

# Harmonising with Nature: Exploring Nature-Based Solutions in Water Management



**LIFE IP CleanEST : International Conference – 26<sup>th</sup> October 2023**

# The Rivers Trust

We are the umbrella body for a movement of 65 Member Trusts, operating in the UK and Ireland.

Each Member Trust carries out work in their catchment to help improve local river health.



# The Rivers Trust



# The Rivers Trust Movement in 2022-23



Completed  
**14**  
SUDS projects



Delivered  
**496**  
river cleans



Erased, passed,  
or removed  
**105**  
fish barriers



Worked with  
**4,478**  
farmers



Opened up  
**1,329**  
kilometres of river  
for fish passage



Created or restored  
**619**  
hectares of wetlands



Planted  
**340,623**  
trees



Inspired  
**26,326**  
school children



Installed  
**904**  
natural flood  
management measures

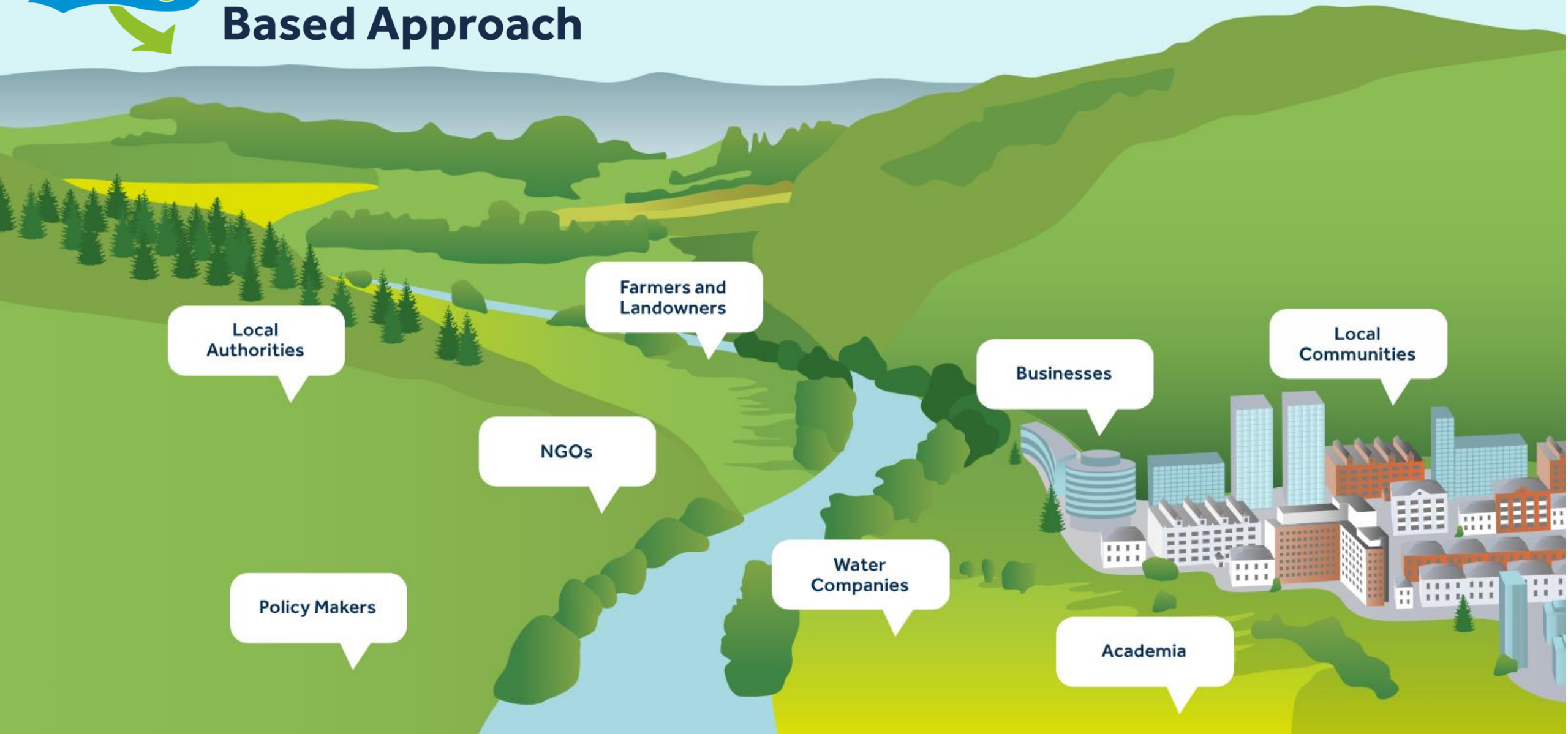


Engaged with  
**21,443**  
volunteers





# Catchment Based Approach



For thriving rivers and communities





# Catchment Based Approach

- Each catchment has a **Catchment Partnership**
- Gives us access to local knowledge and expertise
- Helps us manage land and water strategically, in a way that considers the whole catchment



# Nature-based Solutions at The Rivers Trust



For thriving rivers and communities



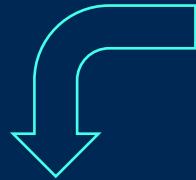
# How do we deliver NbS?



- The NbS deliver improved ecosystem services. Usually delivered by a third party.
- Improve water and air quality, flood management, biodiversity and carbon sequestration.



**Nature-based Solutions**



**Beneficiaries (Buyers)**



**Landowners (Sellers)**



- If the environmental benefits can be quantified and verified, they will have commercial value.
- Organisation who benefit from these outcomes will pay landowners for hosting and maintaining NbS.

- Landowners are required to make land use changes to host NbS.
- Without land to build NbS, delivery is impossible.

# Replenish - Volumetric Water Benefit Accounting



## Volumetric Water Benefit Accounting:

A methodology used to quantify the volumetric benefits from water stewardship activities relative to a unit of time.

