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The catchment based approach using catchment system engineering

Jennine Jonczyk (1), Paul Quinn (1), Nicholas Barber (2), and Mark Wilkinson (3)

(1) Newcastle University, Newcastle upon Tyne,United Kingdom (jennine.jonczyk@ncl.ac.uk), (2) Durham University,Durham,United Kingdom, (3) JHI,Aberdeen,Scotland

The catchment based approach (CaBa) has been championed as a potential mechanism for delivery of environmental directives such as the Water Framework Directive in the UK. However, since its launch in 2013, there has been only limited progress towards achieving sustainable, holistic management, with only a few of examples of good practice (e.g. from the Tyne Rivers trust). Common issues with developing catchment plans over a national scale include limited data and resources to identify issues and source of those issues, how to systematically identify suitable locations for measures or suites of measures that will have the biggest downstream impact and how to overcome barriers for implementing solutions.

Catchment System Engineering (CSE) is an interventionist approach to altering the catchment scale runoff regime through the manipulation of hydrological flow pathways throughout the catchment. A significant component of the runoff generation can be managed by targeting hydrological flow pathways at source, such as overland flow, field drain and ditch function, greatly reducing erosive soil losses. Coupled with management of farm nutrients at source, many runoff attenuation features or measures can be co-located to achieve benefits for water quality and biodiversity.

A catchment, community-led mitigation measures plan using the CSE approach will be presented from a catchment in Northumberland, Northern England that demonstrate a generic framework for identification of multi-purpose features that slow, store and filter runoff at strategic locations in the landscape. Measures include within-field barriers, edge of field traps and within-ditch measures. Progress on the implementation of measures will be reported alongside potential impacts on the runoff regime at both local and catchment scale and costs.