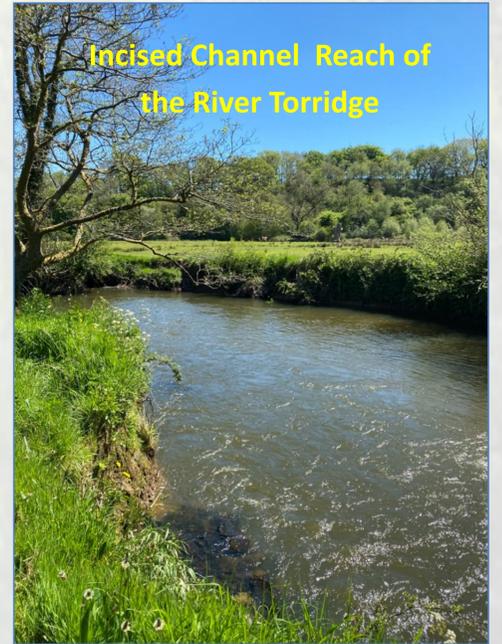


## The Problem

Despite its undisputed ecological value, the headwater of the River Torridge in North Devon has experienced significant land use changes which have negatively impacted upon the hydrology of the river, resulting in gravels and cobbles that were once present in the upper catchment increasingly being transported downstream. As the upper Torridge has a limited supply of coarse material from floodplain material and bedrock, this part of the catchment has become depleted of gravels. This has left the river bed and bank vulnerable to erosion, causing the channel to over deepen (incise) and widen, degrading the limited gravels, cobbles and riffles that remain, and reducing habitat suitable for fish spawning.

Restoring the upper River Torridge to a more natural state, in which natural ecological processes can return and allow it to support a greater biodiversity, requires a holistic approach to enable the successful restoration of the geomorphological characteristics of the upper Torridge. One such approach is the implementation of gravel augmentation which seeks to replenish a river's sediment budget deficit with imported sediment.

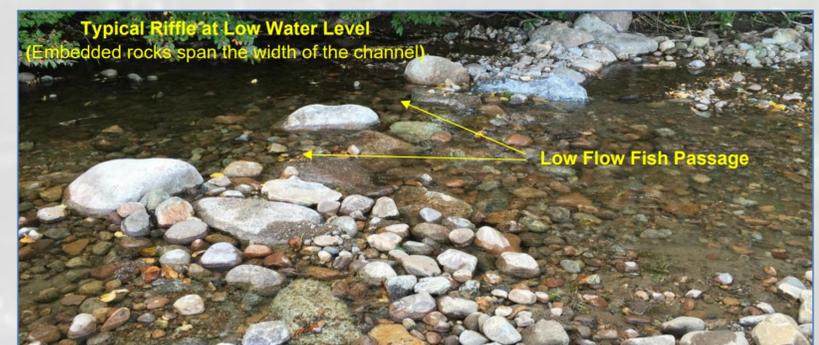
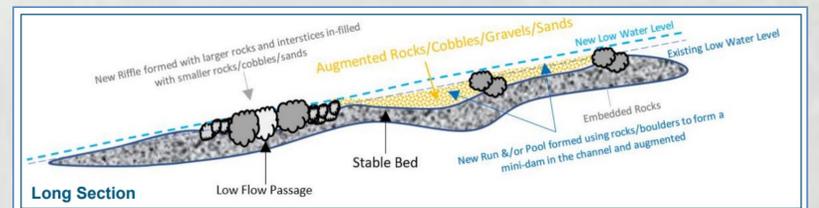
As such, the Devon Wildlife Trust, Royal HaskoningDHV and Ebsford Environmental have developed a Gravel Augmentation Plan (GAP) for reintroducing gravels along a 3 km length of the River Torridge.



## The Design Philosophy of the River Torridge GAP

The design philosophy of the River Torridge GAP for the works was based around the concept of restoring river channels to a form that enables better river functioning and increases aquatic flora and fauna. In particular, to reduce the excessive water velocities in the river channel itself, which cause the erosion of river bed gravels and sands, the aim of the GAP was to create a 'rougher' river bed with larger, stable rocks embedded in the underlying sediments. This will create more 'sheltered areas' of the channel bed in which the augmented sands and gravels will remain stable during higher flow events to provide greater channel stability and form appropriate habitats in which salmonids, such as brown trout, are able to breed.

The GAP has now been implemented for key sites in partnership with land managers and land owners which will assist in restoring the River Torridge to a form that enables better geomorphological and ecological condition through the creation of riffles and pools; channel narrowing; and provision of bank protection (see the below Results). The GAP will be further used for the other sites along the 3 km length of the River Torridge when funding becomes available in the future.



## The Results of Selected Key Sites