## Water Stewardship:

*“The use of water that is socially and culturally equitable, environmentally sustainable and economically beneficial.”*

*Achieved through a stakeholder-inclusive process that includes both site- and catchment-based actions.”* – (Alliance for Water Stewardship)

**The Rivers Trust has developed a tool to quantify the benefits of a range of projects:**

[The Rivers Trust - Replenish](#)



## VOLUMETRIC WATER BENEFIT ACCOUNTING (VWBA): A METHOD FOR IMPLEMENTING AND VALUING WATER STEWARDSHIP ACTIVITIES

PAUL REIG, WENDY LARSON, SAMUEL VIONNET, AND JEAN-BAPTISTE BAYART

### EXECUTIVE SUMMARY

#### Highlights

- Volumetric water benefits (VWBs) are the volume of water resulting from water stewardship activities, relative to a unit of time, that modify the hydrology in a beneficial way and/or help reduce shared water challenges, improve water stewardship outcomes, and meet the targets of Sustainable Development Goal 6.
- Volumetric water benefit accounting (VWBA) provides corporate water stewardship practitioners with a standardized approach and set of indicators to quantify and communicate the volumetric water benefits, complementary indicators to measure nonvolumetric outputs, and elements of effective water stewardship activities that increase the likelihood of generating social, economic, and environmental benefits and solving shared water challenges.
- The method we propose includes recommended indicators and calculation methods for each water stewardship activity, communication guidelines, and a three-step process for implementation: (1) identify shared water challenges and understand local context; (2) define water stewardship project activities and partners; and (3) gather data and calculate volumetric water benefits.
- The limitations of VWBA include the lack of calculation methods for sanitation and hygiene, agrochemical management, and in-stream channel rehabilitation activities, as well as the need for additional assurance to guarantee the associated social, economic, and environmental benefits.

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Working Papers contain preliminary research, analysis, findings, and recommendations. They are circulated to stimulate timely discussion and critical feedback, and to influence ongoing debate on emerging issues. Working papers may eventually be published in another form and their content may be revised.

**Suggested Citation:** Reig, P., W. Larson, S. Vionnet, and J.B. Bayart. 2019. "Volumetric Water Benefit Accounting (VWBA): A Method for Implementing and Valuing Water Stewardship Activities." Working Paper. Washington, DC: World Resources Institute. Available online at [www.wri.org/publications/volumetric-water-benefit-accounting](http://www.wri.org/publications/volumetric-water-benefit-accounting).





# Replenish – Nature-Based Solutions

- 1. Offline systems for water storage**
  - Volume Stored
- 2. Offline systems for water quality**
  - Volume Treated
- 3. Online systems for water quality**
  - Volume Treated
- 4. Land use change**
  - Reduced Runoff
- 5. Peat restoration**
  - Volume Stored
- 6. Floodplain increase and restoration**
  - Increased Recharge
- 7. Leaky woody debris dams**
  - Volume Stored



# REPLENISHING NATURE

MAKING IT SIMPLE FOR BUSINESSES TO INVEST IN WATER

**WATER REPLENISHED:  
4,725,090M3 PER YEAR\***

Britvic & Aire Rivers Trust  
Wetland restoration and habitat improvement



Sainsbury's & Wyre Rivers Trust  
Supporting catchment scale natural  
flood risk management

Coca-Cola & South East Rivers Trust  
Intercepting road runoff and creating  
wetlands



Amazon Web Services  
Creation of two rural wetlands



Coca-Cola & Northumberland Rivers Trust  
9000 trees planted and 21 small wetlands  
created

Coca-Cola & Calder and Colne Rivers Trust  
Wetland restoration and catchment resilience

Britvic & Thames 21  
Wetland and river restoration



Coca-Cola & Norfolk Rivers Trust  
Water sensitive farm advice, wetland creation and  
land management

ASDA & Norfolk Rivers Trust  
Wetland creation

Coca-Cola & Thames21  
Creation of five urban wetlands



Coca-Cola & Kent Wildlife Trust  
Ancient fenland and peat restoration and habitat enhancement







