Evenlode Catchment Partnership

First Annual Report on the Smarter Water Catchment initiative 2021- 2022

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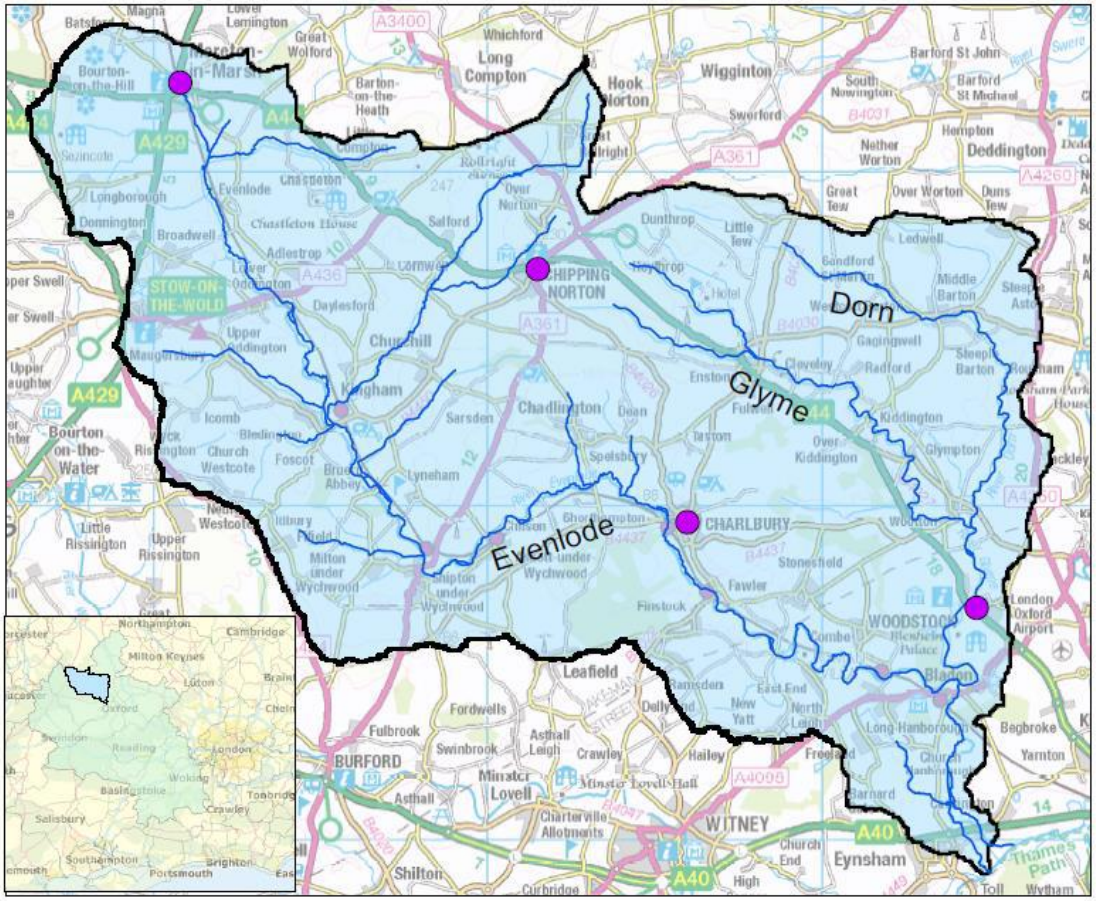
This document has been created for the purposes of the Evenlode Catchment Partnership. This document will be made available to all partners associated with the project, in line with the true partnership ethos. The work detailed in this report is based on the information available at the time. Any findings and/or recommendations will inform future phases of the project.



Environment Agency

Evenlode Catchment

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Chairman's Report

Welcome to the first annual report on the Evenlode Catchment Partnership's work in our Smarter Water Catchment partnership programme.

