

<b>Committees:</b> Bridge House Estate Board	<b>Dates:</b> 06 July 2022
<b>Subject:</b> <i>Blackfriars Bridge Parapet Refurbishment and Bridge Re-Painting (72800019)</i> <b>Unique Project Identifier: 11988</b>	<b>Gateway 5</b> <b>Regular</b> <b>Issue Report</b>
<b>Report of:</b> Executive Director Environment <b>Report Author:</b> Thomas Creed	<b>For Decision</b>
<h1>PUBLIC</h1>	

<b>1. Status update</b>	<p><b>Project Description:</b> The project will repaint Blackfriars Bridge, including the gilding of embellishments where appropriate. This will significantly improve the aesthetics of the structure and protect its fabric.</p> <p>The project will also repair the parapets to prevent future water ingress and protect the structure.</p> <p>The proposed activity and expenditure is consistent with the Trustee's duty to further the primary object of Bridge House Estates (BHE), in this case to maintain and support Blackfriars Bridge</p> <p><b>RAG Status:</b> Green (Red at last report to Committee)</p> <p><b>Risk Status:</b> Medium (Medium at last Gateway)</p> <p><b>Total Estimated Cost of Project (excluding risk):</b> £11,878,596</p> <p><b>Change in Total Estimated Cost of Project (excluding risk):</b> Decrease of £415,892 due to Value Engineering. However, an increase of £200,000 to Costed Risk Provision (CRP) is also proposed and the inclusion within this project of an additional £50,000 of works already identified and budgeted for in the 50-year plan.</p> <p><i>Overall Reduction of £165,892 (including risk), £365,892 (excluding risk) since the last report to Members. However, it is not proposed to adjust the overall budget at this point owing to uncertainty of the value of risks emerging.</i></p>
-------------------------	--

	<p><b>Spend to Date</b> (May 2022): £1,410,513 (plus further commitment of £10,552,896)</p> <p><b>Costed Risk Provision Utilised:</b> £22,056 (all of which has been drawn down since the last report to Members in Committee).</p> <p><b>Funding Source:</b> BHE 50-year Bridges Maintenance Plan</p> <p><b>Slippage:</b> <i>No slippage to programme.</i></p>
<b>2. Progress to date</b>	<p><u>Post Gateway 5 Progress</u></p> <p>Since Gateway 5 in May 2021 (reported to Planning and Transportation Committee and Project Sub-Committee, being the predecessor Committees/Sub-Committees with delegated responsibility for the relevant BHE functions), the contractor (FM Conway) and site supervisors (AECOM) have been appointed.</p> <p>An extensive stakeholder engagement process has commenced, and FM Conway have obtained the relevant approvals and adjusted their proposals to meet the requirements of each stakeholder in order to complete the refurbishment efficiently.</p> <p><u>Value Engineering</u></p> <p>A value engineering exercise was carried out following the appointment of the contractor. By making a slight adjustment the paint specified for the underside of the Bridge, the project was able to make a significant saving of <b>£415,892</b>. The parapet and facades of the Bridge will continue to be finished in the originally specified, fluoropolymer paint which is not susceptible to ultraviolet degradation and the associated colour fading; something which is less important on the white coloured areas underneath the Bridge. The underside of the Bridge will still be painted in high quality polyurethane bridge paint from which change the savings will be realised.</p> <p><u>Site Progress</u></p> <p>Following the stakeholder engagement process, works started on site in earnest in January 2022. The refurbishment has started on Span 2 of the Bridge and after the installation of a significant scaffold, the parapets have been dismantled and removed to be refurbished in a controlled environment. The progress so far is slightly behind where the contractor had hoped at this stage but Span 2 is expected to be complete in October 2022 and the project as a whole is still due to be completed in the Summer of 2024.</p> <p>A selection of photographs showing the progress of the parapet works on site, the production of new balusters and painting are included in Appendix 4.</p>

#### Risks Encountered

During the initial site works, it was observed that there were nine different decorative patterns on the balusters of the parapet, rather than the three patterns originally allowed for. As there are several balusters in need of replacement, these additional patterns have had to be created to allow exact replicas of the originals to be produced.

In addition to this, the number of balusters in need of replacement has significantly increased. Of the 1200 balusters on the Bridge, 135 were originally identified as significantly damaged beyond repair. However, once the paint had been removed and the balusters removed on the first section of parapet on span 2, it has become apparent that this figure is likely to increase to approximately 600 across the whole Bridge.

