Severn Rivers Trust:

Working with Nature to Reduce Flooding

Solutions for Our Community



SEVERN
RIVERS TRUST



Hello!



Jake Loughran

Catchment Restoration Officer



Katie Jones

Communications & Giving Lead



Who Are We?





We are an independent environmental charity, taking a hands-on approach to restoring natural flows, reviving habitats, and tackling environmental threats. Founded in 2008, we work from source to sea, protecting and enhancing the River Severn and its tributaries across England and Wales.

Where Do We Work?

We work across the entire River Severn catchment, from its source in the Cambrian mountains in Wales to its mouth at the Severn Estuary.

Covering both England and Wales, our projects span rural landscapes, farmland, and urban waterways. By working at a catchment scale, we deliver local action with far-reaching benefits for nature, wildlife, and communities.



Our Mission & Approach

Our mission is to ecologically restore the River Severn, creating healthier waterways for wildlife and people. We take a boots on the ground approach, working closely with farmers, land managers, local authorities, and volunteers to undo some of the historical and continual negative impacts to our brooks and rivers.

Through habitat restoration, natural flood management, and education, we tackle pollution, improve water quality, and reconnect rivers with their landscapes. By taking action at a catchment scale, we build resilience against environmental threats and safeguard the future of the UK's longest river.





Restoring Our Rivers

Barriers

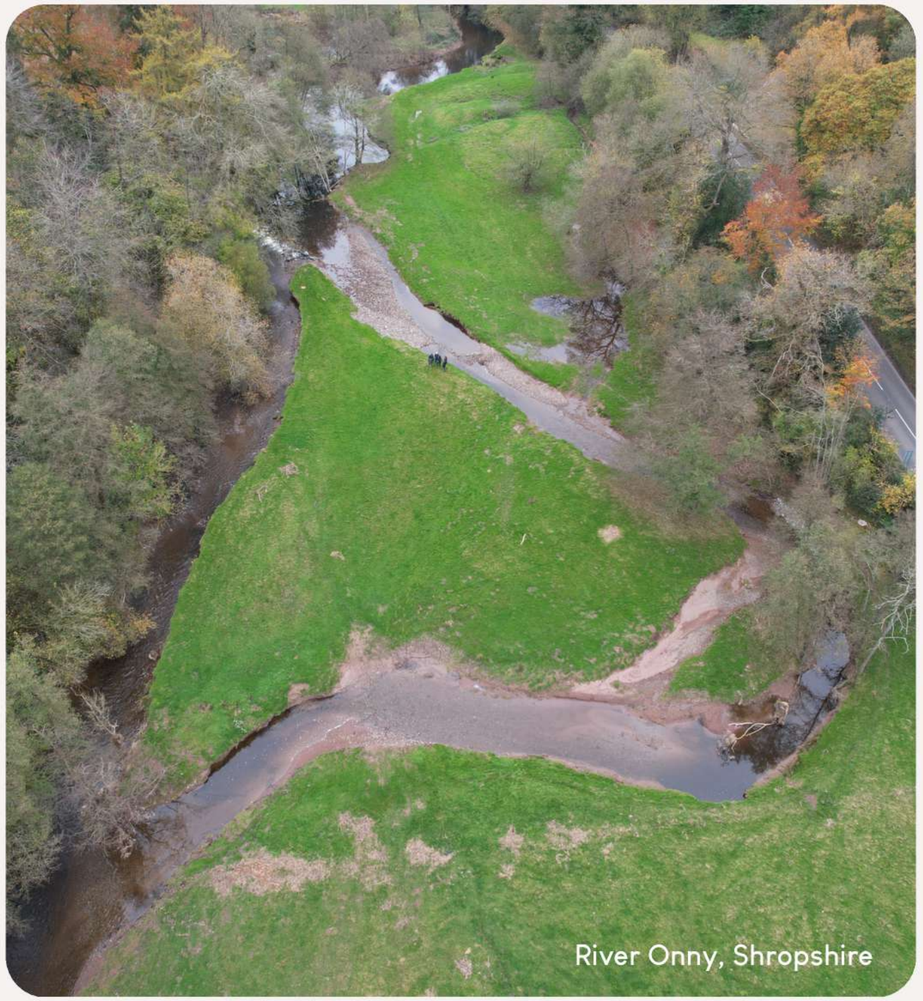
We remove barriers to fish migration to reconnect fragmented habitats.

Rewiggling & Buffering

We restore natural river flows by re-wiggling channels and seek to restore riparian buffers with natural vegetation between the river and productive land

Woody Material

We install wood into the channel to enhance habitat complexity and support aquatic life this helps restore natural process and slow the flow.



River Onny, Shropshire



Cinderford Brook, Gloucestershire

Recovering Our Land





Wetlands

We restore wetlands to improve water quality, reduce flood risks, and support wildlife.

Woodland

We restore riparian woodlands to prevent erosion, improve water quality, and provide habitats.

Farm Advice

We provide farmers with practical advice on regenerative practices to improve soil health and infiltration capacity.



Empowering Communities

Mobilising Volunteers

We engage local volunteers to take direct action for improving water environments.

Citizen Science

We run projects that involve the public in monitoring water quality and wildlife health. (CaSTCo)

Learning Programmes

Our programmes build practical skills and inspire the next generation of river guardians.


NFM
Natural Flood Management

Water Management in the UK

Brief History (1600-2020)

Wetlands

10-12%

(3 Million ha)

(Fens, Bogs, Marshes, Floodplain Meadows, Coastal Wetlands)

Draining of the Fens



- First large scale draining of wetlands for agriculture
- Hand-dug straight channels and sluice gates
- 'Great Level of the Fens' - 310,000 hectares
-
- 1.8 x the size of present day Worcestershire

17th | 18th | 19th | 20th | 21st | Present

Enclosure of the Commons



- Further wetland losses, incentivised productive land improvement

Industrial Revolution

- Urbanisation of floodplains
- Sealed surfaces
- Canal and River Navigation (weirs!)



Flood Management Engineering



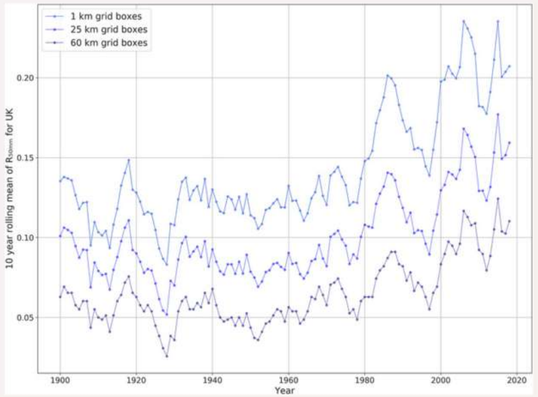
- Embankments, flood walls, Culverts, Dredging
- Often displaces flood risk

