Chalk River Conservation –
working with landowners on a catchment scale

Sarah Perry, River Catchment Coordinator

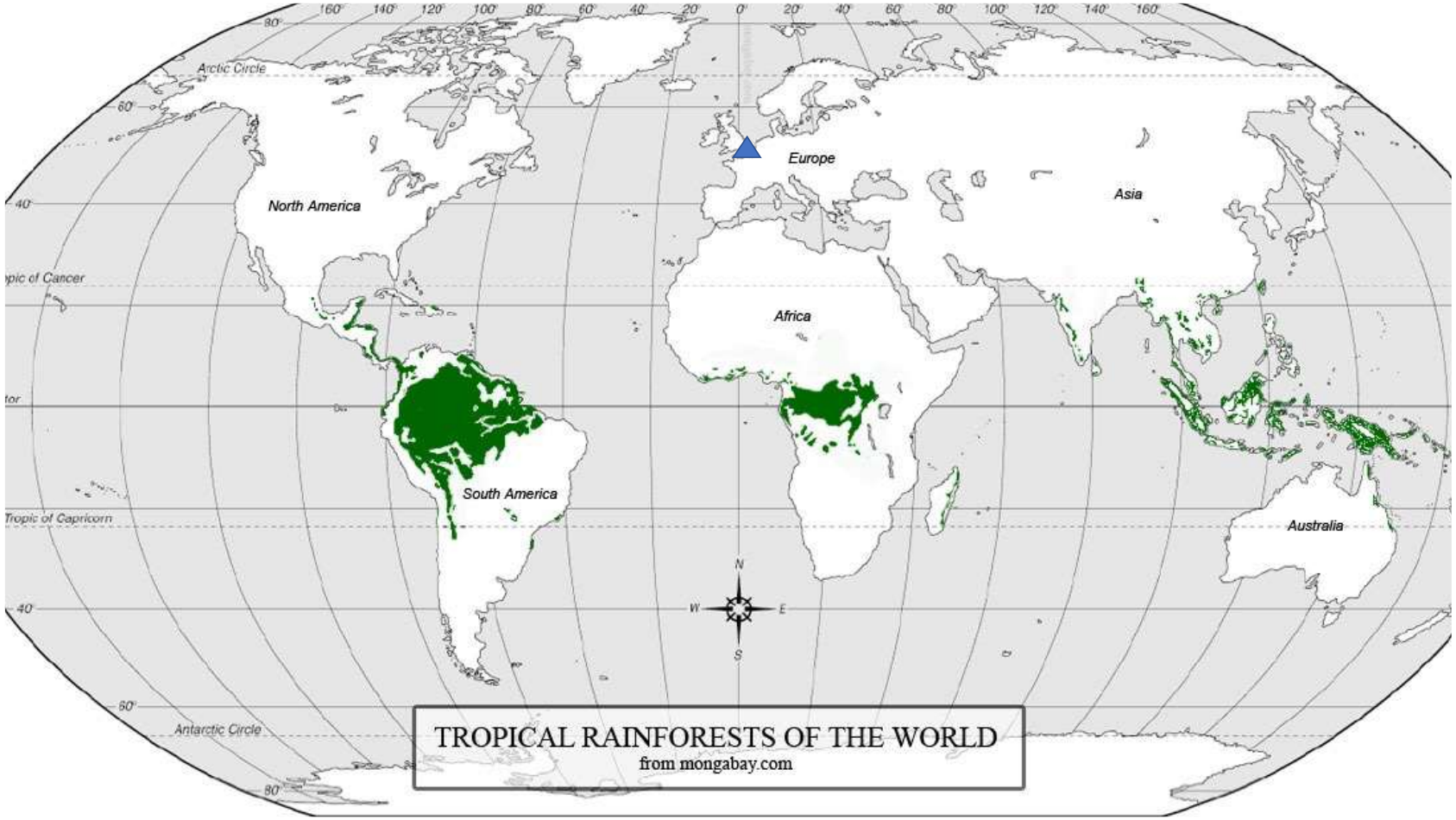
Herts & Middlesex Wildlife Trust

Creating a wilder Hertfordshire and Middlesex

“One of the rarest habitats on Earth..”

Sir David Attenborough, Wild Isles, 2023

Herts & Middlesex Wildlife Trust



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The world's first geological map, drawn by William Smith (who also built water meadows) picks out the English chalk in a serpentine band of green.

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- Restricted to local geology
- Less than 220 worldwide
- 85% in SE England
- 10% in Herts & Middlesex

“What does this country have to offer in terms of the global conservation picture? *The answer is chalk streams!*”

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Tony Juniper, Head of Natural England, 2012

© Russell Savoury

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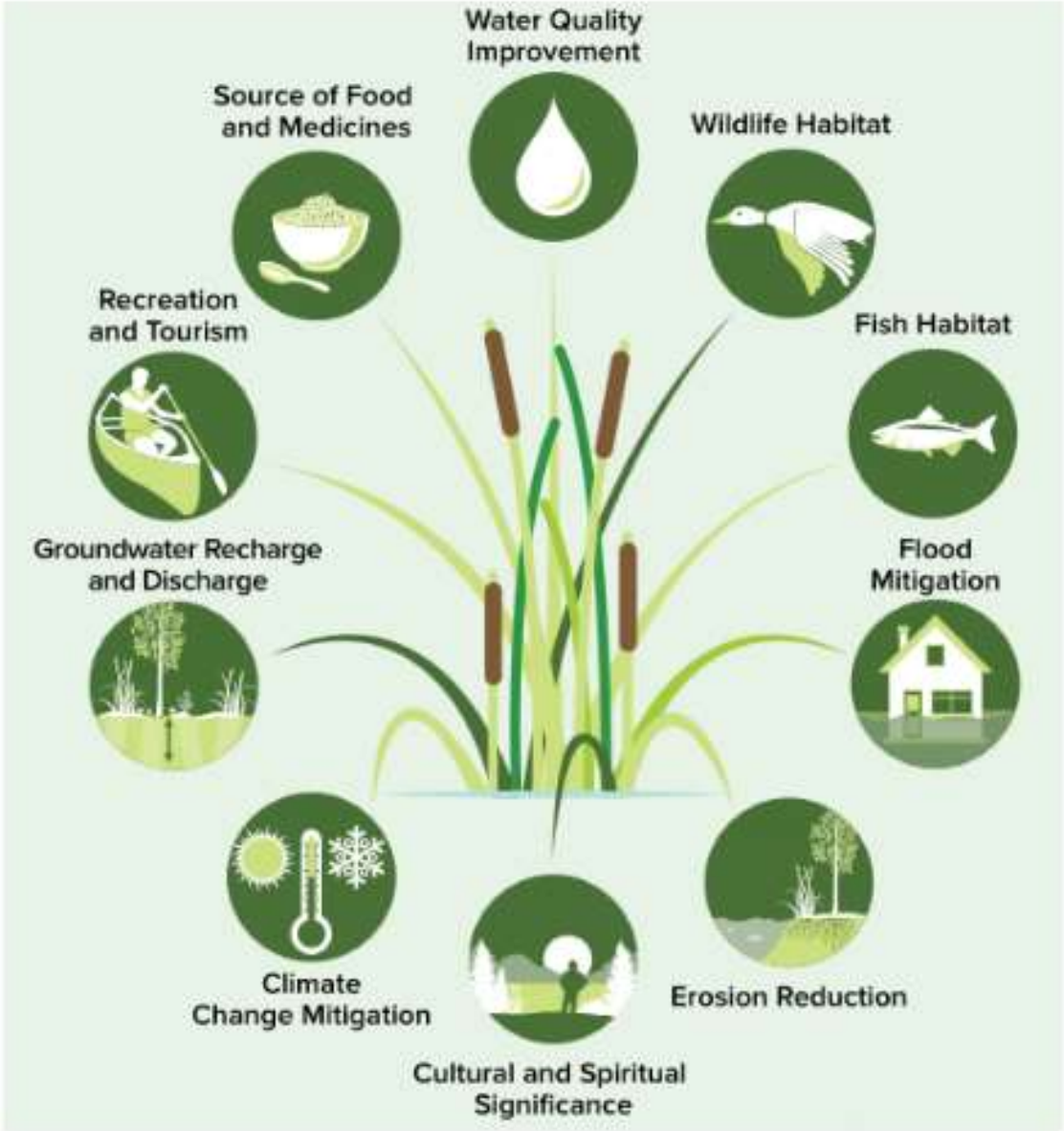
Wetlands are highly productive ecosystems…



- Store up to 2x more carbon than forests
- Can reduce air temperatures by up to 10°C
- £1.5bn water quality benefits to economy annually

How do species-rich floodplains compare with other habitats for carbon storage? (in the top 15cm of soil)

Broad Habitat	**Mean C density (t ha^{-1})**
Arable & horticulture	47.3
Improved grassland	67.2
Neutral grassland	68.7
Woodland (broadleaved & mixed)	73.0
Floodplain meadow	82.6 (up to 207.9 down to 50cm!)

