

Natural Course: Leading the way for Natural Flood Management in the UK

LIFE GoodWater IP international conference on “Nature-based solutions for improvement of water quality and river basin management”

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Natural Course: an introduction

A collaboration of public, private and third sector organisations working together to help to deliver real **improvements to rivers and the water environment across North West England.**

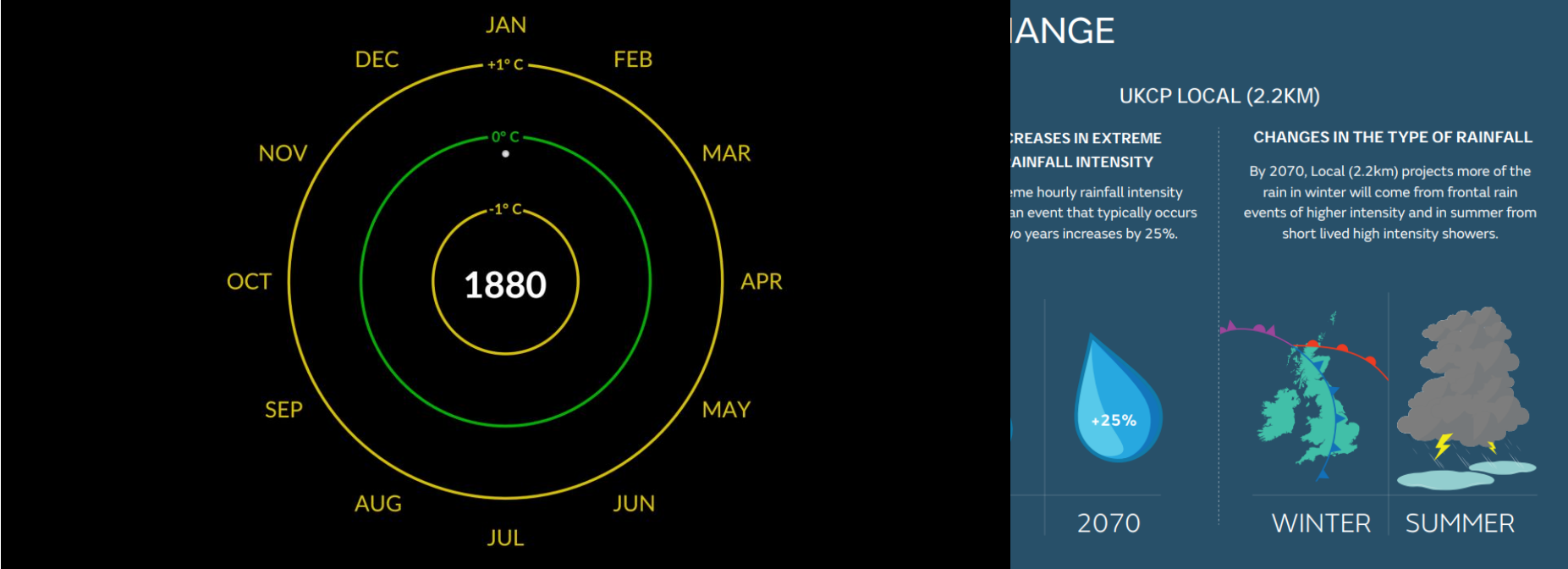


As a part EU-funded project, Natural Course is designing projects to better understand and **overcome some of the biggest barriers preventing the achievement of 'good ecological status'** under the EU Water Framework Directive in the North West River Basin District.

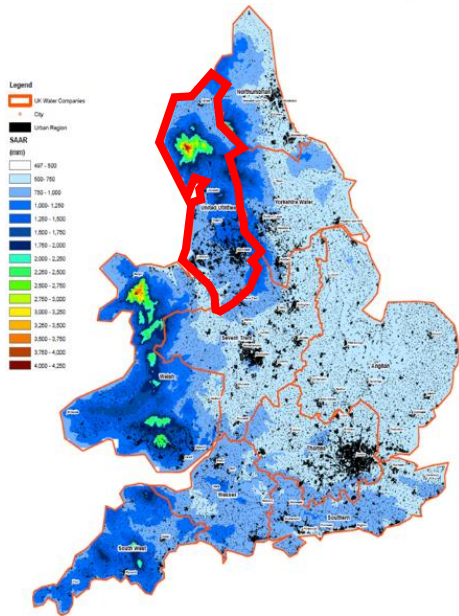
Natural Course is **building capacity** and trialling **new, innovative ways of working**. Our projects are highly scalable and transferable, enabling us to better influence policy.



