



State of the Crane Environment Report

Working in partnership



February 2025



This document has been created for the purposes of Thames Water's Smarter Water Catchment programme. Although Thames Water remain the primary client, the document will be made available to all partners, in line with the true partnership ethos of the programme. The work detailed in this report is based on the information available at the time. Any findings and/or recommendations will inform future phases of work. It does not make any observations or recommendations regarding the delivery of statutory obligations by the Environment Agency, Thames Water, Local Authorities, the Highways Authority, and others.

Foreword



John Waxman
Development Manager,
Crane Valley Partnership

“ Welcome to the second edition of the State of the Environment report for the River Crane catchment. This document provides an overview of the current situation across the Crane Valley as we approach the end of the initial phase of the Smarter Water Catchments (SWC) initiative.

In the report's first edition - published back in 2022 - I highlighted that there was a lot for us to be optimistic about despite the many challenges we collectively faced. This latest report demonstrates that this optimism was justified - there has certainly been plenty of progress made between then and now. SWC funding - often augmented by funding from other sources - has allowed us to support a wide range of projects and activities that have helped to protect and enhance the rivers and associated open spaces of the Crane Valley. It has been particularly gratifying to see the Crane Valley's network of community groups grow and develop over time - strengthening the spirit of collective endeavour and delivering a wide range of environmental and social benefits at a local level.

Whilst there is undoubtedly much for us to celebrate, this report also serves as a rallying call to keep pushing onwards. We still face many challenges in the Crane Valley and the future funding picture is uncertain. But we do now have a stronger organisational foundation on

which to build. The catchment partnership is in great shape, able to draw upon the expertise and experience of a wider range of stakeholders, many of them based in the catchment. And of course in recent times the condition of the country's rivers has emerged as a big political issue, increasing the pressure on our elected representatives to engage in meaningful debate and take appropriate action to improve the situation.

I just want to conclude these opening remarks with a heartfelt 'thank you' to everyone who works to deliver the Crane Valley Partnership's objectives, whether operating in a professional capacity or as a volunteer. Your efforts are greatly appreciated. As illustrated by this report, together we are making a significant - and very positive - difference to the state of the environment.

Best wishes,
John Waxman
Development Manager, Crane Valley Partnership

The Crane Valley Partnership would welcome your views and further engagement regarding the Crane Valley. Contact us at cvp@cvcic.org.uk

- Foreword
- Executive summary
- Introduction
- The Crane Valley
- SWC Overview and Context
- Public awareness, access and recreation
- Flood Resilience
- Water Quality
- Geomorphology
- Biodiversity
- Looking Forwards
- Acknowledgements

Contents

Foreword	3
Executive summary	5
Introduction	8
The Crane Valley	10

Key report themes

Detailing: The current status, what has been achieved in the last five years, and what do we want to achieve in the next five years.

SWC Overview and Context	11
① Public awareness, access and recreation	17
② Flood Resilience	21
③ Water Quality	29
④ Geomorphology	34
⑤ Biodiversity	40
Looking Forwards	41
Acknowledgements	42

Executive summary

Rivers connect – they connect green open spaces in an urban setting like the Crane Valley, they connect people with each other and they connect us to nature. The health of our rivers and open spaces says a lot about our health as communities. We are pleased to be able to show, in the latest State of the Crane Environment Report, that both the river and the open spaces around it are showing some significant improvements, with enhanced support from their communities and a growing network of interested parties.

About the Crane Valley

The River Crane is a west London tributary of the River Thames. The Crane Valley is home to around 650,000 people, and the 65km of river corridors include most of the linked green open space and biodiverse habitat in this otherwise urban and suburban landscape.

The Crane Valley Partnership (CVP) formed in 2005 and brings together the main landowners (the five boroughs and Heathrow Airport) with the Environment Agency, Thames Water, third sector organisations, and local community groups. The Partnership has been steadily improving the community and environmental value of the river and open spaces such that in 2020 it was selected by Thames Water as the first urban Smarter Water Catchment (SWC), with £3m funding over an initial five years for improvements across the catchment through partnership working.

The River Crane SWC programme is delivering across five key themes – public awareness, access and recreation; biodiversity and ecological connectivity, flood resilience; water quality; and geomorphology. In 2022 we produced our first state of the environment report setting out the conditions against these themes.

This new report provides an update on the 2022 document at the end of the first five years of the SWC programme and sets out the objectives for the next five years to 2030. Thames Water funding is currently in place to the end of March 2026 with ongoing support anticipated.

The report is structured around these themes and we look in turn at:

- Public awareness, access and recreation
- Flood Resilience
- Water Quality
- Geomorphology
- Biodiversity

Overview

The SWC initiative has energised the work of the CVP and helped to mobilise a further £20m of investment across the five key themes. Networks of specialist consultants and contractors are working together with landowners, academics and community-based groups to deliver improvements on the ground with pilot projects in place across all themes.

These networks have created a “connective tissue” between all key partners, helping to identify opportunities for third party funding and engagement, and also helping reduce the risks of damaging activities and associated conflicts. Given the complex nature of urban open space environments with many overlapping and ill-fitting sets of objectives, interests and responsibilities in between - this in itself is a major achievement.

1 Public awareness, access and recreation

The Crane Valley has great potential as a community asset. There are places to relax and enjoy nature, to walk and cycle, and to socialise. This part of west London is ethnically and socially diverse with a broad mix of wealthy and deprived areas. The open space environment is a place for communities to mix and engage with each other and the natural world – providing a range of health and social benefits.

Parts of the Crane Valley, such as Headstone Manor Park at the top end of the catchment and Crane Park towards the downstream end, are already providing many of these benefits. Other parts though are rather neglected and little used by local communities – there is potential but it has not yet been realised.

The Partnership has worked over the last few years to engage existing community groups with an interest in the river and open spaces of the Crane Valley and to support the creation of new groups – including in many of the more deprived and ethnically diverse parts of the catchment. Well over 70 of these groups are now linked to the Partnership and over 40 group-led improvement projects have been supported through the Crane Valley Community Fund.

All of the larger projects delivering environmental and flood benefits have a strong community link, with local

groups advising on the design and delivery of the schemes and supporting through practical volunteer-led work days. Citizen science is a key mechanism for monitoring the condition of the river and open spaces and data gathering activity is being delivered by community volunteers through the Citizen Crane programme.

CVP is actively promoting the Crane Valley Trail concept with the aim of formally establishing a (mainly) riverside walking and cycling route that runs for 35km from the source of the river at Headstone Manor Park to the River Thames. Some parts of the national trail route are very well used by over 1,000 people per day whilst other parts are overgrown and/or considered to be unsafe with 50 or fewer users per day. The Partnership is engaging with landowners to help deliver the enhancements that the trail will need. Some significant improvements to riverside paths have already been delivered over the last three years.

Communications networks have been developed over the last few years and better links created between community groups and other key parties. A coherent story for the Crane Valley has been developed and is starting to be delivered through these networks. Awareness of the Crane Valley as an entity and a public asset is growing in the catchment and across Greater London as a result.

2 Flood Resilience

The catchment, in common with many urban areas with large amounts of hard standing, has significant flood risks from surface water run-off responses to storm events. These can also cause sewer surcharges and overwhelm the storage at Mogden Sewage Treatment Works, resulting in overflows into the tidal Thames. River and groundwater flooding present further risks to properties in the catchment.

The flood risks have been collated by the Partnership and a mapping exercise has been completed to understand where wetland and Sustainable Drainage Systems (SuDS) implementation could

provide the most overall benefits to the catchment. Several wetland schemes are in various stages of development but no new schemes have been delivered in the last three years. The major wetland and flood storage schemes at Headstone Manor Park, completed in 2021, have been shown to be effective. Eight new SuDS schemes have also been implemented recently and these have been well received to date by the public.

The intention over the next five years is to build on the success of these projects with the delivery of more SuDS and wetland schemes at scale and through the optimisation of flood risk benefits from river restoration schemes.

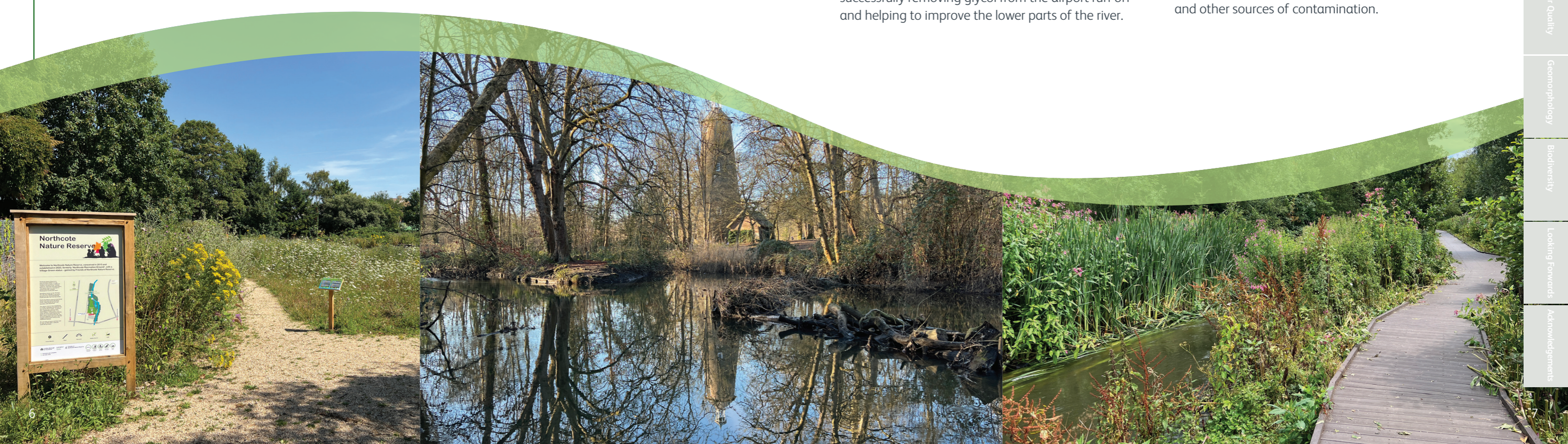
3 Water Quality

The Citizen Crane programme celebrated ten years of citizen science based monitoring in 2024. This programme has identified improvements to water quality parameters in recent years, particularly in the lower and upper reaches, though the central parts of the river are still in poor condition.