Floodplain Meadows Partnership

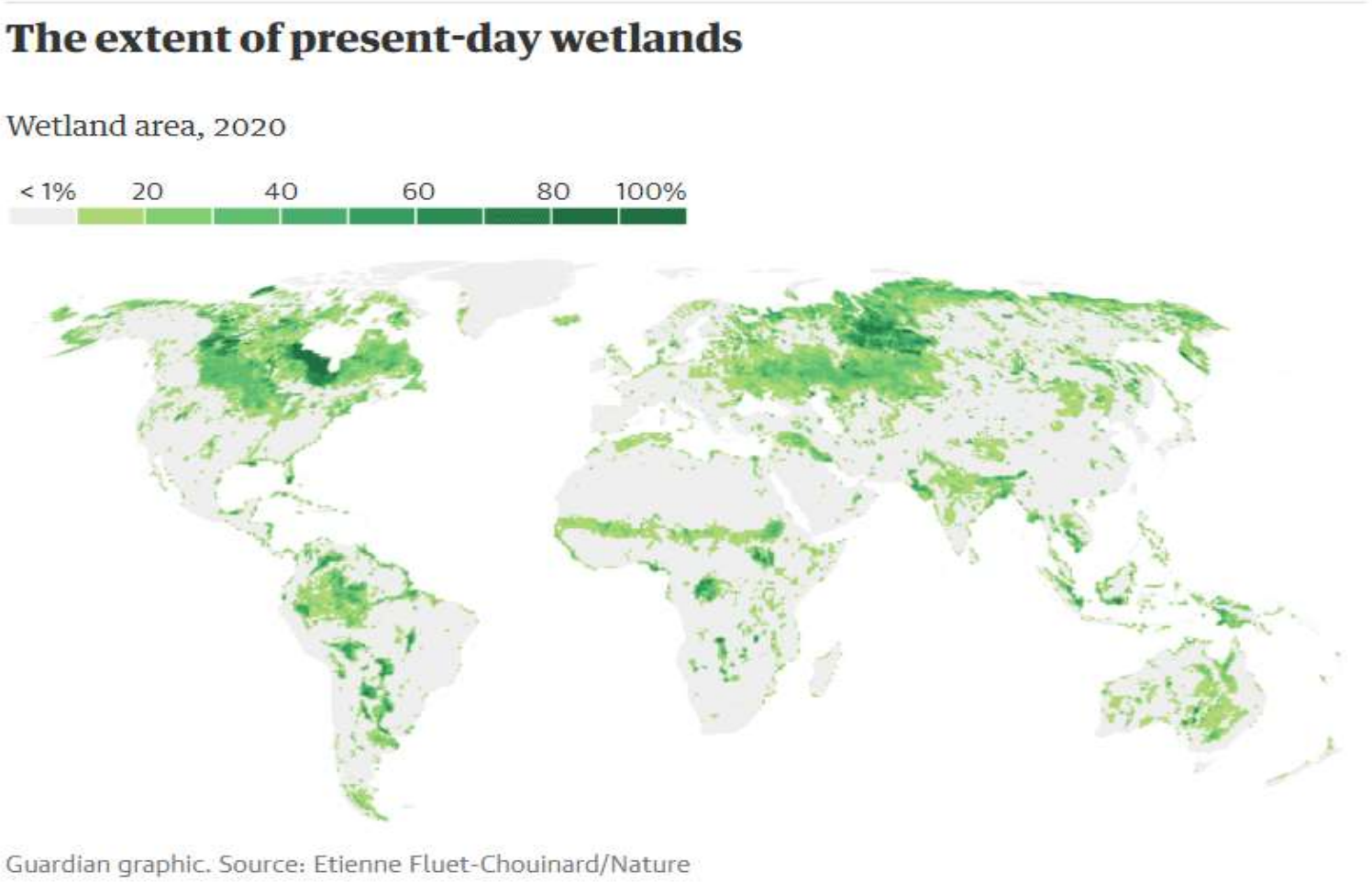
NERC SCIENCE OF THE ENVIRONMENT

The Open University

Daphne Jackson Trust

… but they are disappearing

- 3x faster than forests
- Over 1/3 lost globally since 1700's
- In the UK, 75% destroyed since 1970!



There is currently approximately 27,000 ha of semi-natural habitat in Hertfordshire covering 16% of the county's area.

10 % Woodland

6 % Grassland

1 % Wetland

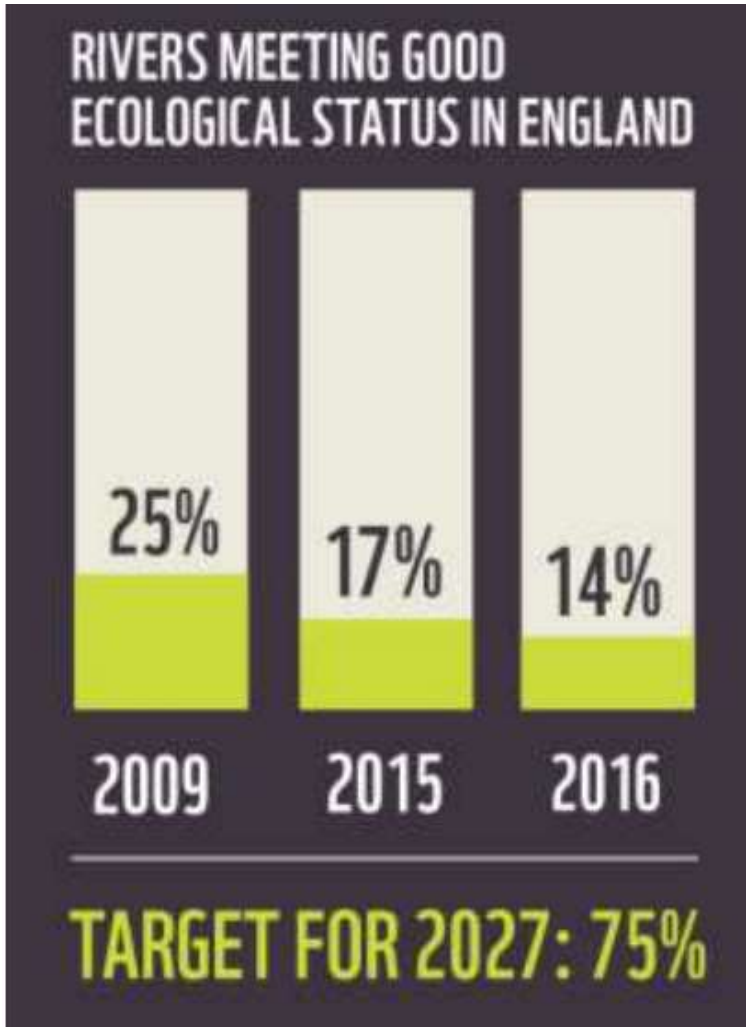
Less than 1,300 football pitches!