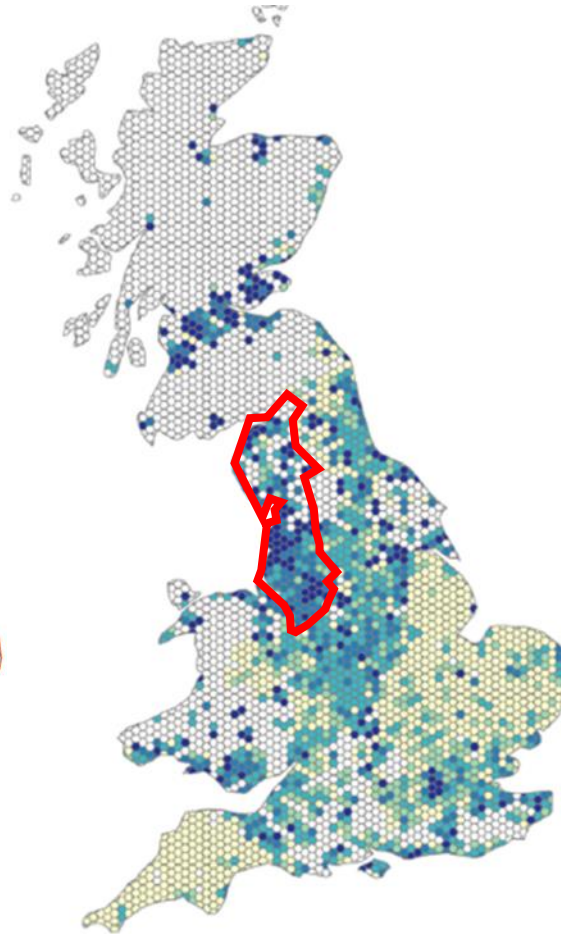
Drivers – Climate Change



Climate Change: The North West



Map showing standard average annual rainfall
(darker blue/green = higher rainfall)



Map showing sewerage network stress
(darker = more stressed).

21% more combined sewers than the industry average and **40% more overflows** than the industry average.



21st Century Drainage Study, reported the **North West sewerage capacity is significantly more stressed** than other parts of the UK.



Rainfall is higher in the West of England & Wales. **The North West receives 17% more rainfall than the industry average.**



These factors collectively mean United Utilities is exposed to changes which **pressurise hydraulic capacity.**

