POLICY AND RESOURCES COMMITTEE	**25th April 2018**

MOTE PARK LAKE DAM

Final Decision-Maker	Policy & Resources Committee
Lead Head of Service	Director of Finance & Business Improvement
Lead Officer and Report Author	Deborah Turner – Interim Strategic Property Consultant
Classification	Public
Wards affected	All

Executive Summary

The Council is required by law to undertake improvement works to the Mote Park Lake Dam. This report sets out details of the recommended option for meeting the Council's legal obligations and describes the next steps in the project.

This report makes the following recommendations to Policy & Resources Committee:

1. That the contents and conclusions of the Mote Park Lake Reservoir Engineering Services Options Appraisal Report April 2018 are noted.

2. That Option C1 works to the Mote Park Lake spillway, as outlined in the report, are approved in order to reduce the risk of failure of the dam due to overtopping as low as reasonably practicable.

3. That the Director of Finance & Business Improvement is given delegated authority to seek planning approval for the recommended works and to enter into contracts for the supply, design and construction work to both the dam and sluice gates.

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Timetable	
Meeting	***Date***
Policy & Resources Committee	25th April 2018

MOTE PARK LAKE

1. INTRODUCTION AND BACKGROUND

1.1 The purpose of this report is to provide Members with an update on the Mote Park Lake Dam project and to put forward the recommendation made by the appointed Consulting Engineers. The question of the improvement works to Mote Park Lake as required under the Reservoirs Act 1975 was presented to Policy & Resources Committee on 26th April 2017 and the recommendations were noted and approved.

1.2 The recommendations to P&R Committee included appointment of a Reservoir Panel Engineer to undertake scheme design (Stage 1) and submission of a planning application (Stage 2) for the mandatory improvement works to Mote Park Lake to reduce the risk of failure of the dam in flood conditions.

1.3 The Stage 1 Report and associated feasibility studies have now been completed and this report presents to Members, the Consulting Engineer's recommended option and the associated projected costs.

1.4 The mandatory works to reduce the risk of failure to the dam due to overtopping must be completed by June 2020. To ensure the Council meets this deadline, approval is sought to proceed with the Report recommendations and to proceed with all necessary works.

1.5 Mote Park Lake is a reservoir retained by an embankment dam across the River Len. The Reservoirs Act 1975 requires that a review of the dam by an All Reservoirs Panel Engineer takes place every 10 years. The 2014 inspection and review concluded that the dam did not meet current standards and that works of improvement were required. The subsequent 2017 ALARP (As low as reasonably practicable) feasibility report, carried out by Stillwater Associates, outlined options for these works. The report was provided as a background paper to the Policy & Resources Committee Report on 26th April 2017.

1.6 The dam is currently formed with a raised earth embankment and spillway. The 2017 ALARP report advised that failure of the existing dam would result in flooding of Turkey Mill Business Park and areas of housing along the River Len. The risk based approach identified that the consequences of the dam failing and releasing the water from the Mote Park Lake would result in 3 deaths and approximately £5 million of property damage. At the Policy & Resources committee on 26th April 2017 it was agreed that confirmation be sent to the Environment Agency that the Council commit to undertaking works to upgrade the spillway to reduce the risk of failure due to overtopping.

