Fotheringhay Backwater Project

Location: Fotheringhay, Northamptonshire

Upstream Grid Ref: TL 06313 92450

Downstream Grid Ref: TL 06505 92363

Length: 300m

Completion date: May 2022

Cost: £64,200

Partners: National Lottery Heritage Fund, Environment Agency, Nene Valley Catchment Partnership, Nenescape LP, Landowners

Summary of activities

The Fotheringhay backwater project comprised of 2 activities:

Activity 1 – De-silt entire backwater to open it up for fish refuge and spawning habitat.

Activity 2 – Using faggot bundle & coir roll revetment to protect river banks in key erosion locations.

Supported by:

Location map

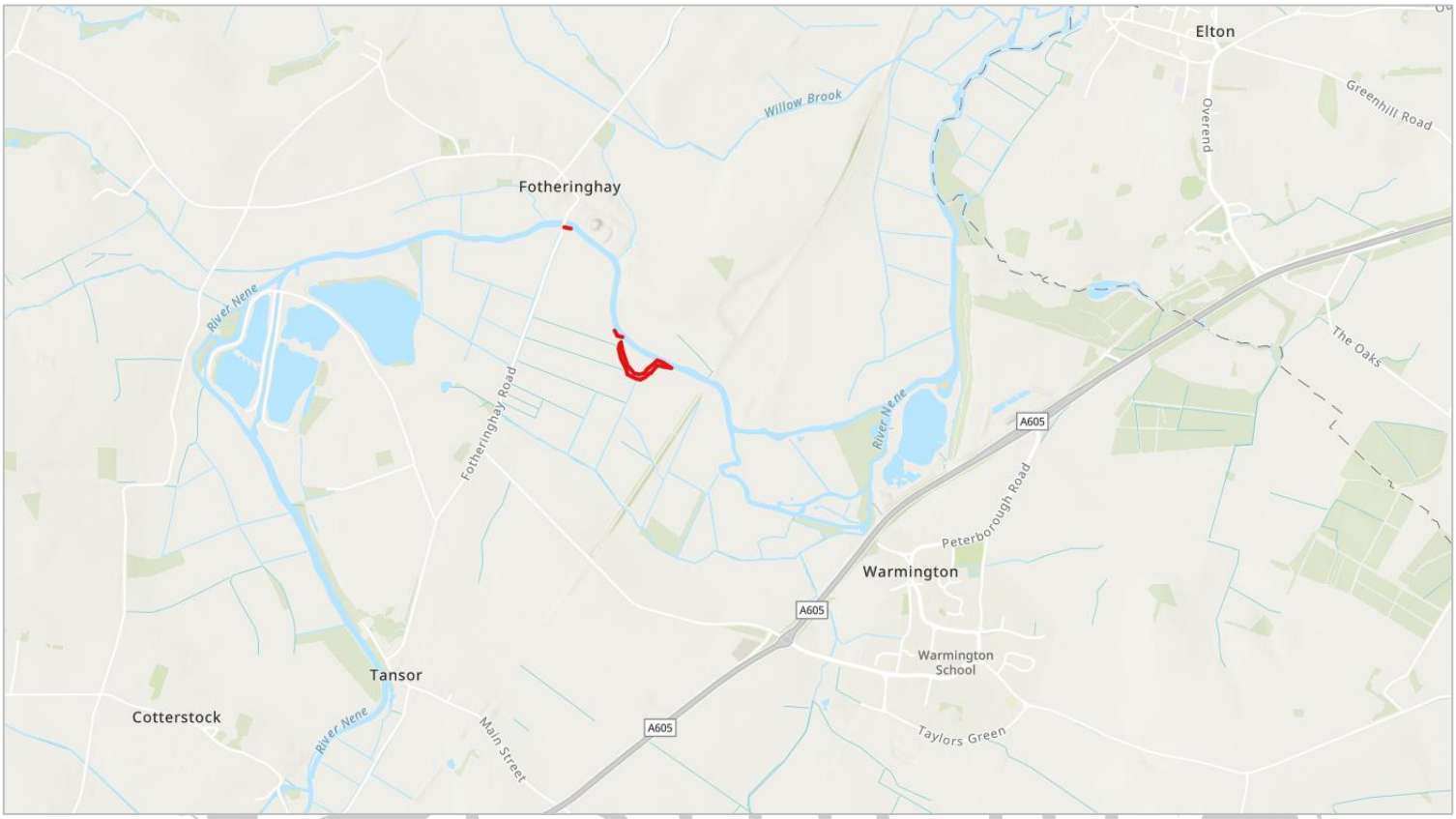

Figure 1 – Location of Fotheringhay Backwater Project

Background to project

This project was part of the Resilient River project, part of the Nenescape Landscape Partnership.

Fotheringhay Backwater is a former meander in the natural watercourse which has historically been cut off at the upstream end when the channel was straightened. It has been impacted severely by sedimentation over the last 10 years. Due to increased sediment, not only in the mouth but also throughout the channel, reducing the opportunity for it to be utilised as a spawning site and off-line refuge for fish. This was evidenced by an electro-fishing survey carried out in December 2018, where only two juvenile fish were found in the backwater, a pike (esox lucius) & a perch (perca fluviatilis).

