Stoke Brook Restoration, Stoney Middleton

Techniques: Sediment removal, Riddling

Project location: Stoney Middleton, Peak District
River: Stoke Brook & Derwent
County: Derbyshire
Project start date: June 2007
Project end date: September 2008
Length: Stoke Brook 1.2 km, Derwent 2.5 km
Cost: £500,000
Upstream grid reference: SK230754

Stoke brook prior to cleanup

Site background

Stoney Middleton lies within the Peak District National Park, with Stoke Brook flowing through the centre of the village, joining the River Derwent to the east. In January 2007 a major incident occurred at a mine operated by Glebe Mines, upstream of Stoney Middleton, in which a tailings lagoon burst its banks. Huge volumes of water and fine sediment were washed downstream, through the village and into Stoke Brook and the Derwent, leaving a trail of devastation. Stoke Brook and the Derwent subsequently became smothered with tailings, leaving a thick layer of fine material on the river bed and adjacent flood plain. In places gravel beds acting as spawning grounds for fish and Brook Lamprey became armoured and resulted in a loss of breeding habitat for fish and other aquatic species. As part of the remediation process following this incident, Penny Anderson Associates (Consultant Ecologists) were commissioned by the Glebe Mines' insurers to devise and implement a scheme to remove the tailings materials from the Brook and Derwent, without undue impact on the ecology and landscape of these rivers within the National Park.

Walking excavator entering Stoke Brook

Objectives

To restore Stoke Brook and the River Derwent to its condition of prior to the January 2007 incident, removing the sediment and exposing the original bed material. To ensure that breeding habitats for fish and other aquatic and riparian species are restored.

Design

Work began to remove the tailings in June 2008, finishing in September that year. AlaskA Environmental Contracting Ltd undertook the works under a scheme devised and directed by Penny Anderson Associates Ltd (Consultant Ecologists):

Stoke Brook after cleanup

- An Italian designed and connstructed 'walking excavator' was used as the key tool in removing sediment from the rivers whilst causing minimal impact to the river banks, and especially to water buroows and habitat. The excavated material (as much as 1000 tonnes) was returned to the mine. With low ground pressures and the ability to walk over fences and across the river banks and into the channel, this specialist equipment enabled remediation to occur with little impact on the associated river systems.
- Fine bed material was removed using a 'riddling' head on the walking excavator Particles less than 4mm in diameter were extracted from the river and returend to the mine for reprocessing.
- In addition to these works, sections of floodplain were restored by creating off-line and online ponds and wetland areas (see separate case study).

Subsequent performance – RRC's views

Almost immediately after the sediment was removed from Stoke Brook, fish were observed within the channel. A programme of monitoring will be taking place over the next 5 years to survey the invertebrate and fish populations. The work has removed almost all evidence of sediment deposited by the flood. The project is an excellent example of the ability to get in and out of the channel, causing little or no impact to the surrounding habitat. For example, Large Woody Debris was retained within the channel, whilst water vole banks were un-damaged.

the **River Restoration Centre Case Study Series**
This site was last visited by RRC staff on 18th August 2008

Tel/fax: 01234 752979 Email: rrc@therrc.co.uk http://www.therrc.co.uk