# Wyre Catchment NFM

## Investment readiness project



Working in partnership with



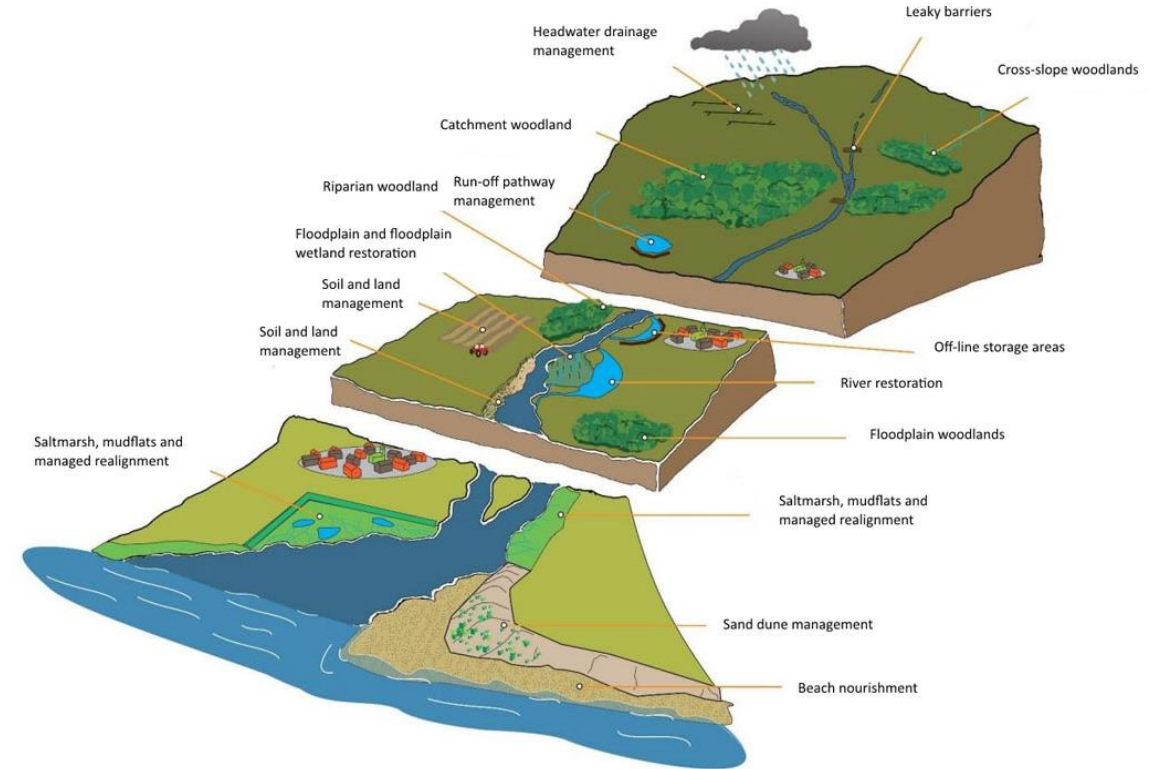


# Natural Flood Management

*"Natural Flood Management (NFM) to reduce flood and coastal erosion risk involves implementing measures that help to protect, restore and emulate the **natural functions** of catchments, floodplains, rivers and the coast."*

NFM aims to slow the flow and reduce flood peaks by:

1. Increasing storage
2. Increasing catchment and channel roughness
3. Increasing losses
4. Delaying peak flows from tributaries

