

Newcastle & Gateshead Joint Bridges Committee**19 December 2022****TYNE BRIDGE MAJOR MAINTENANCE**

Report by: **Assistant Director Transport, Newcastle /
Strategic Director, Housing, Environment and Healthy
Communities Gateshead**

Ward Implications: **Monument / Bridges**

For information		
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1. Purpose of the report

This report updates Members on progress with the major maintenance scheme for the Tyne Bridge. It details the findings of the investigations undertaken, the identified works required, the anticipated programme for delivery and reviews the available funding. The report also identifies the next steps.

2. Recommendations

2.1 Committee is requested to: -

i Note the contents of the report.

3. Introduction and background

3.1 The Tyne Bridge, which was constructed between 1925 and 1928, was given Grade II* listed status by English Heritage in 2018 as part of the Great Exhibition of the North celebrations.

3.2 When it was opened on the 10 October 1928 it was the largest single span steel arch bridge in Britain. The bridge is a landmark feature in the North East and is recognised around the world.

3.3 The Tyne Bridge is jointly owned and maintained by Newcastle City Council and Gateshead Council with maintenance costs being shared on a population basis of 58:42. Newcastle City Council are the lead authority for the bridge with respect to maintenance.

3.4 The Tyne Bridge forms a key part of the region's highway network crossing the River

Tyne and carrying around 70,000 vehicles per day.

- 3.5 The ongoing maintenance of the bridge is essential to ensure public safety and to ensure that it remains fit for purpose. Major maintenance of the bridge was last undertaken between 1999 and 2001 when the bridge deck was repaired, re-waterproofed and re-surfaced, and the steelwork was repainted.
- 3.6 The works undertaken were expected to last 18-20 years and the bridge is now showing clear signs of deterioration, particularly with the breakdown of the paint system and visible corrosion of the steelwork, the localised deterioration of the road and footway surfacing and evidence of water penetration from leaking drains and damaged deck joints.

4. Current position and proposals

- 4.1 An Outline Business Case (OBC) scheme bid of £41.4m was submitted to the Department for Transport (DfT) in 2019 for funding from their Major Road Network (MRN) programme comprising £20.7m for major maintenance of the Tyne Bridge and £20.7m for a programme of maintenance works on the Central Motorway in Newcastle, refer to Appendix A.
- 4.2 In June 2022 Ministers approved the Outline Business Case for the scheme and granted it “programme entry”. As part of this approval the DfT confirmed a maximum capped funding contribution of up to £35.2m towards the scheme, £17.6m towards the Tyne Bridge element. With the balance being met by the Councils.

This funding is conditional on submission of the Full Business Case and:

- the scheme’s Value for Money (VfM), once the final tender prices are received, is still at least in the high category and/or has a Benefit Cost Ratio (BCR) of at least 3.5.
 - the scheme is implemented in accordance with the scheme proposals set out in the OBC funding bid.
 - confirmation the Councils have the statutory powers to construct the scheme.
 - the Councils undertake the procurement of a preferred bidder and receive a firm and final offer.
 - provide a funding profile and delivery programme.
 - the Councils confirm they will cover the funding required above the capped DfT amount.
- 4.3 The Councils undertook a procurement exercise earlier this year and engaged Esh Construction Ltd to undertake detailed inspection and investigation works, to develop the works programme, phasing and works costs which will be required by the DfT before final approval of funding for the scheme can be given.
 - 4.4 The inspections are now substantially complete, and the results are being analysed and the methods of repair agreed to inform the phasing of the works, the works programme and works costs. The areas of deterioration of the structure identified are as anticipated at scheme development stage however the number and extent of repairs required has increased as it is now 4 years since the scheme development stage. A summary of the key findings of the investigation works are presented in Appendix B.

- 4.5 The location and extent of the structural repairs required has a significant impact on the phasing of the works and the works programme. The current estimated duration of the works is between 36 and 42 months. The phasing is driven by the location of the structural repairs and the erection and removal of scaffold and working around the kittiwake nesting season.
- 4.6 Since the original funding bid was submitted there has been a significant increase in inflation costs in the construction industry. This has resulted in the estimated costs for the proposed works significantly increasing. The Council are currently working with the contractor to finalise these costs.
- 4.7 The Councils have spoken with Department for Transport regarding the anticipated increase in scheme costs and they have stated that at this time there is no additional funding available from the Major Road Network programme.
- 4.8 Officers are continuing to explore further funding options, however, we would look to re-allocate funding within the full £41.4m package, to ensure the Tyne Bridge was fully restored. The central motorway works would then need to be reprofiled. This work is being scoped by engineers.
- 4.9 It is proposed to hold a workshop with Members in the new year to explain in detail the proposed works, the delivery programme and traffic impacts.
- 4.10 After the workshop, it is proposed that the Final Business Case is finalised and submitted to the DfT for approval and confirmation of the funding allocation.
- 4.11 At this time, we do not anticipate DfT approval before the summer 2023 and have provisionally programmed the works phase to commence in autumn 2023. A provisional programme is presented in Appendix C.
- 4.12 To carry the work out safely and to protect the workforce, lane closures will be required, this will see the main carriageway over Tyne Bridge reduced to one lane in each direction during the refurbishment with some overnight closures to allow for the erection and dismantling of the scaffolding to the main arch. Some localised lane restrictions and overnight closures will also be required on the roads below the bridge on both the Newcastle and Gateshead quaysides.
- 4.13 As the Tyne Bridge is used by 70,000 vehicles a day, this would see capacity greatly reduced on a major cross river route between Newcastle and Gateshead. The Councils have already begun looking at a number of mitigation measures, including promoting alternative routes and improving public transport links to ease disruption. They will also be working with business representatives and public sector partners over the coming months and will publish updates as they develop a more detailed plan.