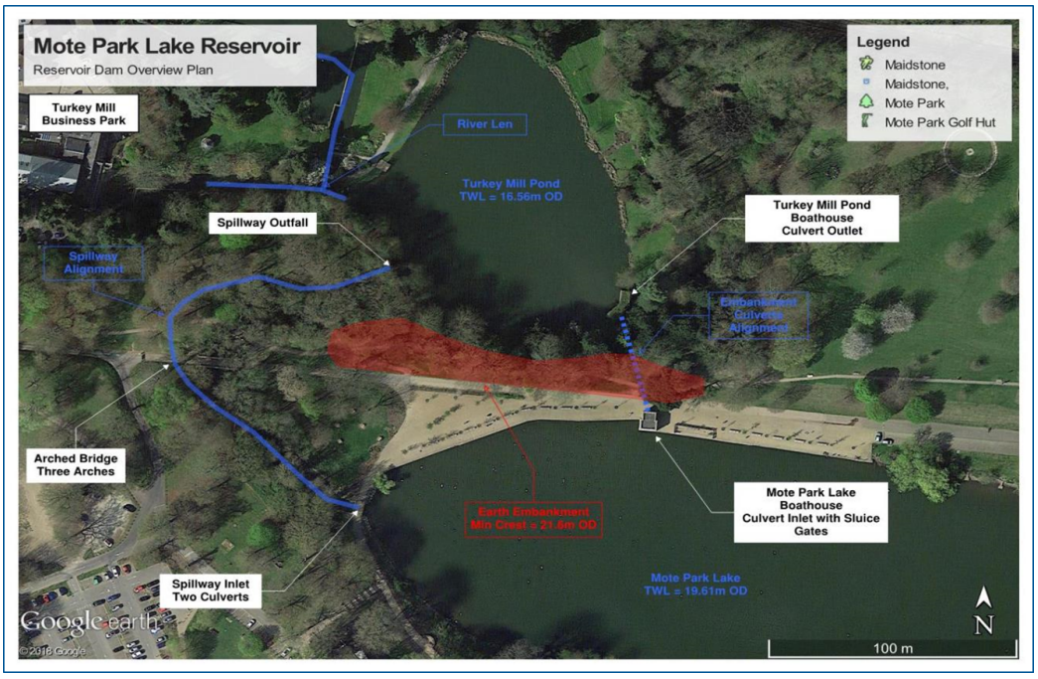
1.7 The Council appointed Black & Veatch Consulting Engineers to carry out an Options Appraisal Report to consider the 'pre-feasibility' options that had been undertaken as part of the 2017 ALARP Report.

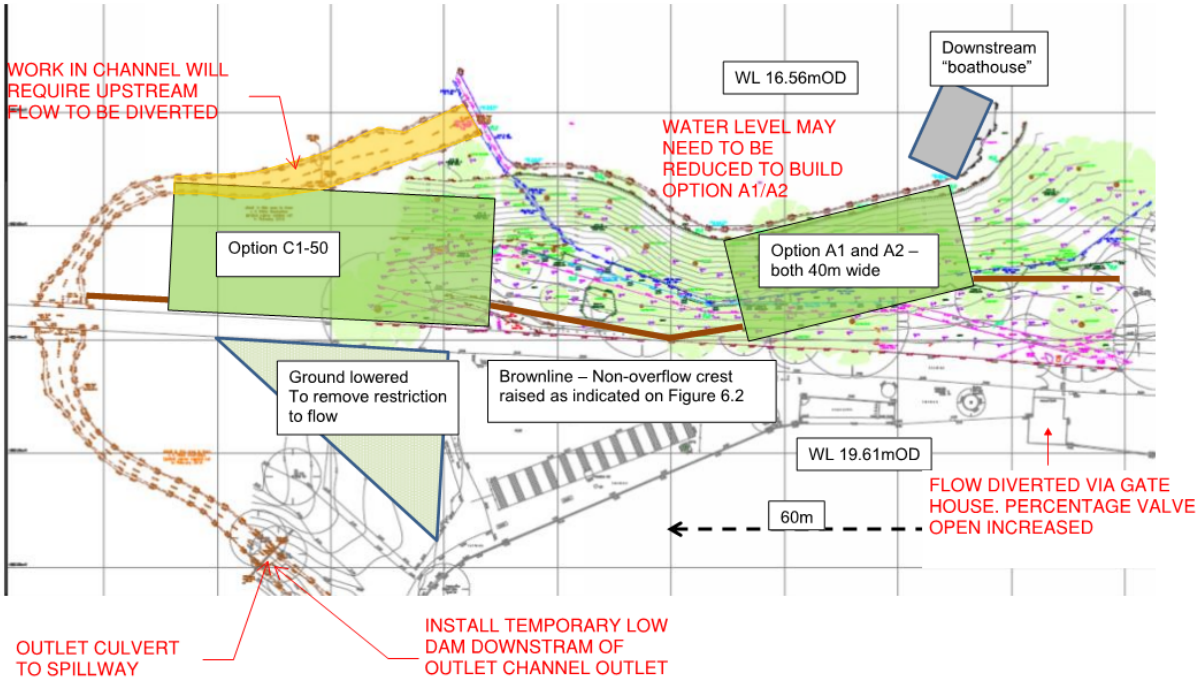
1.8 The Stage 1 Report produced by Black & Veatch has considered and assessed the pre-feasibility options, taking account of design aesthetics, cost, risk, practicality, disruption to users and ongoing maintenance costs. Based on all these factors, the Engineer's Appraisal Report sets out a clear recommendation.

