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Committees: Planning and Transport Committee <i>[for decision]</i> Culture, Heritage and Libraries Committee <i>[for information]</i> Projects Sub <i>[for decision]</i>	Dates: 17 November 2020 23 November 2020 30 November 2020
Subject: Tower Bridge HV System Replacement and Increasing Resilience Unique Project Identifier: 11520	Gateway 4C: Detailed Design (Complex)
Report of: City Surveyor Report Author: Navdeep Bhal	For Decision CS 388/20
<h1 style="margin: 0;">PUBLIC</h1>	

1. Status update	<p>Project Description: Refurbishment of the High Voltage (HV) and Low Voltage (LV) electrical infrastructure at Tower Bridge and increasing its power resilience (i.e. the secondary source of power in the event of a power failure).</p> <p>This report is submitted for approval to proceed to detailed design stage (Gateway 4c).</p> <p>RAG Status: Green (Red at last report to Committee against original programme and budget estimate. Reduced as the estimated cost has decreased,)</p> <p>Risk Status: Medium (Medium at last report to committee)</p> <p>Total Estimated Cost of Project (excluding risk): £5,687,003</p> <p>Change in Total Estimated Cost of Project (excluding risk): Decrease of £112,997 since the last Gateway report</p> <p>Spend and Committed to Date: £670,155.</p> <p>Costed Risk Provision Utilised: £0</p> <p>Funding Source: Bridge House Estates Trust 50 Year Maintenance Fund for 2020/ 21</p>
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	Slippage: 0 months since last committee report. Completion date - December 2021.																			
2. Next steps and requested decisions	<p>Next Gateway: Gateway 5: Authority to Start Work</p> <p>Next Steps:</p> <ul style="list-style-type: none"> • Approval of listed building consent and planning submission • Approval from Building Control • Approval from UKPN for new intake from the north shore • Completion of the stage 4 surveys • Completion of the electrical and structural detailed design • Completion and issue of the Invitation to Tender (ITT) documents • Procurement of main works contractor <p>Requested Decisions:</p> <ol style="list-style-type: none"> 1. That additional budget of £128,115 is approved for professional fees to progress from Gateway 4c to Gateway 5, 2. That a Costed Risk Provision of £335,000 is approved to progress from Gateway 4c to Gateway 5. (to be drawn down via delegation to Chief Officer). 3. Note the revised project budget of £888,270 (excluding risk). 4. Note the total estimated cost of the project at £5,687,003 (excluding costed risk); this is a decrease of £112,997 since the previous report. 5. Note the total estimated cost of the project at £7,872,003 (including £2,185,000 costed risk); this is a decrease of £527,997 since the previous report. 																			
3. Resource requirements to reach next Gateway	<table border="1" data-bbox="480 1440 1401 2009"> <thead> <tr> <th data-bbox="480 1440 715 1585">Item</th> <th data-bbox="715 1440 1002 1585">Reason</th> <th data-bbox="1002 1440 1230 1585">Funds/ Source of Funding</th> <th data-bbox="1230 1440 1401 1585">Cost (£)</th> </tr> </thead> <tbody> <tr> <td colspan="4" data-bbox="480 1585 1401 1653">Professional Fees</td> </tr> <tr> <td data-bbox="480 1653 715 1906">Project Management</td> <td data-bbox="715 1653 1002 1906">To progress to Gateway 5</td> <td data-bbox="1002 1653 1230 1906">Bridge House Estates Trust 50 Year Maintenance Fund for 2020/ 21</td> <td data-bbox="1230 1653 1401 1906">£8,312</td> </tr> <tr> <td data-bbox="480 1906 715 2009">Cost Consultant</td> <td data-bbox="715 1906 1002 2009">To progress to Gateway 5</td> <td data-bbox="1002 1906 1230 2009">As Above</td> <td data-bbox="1230 1906 1401 2009">£9,411</td> </tr> </tbody> </table>				Item	Reason	Funds/ Source of Funding	Cost (£)	Professional Fees				Project Management	To progress to Gateway 5	Bridge House Estates Trust 50 Year Maintenance Fund for 2020/ 21	£8,312	Cost Consultant	To progress to Gateway 5	As Above	£9,411
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	MEP / Structural Engineer & Principal Designer	To progress to Gateway 5	As Above	£51,080
	Architect	To progress to Gateway 5	As Above	£8,488
	Planning Consultant	To progress to Gateway 5	As Above	£4,824
	Fire Engineering	To progress to Gateway 5	As Above	£6,000
	Transport Consultant	To develop a Traffic Management Plan and minimise disruption to the public during construction phase	As Above	£10,000
	Other Consultant	To progress to Gateway 5	As Above	£10,000
Consequential Fees				
	Surveys	To progress to Gateway 5	As Above	£15,000
City of London Internal Recharge				
	Staff Costs	To progress to Gateway 5	As Above	£5,000
	Total			£128,115
<p>Costed Risk Provision requested for Gateway 4c: £335,000 (as detailed in the Risk Register – Appendix 2). This will be funded from the Bridge House Estates Trust 50 Year Maintenance Fund for 2020/ 21.</p> <p>Please note that the appointment of contractors will be in line with the City of London’s Procurement Code</p>				

