Committees: Corporate Projects Board - f*or information* Planning & Transportation Committee - *for decision* Projects Sub Committee - *for decision*	**Dates:** 26 February 2020 06 March 2020 16 March 2020
Subject: Thames Court Footbridge **Unique Project Identifier:** 11962	**Gateway 6: Outcome Report** Regular
Report of: Director of the Built Environment **Report Author:** Mark Bailey	**For Decision**
PUBLIC	

Summary

1. Status update	**Project Description:** This project related to essential structural maintenance works to a cable stayed footbridge over Upper Thames Street adjacent to Thames Court, Queenhithe, acquired from previously private ownership, in order to bring it back into public service. **RAG Status:** Amber (Amber at last report to Committee) **Risk Status:** Low (High at last report to committee) **Costed Risk Provision Utilised:** £200,000 (of which £100,000 was drawn down at the last report to Committee) **Final Outturn Cost:** Approximately £503,000
2. Next steps and requested decisions	**Requested Decisions:** Members are asked to approve the content of this Outcome Report and approve that the project be closed, subject to successful verification of the final account by the Chamberlain's Financial Services Division.

3. Key conclusions	• The remedial works to bring the footbridge safely back into public service were satisfactorily completed in May 2019, although delayed in their completion and at increased cost arising from unforeseen conditions experienced during construction, as reported previously to members. • This required use of the majority of the Costed Risk Provision (CRP) for the project, a great proportion of which had previously been allocated to the risk of having to implement subsequent dynamic mitigation measures (to reduce vibration of the bridge) following completion of the main remedial works. • Fortunately, it has not been found necessary to implement dynamic mitigation measures at the current time, with no concerns of excessive vibration reported by the public following completion and re-opening of the bridge in May 2019 (8 months ago). • No particular items of learning or recommendations for future projects have been established from the project, although the project does demonstrate the financial and logistical challenges facing highway authorities in maintaining long span steel structures over busy strategic road routes, in comparison with lower maintenance alternatives (such as reinforced concrete structures or steel structures within weather-resistant containment systems).

Main Report

Design & Delivery Review

4. Design into delivery	• As the project involved the refurbishment or replacement of existing components, there were very few alternative options to consider at design stage. • Unforeseen physical conditions encountered during construction related mainly to the internal corrosion and seizing of turnbuckles on existing tension stays, due to the discovered lack of an effective internal seal during the original 1990's construction. However, it was not possible to establish this from investigations during the design phase, nor would it have influenced the design had it become apparent.

5. Options appraisal	• At Gateway 3-4, the option was selected which involved the minimal amount of maintenance works necessary to bring the bridge back into public service. This excluded significant steel painting proposals and deferred major maintenance intervention by an estimated 5 years. • This enabled the bridge to be safely re-opened to the public at the earliest and most cost-effective manner (albeit the project ultimately overran on cost and programme). • However, it should be recognised that this merely deferred major interventions that should include a complete strip and re-paint of the structure by an estimated 5 years. • The cyclical cost of major maintenance interventions on the bridge is estimated at around £1M every 20-25 years (including for minor interventions at mid-cycle), if the bridge is retained after the 5-year period has elapsed. • These costs primarily relate to cyclical replacement and repair to the anti-corrosion painting systems to steel members, as well as replacement of tension stays. • The residual life of the bridge (if suitably maintained) is approximately 100 years, with a life cycle maintenance legacy at Net Present Value (2020) of £1.7 M. • These high values reflect the financial and logistical challenges facing highway authorities in maintaining long-span complex steel structures over busy strategic road routes.
6. Procurement route	• Works were procured through an open competitive tender process, arranged in collaboration with City Procurement. • Design services were provided by the term structural consultant for the inspection and management of highway structures, under their contract rates.
7. Skills base	• The City of London project team were fully capable of delivering this project, with technical support provided by the appointed term structural consultant for highway structures.
8. Stakeholders	• In arranging for these works to be carried out on a major route, full consultation with (and approval from) Transport for London was necessary. • Disruption to the travelling public was mitigated by phasing the works during a number of weekend closures of the road network, whilst managing to keep the TFL cycle route open.

	• Local residents and ward members were kept informed and updated on programme both before and during the works, with positive feedback received on the outcome of the project.

Variation Review

9. Assessment of project against key milestones	• The project was delayed in its key milestone to re-open the bridge by the end of 2018, initially due to the delayed appointment of a contractor (due to tender costs being above the baseline budget) and, subsequently, due to unforeseen physical conditions encountered during the works. • Once additional component materials could be sourced and new road closures agreed with TFL, the works were completed, and the bridge re-opened to the public at the end of May 2019.
10. Assessment of project against Scope	• The project fully completed on the scope to carry out the programme of maintenance works agreed at G3-4 and to safely re-open the bridge to the public. • Dynamic mitigation measures on completion of works to mitigate vibration (an identified project risk and allowed for in the Costed Risk Provision) were not found to be necessary. • Theoretical analyses indicated that the bridge does not comply with established guidelines in respect of limiting vibration to levels which do not cause human discomfort. • Whilst it is physically possible to excite the bridge into very short-term levels of vibration that can be detected by users (primarily by synchronized footfall or running across the bridge), this does not seem to occur on a regular basis. There have been no concerns raised by the public since the re-opening of the bridge, despite clear signs encouraging the public to report any such observations. It is also likely that the re-tensioning of the bridge stays has reduced levels of vibration, compared to those experienced by the public prior to its closure. • It is therefore not considered prudent to implement dynamic mitigation measures at the current time, although this should be reviewed in 5 years' time when the cycle of major maintenance on the bridge is due and a decision on its long-term future is made.
11. Risks and issues	• At G3-4, a costed Risk Provision (CRP) of £224,000 was identified, of which £200,000 related to the estimated risk of carrying out dynamic mitigation measures to reduce vibration of