Following the removal of the existing paint system on the facades of the span 2, there are various cast iron repairs which need to be carried out. This was expected and is identified in the risk register. These repairs will be assessed on a case-by-case basis to protect the structure.

Since tendering the project, the Government has announced changes to National Insurance rates from April 2022. Additionally, the permitted use of rebated fuel (red diesel) has been restricted. Both of these changes to the law are valid compensation events under the contract which will increase the total cost of the project. We are evaluating the impact of this with FM Conway and AECOM. This has been added to the project Risk Register (R32) and additional CRP is being requested in this report to cover this.

The cost implications of these risks have been or will be funded by the CRP in the project budget, with funding released by the Assistant Director Engineering, as delegated at Gateway 5.

#### Opportunities for Collaboration

FM Conway have been working closely with officers to help to measure their performance against BHE's Climate Action Strategy. FM Conway have created a template to measure the amount of carbon emitted during the works in a project. This calculator takes the unit- km for travel, kg for materials, and hours for equipment, and uses this to get a sum of embodied carbon. It tracks information regarding vehicles/deliveries, materials and equipment used. A summary of the current information is included in Appendix 3.

	<p>Identified in the BHE 50-year rolling Bridges Maintenance Plan for 2022/23 is the replacement of the navigation lights on Blackfriars Bridge. There is currently a great deal of redundant bracketry associated with the navigation lights and the fittings are inefficient. It is proposed that the project team instruct these works under the current refurbishment project contract to utilise the access already in place which would be more cost effective and efficient (both in project delivery and in minimising disruption to the general public). The lights will be designed to be less visually intrusive and use less energy.</p> <p>The street lighting is also due to be replaced in 2022/23. This installation will also look to incorporate hardware for the Secure City Project. Officers from each of these projects as they relate to the discharge of the City Corporation's wider functions are working together with BHE to allow all work to take place efficiently and safely alongside each other.</p> <p>One of the significant external stakeholders on the project is the Tideway Tunnel Project, with its adjacent Blackfriars Foreshore Site. Part of this project involves the reinstatement of part of the heritage parapet on Span 1 of the Bridge to accommodate a new staircase. The two projects are looking at sharing the knowledge already accumulated from the refurbishment project to produce a seamless interface between the two projects and protect the character of the Bridge.</p> <p><u>Next Steps</u></p> <p>Despite the extensive phase of stakeholder engagement, the Blackfriars Bridge Parapet Refurbishment and Bridge Re-Painting project is still in its early stages on site. The next stages are to:</p> <ul style="list-style-type: none"> <li>• Complete the parapet refurbishment of Span 2,</li> <li>• Complete the refurbishment and repainting works on the façade and underside of Span 2,</li> <li>• Progress to Span 5, Span 4, Span 1a (over Blackfriars underpass), Span 3 and finally Span 1b. Access to span 1b depends on the progress of the Tideway foreshore site.</li> <li>• Planned project completion September 2024</li> </ul>
<p><b>3. Requested decisions</b></p>	<p><b>Requested Decisions:</b></p> <ul style="list-style-type: none"> <li>• Note the <b>£415,892</b> saving made in the Value Engineering process.</li> <li>• Approve the increase to value of the CRP by <b>£200,000</b> to allow for changes in the law, the full impact is still being quantified.</li> </ul>

