Committees:	Dates:	
Planning and Transportation Committee Projects Sub Priority Board	04 July 2017 18 July 2017 TBC	
Subject: Pipe Subways of Holborn Viaduct and Snow Hill over Thameslink	**Gateway 3** **Outline Options Appraisal(Complex)**	**Public**
Report of: Director of the Built Environment **Report Author:** Jagdeep Bilkhu		**For Decision**

Summary

Dashboard
Project Status: Green
Last Approved Budget: £33,000
Spend to date: £32,342 (remaining balance: £658)
Overall Project Risk: Amber

This report proposes the combining of two projects to progress to Gateway 4a and in order to select the best option in terms of whole-life costings, seeks to appoint a Quantity Surveyor and a Contractor for just early contractor involvement. This will be needed as understanding the construction logistics in conjunction with the Railway operations and blockades will be significant to select the right option. This project has been dormant as we were not ready to combine with the Thameslink works and conceded to the developers works to the Market buildings as these were structurally more significant. The aim is to have a design in place so we can commence discussions with Network Rail and if they become available take advantage of the developers possessions for the proposed redevelopment of Citicape House at 61-65 Holborn Viaduct which is between both of these railway crossings.

Background

Progress to date including resources expended and any changes since previous gateway

This report concerns the pipe subways that carry utilities plant through Holborn Viaduct and Snow Hill pipe subways located in the north and south footways of both highways, i.e. four separate sections of subway traversing the same railway lines.

Feasibility reports were prepared in 2008 for both sites following reports to Planning & Transportation Committee (dated 27 November 1998 and 04 July 2000 for Holborn Viaduct and Snow Hill, respectively).

The structural assessments summarised that the roof slabs of the pipe subways are deemed incapable of carrying loading from a vehicle accidentally driving on the footway above and would result in an element failure. The inside of the pipe subways have various locations where corrosion to the metal supporting girders has

taken place. The base slabs are reinforced concrete and are in need of minor maintenance which would require Network Rail to facilitate access.

It is recommended that works to these two structures be programmed together to allow them to be coordinated to maximise efficiencies which cannot be undertaken without possession of the same section of railway. They are less than 100m apart along the railway line. Any railway possession to undertake these works is likely to be expensive. This report seeks to outline the options of combining the work at both Holborn Viaduct and Snow Hill.

The two separate projects above are presented to be taken forward as one single scheme, the scope of which will include the development and re-assessment of options already considered in feasibility reports, which are now 9 years old.

Since 2008, the risks from these highway structures have been carefully monitored through regular visual inspection. However, the inspections have continually indicated that their condition is poor and deteriorating. There is evidence that some minor maintenance work to the soffit of these pipe subways has been carried out, but not under the instruction of the City. It is suspected that Network Rail may have undertaken minor repairs without informing the City's Engineering Structures Team.

Some interim measures have been undertaken to restrict vehicular loading on the pipe subways on Holborn Viaduct in light of the above issues but these are not permanent solutions. The kerb line along Holborn Viaduct was re-aligned to reduce traffic loading on the subways. However, these measures do not eliminate the risk of the structures being adversely loaded completely. No such measures have been undertaken on Snow Hill. It is a less trafficked highway than Holborn Viaduct.

During the inception of the original schemes and for several years after, attemps were made to utilise possessions that had been block booked by Network Rail of a large stretch of the Thameslink lines which encompassed these two sites when they were undertaking upgrade and refurbishment works to their track and building infrastructure. Unfortunately, efforts to coordinate this work were not possible at that time and priority was given to the works at the General Market. Strengthening work to these structures has subsequently been delayed for a number of years.

It is also noted that the privately owned site at 61-65 Holborn Viaduct, effectively between the two sites at Holborn Viaduct and Snow Hill, is currently unoccupied. There are plans to redevelop this site and as this property also straddles the Thameslink railway lines, any redevelopment will require negotiations of the developer with Network Rail. Should this redevelopment proceed, the City should enable itself to be in a position to make use of possessions that this developer may arrange with Network Rail and potentially agree coordination of works. Hence further reason for recommending that the scheme is progressed such that we would be ready to commence works if they can be coordinated as above and save expense for some of the railway access costs.