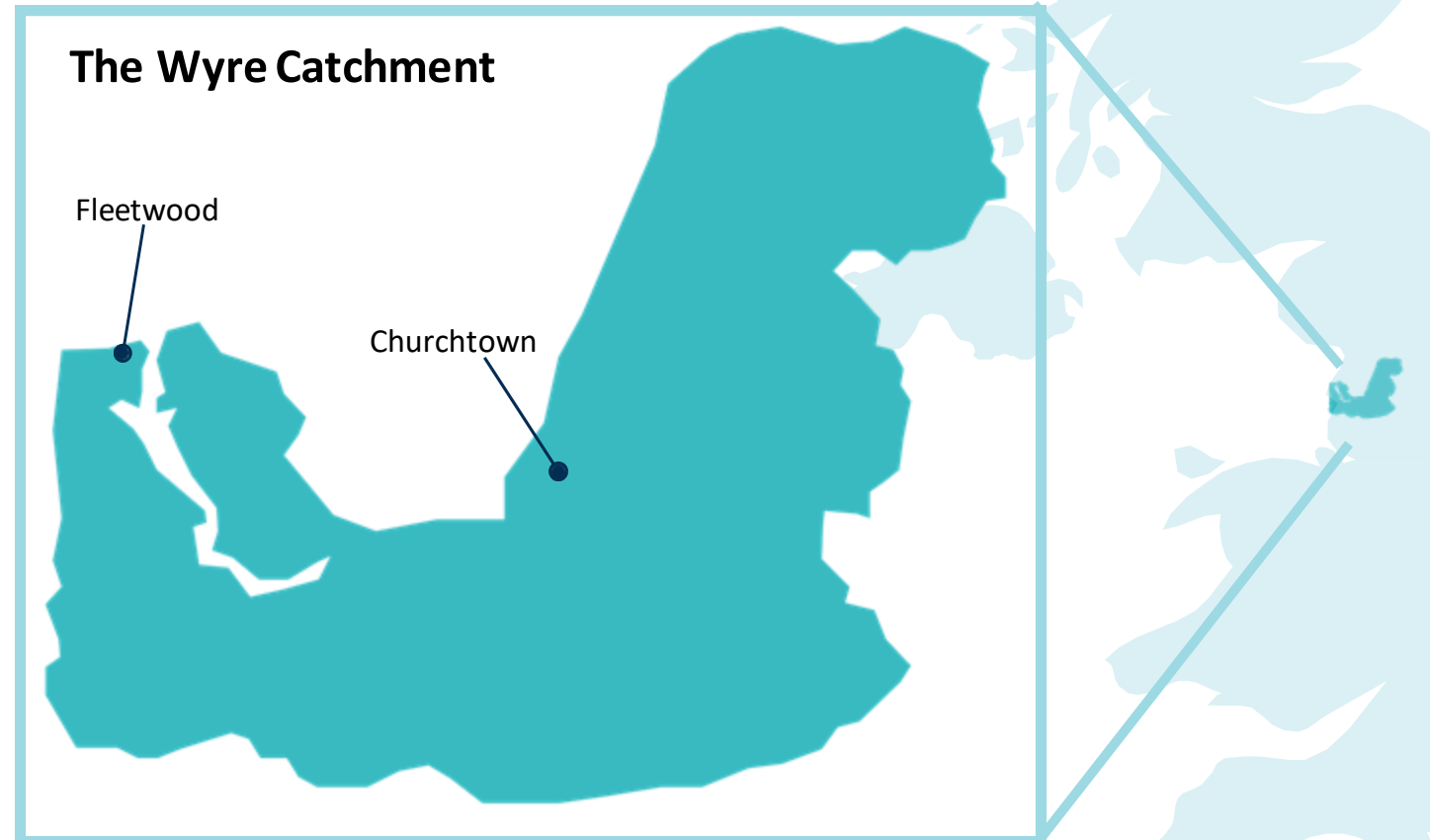


# The Wyre Catchment



Communities in the Wyre Catchment such as Churchtown have experienced a **1 in 50-year flood event four times in the last 20 years** with a devastating impact on the local community.

The **economic cost** alone to insurers alone of a 1 in 50-year flood is **£1.96m**.



# The interventions

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**70 ha** NFM features

**40 ha** Woodland creation

**1710** Leaky dams

**42** Ponds and scrapes

**10 km** New hedgerows









**WYRE RIVERS TRUST**  
"from Bowland to Bay"







**WYRE RIVERS TRUST**  
"from Bowland to Bay"





# Wyre NFM



**FLOODRE**

**Sainsbury's**



- 10 Farms
- 70 Hectares



# Replenish and Sainsbury's



Sainsbury's are aiming to become **water neutral** by **2040**. This includes piloting the **VWBA** methodology (**Replenish**) to help achieve this.

