

Nassington Backchannel

Location: Nassington, Peterborough

Upstream Grid Ref: TL 07819 95879

Downstream Grid Ref: TL 07662 97126

Length: 1.6km

Completion date: October 2020

Cost: £20,653

Partners: National Lottery Heritage Fund, Environment agency, Nene Valley Catchment Partnership, Nenescape LP & Peterborough & District Angling Association.

Summary of activities

The Nassington Backchannel scheme comprised of 5 activities. The activities were:

Activity 1 – Hinging and pinning overhanging trees and pleaching small riverside trees to increase in-stream woody habitat and create flow variation to improve the natural cleansing of the gravels.

Activity 2 - Tree planting to increase shade over the river and suppress the growth of emergent vegetation.

Activity 3 – Protect banks from future damage by erecting livestock fencing.

Activity 4 – Introducing fresh gravels to enhance spawning habitat and adjust flow dynamics.

Activity 5 – Create overhead cover for fish species in an area where currently they are exposed.



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Location map

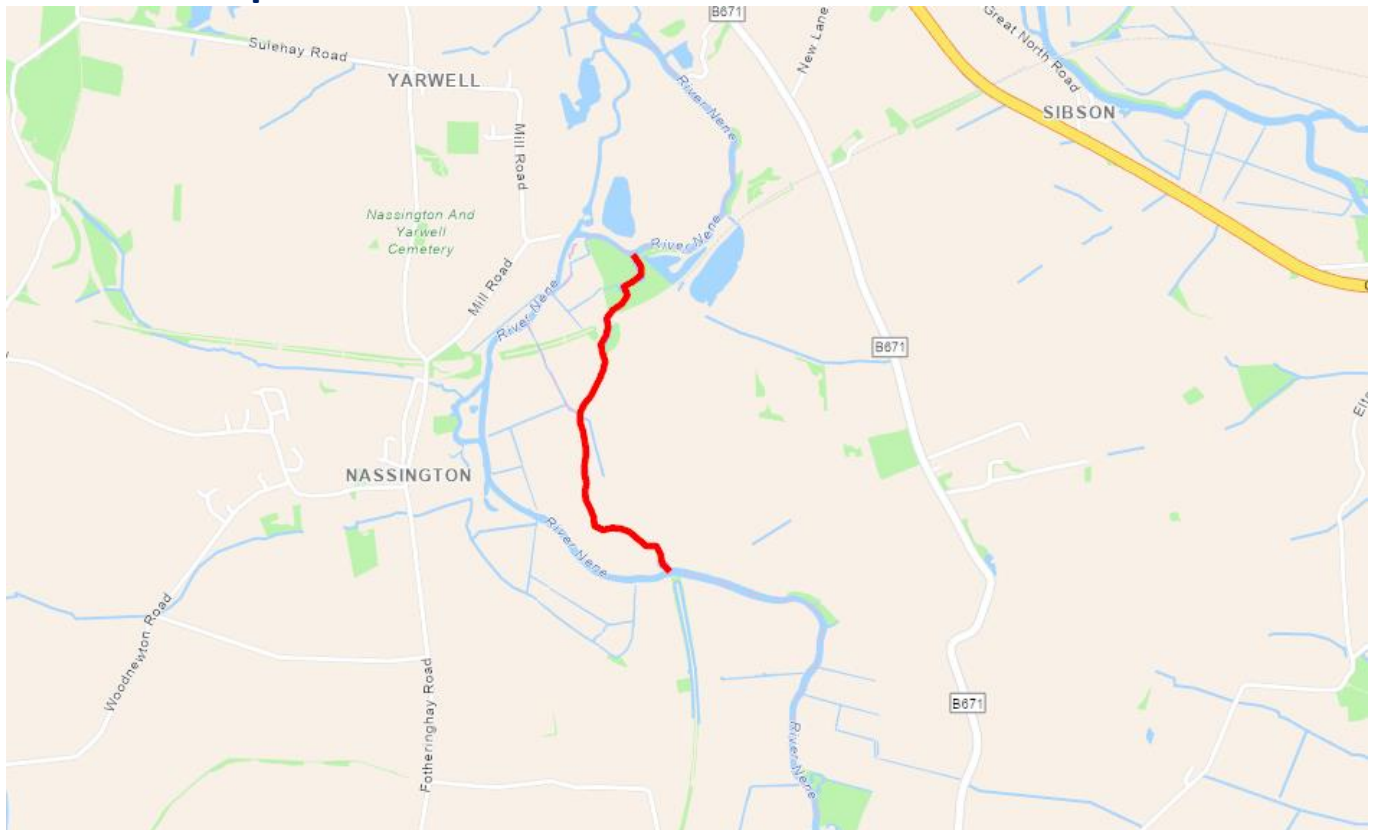


Figure 1 – Location of Nassington Backchannel, Peterborough

Background to project

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

Nassington Back Channel, also known as Wellington Back Channel, was in a generally good condition with some shallow gravel runs and some deeper pools. However, the gravel runs have a fairly uniform topography and are choked with fine sediment.

The back channel can be split in to two distinct section, divided at the foot bridge to the lower end of the channel. Downstream of this bridge there is an area known as “The Poplars”, a densely wooded area on both banks. Here there is significantly less weed growth due to the large amounts of shade provided by tree cover creating a relatively bare channel bed as well as heavily nettled banks with little variety in vegetation.

The upper ‘section’ of the back channel, from the weir to the foot bridge, is more typical of the Nene back channels with clear gravel runs, variable depths, and an intermittent tree stock. This section of the back channel was in a generally good condition however there was significant erosion due to flow

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dynamic and livestock poaching as well as some large areas of in-channel weed growth, which were exacerbating the erosion issues.

The Nassington backchannel is popular with both canoeists and kayakers so any works would have to be carried out in a way that is not to the detriment of the public right of navigation.

Objectives

