

Committee: Audit and Risk Management Hampstead Heath, Highgate Wood and Queen's Park Committee	Date: 12 December 2012 28 January 2013	Item no.
Subject: Hampstead Heath Hydrology (Strategic Risk 11) – Progress Report	Public	
Report of: Director of Open Spaces and City Surveyor	For Information	
<p style="text-align: center;"><u>Summary</u></p> <p>The City is currently managing the risk of failure of dams on Hampstead Heath. This is listed as Strategic Risk 11 on the Risk Register and is rated red due to the likelihood being rated as Possible and the impact as Catastrophic. This risk is owned and managed by the Director of Open Spaces with support and advice from the City Surveyor.</p> <p>Officers confirm that the City has taken all practical steps to reduce the risk to the downstream community and we continue to progress the dams project towards the ultimate resolution of this risk.</p> <p>This report provides the 9 month update requested and confirms that there has been no substantive slippage to the project.</p> <p>Recommendation</p> <ul style="list-style-type: none"> • It is recommended that this report be received for information. 		

Main Report

Background

1. When Hampstead Heath transferred to the City under the provisions of The London Government Reorganisation (Hampstead Heath) Order 1989, the City took on all associated liabilities, including those relating to the chains of ponds on Hampstead Heath.
2. The Hampstead Heath, Highgate Wood & Queen's Park Committee has been delegated all powers and duties relating to Hampstead Heath including the dams and for monitoring and oversight of SR11.
3. The Audit & Risk Management Committee provides risk management oversight and seeks to obtain general assurance on the adequacy of the arrangements in place for managing risk across the organisation.
4. Approval was given by the Court of Common Council on 14 July 2011 to the project to upgrade the pond embankments on the Hampstead and Highgate chains. The aims of the project are to reduce the risk of pond overtopping,

embankment erosion and failure; ensure compliance with the existing requirements of the Reservoirs Act 1975 together with the additional expected requirements under the Flood and Water Management Act 2010 while meeting the obligations of the Hampstead Heath Act 1871; and improve water quality.

5. The 22nd February meeting of the Audit and Risk Management Committee resolved:
 - The Hampstead Heath, Highgate Wood and Queens Park Committee be sent a message of support from the Audit and Risk Management Committee for the steps being taken.
 - The Audit and Risk Management Committee receive a 9 monthly update on the project to reduce the likelihood of dam failure.
 - Any risks arising from slippage in the project be reported to the Audit and Risk Management Committee.
 - Whilst supporting the risk having a dedicated owner, the Audit and Risk Management Committee would like confirmation of the written agreement of this allocation of responsibilities as soon as possible.

Management of Risk

6. The risk of major flooding as a result of pond embankment failure is listed on the City of London's Risk Register as a red status (net risk) as a result of it being categorised as Possible with a Catastrophic impact. The likelihood assessment was reduced (just prior to the last report to Committee) from Likely to Possible to reflect that in some scenarios, the dams will have the capacity to receive waters without breach and flooding downstream. However it should be noted that should severe overtopping occur, it is highly likely that the resulting erosion will lead to embankment failure.
7. Despite this re-assessment, the risk remains red rated. The red rating reflects that, despite our interim measures, the risk of dam failure remains possible under the terms of the risk register and would have a catastrophic impact. Despite the warning systems which the City has put into place, the damages to property and associated loss of life could be severe. (See risk register extract at appendix 1).
8. The interim measures in place are intended to provide maximum warning of overtopping and possible flooding, reducing the resulting risk to the lives of members of the local community; whereas the dams project seeks to mitigate the possibility of dams and embankment failure.

Risk Ownership

9. The risk of dam failure is now owned and managed by the Director of Open Spaces with support and advice from the City Surveyor. The City Surveyor and Supervising Engineer provide expert technical advice, and in the event of an emergency, provide instructions to Open Spaces staff and the Emergency Contractors. In order to provide this advice the City Surveyor monitors the dams using telemetry. A written agreement covering the allocation of responsibilities was completed in May 2012 and the Chairman and Deputy Chairman of your Committee were advised on the 25th May.
10. Whilst the Director of Open Spaces is responsible for the risk of dam failure, the City Surveyor is responsible for the delivery of the dams project and project specific risks. A Project Board supports delivery of the project, and includes representation from Open Spaces, the Comptroller & City Solicitor, Chamberlain and Town Clerk.
11. Parts of Hampstead Ponds 1 & 2 are not in the City's ownership and are flooded by the City under the terms of a licence. Additionally parts of the existing dams and land which is likely to be required for the re-modelled dams, are not owned by the City. These adjoining landowners would be considered statutory co-undertakers if registered as such by the Environment Agency, which would result in them jointly holding risks with the City associated with any dam failure of Hampstead Ponds 1 & 2. As the detailed design solution is not expected to be fully developed until later, it is not yet possible to confirm the full extent of other affected land owners; however some of these landowners have been made aware of their potential liability. A separate report providing details of the potential liabilities of these adjoining land owners and recommendations as to how the City should proceed is currently being prepared by officers to be heard at your committees in the early part of 2013.

Appointments

12. The design team and Strategic Landscape Architect (SLA) were appointed in October following approval from the Hampstead Heath, Highgate Wood & Queen's Park and Project Sub Committees. The appointment of the SLA followed a presentation to the stakeholder group. Currently the City is appointing the construction contractor and this involves a competitive dialogue process. Local stakeholders will be involved with the appointment process but excluded from sensitive commercial issues.
13. Following the appointment of the design team one of the first tasks is to undertake a fundamental review of the previous study works. This review will include a risk assessment, to identify Likely Loss of Life and Persons at

Risk. A further priority for the design team is to review the timescale for the project, in the light of the fundamental review and the need to further engage with the stakeholders.

The Supervising Engineer

14. Andrew Hughes of Atkins Ltd was appointed as Supervising Engineer in April 2010 for a five year period to monitor, report and advise on the condition and safety of the dams.
15. The Supervising Engineer provides inspection reports and advice to the City Surveyor's Assistant Director of Engineering (the Responsible Person in accordance with the legislation for the City). The Assistant Director of Engineering undertakes recommended maintenance works which cannot be done in-house by Open Spaces and provides technical advice and instructions to the Director of Open Spaces and emergency contractors.

Mitigation of Risk

16. The final engineering solution will take a number of years to put into place (both in terms of the local consultation required, the development of an appropriate design and the design's construction). It is currently anticipated that the project will start on site in February 2014, and complete in May 2015. In order to mitigate the interim risk, a number of measures have been put into place including creation and dissemination of an emergency action plan, installation of telemetry system and the engagement of an emergency response contractor. These measures do not reduce the likelihood of dam failure, but aid the City in identifying the potential for dam failure and taking appropriate action to alert the London Borough of Camden and the Police in order that they initiate their Off-Site Emergency Action Plan in order to reduce loss of life.
17. Officers advise that the City has taken all practical steps to reduce the current risk to the safety and wellbeing of the local community and continues to progress at practical speed towards the mitigation of Strategic Risk 11 Pond Embankment Failure, in the form of the dams project.

On-Site Emergency Plan

18. An on-site emergency plan has been developed and is in place. Testing of the Plan with telemetry systems with Hampstead staff has happened and further tests with MITIE are planned for January 2013.
19. The London Borough of Camden has an off-site emergency plan. Officers are continuing to liaise with colleagues in Camden and the Emergency services and will appraise them of any revisions to our work plan as it develops.

Emergency Response Contractor

20. The appointed Emergency Response Contractor supports the Supervising Engineer and the City Surveyor's Assistant Director of Engineering (who is the responsible officer), and will in the event of an emergency provide practical on-site support to City officers. The Emergency Response Contractor also carries out monthly water level monitoring and attends the Supervising Engineer's bi-annual inspections to ensure that they are familiar with the ponds.

Telemetry System,

21. This system was installed to give early warning of water level changes which could lead to a breach of the dams. The system also allows remote monitoring of water levels. This additional information provides a warning permitting the City to implement measures to prevent a breach of the dams, as well as for evacuation if necessary. The system has recently been tested with the emergency plan and staff on site.

Monitoring the weather

22. A rainfall forecasting system is in use, which will give a 6 hour alert of heavy rainfall being predicted on the Heath. Trigger levels for predicted and measured rainfall have been agreed and set.

Inspections by the Supervising Engineer

23. Twice a year the Supervising Engineer undertakes an inspection of all the dams across the Heath. During these inspections he checks for any advance signs of deterioration in the dams or leaks. Since taking up his position in 2010, the Supervising Engineer has been making recommendations in accordance with best practice, that coarse vegetation and saplings along the downstream face of the dams be removed. Hampstead Heath staff have undertaken works to comply with these recommendations, thereby enabling better observation of the condition of the dams and reducing obstacles that can result in turbulence and erosion of dams if they overtop.

Monitoring the dams for movement

24. Part of the recommended maintenance work on the dams includes annual surveying of the crests and embankments of Hampstead No 1, the Highgate Men's and Model Boating ponds.

25. In light of all the above actions, the City's Supervising Engineer is satisfied that the City has acted responsibly to reduce the interim risk, and advises that the only way to truly reduce the risk is to undertake improvement works.

