



**LEE VALLEY REGIONAL PARK AUTHORITY**  
**EXECUTIVE COMMITTEE**  
**16 DECEMBER 2021 AT 10:30**

**Agenda Item No:**

**6**

**Report No:**

**E/747/21**

## **SUSTAINABLE WATER MANAGEMENT FOR MIDDLESEX FILTER BEDS**

Presented by the Corporate Director

### **EXECUTIVE SUMMARY**

Wetland habitat at Middlesex Filter Beds has historically been managed with two river pumps which suffered a range of issues and were expensive to run and maintain. Since these pumps have not been operational the site has degraded in terms of its biodiversity value and as a visitor attraction as the habitats have succumbed to natural regeneration thus losing the wetland habitat. In April 2019 Members approved to finance a design phase seeking sustainable options to continue management of the wetland habitats on Middlesex Filter Beds, with a second option of creating ponds. Officers have looked at options for funding for this project and were unsuccessful for the Green and Resilient Spaces fund. This project is unlikely to attract National Lottery Heritage Funding as it is not in a priority area for National Lottery Heritage Funding. Other streams of funding are still being investigated including a request for £50,000 S106 which is dependent on planning approval for a development in Waltham Forest.

### **RECOMMENDATIONS**

- Members Note:
- (1) the need for a permanent solution for water management on the Middlesex Filter Beds;
  - (2) external funding has not currently been secured to deliver a construction phase; and
- Members Approve:
- (3) option 1 - Installation of a sluice with control valve as outlined in paragraph 10 of this report, including the financial obligations.

### **BACKGROUND**

- 1 Middlesex Filter Beds is located just south of Lea Bridge Road on the junction of the Old River Lee and Lea Navigation. The Lee Valley Regional Park lease the site on a 999-year lease from Thames Water and has 965 years remaining. The Authority has managed Middlesex Filter Beds as a mixture of woodland and wetland habitat for over 40 years. The Authority showed further commitment to the ongoing management of the wetland habitats by signing up to a 10-year agreement with Natural England for a Higher Level Stewardship agreement,

which ends in 2023. For this the Authority receives £718 per annum for the management of wetland habitats.

Middlesex Filter Beds is a part of the Lower Lea river corridor wetland habitat and acts as a natural filter, also cleaning the River Lea when water is flowed through the site. It also acts as a carbon sink and without the ability to provide a water source the result will be a net loss of wetland habitat and the species associated with this habitat. Wetland habitat such as this is identified in the UK and Authority Biodiversity Action Plans (BAP) as a focus for maintaining, improving and increasing. If not maintained as wetland habitat it will be succeeded by woodland and scrub.

Previously the water level management was maintained by two river pumps powered by a diesel generator. The generator has been stolen twice, despite increased security measures. Replacement of the generator would cost in the region of £45,000 and it is felt the site is too vulnerable to replace the generator.

The continued use of pumps would also have an ongoing maintenance cost due to their 4-5 year life span with a cost of around £6,000 each, see table 12 under financial costs. Therefore Officers have looked at other options for powering the pumps:

- providing electricity to the pumps was not viable as the length of a power cable from the source to the pumps is too great a distance and would cause a drop down in power that would be insufficient to run the river pumps. An electrical source from the Lea Bridge Road Sluice was also investigated and found to also be too far from the pumps with similar drops in power levels over the distance rendering this option non-viable;
  - solar panels were also not viable as the site does not have sufficient land area needed to provide sufficient energy generating capacity to power two pumps; and
  - water power options such as Archimedes Screw were also investigated. This form of power was not possible as the river on the south side of the sluice does not have enough differential in height to generate enough energy to power the pumps.
- 2 The UK has lost 90% of its wetland habitats in the last 100 years and over 10% of its freshwater and wetland species are threatened with extinction in the UK. Two thirds of existing species are in decline. Wetlands make up only 3% of the UK but are home to around 10% of all our species, so they are vital for species that remain.
  - 3 A water management design was produced to provide a sustainable solution to water management of the Middlesex Filter Beds to maintain the wetland habitat.
  - 4 Members approved in 2019 to fund the design phase seeking options to provide water to manage the wetland habitats at the Middlesex Filter Beds with a proposal of a pond as a further option for investigation.
  - 5 This Paper details three options and costs proposed for future management at the Middlesex Filter Beds.

### **Option 1**

Installation of a sluice, from the River Lee with a control valve control between Bed 3 and Bed 4.

**Option 2**

Installation of a large pond on both Bed 3 and Bed 4.

**Option 3**

No water level management.

- 6 Many varied surveys, both utilities and ecological studies, were undertaken to establish the costs of the options, these included topographical, ecological, tree, utility and site investigation surveys.

This resulted in a fully drawn up scheme that is ready to tender.

**OPTION 1: SLUICE WITH CONTROL VALVE**

7 **Pros**

- Sustainable long term solution to water level management for the Beds
- No ongoing energy costs
- Whole Bed utilised as wetland reed habitat with some areas of open water
- More flexibility with topography and habitat variations
- Reed, wetland habitat identified in UK, LVRPA and local borough BAP plans as high priority habitat
- Increased biodiversity value for site, due to more variations of habitat types on the site as a whole which will attract more flora and fauna
- Larger area of habitat created for wetland nesting bird such as Reed Warbler
- Control valve enables best water level management for Beds
- Control valve enables Beds to be drained independently for habitat maintenance
- Control valve minimises disturbance to wildlife during habitat management, less time Beds need to be drained
- Control valve between Beds allows for back-up if sluice valve fails
- Enhances the heritage value of the site in re-enacting the historic filtration of water using the reed bed and wetland habitat as the filter and the gravel and sand beds which are still in place
- Reduces pollution of river water through natural filtration
- The wetland habitat provides a source of carbon offsetting due to carbon sink and reduced energy consumption, wetland habitats slow down climate change by naturally absorbing and storing vast amounts of carbon. The wetland habitat is twice as efficient than woodland habitats at carbon offsetting, they can also help to prepare, cope with and bounce back from the impacts of climate change
- Minimal infrastructure to maintain
- Sustained water level management of Beds reduces disturbance from people and dogs entering Beds
- Strong community support for water level management
- Positive PR for LVRPA supported by local community groups