Severe Flooding Changes Approach

- 2007, 2015 severe floods
- 2010 Flood and Water Management Act



R50mm days 1900-2020



Nature-based Solutions



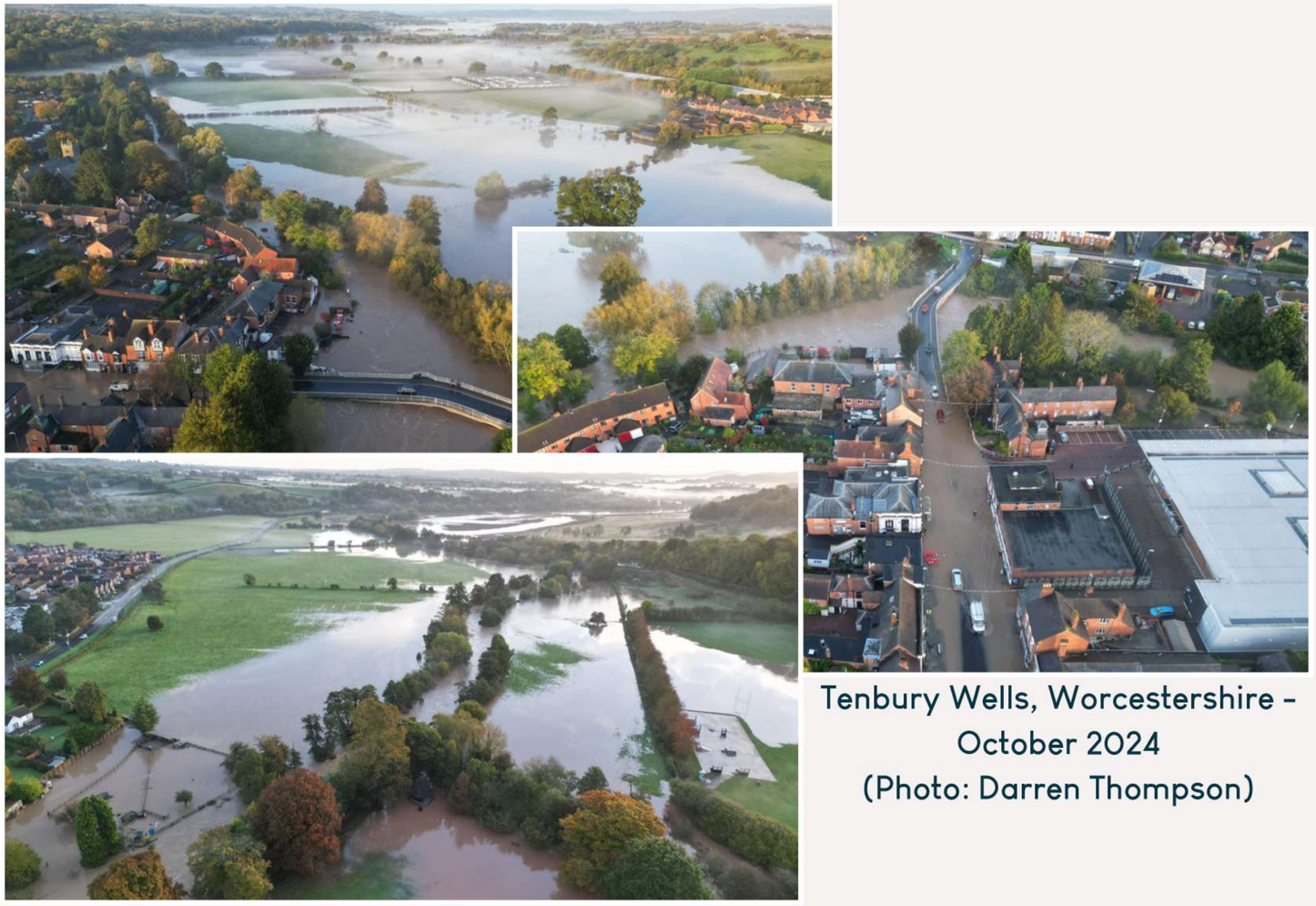
- Sustainable drainage and urban green infrastructure
- Natural Flood Management Funding for councils (EA)
- Looking toward restoring the ability of the landscape to store water

Wetlands

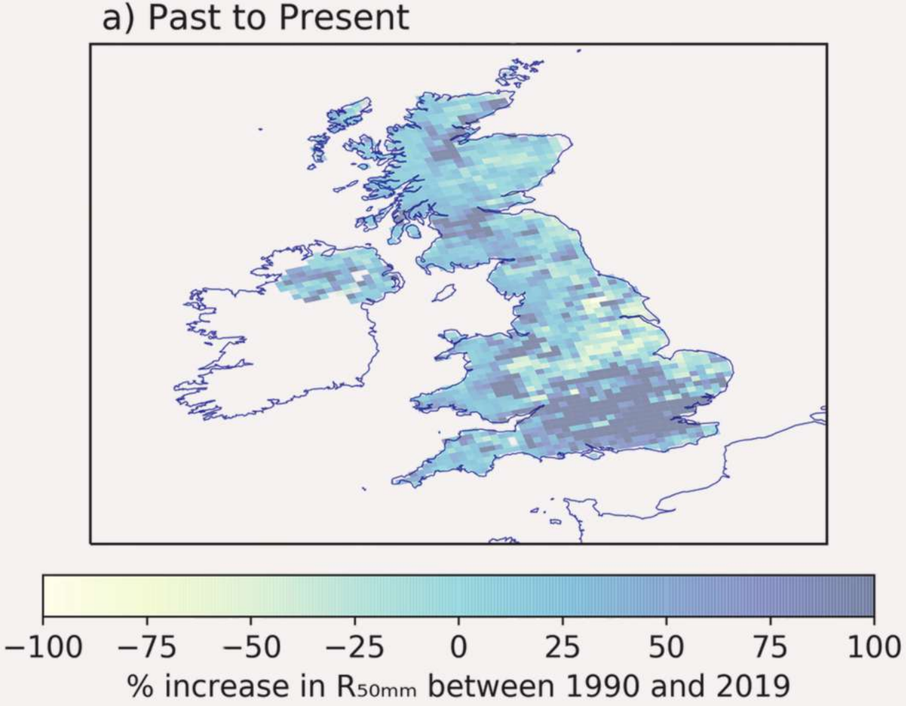
1-1.5%

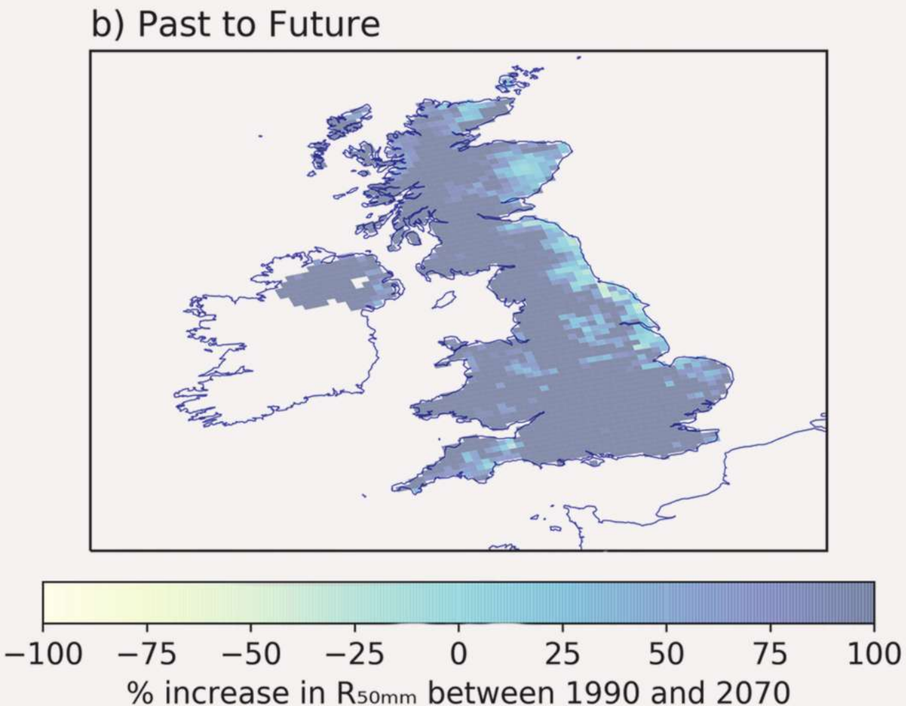
(350,000 ha)

