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The Wilder Frome

A Vision and Strategic Action Plan for the River Frome, Stroud, Gloucestershire

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Weir upstream of Stroud Cricket Club

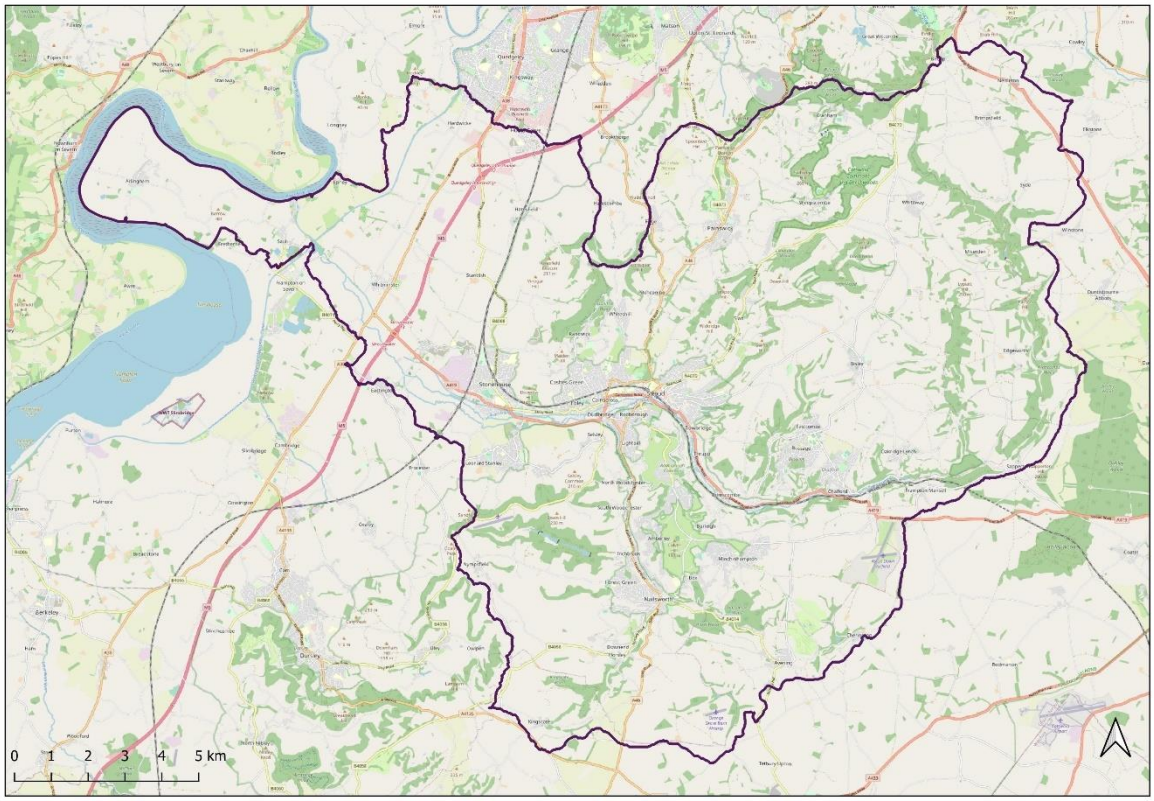
Arundel Mill Pond

Lower Frome

Our Vision for the River Frome

A crystal clear, limestone river bursting with life, teeming with fish as they make their way up the Frome from the Severn Estuary. Eels living out their lives before returning to the Sargasso Sea to breed. Salmon migrating upstream to healthy, gravelly spawning grounds. Wetlands, floodplains and woodlands full of plants and trees, removing carbon from the air and storing it. Thriving populations of insects, birds and mammals on wildlife-rich farmland and in towns and villages. A river in which flooding causes minimal human suffering, and droughts rarely make the river run dry. A place where you want to live, work, and play.

What makes the Frome catchment special?



The Frome's source is on the western side of the Cotswolds near Caudle Green, and it flows into the Severn Estuary at Upper Framilode. It takes in a landscape mosaic of Cotswold beech woodlands, mixed farming, and urban settlements. The Frome starts its life in the Cotswold limestone, where springs and flushes bubble up from the ground, in many places forming soft stony deposits or "tufa" on the ground, logs and stones. Tufa forming streams provide a unique ancient wild habitat in the River Frome, with rare insects and mosses.

