CASE STUDY

Remove or modify structures to increase access for fish and eel

Project Summary

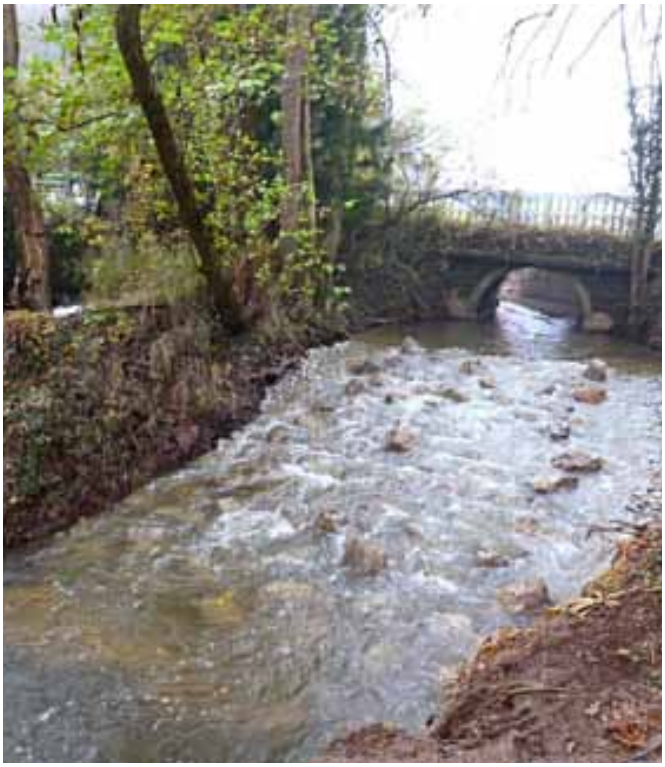
Title: Sharpsbridge Fish Passage Easement Project, Middle Ouse Restoration of Physical Habitats (MORPH)
Location: Uckfield, East Sussex, England
Technique: Weir modification to rock ramp
Cost of technique: ~~£~~~~£~~~~£~~~~£~~
Overall cost of scheme: ~~£~~~~£~~~~£~~~~£~~
Benefits: ~~£~~~~£~~~~£~~
Dates: 2009-2012

Mitigation Measure(s)

Remove or modify structures to increase access for fish and eel
Remove structures that are no longer needed

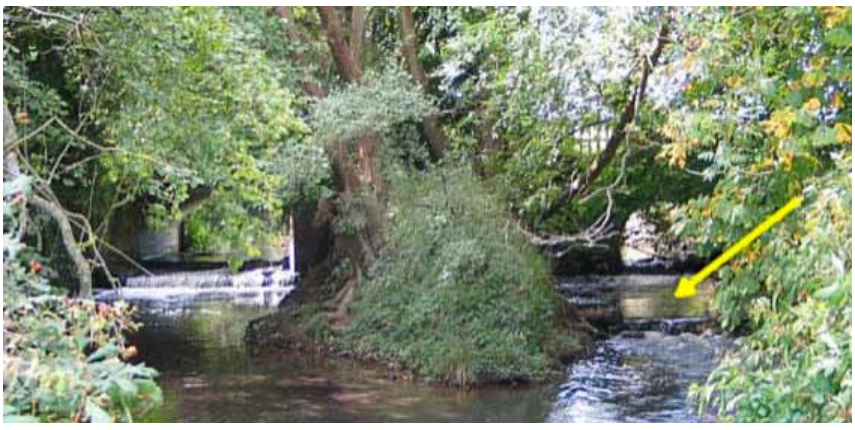
How it was delivered

Delivered by: Environment Agency
Partners: Ouse and Adur Rivers Trust, Royal HaskoningDHV, C A Blackwell



Background / Issues

Sharpsbridge is a road bridge, with two culverts that carry flow under the road and an island in the channel downstream. The footings of the road bridge are formed of a solid concrete slab which acts as a weir, backing up flow. The height of the drop between the concrete slab and the water level was causing a barrier to fish passage. Previous work was undertaken to place rubble rock at the downstream extent of the concrete slab to enable fish migration; however, this began to function as an additional barrier. The aim of this project was to improve fish passage in one of the culverts, to allow free movement of fish upstream. In order to eliminate the barrier to fish passage, the water levels in the downstream weir pool were raised by the addition of a rock ramp structure.



River prior to scheme. Yellow arrow indicates weir in the western channel.

CASE STUDY

Step-by-step

Preparation

- The western channel was blocked using temporary dams and pumps to move water through the eastern side of the bridge. During high water flows, the dams were periodically removed to prevent flooding.

Works

- The existing rubble rock weir was removed.
- A 4.5 m wide rock ramp was constructed in-situ, using granular fill and geotextile at the base, concrete at the upstream end, and rock armour forming the surface of the ramp.
- Kentish ragstone (a hard limestone) was used for the main perturbation boulders because of its durability.
- Rocks were positioned approximately equidistant, with increasing height of rocks upstream, to ensure a smooth gradient of flow over the former head drop.

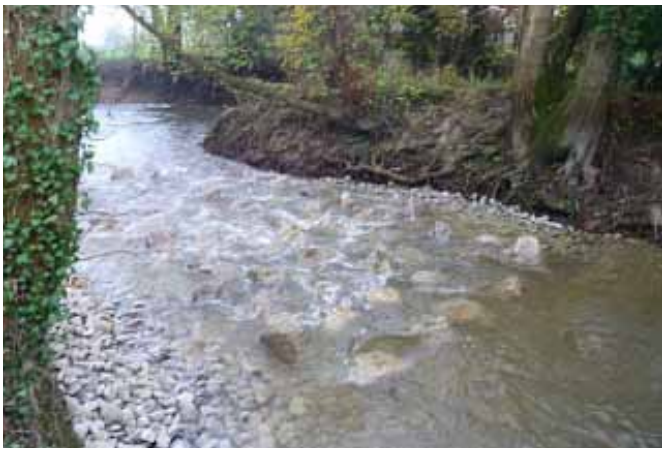
Post-construction works

- Works to rectify the site compound were undertaken. Signs were erected to divert canoeists around the eastern channel.

Rock ramp during construction

Benefits

- During low flows, the flow velocities between the perturbation boulders and the water depth are expected to be good for fish migration. At high flows, the flow will be much slower flowing over the high-flow channel, and sufficiently deep to allow fish passage.



Rock ramp after completion of works

Lessons Learnt

- The project team was able to draw upon experience from Belgium and The Netherlands to help determine the best layout of the large boulders on the ramp.
- Carbon calculators were used, and were able to highlight the transport of materials as a high carbon cost, leading to the successful sourcing of local materials to construct the ramp.

Project contact: Fisheries & Biodiversity team, Worthing, Environment Agency