Flooding: Present and Future



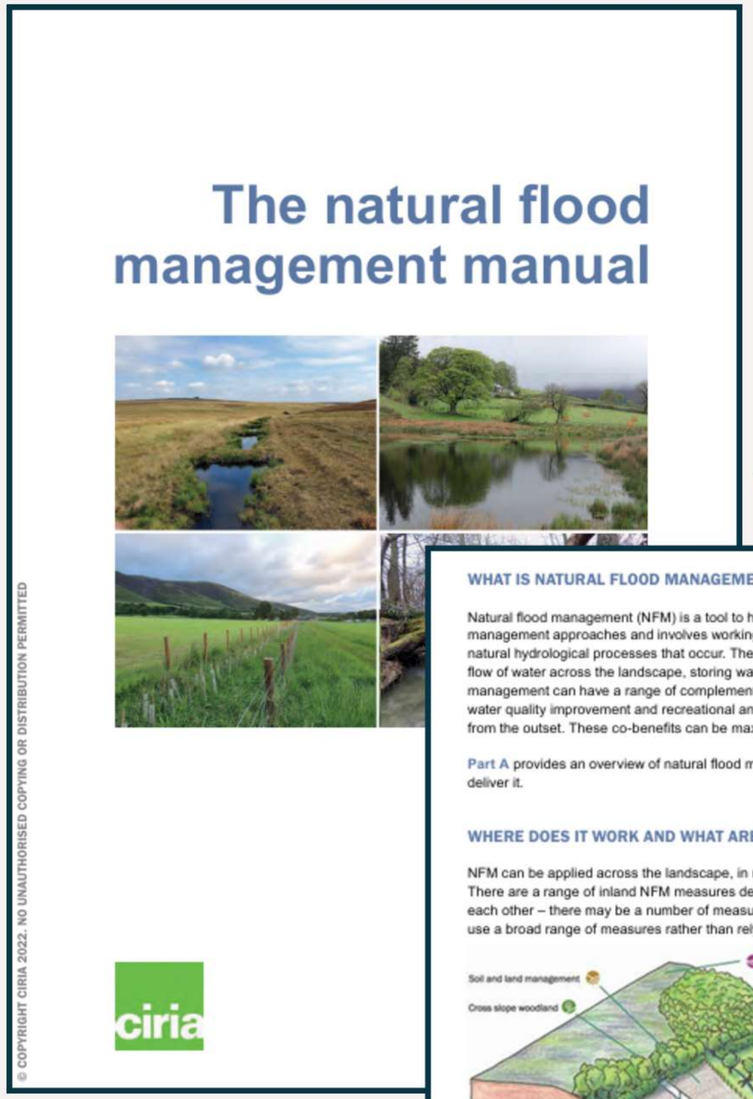
Tenbury Wells, Worcestershire - October 2024
(Photo: Darren Thompson)

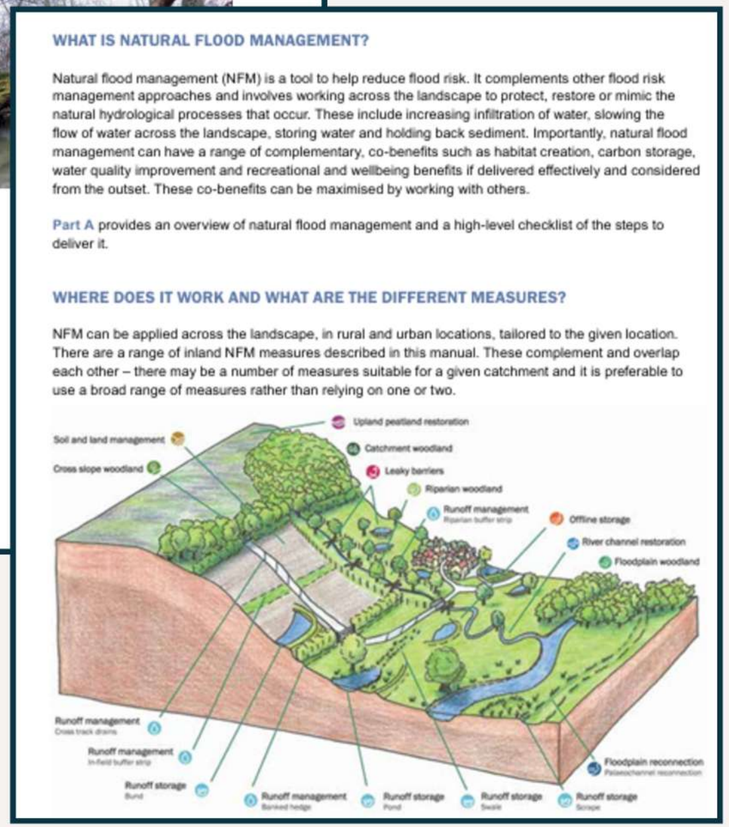




Natural Flood Management

- Is a tool to help reduce flood risk, complimenting a holistic approach to flood risk reduction
- Working across the landscape to restore, or mimic the naturally occurring hydrological processes
- Infiltrating and slowing the flow of water across the landscape, storing water and holding back sediment.
- Range of complementary benefits: Habitat Creation, Carbon Storage, Water Quality Improvement, and Recreational and Well-being benefits.





(Ciria, 2022)
Check resources at the end for product info.

Natural Flood Management



Natural Flood Management (NFM) techniques to address water management and soil erosion, while reducing flooding downstream with four approaches

Enhancing Infiltration in Soils & Buffering Watercourses

- Limiting Livestock Access
- Restoring Diverse Meadows
- Increasing Vegetation Cover and Soil Organic Matter

Planting Woodlands and Hedgerows

- Planting Hillslope and Riparian Woodland
- Cross-slope Hedgerows

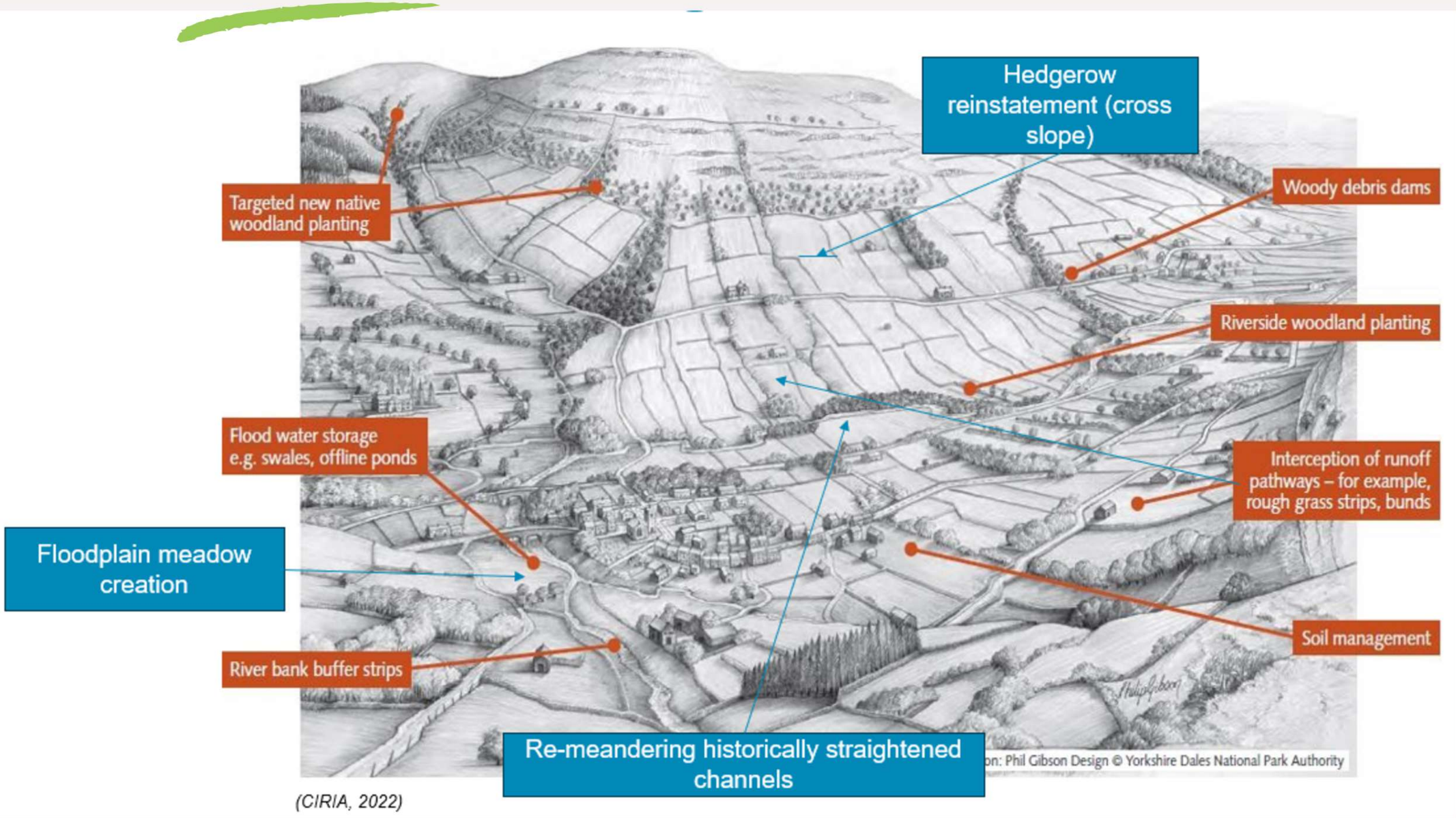
Intercepting & Attenuating: Creating Flood storage