1.9 The recommendation to prevent the overtopping of the dam in the event of flood is the construction of an auxiliary spillway. The auxiliary spillway would need to be approximately 58m wide on the abutment. To reduce the visual impact the spillway would be formed with grass covered articulated concrete blocks.

1.10 In addition to the auxiliary spillway, works are required to the existing sluice gates. A survey of the sluice gates was undertaken in 2010 by Campbell Reith with recommendations for works which have not yet been undertaken. The mechanical plant is over 200 years old and although there are four sluice gates, only one is currently operable. The 2017 ALARP Report states that Category A dams should have a means of lowering the dam in an emergency and as such at least one gate should be kept in working order. Investigations are underway to develop options for repair and/or replacement and to produce a scope of works for a contractor.

1.11 The works to the sluice gates should ideally be carried out prior to the construction of the auxiliary spillway. The water levels in the lake need to be controlled at a steady level during the period of the dam works and optimally by the operation of the sluice.





1.12 The Capital Programme includes an allowance of £1.9m for the remedial works required to the Mote Park dam. The Stage 1 Report and additional review of the condition of the sluice gates indicate that total costs may now exceed this sum. The additional costs associated with these further specialist surveys, the sluice gates replacement, additional contract administration, communications strategy and extra project contingency, point to a further £250k. However expenditure for 2018/19 is not likely to exceed the current allocation of £1.3m since the major works are expected to commence 2019/2020.

1.13 Stakeholder Liaison

1.13.1 Meetings have taken place with the managers of Turkey Mill to advise them of the impact of the works to their operations. They are generally supportive of the scheme and are willing to work with us to minimise the impact. Communication prior and during the construction works will be key and the Council will continue to maintain the good relationship established so far.

1.13.2 As part of the Stage 1 report, unobtrusive survey work was carried out in Mote Park and Turkey Mill and letters were sent to some user groups to give them notice of those surveys and to make them aware of the future works in 2019/2020. Only three of the groups formally replied which included: the Model Boat Club, whose storage container will need to relocated as a result of the construction of the spillway; Water Sports Centre who want to know how the works may affect business which at present is envisaged to be minimal; The Mote Park Fellowship have enquired how the works will this impact the trees and wildlife in the park and the aesthetics of the area around the dam and the Parks Manager is to give a short presentation to the group at their next meeting in April.

1.13.3 The Consulting Engineers contacted Historic England and they have confirmed that planning permission should be sought for the works.

1.13.4 Ongoing consultation will take place with Mote Park users and a Communications Strategy for the project will be developed prior to construction works commencing on site.

2 AVAILABLE OPTIONS

2.1 The Reservoir Act 1975 provides the Environment Agency with the power to take enforcement proceedings against the Council should we not implement works to increase the capacity of the spillway to reduce the risk of failure due to overtopping "as low as reasonably practicable" (ALARP) by June 2020.

2.2 The Consulting Engineers have assessed the options and recommended works that would be proportionate in cost to the reduction in risk achieved.

2.3 All options require preparatory and associated works that include: removal of some vegetation and trees, HV cable diversion, local ground lowering and formation of a wave wall from precast concrete blocks dressed with a textured finish to look like masonry to reduce visual impact.

2.4 The options are as follows:

No.	**Description**	**COST**
C1	A 58m wide auxiliary spillway on the abutment formed with grass covered articulated concrete blocks	£1.66m
C2	A 50-65m wide auxiliary spillway on the abutment, formed with reinforced concrete in situ cast steps.	£2.67m and £3.14m dependant on width
A2 + C2	A 40m wide auxiliary spillway and a 50m wide auxiliary spillway on the abutment, both formed with reinforced in situ-concrete.	£4.3m

2.4.1 **Option C2** - 50-65m wide auxiliary spillway on the abutment, formed with reinforced concrete in situ cast steps.

