

Preserve and improve water's edge and bank side habitats

Project Summary

Title: Martins River Island Enhancement

Location: Ilsington, Tincleton, Dorset, England

Technique: Placement of large woody debris, removal of embankments, bed and bank reprofiling

Cost of technique: £

Overall cost of scheme: £££

Benefits: £££

Dates: 2012-2013

Mitigation Measure(s)

Preserve and improve water's edge and bank side habitats

Manage natural obstructions in the channel

Allow the river to flood its floodplain

Restore aquatic habitats in modified watercourses

How it was delivered

Delivered by: Environment Agency as part of River Frome Rehabilitation Plan

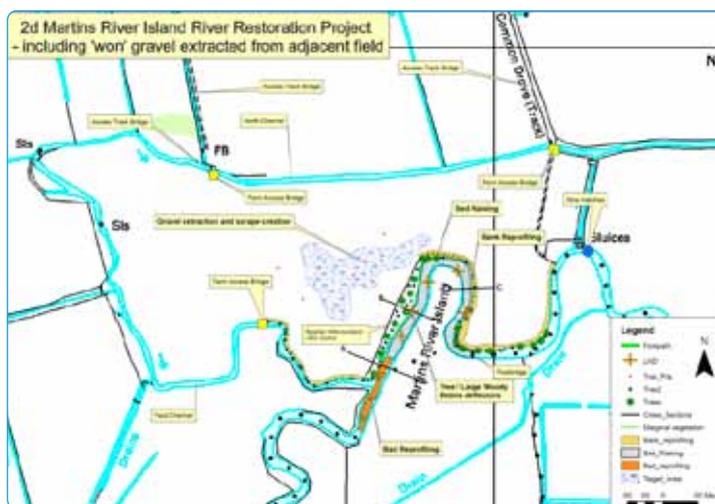
Partners: Environment Agency; Natural England



The key aims of the project were to remove artificial raised embankments and return gravels to the dredged reach creating a range of in channel features and a varied bed profile. All images © Environment Agency copyright and database rights 2013

Background / Issues

The reach of the River Frome at Martins River Island had been significantly degraded by land drainage activities in the 1970s, including extensive river dredging. These works removed significant quantities of river gravels, creating an over deep slow flowing canalised channel and adversely affecting the salmonid spawning potential of the river. The dredged material was predominantly placed on the north bank, creating a raised embankment along the edge of the river. This reduced flooding of the adjacent fields and improved land drainage, allowing agricultural intensification through arable production. As part of the River Frome Site of Special Scientific Interest (SSSI) this reach was classified as being in unfavourable condition (i.e. Natural England have assessed the SSSI as not being properly conserved) due to morphological condition and flow changes. Furthermore, the river is failing to reach the required quality status for fish under the Water Framework Directive due to its degraded morphology.



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Environment Agency, 100026380

Step-by-step

The embankments were removed and reprofiled to a natural bank level. The material was piled up and consisted of river gravels and finer sediments excavated from the river during the historic dredging.

It was originally planned to use the material from the embankments to raise the bed. However, it was found that the natural floodplain material in the adjacent field contained a much higher proportion of suitable gravels than the embankment material. This meant that it was more efficient to use newly won material from the floodplain than to reuse the embankment material.

A borrow pit was therefore dug in the floodplain to win gravels for riffle creation and bed raising. The hole created was in-filled with the embankment material, and any sands and silts that were screened out of the floodplain gravels. This left a shallow open water wetland area with water levels that fluctuate depending on rainfall and river levels.

The won gravels were added to the river at key locations for riffle creation and bed raising to create a range of bed profiles. Gravel was placed in areas where it would naturally be expected to occur in the river channel, such as shallower channel margins on the inside of meander bends, and in particularly deep sections of the channel.

Large woody debris in various sizes (taken from root ball, crown, cut trunk and branches) sourced from local trees was also added to the reach at key locations to provide refuge habitat and also to increase flow variations throughout the reach.

The works were not totally finished in 2012 as severe weather in October led to out of bank flows and wet fields forcing the contractors off site until early summer 2013.



Embankment removal



Gravel extraction



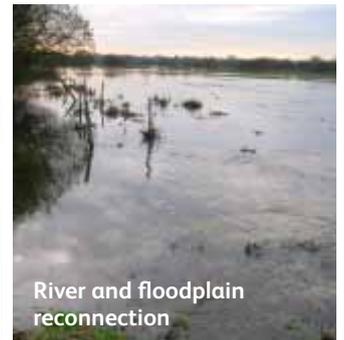
Riffle creation



Bed raising

Benefits

- Removed 400 m raised embankments, which improved the connectivity between the river and floodplain.
- Reintroduced 2500-3000 tonnes of river gravels, creating a more natural river bed and increasing spawning habitat for fish.
- Created four new riffles and pools, and raised 250 m of river bed by varying depths between 0.5 m and 1.5 m. This has improved flow variation and increase the morphological diversity of the river bed.
- Increase flow and morphological diversity through the installation of large woody debris.
- Create new and improve existing wetland habitats, including a pond and wetland scrape with a combined area of 2500 m².
- There was no waste from the site, which minimised local construction impacts (approximately 150 lorry loads of material avoided) and reduces the overall cost and carbon impact of the scheme.
- An improvement in the available habitat and biology; and therefore the WFD status of the water body.



Lessons Learnt

The Martins River Island Project was nearly completed before extensive and prolonged flooding affected the Frome during the winter of 2012. There was widespread out of bank flooding in the fields adjacent to the project area. The landowner and Natural England welcomed this, especially with huge numbers of wetland and migratory birds making use of the flooded fields. The flooding did cause some bank erosion on subsidiary channels in the area. Post flooding discussions were held with the landowner to mitigate some low points in the banks and repair the bank erosion.

Despite the conditions the landowner has been very supportive and still agrees with the project objectives. Winter flooding of the fields, partly as a result of the project, has benefited numerous species of wintering wildfowl and other wetland birds, with thousands of individuals observed.

The project has demonstrated that it is important to:

- Have clear discussions and agreements with land owners with regards to consequences of out of bank flows and flooding.
- Ensure all parties are clear as to the objectives and what to expect during and post project completion, especially in the event of extreme conditions.
- Think about what will happen to flood water when flows return to the channel bank erosion and scour is likely.
- Have confidence to stop work when conditions deteriorate and return when suitable, even if it is during the next construction window.

Success

Project contact: WFD Planning & Delivery Team, Wessex Area, South West Region, Environment Agency