



The impact of a small weir on flood risk modelling and management

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Some ~26,000 obstructions govern British river systems with the majority of these being weirs. Most of the weirs in the UK were built in the 18th century for reasons such as flood control, fishing purposes and navigation. Despite hydroelectric power being at the forefront of new weir construction, many of the existing weirs are being considered for removal to adhere to the Water Framework Directive. However, there are concerns about weir removal regarding increased flood risk, erosion, deposition, pollution redistribution and gradient changes. Before weirs can be removed it is important to understand how a weir is altering a river in order to identify how it may respond to removal; a concept that is poorly understood. Weirs can significantly modify flow regime and sediment transport, ultimately greatly affecting habitats and ecosystems and make constrained rivers behave considerably different to unconstrained channels. The aim of this study is to identify the effect of a weir on morphology, hydraulics, flood risk and sediment transport to determine its current effect and help inform if removal is logical. Hydraulic and sediment transport modeling will be used to determine the effect of the weir on flood risk, flow and sediment transport and historical and present maps to determine morphological changes. Modelling will also be used to establish the effect of removal on flood risk.