This Smarter Water Catchment programme (SWC) is one of three innovative pilot schemes being funded by Thames Water in the wider Thames catchment. In the Evenlode Catchment the SWC programme builds on and allows us to expand our existing partnership work in the key areas of water quality and advocacy, biodiversity habitat and landscape, education access and recreation and natural flood management and resilience - all with the focus of restoring the Evenlode Catchment to "Good Ecological Status" for the benefit of all.

Our partners and our Catchment Partnership hosts - Wild Oxfordshire - worked extremely hard to bring the initial bid proposal together and create a robust work programme for an initial five year period. Following approval of the programme in March 2021 the catchment's partners have made rapid progress on many different fronts. New staff have been appointed, equipment purchased and an effective partnership steering group formed to oversee programme delivery. An initial tranche of projects is already up and running. As this report highlights the first fruits of these endeavours can already be seen and the SWC programme is well placed to address the challenges and opportunities that will come its way over the remaining years.

Nick Mottram
Chair, Evenlode Catchment Partnership

1 Evenlode Catchment Partnership

Catchment Partnerships were set up in 2014 by the Environment Agency throughout England in a programme to involve communities in tackling the failure of our rivers to meet 'Good Ecological Status' under the Water Framework Directive. The Evenlode Catchment Partnership drew together a wide range of interested people to help tackle the water quality failure throughout all 18 water bodies. These include government agencies, Thames Water, NGOs, consultants, members of fishing clubs, parish councils and catchment residents. Funding from the EA has been very limited in the past so although an active partnership we have been limited on how much we have been able to achieve.

The Evenlode Catchment was chosen with The Chess and The Crane Catchments to pilot Thames Water's Smarter Water Catchment Initiative to enable catchments achieve more. The £3 million funding over 5 years from TW has enabled us to expand our staff and increase our ambitions and resources and concentrate on what the partnership wants to achieve in the future.

Our vision is to achieve *Good Ecological Status* across the catchment.

We have developed a ten year plan which identifies the four main themes under which we plan to deliver our projects each year. https://www.wildoxfordshire.org.uk/evenlode/evenlode-catchment-partnership

Each theme is led by a Theme Lead Organisation and the work is planned by working groups who are made up of experts and practitioners, collectively shaping the direction and course of the different projects and milestones. Overall governance is directed by the Steering Group consisting of representatives from all themes and key operators.

2 Hosting and the wider partnership

The charity, Wild Oxfordshire, is the host for the ECP and has responsibility for bringing the partnership together, disseminating information and for the co-ordination of the partnership.

This year we continued to hold our quarterly Evenlode Catchment Partnership meetings involving the wider partnership, although we did not manage a face-to-face meeting. The use of Teams meetings has enabled the partnership to continue with business as usual despite the restrictions due to the covid pandemic. These are a taste of the range of projects going on in the catchment outside of the smarter water catchment funded core.

Amongst many other initiatives, we heard about the ambitious plans that Blenheim Estate has for planting 300 acres of woodland in the Dorn valley in a partnership with the Morgan Sindall Group to offset their carbon. Blenheim are also working towards becoming carbon neutral, including for all the tourist travel and plan to change to more sustainable farming on their estates.

Natural England introduced the new catchment sensitive farming initiative and a new officer to work in the Cotswolds and many more farms are now taking up the Countryside Stewardship Scheme.

The North East Cotswold Farmer Cluster (NECFC) told us that they are growing rapidly and holding monthly meetings or visits and now have their own website.

The Cotswold AONB announced that grant scheme Farming in Protected Landscapes (FiPL) was launched in July and they will be employing a dedicated staff to facilitate the grant funding and advice.

Thames Water gave a presentation on how the Smarter Water Catchments worked over the three pilot projects and in the December meeting, the SWC team shared the project activities and progress so far with the wider catchment.

The Littlestock Natural Flood Management Team gave a presentation on the lessons learnt in this 5 year pilot project at Milton-under-Wychwood.

Early in 2022, a small group took part in the Environment Agency's consultation on their River Basin Management Plan and Flood Risk Management Plan.

Discussions were held on whether the ECP should accept monies from the EA for Enforcement Undertakings, the conclusion was not to do so, we believe that the Company that has polluted should be taken to court and fined. The EA were unable to comment.