Moving away from the traditional approach

Didsbury flooding: River Mersey bursts its banks

🕒 6 February

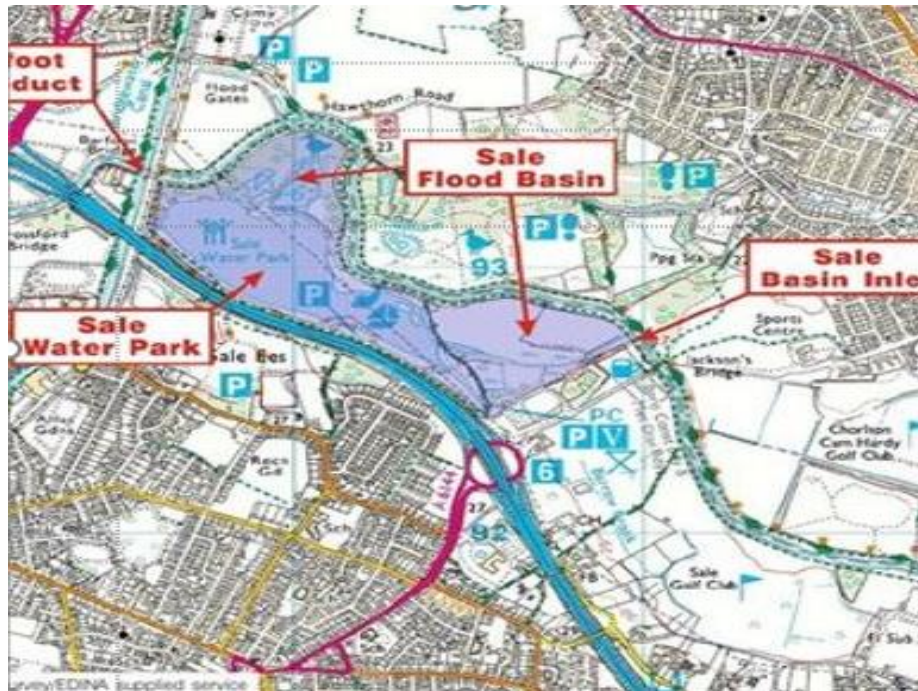


Didsbury flooding: River Mersey 'centimetres' from breaching defences

🕒 21 January 2021



Moving away from the traditional approach



Moving away from the traditional approach



Moving away from the traditional approach



Building an Evidence Base

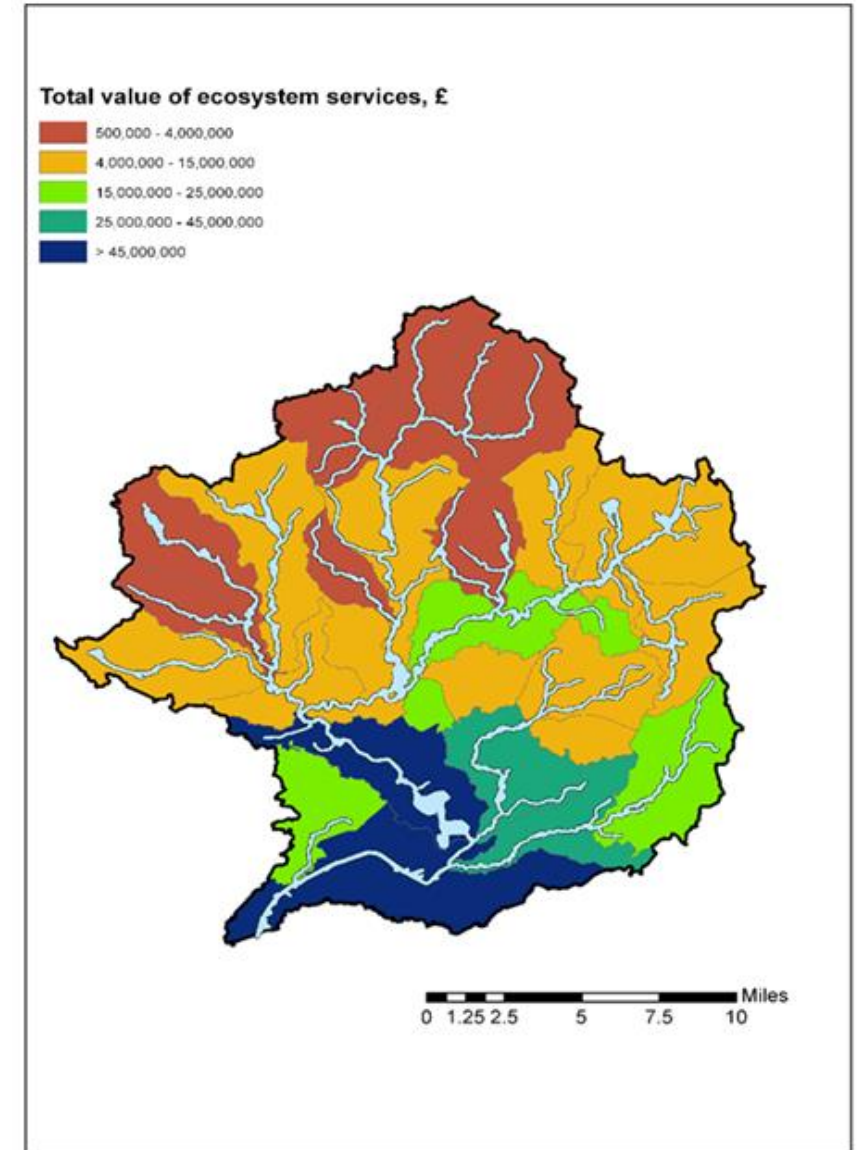
Natural Capital and Ecosystem Services Opportunity Mapping in the River Irwell Catchment

The natural environment alongside the waterbodies has an existing **natural capital value of £418 million** per year.

