

## Bother on the River Rother!

The tidal section of the River Rother between Rye and the sea has been constrained by human intervention for many centuries. Substantial levees dating back to medieval times are in evidence throughout its length and these now dominate the riparian landscape. Despite this intervention, natural in-channel processes continue. Heavy sediment loads from the weald continue to accumulate on the inside meanders, whilst rotational slips and erosion on the opposite bank, add further material to



*Slumping bank - site of emergency works*

a deconstructing system intent on reclaiming its saltings. Whilst these processes enable an unconstrained river system to adapt to changing flow and sediment regimes, in a severely constrained one, these same in-channel changes are often a cause for concern. In an ideal situation the levees would be set back allowing the river to reclaim its floodplain, reducing the stress on banks. Extensive floodplain development prevents such an holistic approach at present and some banks are so degraded that emergency protection is essential to prevent a complete breach of the existing defences.



*Trial construction: more faggots than you can shake a stick at.*

During the post war period, sediment in this part of the river was successfully stabilised via a series of vertical, sediment-retaining groynes in the lower channel whilst wooden board revetments were used to protect the upper

banks. In addition to these relatively modern techniques, numerous ancient structures in the form of accreted bundles of brushwood were discovered 'woven' into the banks. Visual evidence suggests that these structures, apparently applied as routine maintenance on an 'as needed' basis, are highly successful in stabilising steep bank slopes by providing a medium for silt entrapment. Conversely, the severely degraded banks coincided with section where brushwood was totally absent.



*22m reach Komatsu and two faggoters shows scale of works.*

More recently, similar brushwood techniques have been successfully used by the Cain Consultancy to restore chalk streams and spate rivers. Their ability to protect and stabilise banks, create new marginal habitat, and crucially, to trap silt, has been demonstrated. So when asked to

provide an environmentally friendly, sustainable and cost effective alternative to sheet piling for the emergency bank protection work at Rye, Simon Cain thought big and adapted his relatively small brushwood structures for the job. A trial project was rapidly constructed to demonstrate the principles of the new technique. Within weeks of completion the bottom half of the structure was completely full of sediment with no noticeable adverse effects.



*Sedimentation at trial site*

With the backing of the Environment Agency, and in cooperation with their Emergency Work Force and Halcrow, construction has now started on the eroded bank near the town of Rye. All of those involved with the project have a lot of enthusiasm about the use of this technique. It provides an alternative to the costly and hard engineered bank protection measures and once covered with sediment should blend in with the surrounding landscape. Furthermore it uses wood derived from sustainable sources and at £0.5million would pass any cost-benefit analysis when compared to sheet piling a 120m x 4m deep section of eroding and highly unstable bank.

The design and technique is 'new' and hence the need to monitor its performance has been acknowledged. A strategy has been developed in collaboration with the Environment Agency, and advice from the River Restoration Centre, that will establish how rapidly sediment accumulates within the structure, its robustness to storm events, and how well it integrates into the existing bank.

If you are developing a new river restoration technique then the River Restoration Centre (RRC) would be very interested to hear from you. As part of our agreement with the Environment Agency we provide a service to independently audit such projects and bring them to the attention of others in the industry.

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*Brushwood mattress on a chalk stream*

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**If you would like to know more about the development and application of this technique then contact Simon Cain. See advert on page 22.**