5. Reasons for the decision

- 5.1 This report is for information only and does not require a decision. It updates Members on the proposals for and progress on the major maintenance of the Tyne Bridge.
- 5.2 The works are essential to secure the long-term availability of the Tyne Bridge to the travelling public and to maintain the safe and fit for purpose use of the bridge without the need to impose weight or width restrictions.

- 5.3 When the DfT funding is confirmed, a separate report will be brought to the appropriate Committee or delegated decision maker of each Council to seek approval to the local funding contributions and to commence the works.

6. Alternative Options

- 6.1 The programme of works identified addresses the deterioration of the structure which needs to be undertaken to maintain its safe use. The extent of the works requires significant investment.
- 6.2 The normal level of Bridge Maintenance funding available to the Councils is insufficient to allow these works to be carried out under a single contract. Without the additional MRN capital funding, there would be a delay in undertaking these works which would lead to further deterioration in the bridge condition. This would ultimately result in restrictions having to be placed on the use of the Tyne Bridge.
- 6.3 If funding from the DfT cannot be secured the Councils would have to look at alternative funding options.

7. What happens next

- 7.1 Officers shall finalise the programme, phasing, and costs for the proposed works to be agreed with Members before submission to the DfT for final approval and agreement of funding.
- 7.2 Subject to final funding approval the programme of works and budget shall be submitted to the appropriate Committee or delegated decision maker of each Council to authorise the local contributions and approve the works.
- 7.3 Subject to funding and Committee approval the works will be procured in accordance with Newcastle City Council's Financial Regulations.
- 7.4 The development of the project will be reported to the Joint Tyne Bridges Committee and to the appropriate Committee of each authority. The Newcastle City Council Project Management Framework shall be used for the monitoring and reporting of the project.

8. Background papers

Background papers held by: -

Newcastle City Council, Place Directorate, Transport, Contact Officer:
Alastair Swan, Tel. 0191 211 5931;

9. Contact officers

Alastair Swan, Tel. 0191 211 5931; alastair.swan@newcastle.gov.uk

Appendix A: Financial Summary

The following table outlines the anticipated programme of spend and funding for the project.

Tyne Bridge Major Maintenance	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	TOTAL
Funding (£000s)							
DfT Major Road Network Fund*	100		4,138	6,848	5,547	986	17,619
Newcastle City Council	12	828	288	288	288	99	1,803
Gateshead Council	8	599	209	209	209	72	1,306
TOTAL	120	1,427	4,635	7,345	6,044	1,157	20,728
Expenditure (£000s)							
Tyne Bridge Major Maintenance							
Inspection, Investigation etc	114	1,241					1,355
Works**			4,403	6,978	5,742	1,099	18,222
Project Fees	6	186	231.75	367.25	302.2	57.85	1,151
	120	1,427	4,635	7,345	6,044	1,157	20,728

*DfT funding for 21/22 secured, funding for 22/23 onwards still to be confirmed

**Moving to undertake works is subject to DfT funding.

Appendix B: Inspection and Investigation Works

Over the summer Esh Construction Ltd have undertaken detailed inspections and investigation of the condition of the Tyne Bridge to identify and quantify the number and extent of repairs required.

Much of the repairs identified are in line with the assumptions made at the bid stage however the extent of repair required has increased. The following table summarises the results of the inspections.

Location	Inspection findings	Repairs Required
Steelwork and Cast-Iron Work		
Newcastle Approach spans	<ul style="list-style-type: none"> breakdown and failure of paint system corrosion of deck steelwork perforation of footway soffit steelwork 	<p>Grit blast and repaint steelwork/cast ironwork</p> <p>Structural repair/replace corroded steelwork/cast iron work</p> <p>Structural repairs required prior to scaffold erection</p>
Main River Span (deck)	<ul style="list-style-type: none"> breakdown and failure of paint system corrosion of deck steelwork perforation of footway soffit steelwork 	<p>Grit blast and repaint steelwork/cast ironwork</p> <p>Structural repair/replace corroded steelwork/cast iron work</p> <p>Structural repairs required prior to scaffold erection</p> <p>Kittiwake nesting season impact on programme</p>
Main River Span - Arch	<ul style="list-style-type: none"> breakdown and failure of paint system structural damage to bracing steelwork 	<p>Grit blast and repaint steelwork/cast ironwork</p> <p>Structural repair/replace damaged bracing</p> <p>Structural repairs required prior to scaffold erection</p> <p>Kittiwake nesting season impact on programme</p>
Gateshead Approach Span	<ul style="list-style-type: none"> breakdown and failure of paint system corrosion of deck steelwork perforation of footway soffit steelwork 	<p>Grit blast and repaint steelwork/cast ironwork</p> <p>Structural repair/replace corroded steelwork/cast iron work</p> <p>Structural repairs required prior to scaffold erection</p> <p>Kittiwake nesting season impact on programme</p>
Abutments and Towers		
Newcastle Abutment	<ul style="list-style-type: none"> spalling and cracking of concrete breakdown and failure of paint system to parapets 	<p>Concrete repairs and injection</p> <p>Grit blast and paint parapets</p>