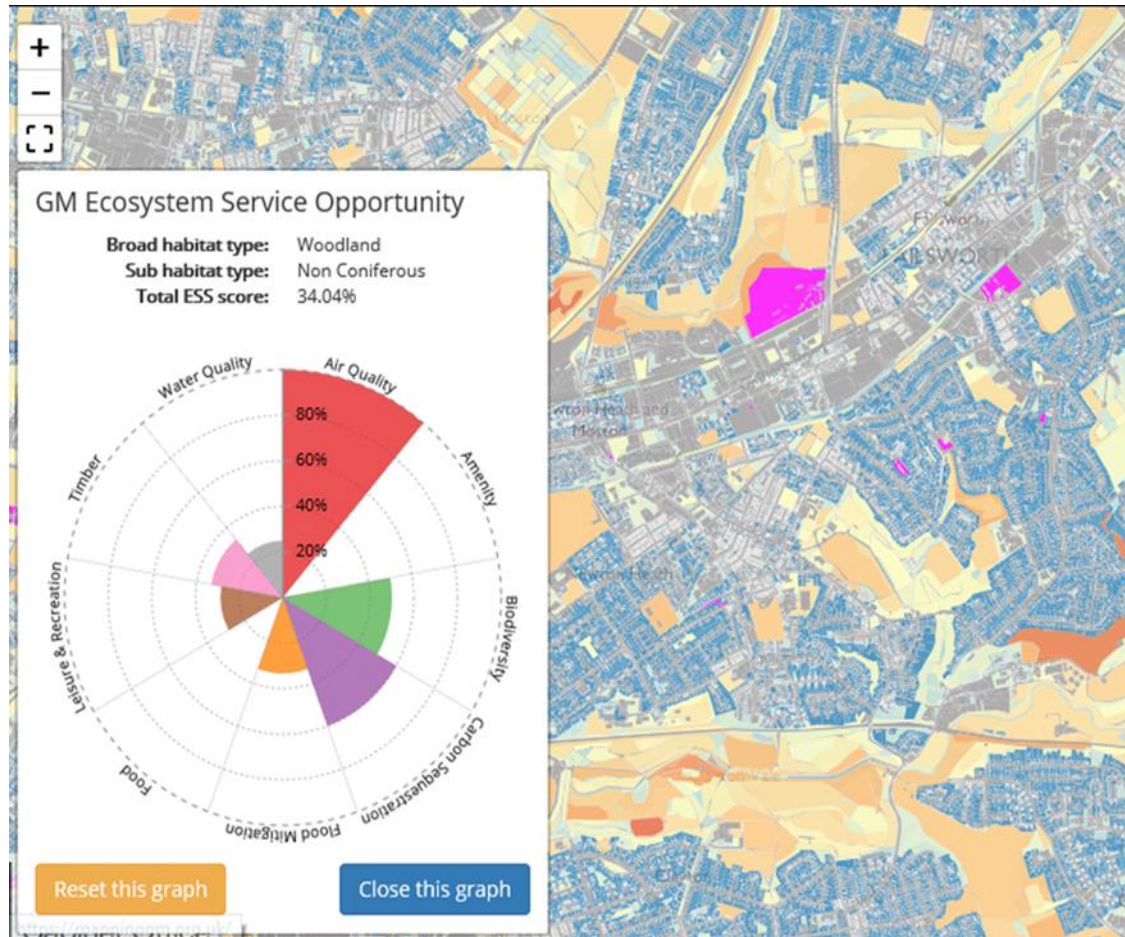
The **natural capital value arises from ecosystem services which flow to society**.

Values of £105 per annum/per head arise from the combined **physical and mental health benefits** associated with use and enjoyment of waterbodies and associated greenspaces.

The study area also provides ecosystem services with **significant values in water quality, water resources, amenity, flood risk mitigation and carbon sequestration**.