Thames Water's Surface Water Outfall Programme (SWOP) has helped to remove around 1,000 misconnected appliances over the last five years. Heathrow's new treatment system appears to be successfully removing glycol from the airport run-off and helping to improve the lower parts of the river.

Multiple partners are helping to investigate and remove some of the complex pollution problems in the Yeading Brook East, which is the most polluted part of the river system.

These improvements are providing encouragement that the Crane can reach Good Ecological Status over the next five years – which would be a remarkable achievement for an urban west London river given only 14 per cent of rivers across the country have this status. There remains though considerable work to do to reduce ongoing chronic pollution problems from misconnected properties and sewer discharges as well as road run-off and other sources of contamination.





- Foreword
- Executive Summary
- Introduction
- The Crane Valley
- SWC Overview and Context
- Public awareness, access and recreation
- Flood Resilience
- Water Quality
- Geomorphology
- Biodiversity
- Looking Forward
- Acknowledgements

4 Geomorphology

The natural river corridor has been heavily engineered over hundreds of years – through straightening, widening, deepening and/or culverting. This was often done for historic reasons, or to control local flood risk, but it has had the effect of reducing the biodiversity and social value of the river and transferring the flood problem downstream.

Almost all the 65km of river corridor has been mapped to assess its geomorphology and the degree of engineering it has undergone. This has also been used to identify opportunity areas for river restoration.

Several river restoration projects have been completed or have got underway during the last few years, including pilot restorations in each of the geomorphological types found in the Crane Valley. Ongoing monitoring is being delivered with citizen scientists to assess the ways in which the river system is responding to these interventions. This is providing very encouraging evidence of both biodiversity and community benefits from these schemes which will be used to help design and deliver future schemes across the catchment.

5 Biodiversity and Ecological Connectivity

The river corridors are vitally important to link larger green spaces together and provide routes for wildlife to move around this otherwise largely urban landscape. Key species using these corridors include around 16 species of fish, seven species of bats, four species of owl, kingfishers and little egrets. The public greatly appreciate the opportunities to see these species and commune with nature on their doorsteps.

One totemic Crane Valley species has been the water vole, though evidence gathered over recent years indicated it had become extinct in the main river corridor. In June 2024, following several years work to enhance river habitat, we released 134 water voles in the lower Crane Valley and were delighted to secure video evidence that they have settled in and started to breed.

Habitats have been improved at several locations. Recent enhancement works include the installation of a major fish pass by the Environment Agency, linking the Lower Crane with the rest of the river system for the first time in hundreds of years. Also, several new kingfisher nesting banks have been installed at Crane Park by volunteers. Work has also progressed well to map and start to remove key invasive species from the catchment. Traps are in place to remove American mink (the main predator for water voles) and we are working towards the eradication of giant hogweed, a plant that is particularly dangerous to public health. Plans for the eradication of floating pennywort and Japanese knotweed and the control of Himalayan balsam are also in development.

In Summary

The SWC programme, delivered through partnership working at a catchment level with broad public engagement, has enabled considerable progress in protecting and enhancing the community and environmental value of the Crane Valley. There is still a lot of work to be done to achieve all our objectives but key structures are in place with pilot projects delivered against each of the themes. The Partners are looking forward to working together over the next five years to enhance the value of the river and the lives of the 650,000 people that live within its catchment.



Introduction

This update to the State of the Environment Report for the River Crane showcases the positive progress and achievements that have been made throughout the catchment since 2022. It provides an overview from Smarter Water Catchments (SWC) but seeks to encapsulate the efforts of all those who work and live in the Crane Valley. Our ultimate vision is to realise the full potential of this high value blue green corridor in West London, delivering enhancements through co-creative engagement of all interested parties including the wider public.

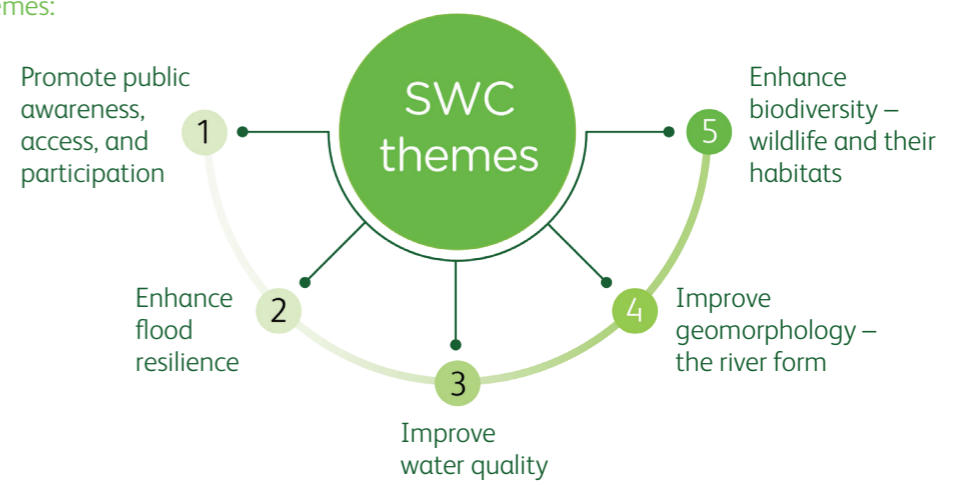
We have made positive progress against most of our targets as described in the chapters below. This report follows the same structure as the initial report in October 2022. It provides an update on the catchment towards the end of the initial five-year Thames Water SWC programme. The programme is scheduled to continue until April 2030 (subject to funding) and this report therefore marks the halfway point. The SWC

programme is delivering across the five major themes in the below illustration:

For each theme we consider the current baseline, the progress over the last five years and targets for the next five years. The final chapter sets out an overview of progress and the forthcoming challenges and opportunities.

The River Crane SWC programme is delivering across five key themes:

River Crane catchment



The Crane Valley

The Crane is a catchment of contrasts. There are open areas with a countryside feel, and leafy suburbs too, whilst there are also many stretches where the environment is far less attractive. In some places the watercourses are difficult or impossible to access, hidden by dense vegetation, squeezed between rows of houses or buried in culverts underground.

There can be an air of neglect, with littering and fly-tipping along riverbanks and adjacent pathways. Despite all this, it's still a valuable habitat for wildlife, including kingfishers, water voles, eels and seven types of bat. It is already appreciated and cared for by many thousands of local people and there is the potential for many more to engage with their local river and open spaces if and when conditions improve further.

The Crane Valley covers approximately 125km² and extends across five west London Boroughs. The headwaters of the River Crane are formed by the Yeading Brook which rises as two separate branches in the London Borough of Harrow. In the London Borough of Hounslow the Crane receives some water from the neighbouring Colne catchment via the Upper Duke of Northumberland's River. The Lower Duke of Northumberland's River is a distributary of the Crane, branching away above the Mereway Road Weir in Twickenham. The Longford River flows through the Crane Valley but is not connected to the Crane. Like the Duke of Northumberland's River it is a historic water transfer channel.

The Crane Valley is home to around 650,000 people and includes areas of affluence and social deprivation. Several major roads and mainline railways traverse the valley. Most of London Heathrow - Europe's busiest airport - lies within the catchment. Much of the land area in the Crane Valley is given over to residential and commercial properties and significant development activity is either ongoing or planned. Within this urban setting, the semi-natural river corridors of the valley act as unifying green threads, linking an extensive and varied network of around 3,000 hectares of publicly accessible open spaces.

The value of the Crane Valley river corridor was first recognised a century ago by Middlesex County Council, in the 1924 West Middlesex Plan, which incorporated much of it into 'The West London Green Chain'. Large parts of this green chain remain intact, some parts in good condition whilst others are significantly degraded.

The Crane Valley is, in many ways, a typical urban catchment. Over the years, much of the river system has been straightened, often accompanied by river widening and bank reinforcement with some culverting. This reduced the local flood risk and allowed development to occur but also had a negative impact on the attractiveness and habitat of the river corridor and transferred much of the flood risk downstream. Engineering works have disconnected the river from its natural floodplain in some places and created barriers to fish movement. The large amount of hardstanding areas and artificial drainage systems (combined with largely clay soils) means that rainfall generally reaches the river channels quickly, leading to sudden rises in water levels in response to heavy rainfall and a vulnerability to drought.

