

# The Demonstration Test Catchments Project

*Newsletter: September 2012*

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Demonstration  
Test  
Catchments

## What's happening across the Demonstration Test Catchments?

Welcome to the third edition of the DTC Newsletter. It's designed to update you on developments across the Eden, Hampshire Avon and Wensum catchments. You may also visit our [website](#) where you can exchange knowledge with the scientists, farmers, policymakers, water managers and policy makers involved in the sustainable use and management of river catchment areas.

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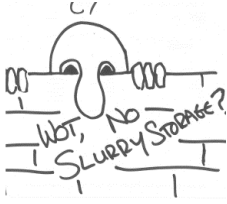
## DTCs start to experiment

The three Demonstration Test Catchments are making progress on accumulating baseline data, understanding the challenges and issues facing their catchments and working with farmers to develop plans for mitigation. They are now installing measures in the three catchments that will be tested experimentally. Data are available on their websites.



## A Google Earth look at Wensum

GIS expert Gilla Sunnenberg from the Wensum DTC team has developed a ['Google Earth' view of the Wensum](#) that enables you to view the catchment from your own computer. It includes photographs and information on monitoring sites. If you have got Google Earth installed on your computer you can take advantage of this new facility and send comments to the team by emailing [wensumalliance@uea.ac.uk](mailto:wensumalliance@uea.ac.uk).



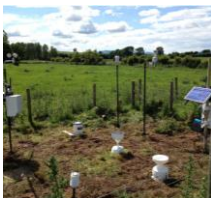
## Eden highlights slurry storage

Eden Rivers Trust and their local Catchment Sensitive Farming Officer have been working with the farming community to find out why so many farms in the area don't have slurry storage facilities. They found that the obstacles fell into several categories: doubts about whether the investment would give a reasonable return; a perception that no such facility was really needed on the farm and external problems such as planning regulations. Farmers working free draining soil thought that they could get out spreading on most days of the year anyway. But those who really needed such facilities often required finance that was not forthcoming from banks. Even more worrying was the finding that many were not getting good business advice, and because the problems often manifest downstream from the farm, slurry storage was considered to be a low priority. Those farming outside Nitrate Vulnerable Zones may even think they don't need to worry at all about slurry storage, when it should, of course be of concern to all livestock farmers.



## Avon learning exchange

A national learning event for farmers and scientists will take place in the Tisbury area in Wiltshire, on Tuesday 23 October. The event will provide an opportunity to demonstrate and share good practice about knowledge exchange within the Demonstration Test Catchments. It will include a knowledge exchange session for scientists working on pollution mitigation measures and a group of farmers and agronomists, to be held during the early evening. For programme details and booking contact Hilary Winter at [wintercountryside@hotmail.co.uk](mailto:wintercountryside@hotmail.co.uk)



## Eden develops best practice

Newton Rigg demonstration site in the Eden DTC has been chosen to investigate the reliability of results from the types of rain gauges generally used in scientific studies and by the water industry. The experiment, which will compare results from

different gauges, will run for at least a year and aims to highlight the problem of the equipment “undercatching” rainfall because of wind and other weather conditions, and thus giving a reading that is misleadingly low. This should help to address uncertainty in one of the most important areas of study in the DTCs. The experiment builds on [similar work taking place in the Upper Eden](#).



## Dial up your river for eco data

The Wensum team has developed a smartphone augmented reality app to help people explore nature’s benefits along the river. The user sees the landscape through their phone’s camera, overlaid with additional information about the ecosystem services that they can observe. A pilot study comparing the new app with a printed leaflet showed that the tool helped participants to gain a new understanding of the landscape. The research will now be extended into other catchments to help more people to learn about the importance of ecosystems services and the need for sustainable management of catchments. Find out more by emailing [wensumalliance@uea.ac.uk](mailto:wensumalliance@uea.ac.uk) .



## Avon investigates forms of N&P

The losses of nitrogen and phosphorus to water courses are important causes of pollution which can be present in several different forms and come from a variety of sources in the landscape. Large quantities of inorganic nitrates in fertilisers have been applied to agricultural land and, as a result, are present in groundwater aquifers. Because of the time taken for water to travel through aquifers before reaching the surface, these applications will continue to impact surface water quality over many years, even if steps are taken to reduce current use. In addition, there are also forms of nitrogen and phosphorus going into the water from livestock and human urine and faeces. Some of these forms of nitrogen and phosphorus reaching the river course may be taken up by plants and algae, stimulating them to grow excessively and smothering out more sensitive species, thus upsetting the ecological balance. Some forms of organic nitrogen and phosphorus are filtered out by shellfish, fish, insects or microbes which feed on these and, again, this upsets the balance of the ecosystem. So the different forms of nutrients have varying effects on the health of the river ecosystem and measures to

mitigate such pollution may only target specific forms. In the Avon, researchers are identifying the different types of nitrogen and phosphorus present in the water so that they can link these more closely with particular farming practices. This will increase our knowledge about how changes in land management might mitigate nutrient pollution.