The NECFC told up that they were planning to submit an expression of interest in the landscape recovery pilot with 500 to 5000 hectares of restored habitat focusing on the river. Linking to existing projects skills and data in the catchment.

Another busy year for the wider catchment, we will now look in more detail at some of the SWC projects and initiatives completed over the year within the catchment plan.

Wychwood Forest Fair – first public engagement of the Smarter Water Catchment Pilot

ECP stand at Wychwood Forest Fair

Our first public engagement at the summer fair, we were able to chat with catchment residents to explain the project and discuss how they could be involved. Many people were willing to volunteer and signed up for water quality monitoring.

Magpie Farm – launch of the Smarter Water Catchment Pilot

To launch the Smarter Water Catchment, we held an open day at Magpie Farm, where a wetland and series of ponds had been constructed to reduce the sediment and nutrient flowing downstream to a Site of Special Scientific Interest (SSSI) on an upper tributary of the River Dorn. This was designed by Atkins under a pilot scheme during Thames Water's previous Asset Management Plan period, AMP 6.

We had 42 people attending, ranging from landowners, councillors and ECP partners. There were guided tours taking you through the land management changes, and the various stages of

construction, the use of ponds to settle out nutrients and sediment and the importance of the SSSI downstream.

The visit generated a huge interest in wetland creation and became a catalyst to develop a new initiative.

Magpie Farm launch event

3 Water Quality

None of the 18 water bodies in the catchment currently achieve good ecological status under the water framework directive (WFD). Phosphorus is the main pollutant; about 65-70% of which comes from sewage effluent and about 28-30% from agricultural runoff. Currently only sewage treatment works on the Dorn and Glyme tributaries are equipped with phosphorus stripping capabilities.

The high phosphorus concentration enriches the water and causes algal blooms in the late spring and summer during low flows. This severely affects the water quality and the diversity of macrophytes invertebrates and fish.

Citizen Scientists

The ECP, led by Earthwatch, set up a group of volunteers to take monthly readings of nitrogen and phosphorous upstream and downstream of some of the sewage treatment works in the catchment using Fresh Water Watch kits. These volunteers, who we call *Catchment Champions*, have continued to monitor in 24 locations and have amassed a core of data that Earthwatch has analysed in an attempt to establish where the main sources of pollution are

occurring. The results show categorically that water quality is greatly reduced downstream of the STWs. All monitoring points show high nitrate readings meaning that the catchment ground water is high in nitrate.

A Water Blitz event open to everyone in the Thames Region was held in September 2021, by Earthwatch. Citizen Scientists measured Phosphorus (P) and Nitrogen (N) concentrations around the streams and brooks of the catchment producing more valuable data.

Catchment Champions sampling (c) Earthwatch

Sondes

In February 2022 multiparameter sondes were installed in 4 locations. Upstream and downstream of Milton under Wychwood STW and Chipping Norton STW. The sondes measure specific conductance, turbidity, temperature, dissolved oxygen, pH, oxidation-reduction potential, ammonium and two optical sensors that record tryptophan and chromophoric dissolved organic matter.

Sonde on Littlestock Brook

Every 15 minutes the readings are sent to an online data base which is linked to the ECP section of the Wild Oxfordshire website.

Having analysed all the data, Earthwatch have concluded that priority should be given to P stripping at STW that discharge continuously to small brooks where summertime flows are dominated by STW effluent. Priority should also be given to upgrade STWs on main river sites (receiving STW discharge) that have elevated anomalies and STWs with elevated spill event frequency and duration.

The full Earthwatch Annual Water Quality and Monitoring Strategy Report May 2022 (actual reviewed data 2021-22), can be found on the ECP section of the Wild Oxfordshire website.

In January 2022 members of the partnership were interviewed by New Scientist interested in the nutrient monitoring that we were carrying out and the poor state of our rivers. They produced both an article and a short film.

Campaigns

The ECP continues to campaign for P stripping and greater capacity in storm overflow tanks, and the amount STW can treat. We work closely with Windrush Against Sewage Pollution (WASP) who run a very effective campaign for better water quality.