- Ponds and Swales
- Sediment Traps
- Wetlands

In-Channel Features

- Leaky Woody Structures
- Re-meandering

NFM Techniques: An Example Catchment



(CIRIA, 2022)

Enhancing Infiltration in soils and Buffering Watercourses

- R50mm = 50 mm / m2 in one day.

- 1 Hectare / 2.5 acre: 500 tonnes of water <u>in a single day</u>



<u>Spongey soils are our most important ally (%SOC)</u>



Wildflower Meadow



Arable?

- Cover cropping
- Polycropping,
- Grassy buffer strips in field margins

- Massively enhanced ability to store water vs low diversity grazing sward
- Vital habitat (pollinators)



- Excluding livestock from overgrazing vegetation at the riverbank allows deeper rooted plants to take hold.

- Slows the flow of water entering the watercourse, filters sediments & contaminants

- Stabilises banks from excessive erosion (watercourses will naturally be wooded)

Enhancing Infiltration in soils and Buffering Watercourses

https://www.herefordshiremeadows.org.uk/resources/meadow-restoration/



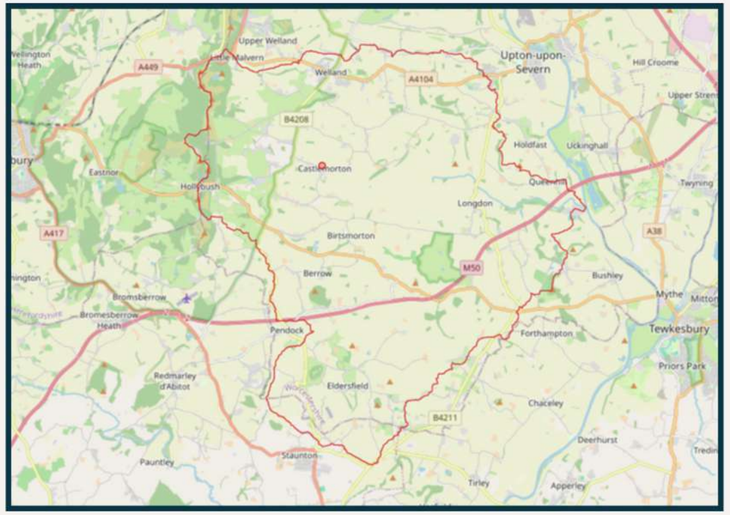
Green Hay harvested from a donor site (Floodplain Meadow with rich diversity of grasses and wildflowers)



Strewn across a typical mown lawn with seed bank and microbes!



Tonnes of advice on creating new, or restoring wildflower meadows. Applicable on any scale: gardens, roadside verges, odd corners, roundabouts etc.



Castlemorton: Bushley Longdon Bk – source to conf R Severn

7900 hectares draining into the Severn
Every little helps, no matter where you are

Wildlower meadow = 40% increase in infiltration vs traditional lawn

Planting Woodlands and Hedgerows



0.8 ha Woodland planting on hillslope towards the Perry brook, part of the Kyre catchment (2025)



+ 300 metres of new hedgerow (210 oriented cross-slope) (2025)

Planting Woodlands and Hedgerows


Kyre Brook, Worcestershire



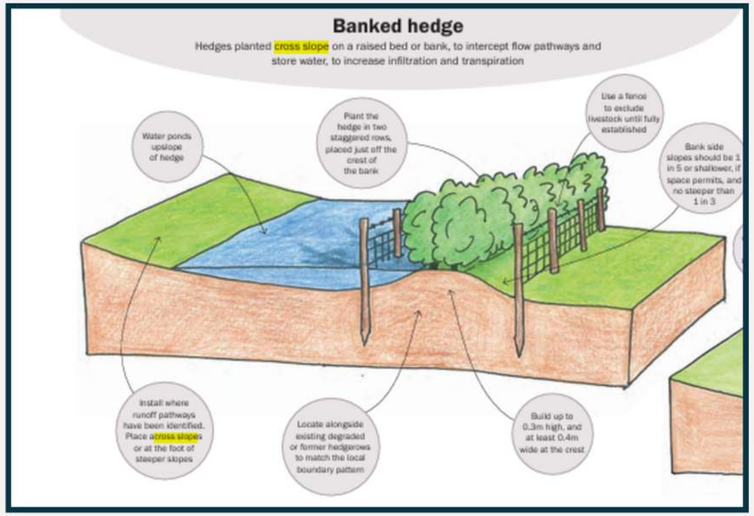
Complimentary benefits:

- Long standing habitat creation
- linked in wildlife corridors
- carbon storage
- shade and windbreak for livestock

2024/25 season:

Lower Teme: 7,800

Severn catchment 36,400



Hedges oriented cross-slope can be combined with other features (Banks, Swales)

(CIRIA, 2022)