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<p>4. Design summary</p>	<p>4.1. The professional team have advised the City to continue with Option B, which was approved at Gateway 3 by committee. This option includes the following:</p> <p>4.2. Installation of new secondary HV supply from the north shore:</p> <ul style="list-style-type: none">4.2.1. To ensure the required resilience, a new 11kV electrical supply will be installed from the north shore in addition to the existing 11kV supply from the south shore.4.2.2. The 11kV cable will exit the new HV switch room onto the east side of the bridge and will enter the north east accumulation chamber, before being fed across the bridge into the switch room located in the north west accumulation chamber. <p>4.3. Replacement of existing HV & LV switchgear, transformers and cables:</p> <ul style="list-style-type: none">4.3.1. The current switchgear, transformers and cables date back from the original electrification project in 1977. Therefore, they are between 10 - 20 years past their economic life expectancy.4.3.2. CIBSE Guide M advise that the economic life expectancy would be on average around 30 years for most of the major components of the electrical system. Given an expected practical completion date of December 2021 the new electrical installation's life expectancy is until December 2051.4.3.3. The new 11kV cable from the HV switch room on the south shore will follow the same route as the existing 11kV cable that will be replaced. <p>4.4. Construction of new mezzanine floor and switch room & segregation of HV / LV services:</p> <ul style="list-style-type: none">4.4.1. The proposed construction of a fire-rated mezzanine level to support the new electrical infrastructure will be positioned below the existing electrical equipment room in the north west accumulation chamber.4.4.2. The proposed solution being considered is a steel platform of similar construction to the existing platform. Primary steel beams would span between the pier walls onto concrete padstones that are installed into the brickwork. Secondary trimmer members would then span between these beams to support the plant decking.4.4.3. Both the existing and new mezzanine floor will accommodate new switch rooms which will contain new HV / LV equipment with a Ring Main Unit.
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	<p>4.4.4. In any location within the bridge structure where HV and LV cables are adjacent to each other, they will be segregated by separating the cables in enclosed fire rated containment. Also north and south HV supply cables that are adjacent to each other will be separated in this way too. Finally all HV and LV components will be separated in the switch room by fire-rated partitions.</p> <p>4.5. Replacement of existing generator with a generator plug-in connection point:</p> <p>4.5.1. It is proposed that an 11kV cable will run from the generator plug-in location following the same route as the new north stream supply. The feasibility of this is being explored.</p> <p>4.6. Other services included in the scope of works:</p> <p>4.6.1. Other electrical engineering services: general lighting; general power; emergency lighting; fire detection & alarm; earthing & bonding</p> <p>4.6.2. Mechanical engineering services: supply & extract ventilation systems and air conditioning</p> <p>4.6.3. Fire engineering services: gaseous fire-fighting systems</p> <p>4.6.4. Building management systems: supervisory control and data acquisition system (SCADA)</p> <p>4.7. Proposed construction sequence strategy:</p> <p>4.7.1. Site setup including access routes and compound setup with associated traffic management.</p> <p>4.7.2. New mezzanine deck construction.</p> <p>4.7.3. New north stream HV and LV switch room construction on the mezzanine deck including installation and commissioning of electrical switchgear.</p> <p>4.7.4. New distribution network 11kV switch room and temporary generator plug-in.</p> <p>4.7.5. Strip out of existing switch room.</p> <p>4.7.6. Construction of new HV and LV switch room on existing mezzanine deck including installation and commissioning of electrical switchgear.</p> <p>4.7.7. Reinstate site access.</p>
<p>5. Confirmation that design solution will meet our</p>	<p>This design team have confirmed that the proposed design meets the following objectives set out in the Gateway 1- 2 report:</p> <ul style="list-style-type: none"> • Serviceable electrical installations • Compliant installations (all designs / drawings have been signed off by a director / project lead from the design team)

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SMART objectives	<ul style="list-style-type: none"> Increased resilience in the event of partial/total failure
6. Risks	<p>The fundamental risks associated with Gateway 4c are as follows:</p> <ul style="list-style-type: none"> Failure to obtain listed building consent or planning approval. Failure to obtain statutory approval including TfL and PLA licences. Road closure requests are not approved. Limited site survey information resulting in delay to the design process. Existing equipment expires before the project is completed. <p>It should be noted that as the design continues to develop, some risks identified in the Gateway 3 issues report still remain and as such these risks have been transferred to Gateway 4c. Consequently, it is requested that a total Costed Risk Provision of £335,000 is approved for Gateway 4c. The Costed Risk Provision will predominantly be used for delays and for redesign if it is not possible to obtain planning permission / listed building consent or other statutory approvals.</p> <p>However please also note that, following the conclusion of RIBA Stage 2 and confirmation from UKPN that the required power capacity can be supplied, the overall project costed risk has decreased by £415k.</p> <p>Costed Risk Provision Utilised at Last Gateway: £0</p> <p>Further information available in the Risk Register (Appendix 2).</p>

Appendices

Appendix 1	Project Coversheet
Appendix 2	Risk Register
Appendix 3	Cost Book (Non-Public)
Appendix 4	Programme

Contact

Report Author	Navdeep Bhal
Email Address	Navdeep.Bhal@CityofLondon.gov.uk
Telephone Number	07599 512712