4 Biodiversity, Habitat and Landscape

As well as water quality issues, changes in land management and river engineering all impact our biodiversity. Much of the catchment lies within the Cotswold Area of Outstanding Natural Beauty and includes the remains of Wychwood Forest and the World Heritage Site of Blenheim Palace. It is a beautiful landscape that has become degraded.

Past dredging activities for drainage purposes have caused the river channels to be disconnected from the natural flood plain. As a result, natural flood meadow habitats are rare and much of the valley floor has been converted to arable land where nutrient and sediment losses are greatest during flooding.

Weirs and other barriers block the passage of fish and reduce their access to spawning grounds.

Extensive farming practises are highly dependent on high fertiliser and pesticide applications and impact heavily on water quality and biodiversity. Sustainable farming is being actively encouraged in the catchment in order to protect soil health, water quality and wildlife.

River Restoration Project

The Blenheim Estate with EA funding and design advice from Atkins, constructed a 'Stage Zero' project on the River Dorn. Leaky timber dams were constructed to partially block the perched channel, and swales cut into the bank to allow the water to find the the natural route along the bottom of the field. Stage Zero is a term loosely applied to putting the river back into a state before man intervened.

River Dorn Restoration Project

Wild Oxfordshire undertook a wetland creation and river restoration project at Brookend Farm using EA funding. An incised brook was blocked from following the field boundary and released into the field to run naturally with the land to re-join a brook in the next field below.

Brookend Farm River Restoration

Wetland Creation, Brookend Farm

In addition, 4 new ponds were dug at varying depths to create a mosaic of wetland habitats. Not only have more habitats been created but these interventions will help to slow the flow of water through the catchment, helping to reduce flooding. Wetlands sequester more carbon than woodlands and nutrients and sediment will be trapped, thus improving water quality. This site is

downstream of a STW and can be enjoyed by the public as a public right of way crosses these fields.

Weir Removal

Weirs in tributaries have not been recorded by the EA and the ECP is trying to plot as many of these as possible using the River Obstacles App https://river-obstacles-theriverstrust.hub.arcgis.com/.

Two weirs were 'drowned out' using locally sourced stone to fill the drop with a ramp of stone, so fish and other aquatic species can migrate up and downstream.

Weir removal, Brookend Farm

Wigwell Nature Reserve, Charlbury

Wigwell nature reserve is owned by Thames Water on land where water was formerly abstracted, several springs rise here. It is now managed by Wychwood Forest Trust for the species rich limestone grassland. It consists of three fields which are grazed by cattle and a brook runs down the middle, fed by the springs.

This brook has become overgrown with trees and scrub and has few aquatic invertebrates and flora due to the dense shade. The ECP has funded work to remove some of this scrub and construct a woven timber dam to hold back water and create an open body of water.


Wigwell beaver dam creation, Charlbury
Volunteers working on the dam, the project took several days to complete.

Mapping the catchment

A series of maps have been produced to show a variety of aspects of the catchment including geology, designations, water quality, monitoring, species richness and nature recovery network.

Please access the ECP section of Wild Oxfordshire's website to see these
https://www.wildoxfordshire.org.uk/evenlode/data-mapping

Sustainable Farming

Natural England with their Catchment Sensitive Farming Officers, offer guidance and together with the North East Cotswold Farmer Cluster the catchment continues to work towards more sustainable farming with reduced nutrient and soil runoff.

The ECP has supported both NE and NECFC financially in their work.

Please see the NECFC website for further information https://www.cotswoldfarmers.org/

5 Natural Flood Management

Natural Flood Management (NFM) is a method of 'soft' or 'nature based' engineering. It aims to restore natural features of river catchments to slow water flows to protect communities from peak floods. Such features include riparian areas, instream woody material, the use of floodplains, and wetlands. This helps local communities to prepare and protect them from flood risk, while also improving the health of the river ecosystem.