Tributaries which feed the Frome include the Slad Brook, Painswick Stream, Nailsworth Stream, Ruscombe Brook, and Holy Brook. The Stroudwater Navigation, sections of the Thames and Severn, and Gloucester and Sharpness canals also fall within the catchment. The lower reaches lie adjacent to the Severn Estuary RAMSAR site, Special Protection Area, Special Area of Conservation, and SSSI designations whilst much of the middle and upper catchment falls within the Cotswold National Landscape (formerly AONB).

The River Frome and its tributaries are home to many wonderful species of plants, fungi, and animals. There are notable populations of the endangered, white-clawed crayfish and the critically endangered European eel. We have water vole, kingfisher, otter, trout, and meadows full of cuckoo flower, oxeye daisy, and yellow rattle. These species are present but, in many cases, just hanging on, and this document sets out how we can help make more space for nature to thrive, bringing socio-economic benefits to the area along the way.

Environmental Priorities and Objectives

This document sets out the environmental priorities and objectives that have been agreed through consultation with a wide range of stakeholders. Whilst the plan seeks to include ambitious and specific objectives to be delivered by 2030, other works will be considered when opportunities arise. All these objectives and opportunities can only be realised through collaborative working.

This plan also considers broader environmental objectives such as the government's 25 Year Environment Plan and Local Nature Recovery Strategies.

Climate Change Resilience

As climate change impacts continue to materialise in coming years, a range of ecological, hydrological, and habitat impacts can be anticipated within the Frome catchment, throughout the Severn Basin, and beyond. Climate change resilience will therefore be woven into all planned interventions and work will take account of the latest data and evidence. Wherever possible, Nature-based Solutions (NbS) will be at the heart of our work to improve the Frome catchment for people and wildlife.

1. Making it easier for fish to migrate and move through the Frome catchment

Background

The River Frome is a watercourse with a rich history, shaped by its industrial past and evidenced by reports of a rich salmonid fishery. Indeed, young salmon are still present in the river below Saul Junction. Today, the Frome and its tributaries support moderate to good fish populations which are restricted by habitat fragmentation. Physical structures, such as navigation weirs and mills, have disconnected the Frome by impeding migration capabilities. In the latest survey, over 50 obstructions to fish passage were present within the catchment, all of which have inherent impacts on the river's ecological status.

Despite a lack of longitudinal connectivity, habitat quality throughout the Frome and its tributaries can be generalised as 'good'. It is our ambition to reconnect the river, allowing fish to move from the mouth of the Severn right through to its headwaters (its source). By achieving this, we will build resilience into the fragmented ecosystem and set the foundations for healthy populations of fish, as well as other wildlife. Of course, improved connectivity must be coupled with the provision of suitable habitats and efforts to rectify other fishery bottlenecks.

White-clawed crayfish have been recorded in a number of headwater streams within the Frome catchment. As such, care must be taken to prevent American signal crayfish, or the fungal disease they carry, being spread to these areas. The arguments for removing obstacles to fish migration must be weighed against the potential for an obstruction to be preventing signal crayfish moving into an area and wiping out populations of white-clawed crayfish.

Statement of Ambition

We will make the river channel passable up and downstream for fish and other aquatic species, including implementing multi-species fish passes at all high priority barriers throughout the Frome catchment. In-stream habitat restoration will complement improved connectivity, ensuring species have access to the variety of habitats necessary to complete the different stages of their life cycles.

2030 Objectives

- Implement fish passage solutions at the Frome tidal flap, Whitminster Weir, Fromebridge Mill Weir, Ryeford Mill, and Ebley Mill Weir
- Scope further fish passage or barrier removal opportunities, working upstream towards Chalford, including the Nailsworth stream weir at Sainsburys (Kimmins Mill)
- Seek funding for at least 5 additional barrier removals or easements across the catchment
- Seek funding for suitable instream habitat works to support barrier removals or easements
- Retain and expand existing, white-clawed crayfish habitats and populations

Key species supported: European eel, Atlantic salmon, brown trout, and white-clawed crayfish

2. Making space for wildlife in and around the Frome

Background

As well as storing vast quantities of floodwater, healthy river floodplains can support a huge range of wildlife, including many declining freshwater species. The Severn Vale is a stronghold for European eels, a protected species, which enter the estuary in spring months and live in the ditches, wetlands, and waterbodies for 5-20 years until they reach maturity and migrate back to sea.