	<ul style="list-style-type: none"><li>Approve the replacement of the existing Navigation Lights be added to the scope of the project, increasing the expected project cost by <b>£50,000</b> (funding identified in the existing 50-year BHE Bridges Maintenance Plan budget)</li></ul> <p><b><i>It be recommended that:</i></b></p> <ol style="list-style-type: none"><li>A reduction in expected overall project cost of <b>£165,892</b> be noted;</li><li>The project budget remains at <b>£14,716,540</b> (including risk) to reach the next project Gateway;</li><li>The remaining approved Costed Risk Provision of £2,637,944 is retained and additional £200,000 (totalling <b>£2,837,944</b>) is approved (to be drawn down via delegation to Assistant Director Engineering);</li><li>The replacement of the Navigation Lights is approved to be completed as part of the project, which if approved will increase the overall expected cost of the project.</li></ol>																												
<b>4. Budget</b>	<p>Total expected cost of the project at Gateway 5:</p> <ul style="list-style-type: none"><li>Including CRP: £14,716,540</li><li>Excluding CRP: £12,056,540</li></ul> <p>Current expected cost of the project:</p> <ul style="list-style-type: none"><li>Including CRP: £14,550,648</li><li>Excluding CRP: £11,712,704</li></ul> <p>Proposed total project budget (including CRP) to remain at: £14,716,540 (the same value as at Gateway 5)</p> <p>A breakdown of the proposed project budget is detailed in the table below:</p> <table><tr><th>Item</th><th>Gateway 5 (£)</th><th>Current (£)</th><th>Revised (£)</th></tr><tr><td>Staff Costs Environment</td><td>137,000</td><td>137,000</td><td>137,000</td></tr><tr><td>Staff Costs Legal</td><td>5,000</td><td>5,000</td><td>5,000</td></tr><tr><td>Fees (AECOM)</td><td>334,560</td><td>334,560</td><td>334,560</td></tr><tr><td>Works (FM Conway)</td><td>11,579,980</td><td>11,602,036*</td><td>11,402,036**</td></tr><tr><td>Total (exc. CRP)</td><td>12,056,540</td><td>12,078,596</td><td>11,878,596</td></tr><tr><td>Costed Risk Provision</td><td>2,660,000</td><td>2,637,944</td><td>2,837,944</td></tr></table>	Item	Gateway 5 (£)	Current (£)	Revised (£)	Staff Costs Environment	137,000	137,000	137,000	Staff Costs Legal	5,000	5,000	5,000	Fees (AECOM)	334,560	334,560	334,560	Works (FM Conway)	11,579,980	11,602,036*	11,402,036**	Total (exc. CRP)	12,056,540	12,078,596	11,878,596	Costed Risk Provision	2,660,000	2,637,944	2,837,944
Item	Gateway 5 (£)	Current (£)	Revised (£)																										
Staff Costs Environment	137,000	137,000	137,000																										
Staff Costs Legal	5,000	5,000	5,000																										
Fees (AECOM)	334,560	334,560	334,560																										
Works (FM Conway)	11,579,980	11,602,036*	11,402,036**																										
Total (exc. CRP)	12,056,540	12,078,596	11,878,596																										
Costed Risk Provision	2,660,000	2,637,944	2,837,944																										

	<table><tr><td>Total (inc. CRP)</td><td>14,716,540</td><td>14,716,540</td><td>14,716,540</td></tr></table> <p>*Includes outstanding budget adjustment (requested in May 22) for triggered risk of £22,056.</p> <p>**Change in the works estimate is a saving of £415,892 (Value Engineering) less £50,000 (Navigation Lights), less £200,000 increase in CRP. Revised FM Conway Works figure includes the net saving of £165,892.</p> <p>Costed Risk Provision requested for this Gateway: £2,837,944; Comprising existing £2,637,944 and additional £200,000 (as detailed in the Risk Register – Appendix 2)</p> <p>All costs associated with this project, including the proposed inclusion of the replacement of the Navigation Lights are to be funded from the BHE 50-year Bridges Maintenance Plan.</p> <p>Forecast will be updated to reflect the updated project costs as part of the annual estimate review.</p>	Total (inc. CRP)	14,716,540	14,716,540	14,716,540
Total (inc. CRP)	14,716,540	14,716,540	14,716,540		
5. Issue description	<p><u>Issues covered by CRP</u></p> <ol style="list-style-type: none"><li>1. Additional baluster moulds required;</li><li>2. Additional baluster replacements required;</li><li>3. Additional architectural metal repairs required;</li><li>4. Additional contract costs due to changes in the law;</li></ol> <p><u>Issues not covered by CRP</u></p> <ol style="list-style-type: none"><li>5. Significant saving from Value Engineering process;</li><li>6. Inclusion of the replacement of the Navigation Lights in the project which, if approved, would expand the project budget to encompass these works.</li></ol>				
7. Options	<p>Due to the listed status of the Bridge and BHE’s obligations under the contract, there are limited options with regards to the issues identified which are to be covered by the Costed Risk Provision. These will be managed by the Engineering team throughout the project and reported in the Risk Register.</p> <p>The successful Value Engineering exercise was requested at Gateway 5 and offers a significant saving against the total expected project cost (within the current project scope).</p> <p>With regards to Issue 6 (listed above), this is another opportunity for collaborative working which should produce a saving for BHE overall by utilising the existing access installed as part of the project and would expand the scope of the project and its budget to accommodate these additional works.</p>				