Rainfall interception
1,000-2,000 l

+

Transpiration
6,000-9,000 l

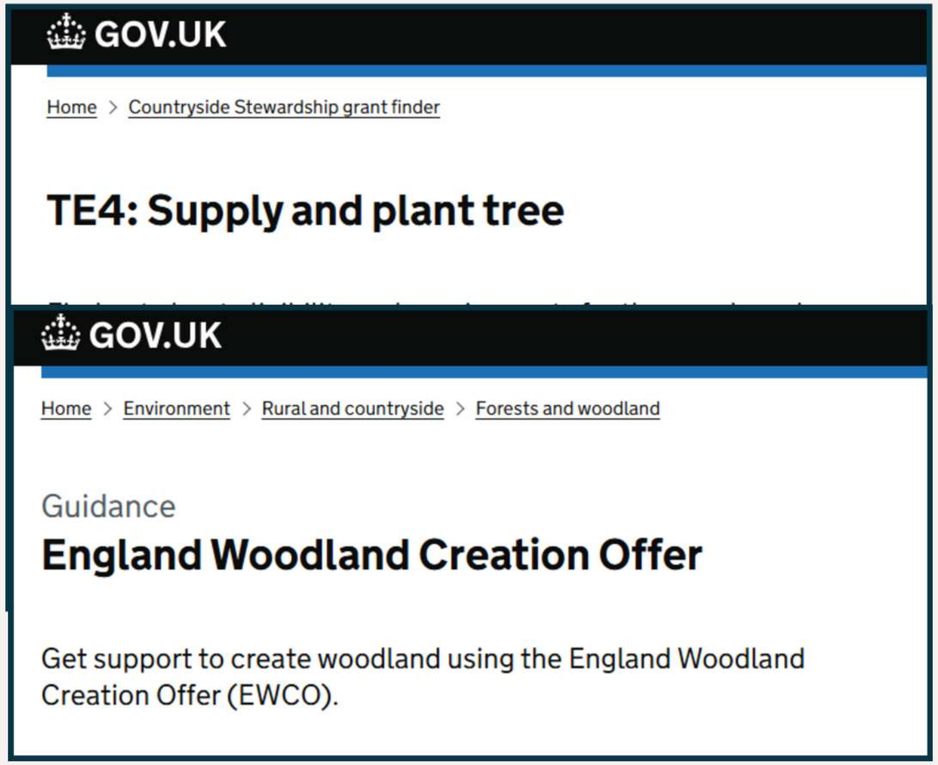
Planting Woodlands and Hedgerows



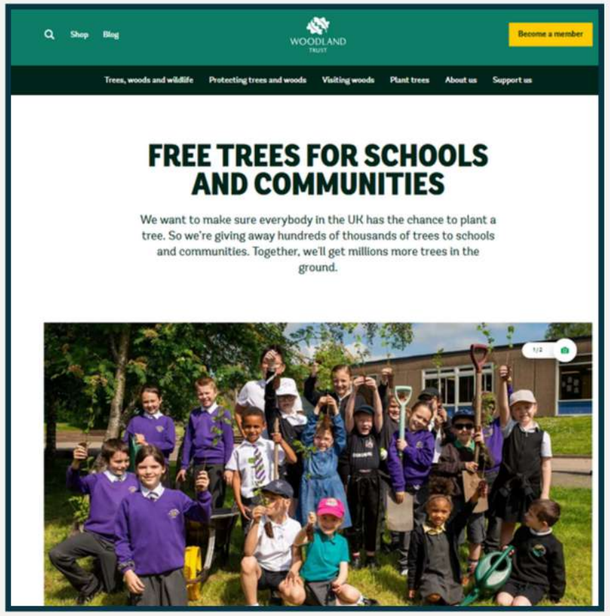
Severn Woodlands: Annual Severn Rivers Trust Project

- Planting 25 hectares per year
- All costs covered upfront and projects managed by us.
- Landowner maintenance payments
- Funded by the Environment Agency (up to 2025/6)
- Seeking further private funding for carbon off-setting.

- Contact Jacob.loughran@severnriverstrust.com



- Countryside Stewardship (Mid & High Tier)
- EWCO - England Woodland Creation Offer
- Paid rates for tree planting and woodland creation
- Lucrative if in priority areas
- Funded by reimbursement
- EWCO: On spaces over 1 hectare



Woodland Trust: Free trees annually

- Schools and communities can apply
- Packs for hedging, wild wood or even fuel wood.
- Taking applications now for November 2025 delivery

Intercepting and attenuating (Creating more storage)





Intercepting and attenuating (Creating more storage)







- Embankments on the field edge built 30 years ago, separating the brook from its floodplain.
- 2024: Flood water overflow installed to take off a portion of the high flows only, designed to periodically flood out the entire field (1 hectare)
- Now a year round wetland habitat (ponds, shallow scrapes, floodplain meadow wildflowers), with the potential for storm water storage above Tenbury Wells
- Still work to go! Phase 2 to enhance the water capture in the field coming this summer.

Intercepting and attenuating (Capturing surface run-off)





- Capturing surface water runoff from the gently sloping field with a 310 m trench/swale running paralell to the Kyre Brook (tree line)
- Field is in a grassland/arable rotation. When the field rotates into crops, this feature will capture soil eroding from the field before it enters the brook, with the possibility to periodically dig out and re-spread the soil.
- **Hedge planted on top for good measure!**

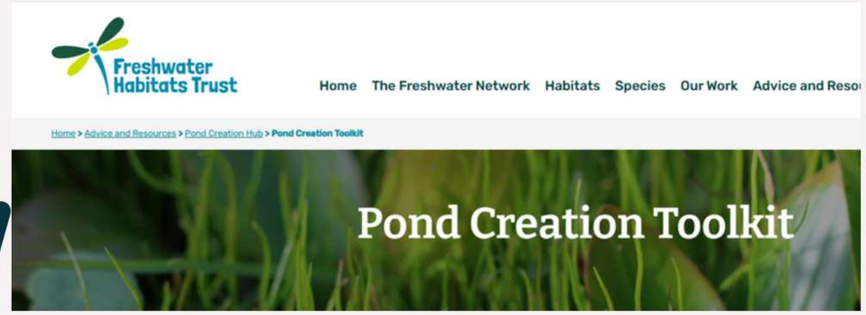
Intercepting and attenuating (Home/garden scale)



Garden Ponds

- Low laying, seasonally wet areas are perfect (look for rushes)
- Intercepting surface flows/springs
- Even seasonally dry ponds are great habitat!

https://freshwaterhabitats.org.uk/advice-resources/pond-creation-hub/pond-creation-toolkit/





Water butts

- Rainwater harvesting from roof & Guttering
- Slow release to be empty before heavy rains
- Use on the garden when in a dry spell

Restore a Ghost Pond!



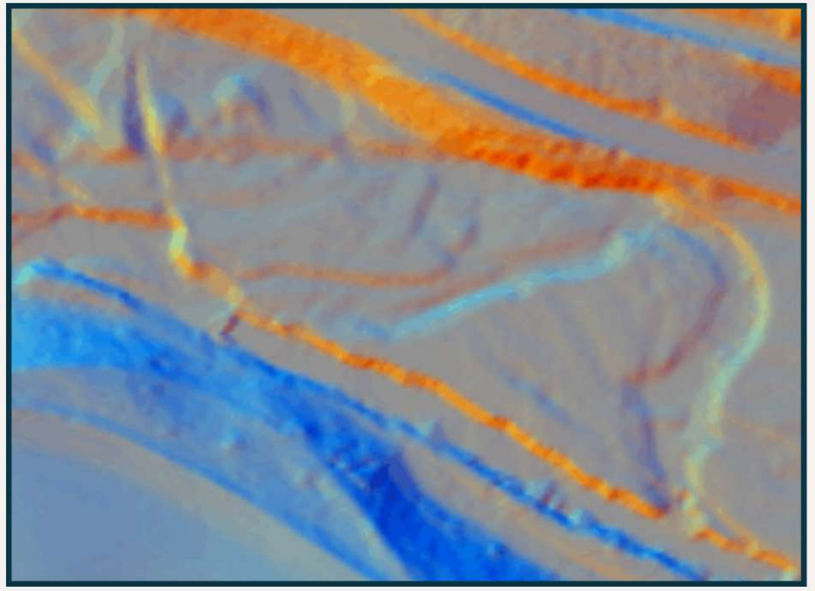
In-channel Features (Large Scale / Floodplain Reconnection)



Re-meandering on the River Onny (2024)

- Restoring partial flow to a palaeochannel
- Accesses historic gravels still present in the floodplain
- Can be due to natural movement or artificial straightening
- Often visible when studying old maps or topographical data
- Data publicly available: National Library of Scotland

Publicly available LiDAR



Side by side georeferenced maps: National Library of Scotland

In-channel Features (Large Woody Structures / Beavers!?)









