CASE STUDY

Use of green engineering techniques instead of hard bank protection

Project Summary

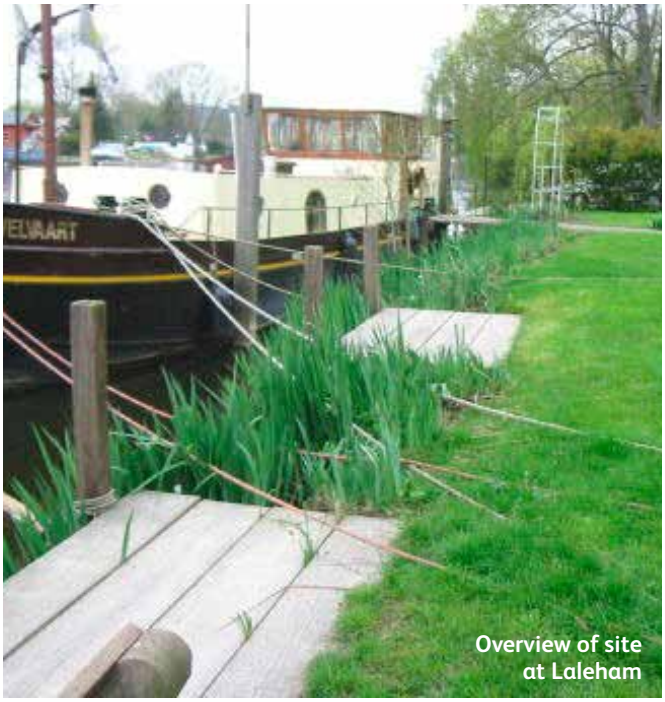
Title: Wargrave Road, Henley-On-Thames Bank Protection
Location: River Thames at Marsh Reach, England
Technique: Use of green engineering techniques
Cost of technique: £
Overall cost of scheme: £
Dates: completed late 1999

Mitigation Measure(s)

Use of 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
Partners: No partners involved



Overview of site at Laleham

Background / Issues

The Environment Agency identified a proposed over-engineered solution as part of an application for a boat mooring on the River Thames. The application involved the proposed installation of steel sheet piling along the riverbanks. The Environment Agency suggested a 'soft' solution as an alternative design to a traditional engineering design for boat moorings.

The site is characterised by a very shallow section of river adjacent to the bank. The structure and substrate of the river bed in this section is dominated by low energy character of the watercourse and associated silting conditions. This has led to regular cutting of the vegetation at the channel banks to ensure access and navigation.

An alternative solution involving the establishment of a selective vegetation control regime and the prevention of the destruction of aquatic habitat was proposed and installed at the site.

Bare, eroding banks

CASE STUDY

Step-by-step

The adopted solution aimed at managing vegetation appropriately while protecting the toe of the bank against undercutting and stabilising it This included:

- The installation of 300 mm diameter by 3 m long planted fibre rolls to retain the shallows along the bank in order to retain the shallows.
- The use of non-contaminated material (silts or gravels) to backfill between the bank and the rolls (no dredging was permitted to minimise disturbance).
- No vegetation management plan or control of the bankside vegetation – the edge of the bank was left to establish.

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

Benefits

In this particular project the toe protection through a selective vegetation control regime presented a wide array of benefits to local ecology and hydromorphology. These included:

- The promotion of a marginal habitat for birds and invertebrates.
- Vegetation component will potentially be self-sustaining and once established, provide permanent bank stabilisation (vegetation was well established on an assessment visit at the site two years after the conclusion of the project).
- Vegetation is providing anchorage as well as absorbing boat and wave wash.
- Pre-planted coir fibre rolls increase the resistance of the banks to erosion.
- No further maintenance investment is required due to appropriate selection of vegetation.

Lessons Learnt

- Toe geotextiles such as coir fibre rolls perform well in low energy shallow water environments.
- A vegetated bank provides a natural and aesthetically pleasing means of protecting a bank from boatwash whilst maintaining a natural bank and habitats.
- Banks supported by geotextile matting reinforcement should be re-seeded with a grass mixture at the time of installation to help bind the soils.
- Existing natural habitats in the channel or on the bank should always be maintained and enhanced where possible when installing a bank protection structure.
- An applicant must provide sufficient justification for the need of hard bank protection in a low energy natural environment.
- Marginal aquatic vegetation planted at the toe of the bank requires minimal maintenance once established and provide long-term protection to the bank toe.

Project contact: Flood & Coastal Risk Management, Thames Region, Environment Agency