CASE STUDY

Use green engineering techniques instead of hard bank protection

Project Summary

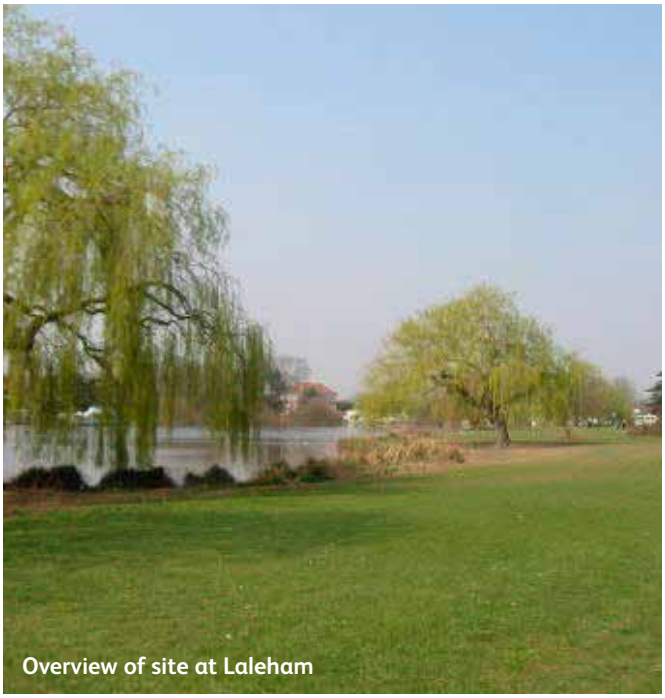
Title: Riverbank Repairs at Thames Side, Laleham
Location: Penton Hook Reach, Thames Side, Laleham, England
Technique: Installation of coir rolls
Cost of technique: ££
Overall cost of scheme: ££
Benefits: £££
Dates: Completed May 2009

Mitigation Measure(s)

Use green engineering techniques instead of hard bank protection
Manage vegetation appropriately
Sensitive techniques for managing vegetation (beds and banks)

How it was delivered

Delivered by: Environment Agency



Overview of site at Laleham

Background / Issues

The river banks at Laleham were being eroded by a combination of natural river action and boatwash rolling over the shallow channel margins and up the bank toe.

In addition, waterfowl grazing of riparian vegetation had resulted in the creation of a sizeable area of mudflat. Before the project, bank destabilisation, particularly during high flows, had been further augmented by the lack of rooted foliage on and adjacent to the banks.

A method for reducing the energy of the wash from the boats and stabilise sediment was, therefore, required to halt the erosive processes which were impacting upon the banks. Given the relatively low levels of energy present in the system in this area and the need to preserve and, where possible, enhance bankside habitats, a "soft engineering" solution focusing on bankside vegetation planting was advanced.

Bare, eroding banks

CASE STUDY

Step-by-step

A combination of soft engineering techniques and the appropriate management of the bankside vegetation were deemed best suited to the local bankside and flow conditions. These included

- Installation of soft bank protection in the form of pre-planted coir fibre rolls, which were held in place by stakes through their entire length and dug into the bed level.
- Anti-scour protection was installed to safeguard the coir rolls where water levels deepened.
- Creation of irrigation trenches joined to a rear trench planted with further marginal vegetation.
- Temporary fencing of the area to prevent access and promote establishment of vegetation (some gaps were put in place to allow access to the waters' edge).
- No vegetation management at the edge of the channel – the edge of the bank was left to establish.

(1) Access point along riverside
(2) Planting along the bankside

Benefits

- The coir rolls provide a valuable habitat for fish, mammals and aquatic insects.
- Root systems provide consolidation of sediments and maintain a stable bank through prevention of scour.
- The marginal vegetation absorbs wave energy and boat-wash – boat wave dissipation varies according to species and width of reed bed (typically 2 m of common reed will absorb about 60 % of boat wave energy). In central sections of the project area the marginal vegetation was growing to a width of up to 3 m two years after the project conclusion.
- The natural bank has regenerated and maintained its own stability.
- No further maintenance investment is required due to appropriate selection of vegetation.

Lessons Learnt

- Incorporating specific access points along the bank is important to control trampling of newly established vegetation.
- Fencing off the site during the establishment phase protects the young plants from trampling and animal erosion, promoting the successful establishment of marginal aquatic vegetation.
- Allow some contingency against the failure of one or more species due to external factors, such as the grazing of waterfowl.
- Coir fibre rolls should be installed such that they are partly (2/3rds) submerged below normal summer water level.

Project contact: Fisheries and Biodiversity team, Thames Region, Environment Agency