- Ecosystem Engineers: Beavers released March 2025
- Create wetlands, influence hydrology with dams
- Cascading benefits for many animal species
- Holding water back!
- CEG visit to Forest of Dean - did they see them?

Follow us to see how ours do with engineering the landscape in their 6 hectare enclosure
https://www.instagram.com/severnrivers/

In-channel Features (Medium > Small Scale)



Chop and Drop (Warwickshire Avon)





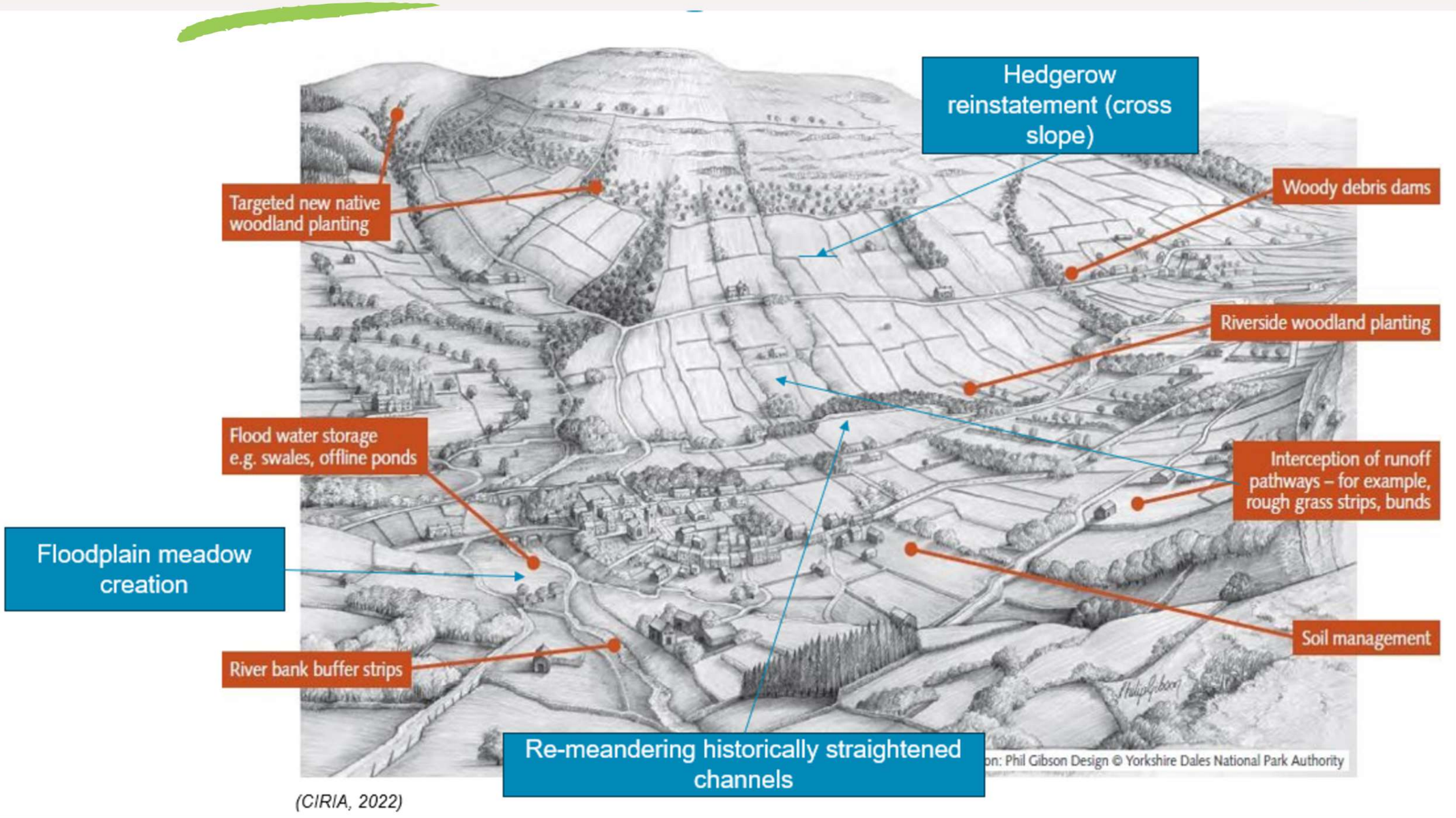


Leaky Barriers: Barrow Hill Nature Reserve (Dudley)

Built by volunteers (2023)

NFM Techniques: An Example Catchment

(Again)



(CIRIA, 2022)

Community Engagement Team



Volunteers & Citizen Science

We involve volunteers in monitoring water quality across the catchment using up-to-date testing methods. This helps us pinpoint pollution sources to take targeted action to improve river health.



Educating Children

We deliver fun, practical activities in schools and family events to inspire the next generation of river guardians.



Local Community & Business Partnerships

We work with local businesses and communities to foster pride and support river restoration through events and sponsorship at a large scale.

The River Schools Project



Connecting Children to Their Local Rivers

So far, we've engaged over 4,000 children through this project, teaching them about river health, plastic pollution and the importance of respecting their local rivers. We run assemblies, workshops and riverside visits.



Managing Water and Reducing Surface Water

Children have helped build ponds and rain gardens that capture water from school rooftops. These natural solutions boost biodiversity and help manage surface water.