Unusually for an urban river system, there are no municipal sewage works discharges. Mogden Sewage Treatment Works - one of Europe's largest - is located in the lower Crane catchment but discharges directly to the River Thames. However, sewage pollution from misconnections and storm overflows is still a major issue in the Crane catchment, impacting water quality and biodiversity.



- Foreword
- Executive summary
- Introduction
- The Crane Valley**
- SVIC Overview and Context
- Public ownership, access and recreation
- Flood Resilience
- Water Quality
- Geomorphology
- Biodiversity
- Looking Forward
- Acknowledgements

Smarter Water Catchments Overview

The Crane Valley Partnership (CVP) consists of the five boroughs (Harrow, Hillingdon, Ealing, Hounslow and Richmond) alongside Thames Water, Environment Agency, Heathrow Airport Ltd and a wide range of third sector and community based organisations that have been working together for twenty years to protect and enhance the community and environmental value of the rivers and open spaces of the valley.

SWC is a Thames Water initiative. The River Crane catchment is one of three pilot SWC catchments in the Thames Region and is the only urban catchment within this group.

Thames Water has invested £3m in the Crane Valley over five years from 2020 to 2025 in support of SWC activity. SWC is delivering around 80 catchment and nature-based solutions (C&NBS) across the key themes. It has brought together local authority and private landowners with 40+ expert organisations across all sectors and 70+ community-based groups to create effective networks for delivering change.

These networks are responsible for identifying and delivering a further 70+ projects and £20m of investment linked to our key themes. Around half of the investment has been generated as a direct result of the programme and we are looking to optimise all of it in support of our objectives.

Lead organisations are helping to co-ordinate each theme and the SWC Crane programme is being overseen by a Steering Group with representation from each of the key sectors. As a result we have a much better understanding of the issues and opportunities for each theme across the catchment. Pilot projects have already been delivered for each theme and ongoing monitoring is helping to optimise their benefits and provide insight for future projects. Community groups and the wider public have been central to the delivery against each

theme, co-designing solutions and greatly expanding our citizen science programmes to monitor their effects.

At the same time the programme has encouraged more cross-sectoral working within major organisations. For example both the Environment Agency and Thames Water have set up working groups for the Crane Valley and these meet regularly to share information and discuss projects that require inputs across internal work siloes.

The work of the last five years has greatly energised the Partnership, yielding significant benefits on the ground and helping to deliver our vision for the catchment as:

“ An urban river corridor teeming with wildlife and unconstrained by pollution, serving as a vital community resource where people can connect with nature and improve their wellbeing. ”

Figure 1.1 shows the distribution of projects across the catchment and can be found in the theme sections. The remaining sections summarise our progress against each theme and the future targets to deliver on this vision.

- 1 Headstone Manor Park Wetland
- 2a Yeading Brook Unbound: Headstone Manor Park
- 2b Yeading Brook Unbound: Yeading Walk
- 2c Yeading Brook Unbound: Streamside Open Space and Allotments
- 2d Yeading Brook Unbound: Roxbourne Park
- 3 Transforming Spider Park Phase 3 River and Wetland Enhancements
- 4 Nature Recovery and Flood Resilience at the Yeading Confluence
- 5 Construction of backwaters at Yeading Brook Meadows
- 6 Frogs Ditch improvements
- 7 Reclaiming the Riverside
- 7a Reclaiming the Riverside: riverside access route - A4 Bath Road to Waye Avenue Open Space
- 8 Riverside Access at Baber Bridge
- 9 CREW - Crane Restoration and Engagement for Water Voles (entire project zone)
- 9a CREW - Crane Restoration and Engagement for Water Voles: Little Park/Pevensey Road NR sub-zone
- 9b CREW - Crane Restoration and Engagement for Water Voles: Crane Park Island sub-zone
- 10a Lower River Crane Restoration Project: pilot project at Twickenham Rifle and Pistol Club
- 10b Lower River Crane Restoration Project: Mereway Nature Park
- 10c Lower River Crane Restoration Project: Twickenham Junction Rough
- 10d Lower River Crane Restoration Project: London Road
- 10e Lower River Crane Restoration Project: Moormead and Bandy Recreation Ground
- 11 Mereway Fish Pass
- 12 Understanding the habitat
- 13 Northcote Nature Reserve
- 14 Riverside path enhancements - Donkey Wood
- 15 Riverside path enhancements - Cygnet Avenue to Cavalry Tunnel
- 16 Riverside path enhancements - Cavalry Tunnel to Leirim Park
- 17 Take Me to the River
- 18 Community engagement at Stonefield Park
- 19 Better Water for our Wetlands
- 20 Cut, Scoop and Gouge: further steps to enhance a wilder Crane
- 21 Drainage ditch daylighting (and pond) at Elephant Park
- 22 New meandering drainage ditch at Hillingdon Court Park
- 23 Wetland feasibility and outline design at Newton Farm Ecology Park



Figure 1.1 Distribution of projects across the catchment.

Public awareness, access and participation

This theme considers the communities living in the Crane catchment and how they access and use the open spaces. The overall aims are to:

- Increase the appreciation of these river corridors by local communities and policy makers.
- Place every river corridor and open space under some form of community stewardship and increase the capacity of the existing community groups.
- Encourage new audiences to engage – this includes businesses and communities that may not normally engage with community stewardship or citizen science.
- Encourage public use of all the corridors and open spaces for recreation and health/wellbeing.
- Create an unbroken Crane Valley Trail with visitor facilities at regular intervals.

Headlines

Encouraging diverse community participation in environmental stewardship

Expanding engagement to new audiences through activities, events and publications

Enhancing the Crane Valley Trail over 35km from the source to the Thames

Linking over 70 local community groups to improve the river and open spaces

Funding 50 community grants to local groups and awarding 35 larger project funds worth over £900,000.

Indicators

Crane Community Fund has provided 50 grants to local groups worth almost £100,000

Number of community-based groups working in the catchment has grown from 44 to 73

Crane Project Fund has awarded 35 grants worth over £800,000

Number of active volunteers has grown from below 1,000 to 2,000+

Around 6km of paths have been improved along the potential Crane Valley Trail route.

What has been achieved in the last five years?

A Public Engagement Strategy (PES) was produced to help the Partnership reach a wide range of community, business and other stakeholders. It addresses the opportunities and challenges identified, such as gaps in stewardship and funding. It seeks to incubate new community stewardship and awareness in new audiences, build the capacity of existing community-based groups and develop new networks for communication, discussion and sharing best practice. The strength and capacity of community involvement has grown between the baseline analysis in 2022 and 2024. This growth has been helped in part by the Crane

Valley Community Fund, created in 2022, which has provided 50 grants to small local groups working within the catchment. A new community forum has been created to strengthen collaboration and interaction, share best practice, explore opportunities, and engage new audiences – young people & schools, families and business. The areas of active community engagement were mapped and key gaps were addressed through targeted events. Around 30 new community groups have been identified and brought into the partnership, several of which have been created as a direct response to the programme. This is shown in Figure 2.4.

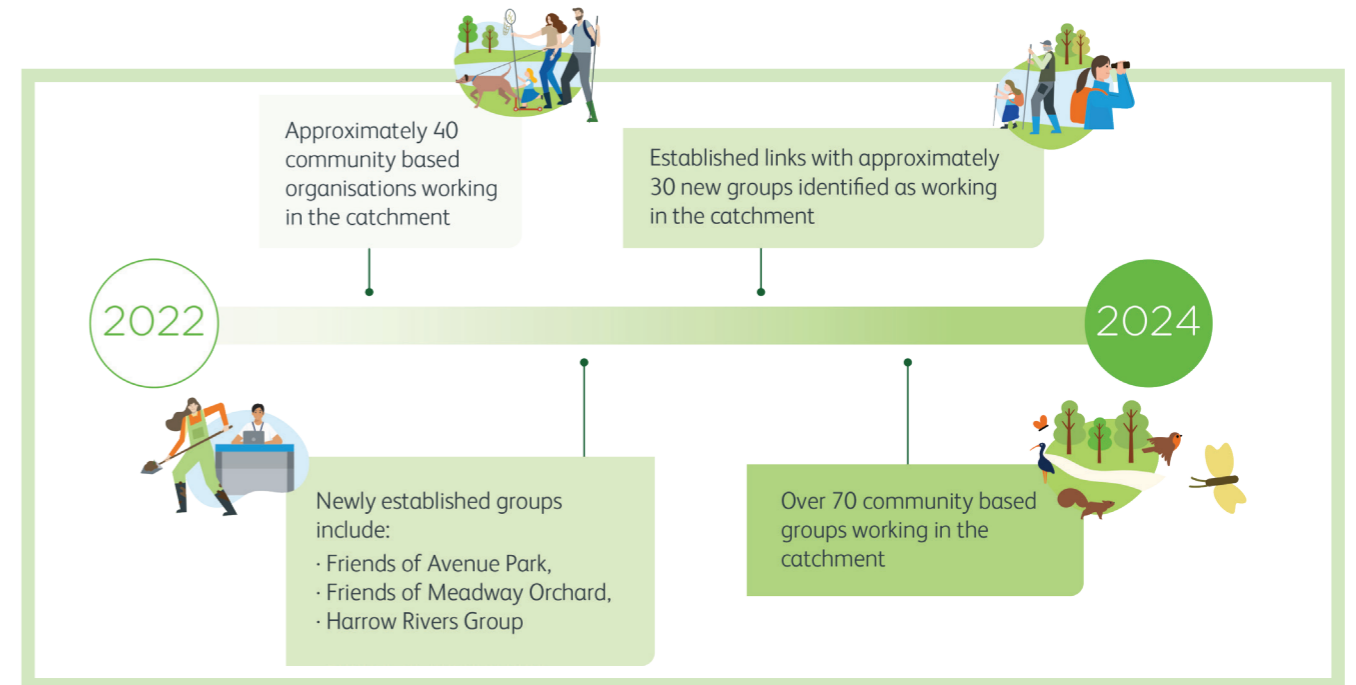


Fig 2.1 - Progress made in growing capacity for community stewardship from 2022 to 2024.

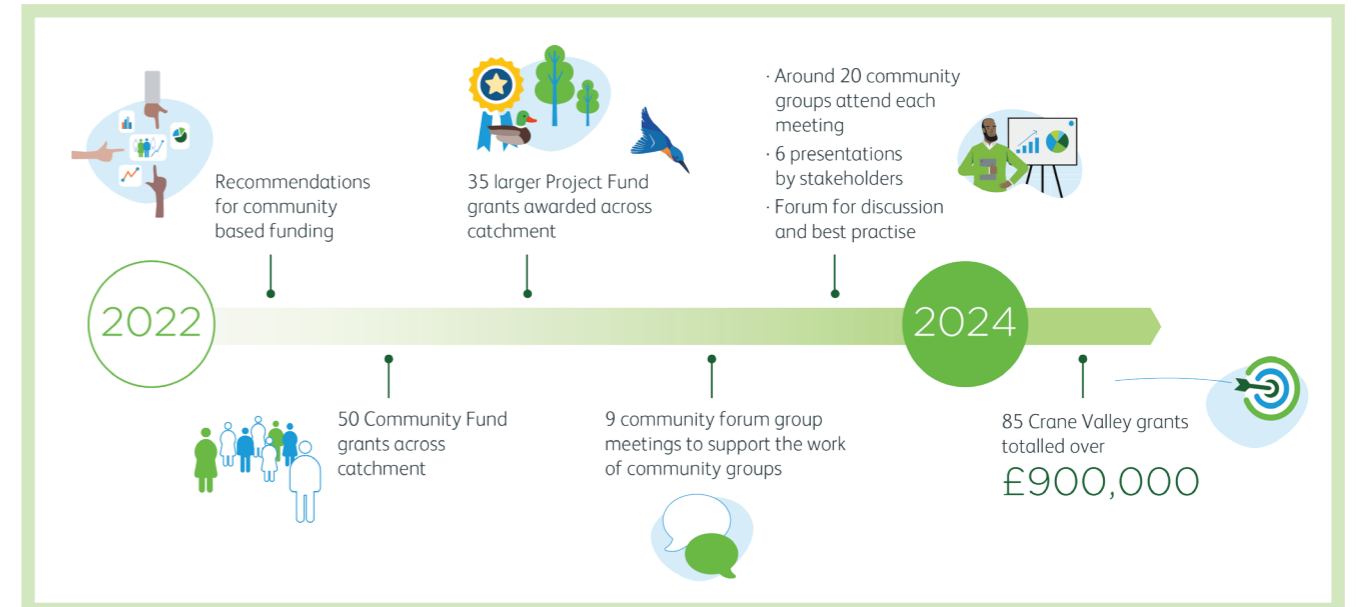


Fig 2.2 - Supporting communities via the Crane Valley Community & Project Fund.



Fig 2.3 - Growth in the number of volunteers within the catchment between 2022 and 2024.

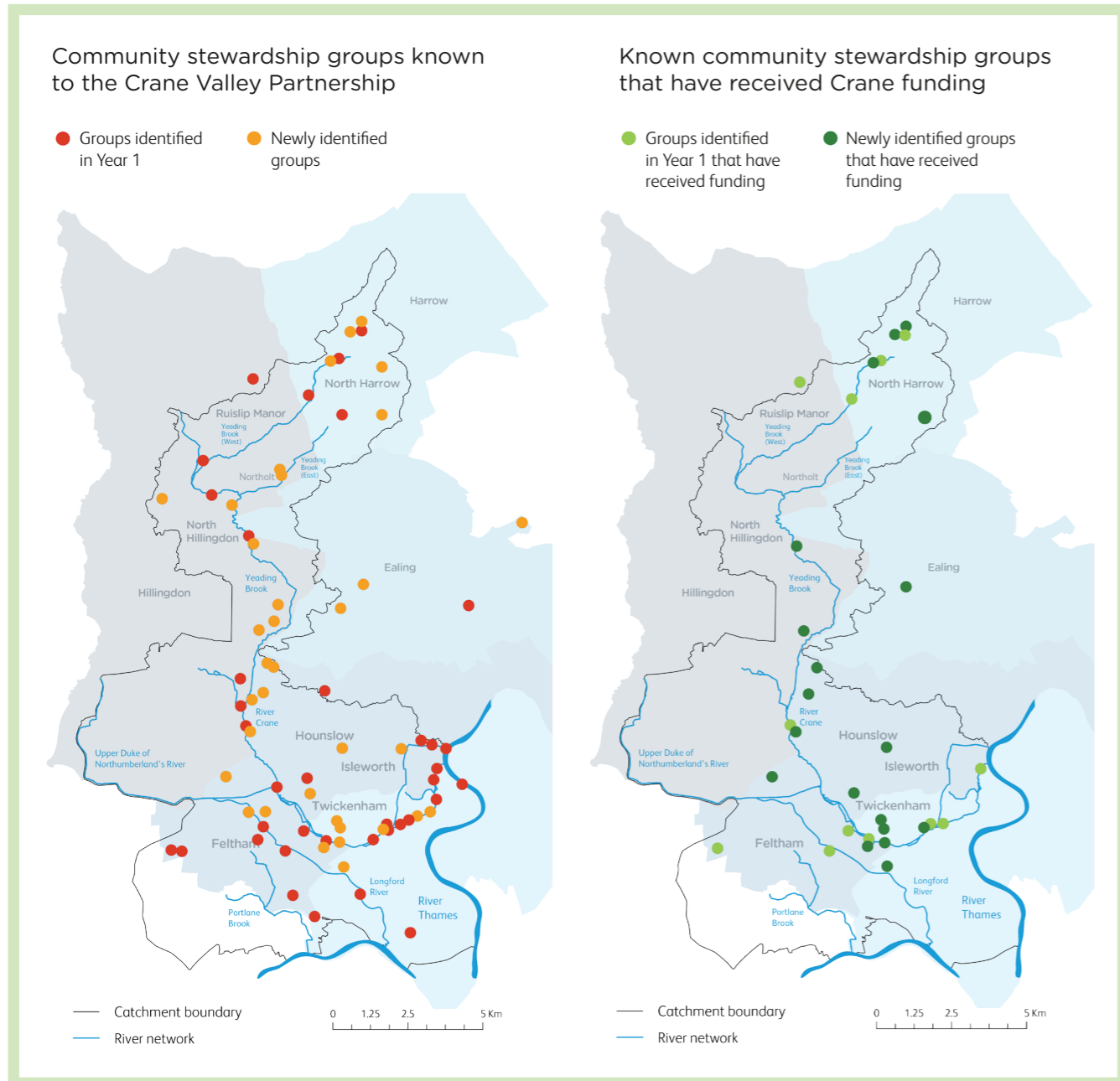


Fig 2.4 - The maps display growth in community stewardship groups known to the CVP and those which have received funding from the Crane Valley Community Fund.

Following the development of an Ethnicity Diversity and Inclusion (EDI) Plan to encourage more diverse engagement within the Crane Valley, the communities team worked with Zoological Society of London (ZSL) to explore how to broaden the audience of citizen scientists. With financial support from the Esmée Fairbairn Foundation and the Mayor of London, a citizen science training programme was delivered in partnership with Cranford Community College. 12 participants from under-represented communities subsequently received a newly developed AQA citizen science unit award.

The access team has worked alongside the London Borough of Hounslow as a pilot authority for the Crane Valley Trail, delivering over 1,000m of new and improved public access alongside the river. Several other projects are underway, developing schemes for further pathway improvements and associated barrier removals. Other work has delivered all-ability cycling to a new hub in the Lower Crane Valley in the London Borough of Richmond.