	It is proposed that the funds already identified in the 50-year plan for the replacement of the Navigation Lights on Blackfriars Bridge, are incorporated into the Blackfriars Bridge Refurbishment Project and include this in the scope.
--	--

### **Appendices**

<b>Appendix 1</b>	Project Coversheet
<b>Appendix 2</b>	Risk Register
<b>Appendix 3</b>	Project Carbon Calculator
<b>Appendix 4</b>	Project Photos

### **Contact**

<b>Report Author</b>	T Creed
<b>Email Address</b>	thomas.creed@cityoflondon.gov.uk
<b>Telephone Number</b>	02073323913

# Project Coversheet

## [1] Ownership

**Unique Project Identifier:** 11988      **Report Date:** 08/06/2022  
**Core Project Name:** Blackfriars Bridge Parapet Refurbishment and Bridge Re-Painting  
**Programme Affiliation** (if applicable): N/A  
**Project Manager:** Thomas Creed  
**Next Gateway to be passed:** Gateway 6 Outcome Report

## [2] Project Brief

**Project Mission statement:** The project will repaint Blackfriars Bridge, including the gilding of embellishments where appropriate. This will significantly improve the aesthetics of the structure and protect its fabric.

The project will also repair the parapets to prevent future water ingress and protect the structure.

**Definition of need:** If the project is not progressed, the appearance of the bridge will further deteriorate and ultimately, the lifespan of the structure will be significantly reduced.

Reputational risk as the City would be seen to be failing to meet its obligations under the Blackfriars Bridge Act 1863 and the Corporation of London (Bridges) Act 1911 to maintain and repair the bridge.

### Key measures of success:

- 1) Project to control water ingress in the structure.
- 2) Project to be completed within the budget allocated in the Bridge House Estates 50-year plan
- 3) Project to repaint the bridge, including the gilding of embellishments where appropriate; to protect the structure and improve it aesthetically.

## [3] Highlights

### Finance:

**Total anticipated cost to deliver [£]:** £11.9m (excl. Risk)

**Total potential project liability (cost) [£]:** £11.9m + risk (£2.8m)

**Total anticipated on-going commitment post-delivery [£]:** No Change

**Programme Affiliation [£]:** N/A

### Headline Financial changes:

#### Since 'Project Proposal' (G2) report:

▲ £3,570,000

*Increase owing to better understanding of the full implications of the access restrictions, particularly because of the Tideway Tunnel works site. The increase in cost now means that the works must be procured through a full EU tender process.*

#### Since 'Options Appraisal and Design' (G3-4) report:

▲ £6,146,540

*Tendered works cost is higher than previously anticipated partly owing to an increased programme duration. This has also increased CRP due to increased prelim costs.*

#### Since 'Authority to start Work' (G5) report:

No change in budget proposed

### Project Status:

**Overall RAG rating:** Green

**Previous RAG rating:** Green



#### [4] Member Decisions and Delegated Authority

Costed Risk Provision delegated to Assistant Director Engineering

#### [5] Narrative and change

##### Date and type of last report:

Gateway 5 May 2021

##### Key headline updates and change since last report.

*Stakeholder engagement ongoing. Value Engineering exercise complete. Works started on site.*

##### Headline Scope/Design changes, reasons why, impact of change:

###### Since 'Project Proposal' (G2) report:

No change in scope

###### Since 'Options Appraisal and Design' (G3-4 report):

No change in scope

###### Since 'Authority to Start Work' (G5) report:

No change in scope

##### Timetable and Milestones:

**Expected timeframe for the project delivery:** 3 years on site

##### Milestones:

- 1) Completion of Span 2 – October 2022
- 2) Completion of Span 5 – April 2023
- 3) Estimated Completion on Site October 2024

**Are we on track for this stage of the project against the plan/major milestones?** Y

**Are we on track for completing the project against the expected timeframe for project delivery?** Y

##### Risks and Issues

##### Top 3 risks:

<i>Risk description</i>	Access issues – PLA / Tideway constraints
<i>Risk description</i>	HVM Barriers (uncertainty due to temporary nature)
<i>Risk description</i>	Terrorism – Creating new access points to the bridge

