

Use green engineering techniques instead of hard bank protection

Project Summary

Title: Biotechnically engineered designs

Location: River Severn, Purton, Gloucestershire, England

Technique: Regrading, planting of bank slope and installation of stone gabions

Cost of technique: £££

Overall cost of scheme: £££

Benefits: ££

Dates: Completed 1998

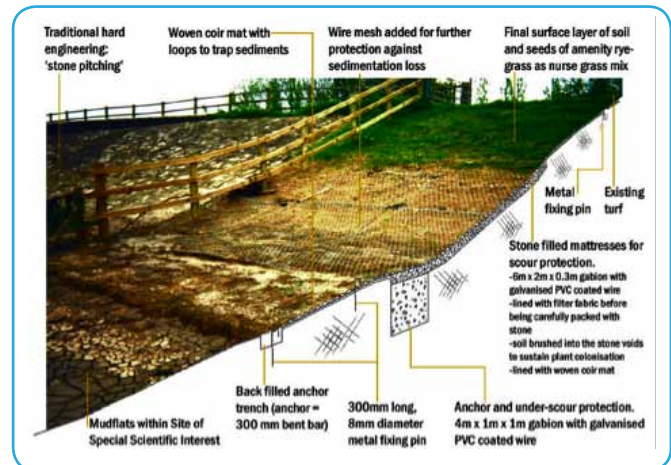
Mitigation Measure(s)

Use green engineering techniques instead of hard bank protection

How it was delivered

Delivered through: Environment Agency

Partners: Local landowners



Schematic for installation of gabion baskets in SSSI bank

All images © Environment Agency copyright and database rights 2013

Background / Issues & Step-by-step

Around 80 m of the bank of the River Severn (also designated as a SSSI) at Purton had been affected by significant erosion at the high tide line. The river at this site is approximately 3 km wide, with a maximum tidal range of approximately 10 m. Given local conditions, conventional green engineering techniques were considered insufficient to withstand the peak forces anticipated at the site. Planting was therefore reinforced with structurally engineered components to maintain bank integrity during extreme events when the bank vegetation may be washed out. The scheme consisted of the following elements:

- The scoured area was excavated to accommodate structural reinforcement, which would be below the final bank line.
- Installation of 30cm deep gabion mattresses. These were composed of woven wire, which was galvanised and PVC-coated for increased durability. The gabions were also lined with a filter fabric before being carefully packed with stone.
- Seeded soil was brushed into the voids, which made up 30 % of the gabions by volume. A loop-piled woven coir matting was laid over the surface and extended beyond the mattress both up and down the slope.
- At the river-wards edge, the matting was laid over the mudflat and anchored in a trench.



Successful restoration with well-established bankside vegetation

Benefits & Lessons Learnt

- Some coir loop matting was incorrectly attached, resulting in loss of soil infill and stone movement. It is therefore important that the reinforcement is finished correctly, particularly in high energy environments. This resulted in a requirement to undertake remedial works to put the construction issues right.
- Once repaired, local vegetation quickly colonised mattresses, halting erosion processes.
- Design was considered appropriate to the SSSI.

Project contact: Flood and Coastal Risk Management, South West Region, Environment Agency