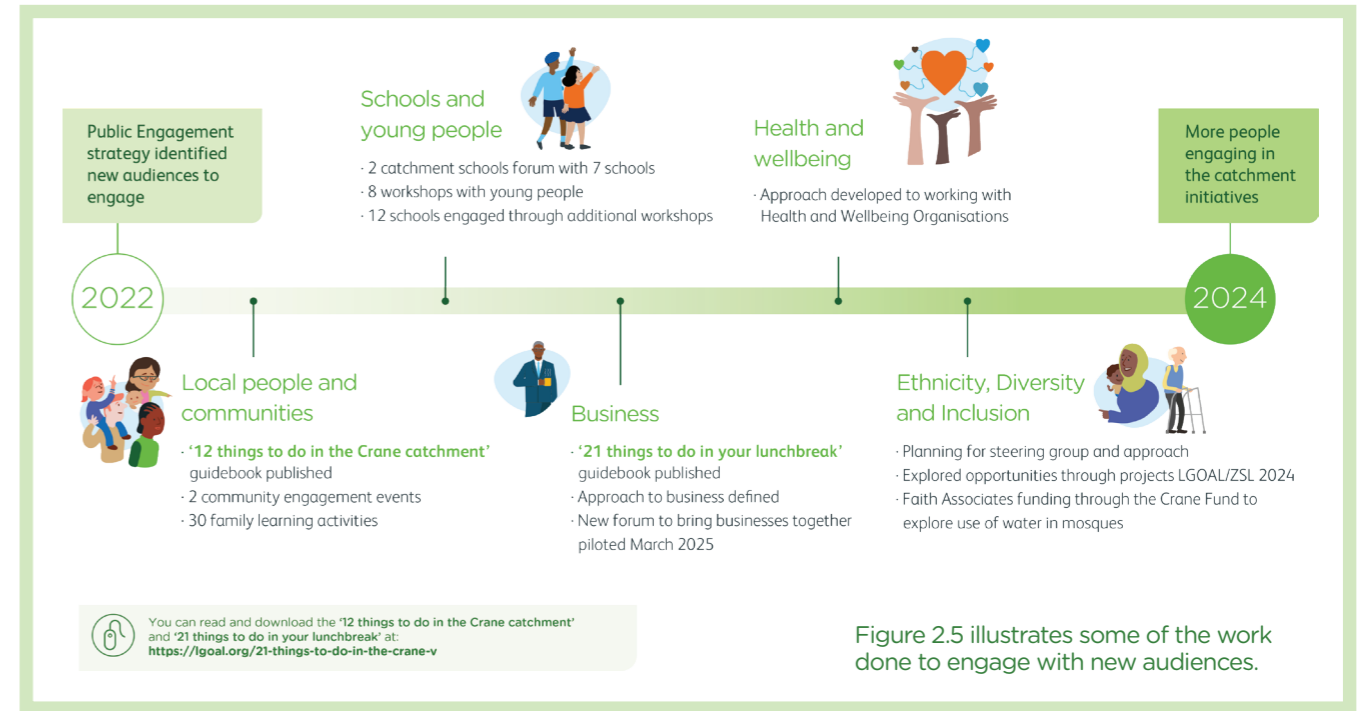


Figure 2.5 illustrates some of the work done to engage with new audiences.



Figure 2.6 details examples of work done to address areas where there were gaps in community engagement along the river corridor.

Case study 1

New Audiences – young people and schools forum.

In 2023 we held the first Crane Schools Forum bringing together young people from three secondary schools in the catchment to present their visions for the River Crane and the river corridor following a programme of workshops held in the green spaces. The model was repeated in 2024 with four schools contributing their



ideas through a small social action aimed at raising awareness of surface water pollution that ends up in local rivers. In both years, young people were given the opportunity to present their ideas to a group of policymakers and decision takers and hold discussions with them. The audience found the young people inspiring and engaging and were interested in their ideas. We have looked to the audience to take forward the ideas presented.

The workshops and schools forum has given young people the opportunity to have their voices heard, to exert some influence and to show that they want to take part in caring for the Crane to make it a better place for local people and wildlife. The aim is to continue to engage with young people using this model and to encourage more schools to take part in the workshops and annual forum.



Case study 2

Friendly Parks for All project: developing a model to improve access in Kneller Gardens, Twickenham.

Richmond Council parks team have been developing a 'Friendly Parks for All' network. The principle behind the model is that all people should be able to have opportunities to access, enjoy, learn, and participate in the green spaces in the borough. Kneller Gardens in Twickenham is on the River Crane and offers access to local transport links, level wide paths and plenty of well-spaced benches. Facilities include a café and toilets as well as opportunities for socialising and a short waymarked path with interpretation that is accessible for people with visual impairments. Recent work with blind and visually impaired park users highlighted the need

for marking park furniture such as bollards and cycle hoops so that they are visible. There is a wide entrance to the park suitable for pedestrians and cyclists. The SWC Project Fund has provided funding that enabled All Ability Cycling to be established in the park twice a month. This popular activity has encouraged access to cycling along the Crane corridor for more local people. It supplements an already extensive programme of accessible activities that make use of the park: monthly lunches for older people, accessible walks, and a dementia-inclusive litter pick.

Crane Valley Trail and Access

- Sustrans surveyed the riverside paths and identified a potential Crane Valley Trail route in 2022. It is c58km in length (on one side only and there are significant stretches with alternatives on both sides and potential for circular routes as well).

Figure 2.7 shows the indicative route proposed by Sustrans and the current level of accessibility.

- accessible is useable year-round by walkers, cyclists, wheelchair users and buggies.
- Semi-accessible may be only suitable for 'welly walking' due to slippery, wet or uneven surfaces.
- Note that there are still barriers to entry even where paths themselves are accessible.
- Significant project funding has been provided by Hounslow Council to improve physical access and engage the community. 3400m of path has already been improved and another funded project, 'Take Me To The River' is piloting the Crane Valley Trail. Progress is shown in figure 2.8
- A Crane Valley Trail Working Group has been set up with all five boroughs represented to agree the detailed route and manage necessary improvements.



Fig 2.8 - Improvements to access completed along the Crane Valley Trail.

	BOROUGH		
	Hillingdon	Hounslow	Richmond
Improved surface/boardwalks (m)	Field end to Queens Walk: 470m Yeading brook: 280m Frogs Ditch: 690m	Donkey Wood: 1400m Brazil Mill: 600m Pevensey: 1400m	Twickenham Station to Moormead: 400m New dog dip and new road crossing at Kneller Gardens led by Richmond Council.



What do we want to achieve in the next five years?

Public awareness and recreation

By 2030 we will have:

- Doubled stewardship and built capacity through volunteering and citizen science.
- Established funding streams for community groups to access.
- Encouraged new audiences to take an active role in the promotion, management and enhancement of the river corridor through volunteering and citizen science.
- Built on engagements in the areas of limited community involvement to place every stretch of the river corridor under community stewardship.
- Strengthened forums and widened participation in them to enable best practice to be shared and bring together interested stakeholders.
- Encouraged diverse community participation in environmental stewardship through the Equality Diversity and Inclusion (EDI) plan.
- Encourage broad community and political support for the Crane SWC.

Access

By 2030 we will have:

- Developed a joined-up high quality network of public spaces through the Crane Valley Trail project.
- Worked with landowners to ensure that the Crane Valley Trail is accessible to all.
- Developed a distinctive and cohesive identity for the catchment.
- Encouraged the development of nodal points of community facilities to support public engagement.
- Developed green travel targets for the Crane Valley Trail and linked trails with public transport, councils and businesses' Green Travel Plans.
- Developed a variety of communication channels including maps and information leaflets.



Enhance flood resilience

This theme focuses on enhancing the flood resilience of the catchment and the communities at risk within the Crane catchment. The overall aims are to:

- Improve connectivity with the river so that remaining undeveloped areas of floodplain function more naturally.
- Increase water storage capacity and infiltration through the creation of backwaters, wetlands, wet woodlands and other sustainable drainage systems (SuDS).
- Raise protection levels for some homes, businesses and infrastructure by at least one flood band.
- Enhance community resilience to flooding in at-risk areas.
- Reduce or offset the need to expand Mogden Sewage Treatment Works to accommodate increased surface water inflows.

Headlines

Whole catchment flood risk assessment collated, accounting for flooding from river, surface, groundwater and tidal sources

Existing flood resilience schemes identified and mapped to allow for opportunities for collaborative working

Optimal locations suitable for the creation of natural wetlands (to slow or store runoff) identified

Indicators

Since 2022, an additional 1,837m³ of storage had been built into the pipe network that carries surface runoff to the Crane and “slow the flow” measures have been implemented across 4.2ha of the urban catchments draining directly to Mogden Sewage Treatment Works

Eight surface water SuDS schemes within the catchment will be completed by March 2025

Background

Surface water flooding (flood risk from severe rain) and sewer flooding are the most significant sources of flood risk within the catchment. Extensive impermeable surfaces like roofs and roads rapidly turn rainfall into surface runoff in urban areas. Undersized surface water sewer networks are often overwhelmed, flooding property and infrastructure. This type of flooding is increasing and becoming more severe as urban areas expand and climate change makes extreme rainfall events more common.

Throughout the Crane Valley, much of the river system is fringed by a green corridor – an area that naturally stores water during extreme storm events, alleviating the risks to property from river flooding. The corridor is an integral part of flood risk management for the Crane Valley. It needs to be protected, and if possible

expanded, to prevent additional flood risk, especially as climate change increases the risk of river flooding in the catchment.

Surface water and river flood alleviation schemes reduce flood risk to properties and often provide wider benefits to water quality, biodiversity and amenity. Small schemes can make a difference. For instance, residents can help reduce flood risk to their community by de-paving front gardens and/or installing water butts to capture run-off from roofs. Larger flood risk schemes have a bigger impact, but often require a long-lead time from identification of a flooding problem to implementation. This is because funding constraints, hydraulic studies, design and permissions from stakeholders all take time. Council Lead Local Flood Authorities (LLFAs), the Environment Agency, Thames Water and local residents are all responsible for managing flood risk.

What has been achieved in the last five years?

Surface and Sewer Water Flood Risk:

The urban nature of the Crane Valley and the susceptibility of the catchment to surface water flooding make SuDS an important and very effective way of managing flood risk.