Understanding Ecosystem Services and Natural Capital Value



Extract from Ecosystem Services Opportunity Mapping
for Greater Manchester

Opportunity maps were created for:

- ✓ Water quality;
- ✓ Flood risk mitigation;
- ✓ Leisure and recreation;
- ✓ Amenity;
- ✓ Biodiversity and ecological networks;
- ✓ Carbon sequestration; and
- ✓ Air quality.

ESS opportunity arises where there is a combination of **feasibility** and **need**.

Feasibility

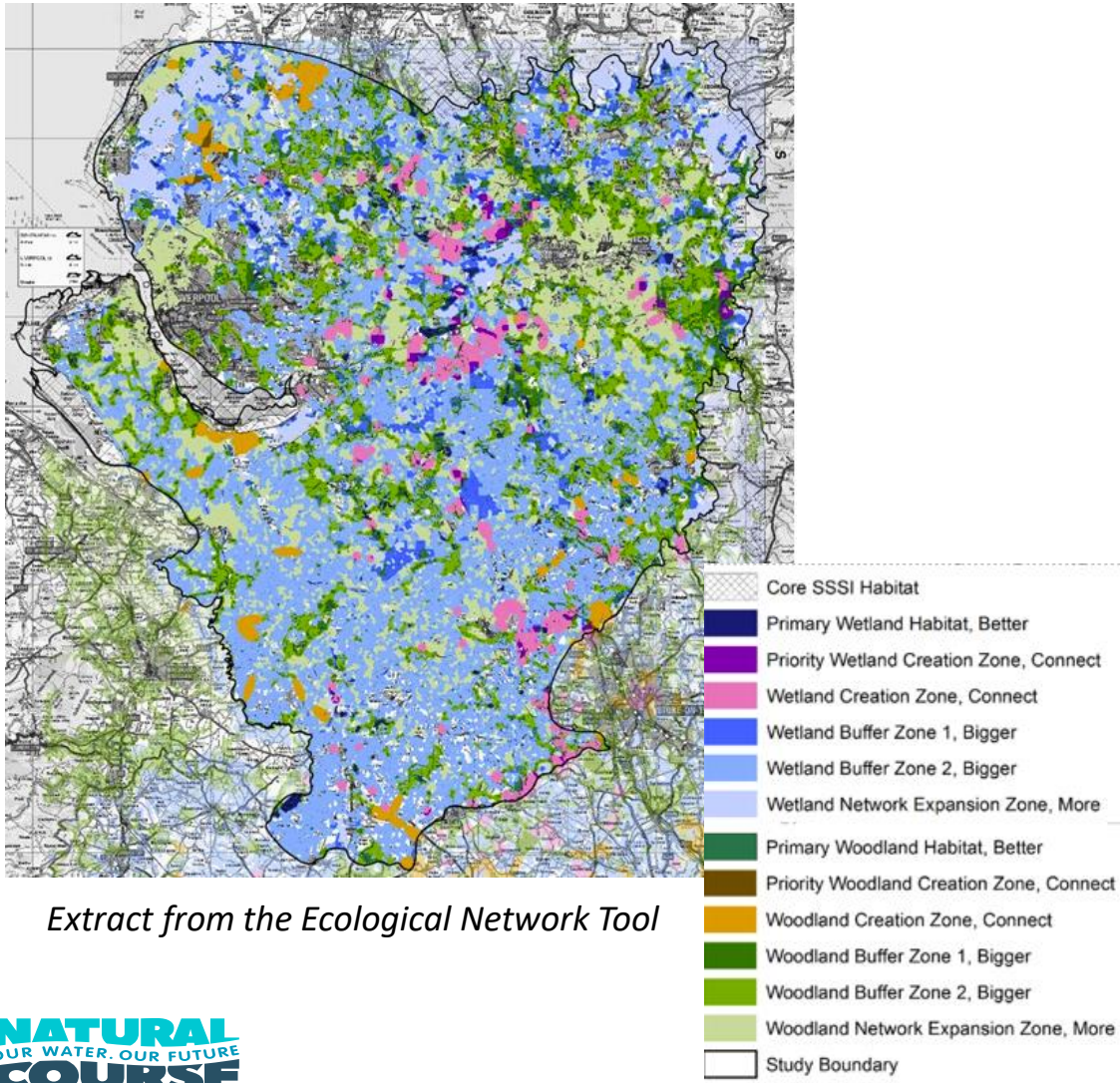
Some land uses are unlikely to be capable of significant change to improve ecological functioning e.g. road surfaces, cemeteries, private residences. These are ruled out of opportunity assessment.