The project at Nassington backchannel would benefit fish, other wildlife including otters and diversify the river habitats. 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.

- Improve the gravel bed topography and the quality of spawning habitat through clean gravel introduction in 7 locations.
- Increase in-stream woody habitat; provide fish and invertebrate refuges; improve conveyance; and reduce the risk of channel blockages by hinging and pinning selected riverside trees and securing fallen tree limbs.
- Reduce the impact of sediment inputs, in particular because of erosion caused by livestock and public access.
- Plant new trees to provide shade over the water to improve cover for fish and reduce water temperature.
- Improve access for anglers.
- Improve overhead cover by installing floating woody refuge.

Activities

Hinging & Pinning/Pleaching Overhanging Trees

19 small trees as well as 2 large trees were selectively “hinged and pinned” to increase woody habitat and provide a refuge for juvenile fish and invertebrates. The limbs that were closest to the water and extended furthest across the channel at the time were selected to ensure that conveyance will be improved as a result of the works. Larger overhanging limbs/trunks were also selected on the basis that they were the most likely to collapse into the river with the potential to cause a blockage. As such hinging these larger 2 trees/limbs is effectively advance maintenance – removing the need for emergency action and ensuring that beneficial in-stream woody habitat is retained.

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The trunks of trees were partially cut at the base, leaving a narrow bark and sapwood hinge, and then bent horizontally (pointing downstream) along the bank to create a tangle of twigs and branches extending to no more than 10-15% of the channel width. Cut limbs were held between pairs of hardwood stakes, and then secured with short loops of plain fencing wire attached to the stakes with staples. The loops of wire were independent from each other, so if one fails, the whole structure will not. Wire loops were twisted tight and the stakes driven down further to securely hold down the limbs in place. Post tops and surplus wire were trimmed to length. For added security, particularly if the hinge was to fail, in addition to the wire bindings, the limbs were drilled through and secured using lengths of steel cable shackled to double hardwood stakes driven deep in the riverbank using a mechanical (compressed air) post driver. Also, on the basis of advance maintenance, where trees have already collapsed, they were pulled against the bank and secured in situ, to ensure that they do not wash away in high flows and create a blockage downstream.