*See 'risk register template' for full explanation.*

##### Top 3 issues realised

<i>Issue Description</i>	Impact and action taken	<i>Realised Cost</i>
Access Issues	Restrictions have required different access solutions, leading to higher project costs and extended procurement timeframes	No costs realised to date (see Gateway 5 budget variance)

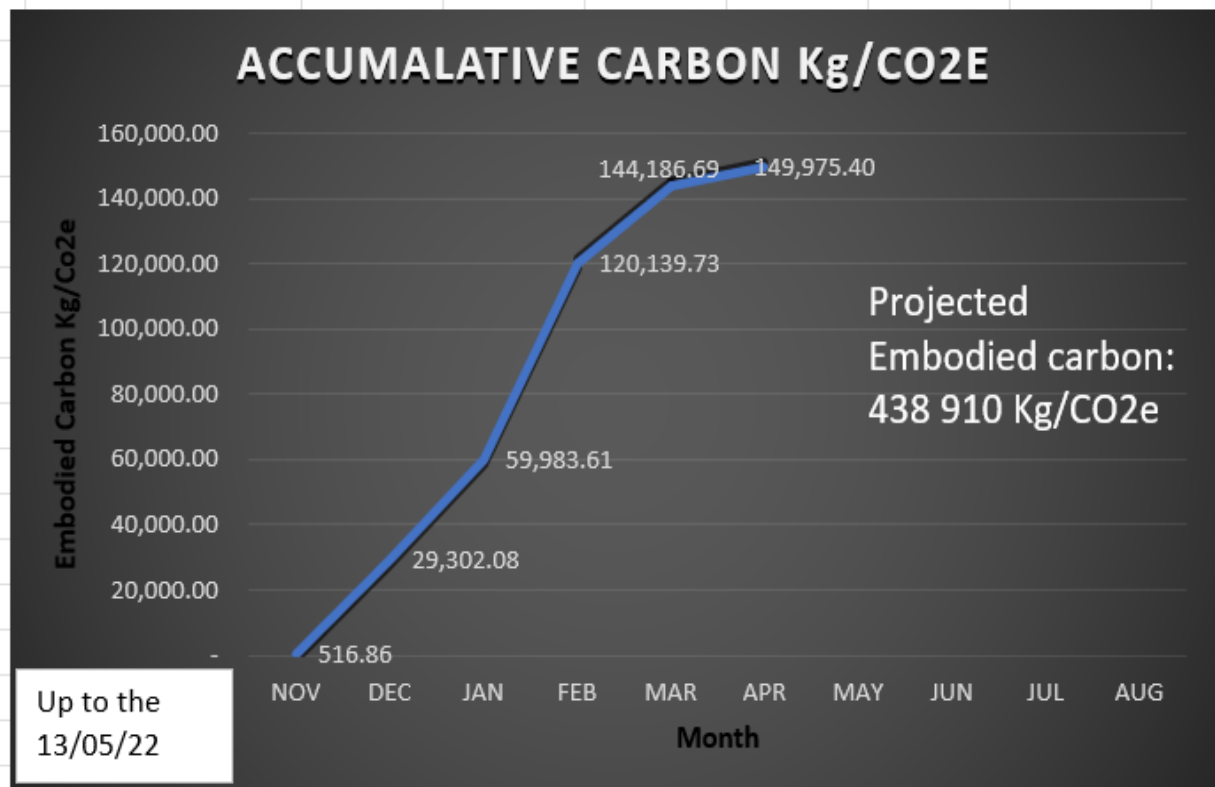
**Has this project generated public or media impact and response which the City of London has needed to manage or is managing?**

Not to date but this may be necessary at a later date.

City of London: Projects Procedure Corporate Risks Register

Project Name:			Blackfriars Bridge Refurbishment				PM's overall risk rating:		Medium		CRP requested this gateway		£ 2,837,944		Average unmitigated risk		11.3				Open Risks		27														
Unique project identifier:			11988		Total estimated cost (exc risk):							£ 11,712,704		Total CRP used to date		£ 22,056		Average mitigated risk score		7.6				Closed Risks		5											
General risk classification												Mitigation actions												Ownership & Action													
Risk ID	Gateway	Category	Description of the Risk	Risk Impact Description	Likelihood Classification pre-mitigation	Impact Classification pre-mitigation	Risk score	Costed impact pre-mitigation (£)	Costed Risk Provision requested Y/N	Confidence in the estimation	Mitigating actions	Mitigation cost (£)	Likelihood Classification post-mitigation	Impact Classification post-mitigation	Costed impact post-mitigation (£)	Post-Mitigation risk score	CRP used to date	Use of CRP	Date raised	Named Departmental Risk Manager/ Coordinator	Risk owner (Named Officer or External Party)	Date Closed OR/ Realised & moved to Issues	Comment(s)														
R1	5	(10) Physical	Access issues leading to the inability to operate continuously	PLA constraints, including Tideway enforcement	Likely	Extreme	32	£1,000,000.00	Y - for costed impact post-mitigation	C – Uncomfortable	Early discussion and sequencing of works. Phasing contract works	£0.00	Likely	Extreme	£500,000.00	32	£0.00		18/06/2018	Environment	Ass. Dir. Engineering		Increase in prelims and interruption of works														
R2	5	(10) Physical	Access issues leading to the inability to operate continuously	Tideway Access constraints	Likely	Extreme	32	£1,000,000.00	Y - for costed impact post-mitigation	B – Fairly Confident	Early discussion and sequencing of works. Phasing contract works	£0.00	Likely	Serious	£250,000.00	8	£0.00		18/06/2018	Environment	Ass. Dir. Engineering		Increase in prelims and interruption of works														
R3	5	(10) Physical	Access issues leading to the inability to operate continuously	TfL access constraints	Possible	Serious	6	£80,000.00	Y - for costed impact post-mitigation	B – Fairly Confident	Early discussion and sequencing of works. Phasing contract works	£0.00	Possible	Serious	£80,000.00	6	£0.00		18/06/2018	Environment	Ass. Dir. Engineering		Increase in prelims and interruption of works														
R4	5	(10) Physical	Access issues leading to the inability to operate continuously	Illuminated River Access Constraints	Unlikely	Serious	4	£20,000.00	N	B – Fairly Confident	Early discussion and sequencing of works. Phasing contract works	£0.00	Unlikely	Serious	£0.00	4	£0.00		18/06/2018	Environment	Ass. Dir. Engineering	01/03/2021	IR Installation now complete														
R5	5	(10) Physical	Access issues leading to the inability to operate continuously	Network Rail Access Constraints	Unlikely	Major	8	£20,000.00	Y - for costed impact post-mitigation	C – Uncomfortable	Early engagement	£0.00	Rare	Major	£20,000.00	4	£0.00		18/06/2018	Environment	Ass. Dir. Engineering		Increase in prelims and interruption of works														
R6	5	(10) Physical	No suitable Location of site compound	Cost and programme.	Likely	Serious	8	£50,000.00	N	B – Fairly Confident	Early discussions with contractor / City Surveyor / TfL / Tideway	£0.00	Possible	Serious	£0.00	6	£0.00		18/06/2018	Environment	Ass. Dir. Engineering		The option to build a high level compound has been allowed for.														
R7	5	(2) Financial	TfL charge lane rental	Cost and programme.	Possible	Serious	6	£120,000.00	Y - for costed impact post-mitigation	C – Uncomfortable	Review Blackfriars Bridge Act	£0.00	Unlikely	Serious	£20,000.00	4	£0.00		18/06/2018	Environment	Ass. Dir. Engineering		£800 per day is current cost. Initial estimate based on 150 days.														
R8	5	(2) Financial	Events	LMS, river events	Likely	Minor	4	£20,000.00	N	C – Uncomfortable	forward programming & flexible contract	£0.00	Possible	Minor	£0.00	3	£0.00		18/06/2018	Environment	Ass. Dir. Engineering		Possible additional prelims														