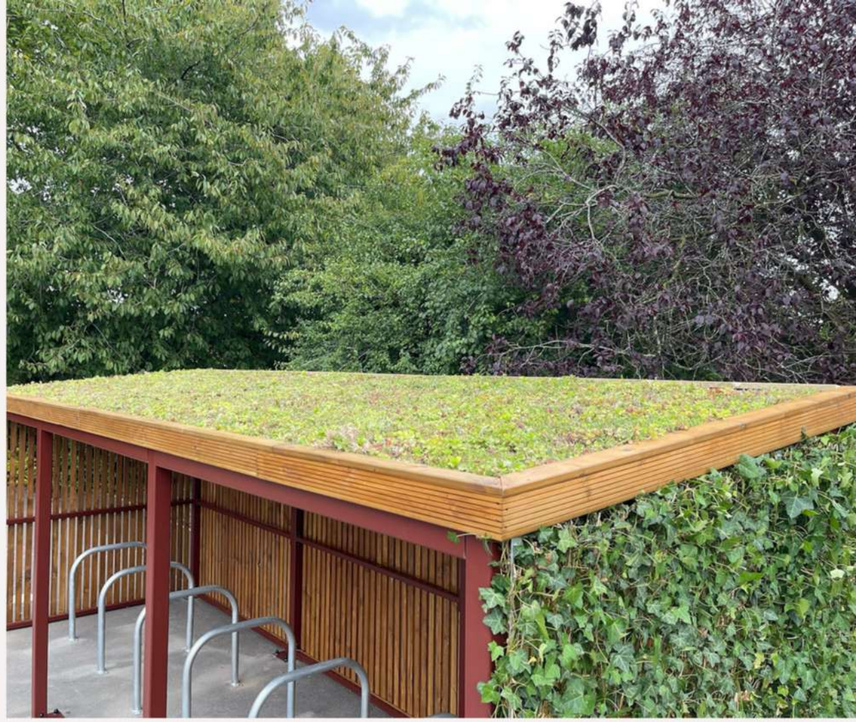


Creating Green Spaces at Schools

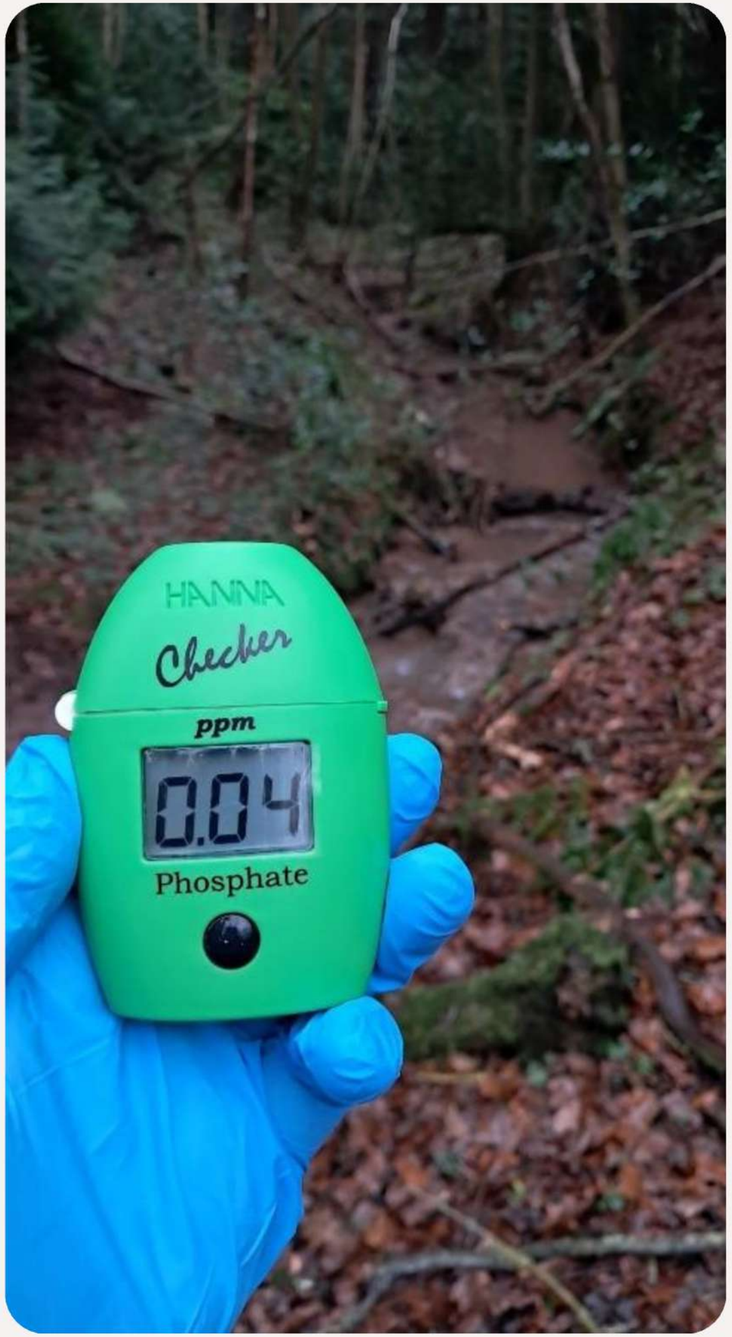
We've planted over 1,000 trees and installed green roof bike shelters and reading shelters. More schools in the Tenbury area are joining the project this September.











Citizen Science

Introducing our citizen science efforts

Putting the power to monitor rivers in local hands:

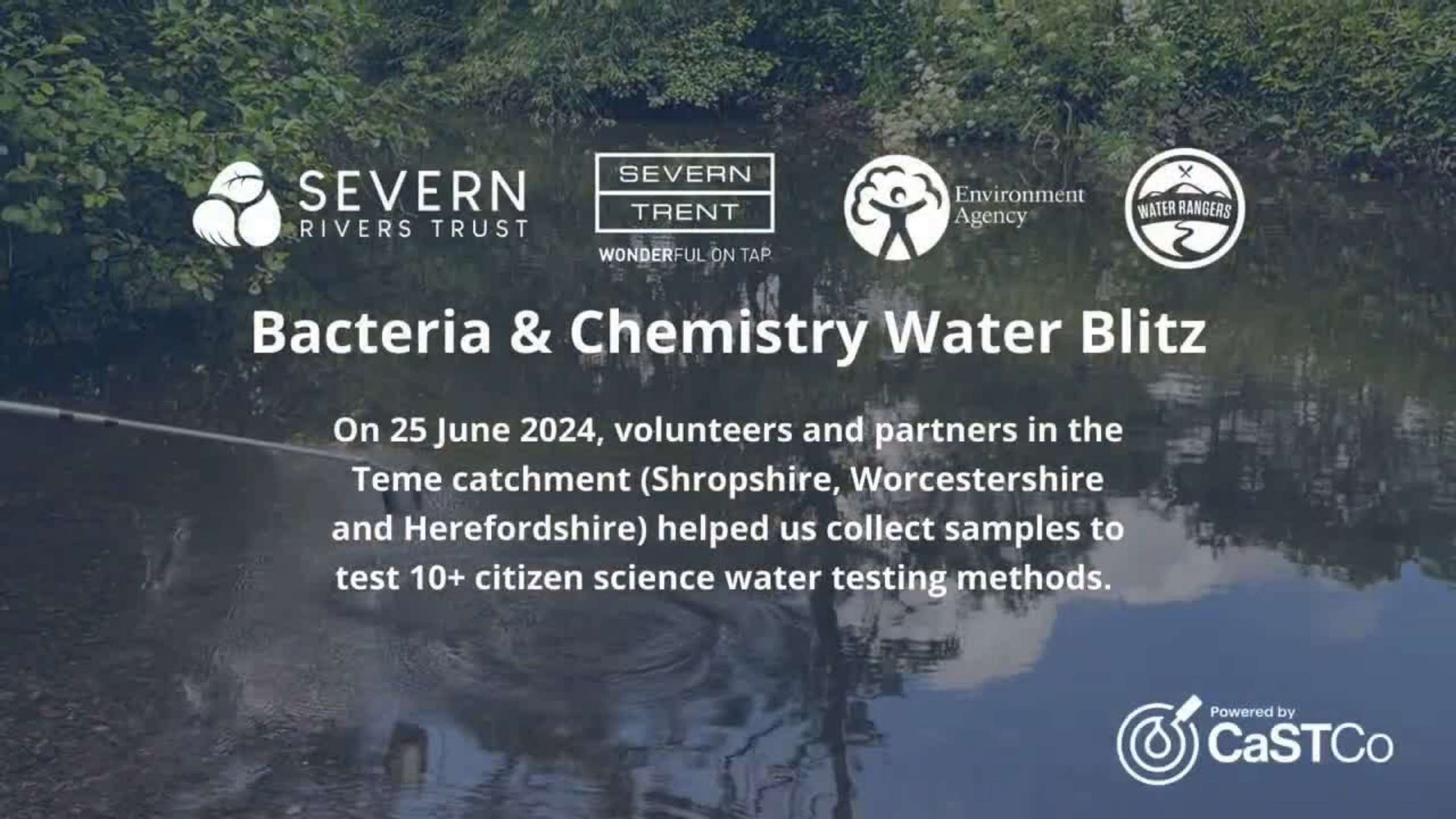
Across the Severn region, volunteers are helping us gather vital data on water quality. By using up-to-date testing methods, we're able to pinpoint sources of pollution more accurately. Their insights feed directly into our work and support healthier, more resilient rivers.

Spotlight: Bacteria testing in the Teme

→ Volunteers co-designed and trialled over 10 bacteria and testing methods.

→ "Water Blitz" days gathered large-scale data in a single day across 3 counties.

→ Findings support the region's first designated bathing water site on the Teme.



Bacteria & Chemistry Water Blitz

On 25 June 2024, volunteers and partners in the Teme catchment (Shropshire, Worcestershire and Herefordshire) helped us collect samples to test 10+ citizen science water testing methods.