Need

Some land uses are already in optimal ecological condition for the ESS in question e.g. woodlands cannot be bettered in respect of ESS such as carbon sequestration.



Understanding Ecosystem Services and Natural Capital Value



Historic habitat loss means that across the North West we have limited natural wetland and woodlands, **and ecological networks are significantly fragmented**, which can disrupt species dispersal and ecological function



Through the spatial modelling a variety of data including soil conditions, habitat connectivity and species dispersal, the tool **reveals priority areas for habitat creation and restoration.**



Small-scale water management solutions in the urban environment

Roadside rain garden at Dales Brow, Swinton, Greater Manchester: the problem and the solution



Surface Water Flooding



Main swale and flow control feature, showing wetland planting and boulders placed to remove energy from circulating flows.

Small-scale water management solutions in the urban environment

SuDS enabled street trees along Prestwich High St, Bury, Greater Manchester



Slowing the flow in peri-urban & rural areas

Up-stream slow the flow measures at the Smithills Estate, Bolton, Greater Manchester.



Nature-based solutions to deliver water quality and quantity benefits

Hillylaid constructed wetland, Thornton, Lancashire



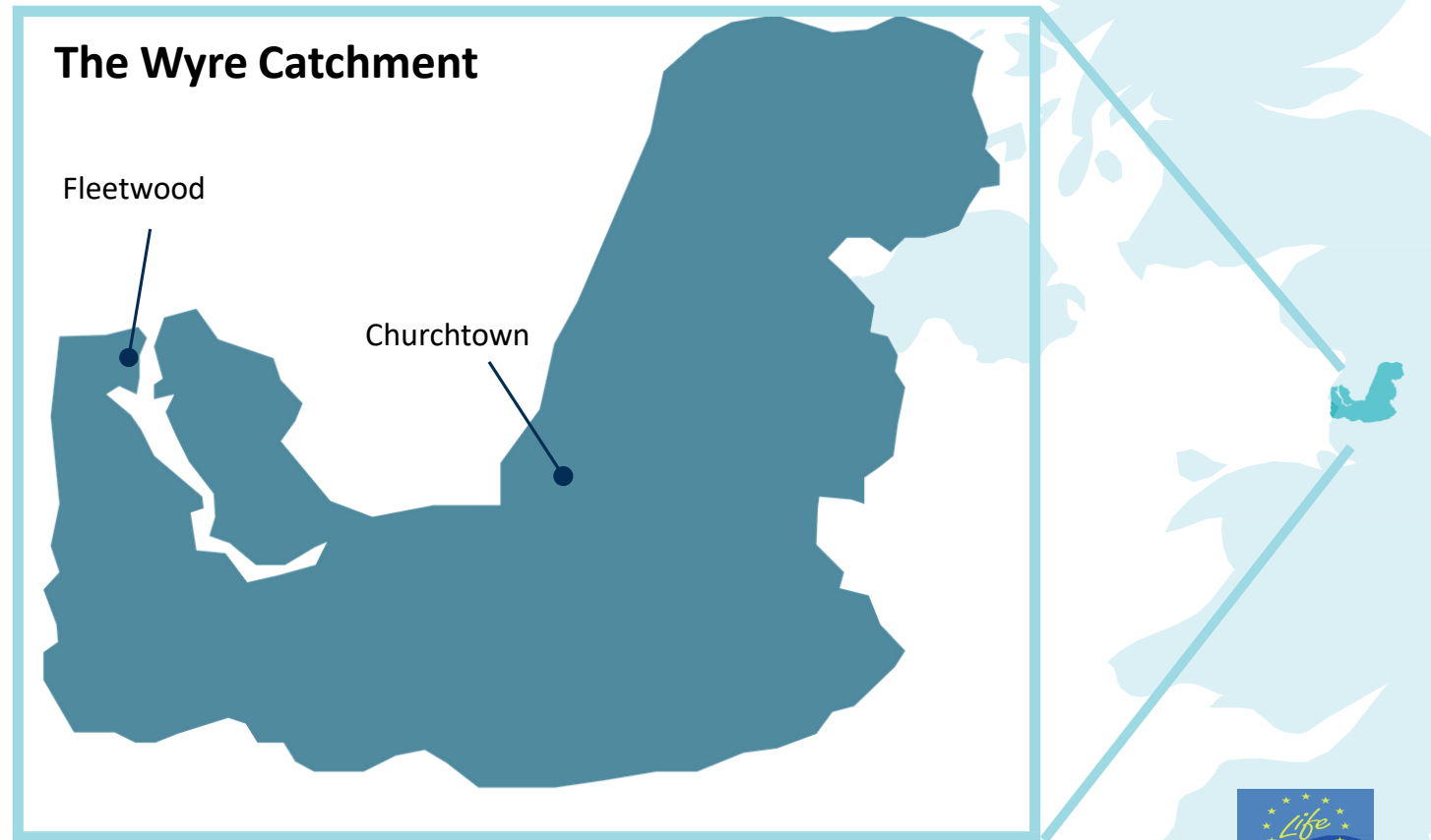
Green Finance: Wyre NFM Investment Readiness Project

