

<b>Committees:</b> Corporate Projects Board <i>[for decision]</i> Epping Forest and Commons Committee <i>[for decision]</i> Projects Sub <i>[for decision]</i>	<b>Dates:</b> 11 November 2020 16 November 2020 30 November 2020
<b>Subject:</b> Wanstead Park Ponds Project <b>Unique Project Identifier:</b> 12058	<b>Gateway 2  Complex  Issue Report</b>
<b>Report of:</b> Director of Open Spaces <b>Report Author:</b> Tim Munday, Department of the Built Environment	<b>For Decision</b>
<h1>PUBLIC</h1>	

<b>1. Status update</b>	<p><b>Project Description:</b> An engineering assessment of the EA designated 'High Risk' ponds at Grade II* Wanstead Park. Identifying solutions that fulfil both the City's statutory duties and other works in the Wanstead Parkland Plan, contributing to the removal of the Heritage at Risk status</p> <p><b>RAG Status:</b> Amber (Green at last report to Committee)</p> <p><b>Risk Status:</b> High (High at last report to committee)</p> <p><b>Total Estimated Cost of Project (excluding risk):</b> £750 000 - 1 Million</p> <p><b>Change in Total Estimated Cost of Project (excluding risk):</b> Decrease of <b>£7 - 11 million</b> since last report to Committee due to a lower requirement on the dam structures than anticipated.</p> <p><b>Spend to Date:</b> £52 000</p> <p><b>Source of Funding:</b> City Cash</p> <p><b>Costed Risk Provision Utilised:</b> N/A;</p> <p><b>Slippage:</b> <i>Change in anticipated size of works required and delay in progressing the project to Gateway 3 until Spring 2021.</i></p>
<b>2. Requested decisions</b>	<p><b>Next Gateway:</b> Gateway 3 - Outline Options Appraisal (Complex)</p> <p><b>Requested Decisions:</b></p>

	<ol style="list-style-type: none"> <li>1. That additional budget of <b>£40 000</b> is approved and <b>£30 000</b> from the existing budget is reallocated to reach the next Gateway;</li> <li>2. Note the categories assigned to each of the lake's dams;</li> <li>3. Note the Panel Engineer's recommendation;</li> <li>4. Note the revised project budget of <b>£190 000</b> (excluding risk) including reallocation of funds;</li> <li>5. Note the change in extent of the project and the reduced total estimated cost of the project now at <b>£750 000 - 1 million</b> (excluding risk);</li> <li>6. Approve Option <b>3</b>, to undertake a further engineering study including into the water management of the lakes.</li> </ol>
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<p><b>3. Budget</b></p>	<ol style="list-style-type: none"> <li>1. The existing project budget of £150 000 had been allocated to progress this project to the next gateway. Of this, £77 000 was allocated for the initial engineering assessment of which only £47 000 has been needed. The remainder was allocated to staff costs, including a communication officers post which will be appointed soon.</li> <li>2. It is proposed to undertake a further engineering study which is estimated to cost £70 000. To progress the recommendations ahead of proceeding to the next gateway it is requested that the £30 000 not spent on the initial engineering assessment be reallocated to the further engineering study and that a further £40 000 is allocated from central funding.</li> <li>3. This project was agreed for progression outside of the fundamental review. The request to draw down an additional £40,000 from central City's Cash resources will require the approval of the Resource Allocation Sub Committee and Policy and Resources Committees. (This request will form part of the next Chamberlain's project funding update report.)</li> </ol>
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Item	Reason	Funds/ Source of Funding	Cost (£)
Further engineering study	It has been recommended in the initial engineering assessment.	Existing budget reallocation, Additional draw down of central funding	30 000  40 000
<b>Total</b>			70 000

	<b>Costed Risk Provision requested for this Gateway: 0</b>
<b>4. Issue description</b>	<p>1. The scope of the project has reduced following the initial engineering assessment which now requires a change in approach. This will cause a delay in the project's progression to the next gateway as there is a need to carry out a further engineering study.</p> <p>2. Wanstead Park is East London's oldest public park and considered to be London's greatest surviving designed waterscape. At its most extensive (circa 1800) there were nine artificial lakes within the Park. Five lakes remain today and form a cascade with the lower four lakes the responsibility of the City of London Corporation. A substantial proportion of the Park and Out Park were added to Epping Forest by the City Corporation between 1876 and 1880. In 2001 the Park was designated a Grade II* – 'a garden of special interest' - Registered Park and Garden (RPG) by English Heritage (now Historic England), following an earlier Grade II designation in 1987. Since 2009 Wanstead Park has been on Historic England's Heritage at Risk Register (HARR).</p> <p>3. Wanstead Park faces four key challenges to its continued integrity.  <b>Heritage</b> - The Park was placed on the Heritage at Risk Register in 2009 due to differences in management by the four owners and the deteriorating condition of the Park's heritage features.  <b>Water Supply</b> - The largely City-owned lake cascade at the heart of the listed landscape has a long-term negative water budget with insufficient inflow and widespread leakage which is currently augmented by aquifer pumping and is likely to see future reductions in abstraction permissions if the water holding capacity of the lakes is not stabilised.  <b>Local Flooding</b> - The Park is also at risk of occasional flooding from the River Roding and the City Corporation has been identified since 2012 as a private riparian owner expected to match fund in partnership upstream flood alleviation works grant-aided by DEFRA  <b>Reservoir Safety</b> – In 2018, The Environment Agency designated three of the cascade's lakes, for which the City Corporation is the reservoir owner, as 'High Risk' in a risk assessment of dam safety during the Probable Maximum Flood.</p> <p>4. The Wanstead Park Ponds Project was initiated in July 2019 as a Gateway 2 project to fulfil the City Corporation's</p>

statutory duties as the reservoir owner of the ponds at Wanstead Park and to identify the solutions to achieving this and other works in the Wanstead Parkland Plan, contributing to the removal of the Heritage at Risk status of the listed landscape. This was required following the Environment Agency's designation of the Large Raised Reservoirs as being 'High Risk'. The essential flood prevention works were approved for progression outside of the fundamental review.

5. Dams and Reservoirs Limited, and their Panel Engineer were contracted to undertake an initial engineering assessment of the four ponds (Shoulder of Mutton, Heronry, Perch and Ornamental Water). This was to establish the requirement for each of the pond structures and if they were currently able to safely overtop. This was undertaken to fulfil the City Corporation's statutory duties under the Reservoirs Act 1975 and the Flood and Water Management Act 2010, following the Environment Agency's designating the cascade of lakes as 'High Risk' Large Raised Reservoirs.
6. It was expected that the dam structures would be assessed against the Probable Maximum Flood, as had been the case for the Hampstead Heath Ponds Project. It was initially envisaged that the amount of work required would be similar in scope to that required to the two chains of ponds at Hampstead Heath.
7. In summer 2020 the initial engineering assessment was concluded by Dams and Reservoirs Limited. The Panel Engineer's report (Appendix 3) sets out the rationale of the assessment and makes recommendations.
8. The 'High Risk' designation did not change the categorisation of each of the lake's dams. Shoulder of Mutton, Heronry and Perch are Category C and the Ornamental Water is Category D. These categories are assigned based on the consequence of the dam's failure. The category of a dam determines the level of the safety check, with lower consequences of failure requiring the use a less onerous performance criteria.
9. In the Panel Engineer's report (Appendix 3) it is noted that; in some cases, owners of dams decide to provide a higher degree of protection for a number of reasons that could include the marginal cost of providing higher protection or that the organisation wishes to avoid reputational loss should a dam fail. This is not considered to be necessary in this case and the categories assigned and the level of

protection required are considered by Dams and Reservoirs Ltd to be appropriate.

10. The Wanstead Park cascade of lakes have dams which have been categorised as having a lower consequence of failure than was the case at Hampstead Heath. This has had ramifications on the extent of working being recommended to ensure that the dams remain safe. This has resulted in a significant reduction in the anticipated total cost of the project.

11. In the report (Appendix 3), based on the initial engineering assessment, the Panel Engineer has made recommendations for work to each of the dams and in addition recommended that a further study should be undertaken to review the interaction between the dam structures of the lowest lake, Ornamental Water, and the adjacent River Roding. The recommendations are summarised here:

<b>Pond</b>	<b>Recommendations</b>
Shoulder of Mutton	<ul style="list-style-type: none"> <li>- Regulation of the dam's crest.</li> <li>- Maintenance of short grass cover to dam's embankment.</li> </ul>
Heronry	<ul style="list-style-type: none"> <li>- Regulation of the dam's crest.</li> <li>- Installation of a concrete edging beam.</li> <li>- Grass improvement to the dam's embankment.</li> <li>- Regrading of the dam's embankment.</li> </ul>
Perch	<ul style="list-style-type: none"> <li>- Regulation of the dam's crest.</li> <li>- Installation of a concrete edging beam.</li> </ul>
Ornamental Water	<ul style="list-style-type: none"> <li>- Works to ensure overtopping occurs only at overflow embankment.</li> <li>- Regulation of the dam's crest.</li> <li>- An 'engineered' reinforced grass system to the overflow embankment's downstream face.</li> <li>- A further study to understand the effects of the interaction with the River Roding.</li> </ul>

12. The cascading nature of the lakes has been considered in the engineering assessment, specifically the mechanism for a chain reaction of failures and the capacity of the dams to accommodate this. The flooding routing undertaken

demonstrates that the penultimate lake in the chain (Perch Pond) has the capacity to accommodate the required design flows without overtopping. This effectively cuts the chain in two. As such only minimal interventions have been recommended to the upper three lakes (Shoulder of Mutton, Heronry and Perch).

13. The lowest lake in the chain, Ornamental Water, which is also the lowest category of dam, does overtop in the considered flood events and it is recommended that work should be carried out to ensure this is accommodated safely.
14. The Panel Engineer also notes that the Ornamental Water sits in the effective flood zone of the River Roding (which would likely to be in flood during the considered event). Due to this there could be a greater risk of erosion from the Roding effecting the dam than that caused by the overtopping. The Panel Engineer has therefore recommended that study be undertaken to understand the complex effects of this interaction.
15. It is necessary to undertake this study ahead of proceeding to the next gateway as it will have a material impact on determining the works considered at that stage. This study would require the reallocation of funding that was not spent as part of the initial engineering assessment, £30 000 and require the further allocation of £40 000.
16. The lake system at Wanstead Park makes up a key component on the park's Grade II\* listed status and long term issues with the water supply to the lakes have also been noted as a major factor in the park's Heritage at Risk status and has been raised as a significant concern by other stakeholders. The Roding/Ornamental Water Study would be an opportunity to investigate further the implications, particularly on reservoir safety, to changes to the water supply; including winter pumping from the Roding and other options as considered by the Wanstead Parkland Plan.
17. The Panel Engineer has estimated the costs for the recommended works on site to be approximately £500 000. The estimated total cost of the project is now likely to be up to £1 million. This is significantly less than was anticipated for the project initially which was £8-12 million.
18. The reduction in the cost of this project has a direct impact on previous funding considerations for the Wanstead Parklands Plan. As it was intended to utilise this

	<p>expenditure as match funding for the wider work in the Park. A review into the implication of this will now be required.</p>
<p><b>5. Options</b></p>	<ol style="list-style-type: none"> <li>1. <b>Do nothing.</b> <i>Should this option be chosen the project will remain delayed but will continue to progress to the next gateway. This would include a significant risk that the options proposed for work to improve the Ornamental Water would be ineffective and that further work would be required. <b>This option is not recommended.</b></i></li>   <li>2. <b>Follow the recommendation to carry out the Roding/Ornamental Water study.</b> <i>Should this option be chosen a further engineering study would be commissioned and used to inform the options recommended at Gateway 3. This would result in a delay to the project. <b>This option is not recommended.</b></i></li>   <li>3. <b>Follow the recommendation to carry out the Roding/Ornamental Water study and investigate water supply issues.</b> <i>Should this option be chosen a further engineering study would be commissioned including aspects concerning the water supply to the lakes. This would inform the options recommended at Gateway 3. This would result in a delay to the project. <b>This option is recommended.</b></i></li>   <li>4. <b>Consider the dams as having a higher category.</b> <i>Should this option to be chosen a further review of the dams and recommendations would need to be undertaken by the Panel Engineer at additional cost and delay, with the expectation that more intrusive and expensive works would be required. The current categorisation is considered to be appropriate. <b>This option is not recommended.</b></i></li> </ol>

**Appendices**

Appendix 1	Project Coversheet
Appendix 2	Risk Register
Appendix 3	Wanstead Park Ponds Flood Study

**Contact**

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