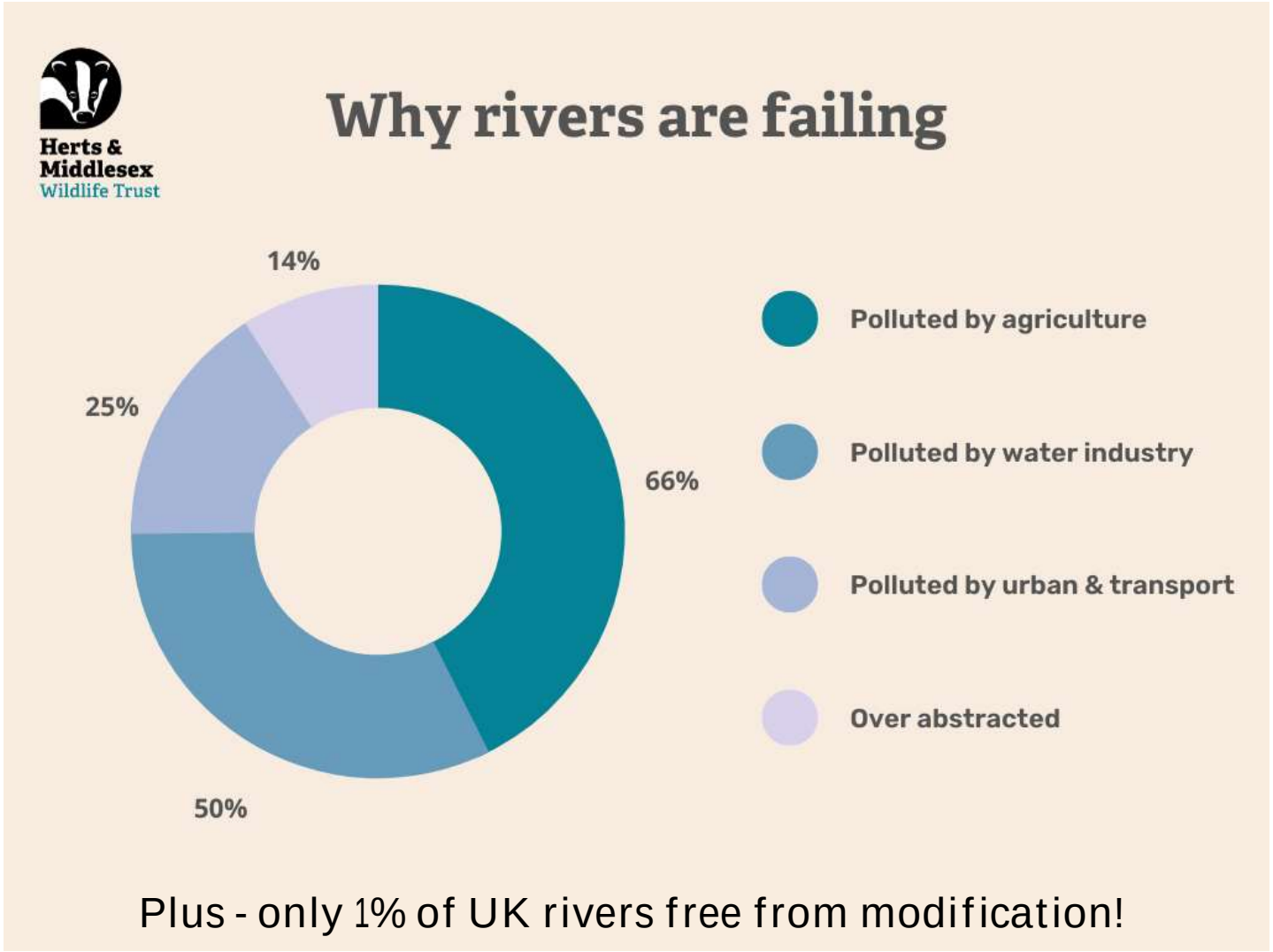
RIVERS & WETLAND

- 10,000+ records analyzed
- 1970 to 2020
- 12 species (7%) extinct
- 76 (47%) notably declined
- 1,524 species of Herts conservation concern (24% wetlands)

hertswildlifetrust.org.uk/stateofnature

The challenge: 30% of land and water in good condition by 2030...





Source: State of Our Rivers Report – 2021 – Rivers Trust. and https://www.sciencedirect.com/science/article/abs/pii/S0048969719316511

Broad consensus on issues …. and crucially, resolutions!

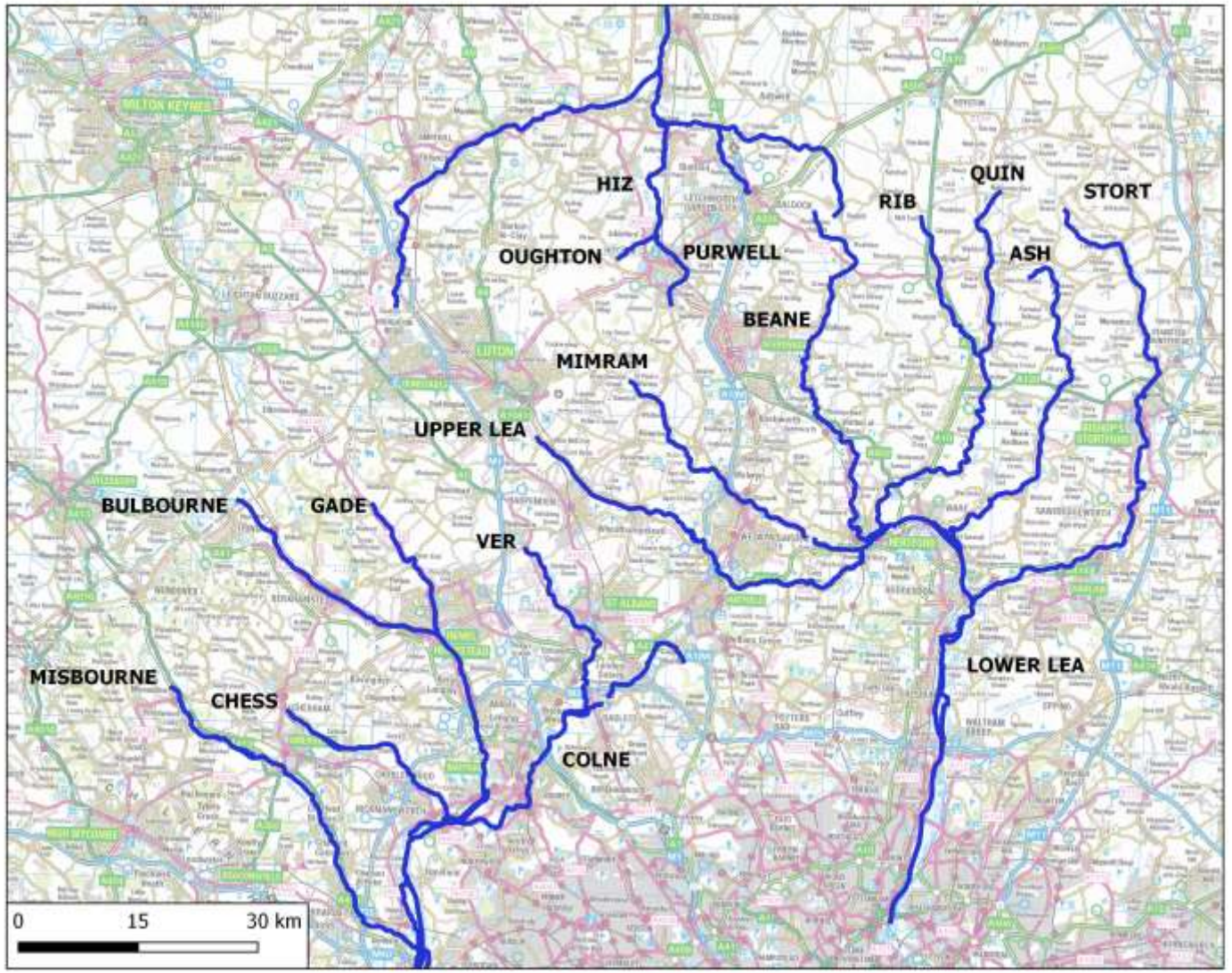
Source: CaBA Chalk Stream Strategy 2021

Catchment Based Approach

Lea, Colne and Ouse Catchments

Partnership Hosting since 2012:

- Supporting 350+ members of the Lea Catchment Partnership
- Advising 45+ landowners incl. farms, anglers, councils, schools
- Management plans for 65 km river and 170 ha wetland
- 200+ volunteers trained committing 1,500 volunteer hours
- £744,000 investment into restoration and conservation activities