The Museum of London may have plans to carry out some works using possession(s) which could be shared for this scheme. At the present time this cannot be confirmed but we will continue to coordinate with the MoL team.

Overview of options

The following options are presented:

1. "Do Nothing" and protect
2. Replace the failing elements (i.e. the roof slabs of the pipe subways only)
3. Replace the failing elements and varying degree of refurbishment/upgrade works to the girders from within the the pipe subways and limited work to the underside (from railtracks).
4. Replace failing roof slab and base slab, as well as refurbishment to the girders.
5. Full replacement of the pipe subways over the railtracks.

Options 4 and 5 will cause significant disruption to the railway.

Proposed way forward and summary of recommened option

It is proposed that the City's term structural consultant for highway structures (Arcadis) be appointed as soon as practically possible in order to review the previous condition surveys and options, verify the viable options from the feasibility reports and/or present any alternative(s) they consider to be appropriate. Following this exercise, proposals to carry out any further investiagations to inform the final design and procurement route shall be undertaken to arrive at a firm recommendation for solutions that protect the City's long term interest. To obtain the best use of railtrack possessions, it is likely that construction work at both sites will be undertaken under the same contract.

It is also proposed that detailed early discussions with Network Rail be commenced. From experience gained through obtaining non-disruptive possessions to undertake the City's routine inspections costing in the tens of thousands, it can be expected that the estimated cost of a disruptive possession would exceed £100k. However, until discussions are commenced this remains unknown. Network Rail do not undertake any form of consultantioin until a Basic Asset Protection Agreement is in place, which would require an advance payment. This has been included in the budget to reach the next gateway.

Further resources are considered necessary to inform the recommendations of the preferred option in a GW4 report and reduce project risks, which are summarised below:

1. Consultancy services from Arcadis to assist in investigating practical solutions to the works, assist in the brief/tender preparation for the appointment of a contractor, as well as specifying and supervising exploratory works to inform the GW4 recommendations; the subsequent design proposals and to reduce construction stage risks.
2. Cost consultancy services. Tender and appointment of a cost consultant for the project to provide high level cost advice.
3. Appointment of a contractor to carry out investigative works as necessary, potentially with the assistance of the City's highway term maintenance contractor.
4. Staff costs.

Procurement approach

Between GW3 and GW4 it is proposed to instruct Arcadis on a limited brief as stated above, to include assisting with the brief/tendering of a contractor to engage in Early Contractor Involvement (ECI) and a Cost Consultant and subsequently a separate contract for the works package. It is considered that ECI would be best suited to this scheme given the nature of the works.

The ECI contractor would be appointed post GW4. It is proposed that the ECI contractor would not be precluded from tendering for the main works.

The services of Arcadis will be retained in a client advisor role as checking engineers and contract administrators post-GW4, in respect of checking the proposals of the appointed ECI contractor and works contractor, thus protecting the City's interests and the highway structures in general.

City Procurement have been consulted and have advised that the procurement strategy should be considered before the presentation of GW4 as a better understanding of the preferred option will be known, which will in turn influence the approach. The estimates of required resource to reach GW4 are presented in Appendix 1.

Table with financial implications

Description	**Option 1 ("Do nothing" and protect)**	**Option 2 (Replace roof slabs)** **(£)**	**Option 3 (Replace roof slabs + partially refurbish girders)** **(£)**	**Option 4 (Replace roof and base slabs + fully refurbish girders)** **(£)**	**Option 5 (Replace all 3 pipe subways, including the main girders, roof and base slabs.** **(£)**
Works Costs	£150k - £200k	3,000,000 – 5,000,000	3,500,000 – 5,500,000	5,000,000 – 7,000,000	< £10,000,000
Fees to GW4	£25k	£250k*	£250k*	£250k*	£250k*
Staff Costs to GW4	£15k	£30k	£30k	£30k	£30k
Total	**£190k - £240k**	**3,280,000 – 5,280,000**	**3,780,000 – 5,780,000**	**5,280,000 – 7,280,000**	**< £10,280,000**
Tolerance +/-		-	-	-	-
Funding Strategy					
Exact funding source(s) to be determined	To be determined – see Item 8 of Options Matrix				
Total Funding Requirement	**£240k**	**5,280,000**	**5,780,000**	**7,280,000**	**£10,280,000**
Investment Appraisal (e.g. NPV/IRR)		N/A	N/A	N/A	N/A

Recommendations

1. Approval is given to the Director of the Built Environment to proceed to the next gateway by combining the above listed two projects and close them as two separate projects.