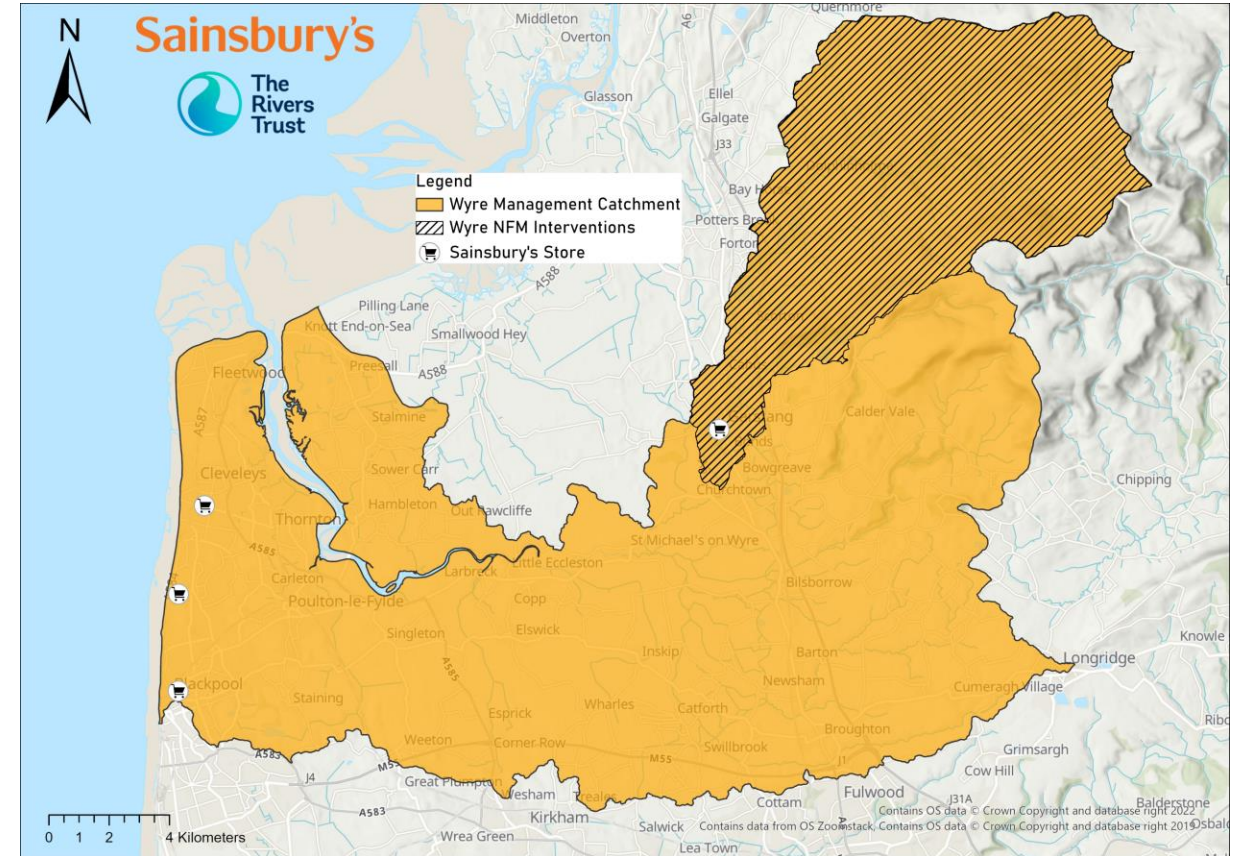
The Wyre NFM Replenish volumes are relevant to 4 stores in the Wyre Management Catchment.

## Interventions must be addressing a shared water challenge in the catchment

- Wyre NFM - Extreme weather events – Flood Risk

Others could be:

- Water Quality
- Water Quantity
- Water Governance
- Important water related ecosystems





# North London Wetlands

London suffers from issues with water quality:

- Raw Sewage – discharging into the river
- Road runoff – Oils, metals other pollutants

Thames 21 have been establishing wetlands in North London to help tackle this.