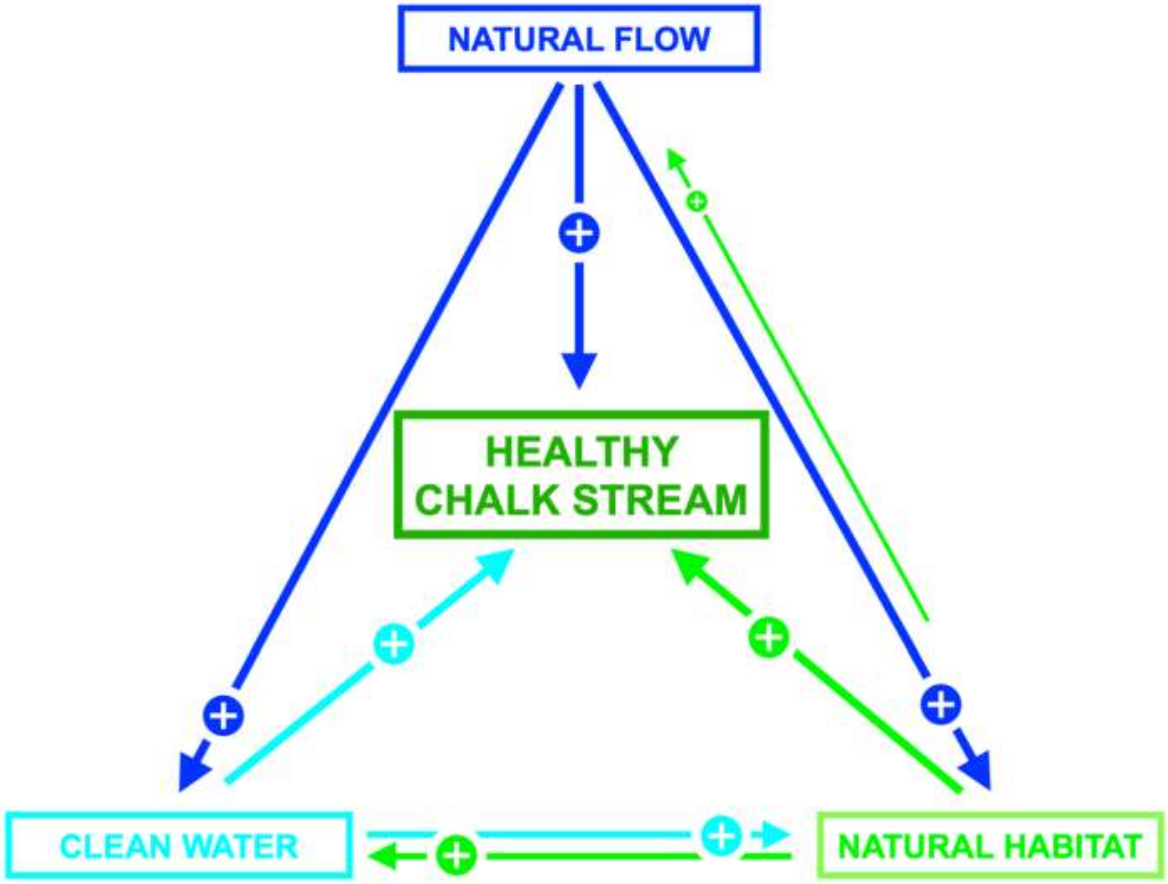
Trinity of Chalk Stream Health...

The key to a healthy, well functioning chalk stream is:

1. Water quantity – flows are sufficient to support the river's natural ecology and morphological processes

2. Water quality – clean water that is low in nutrients (phosphate, nitrate), sediments and forever chemicals (e.g. PFOS)

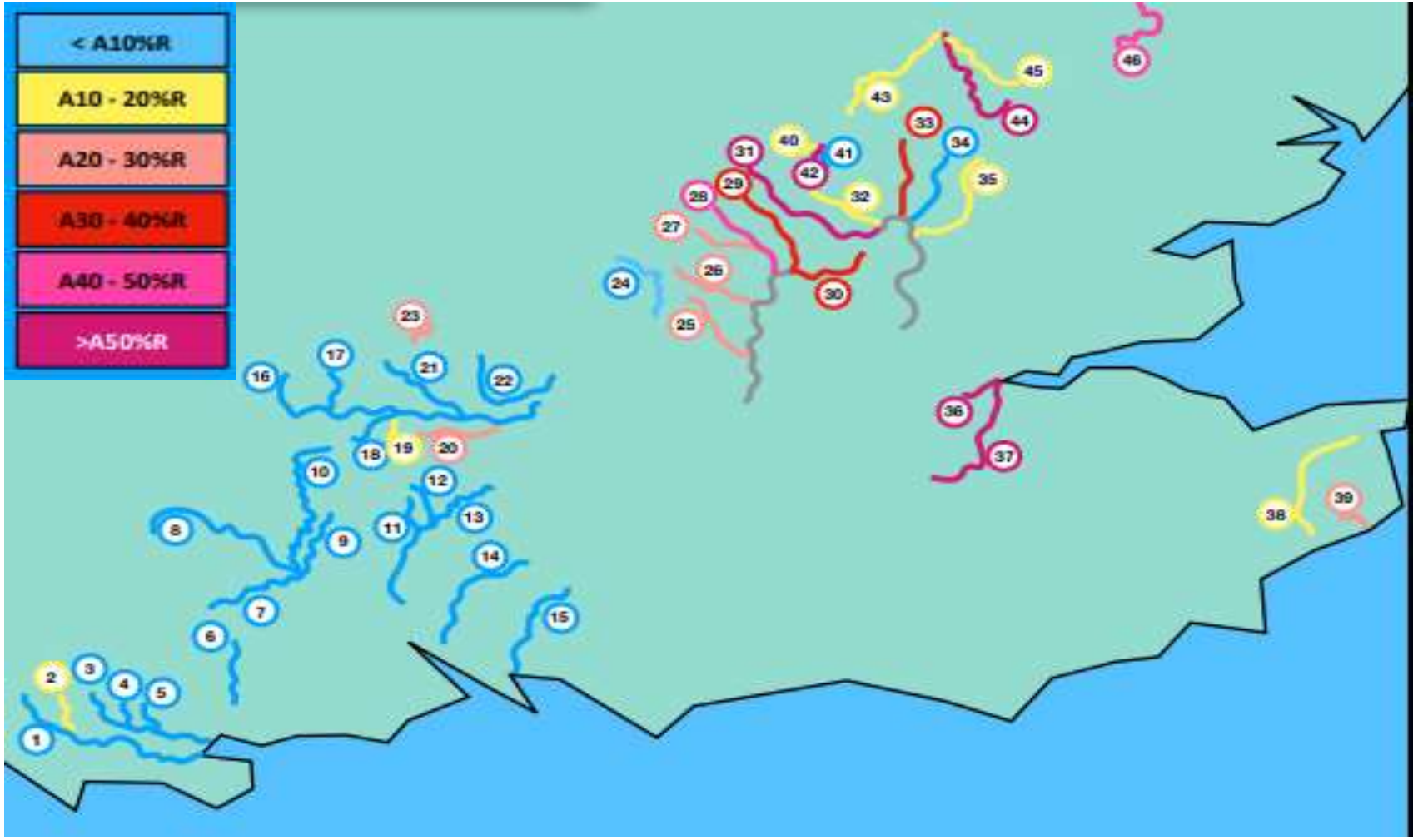
3. Natural habitat – the river supports a range of complex habitat, in the channel and along the bank top, which drive its natural processes and provide shelter for its wildlife.



A simple diagram illustrating the positive correlations between flow, water quality and physical habitat, to show how positive gains in ecological health are maximised by making improvements to all three components. The arrows may be reversed for negative correlations, showing how water quality and habitat diminish as flow is lost to abstraction, for example.

