst supporting the Council's priorities, will be measured.

7.2 Legal Implications

7.2.1 The relevant primary legislation required to implement this project is contained within the Highways Act 1980. Birmingham City Council, in undertaking the project, will do so under this Act and other related highways legislation, regulations, instructions, directives and general guidance. Under S111 Local Government Act 1972, the Council has the power to do anything which is calculated to facilitate, or is conducive or incidental to, the discharge of any of its functions.

7.2.2 Commercially sensitive information is provided in the exempt Annex 5 of Appendix A to this report in accordance with Paragraph 3 - Schedule 12A Local Government Act 1972: Information relating to the financial or business affairs of any particular person (including the Council).

7.3 Financial Implications

Capital Implications

7.3.1 The overall capital cost of the scheme is estimated at £93.460m. The funding comprises a grant of £72.110m from the Department for Transport's Local Growth fund (LGF), £6.009m of the Council's Integrated Transport Block (ITB) resources and, subject to approval detailed within this report, £15.341m of the Council's Highway and Infrastructure resources as part of the Council's local contribution.

7.3.2 Paragraphs 3.6 to 3.9 above provide details of funding requirements, expenditure and grant proposals.

7.3.3 To mitigate the escalation of the construction costs arising from latent defects and to achieve cost certainty, it is proposed to undertake additional activities prior to inviting tenders for the strengthening works. DfT has agreed to make an advance payment of £0.900m from the allocated LGF towards these works in the financial year 2019/20 and this report seeks approval to the release these funds and also £0.843m Highways and Infrastructure resources (subject to approval sought in 2.1.4), to progress the project.

7.3.4 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 of Appendix A.

7.3.5 The scheme will be carefully managed to ensure costs are contained within the available budget. Although unlikely, should there be an early indication that the costs may increase to a level beyond the available budget, the scope of the non-safety critical refurbishment activities will be reviewed and adjusted to suit the available funding. Any remaining works would then have to be undertaken at a later date and will be subject to a further report in line with the Council's governance framework.

7.3.6 The funding profile for the scheme has been provided in the table below.

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

Revenue Implications

7.3.7 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.

7.4 Procurement Implications

7.4.1 The key objectives of the scheme from the delivery and procurement perspective are; cost certainty, securing DfT funding through meeting their award conditions, achieving value for money, scope and programme certainty.

7.4.2 The procurement strategy is detailed in Annex 3 of Appendix A and the key procurement and delivery milestones are shown in Annex 4 of Appendix A.

7.5 Human Resources Implications (if required)

7.5.1 The Council has experience and a proven track record of successfully delivering multi-million pound works programmes for bridge strengthening

and maintenance schemes on time and within budget whilst achieving the desired outcomes.

- 7.5.2 In addition to the available internal resources, it is proposed to procure additional specialist resources from external consultants to assist in the project and commercial management, site supervision and specialist testing as detailed in the Procurement Strategy in Annex 3.

7.6 Public Sector Equality Duty

7.6.1 In November 2018, an analysis of the effects of equality was undertaken for the Tame Valley Viaduct strengthening scheme. It was concluded that there would be no adverse effect on protected groups so no action plan would be required. A copy of the Equality Impact Assessment (EIA) has been provided in Appendix B of this report.

8 Appendices

- 8.1 Appendix A - A38(M) Aston Expressway Tame Valley Viaduct Strengthening Works Full Business Case including;

- Summary of Risks and Issues Register provided in Section G2, page 13, of Appendix A
- Annex 1 - Location Plan and Typical Cross Section
- Annex 2 - Tame Valley Viaduct -Interim Management Strategy
- Annex 3 - A38(M) Tame Valley Viaduct Procurement Strategy
- Annex 4 - A38(M) Tame Valley Viaduct Strengthening - Works Delivery Programme
- Exempt Annex 5 - Estimated Project Outturn and Construction Cost Estimate

- 8.2 Appendix B – Equalities Assessment

9 Background Documents

- 9.1 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
- 9.2 'A38(M) Tame Valley Viaduct Management Strategy - Implementation of Phase 2' submitted to Cabinet on 19 May 2014

- 9.3 Updated Transportation and Highways Capital Funding Strategy 2015/16 to 2020/21 - Report of the Strategic Director Economy to Cabinet, 16th February 2016
- 9.4 'Updated Transportation and Highways Funding Strategy 2017/18 to 2022/23' – Report of the Corporate Director Economy to Cabinet, 16th May 2017
- 9.5 “Highways Maintenance and Management PFI Contract” – Report of the Strategic Director - Inclusive Growth to Cabinet, 25th June 2019