## Eden investigates sedimentation

The Eden DTC is investigating the type and quantity of sediment in the river, in order to find out what kinds of agricultural practices might be causing it and what effects it has on the health of the watercourse. They are developing processes for tracking this kind of pollution back to its source by “fingerprinting” sediment and will be able to provide catchment managers with information about high risk areas.



## Avon models groundwater flow

Rivers are linked with the groundwater system in aquifers, under the surface of the soil, but the extent of such linkages may vary across catchments. Water moves more slowly into and out of the groundwater system than it travels through the soil, or over the surface of the land. So in catchments where a lot of water is being absorbed into aquifers, pollutants being transported in the water will take longer to reach the watercourse. How quickly we see the beneficial effects of any changes in land management, depends on what proportion of the water, and the pollutants, are getting into the river via the surface, or soil, or via underground aquifers. The time lags need to be taken into account when we look for improvements. In the Avon sub-catchments, where groundwater is often the main flow route, researchers are developing conceptual models of the underground flow systems. By looking at the nature of the geological materials underlying the catchments, the groundwaters that they contain and how these waters interact with the surface (for example where they appear as springs) the [British Geological Survey](#) is helping to build up a picture of how the groundwater moves. They are using various techniques to improve our understanding; for example, from tests on samples of water taken from wells or springs they can estimate the time lag since the water first entered the ground. This can

help to predict the likely timescale before measures at the surface will become effective at the watercourse.



## Evaluation phase for Eden pilot

The evaluation phase of the NERC funded [Environmental Virtual Observatory](#) pilot project, which has been working with the Eden DTC on local landscape tools, is now underway. Over the past year the team, along with members of the local community, has been developing a range of visualisation tools which will make information about water levels, water quality and flood risk more accessible. At workshops planned for October, Eden stakeholders will test and discuss some web-based demos. Their comments will be fed back into the design process and will shape the evolution of the project as it moves from the pilot to the full observatory. A trial evaluation workshop carried out in July with science and technical users, has already kicked off this process, providing feedback on usability, visual appeal and the range of data and tools available. For more information on the evaluation workshops, contact Ellie Mackay [e.mackay@lancaster.ac.uk](mailto:e.mackay@lancaster.ac.uk).



## Farm advisors give feedback

Fifteen farm advisors came along to a knowledge exchange workshop in the Avon catchment in May to give feedback on [Farmscoper](#), a decision support tool recently developed by ADAS, which helps to assess and mitigate the risk of diffusion pollution from agriculture. The event was designed to test the relevance of the software to their work, consider what factors would encourage or impede advisors to adopt it, and to invite suggestions for model enhancement. The advisors felt that the software could help to provide a useful generic baseline indication of risk, but worked best when coupled with their own professional knowledge and expertise. They were keen to see the tool developed in a way that allows more local information to be incorporated, and suggested refinements to the software including the facility to identify which mitigation methods were the most cost effective to implement in terms of environmental benefit as well as farm profitability, and the ability to sort and rank mitigation priorities.



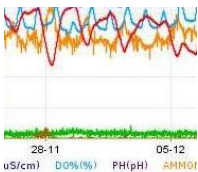
## Eden research simple solutions

We know that livestock can have a detrimental effect on water quality because of organisms from their faeces getting into rivers. However, experts disagree about whether this is caused by animals having physical access to watercourses, or whether the runoff from their pasture, containing pollutants from faeces is the real problem. The Eden DTC team is investigating a real-life situation where livestock have access to a stream, using cameras to monitor the animals' movements and measuring the water quality downstream. They will then be able to assess the potential benefits of fencing off watercourses.



## Wensum latest conference

Over 80 people attended the third annual Wensum DTC conference, including representatives of organisations with an interest in the river and its future. It provided an opportunity to hear some of the data gathered so far and presentations [may be found on the project website](#).



## Avon data go live

A live data feed to the Avon high spec stations at Brixton Deverill and Ebbesbourne Wake is [now available on the project website](#).



## Information at your fingertips

A new series of information sheets about the work being carried out by the Wensum team, plus the latest research project summaries, are now available and may be [downloaded from the website](#).



## **Wetlands show their potential**

Research carried out in Leicestershire and Cumbria for the Mitigation Options for Phosphorus Sediment initiative has shown that small wetlands constructed in unproductive areas of agricultural land can be effective at trapping sediment and nutrients from surface run off, field drains and ditches. Details of the research are available in the Eden DTC information series at [MOPS: Field wetlands reduce diffuse pollution from agricultural land : EdenDTC – A Defra Demonstration Test Catchment](#)

<http://www.avondtc.org.uk/>

<http://www.wensumalliance.org.uk/>

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