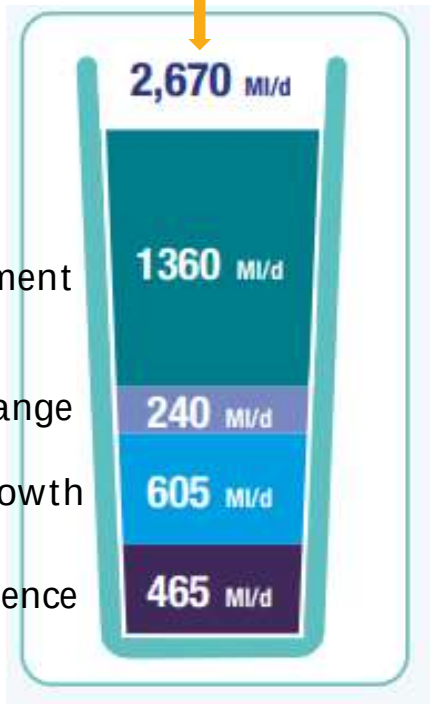
Source: CaBA Chalk Stream Strategy 2021

Natural flow... the challenge



- Abstraction <10% recharge
- Over half of 55 assessed are currently unsustainably abstracted from
- Worst affected incl. Lea, Hiz, Cam, Cray, Darent, Lark, Gade, Ver, Colne, Rib, Beane

Predicted shortfall by 2050



Source: CaBA Chalk Stream Strategy 2021

Our draft regional plan shows how resilient and sustainable water supplies could be provided for the future.*

Reduce leakage by at least **50%** and lower water use by **40 litres** per person per day (on average) by 2050.

Between 2025 and 2035 we need to:

- Complete the construction of **1** new reservoir in Hampshire and start building **3** more in Oxfordshire, Kent and West Sussex
- Use the Grand Union Canal to transfer water from the Midlands to South East England
- Develop **6** water recycling schemes in Kent, Sussex, London, Hampshire and the Isle of Wight to supplement our water supplies
- Build **1** desalination plant on the Sussex coast
- Develop new transfers so we can move up to **600 million litres** of water per day around the South East and between other regions

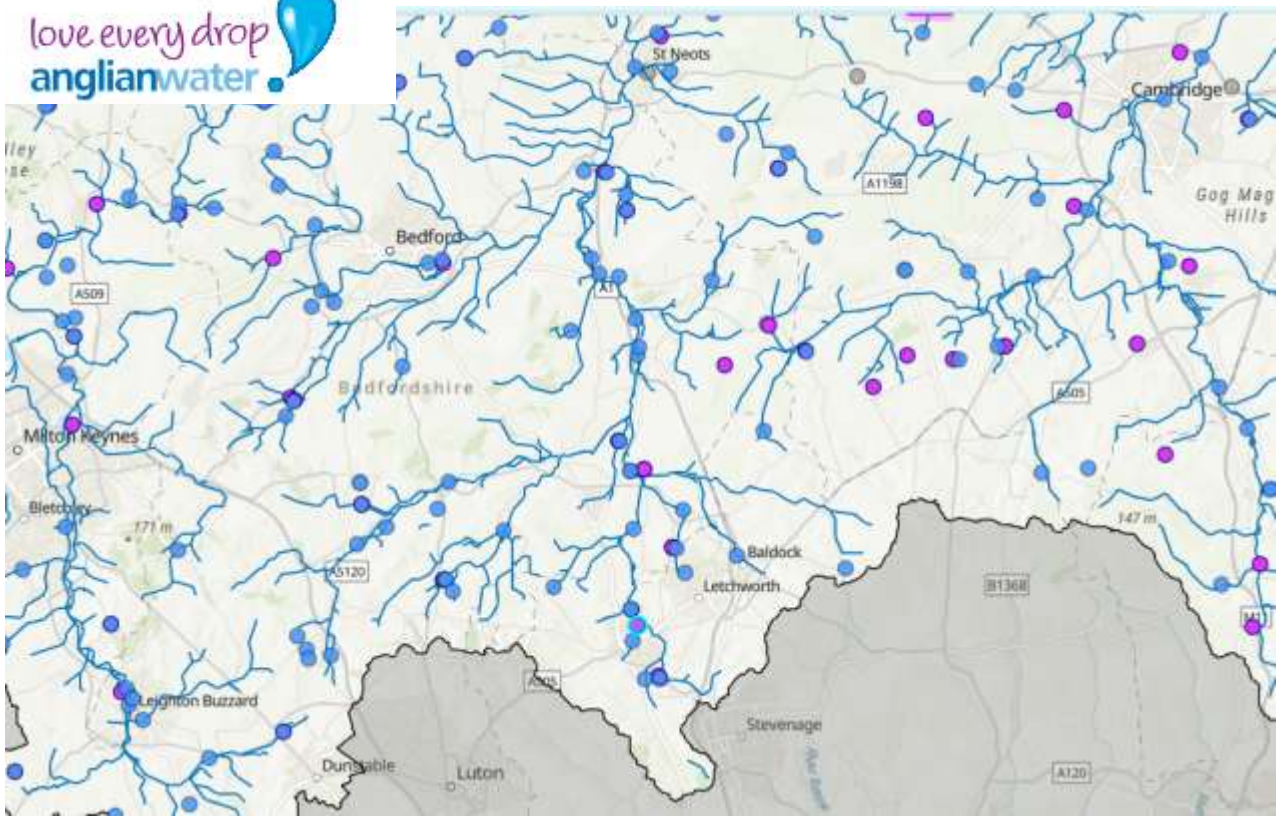
Between 2035 and 2075 we could need to:

- Develop a further **6** water recycling schemes across the region
- Transfer more water from the Midlands and the North West using the River Severn and the River Thames
- Build desalination plants at a further **5** locations in Kent
- Build **1** new reservoir in East Sussex
- Store extra water underground at **3 sites**
- Develop new transfers so we can move up to **1,400 million litres** of water per day around the South East and between other regions.

Our regional plan could cost **£15.6 billion** to deliver by 2075.

River Catchment	Average reduction (Ml/d)	Implementation date	Community area
Upper Chess	6.38	September 2020	Misbourne
Ver	9.01	December 2024	Colne
Misbourne	2	December 2024	Misbourne
Mimram	5.7	December 2024	Lee
Upper Lea	10.2	December 2024	Lee
Cam	0.42	December 2024	Stort
Brett	2.6	December 2024	Brett
Total	36.31		

Clean water...



© Groundswell 2023

No rivers meet good chemical status in the UK... *phosphates, nitrates, forever chemicals, pesticides*

Water sector accounts for 24% of failures, transport, housing & farming 76% of failures.

Cover crops, regenerative farming, sewage infrastructure upgrades, misconnected homes, road infrastructure upgrades – *Catchment management methods to address water quality failures.*

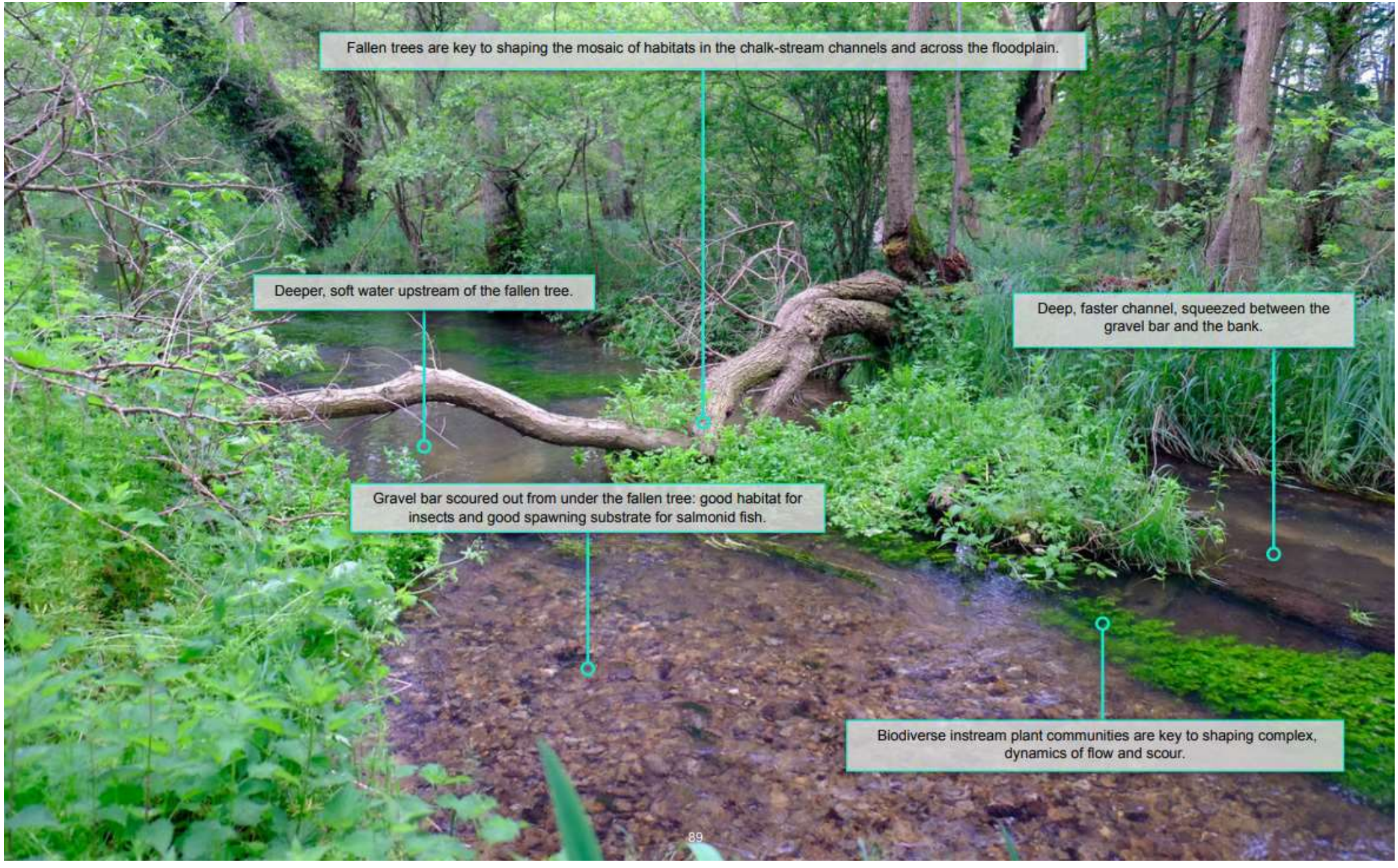
Natural habitat...