The aspiration is to create a naturally functioning wetland complex that will provide a safe space for wildlife, store carbon in the face of climate change, and hold and filter water. The mosaic of habitats will include wet woodland, scrub-edges, surface flow marsh, marginal vegetation, reedbeds, floodplain meadows, scrapes, and ponds. The reintroduction of beavers will help to create and maintain biodiverse wetland and river habitats. Appropriately sited trees along sediment and run-off pathways will interrupt flow routes and increase soil infiltration, reducing flooding and the amount of sediment, nutrients, and pollutants reaching a river channel.

Woody debris is a vital component of the river ecosystem. It is an important food source for invertebrates, provides refuge for fish and invertebrates like crayfish, and diversifies flow patterns. Large woody debris (LWD) helps scour gravels and create deeper pools which can be vital for a variety of species during low flows. Brown trout create nests or ‘redds’ and spawn in in fast flowing, well oxygenated flows. In locations where the river is homogeneous in character and the gravels lie beneath a layer of silt the introduction of LWD would be advantageous for aquatic life.

Previous Natural Flood Management (NFM) projects in the Stroud valleys introduced woody debris into the tributaries of the Frome and helped to create diversity of flow. This work will continue and expand to include the main river Frome upstream and below Stroud where there is a paucity of woody debris and for long stretches the bed is relatively flat and uniform. Reintroducing Beavers will add dynamism and complexity to the river and floodplain habitats, slowing flows, filtering sediments, and contributing to reducing flood and drought risk.

Statement of Ambition

We will continue to introduce woody debris into tributaries by introducing features, such as LWD, that are associated with more natural river systems and diversity of flow types. NFM interventions will be incorporated into our general approach to river restoration and contribute to the reduction of downstream flood risk. We will investigate the social and ecological feasibility of wild beaver releases in the tributaries and the upper Frome, determining the habitat and land use consequences of this. We will focus our work on floodplain connectivity in the headwater floodplains, downstream of Ebley Meadows, and west of the A38.

2030 Objectives

- Re-naturalise the river channel by introducing woody debris at 30 sites
- Restore 50ha of wetland mosaic in the lower Frome catchment, reinstating natural processes
- Establish or restore 100ha of new botanically rich grasslands and 20ha of wet woodland
- Reconnect 5km of headwater river with the floodplain by removing embankments and re-meandering straight sections of river
- Decommission 3 mill ponds to create floodplain habitat
- Commission ecological and social studies to investigate the feasibility of reintroducing wild beavers into the tributaries and the upper Frome

Key species supported: Brown trout, European beaver, and dipper

3. Working in the wider landscape of the River Frome

Background

The River Frome flows from the Cotswold plateau in the east, through the five valleys of Stroud, across the Severn Vale and into the River Severn. The geology of these three distinct areas has dictated land use. The free draining soils of the Cotswold plateau have made it easy to cultivate the land, making arable farming the dominant land use. The steep slopes and wetter valley floor of the Stroud valleys have made agricultural improvements difficult, therefore this area has retained many natural habitats, such as woodland and unimproved grassland. Within the Severn Vale the deep wet soils are ideal for grassland, with dairy and beef farming dominating the land use. More recently maize has become an important dairy farming feed crop.

Each area has its own issues. Arable farming on the free draining Cotswold soils leaches phosphorus and nitrate into aquifers. The valley systems suffer from diffuse water pollution – soil poaching from livestock, muck spreading etc. The problems in the Vale include nutrient and pesticide run-off as well as urban pollution entering the river in Stroud and Stonehouse. The removal of the basic payment scheme and the introduction of the new Environmental Land Management (ELM) scheme based on the idea of public money for public goods will alter farming practices and provide opportunities to influence change.

Statement of Ambition

We will promote ELMs options and regenerative farming practices, focusing on those holdings at high risk of generating diffuse pollution. This will require a better knowledge of water quality in the catchment and critical areas for wildlife. We will work with partners and existing funding mechanisms such as DEFRA's Catchment Sensitive Farming programme.

2030 Objectives

- Create farm case studies for the three farming zones, identifying what options, including regenerative farming, could be adopted to improve the water environment and wildlife
- Work with 30 landowners to help them select appropriate ELMs options to improve the water environment and adopt regenerative farming practices

Key species supported: Stoneflies, Daubenton's bat, and a range of pollinator species

4. Cleaning up our rivers

Background

Like most lowland watercourses in the UK, water quality in the Frome is impacted by runoff from both rural and urban sources. In rural areas, agricultural sources include nutrient and sediment inputs from fertilisers and livestock management, and point sources from sewage treatment works (both private and water company-owned), the sewerage system, and septic tanks. In urban areas, surface inputs including run-off from roads and other infrastructure, and foul water sewerage systems are the key sources of pollutants. The surface water system can be contaminated unwittingly by activities in residential, business, and commercial areas throughout towns and villages. There are also storm overflows, operating by discharging untreated sewage into rivers, which should only occur during heavy rainfall.

