

Hampshire Avon DTC consortium approach to mitigation

The Hampshire Avon catchment comprises mixed agriculture and the DTC platform is focusing on using target sub-catchments on clay (River Sem), greensand (River Nadder) and chalk (Rivers Ebbles and Wylfe). The Avon DTC platform has recently been expanded into the River Tamar catchment in SW England, working on the River Ottery tributary. Both study areas are CSF priority catchments. Investigations into the efficacy of diffuse pollution mitigation measures are examining a spectrum of intervention intensity, including the use of a constructed wetland at the outlet of one target sub-catchment (low intensity), agri-environment measures in ELS together with some carefully targeted additional options (medium intensity) and water company-funded payment for ecosystem services (high intensity). The planning of mitigation measures is mindful of the source-mobilisation-delivery-impact diffuse pollution continuum and the need to support the agricultural sector with respect to critical business considerations. Experiments examining the efficacy of interventions are based on a comparison of control and manipulated sub-catchments (Before-After, Control-Impact version 1) or upstream and downstream datasets (Before-After, Control-Impact version 2). The monitoring of conventional water quality determinants at the target sub-catchment outlets is being synthesised with repeat source apportionment (pre- and post- mitigation) and a range of additional metrics (e.g. engagement, attitudes, implementation and behaviour data; pollutant mobilisation; soil surveys) in an integrated toolkit for catchment appraisals as a means of maximising the opportunity for reporting positive outcomes within the lifespan of the current DTC project. The integrated toolkit will be tested and revised using 'communities of practice' focused on helping to develop bottom-up river catchment management as part of the 'big society' initiative launched by the coalition government.

Wensum DTC consortium approach to mitigation

The Wensum is an intensive arable catchment in northern East Anglia. The Wensum DTC is concentrating its monitoring activities in the Blackwater Drain sub-catchment in the area north of Reepham. The Blackwater Drain is an ECSFDI priority area in which four mini-catchments (A, B, C and D) have been identified for monitoring with a nested sampling approach. The table below shows a simplified land cover profile (in hectares) for the four mini-catchments. The planning of mitigation measures embraces the source-mobilisation-delivery diffuse pollution paradigm and recognises the need to respect the practicalities of farm business operations. Almost all of the area is already in agri-environmental schemes, with ELS predominating in mini-catchments A and B, while much of C and D are in Countryside Stewardship. The Broads & Norfolk River Valleys HLS Target Area covers mini-catchment C and smaller parts of B and D. Current measures include 6 m margins around most cultivated areas and some wider headlands (e.g. in field corners). In mini-catchment areas A and B, an ELS agreement is expected to result

in 6 m buffers alongside all water course margins, to extend 6 m margins to fields where they are presently not included and to allow natural regeneration of redundant field corners. There is a willingness among local farmers to employ minimum tillage methods or measures such as over-wintered stubble prior to sugar beet planting. More generally, there is a preference for planting autumn-sown crops. A target for minimum tillage would be several large arable fields that border some of the stream courses. Precision farming methods are also a possibility. There are some existing no- or low-input grassland areas in riparian zones with the possibility of extending areas of wet woodland and in developing scrapes and constructed wetlands with the aim of slowing hydrological flow paths. Hence, the Wensum DTC consortium is particularly interested in evaluating the effects of: (i) increased use of minimum tillage and/or precision agriculture techniques; (ii) the provision of sustainable drainage systems (SuDS) e.g. scrapes, in-ditch wetlands and associated vegetation at key points in the stream network; (iii) the management of field drains; and (iv) the creation of new areas of grassland or wet woodland.

Sub-Catchment	Woodland	Arable	Grassland	Other Land	Total
A	8.6	446.7	3.3	2.4	461.1
B	6.5	133.1	0.8	0.0	140.4
C	74.5	249.2	45.0	1.8	370.5
D	81.2	473.3	100.3	7.5	662.3
Total	170.8	1302.3	149.3	11.8	1634.2

Note: statistics calculated from LandCover Map 2000.

Eden DTC consortium approach to mitigation

The Eden catchment is a mixed grassland catchment in the North West of England. Eden DTC is focussing activities on three sub catchments (Pow, Moreland, Dacre) and one demonstration farm (Newton Rigg). The general approach in the Eden is that mitigation should be approached through the source –mobilisation–delivery framework and that this needs to work closely with local farmers and landowners, with ownership and empowerment at the heart of the approach. Eden is eligible to ELS and HLS. The Eden is a priority catchment for CSFI and the mitigation strategy should also complement/work with existing initiatives particularly the NWDA livestock programme and CSFI. There are already some funded streams of activity in the Eden and the potential to expand the partnerships through Defra, EA , CSFOs, research councils and European funding is either already in place or is being pursued. The EdenDTC is already committed to ‘cleaning’ up 3, two km² catchments within the DTC sub catchments.

'Mobilisation' control will require all 'hotspots', e.g., farm standing local foul water drains and vulnerable fields, to be identified. A series of interventions including new guttering, drains, ponds, lagoons and soakaways will also be required. The evidence base for strategy can be largely determined by before–after, control-impact studies. 'Delivery' management will require a landscape scale assessment of flow pathways, including edge of fields, roads, tracks, land drains, riparian areas and both small and larger scale wetlands. Dr Paul Quinn (p.f.quinn@newcastle.ac.uk) and Prof John Quinton (j.quinton@lancster.ac.uk) are the contacts for more information on the mitigation strategy EdenDTC.