

Reposition or alter river embankments to create a natural floodplain

Project Summary

Title: Long Preston Deeps Restoration

Location: Long Preston, North Yorkshire, England

Technique: Construction of set-back embankments

Cost of technique: ££££

Overall cost of scheme: £££££

Benefits: ££££££

Dates: 2011 – 2012

Mitigation Measure(s)

Reposition or alter river embankments to create a natural floodplain

How it was delivered

Delivered by: Environment Agency

Partners: Natural England, JBA



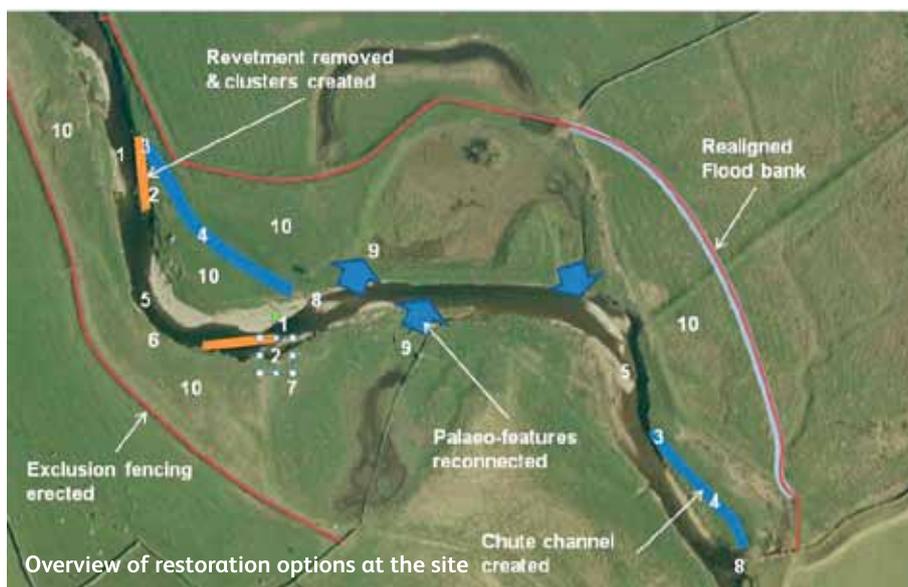
New set back embankment at Long Preston. All images © Environment Agency copyright and database rights 2013

Background / Issues

A 7 km long reach of the River Ribble near Settle in North Yorkshire is designated as the River Ribble (Long Preston Deeps) SSSI, which covers the river and localised areas of the floodplain.

The river and floodplain at Long Preston Deeps have undergone considerable modification over time and are subject to land management pressures including flood embankments to protect agricultural land. Significant alterations to the physical form and function of the river have occurred historically, which in turn have affected the flora and fauna across the entire site. As a result the system was degraded and displayed few of the geomorphological and ecological features expected under more natural conditions.

As part of the North West River Basin Management Plan (RBMP), the Long Preston Deeps Restoration Plan was developed aiming to promote the restoration of the floodplain, attenuating flows in the upper Ribble catchment and reducing flood risk downstream. The plan included a significant degree of alteration of river embankments.



Step-by-step

The implementation of the Long Preston Deeps restoration plan in regards to the alteration of embankments was achieved through the:

- Removal of the embankment adjacent to river channel to a level of 125.5 m AOD to reduce the height of structure
- Construction of a new embankment, set back from river margins varying between 1 m and 10 m at a level of 126.5 m AOD (higher to increase flood protection). This created approximately 7,500 m² of additional floodplain.
- Materials used for construction of the embankments were partly obtained from excess spoil. Scrapes were created on the floodplain to source the material.
- Seeding of new embankment during construction.
- Grass, wet woodland and wildflower meadow seeding of the new floodplain area that was previously occupied by the original embankment.



View of new floodplain during construction



Newly created floodplain

Benefits

The scheme has resulted in:

- A reduction in stream power at flows above bankfull, influencing local sediment transport by encouraging sedimentation during out of bank flows, and reducing erosive pressure that previously eroded the banks.
- Fine sediment deposition on the floodplain, providing nutrients to floodplain habitats and reducing deposition on gravel features in the main channel.
- The floodplain has been planted with wet woodland species, therefore increasing the ecological diversity and flow diversity locally as a source of large woody debris to the river channel.
- An improvement in the status of the SSSI, which has been moved from 'unfavourable' condition to 'favourable recovering'. This will make favourable condition achievable once further natural recovery has occurred.



Flooding across Long Preston Deeps

Lessons Learnt

- Landowner support was instrumental in ensuring project success. This was achieved through the appointment of a Higher Level Stewardship (HLS), project officer in partnership with the RSPB who supported the successful entry of landowners into the Higher Level Stewardship scheme HLS.

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