Slope

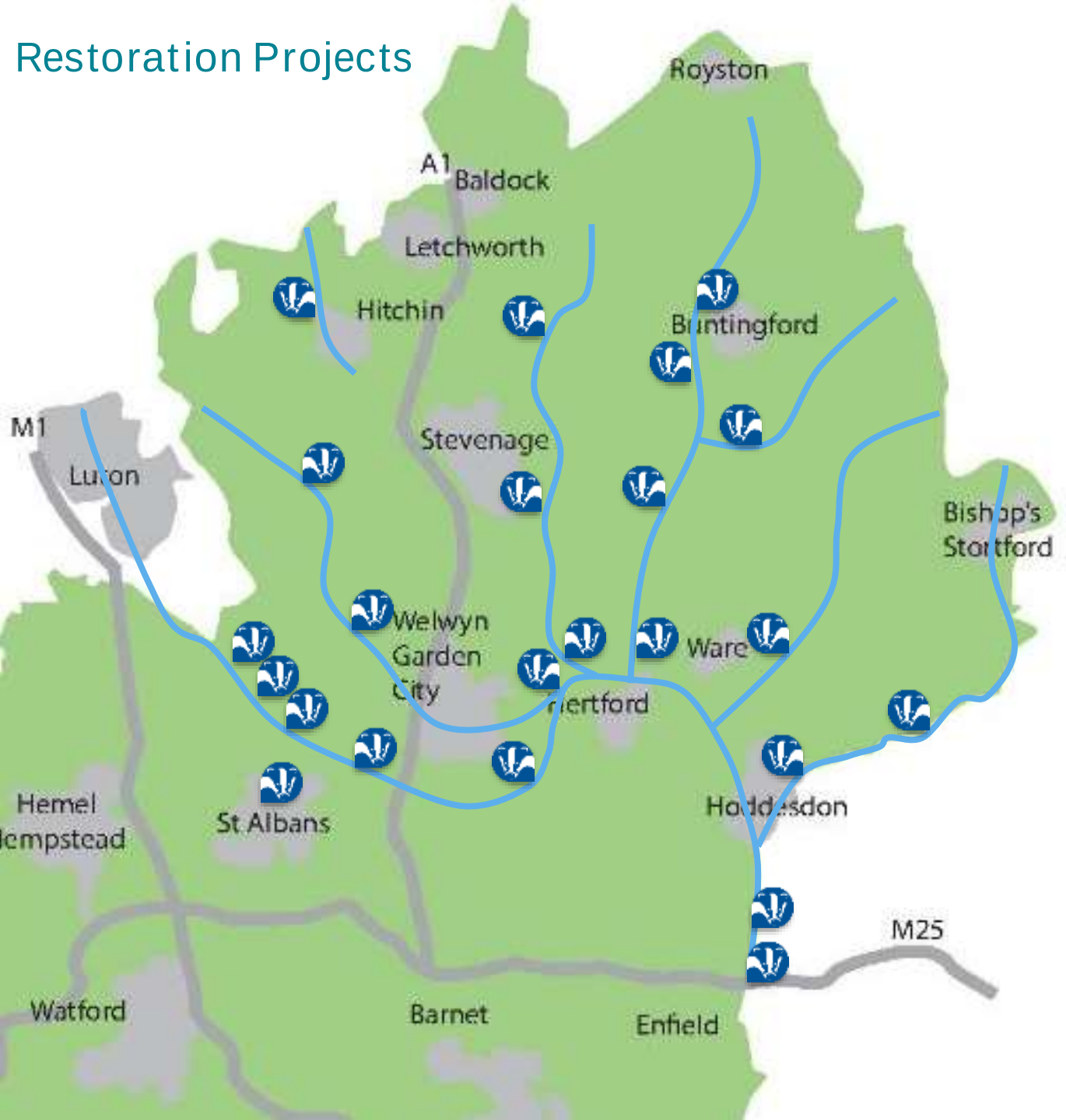
Meanders

Plants & wood

Floodplain connection



Restoration Projects



Herts & Middlesex Wildlife Trust

Working in partnership with…

- Local authorities & parish councils
- Farms, estates and landowners
- Community groups & volunteers
- Schools & youth groups
- Statutory organisations
- NGOs

North Herts Chalk Rivers Restoration

- Led by HMWT – in partnership with NHDC, Hitchin Lavender, EA, Ickleford PC, CMS
- Follows development of a management plan for R.Hiz in 2019 by HMWT and Green Space Action Plans refreshed for Oughtonhead Common & Purwell Meadows by NHDC/CMS in 2021.
- FLOW commissioned in 2023, funded by EA to develop detailed designs.

Aims:

- Enhancement plan for 6km globally rare chalk streams
- Improved resilience to climate change and abstraction impacts
- Address issues of dredging, modification & urban pressures
- Improve habitat for fish, macrophytes, invertebrates and water vole (for potential future reintroduction)
- Increase connectivity of the river to floodplain habitats (existing and new) and improve quality of existing wetland features, such as reedbeds and wet grassland.