The 20,000m³ detention basin system at Headstone Manor Park (London Borough of Harrow) completed in 2021, has proved to be effective at reducing the risk of property flooding. Building on this success, eight additional SuDS schemes have since been delivered elsewhere providing an additional 1,837m³ of storage. These schemes have been made possible largely through the development of a localised SuDS programme, driven by the Strategic Partnership between Thames Water and the London Borough of Hounslow (which is part of Thames Water’s Strategic Surface Water Management Plan). Collaboration between LLFAs, Thames Water and the Environment Agency has also led to a programme of flood risk studies throughout the catchment that will refine our understanding of flood risk in the catchment and have the potential to deliver additional SuDS interventions.

Drainage and Wastewater Management Plan (DWMP):

Thames Water has developed our first long-term strategy for wastewater and drainage issues within the Mogden System that covers the London Boroughs of Hounslow, Ealing, Harrow, Hillingdon, Richmond upon Thames and Brent and some parts of Surrey. The DWMP sets out a strategy for how to meet future challenges such as climate change, population growth and urban creep which could impact the sewerage and drainage systems in our region over the next 25 years. DWMP continues to be an opportunity to develop partnership projects.

Catchment Prioritisation for Wetland Implementation:

Wetlands and above ground SuDS do more than just reduce flood risk. They also benefit water quality, biodiversity and amenity. A mapping exercise was completed to understand where wetland and SuDS implementation could provide the most overall benefits to the catchment. Figure 3.1 shows the process used to rank optimal locations and sub-catchments for wetland and SuDS implementation.

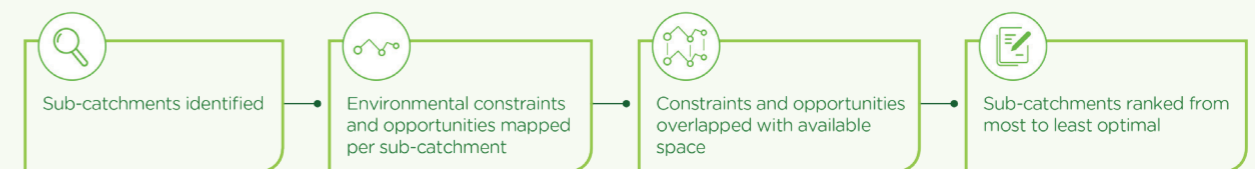


Figure 3.1 shows the process used to rank optimal locations and sub-catchments for wetland and SuDS implementation.



Top 20 Wetland Opportunity Areas

- 1-5
- 6-10
- 11-15
- 16-20
- London Boroughs

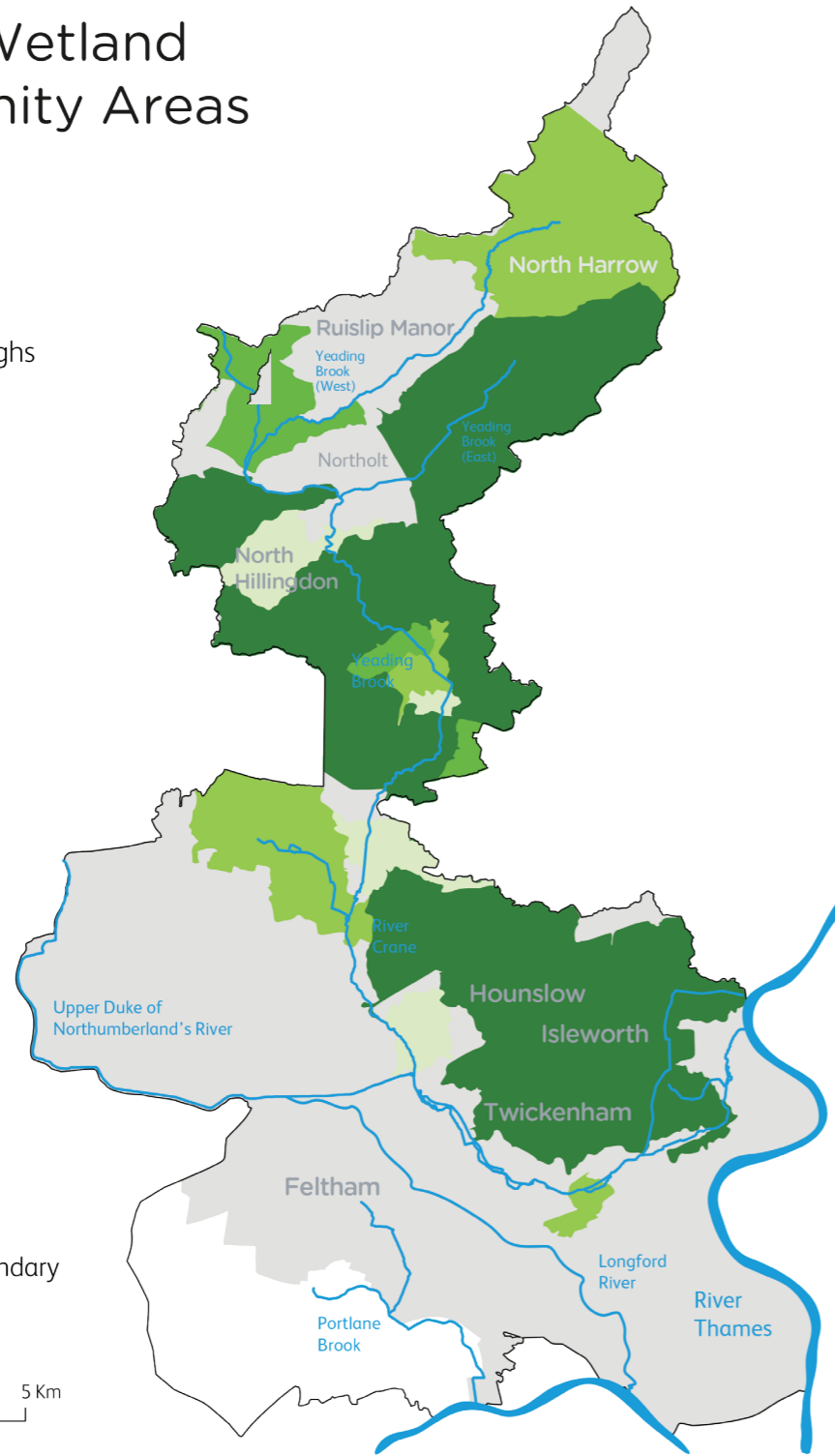


Figure 3.2 shows the top ranked sub-catchments for wetlands in the Crane Valley.

Figure 3.2 shows the top ranked sub-catchments for wetlands in the Crane Valley. This mapping has been shared with flood risk and environmental managers throughout the catchment, supporting decision-making. For example, the maps were used by Harrow LLFA to

recommend a wetland in Newton Farm Ecology Park within a sub-catchment that is ranked as having the second highest potential benefits for implementing wetlands. It provided the council with strong justification for investing in SuDS in this area.

Case study 1

Wellington Road Surface Water SuDS Scheme.

The Wellington Road SuDS scheme reduces surface water flood risk to the local area by providing water storage for severe flood events whilst also slowing the flow of water to Mogden Sewage Treatment Works and reducing sewer flooding and overflows. The SuDS scheme creates additional community benefits by upgrading a local park to create a 'community-centric corridor' that includes new gathering spaces, benches and picnic spots. It also incorporates a wildflower meadow and ornamental planting, to increase local biodiversity.

The scheme diverts a Thames Water surface water sewer into a below ground storage feature that holds up to 585m³ of water. It was designed to attenuate flows for a 3% annual exceedance probability storm event (this refers to a storm event that has a 3% chance of occurring in any given year or that is likely to occur once every 30 years), with an allowance for climate change.



Figure 3.3 Visualisation of the landscaping and park upgrades of the SuDS scheme at Wellington Road.

The scheme has been progressed through the Thames Water Strategic Partnership with the London Borough of Hounslow (part of Thames Water's Surface Water Management Plan) and will be completed by March 2025.



Case study 2

College Road Raingardens.

Raingardens are small water storage features- usually located on highways and other hardstanding areas- providing water storage at source, thereby minimising the inflow of water into gullies and sewer systems during storms. They help to prevent flooding during smaller, and more frequent, storms. As small green spaces,



they also provide additional benefits, including urban greening, water quality improvements through filtration and increased biodiversity through the creation of green corridors and selective planting. The scheme consists of three raingardens, that are 14m², 23m² and 23m² and store a total volume of 11.6m³. The raingardens were implemented on College Road, capitalising on junction improvement works being completed by the council's highway's team. The raingardens were built in Hounslow as part of the Strategic Partnership between Thames Water and the London Borough of Hounslow in November 2023.

Figure 3.4 The photos show two of the raingardens built on College Road, designed to capture rain water from the surrounding roads and reduce peak flows into the sewer network.

What do we want to achieve in the next five years?

① Surface and Sewer Flood Risk:

We would like to see an increase in local SuDS schemes developed from the surface water flood studies being undertaken within the national flood risk programme, with at least ten SuDS schemes built in the catchment.

② Public engagement:

We need to keep working with people living in the catchment, encouraging them to contribute directly to reducing flood risk in their communities – for instance by de-paving front gardens and/or installing water butts.