This option is discounted giving consideration to:

- Cost
- Slight increase in complexity of build and civil design due to the use of reinforced concrete.
- Visual Impact due to the finish being concrete, i.e. no planting possible within structure and the outlook for The Orangery (Turkey Mill's wedding venue) considerably altered.
- Scour protection required at the downstream (Turkey Mill) end of the spillway.
- Potential effects on badgers

2.4.2 **<u>Option A2 + C2</u>** - 40m wide auxiliary spillway and a 50m wide auxiliary spillway on the abutment, both formed with reinforced in situ-concrete

This option is discounted giving consideration to:

- Requirement for extensive vegetation clearance leading to loss of visual backdrop and severance of woodland habitat.
- Impact to adjoining land owners - The downstream face of the dam is owned by Turkey Mill and they are very resistant to options which remove the existing tree backdrop to Turkey Mill Pond, their wedding venue.
- A temporary haul road through Turkey Mill to facilitate construction of spillway A2 would be required.
- Scour protection within Turkey Mill Pond would be required where the spillway is constructed with reinforced concrete.
- The water level in Turkey Mill would have to be lowered for a period during the works
- The significant visual impact of in-situ formed spillway A2
- Potential effects on badger

2.4.3 **<u>PREFERRED OPTION – Option C1</u>** - A 58m wide auxiliary spillway on the abutment formed with grass covered articulated concrete blocks

This is the preferred option giving consideration to:

- Lowest cost
- Visual impact of the spillway mitigated by grass covering.
- The use of modular sections of articulated concrete blocks combined with the location of much of the works along the existing spillway makes construction of Option C1 relatively straightforward.
- Low maintenance costs, limited to grass cutting and regular inspections.
- Access during construction all via Mote Park. Minor reinstatement to West Drive will be required due to construction plant movement.

3 PREFERRED OPTION AND REASONS FOR RECOMMENDATIONS

3.1 Option C1 is the preferred option for the reasons set out in paragraph 2.4.3 above.

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4 RISK

4.1 The overall Mote Park Lake Dam improvement works project is based on an assessment of the potential risk from not carrying out such improvements. Within the context of the project, the recommended solution is based on the recognised ALARP methodology for addressing this risk.

4.2 Specific project risks have been identified in detail in section 11 of the Black & Veatch options appraisal report, which is available as a background paper, together with mitigating actions. Risks will continue to be monitored and managed during the course of the project.

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5 CONSULTATION RESULTS AND PREVIOUS COMMITTEE FEEDBACK

5.1 The question of the improvement works to Mote Park Lake as required under the Reservoirs Act 1975 was presented to P&R Committee on 26th April 2017 and the recommendations were noted and approved.

5.2 A Members' briefing took place on 5th March 2018 to explain the three options being considered by the Consulting Engineers, with a subsequent site visit on 6th March 2018.

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6 NEXT STEPS: COMMUNICATION AND IMPLEMENTATION OF THE DECISION

6.1 Confirm acceptance of the recommended option C1 for the construction of an auxiliary spillway on the abutment formed with grass covered articulated concrete blocks.

6.2 Instruct Black & Veatch to proceed with Stage 2, developing detailed design of the recommended option and submitting a planning application.

6.3 Carry out the repair and replacement works to the sluice gates prior to the commencement of the construction of the auxiliary spillway.

6.4 Construct the auxiliary spillway and complete all associated works by June 2020.

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7 CROSS-CUTTING ISSUES AND IMPLICATIONS

Issue	Implications	Sign-off
Impact on Corporate Priorities	Keeping Maidstone Borough an attractive place for all- The lake forms a key part of the historic setting of the park Providing a clean and safe environment- the dam provides flood attenuation to Maidstone in times of extreme weather	Director of Finance and Business Improvement
Risk Management	The Council is at risk of enforcement action if no action is taken to address the problem. Project risks have b	Director of Finance and Business Improvement
Financial	The estimated cost of the construction works is £1.66m. Additional supervisory and associated works will also be required. Capital programme is £1.9m - 18/19 £1.3m and 19/20 £600k. It is likely additional allowance will be required for 2019/2020 and that total project costs should not exceed £2.5m	Director of Finance and Business Improvement
Staffing	Property is overseeing the current work of the Consulting Engineers. A Project Manager will be required to oversee the contract administration of the construction works.	Head of Commissioning and Business Improvement
Legal	Legal will be required to produce the relevant contracts following the procurement process	Head of Mid Kent Legal
Privacy and Data Protection	N/A	Head of Commissioning and Business Improvement
Equality	No detrimental impact to the needs of individuals with protected characteristics identified.	Equalities and Corporate Policy Officer
Crime and Disorder	N/A	Head of Commissioning

		and Business Improvement
Procurement	Appointment of Engineers and a construction team will comply with contract procedure rules.	Head of Commissioning and Business Improvement

8 REPORT APPENDICES

The following documents are to be published with this report and form part of the report:

NONE

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9 BACKGROUND PAPERS

Mote Park Lake Reservoir Engineering Services Options Appraisal Report March 2018