



Improving Habitats for Fish

The challenge

Obsolete and engineering-led 'in-channel' structures are a major issue. These can affect many river systems due to their impact on flow patterns, sediment transport and fish passage.

Our approach

Through our market-leading knowledge, experience and innovative solutions we help to improve freshwater environments. We are at the forefront of planning and implementing the Water Framework Directive (WFD) in the UK, and are industry leaders in integrated catchment management, where we improve habitats for fish and develop fish passage solutions.

Consideration should be given to a wide range of mitigation and interventions for fish passage improvement in light of cost, regulation and return on investment. These include:

- The potential to remove entirely any barriers to fish passage
- The potential to modify a barrier to improve fish passage if constraints are likely to preclude complete removal.

- Changing the way workable structures are operated if major modifications are not feasible.
- Assessing the potential to install a bypass channel designed to reproduce naturally occurring features where modification is unlikely to be feasible.
- Installing a technical fish pass onto the existing structure if no realistic potential to locate a bypass channel exists.

We successfully deliver a range of fish passage and habitat improvement services to Rivers Trusts, water companies and regulators.

Recent assignments include the selection of appropriate WFD measures, production of outline and detailed designs, and implementation of river restoration measures on the ground. An example of our expertise is the central role we played in the multi-award winning Middle Ouse Restoration of Physical Habitats (MORPH) project.

Our other clients include the Environment Agency, Natural England, Scottish Environmental Protection Agency, Defra, National Trust, local authorities, private developers and riparian owners.

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Leading services provided by our water consultancy group include:

Structure removal feasibility assessments and flood risk modelling

Considerable experience in assessing the risk of removing obsolete structures. This is based on engineering experience supported by hydraulic and sediment modelling and field inspections. Our experience includes detailed assessments of the impacts and benefits of removing large mill and weir structures at ecologically sensitive sites. These involved balancing the competing constraints to develop solutions that deliver ecological benefits without increasing flood risk or channel instability.

Fish pass design and feasibility assessments

Detailed design for a number of technical fish passes in the UK and Europe where our designs have delivering passage for coarse and salmonid species. Our project experience encompasses a range of technical passes, low cost baffles, rock ramps and natural solutions, such as bypass channels. We have also completed several fish pass designs for flow gauging weirs, taking into account the specific requirements for these structures. Our engineers, fisheries specialists and geomorphologists work together alongside the UK's leading fish pass manufacturers to deliver robust and innovative designs.

Fisheries surveys and habitat assessment

Fisheries habitat surveys across a range of industrialised, urban and rural environments. Our experience includes a successful track record of surveys to accurately characterise the ecological baseline of aquatic macrophyte, macroinvertebrate and fish communities. These ecological surveys enable long-term monitoring to determine the effectiveness of past schemes.

Geomorphological assessments and sediment transport analysis

Our team of geomorphologists regularly undertake rapid assessments for individual sites to identify the potential risks and opportunities associated with weir removal or modification. This is usually carried out alongside sediment transport analysis for sites where a potential risk for aquatic communities downstream exists. Where further evidence gathering is needed, we have undertaken more comprehensive geomorphological surveys for catchment wide issues using mobile mapping technologies.

River restoration and habitat creation

Our portfolio includes detailed restoration designs for a number of high profile river systems in urban and rural catchments throughout the UK. We regularly develop designs to improve fish habitat which also deliver a wide range of hydromorphological, ecological, water quality and amenity benefits.

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