This project sought to remove the build-up of sediment at the mouth and within the backwater to re-establish the backwater as a key off-line refuge on the River Nene. The nearest downstream backwater is 1.5 kilometres away at Eaglethorpe, however upon visiting this backwater it is in a similar, if not worse, condition. Upstream the closest backwater is approx. 2km away, however this is only 25m in length so is relatively small, offering a reduced capacity as an off-line refuge.

There were three locations along the main river channel where there were erosion issues causing sediment to be deposited in the river.

Supported by:

Objectives

The project at Fotheringhay Backwater benefits fish, invertebrates, aquatic birds and the local fauna, diversifying the river habitat through an urban stretch. The project contributes to delivery of Water Frame Directive, improving the ecological status of the river. It will also help the EA deliver the Eel Management Plan and meet its statutory obligations under the Eel Regulations.

- Increase refuge and spawning habitats for fish.
- Increase and diversify marginal habitats in an urban environment.
- Reduce sediment pollution caused by localised erosion.

Activities

Removal of sediment & vegetation to re-connect backwater to the main channel

The condition of the Fotheringhay Backwater was poor, with a large vegetated 'plug' extending from the mouth for 78m. There was then a 40m section of open water which was dense with aquatic weed and lily pads through the warmer months. Following this was another vegetated 'plug' of 35m before the remaining 149m of the backwater was open water with dense weed and lily growth.

A topographic survey found that the entire backwater contains approx.. 3931m^3 of silt and vegetation. All of this was planned to be removed, taking the backwater down to its hard bed level. Alongside this an 215m^2 area of the left hand bank of the mouth of the backwater was be re-graded in to two tiers by reducing the height by between 600-800mm.

The reason for re-grading the mouth of the backwater in this way was due to the current angle of the mouth being at an almost 90 degrees. This does not allow the natural river flow to draw sediment out of the mouth, leaving it to accumulate over time, leading to the current condition of the backwater. With the re-graded area of land lying lower than previously the flow of the river now pushes across the mouth, not creating as large an area of slack water for the sediment to drop out and accumulate. Functioning in this way will keep the mouth of the backwater from becoming silted up to the same extent as prior to this project being delivered.

Approximately 4,103m^3 of spoil was generated from the works, which would need re-locating or disposing of via landfill. The peninsula or 'island' as it is known is higher than the rest of the floodplain surrounding it, identified in the meeting detailed in section 4 – pre application consultation. Due to being out of the floodplain, the spoil can be placed on this area, approx. 7800m2.

It is proposed that the areas protected from erosion with faggot revetment work (described in activity 2) will be backfilled with some of the vegetation removed from the backwater, a total amount of 175m3. This would leave a total of 3,928m3 of spoil to spread over the 7800m2 at a maximum depth of 600mm, a total capacity of 4,680m3. This is in to allow for new sediment deposition since the topographic survey was carried out in May 2017.

Bank protection using soft engineering techniques

There were 3 short sections of bank erosion on the main navigation channel which were repaired and reinforced using faggot revetments. These were then backfilled with the vegetation removed from the backwater to enable faster establishment of marginal plant species.

The first location of erosion is downstream of the road bridge on the right-hand bank. There was significant scour directly below the bridge abutment, which was encroaching in to the buffer margin on the field, and toward the gate used for foot access.

The second location with an erosion issue was where the original course of the river is trying to continue its natural course at the upstream end of the backwater. Where the channel has been historically straightened and the backwater created when the meander was cut off from the main channel, the 'plugged' end is now suffering from erosion issues. Without any intervention it would not be too many years before the backwater turned in to a backchannel after the 'plugged' end is carved through by the river.

Lastly there was some erosion occurring on the downstream end of the mouth of the backwater due to the shape of the mouth. Revetment work here will re-enforce the length of the downstream side of the backwater's mouth, saving a tree from inevitably being washed away. Modifying the upstream side of the mouth of the backwater as described above created the necessity to protect the newly re-profiled bank and ensure its stability.

The faces of the eroded banks were stabilised using ash faggot bundles and backfilled with the vegetation and sediment removed during de-siltation works. Faggots were installed between pairs of untreated cleft hardwood stakes driven into the riverbed / banks at c1-2m centres. They were tightly packed between lines of stakes, and then secured with short loops of plain fencing wire attached to the stakes with staples. The loops of wire are independent from each other, so if one fails, the whole structure will not. Wire loops were twisted tight and the stakes driven further to securely hold down the faggots. Post tops and surplus wire have been trimmed to length. On completion the bank behind the new revetment was filled using the spoil & vegetation removed from the backwater. This was compacted using the excavator bucket and roughly re-profiled to grade in with the current bank level.

Supported by:

Contact information

For further information regarding the restoration project that took place at Fotheringhay Backwater or any other enquires please contact the Nene Rivers Trust:
Email – viktor@neneriverstrust.org
Website – https://neneriverstrust.org/

Contractor Information

ADC Drainage Ltd
Telephone – +44 (0) 1945 450925
Website - https://adcdrainage.co.uk/

Supported by: