

Restoration of the Rye Brook

Andrew Pepper (Consultant Engineer - ATPEC) and Paul Ritchie (Project Manager - Corporation of London) show how volunteer commitment can make a real difference to the successful outcome of a restoration project.



Ashted Common: National Nature Reserve and public open space

The Rye Brook is a tributary of the River Mole, flowing from its source at the foot of Epsom Downs to the main river at Leatherhead, Surrey. It runs through Ashted Common which is a National Nature Reserve and a public open space and is managed by the Corporation of London. Areas of the common were cleared of trees and shrubs during the Second World War for agricultural purposes in a time of need. As part of this clearance the Rye was straightened (possibly by Italian prisoners-of-war), with the spoil being left along the banks. However, the heavy clay under a thin layer of topsoil meant that this was never a preferred arable area. After the war the area was no longer farmed, and reverted to trees and shrubs. Recent surveys have found that the length of the river that had been straightened supported a much reduced biodiversity when compared with other, more natural, reaches of the Rye.

Following a feasibility study the Corporation recently instigated a River Restoration Project, which aimed to achieve the following objectives:

- A natural river channel connected to its floodplain
- Improved biodiversity in the urban fringe environment
- A diversity of semi-natural habitats
- Habitats for some of the key biodiversity species for the London Basin area
- Improved flood storage capacity that reduces flood risk in the urban fringe
- Water quality improvements
- Attractive, safe and accessible open space
- Access routes for walkers, cyclists and horse riders
- A community focal point promoting improved environmental awareness

During the promotion and development of the scheme the public was kept informed of progress by means of a public exhibition, guided walks, presentations, displays, newsletter articles, press releases and the Corporation's website.

After the public exhibition, held in a local hall, the material remained on display in the Estate Office close to the site. This liaison allowed feedback of ideas to the project team for incorporation into the final design.

Hydraulic modelling showed that the relatively steep watercourse would not inundate a significant part of the adjacent land during floods, even if ponds and scrapes were constructed. The team therefore decided to expand the project to include some positive flood storage by constructing a low embankment across the valley using the material excavated from the ponds and scrapes. (There is a known flood risk downstream of the site). This low embankment would limit flood flows passing downstream, and at the same time inundate the ponds and scrapes more frequently, and to a greater depth, than if no embankment was built.

Soil investigations confirmed that there was a considerable depth of stiff clay lay below the topsoil, ideal for embankment construction. The flow control, to ensure that the flow passing downstream was limited, took account of ecological considerations so the design produced effectively meant a 'wall' across the watercourse with a short culvert passing through it. The earth embankment would abut the wall on both sides. The wall should, however, allow pedestrian access over it.

It was recognised that the Rye realignment and the embankment construction would require the services of an earthworks contractor, but the Corporation was keen to involve its volunteers (who regularly carry out a variety of tasks on the common) in some parts of the project. Accordingly it was decided that the flow control structure should be designed from materials that volunteers could handle, with minimal training and without the need for specialist plant.

This ruled out traditional civil engineering materials such as concrete or steel piling to form the wall, and instead a wall was formed of box gabions, with a 600mm diameter pipe passing through its base. Box gabions 0.5m high were chosen, to ease hand placing, but just as importantly to provide 0.25m wide ledges upstream and downstream at every 0.5m level. These ledges are being covered with topsoil and planted, and will soon cover the wall in vegetation.

ok – A Cooperative Venture



Volunteers constructing the flood control structure which will be soon be hidden by vegetation

When work began a small excavator was hired for a day to excavate the required profile of the control structure base, then Andrew Pepper spent a day training Corporation staff, in the construction of box gabions. Subsequently these staff members supervised the volunteers in the fabrication, fixing and filling of the gabions – all 36m³ of them!

As filling the gabions with limestone was all done by hand, the end result is a very neat wall across the watercourse, and a structure that volunteers can feel proud of as they see it – and walk over it – for years to come.

However, the volunteers generally only worked as a concerted team on Thursdays so the control structure was not finished when the earthwork's contractor (Alaska Environmental) moved on to site. The volunteers' site was therefore fenced off, allowing work to progress independently of the earthworks contract. In fact, having the contractor on site concurrently proved very useful, as after the volunteers had completed a layer of gabions the contractor was able to fill clay up to that layer, so permitting the next layer of gabions to be placed.

With the main river restoration work going on all around them, including diverting the Rye through the control structure just before the top row of gabions was completed, the volunteers had the added benefit of feeling very much part of a major project on Ashted Common, and could see the objectives starting to be realised even as they were finishing their work.

Although supervised by the Project Manager this scheme was very much a team effort. Active participation and support from the keepers,

administration officer, apprentices and volunteers ensured that this project was a success and highlights the value of involving local people in a scheme, during the early stages of planning.

The project was a challenging task to plan, design, consult and finally implement. The team is delighted with the initial results and the feedback from visitors, and is confident that, in time, the project will achieve all its objectives. A monitoring scheme has been set up to establish the changes predicted to occur but already a Kingfisher and two Grey Wagtail, both of which are target species for the project, were spotted during a recent guided walk through the site.

SITA Environmental Trust, through the Landfill Tax Credit Scheme, provided £35,000 towards the project.



The new meandering course of the Rye Brook