	the bridge (subsequent to replacement and re-tensioning of cable stays). • Following receipt of tenders, it became obvious that the works could not be funded from the approved project budget (excluding CRP) due to higher-than-estimated tender costs. • Approval was therefore given to re-provision £100,000 from the previous CRP to supplement the tendered works budget, informed by the fact that updated estimates of Dynamic Mitigation measures (following revised analyses) had significantly reduced to £100,000. • Works commenced on 7th January 2019 to an agreed tender price of £ 252,961.24 • The revised CRP at that time amounted to £124,000 and comprised £24,000 for "unforeseen physical conditions" and £100,000 for dynamic mitigation measures. • During construction, unforeseen physical conditions were encountered relating mainly to internal corrosion and seizing of turnbuckles on existing tension stays, due to the lack of an effective internal seal during the original construction. This prevented re-tensioning the stays to their design values, required to safely open the bridge. • In order to complete the scope of works, it was necessary for the contractor to procure additional stay components and to install these under additional road closures at an additional cost of approximately £100,000. • In order to fund this, approval was given by members to draw down £100,000 of the CRP and to re-purpose a proportion of this sum originally allocated to dynamic mitigation measures. • This was considered the most expedient approach to re-opening the bridge to the public, with the risks of dynamic mitigation measures to be investigated and reported on following re-opening. • Having the facility to draw down on a CRP (subject to approval) was of considerable benefit in maintaining the momentum of the project and prevented even greater delays than those experienced. • As of the current date, 8 months after the completion of work (May 2019), no concerns have been reported by members of

	the public, despite signing on the bridge encouraging the reporting of any such concerns. • Our observations are that the vibration of the footbridge has been reduced as a result of re-tensioning stays, even though prior theoretical analyses did not support this as a solution on its own.
12. Transition to BAU	• Whilst there was a clear plan to re-open the bridge to the public by the end of 2018, this was delayed until May 2019 for the reasons discussed above.

Value Review

13. Budget

Estimated Outturn Cost (G2)	At G1/2, the estimated cost of the project was identified as under £250,000, pending further investigations. At G3/4, following full investigations, this was revised as follows: - • Estimated cost (including risk): £567,000 • Estimated cost (excluding risk): £343,000

	At Authority to Start work (G5) (£)	*Final Outturn Cost (£)*
Fees	*114,000*	*98,263*
Staff Costs	*32,000*	*31,028*
Works	*253,000*	*252,961*
Purchases	*22,000*	*21,966*
Other Capital Expend	-	-
Costed Risk Provision	*124,000*	*98,471*
Recharges	-	-
*Other**	-	-
Total	***545,000***	***502,689***

Please confirm whether or not the Final Account for this project has been verified.*

	The final works account of £351,431.84 has yet to be verified by the Chamberlain's Financial Services Division, although this has been requested.
14. Investment	Not applicable.
15. Assessment of project against SMART objectives	A single SMART objective was set at G1/2 to reinstate a north-south link across Upper Thames Street, with the success criteria defined as "Bridge acquired, made fit for use, and opened to the public (with all necessary permissions and consents in place)". This has been fully satisfied.
16. Key benefits realised	A single key benefit was identified at G1/2, namely "retain pedestrian crossing point over Upper Thames Street". This has been fully realised.

Lessons Learned and Recommendations

17. Positive reflections	The project fully met its objectives and the key benefit identified was fully realised, which seems to have been well received by local residents and other regular users of the bridge – who were kept informed of progress and programme throughout.
18. Improvement reflections	Whilst the works were delayed due to unforeseen physical conditions encountered on site, leading to a significant cost increase, it was very difficult to anticipate and cost this in spite of the investigations conducted at design stage. This tends to underline the benefits of a well-considered Costed Risk Provision for works of this nature, to help mitigate delays to projects.
19. Sharing best practice	The project amply demonstrates the potential maintenance costs associated with long-span and complex steel structures over strategic routes, in comparison with alternative materials and structural forms. This should be an important consideration in any future proposals to provide new footbridge crossings across this or similar routes.
20. AOB	The refurbished bridge has now been included in the asset management plan for highway structures, allowing for future routine inspections and cyclical maintenance. It will be due for a cycle of major maintenance in approximately 5 years' time, – primarily involving removing and replacing paint systems to all steel members of the bridge – at an estimated cost of up to £1M.

Appendices

Appendix 1	Project Coversheet

Contact

Report Author	Mark Bailey
Email Address	mark.bailey@cityoflondon.gov.uk
Telephone Number	020 7332 1972