Community Engagement

26. In its stewardship of the Heath, the City has long appreciated the support and critical friendship provided by the local community and its

representative groups. However, given that it is the City which holds the risks and liabilities associated with dam failure and resulting loss of life, it is recognised that this stakeholder engagement must be carefully managed. Officers are working to achieve a balance between reducing the likelihood of legal challenge (which would delay the project and prolong the risk) through consultation, and progressing the project at a reasonable speed. To support this, a Dams Communications Officer has been appointed and a Flood Management Stakeholder Group convened. Together with Hampstead Heath Consultative Committee, this provides a conduit to consider the emerging proposals and a mechanism to feed information back to the wider community. The stakeholder group has met several times to develop their understanding of the project.

27. The on-going dialogue with the Stakeholder Group is generally positive and necessary to secure support for the project and the planning consent process. There is however a serious risk that the level of scrutiny, from those opposing the basis of industry guidance (that environmental damage is not considered) and increasingly from those living downstream (who are seeking to ensure that any overtopping from Heath ponds is minimised), will continue to challenge the City's proposals and delay the project.

Proposals

28. This report provides Members with an update on the interim measures undertaken to reduce the risk of loss of life in the event of pond embankment failure and the strategy for the mitigation of SR 11: Pond Embankment Failure through the dams project. No further proposals are presented.

Implications

29. As outlined, the current measures mitigate the current risks arising from overtopping and dam failure in as far as practically possible until the mitigation measures are in place following the dams project. The current measures should assist in faster identification of possible problems, enabling the City to take steps to reduce the likelihood of overtopping. If overtopping still occurs, the interim measures also allow the City to alert the London Borough of Camden and Police so that they can initiate their Off-Site Emergency Plan in order to try to avoid loss of life. As discussed in this report, despite these interim measures a long term solution remains necessary to mitigate the risk of overtopping and dam failure.

Conclusion

30. The City has taken all practical steps to mitigate the current risk and continues to progress the best options with all reasonable speed towards a final resolution.

Appendices

1. Strategic Risk Register – Risk 11
2. Map of the location of the ponds

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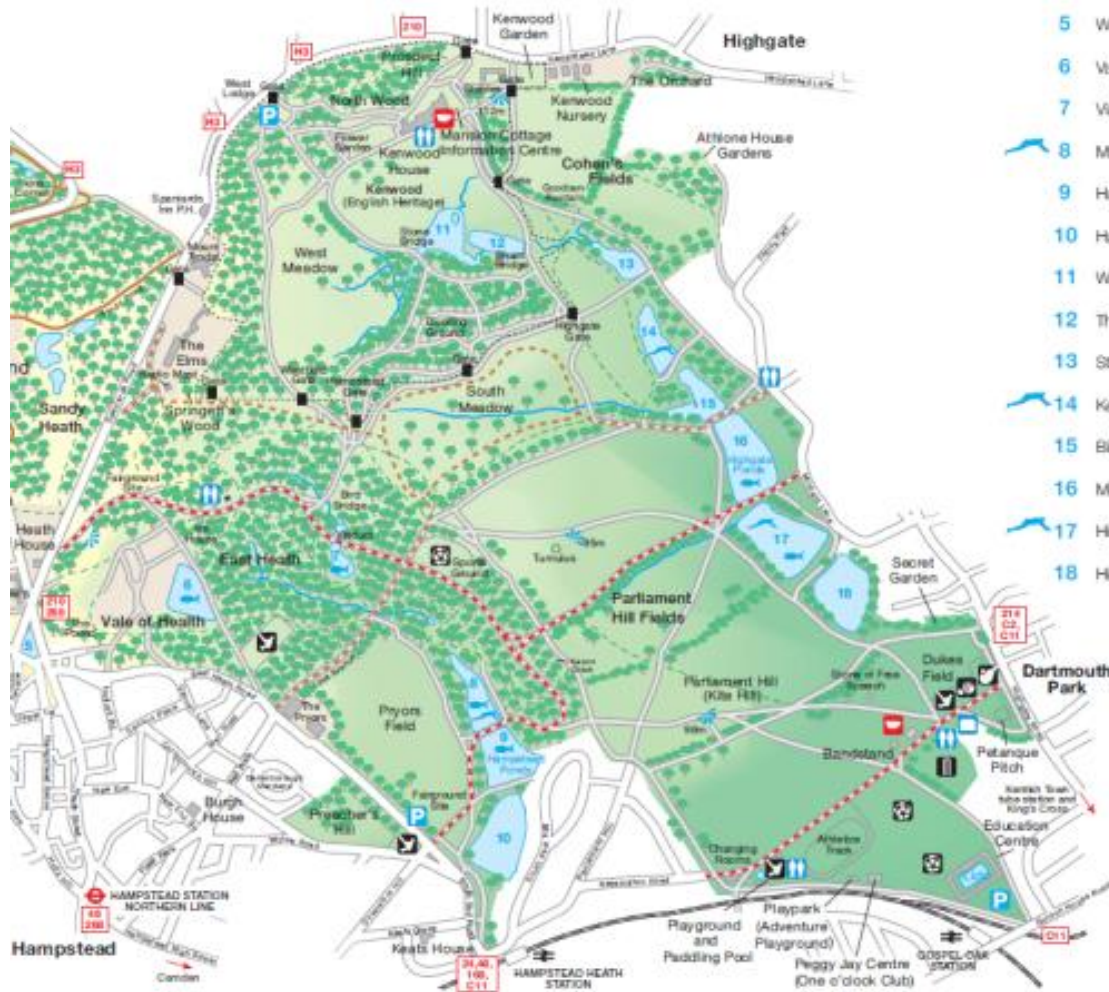
Risk	Major Flooding caused as a result of pond embankment failure at Hampstead Heath Links to: Strategic Aim SA3 and Key Policy Priority KPP4	Gross Risk		R
		Likelihood	Impact	
		3	5	