There is no single solution to improving water quality – it needs a deeper level of understanding and an integrated approach by multiple stakeholders to effect real change. The Frome is of relatively good quality compared to other rivers in the Severn Vale. If we can tackle the key sources of pollution, alongside other measures, this could be a beautiful, thriving river system once more.

The problem of litter and microplastics is one that is now unfortunately found in every river system, and the Frome is no exception. The catchment is blessed with an extensive network of public footpaths adjacent, or in close proximity, to rivers and canals. While this provides plenty of opportunity for negative impacts such as dropped litter and disturbance, it is also perfect for increasing positive engagement with communities who will benefit from an enhanced water environment.

Statement of Ambition

We will strive for the Frome to achieve Good Ecological Status under the Water Framework Directive along its entire length, including key tributaries. To do this, we will engage local communities, work to reduce the frequency of sewer spills across the area, work with partners to deliver support to farmers, and encourage the development of green and blue infrastructure (GBI) across the catchment.

2030 Objectives

- Work with farmers and landowners to reduce sediment and nutrient input to the Frome upstream of the Daneway and in the Painswick stream
- Run annual misconnection awareness campaigns, engaging 10 schools, and various local communities and businesses
- Work with Severn Trent Water, Gloucestershire Highways, Local Authorities, and communities to deliver a programme of GBI, intercepting highway, surface water and roof runoff through the creation of a minimum of 20 SuDs (Sustainable Drainage systems) features
- Work with Severn Trent Water to significantly reduce sewer overflow frequency into the Frome

Key species supported: Otter, red-eyed damselfly, and common toad

5. Restoring healthy flows in Stroud's rivers

Background

The River Frome needs enough water flowing consistently along its entire length to sustain its health, but like all rivers it responds both to the weather and to groundwater levels. This means the river and communities downstream can suffer from the effects of floods, droughts, and low flows caused by multiple impoundments and alterations to the river channel.

Like other parts of Gloucestershire, the Stroud Valleys suffered extensive flooding during the summer of 2007. Floods are not new in the Stroud Valleys and records speak of major flooding dating from 1820. Flooding has been made more likely by climate change and changes to the catchment. Surface run-off routes have been made smoother and run-off from fields and hard surfaces is greater in volume which can add to the risks of flash and surface water flooding.

The River Frome also has many areas that dry out in low flows. Some of this is natural within a limestone area, but in other places, attempts to move the channel to the side of the floodplain cause the loss of water into the fissures within the rock. Water is also lost within the many on-line ponds and lakes, especially those without appropriate lining, as well as in various interactions with the canal. Abstractions of water from the lower reaches of the Frome into the Gloucester and Sharpness canal also depletes flows.

The impacts of this on both local communities and the natural environment can be significant, causing anxiety to people and making the river difficult to navigate for fish and other species.

Statement of Ambition

We will take a whole catchment approach to river flows and deliver interventions that allow rainfall to soak into the soils, reduce surface run off, and slow down flows in streams and rivers to keep more water in the wider landscape. This will reduce the detrimental effects of floods and make the catchment more resilient to droughts. We will create and promote the concept of "Sponge Farms", which aim to increase and retain water storage on-farm. We will also restore and maintain flows by moving channels or reducing leakage from ponds and impoundments.

2030 Objectives

- To double the current number of natural flood and drought management measures across the catchment from 750 to 1500
- Seek funding to identify the causes of zero flows in at least 2 sections of the river and, where possible, develop proposals to reduce or reverse these impacts
- To offer the Stroud Frome as a demonstrator for NFM in the Local Nature Recovery Scheme

Key species supported: River lamprey and spotted flycatcher

6. Taking action on Invasive Non-Native Species

Background

Non-native species are those that occur outside their natural range due to direct or indirect introduction by humans. Many introduced species do not present a problem, but those that spread and outcompete native species can threaten ecosystems, habitats, or vulnerable native species and are termed invasive non-native species (INNS).

The River Frome and surrounding watercourses support a range of rare and important species, such as white-clawed crayfish, water vole, otters, and dippers. There have been numerous restoration projects in the Frome catchment which aimed to address protection of these by reducing and, where possible, eradicating INNS.