Credit: Taking the Pixels



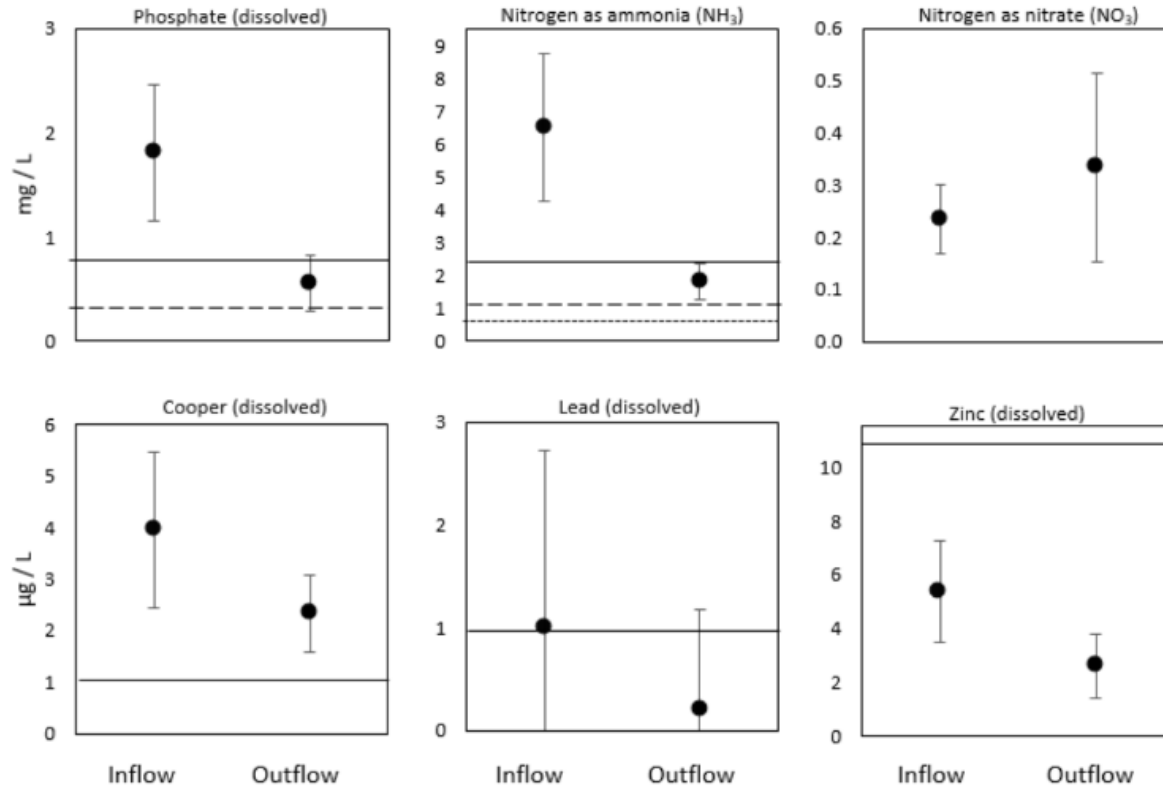
# Broomfield Park Wetlands



**The wetlands in Broomfield Park are connected to a surface water drain with a catchment of 34 ha.**

- Two treatment cells designed to improve water quality
- Reducing flood risk
- Biodiversity improvement
- Amenity value – access to green space

# Broomfield Park Wetlands



**Figure 4:** Mean ( $\pm$  SE) concentrations from the inflow and outflow of Broomfield Park wetlands from 5 paired water samples. Horizontal lines represent threshold standards in water quality from the WFD (nutrients (mg / L), top row) and annual average environmental quality standards (EQS, metals ( $\mu$ g /L), bottom row), simplified as poor (continuous line), moderate (dashed line), good (dotted line). Lead and zinc values at the outfall were below the analytical limit of detection on two occasions so minimum removal for these metals is represented, rather than actual removal.

**Monitoring of the inflow and outflow of the Broomfield Park wetlands has evidenced an improvement in water quality standards**

## Nutrients:

- Phosphate and ammonia: **Poor to Moderate**
- Nitrogen: increase through ammonia nitrification

## Heavy Metals:

- All tested had reduced in concentration
- Minimum removal is presented because lead and zinc were below limit of detection