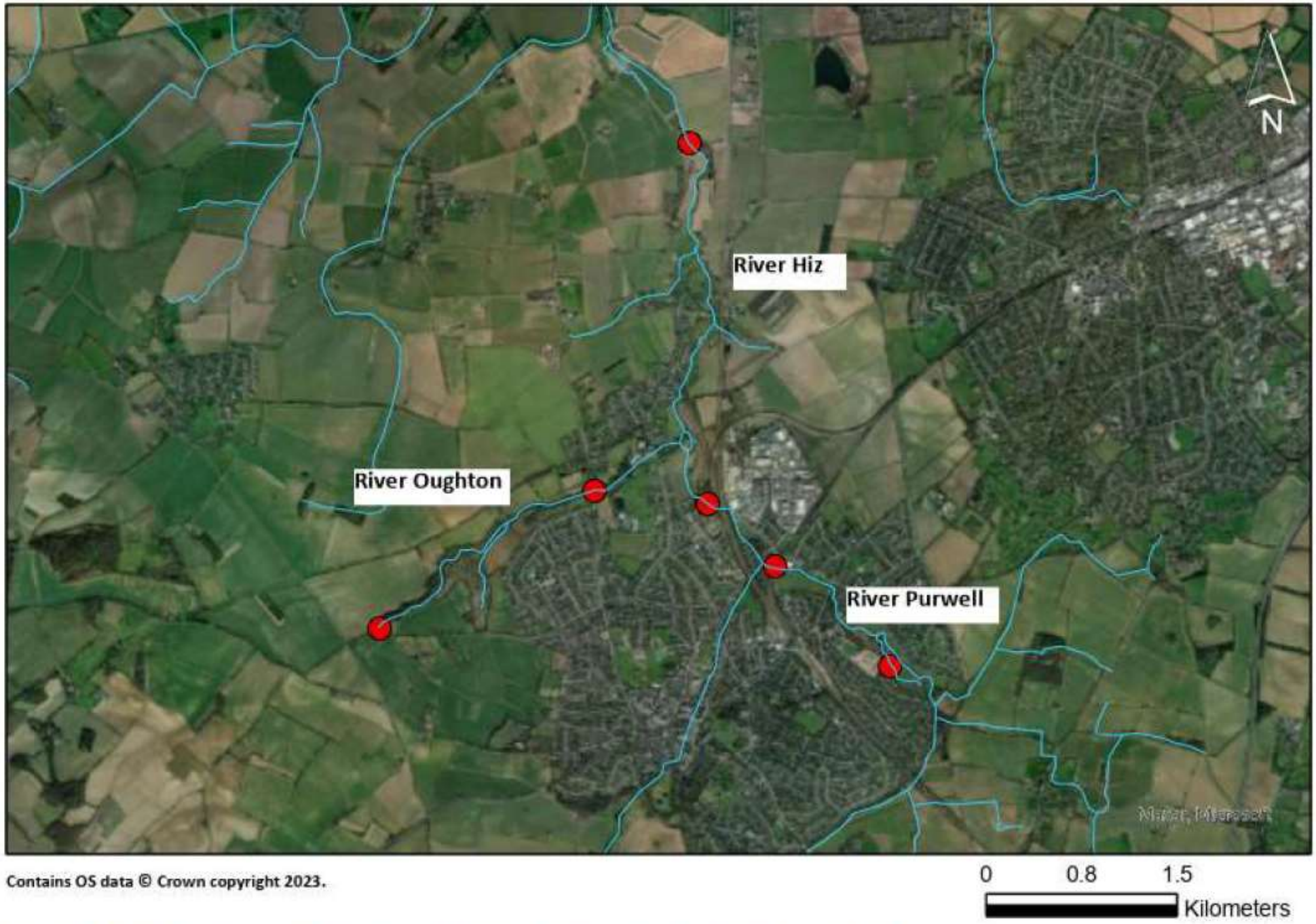


Figure 1. Project areas, upstream and downstream extents shown by red circles.

Project timeline to date...

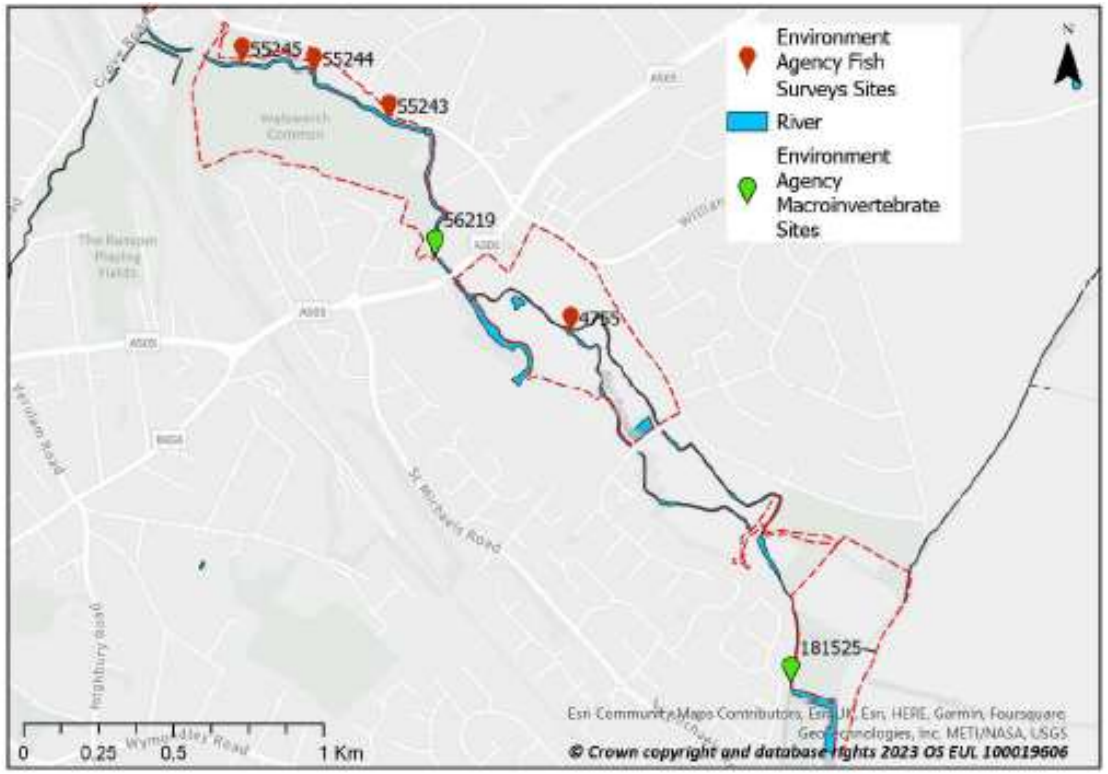
Options report produced

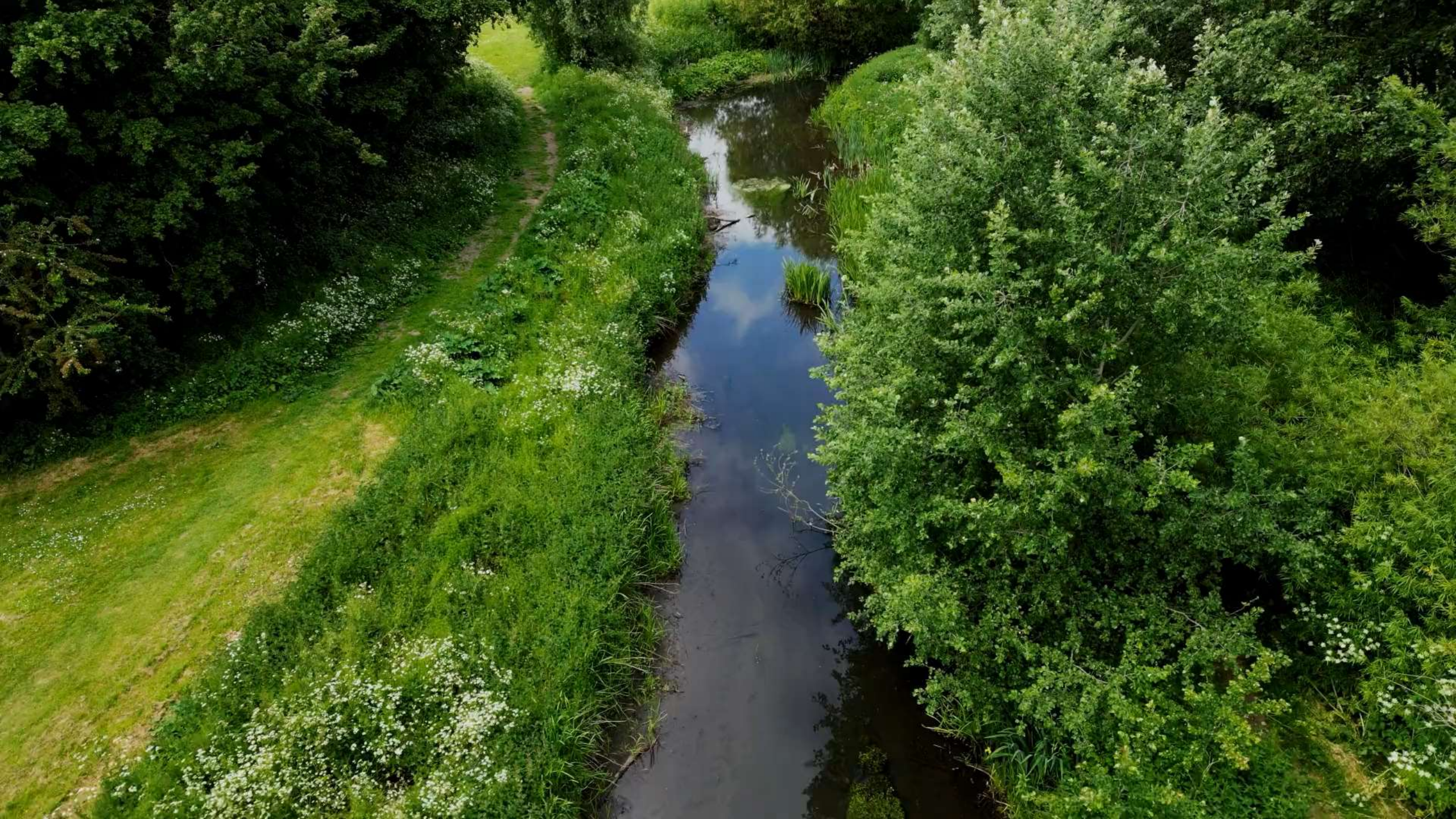
July - Sept 2023

Consultation with project partners

Outline & detailed design of preferred options

October-December 2023





River Purwell

Water Quantity

Both Purwell Meadows and Purwell Nine Springs have the potential for increased water storage and creation of headwater wetland mosiacs.