NFM measures aim to reduce the maximum peak flood flow by reducing and delaying the arrival of the high water levels downstream in towns and villages. During high rainfall events, rain falling on the steep slopes in the upper catchments, quickly rushes downstream along deepened and straightened ditches. NFM interrupts this flow, storing water to be released slowly when the peak flow downstream has passed. Storing more water upstream in wetlands also protects against drought, making the catchment more resilient to climate change and extreme weather events.

Littlestock Brook, Milton under Wychwood

Natural Flood Management, Bruern Farm

Natural Flood Management was trialled on the Littlestock Brook for a 5-year project (2016-2021) aiming to reduce flood risk to the small rural community of Milton-under-Wychwood, and to enhance the river environment. The NFM project created 15 field corner bunds (which temporarily store 30,000m^3 of flood water), 27 leaky woody dams, and de-culverting 100m of watercourse, including the planting of 14.4ha riparian woodland. Hydrological modelling has shown a significant improvement in flood risk. Monitoring of sediment and nutrient deposition undertaken by the Centre of Ecology and Hydrology (CEH) has shown how effective NFM measures are for improving water quality by retaining sediment and nutrients on the land.

Studies and surveys have established that these measures also increase the biodiversity, carbon sequestration and natural capital, delivering multiple benefits to the catchment and community.

This NFM project was selected as the winner of the Climate Resilient Places category in the Flood and Coast Excellence Awards 2021. Watch the 2 minute video here https://www.youtube.com/watch?v=vt9pzi_vqAQ

Bledington NFM

After a flood event in December 2020, local residents who were flooded, formed the Beldington Flood Group, they approached the ECP to try and find out what we could do to help the village. 24 properties had been flooded.

Beldington in flood, December 2020

The ECP has joined walkover field surveys to understand where NFM interventions could be constructed, In addition, they started to install water level loggers to get a better understanding of how the two streams and main Evenlode River interact at this point.

Atkins sponsored an MSc student in the summer to study part of the upper catchment looking at surface water pathways and identifying opportunities for NFM interventions.

6 Education, Access and Recreation

Based at Cotswold AONB the education and outreach officers were appointed in autumn 2021, with a third officer joining the team in January 2022. Starting with planning the programme, delivery commenced in February 2022.

Over 300 students in Junior schools around the catchment were engaged with their local river environment. Events have included class visits for pond dipping and classroom-based learning and some take home activities.

To promote the ECP programme there have been meetings with headmasters of Burford, Chipping Norton and Warriner secondary schools to explore “training the trainers” in river science. This will give skills to teachers to work safely in rivers and engage children with their local water environment.

The Team have been working to develop guided walk and talks with local residents. There have been meetings with the Cotswold National Landscape Warden walk leaders to introduce the ECP project and how to incorporate catchment information in their public guided walks, 4 pilot walks have been agreed for 2022.

Pond dipping, Combe Mill

7 Conclusion

The first months of the SWC programme were spent getting new staff appointed and resolving a delay in receiving the funding from Thames Water. Nevertheless, we have managed to complete a wide variety of projects and have processes and plans in place, so we are in a good position to start the next financial year.

Many thanks to everyone in the partnership who have worked tirelessly and enthusiastically on this project to very tight deadlines, and for completing a very successful first year of the Smarter Water Catchment.

8 List of Partners

- Atkins
- BBOWT
- Blenheim Estate
- Bruern Farms
- Centre of Ecology and Hydrology
- Coldstone Angling Club
- Cotswold National Landscape (CNL)
- Cotswold Rivers Trusts
- Cotswold seeds Ltd.
- Charlbury Parish Council
- Daylesford/Bamford Organic Farm
- EarthWatch Europe
- Environment Agency
- Forestry Commission
- Milton under Wychwood Parish Council
- Natural England
- Oxfordshire County Council
- Sylva Foundation
- Smiths Bletchingdon
- Thames Water
- North East Cotswold Farmer Cluster
- West Oxfordshire District Council
- Windrush AEC
- Windrush Against Sewage Pollution (WASP)
- Wychwood Flora group
- Wychwood Forest Trust

The Evenlode Catchment Partnership