**Cons**

- Cost
- Complexity of design needs technical expertise

## OPTION 2: PONDS

### 8 Pros

- Large area of open water with reed fringe for breeding wetland birds
- Enhances the biodiversity of the site by adding additional wetland habitat which is part of LVRPA's BAP
- Sustained water level management of Beds reduces disturbance from people and dogs entering Beds
- Carbon offsetting, but not as efficient as the wetlands
- Community support but preference for sluice option due to sustainability
- Positive PR for LVRPA

### Cons

- Cost
- No flexibility of topography due to pond liner
- No control on water levels
- Ponds will need to be refilled manually, pump would be required at additional cost
- Ongoing energy/fuel costs for pump
- Ongoing maintenance costs for pump
- Pond liner would need to be replaced after 20 years
- Only part of the Beds utilised as wetland habitat
- Has no heritage connection
- Does not reduce pollution of river water
- Less favoured by community than option 1

## OPTION 3: NO WATER LEVEL MANAGEMENT

### 9 Pros

- No immediate cost
- Creation of Small woodland /scrub area

### Cons

- Loss of valuable wetland habitat as Identified in the LVRPA and Hackney BAP. This is locally rare and an important link on the wetland habitat chain of the whole of the Lea Valley
- Loss of overall biodiversity of site
- Beds less secure from access by people and dogs
- Long-term cost of maintenance due to tree and scrub management to protect integrity of Bed walls and walk ways
- Loss of educational value on filtration and water pollution, theoretical not actual functioning filtration process
- Loss of heritage value due to its discontinued use as a filter treatment site, the Park has artificially continued this historical process on this site
- Not supported by community
- Half the efficiency of carbon offsetting
- Bad PR for LVRPA due to support from community and interest groups for sustainable wetland management for the site

**OFFICER RESPONSE**

- 10
- Option one is the preferred option for the reason outlined in paragraph 7. If approved works should start soon after the site visit with interested parties and would aim to be completed by March 2023.
  - The project is supported by Canal & River Trust, Environment Agency, Thames Water and Hackney Council as it delivers part of their own objectives on Water Quality/Suds systems, Carbon sink, increasing green skills in the local community, and Wetland enhancement/restoration.
  - Officers have agreement for £50,000 from S106 funding for a development further along the Lea Bridge Road in Waltham Forest.
  - This funding is subject to planning approval and is not currently secured.
  - It is not currently felt that a National Lottery Heritage Fund (NLHF) bid would be appropriate for this scheme.
  - Officers are recommending that third party external funding is sought as opportunities are currently starting to present themselves to contribute to these costs.
  - If these are unsuccessful then Members maybe of the opinion to fund fully.
  - The Authority has a number of options for financing its capital programme, from either contribution from revenue, use of existing capital receipts, or borrowing.
  - The Authority has existing capital receipts that are available to use to fund its capital expenditure, along with an anticipated receipt of up to £5million for the disposal of Langley and Mile Nursery (Paper E/743/21) in 2022.
  - It is unlikely that further external funding can be secured, it is therefore recommended that current capital resources/future receipts are utilised to finance £190,000 Authority contribution, bearing in mind the additional £50,000 required is not yet secured, Officers are recommending that if that funding is not secured then the full amount £240,000 is released from capital receipts.
  - This scheme will feed into the Authority's overall capital strategy and programme that will be presented to Members in January 2022.
  - If approved Officers will work with local interested groups and individuals in helping to deliver this project, starting with a site visit to discuss the works and timings.

**ENVIRONMENTAL IMPLICATIONS**

- 11 There are no environmental implications arising directly from the recommendations in this report other than those already described.

**FINANCIAL IMPLICATIONS**

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<b>Costs</b>	Option 1	Option 2	Option 3	Old system
Construction costs	£240,000	£122,000	£0	££57,000
Ongoing costs	minimal	£6000 per annum (Plus replacement of pond liners estimated at £180,000 after 20 years)	£5000	3600lts of fuel 120hrs staff £2,000 servicing

No external funding is currently secured and with only a potential offer of £50,000 the project is currently around £190,000 short.

Capital expenditure financed from existing capital receipts will reduce the Authority's cash holding in the short term, but can be delivered within current budgets, if approved this will be included in the capital report to Members in January 2022.

#### **HUMAN RESOURCE IMPLICATIONS**

- 13 There are no human resource implications arising directly from the recommendations in this report.

#### **LEGAL IMPLICATIONS**

- 14 There are no legal implications arising directly from the recommendations in this report.

#### **RISK MANAGEMENT IMPLICATIONS**

- 15 Potential for contamination from the river due to excessive oil slicks, an oil trap, is part of the design for Option 1.

#### **EQUALITY IMPLICATIONS**

- 16 There would only be restricted access during construction. There is an alternative route for access through site during this time.

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#### **LIST OF ABBREVIATIONS**

BAP	Biodiversity Action Plan
HLS	Higher Level Stewardship
LVRPA	Lee Valley Regional Park Authority
NLHF	National Lottery Heritage Fund