R9	5	(1) Compliance/Regulatory	HVM Barriers	Access, impact on works, removal and renewal.	Likely	Major	16	£10,000.00	Y - for costed impact post-mitigation	C – Uncomfortable	liaison with MET police	£0.00	Unlikely	Serious	£10,000.00	4	£0.00		18/06/2018	Environment	Ass. Dir. Engineering		High level compound reduces impact of these.														
R10	5	(2) Financial	Extent of know cast iron defects	Cost and programme.	Likely	Major	16	£250,000.00	Y - for costed impact post-mitigation	D – Very Uncomfortable	increase level of survey, conservative allowance for repairs	£0.00	Likely	Major	£600,000.00	16	£0.00		18/06/2018	Environment	Ass. Dir. Engineering		When panels are disassembled/blasted there could be further damage uncovered.														
R11	5	(2) Financial	Unknown defects	Cost and programme.	Possible	Major	12	£350,000.00	Y - for costed impact post-mitigation	C – Uncomfortable	n/a	£0.00	Likely	Major	£227,944.00	16	£22,056.00	Additional moulds for cast iron repairs	18/06/2018	Environment	Ass. Dir. Engineering		Regular inspections have been undertaken. Most defects decorative rather than structural														
R12	4	(4) Contractual/Partnership	Finding a suitable contractor for competitive tender	cost and Value for money	Possible	Serious	6	£0.00	N	B – Fairly Confident	Early discussion. Phasing contract works and procurement strategy	£0.00	Possible	Minor	£0.00	3	£0.00		18/06/2018	Environment	Ass. Dir. Engineering	01/03/2021	OJEU process complete														
R13	4	(4) Contractual/Partnership	EU Tender	programme	Possible	Major	12	£25,000.00	N	B – Fairly Confident	procurement strategy. Accurate estimating	£0.00	Possible	Major	£0.00	12	£0.00		18/06/2018	Environment	Ass. Dir. Engineering	01/03/2021	OJEU process complete														
R14	5	(1) Compliance/Regulatory	Not gaining Third Party Approvals	LBC and others	Unlikely	Major	8	£10,000.00	Y - for costed impact post-mitigation	B – Fairly Confident	early engagement with approving bodies	£0.00	Rare	Minor	£5,000.00	1	£0.00		18/06/2018	Environment	Ass. Dir. Engineering																
R15	5	(5) H&S/Wellbeing	site security/trespass	open site.	Possible	Serious	6	£10,000.00	N	C – Uncomfortable	ECL. Early drafting of Construction phase plan	£0.00	Possible	Minor	£0.00	3	£0.00		18/06/2018	Contractor	Contractor																
R16	5	(5) H&S/Wellbeing	Terrorism	could provide new access opportunities for terrorists	Unlikely	Extreme	16	Included above	N	D – Very Uncomfortable	ensure existing mitigation is maintained. Liaison with police forces.	£0.00	Unlikely	Extreme	£0.00	16	£0.00		18/06/2018	Environment	Ass. Dir. Engineering																
R17	5	(5) H&S/Wellbeing	Asbestos / other contaminants found	H&S, cost and programme	Rare	Major	4	£250,000.00	Y - for costed impact post-mitigation	B – Fairly Confident	increase level of survey.	£0.00	Likely	Minor	£15,000.00	4	£0.00		18/06/2018	Environment	Ass. Dir. Engineering		Bridge has been taken back to bare metal previously . No record of harmful materials still present.														
R18	4	(4) Contractual/Partnership	AECOM contract finishing	project programme goes beyond current AECOM commission	Likely	Serious	8	£50,000.00	N	B – Fairly Confident	review appointment / extend contract.	£0.00	Rare	Minor	£0.00	1	£0.00		18/06/2018	Environment	Ass. Dir. Engineering	01/04/2020	AECOM Contract now renewed														
R19	5	(5) H&S/Wellbeing	Utility strike	H&S, cost and programme	Unlikely	Major	8	£150,000.00	N	C – Uncomfortable	increase level of survey. Specifications	£0.00	Rare	Major	£0.00	4	£0.00		18/06/2018	Contractor	Contractor		Contractor made aware of services and to CAT scan before any excavations.														
R20	5	(5) H&S/Wellbeing	Failure of Temporary Works	H&S, cost and programme	Unlikely	Major	8	£100,000.00	N	C – Uncomfortable	selection of appropriate contractors. Quality based tender process	£0.00	Possible	Major	£0.00	12	£0.00		18/06/2018	Contractor	Contractor																
R21	5	(4) Contractual/Partnership	Quality of workmanship	reputation, disruption, cost. Future maintenance issues	Likely	Major	16	£250,000.00	Y - for costed impact post-mitigation	C – Uncomfortable	selection of appropriate contractors. Quality based tender process. Supervision and testing. Paint inspector /Clerk of works	£60,000.00	Rare	Serious	£10,000.00	2	£0.00		18/06/2018	Contractor	Contractor		Rigorous selection of Contractor														