In the Frome catchment we have identified Himalayan balsam and giant hogweed. In addition, American skunk cabbage has been found in the Painswick Stream and floating water fern in the lower Frome. Invasive animal species include Chinese mitten crab, which has previously been identified in the Gloucester and Sharpness canal, as well as American mink which is a critical predator on many native species in particular the endangered water vole, which has been found in significant numbers in the lower Frome.

Statement of Ambition

We will reduce the impact of invasive species by monitoring existing populations (see section 7) and actively removing populations or individuals. We will work to reduce the threat posed by invasive species, limiting their spread where eradication is not possible. We will work together to identify the means to limit the influence of invasive species, including considering predator control.

2030 Objectives

- Control and remove Himalayan Balsam across 10ha of riparian habitat
- Seek funding to eradicate Giant Hogweed from the Frome catchment
- Run a biosecurity campaign focused on improving understanding of the spread of INNS between water courses and impacts on native wildlife
- Control mink to help protect and expand the significant water vole population below Stroud

Key species supported: White-clawed crayfish, water vole, and native waterside plants

7. Monitoring and Data

Background

Across the catchment, organisations are working together to bring about positive changes to the River Frome, its tributaries, and the water that flows off the surrounding land. Where improvements are made, it is important to quantify the benefits through robust monitoring. Changes that affect water quality, increase habitat availability, and impact the quantity of water that flows across the catchment may take time to become established. Often the changes might be small, temporary, or only observed during events such as heavy rainfall. It is only through a thorough understanding of the landscape and catchment that these cumulative effects can be described and the changes they bring about can be measured.

Without monitoring it can be unclear where interventions are needed and how effective past efforts and expenditure have been. Collecting and analysing data needs people on the ground to take measurements and citizen scientists can be used to facilitate a broad range of standardised data collection. Water quality can be measured through programs such as Freshwater Watch and its changing effects on the instream invertebrates can be monitored through monthly RiverFly surveys. Physical changes to river flow can be categorised through modular river surveys, and as communities become more engaged more approaches can be adopted. The collective strategy of the partnership means that data sharing can be easily facilitated, and the contributing organisations can harmonise data collection and analysis to the benefit of all.

Statement of Ambition

We will improve understanding and knowledge of the Frome catchment for the benefit of all by supporting the establishment of Smart River Hubs and encouraging individuals and communities to help protect, monitor, and enjoy their river.

2030 Objectives

- Improve water environment and invasive species monitoring, including citizen science initiatives, to support statutory monitoring
- Establish a citizen science monitoring programme (including at least one Smart River hub) for the River Frome

Key species supported: Iron blue mayfly and common swift

8. Community Engagement and Partnership

Background

Central to the Frome catchment is the market town of Stroud with villages scattered throughout the five valleys including Ruscombe, Pitchcombe, Painswick, Slad, Bisley, Eastcombe and Chalford. The Frome then continues downstream adjacent to the smaller settlements of Whitminster, Eastington, Frampton, and Saul before joining the River Severn at Upper Framilode.

Effective community support can increase the sustainability of a project and is achieved through early and continuing engagement with local people. Offering opportunities to co-design plans and contribute through citizen science schemes can provide a sense of ownership while contributing to project monitoring and building a local evidence base.

Statement of Ambition

This plan has been developed as part of the Severn Vale Catchment partnership. The group welcomes the opportunity to work with any organisation or individual with an interest in improving the water environment of the Frome. Flood Actions groups will be a key element to ensure residents that suffer from flooding are involved in any restorative work. In order to achieve the desired outcomes, we must work in partnership.

2030 Objectives

- Work with Gloucestershire Highways to install the names of rivers and streams on road bridges across the Stroud valleys to promote a better understanding of the catchment
- Work with 5 local communities to run river cleaning events, including the removal of industrial waste, replacing inappropriate substrate with natural habitat
- Run an annual event for all stakeholders to discuss progress towards achieving the vision

Key species supported: Otter and common toad

Delivery of the Vision

Delivery of this vision relies on a wide range of organisations, community groups, and individuals successfully developing, funding, and implementing projects that will cumulatively achieve the 2030 objectives. The Severn Vale Catchment Partnership has created, and will keep updated, a rolling list of pipeline projects that could help deliver the activities and improvements set out within this plan.

For further information and resources, to get involved, or to add a project to the current pipeline list please get in contact using the details set out on the Severn Vale Catchment Partnership website: https://catchmentbasedapproach.org/get-involved/severn-vale/.

Thank you to local Stroud artist Stu McLellan for designing our logo. If you want to see more of his work focused on the river Frome you can visit www.stumclellan.co.uk.