# Broomfield Park Wetlands



For thriving rivers and communities





# Broomfield Park Wetlands

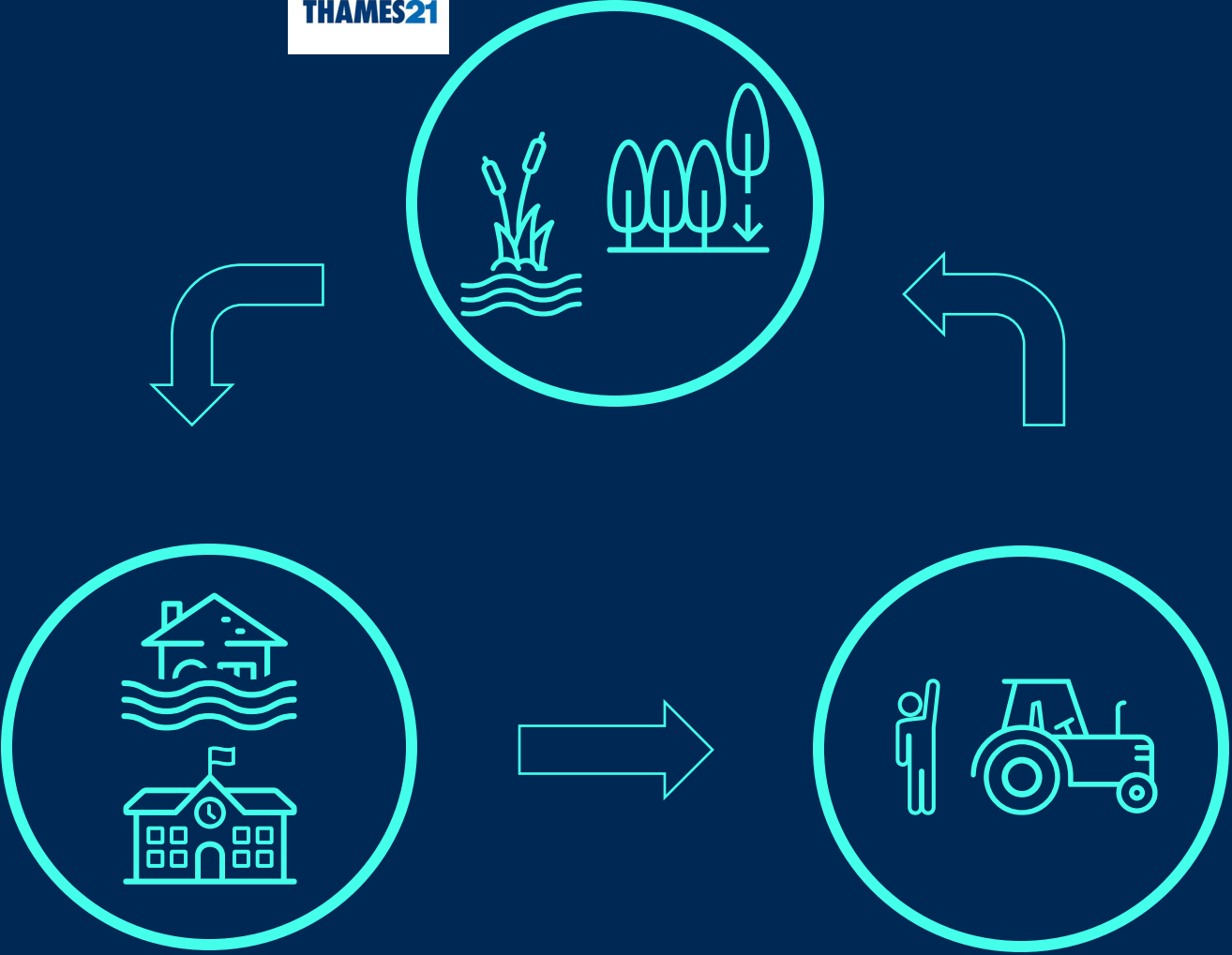


**This was delivered through partnership between:**

- **Thames21**
- **The Rivers Trust**
- **Enfield Council**
- **The Coca-Cola Foundation**



# North London Wetlands



Tyne Rivers Trust 

1. **South Tyne Sediments**



2. **Eden Catchment Market**



3. **Resilient Glenderamackin**



4. **Tees Riverbank**



5. **Ecological Regeneration in Lancashire**



6. **Freshwater Biodiversity Investment**



7. **London Riverbank (T21)**



8. **River Beult Catchment Resilience**





# Aitäh!

Thank you!