Powered by CaSTCo

Help Shape the Future of the Severn

Interested in what you heard from us today? Whether you'd like to get involved, learn more or simply keep in touch, contact us to discuss how we can work together for the good of the Severn.

For more information :

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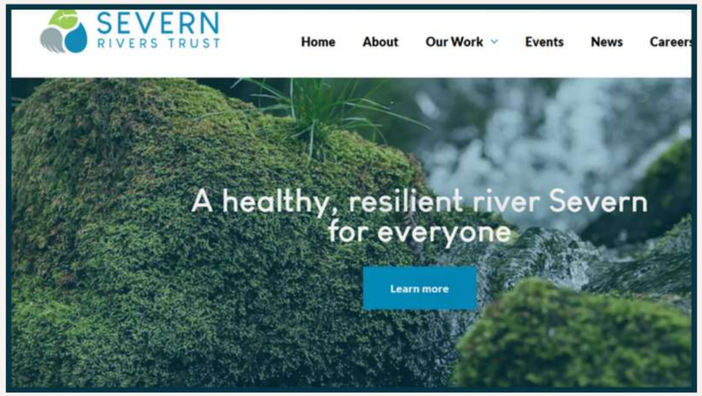
www.severnriverstrust.com

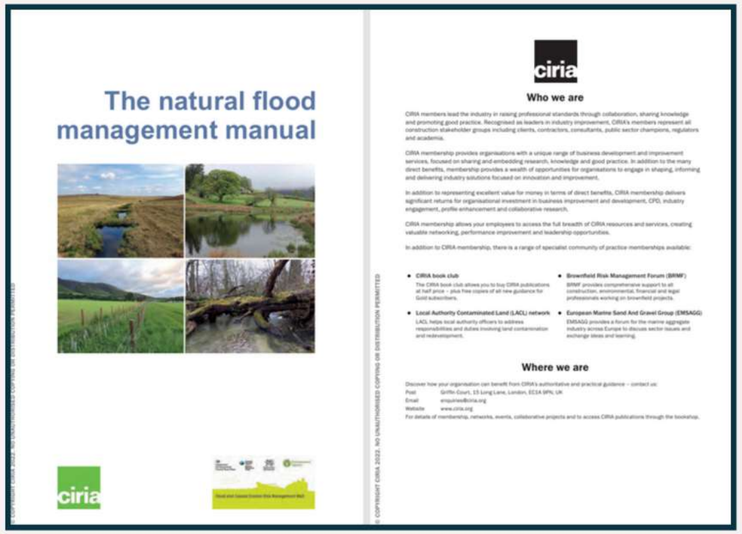


Resources (i)

Severn Rivers Trust - https://www.severnriverstrust.com/



CIRIA - Natural Flood Management Manual



lhttps://www.ciria.org/ItemDetail?iProductCode=C802Fl

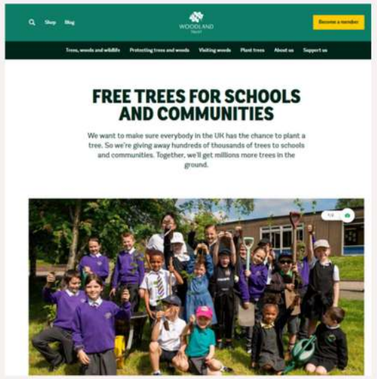
Herefordshire Meadows - Free resources



https://www.herefordshiremeadows.org.uk/resources/meadow-restoration/

CaSTCo: Science Database - https://castco.org/





Free Trees for Schools and Communities - Woodland Trust

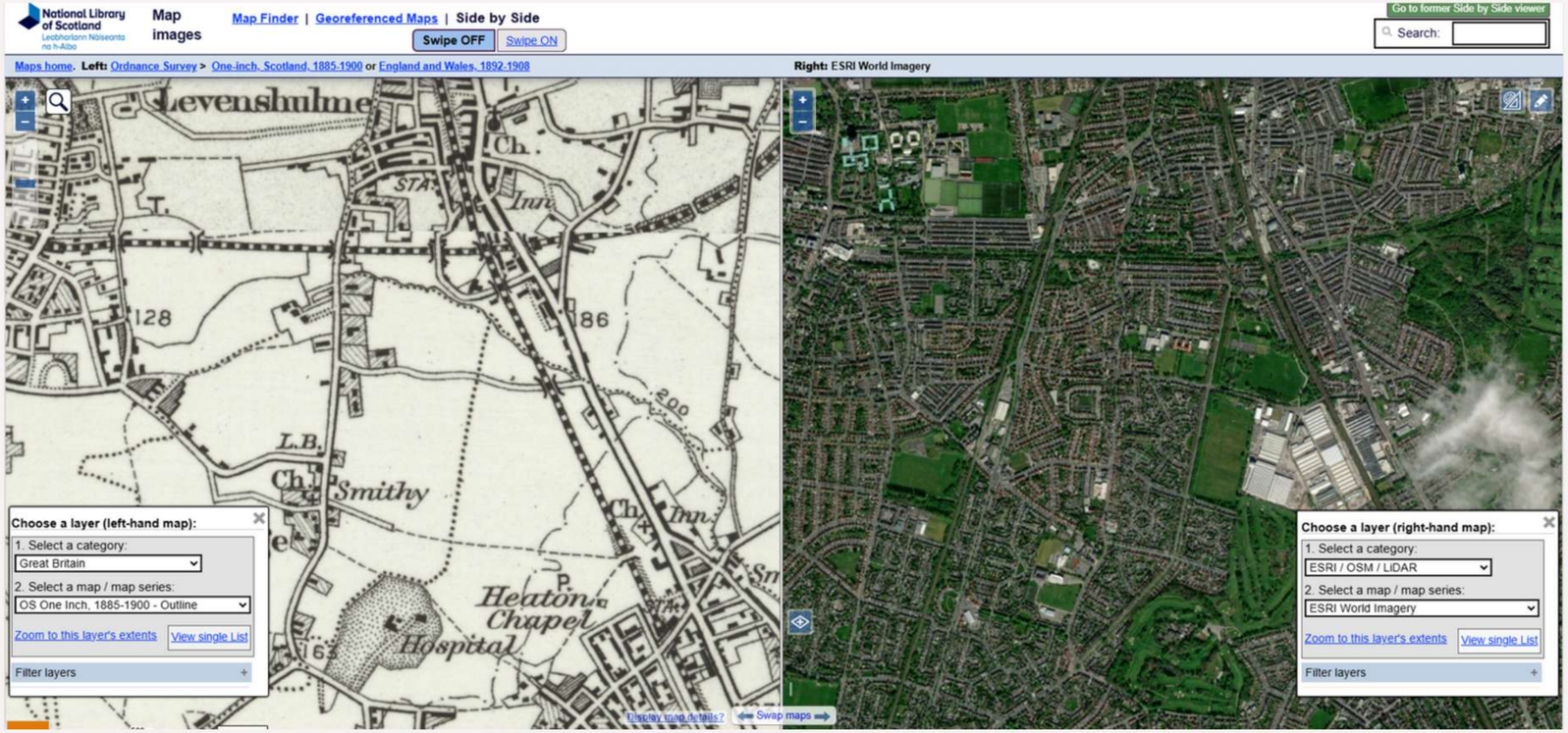
https://www.woodlandtrust.org.uk/plant-trees/schools-and-communities/

https://freshwaterhabitats.org.uk/advice-resources/pond-creation-hub/pond-creation-toolkit/



Resources (ii)

National Library of Scotland - Side by Side Maps



https://maps.nls.uk/geo/explore/side-by-side

Any Questions?



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Holt Fish Pass











Bevere Fish Pass











UNLOCKING THE SEVERN

