

Manage natural obstructions in the channel

Project Summary

Title: River Hull Headwaters WFD Wet Woodland Project

Location: Harpham, East Yorkshire, England

Technique: Installation of large woody debris; bankside tree clearance

Cost of technique: ££

Overall cost of scheme: £££

Benefits: ££

Dates: 2012-2013

Mitigation Measure(s)

Manage natural obstructions in the channel

Development of a strategy to manage sediment in an appropriate way

Retain and improve existing water's edge and bankside habitats in modified watercourses

Preserve and improve water's edge and bank side habitats

Improve channel geomorphology to create habitat

How it was delivered

Delivered by: Environment Agency

Partners: East Yorkshire Rivers Trust (EYRT), Yorkshire Wildlife Trust (YWT)



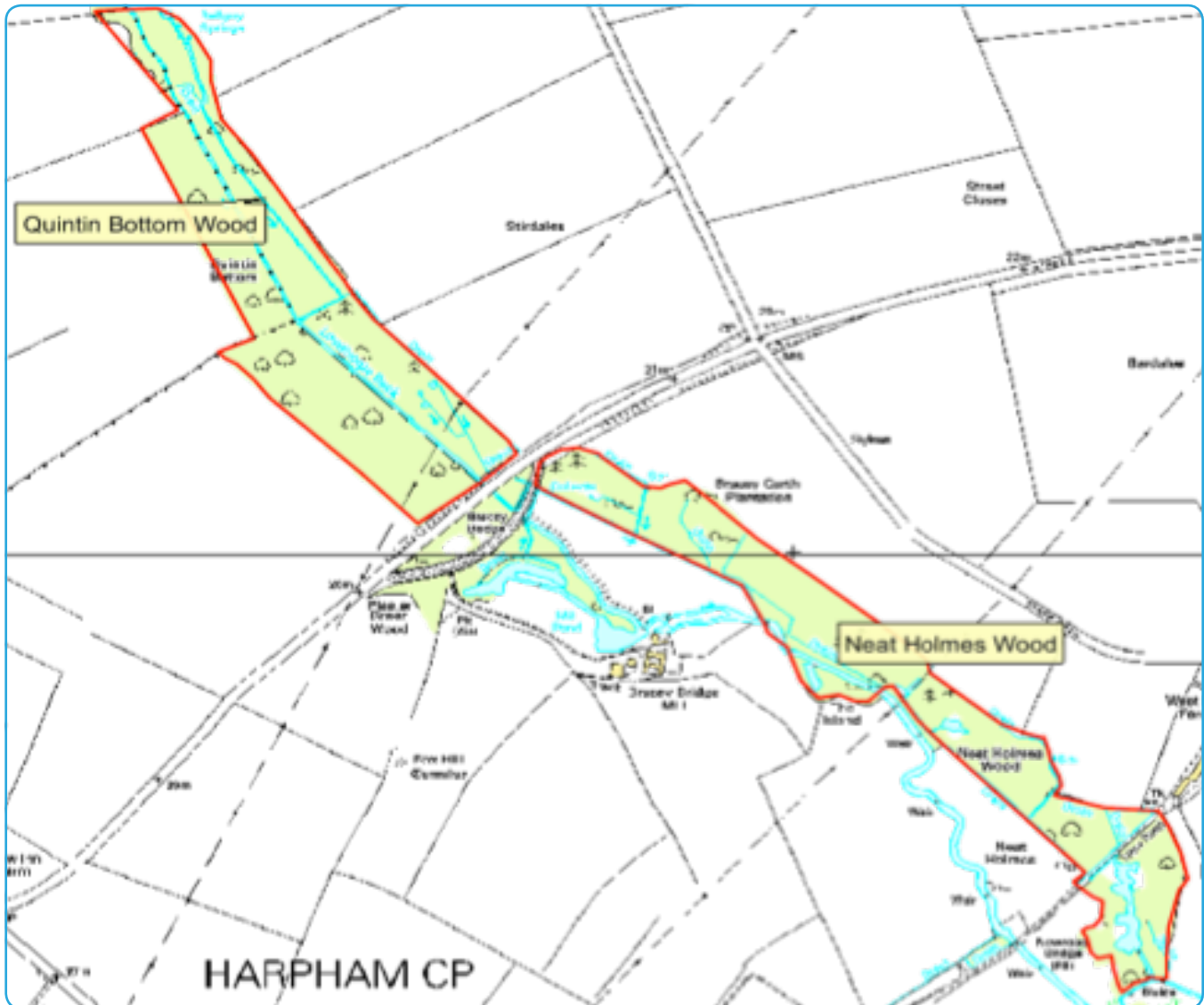
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Background and Issues