2. Approve an increase of the budget by £280,000 to allow a consultant to be appointed, undertake any further exploratory works and for staff costs funded from the On-Street Parking Reserve, bringing the project overall budget to £313,000 (i.e. £280k + £33k already approved).

Options Appraisal Matrix
See attached.

Appendices

Appendix 1	Estimated Project Fees to reach GW4
Appendix 2	Risk Register

Contact

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*This figure includes an estimate of £70,000 of exploratory works as reported in Item 21 of the attached Options Appraisal Matrix.

Options Appraisal Matrix

	Option 1	*Option 2*	*Option 3*	*Option 4*	*Option 5*
1. Brief description	"Do nothing" and protect	Replace the roof slabs of all pipe subways (no refurbishment of other elements).	Replace roof slabs of all pipe subways and limited maintenance of the main supporting girders.	Replace roof slabs and base slabs, including full refurbishment of the main girders.	Replace all three pipe subways, including the main girders and both the roof and base slabs.
2. Scope and exclusions	▪ Will only involve implementing protection measures on the highway and monitoring ▪ Will not include any work to the pipe subways	▪ Will not include any work to refurbish the paintwork or areas of corrosion to the main girders ▪ It is anticipated that utilities will remain in situ without need for diversion ▪ Work will not include refurbishing fixtures holding utilities apparatus within the pipe subway	▪ Will only include limited maintenance to the soffits of the bottom flange of the main girders and minor concrete repairs to the underside of the base slab, i.e. the visible and accessible part from rail tracks below ▪ It is anticipated that utilities will remain in situ without need for diversion	▪ Work could potentially include refurbishing fixtures holding utilities apparatus within the pipe subway ▪ Utilities may need to be diverted for this option	▪ Work could potentially include refurbishing fixtures holding utilities apparatus within the pipe subway ▪ Utilities will need to be temporarily diverted for this option

	Option 1	*Option 2*	*Option 3*	*Option 4*	*Option 5*
			▪ Work will not include refurbishing fixtures holding utilities apparatus within the pipe subway		
Project Planning					
3. Programme and key dates	Programme not currently developed but a consultant would be appointed to determine any intrusive works that are deemed necessary by August 2017.	A programme is not currently developed but the main targets are: (i) to appoint a consultant and determine any intrusive investigations that are deemed necessary by December 2017. (ii) to commence liaising with Network Rail as soon as practically possible to obtain information on availability of possessions, which in turn could potentially dictate the programme by March 2018. Furthermore, it should be noted that Network Rail could require the City to pay up front costs in the form of a Basic Asset Protection Agreement to allow them to give the City advice on possession planning. (iii) to commence liaising with utilities companies to: a) advise that major refurbishment work is planned to the pipe subways by October 2017 and b) to determine if funding from them can be contributed to the scheme by Mar 2018			
4. Risk implications	Medium Risk ▪ Breach of agreement to	Medium Risk ▪ Increased reactive	Medium Risk ▪ Increased reactive (unplanned)	High Risk ▪ Increased reactive	High Risk ▪ Overhead Line Electrification