Location	Inspection findings	Repairs Required
Newcastle Tower	<ul style="list-style-type: none"> deterioration of windows and doors failure of cast iron windowsills and steel fascia panels between windows defective drainage systems loose and spalling concrete within towers breakdown and failure of paint system corrosion of steelwork 	Repair / replace windows Repair / replace windows Repair / replace windowsills and steel fascia panels Replace drainage Concrete repair Grit blast and repaint steelwork Repair/replace steelwork Clean stonework
Gateshead Tower	<ul style="list-style-type: none"> deterioration of windows and doors failure of cast iron windowsills and steel fascia panels between windows defective drainage systems loose and spalling concrete within towers breakdown and failure of paint system corrosion of steelwork 	Repair / replace windows Repair / replace windows Repair / replace windowsills and steel fascia panels Replace drainage Concrete repair Grit blast and repaint steelwork Repair/replace steelwork Clean stonework
Gateshead Abutment	<ul style="list-style-type: none"> spalling and cracking of concrete breakdown and failure of paint system to parapets 	Concrete repairs and injection Grit blast and paint parapets Masonry repair and stitching
Surfacing		
Footways	<ul style="list-style-type: none"> localised failure of surfacing no protection to overrunning by vehicles 	Re-waterproof Re-surface Safety kerbing
Carriageway	<ul style="list-style-type: none"> localised failure of surfacing failure of waterproofing failure of bridge joints deck concrete failure 	Concrete repairs Re-waterproof Re-surface
Bridge joints	<ul style="list-style-type: none"> localised failure seepage into structure 	Replace bridge joints
Drainage	<ul style="list-style-type: none"> localised failure seepage into structure 	Replace drainage pipework drainage and fittings
Lighting		

Location	Inspection findings	Repairs Required
Street Lighting	<ul style="list-style-type: none"> • corrosion of supporting steelwork • cracking of cast iron lamp columns and detailing • fittings reaching end of serviceable life • cabling reaching end of serviceable life • controllers reaching end of serviceable life 	Steelwork repair Cast iron repair / replacement Replace fittings, wiring and controllers
Flood Lighting	<ul style="list-style-type: none"> • fittings reaching end of serviceable life • cabling reaching end of serviceable life • controllers reaching end of serviceable life 	Replace fittings Replace cabling Replace controllers

Appendix C: Phasing and Works Programme

Meetings have taken place with Ecologists, RSPB and the Kittiwake Partnership to discuss the phasing of the works and the constraints required to minimise the impact on the Kittiwakes who nest on large areas of the bridge between February and August annually.

Meetings have also taken place with the Bus companies, Utility Companies, Nexus, Historic England, National Highways, the Tyne Tunnels, the Environment Agency, Marine Maritime Organisations, the Port of Tyne Authority, and local businesses to brief them on the proposed works and to identify the constraints and approvals required on the scheme to inform the phasing of the works.

Based upon an assumed programme start in autumn 2023 this has identified a 36 - 42 month works programme.

**Tyne Bridge Major Maintenance
Provisional Summary Programme**

Task Name	Duration	2023					2024											2025											2026																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41										
Task Name	Duration	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D										
Constraints																																																				
Kittiwake Nesting Season																																																				
Great North Run																																																				
Traffic Restriction Main deck*																																																				
Deck Repairs																																																				
Span 4 East Footpath	120 days																																																			
Span 4 West Footpath	120 days																																																			
Grit Blasting + Painting Works																																																				
Newcastle Tower to chord	195 days																																																			
Bridge Central Span under deck Span 4	175 days																																																			
Bridge Central Span under deck Span 4	200 days																																																			
Bridge main arch - North side	230 days																																																			
Bridge main arch - South side	235 days																																																			
Gateshead Tower to chord	251 days																																																			
Newcastle Span 3	195 days																																																			
Newcastle Span 2	246 days																																																			
Newcastle Span 1	210 days																																																			
Gateshead Span 5	140 days																																																			
Gateshead Span 6	185 days																																																			
Abutments																																																				
Newcastle Abutment	210 days																																																			
Gateshead Abutment	130 days																																																			
Abutment Towers																																																				
Gateshead Tower	399 days																																																			
Newcastle Tower	375 days																																																			
Deck Waterproofing + Resurfacing																																																				
Main deck civils	140 days																																																			

* 1 lane each direction