

Remove or modify structures to increase access for fish and eel

Project Summary

Title: Heatley Fish Weir Fish Pass

Technique: Larinier fish pass in bypass channel

Location: River Bollin, Cheshire, England

Cost of technique: ££££

Overall cost of scheme: £££££

Benefits: £££

Dates: 2008-2009

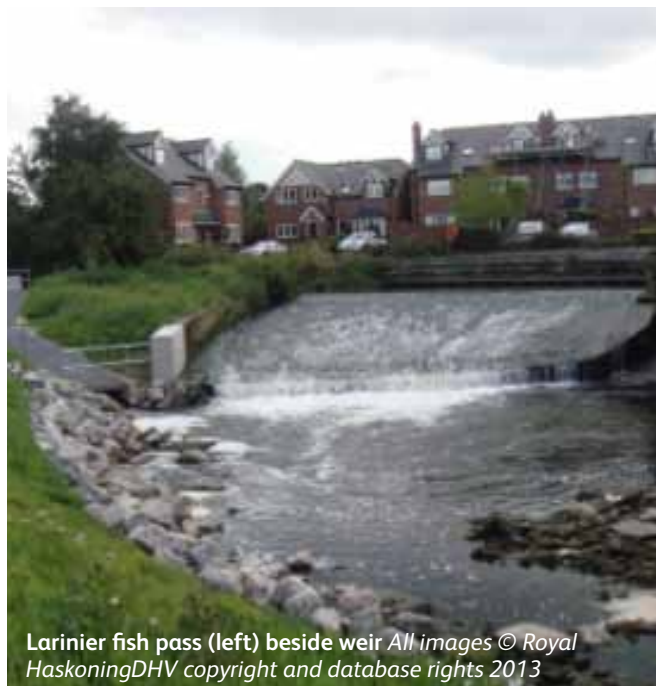
Mitigation Measure(s)

Remove or modify structures to increase access for fish and eel.

How it was delivered

Delivered by: Environment Agency

Partners: Royal HaskoningDHV



Larinier fish pass (left) beside weir All images © Royal HaskoningDHV copyright and database rights 2013

Background / Issues

The River Mersey, downstream of the River Bollin tributary, was once a prolific fishery. However, as a consequence of the Industrial Revolution and increased urbanisation, water quality declined and by the early 1980s fish stocks were virtually extinct. Since the mid-1990s, improvements in water quality management have resulted in an improving fishery. Migratory fish such as salmonids are now returning to the lower reaches of the Mersey catchment and trying to migrate to the headwaters to spawn, and are believed to be migrating up into the Bollin.

In 2003, an Environment Agency study identified 12 weirs that caused a significant barrier to fish movement under all but the most extreme flow conditions, including the Heatley weir. As such, it was proposed that a fish pass should be constructed on this structure.



A 1.8 m wide Larinier Superactive baffle fish pass was constructed to enable fish passage over Heatley Weir, requiring two flights with an intermediate resting pool. The fish pass was located immediately below the weir on the right bank, and the fish pass routed across the flood plain, as shown above. The length of each flight is approximately 8.8 m at a gradient of 15 %, with retaining walls high enough to prevent the ingress of flood waters.

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Step-by-step

The Larinier Superactive baffle fish pass consists of a reinforced concrete U-channel with resting pools between and Glass Reinforced Plastic (GRP) covers to allow access by foot across the channels. An earth embankment will run parallel to the new fish pass between the pre-existing embankment sections.

Construction took place in 2009 and involved the following steps:

Site preparation

- Temporary works were put in place to protect the work area from inundation from the River Bollin during construction.

Construction works

- Construction involved excavation of the pass route.
- Installation of piles, steel reinforcement and poured concrete to create fish pass channel.
- Fixing of baffles within the fish pass channel.
- Installation of penstock and safety grating to finish pass.
- Landscape area to integrate the pass with the floodplain.

Site de-mobilisation

- Removal of temporary works.



(1) Concrete U-channel of the fish pass during construction;
(2) U-channel once completed

Benefits

- An Environment Agency study (Salmon behaviour in the Mersey Catchment) indicated that salmon are able to successfully locate and use the Heatley fish pass. Salmon are now successfully spawning upstream in the River Bollin.



Looking downstream from the completed fish pass

Lessons Learnt

- The ground conditions were particularly challenging for the construction team. As such the piling required for the project needed to be modified for this individual scheme to complete the structure.
- 'Off the shelf' designs for fish passes are not necessarily best applicable where further investigation (in this instance into ground conditions) requiring the need for bespoke design solutions.

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