	Option 1	***Option 2***	***Option 3***	***Option 4***	***Option 5***
	maintain pipe subways in suitable condition ▪ Risk of legal challenge from utilities if damage occurs to their plant from a structural failure ▪ Consequential reputational value to the City ▪ Risk to railway	(unplanned) maintenance costs of replacing the roof slabs and potential damage that could be casued to utilities. ▪ Base slabs and internal pipe subway utilities/apparatus would need protection when demolishing roof slab. ▪ Breach of agreement to maintain pipe subways in suitable condition ▪ Depreciation in asset value and let-able value of pipe utilities space ▪ Risk of legal challenge from utilities if damage	maintenance costs of replacing the roof slabs and potential damage that could be casued to utilities. ▪ Protection to OLE from refurbishment work to girders ▪ Smaller risk to OLE ▪ Breach of agreement to maintain pipe subways in suitable condition ▪ Depreciation in asset value and let-able value of pipe utilities space ▪ Risk of legal challenge from utilities if damage occurs to their plant from a structural failure ▪ Consequential	(unplanned) maintenance costs of replacing the roof slabs and potential damage that could be casued to utilities. ▪ Overhead Line Electrification (OLE) is very close to the soffit of the base slab ▪ Breach of agreement to maintain pipe subways in suitable condition ▪ Depreciation in asset value and let-able value of pipe utilities space ▪ Risk of legal challenge from utilities if damage occurs to their plant from a structural failure	(OLE) is very close to the soffit of the base slab ▪ Breach of agreement to maintain pipe subways in suitable condition ▪ Depreciation in asset value and let-able value of pipe utilities space ▪ Risk of legal challenge from utilities if damage occurs to their plant from a structural failure ▪ Consequential reputational value to the City

	Option 1	*Option 2*	*Option 3*	*Option 4*	*Option 5*
		occurs to their plant from a structural failure ▪ Consequential reputational value to the City	reputational value to the City	▪ Consequential reputational value to the City	
5. Benefits and disbenefits	Benefits				
	▪ Short term cost benefits only, plus lack of disruption to both highway and railway traffic by works	▪ Understrength roof elements replaced ▪ Cheapest works option which addresses the understrength roof elements ▪ Least disruption to traffic and railway.	▪ Understrength roof elements replaced ▪ Addresses paint system defects to the soffits of the main girders. ▪ The most important maintenance will be completed.	▪ Understrength roof elements replaced ▪ Completely refurbishes the main girders. ▪ Reduced risk of failure.	▪ Longer life with low maintenance ▪ Eliminate risk of failure.
	Disbenefits				
	▪ Disbenefits as risks above, including depreciation in asset value and	▪ Other maintenance identified from structural inspections not	▪ Expensive ▪ Will not address any paint defect to the inside faces of the pipe	▪ Expensive ▪ No real need to replace the base slabs	▪ Likely to be much more expensive than all the other options. ▪ Potentil to disrupt

	Option 1	*Option 2*	*Option 3*	*Option 4*	*Option 5*
	let-able value ▪ May not be feasible for both sites at all locations.	carried out.	subways.		traffic a lot more than the other options. ▪ Utilities will likely need to be diverted.
6. Stakeholders and consultees	Same as Options 2-5 but long, protracted negotiations with Network Rail will not be required.	<u>Internal</u> City of London – City Surveyor's Deparment City of London Police <u>External</u> Network Rail Utilities Companies Neighbours and Local Businesses Various parties involved in the re-development of 65 Holborn Vaiduct Museum of London Project			
Resource Implications					
7. Total Estimated cost	£150k - £200k	£3m - £5m. Options 2 and 3 are considered to both be in a similar cost range and depend	£3.5m - £5.5m. Options 2 and 3 are considered to both be in a similar cost range and depend	£5m – £7m	Up to £10m

	Option 1	*Option 2*	*Option 3*	*Option 4*	*Option 5*
		largely on the cost of the possessions.	largely on the cost of the possessions.		
8. Funding strategy	Initial sources of funding have been discussed with Chamberlain's however internal funding would likely be anticipated from the City Fund's On-Street Parking Reserve and/or the CIL Public Realm and Transportation Improvements Pot. For the works, we would also be considering external sources, including funding from TfL for specific schemes (possibly through LoBEG) as well as exploring the possibility for Third Party contribution, i.e. reviewing the potential for utilities companies that actually use the pipe subway to make contribution. Underspend from previous work involving these structures has been reviewed and there is approximately £658 remaining as a combined total from project numbers 16008057 and 16008042. The estimated cost at this stage is quite broad, particularly for options 2-5, as until further negotiations are undertaken with Network Rail the costs of track possessions, which are probably the most variable factor, cannot be easily estimated accurately. Furthermore, programming of the construction works is very difficult until possible possession dates are known.				
9. Estimated capital value/return	n/a				
10. Ongoing revenue implications	Maintenance costs of pipe subways through routine programmed inspections and reactive maintenance coming from current revenue budget for highway structures/pipe subways and recharged to utilities companies.				
11. Investment appraisal	n/a				
12. Affordability	Of all the options this is the most affordable but does	Funds need to be found to at least enable Options 2 or 3.		Option 4 is desirable but it may not be necessary to	Option 5 would require significant financial input but