Figure 2 – Secured limbs on the bankface extending on to the channel

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Figures 3 & 4 – Smaller hinged and pinned trees extending in to the channel

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Gravel Introduction

Clean gravel will be introduced to modify the bed topography and improve spawning habitat in 7 locations. This will involve the top-dressing of 7 existing runs to create shallower riffles in order to increase flow speeds through these areas, providing more oxygenated gravel beds for spawning and to sustain invertebrate life.

The gravel size that will be used ranges from 4-40mm, this creates a strong matrix of gravel in order to keep it stabilised and provide large enough gaps for inverts and fish eggs to survive in. It was difficult to carry out a Wolman's pebble count due to the depth of the water over the existing gravels so a sample was taken where possible and this informed the range of gravel to be introduced. The gravel will be placed using a tracked excavator. The maximum height of the new riffles will increase the height of the existing runs by no more than 15cm and not impede on the canoe and kayak navigation.

Tree planting

There is limited tree stock along much of the left bank prior to the foot bridge, so it was proposed that ~20 native trees, mainly alders, goat willows and hawthorns, are planted to, once mature, increase shade. The trees are staked and guarded to protect them from rabbit damage and a mulch mat applied. Trees were planted on the bank crest in pairs leaving sufficient room for machinery to work around them if necessary. The future maintenance of the trees was passed on to landowner. The tree species used are smaller, low maintenance native species as indicated above. This alleviates some future risk regarding potential fallen branches, etc.

Fencing

The left-hand bank from the weir at the upstream end of the back channel to the central point of the back channel had a dilapidated existing fence line, in places erosion had left the fence line suspended over the watercourse. The original fencing was replaced with post and 3 string barbed wire fencing, set 10m from the original fence line. The open fencing pattern ensures that flood water flows under the fence, minimising the likelihood that the fence will collect debris that had been washed down river when in flood. Up to three, 13ft 7 bar aluminium field gates will be included in the fence line to allow access if required. The fields are not currently grazed however in the event they are grazed in the future these access gates would allow periodic grazing at the right time of year.

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Figure 5 - Access gate on the new fence line



Figure 6 - New fence line at Nassington backchannel

With the new fence line creating much more space between the bank edge and the fence, the local angling club now have much better access to be able to fish on this section of the backchannel. Previously it had been tricky with the original fence line leaving very little room to fish, as well as not having access points on it.

Floating Woody Refuge

In the weir pool the left-hand bank provides the perfect opportunity to add some cover for fish species where there is currently a lack of it. The area the floating brushwood mattress would cover is an area of slack water, this is a natural holding area for fish out of the flow and with a 'cover' on, will provide a safe holding area away from potential predation.

The brushwood mattress will be constructed from the coppiced hawthorn and cuttings from trees in the immediate area. The brushwood is bound together using short plains of fencing wire. It will be securely fixed to bankside using lengths of steel cable shackled to double hardwood stakes driven deep in the riverbank.

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Future Works

Due to budget limitations, there was no gravel introduced in to the backchannel. The hope is that this activity can be built into the mitigation of the proposed lock reversal scheme that would be carried out by the Environment Agency in the future.

It was included in the Flood Risk Assessment Permit that due to the potential lock reversal scheme resulting in additional flow through the Nassington backchannel that the floating woody refuge would only be installed once new flow velocities had been assessed to ensure that the refuge would withstand the increased velocity and not be damaged.

Monitoring

The angling club that control the fishing rights for the Ailsworth backchannel (Peterborough and District Angling Association, PDAA) have agreed to provide informal catch reports to help evidence the improved environment.

The Environment Agency have used the restoration works as further evidence to continue annual barbel stockings in the backchannel to strengthen and sustain the breeding population here.

Fish monitoring is carried out every three years on the channel by the Environment Agency and this report will be made available with it's findings when produced.

Contact information

For further information regarding the restoration project that took place at Nassington or any other enquires please contact the River Nene Regional Park:

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Website – www.riverneneresionalpark.org

Contractor Information

Hinging and pinning – Dominic Crawley Woodland & Water Management

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Website - <http://www.woodland-water.co.uk>

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