Detail	If there were to be failure of the pond embankments during a major storm, and no warning was given, the number of lives at risk on the Hampstead chain would be in the region of 400 and on the Highgate chain would be around 1000. This would also result in inundation and damage to local properties, roads and the railway lines towards Kings Cross. Detailed analysis has identified that dam crests are not currently able to cope with the level of overtopping expected to occur as a result of such a storm, increasing the risk of erosion and dam failure. The City of London Strategic Flood Risk Assessment 2012 with new surface water modelling identified 4 areas of risk in the City from upstream run-off (including Hampstead Heath).
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<u>Specific Issues</u>	<u>Mitigating Controls</u>
Insufficient warning given of flooding	Telemetry system installed and managed by the City Surveyor as an integral part of the on-site Emergency Action Plan for reservoir dam incidents enabling early warning where pre-determined water levels at key ponds in both the Hampstead and Highgate chains of ponds are breached. Testing of this with the emergency plan and Hampstead staff has happened and further tests are planned with Mite. (City Surveyor/Director of Open Spaces)
Inadequate response to dam overtopping	Emergency Action Plan for on-site response in place and Camden now have an off-site plan in place Liaison with Camden Council's emergency planners is on-going, to work through issues raised by Emergency Services and to appraise them of revisions to our work plan as it develops. (City Surveyor/Director of Open Spaces)
Sensitivities of the local community regarding the natural aspect of the Heath	The City has undertaken extensive consultation with local stakeholders about why this project is required. The City has established a Stakeholder Group to enable key groups to contribute to the detailed design of the scheme and has appointed a dedicated officer to manage consultation. Hampstead Heath, Highgate Wood and Queens Park Committee actively engaged with local community. The group has already met several times to develop their understanding of the project. A Strategic Landscape Architect independent of the Design Team has been appointed to champion the landscape. (Director of Open Spaces)
Non delivery of project to upgrade pond embankments (includes slippage from agreed timetable and budget)	There remains a potential risk of legal challenge. This is most likely to arise in relation to the City's need to adhere to current Guidance that sets standards for dams that is opposed by certain Groups/individuals. On-going monitoring by Project Board and Projects Sub Committee. Negotiations for the appointment of the Design Team are complete but took a month longer than planned, The contractor's appointment may be affected by the Purdah period for spring elections, the Project Board are considering ways to mitigate this (City Surveyor) .

Summary and Further Action A project has been initiated to upgrade the pond embankments, but until such time that this project is completed (2014/15) there remains a risk of flooding downstream. Responsibility for the delivery of this project rests with the City Surveyor and in relation to the City's reputation, day to day management of the ponds and the community welfare aspects of this risk, the Director of Open Spaces.	Net Risk		R
	Likelihood	Impact	
	3	5	
	Control Evaluation		
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Hampstead Heath Ponds



-  Fishing ponds
- 1 Swan Pond
- 2 Leg of Mutton Pond
- 3 Lily Pond
- 4 Seven Sisters Ponds
- 5 Whitestone Pond
- 6 Vale of Health Pond
- 7 Voaduct Pond
-  8 Mixed Bathing Pond (No 3)
- 9 Hampstead No 2 Pond
- 10 Hampstead No 1 Pond
- 11 Wood Pond
- 12 Thousand Pound Pond
- 13 Stock Pond
-  14 Kenwood Ladies' Bathing Pond
- 15 Bird Sanctuary Pond
- 16 Model Boating Pond
-  17 Highgate Men's Bathing Pond
- 18 Highgate No 1 Pond