	Option 1	*Option 2*	*Option 3*	*Option 4*	*Option 5*
	not address any maintenance or strengthening issues with the pipe subways.			replace the base slabs.	may be the best whole life cost solution.
13. Legal implications	Under Part V of the City of London (Various Powers) Act 1900 the City is authorised to construct pipe subways under streets to accommodate utilities apparatus. (Utilities are prohibited from installing apparatus directly into the road where pipe subways are available, and this enables utilities apparatus to be installed and maintained without breaking open the streets and the consequential traffic disruption, as well as increasing capacity for apparatus). The 1900 Act provides for the pipe subways to vest in the City's ownership and for the City to be responsible for the maintenance and repair of the pipe subways. Utilities may be charged for their use of the pipe subways **and the charge may reflect the City's expenses incurred in the maintenance, repair, management and improvement of the pipe subway (S.73 London Local Authorities Act 2007).**				
14. Corporate property implications	None of the three structures have corporate property implications, however pipe subways 33/P12 and 33/P13 are part of the wider structure that forms Holborn Viaduct some of which is let by City Surveyor's Department. This scheme is not expected to directly impact the tenanted properties within Holborn Viaduct.				
15. Traffic implications	▪ Closure of footways but not necessarily together.	▪ Closure of both footways at Holborn Viaduct which would require pedestrian management. ▪ Potentially requiring some	▪ Closure of both footways at Holborn Viaduct which would require pedestrian management. ▪ Potentially requiring some	▪ Closure of both footways at Holborn Viaduct which would require pedestrian management. ▪ Potentially requiring some	▪ Closure of both footways at Holborn Viaduct which would require pedestrian management. ▪ Carriageway space is likely to be required and

<table>
<tr><th></th><th>Option 1</th><th>Option 2</th><th>Option 3</th><th>Option 4</th><th>Option 5</th></tr>
<tr><td></td><td></td><td>carriageway space but no lane closures expected.</td><td>carriageway space but no lane closures expected.
If carriageway space is required, London Buses may be impacted.</td><td>carriageway space but no lane closures expected.
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<tr><td>16. Sustainability and energy implications</td><td colspan="5">All options will endeavour to support local labour where possible. However, it should be noted that there are specialisms involved in the works that could make this difficult.</td></tr>
<tr><td>17. IS implications</td><td colspan="5">n/a</td></tr>
<tr><td>18. Equality Impact Assessment</td><td colspan="5">n/a</td></tr>
<tr><td>19. Recommendation</td><td>Recommended</td><td>Recommended</td><td>Recommended</td><td>Recommended</td><td>Recommended</td></tr>
<tr><td>20. Next Gateway</td><td colspan="5">Gateway 4a - Inclusion in Capital Programme</td></tr>
<tr><td>21. Resource requirements to reach next Gateway</td><td colspan="5"><table><tr><th>Item</th><th>Reason</th><th>Cost (£)</th><th>Funding Source</th></tr></table></td></tr>
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	Option 1	Option 2	Option 3	Option 4	Option 5
	Consultancy Services	To better define project risk, confirm geometric details and develop a prelimary design.		£140,000	
	Exploratory Works	To better define project risk, confirm geometric details and develop a prelimary design. This figure includes a estimate of £20,000 for undertaking an asbestos survey, as well as assuming this survey can be carried out in the single railway possession assumed in Third Party Access (below).		£70,000	
	Third Party Access	Allowance for obtaining a Basic Asset Protection Agreement from Netwrok Rail for at least one inspection for the engineering design consultant.		£40,000	
	Staff Costs	To manage the above and coordinate project with stakeholders/consultees		£30,000	