R22	5	(3) Reputation	Reputational damage	delays in doing the works, rust staining after works complete	Likely	Serious	8	£0.00	N	B – Fairly Confident	appropriate PR, liaison strategy.	£0.00	Likely	Minor	£0.00	4	£0.00		18/06/2018	DBE	Ass. Dir. Engineering																
R23	5	(5) H&S/Wellbeing	Bridge strike	increased risk due to decreased headroom	Possible	Major	12	£1,000,000.00	N	C – Uncomfortable	navigation controls and signage.	£0.00	Possible	Major	£0.00	12	£0.00		18/06/2018	Contractor	Contractor		Scaffold to be kept close to (or above) bridge soffit line.														
R24	5	(4) Contractual/Partnership	Continuity of contractor	caused by the potential phase works / contract	Possible	Major	12	£500,000.00	N	C – Uncomfortable	Procurement strategy. Accurate estimating. Impact cost of programme extension and alternative way of working.	£0.00	Possible	Serious	£0.00	6	£0.00		18/06/2018	Environment	Ass. Dir. Engineering		Adopt a Term Service Contract allowing programme flexibility. Knowledge of availability of spans at tender stage														
R25	4	(2) Financial	Procurement strategy	reputational, cost and programme	Possible	Major	12	£250,000.00	N	B – Fairly Confident	flexibility in procurement approach i.e. not fixed price	£0.00	Possible	Serious	£0.00	6	£0.00		18/06/2018	Environment	Ass. Dir. Engineering	01/03/2021	Procurement complete														
R26	5	(4) Contractual/Partnership	Continuity of personnel and supply	uncertainty of programme and phasing	Likely	Major	16	£50,000.00	N	C – Uncomfortable	procurement strategy. Buying materials upfront	£0.00	Possible	Serious	£0.00	6	£0.00		18/06/2018	Environment	Ass. Dir. Engineering																
R27	5	(2) Financial	Contractor dispute	cost reputation	Likely	Serious	8	£500,000.00	Y - for costed impact post-mitigation	C – Uncomfortable	correct contractor selection and contract type. Good management of the contract	£0.00	Likely	Serious	£50,000.00	8	£0.00		18/06/2018	Environment	Ass. Dir. Engineering		Can be further mitigated by Performance Bond														
R28	5	(2) Financial	Consultant dispute	cost reputation	Possible	Serious	6	£50,000.00	N	B – Fairly Confident	continued engagement with AECOM	£0.00	Unlikely	Minor	£0.00	2	£0.00		18/06/2018	Environment	Ass. Dir. Engineering																
R29	5	(10) Physical	Damage to IR Equipment and impact on IR Light show	Cost & Reputation	Possible	Serious	6	£500,000.00	Y - for costed impact post-mitigation	B – Fairly Confident	Provide as-builts. Requirements to protect in contract	£0.00	Possible	Minor	£100,000.00	3	£0.00		01/03/2021	Environment / Contractor	PSM / Contractor		Installation now complete but works will require working around installation														
R30	5	(10) Physical	Permanent installation of HVM	Disruption of work	Possible	Major	12	£1,500,000.00	Y - for costed impact post-mitigation	B – Fairly Confident	Consultation with TfL and coordination of programmes	£0.00	Unlikely	Major	£300,000.00	8	£0.00		01/03/2021	Environment	Ass. Dir. Engineering																
R31	5	(4) Contractual/Partnership	Programme Delays to the works	Financial impact of delay	Possible	Major	12	£1,000,000.00	Y - for costed impact post-mitigation	B – Fairly Confident	Appointment of experienced and competent contractor. Managing the above risk items.	£0.00	Possible	Serious	£450,000.00	6	£0.00		01/03/2021	Environment	Ass. Dir. Engineering																
R32	5	(2) Financial	Changes in the Law	Cost	Likely	Serious	8	£200,000.00	Y - for costed impact post-mitigation	C – Uncomfortable	None	£0.00	Likely	Serious	£200,000.00	8	£0.00		29/03/2022	Environment	Ass. Dir. Engineering		Increase in NI. Removal or rebated fuel.														
R33								£0.00				£0.00			£0.00		£0.00																				

### Appendix 3 – Project Carbon Calculator (May 2022)



## Appendix 4 – Progress Photos



## Balusters removed awaiting refurbishment



Identifier Tag for baluster





Mould ready for new baluster casting (Wolverhampton)



Newly cast balusters (Wolverhampton)



Refurbished balusters; Primed, undercoated, top coat (Wolverhampton)



Top Rail being removed





Top rail with top coat (Wolverhampton)



Plinth of parapet with top coat