

Evidence

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Weir removal, lowering and modification: a review of best practice

Project summary SC070024/S

The Environment Agency has published a report looking at the impact that removing or changing a weir (a low dam built across a river) has on rivers and their ecosystems.

Removing, lowering and modifying weirs can have beneficial effects for rivers and their local environments, and these improvements can also help satisfy the requirements of the EU Water Framework Directive (WFD) – European legislation on integrated river basin management introduced in 2000.

However, there was very little information available about such weir projects in England and Wales, so this report pulled together the available scientific evidence on weir removal to inform best practice and identify gaps in our understanding. The study made use of a literature review, the National River Restoration Inventory, an online survey of people involved in specific projects, technical experts and a series of case studies covering a range of issues experienced in different projects.

The report found that removing, lowering, or modifying weirs can lead to a range of benefits for the river such as improved flow and fish passage. However, there is also potential for changes to flood risk and uncertainty around the impact on sediment transport and related processes within the river. The evidence is anecdotal, so although people seem willing to consider removing weirs, a lack of confidence combined with perceived lack of funding means that such projects struggle to get off the ground.

The report makes a number of observations of best practice from weir removal and modification projects, but also focuses on the need to collect evidence and monitor the results and impacts of such projects.

The study found that the most successful projects had the following characteristics:

- a thorough understanding of the catchment, including an appreciation of the river type, potential benefits of the project to fish

passage, and any unacceptable potential impacts on local infrastructure or flood risk. Case-by-case assessment is very important – weir removal may not be appropriate in some cases.

- information about the weir through visual inspections and walkover surveys to help inform modelling and planning activities.
- topographic data to feed into models that will estimate the influence of flow regime after the weir has been removed.
- sediment analysis to establish how much sediment is deposited behind the weir and estimate how sediment will move after the weir has been removed/modified.
- a cost–benefit analysis of weir removal. Although often perceived to be prohibitively expensive, such an analysis often reveals that weir removal is more cost-effective than maintenance, replacement or the introduction of a fish pass, for example.
- evaluation of the project after it has been completed. Appraisal is the most effective way of demonstrating the success of a project, and formal monitoring should be included in plans and budgets where possible. As part of this activity, evidence should be collected more systematically on the effectiveness of these types of projects.

This summary relates to information from the following project:

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