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 of a 1 in 50-year flood is **£1.96m.**

Hard-engineered flood-risk management solutions alone will not address our future flood risk challenges and must be supplemented with **natural solutions.**

Mechanisms to **finance** the implementation of Natural Flood-risk Management (NFM) at scale in the UK, remains a **significant barrier** to uptake.



Wyre NFM: The Intervention



**70 ha of NFM
features**



**40 ha of woodland
creation**



**1710 Leaky
Dams**



**42 ponds and
scrapes**



**10km of new
hedgerows**



Wyre NFM: Ecosystem Services



Natural Flood Management

This project will install over **70ha** of NFM interventions such as ponds, hedges and leaky dams, storing water in the catchment



Habitat creation

These **nature based solutions** will improve habitats and increase biodiversity, delivering **283 off-site biodiversity credits**.



Water Quality

We will **replenish 2200ml a year** helping to improve the water quality in the catchment



Social

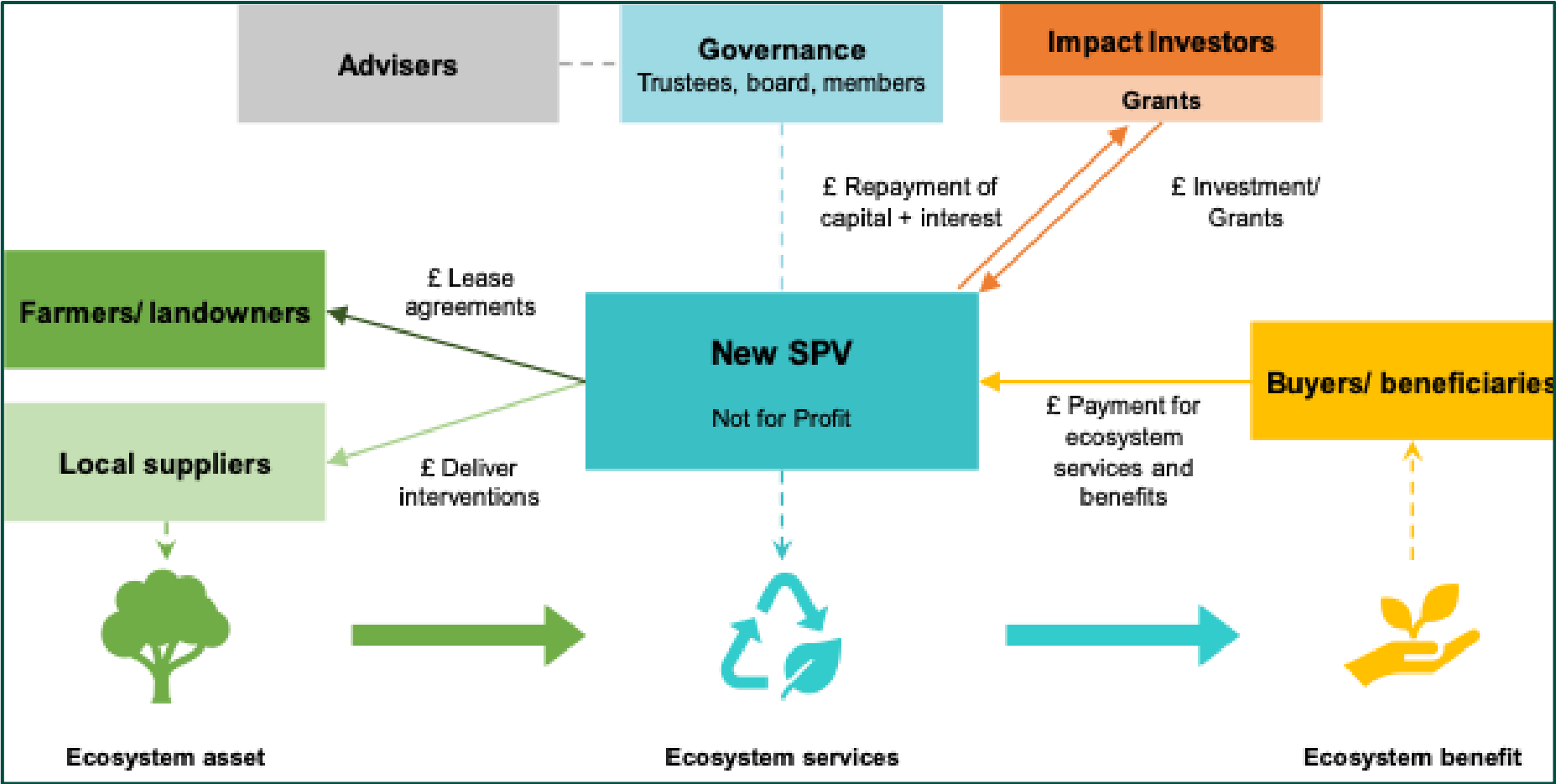
Working with the community, we will reduce flood risk and the associated stresses **to 56 properties**.



Carbon

Through **tree planting** and rewetting peat we will sequester **25,600 tonnes of carbon**.

Transaction Structure



Summary

Flooding is getting more frequent



Traditional approaches have their place, but lack adaptability



NFM can provide more sustainable and adaptable solutions



Treating the problem, upstream, at source is needed



NFM has multiple environmental and social benefits