Kelk Beck (also called Lowthorpe or Harpham Beck) is located in the River Hull Headwaters SSSI, which is designated for its chalk stream communities. 33 hectares of wet woodland in the upper reaches of the beck habitat influences the state of the stream habitat by providing diverse pockets of shade and flow variation due to the influence of tree roots and branches. There are two blocks of woodland, with the northern area known as Quintin Bottom Wood and the area to the south known as Neat Holmes Wood. The beck which flows through the woodland was identified as having high levels of siltation, for which a sedimentation strategy was devised to alleviate the issue (see also Sediment management strategies: River Hull Headwaters WFD Wet Woodland Project).

Silt was arriving in the system from agricultural inputs outside of the woodland, and had disconnected feeder channels from the main river due to sediment build-up which, combined with dense tree cover, had created very poor conditions for fish species such as brown trout, aquatic macrophytes and various freshwater invertebrates. This project has carried out habitat improvement works both in-channel and in the adjacent wet woodland for the benefit of fish and also leading to reduced sedimentation.

Work was undertaken to redirect water within the feeder channels, which are currently disconnected from the adjacent wet woodland habitat, using woody debris and other forest material. The effect of this was to locally raise water levels and encourage out of bank flows, reconnecting the woodland habitat and causing a reduction in sedimentation in the main carriers, by trapping silt within the wet woodland habitat.



Step-by-step

The WFD Wet Woodland project seeks to re-connect the woodland habitat with the watercourses leading to a reduction in sedimentation in the main carriers, by trapping silt within the wet woodland habitat.

Several stretches of watercourse removed sections of over-shading through pollarding or felling of the some larger trees. Other trees growing by the side streams had branches cut on the topside of the branch to enable a hinging effect so that they either over-hung the banks or were lying in the channel. These will grow and in future years provide shade and shelter for fish and other wildlife.

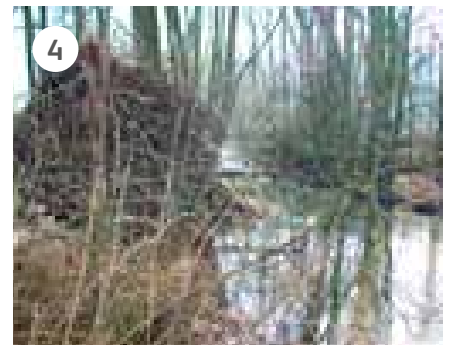
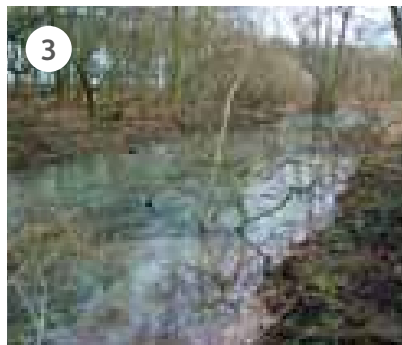
The large woody debris (LWD) from the tree work was used to narrow the river channel and speed up flows. The LWD also increases the range of habitat available for fish and aquatic invertebrates. In addition an old sluice structure within the wood, which was in a state of disrepair, has been restored. This structure allows improved control of water levels within the wet woodland. This restored sluice also allows a level of control of water levels mitigating the increased flood risk caused by the restoration.

Benefits

- Restoration of natural river processes by increasing flow and morphological diversity.
- Improvements to range of in-channel and riparian habitats.
- Reduction in fine sediment loads.
- Benefits to fish, macrophyte and invertebrate populations.
- Contribution towards achievement of good ecological status at a water body level.
- Contribution towards river restoration plan for River Hull Headwaters SSSI.
- Excellent working relationship developed with landowner which may result in additional joint working and biodiversity benefits.



(1) Large woody debris (LWD); in feeder stream; (2) Restored section of stream showing hinged trees and LWD



(3) LWD creating silt trap, in channel growth and channel diversity and flow; (4) Fallen tree, pinned in situ to create shallow pool for macrophyte and invertebrate habitat

Lessons Learnt

- Local partner knowledge and expertise of the site and how it functions helped to minimise costs by matching the shape of some felled trees to create in channel diversity in appropriate places, rather than designing the work in advance and sourcing the material to deliver the design.

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