Water Quality

Increased floodplain connectivity at Purwell Meadows will allow fine sediments to drop out of suspension and the update of nutrients through vegetatative growth.

Increase area of marginal vegetated habitat at Walsworth Common to offer accretion of fine sediments and the update of nutrients.

Habitat Diversity

Increase resiliance to low flows at Walsworth Common by creation of low flow channel and installation of woody material.

Encourage in-channel processes through introduction of wood

Increase floodplain connectivity with creation of floodplain wetland.

Figure 19. High level river and floodplain restoration opportunities for the River Purwell

Figure 23. Downstream extent of Walsworth Common showing tree cover.

Options:

- *Low flow two-stage channel*
- *Daylighting*
- *Bank lowering for access and riparian zone creation*
- *Wetland enhancement at Purwell Ninesprings & Purwell Meadows*

River Oughton

Water Quantity	Water Quality	Habitat Diversity
Increase lateral connectivity and floodplain storage to increase baseflows	Leaky dams to filter water and deposition of fine sediments	Creation of dynamic and connected floodplain, with both wetland and wet woodland habitat
	Daylighting to increase macrophyte growth	Encourage in-channel processes, largely through daylighting and introduction of wood
	Increase in floodplain wetland habitat to reduce nutrient load	

Figure 15. High level river and floodplain restoration opportunities for the River Oughton

Aerial view of the upstream section of the study area showing mostly closed tree canopy

Options:

- *Analogue dams for wetland enhancement*
- *Daylighting*
- *Woody berms and tree hinging*

River Hiz (d/s Hitchin)

Water Quantity

There are limited options here, the channel is so disconnected from the floodplain the opportunities for water retention are limited.

Potential to back up and slow the flow of water entering the site through ditches.

Water Quality

Leaky dams to filter water and deposition of fine sediments

Increase area of marginal vegetated habitat to offer accretion of fine sediments and the update of nutrients.

Habitat Diversity

Increase resiliance to low flows by creation of low flow channel, that would be inundated in higher flows

Encourage in-channel processes, largely through selective daylighting and introduction of wood

Promote other habitats on site i.e. creation of wetland areas, log piles etc.

Figure 2. Aerial view of Ickleford Common looking north.

Options:

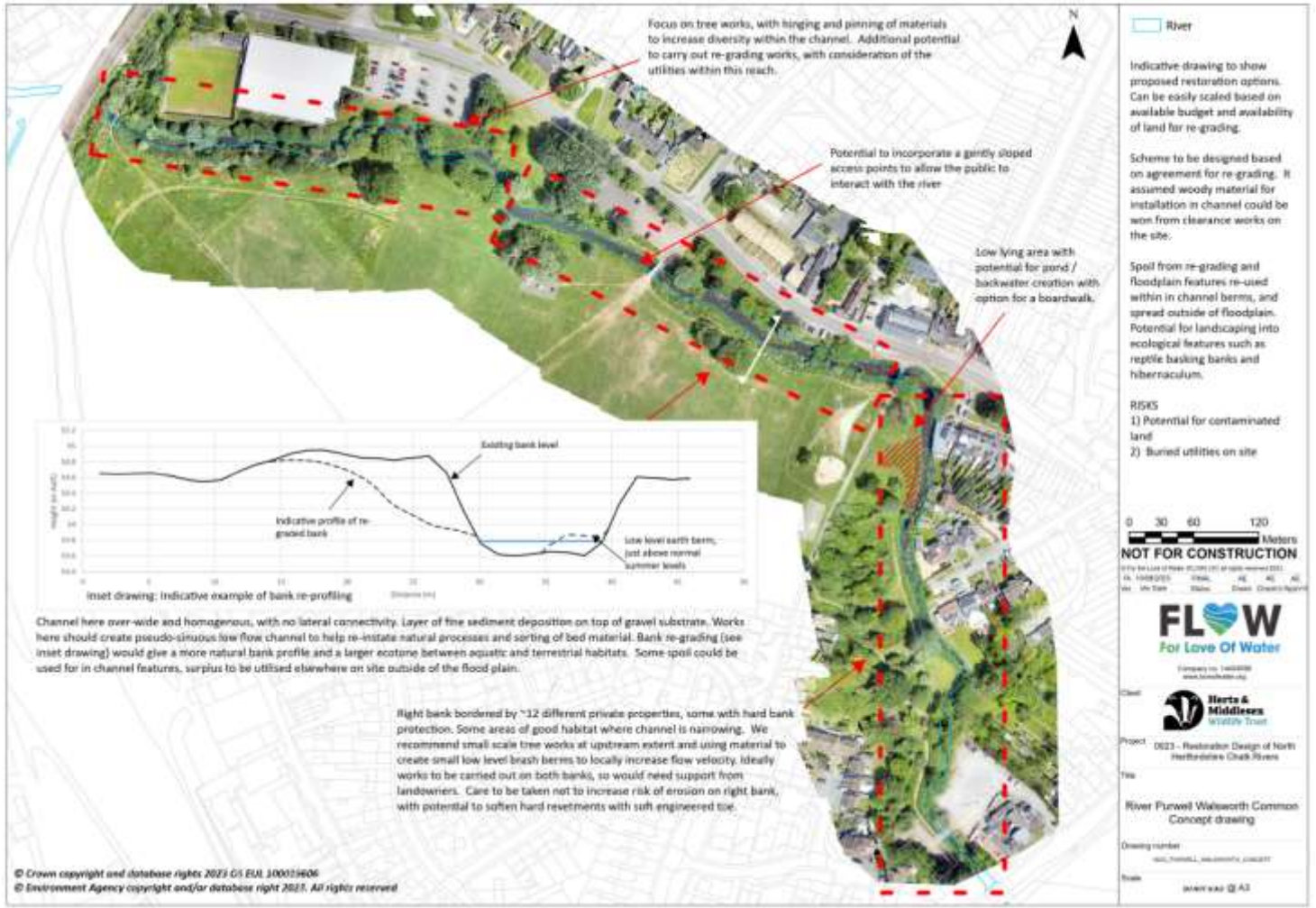
- *Woody berms and tree hinging*
- *Combination of daylighting and tree planting*
- *Bank lowering for riparian zone creation*
- *Wetland enhancement adjacent to river*

Next steps

Apply for EA permit
January 2024

Communication & wider engagement
2024

Construction
2025 onwards – as ££ found



© David Hunter

Water vole reintroduction 2025-2030?

Join Our Campaign!

© Michel Roggo

Help us save our chalk streams!

Tell your MP to champion our chalk streams by supporting new, bespoke legal protections.

We are calling for a new, **pioneering, bespoke protection for all Chalk Streams**, as recommended by the Chalk Stream Strategy.

With these new protections, the government can make polluters pay, hold water companies to account and make sure England's rarest habitat and richest chalk streams are clean, healthy, brimming with life and buzzing with activity for generations to come.

wtru.st/SaveChalkstreams

Hampshire & Isle of Wight Wildlife Trust

Herts & Middlesex Wildlife Trust

Berkshire Buckinghamshire & Oxfordshire Wildlife Trust

Herts & Middlesex Wildlife Trust

Thanks for listening!

Sarah.Perry@hmwt.org

hertswildlifetrust.org.uk/living-rivers

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