Need to think about the whole catchment and new funding mechanism can help achieve this



Next Steps

Mainstream innovative NFM intervention that have been developed through Natural Course and move towards catchment-wide solutions.



Encouraging decision-makers, regulators and others of the value of nature-based solutions as part of a drive towards climate change adaption



Developing new and sustainable sources of funding to support increased delivery of nature-based solutions.



Additional Resources

- Irwell Natural Capital and Ecosystem Services Opportunity Mapping

<https://naturalcourse.co.uk/2018/04/23/irwell-management-catchment-natural-capital-account-and-ecosystem-services-opportunities-mapping/>

- Ecological Network Tool

<https://naturalcourse.co.uk/2021/07/27/natural-course-presents-the-integrated-ecological-network-tool/>

- Dales Brow

<https://naturalcourse.co.uk/uploads/2020/10/Dales-Brow-SUDS.pdf>

- Prestwich High Street

<https://naturalcourse.co.uk/2018/05/14/new-street-trees-in-prestwich-to-tackle-surface-water-flooding/>

- Smithills Estate

<https://naturalcourse.co.uk/2021/06/24/project-update-delivering-multiple-benefits-and-ecosystem-services-at-the-smithills-estate-bolton/>

- Hillylaid Wetlands

<https://naturalcourse.co.uk/projects/managing-pollution-from-rural-areas-using-coastal-bathing-water-quality-and-multiple-benefit-approaches-green-infrastructure-and-public-awareness-to-address-upstream-rural-pollution-hillylaid-wet/>

- Wyre NFM

<https://naturalcourse.co.uk/uploads/2022/08/Wyre-completion-Local-community.pdf>

Thank you

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