③ River Flood Risk:

There are opportunities to make more use of the green spaces within the river corridor to store flood water. This could reduce the risk of flooding to property and infrastructure or offset the effect of climate change. In particular there are four green spaces in the catchment where restoration of river habitat could be coupled with reconnecting parts of the floodplain to create additional natural storage for flood water. We would like to work with partners to develop schemes at these and other sites.

Improve water quality

This theme focuses on identifying pollution sources within the Crane catchment and reducing these inputs to improve the water quality of the watercourses. The overall aims are to:

- Extend regular public reporting of pollution problems to the entire catchment.
- Significantly reduce the overall numbers and severity of misconnections and cross connections.
- Treat the most contaminated highway run-off effectively at or close to source.
- Reduce pollution issues identified on subsequent Outfall Safaris.
- Achieve Good Ecological Status for natural water bodies or Good Ecological Potential for heavily-modified water bodies throughout the catchment.

Headlines

Improvements to Water Framework Directive (WFD) Good Ecological Status parameters, in particular dissolved oxygen and ammonia

Heathrow Airport's new water treatment system has improved the quality of input from their land

New wetlands showing positive impacts on water quality

Indicators

Average Ammonia concentrations are showing signs of improvement over the last five years.

Dissolved Phosphate concentrations remain fairly consistent and poor. However, we are starting to see trends gradually improve.

Dissolved Oxygen concentrations remain poor across the upper reaches of the catchment in particular. But data are showing signs of improvement over the last five years, particularly in the lower catchment.

Background

Water quality in the Crane Valley is well documented through the multi-sector approach to monitoring key issues, pressures and areas of concern. Citizen Crane holds over 10 years of water quality and Riverfly invertebrate data (and is now routinely monitoring 14 sites).

The Environment Agency has a long-term water chemistry dataset, Thames Water has a SWOP investigating misconnections within the network, and ZSL has an Outfall Safari programme which contributes to Thames Water's investigations. This data is coupled with site-specific investigations across the Crane

catchment using real-time monitoring, working with local friends groups or interest groups at sites (e.g. along the Yeading Brook East and at Headstone Manor Park Wetlands).

Our ambition is to achieve and maintain 'Good Ecological Status / Potential' across the Crane catchment waterbodies, of which there are four. To do this, it is important that the information collected is now used to define actions that will address some of these chronic pollution issues and long-term background problems caused by foul sewer network issues and misconnections, road run-off and occasional highly damaging pollution events.

What has been achieved in the last five years?

1 WFD classifications:

WFD classifications produced by the Environment Agency indicated the improvement to 'Good Ecological Status' for multiple parameters over the period from 2019 to 2022 with eight parameters improving over the four Crane waterbodies, and none worsening. It should be noted that these data are from an interim set of sampling. A full data update will be coming within the next two years which will give a complete picture and hopefully continue these positive trends that we have seen in interim data.

2 Riverfly Monitoring Initiative (RMI) Data:

RMI data at sites that had consistent sampling between 2019 - 2023 (five years) show that the annual average RMI scores at seven sites have increased, one has not changed and two have declined. Regular monitoring is now being carried out at 14 sites across the catchment by trained citizen scientists.

3 Heathrow Airport treatment works:

Since the glycol removal process has been enhanced at the Heathrow Eastern Balancing Reservoir (EBR), there has been no evidence of the recurring problems with sewage fungus that would periodically flare up downstream of the EBR outfall in winter.

4 Chemicals of Emerging Concern (CEC):

The CEC investigation conducted by Imperial College London showed that total CEC concentrations in the Crane catchment were similar to measurements in other rivers in the London area. The majority of compounds measured at multiple sites sampled by ZSL across the catchment presented insignificant environmental risks (eight presented low risks and four represented medium risk). Of these, six compounds have been highlighted on EU watch lists as 'Chemicals of Emerging Concern' but there were no chemicals of 'high risk' recorded. Following this investigation, it was recommended that a detailed assessment be carried out to identify exactly where CECs originate from and how long their contamination lasts in receiving water bodies. Furthermore, it was advised that results of this investigation were shared with local communities to help promote responsible river use and help minimise chemical footprints. Over the next five years, the

Chemical Investigations Programme (CIP), an industry wide investigation into the problem of emerging contaminants will help inform water company strategy as well as environmental legislation when it comes to controlling emerging substances such as forever chemicals, hormones, pesticides, anti-microbial resistance and microplastics.

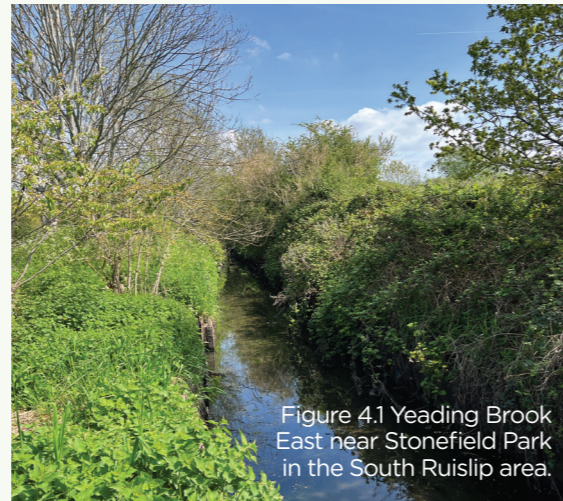


Figure 4.1 Yeading Brook East near Stonefield Park in the South Ruislip area.

5 Yeading Brook East Investigations:

The Environment Agency, London Borough of Harrow, and Thames Water have been working in partnership to investigate pollution sources in the Yeading Brook East. Where possible rectification of these sources will be pursued.

6 SWOP:

The Thames Water SWOP continues to have a positive impact on the removal of misconnected properties from the river system with the identification and rectification of cross-connection problems being key to enhancing river water quality. In total, 39 outfalls were fully rectified between 2015 and 2020 and the average number of misconnected properties per outfall reducing to 10 from 12. It is likely that approximately 1,000 misconnected appliances will have been removed from the surface water network by the end of the next 5-year cycle.

7 Outfall Safari:

See case study on page 34.

Long-term trends in annual average Ammonia (as N) by water body

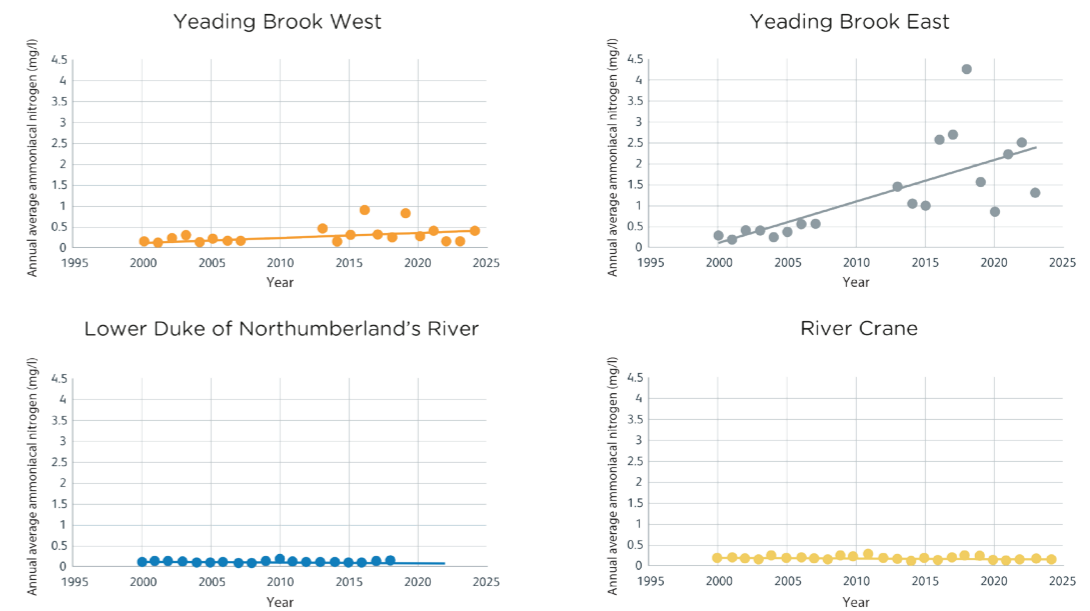


Fig 4.2 - Annual average Ammonia (as N) concentrations by water body.

Ammoniacal nitrogen (TAN) is toxic to aquatic life in higher concentrations with the main source in an urban catchment being sewage effluent. As with the analysis carried out in the previous State of the Environment Crane Report, TAN concentration data across the catchment show that sites in the upper reaches (Yeading Brook) continue to have higher average TAN

concentrations than the lower reaches (the Crane and Duke of Northumberland's River). However, looking at the last five years of data specifically, average TAN concentrations in the Yeading Brook East and West are declining. This improvement in TAN and subsequently water quality, is reflected in the Yeading Brook WFD shift in status for Ammonia from 'Bad' to 'Poor'.

Long-term trends in annual average Dissolved Oxygen by water body

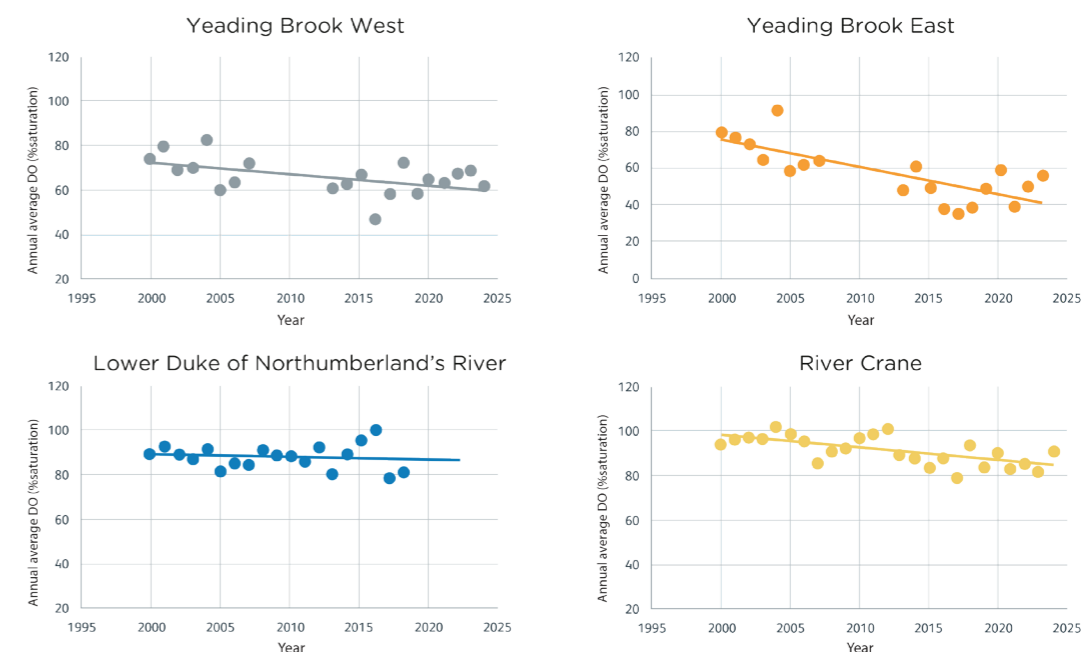


Fig 4.3 - Annual average percentage of dissolved oxygen by water body.

Low oxygen levels can harm aquatic wildlife. Since the last reporting period in 2022, there have been signs of improvement in dissolved oxygen concentrations within the catchment. Lowest concentrations of dissolved oxygen continue to be recorded at sites on the Yeading Brook East. The long term trends continue to show overall declines and reflect poor dissolved oxygen

concentrations. However, looking specifically at the last 5-year period (where data were available), average DO% has slightly increased on the Yeading Brook West, Yeading Brook East and River Crane (there is no recent data available for the Lower Duke of Northumberland's River). This trend aligns with the improvement in WFD status shifting from 'poor' to 'good'.

Long-term trends in annual average Orthophosphate by water body

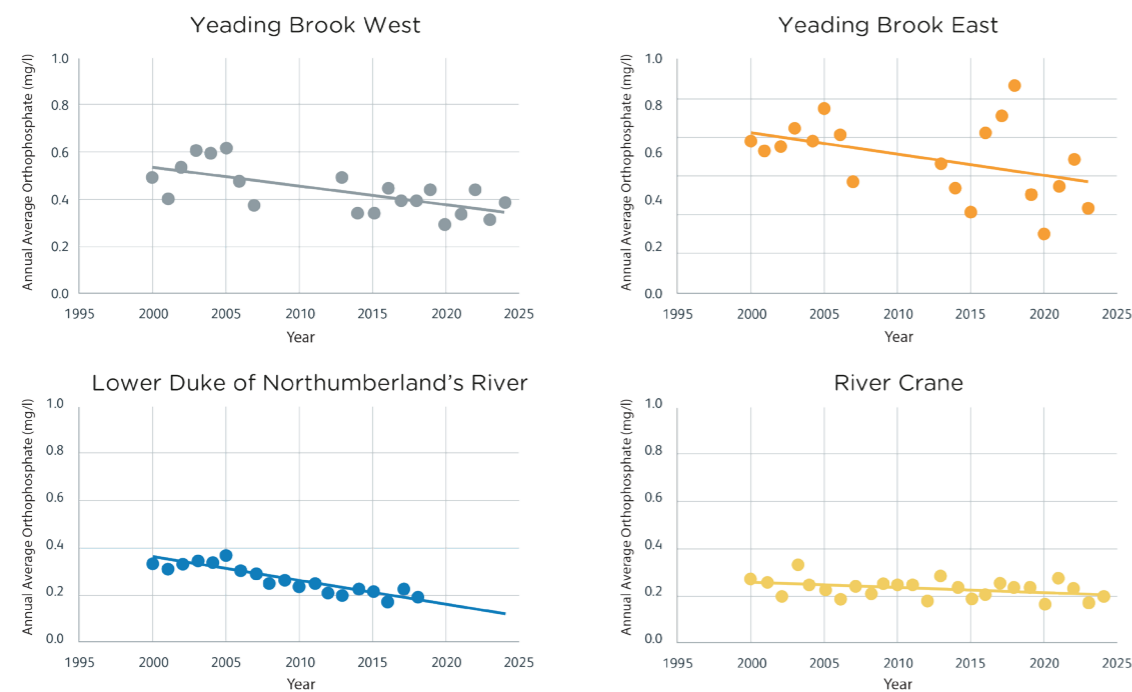


Figure 4.4 Annual average dissolved phosphorus concentrations by water body.

Excess dissolved phosphorus (as orthophosphate-P) contributes to reduced river water quality and in high concentrations can be harmful to aquatic life. Dissolved phosphorus data was not reviewed in the last State of the Environment Crane Report, however, long term annual average data show relatively consistent concentrations

with some slight declines in concentrations and no major recent increases across all Crane catchment rivers. Of the rivers analysed, the Yeading Brook East has consistently had the highest dissolved phosphorus concentrations over the last 25 years.

Case study 1

Wetland Monitoring.

The initial project stemmed from monitoring Headstone Manor Park Wetlands in 2022/23 following completion of its construction in 2021. The wetland monitoring project found that through adapting existing invertebrate sampling methods to monitor the health of this system, it was possible to effectively track pollution,



wetland ecosystem function and the performance of nature based solutions. Reports can be found on the Crane Valley Partnership's Project Library webpage.

Pilot Project Summary:

Through this project, volunteers have restarted their monthly monitoring of the Headstone Manor Park Wetlands and a new group of citizen scientists has been trained at Newton Park West Wetlands.

These groups survey invertebrates on a monthly basis using the newly developed scoring system while also gathering fixed-point photographs and water quality data (ammonia and phosphate).

Data will be reviewed after six months of monitoring, ZSL will work to fine tune the pilot monitoring methods, and work with practitioners to workshop ways that we could refine this as a systematic approach to monitor the health and performance of other constructed wetlands in future.

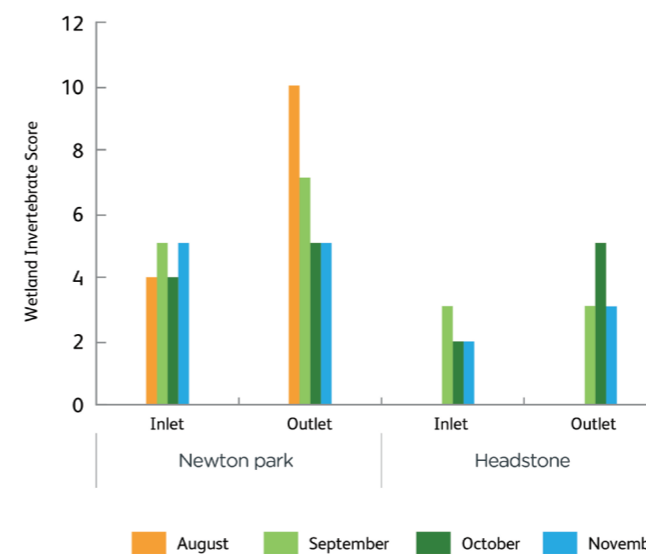


Figure 4.5 Graph comparing inlet and outlet invertebrate scores across Headstone and Newton Park Wetlands can be seen above.

Case study 2

Outfall Safari.

The Outfall Safari programme works with trained citizen scientists to survey every tributary of the Thames that flow above ground in Greater London, on a four-year rotation. The Outfall Safari was first carried out on the River Crane in May 2016, repeated 2021 and most recently repeated in 2024.



- Recruited and trained 22 local volunteers across two training sessions to assess and report pollution to Thames Water on an ongoing basis.
- As part of a trial to improve data on individual outfall pollution histories, Thames Water assigned unique reference numbers and What3Word locations to the outfalls they own.
- In total, 56km of waterways were earmarked for survey work: These included the River Crane, Yeading Brook, Frogs Ditch and the Duke of Northumberland’s River.
- Approximately 25km of river channel were surveyed. Remaining sections were left un-surveyed due to these river sections having no safe/suitable access.
- Recorded and mapped dry weather conditions of 146 outfalls within the surveyed Crane catchment. Results indicated that this was a polluted river, with 30 outfalls scoring ≥ 6 .

Next Steps:

- Repeat the Outfall Safari in the Crane in 2028 and in the meantime continue to encourage/train volunteers to report polluting outfalls to Thames Water.
- Now that the first round of W3W referencing data has been collected, comparisons of individual asset pollution history data can be tracked to monitor potential improvements over time.

	2016	2021	2024
River length surveyed (km)	34	45	25
No. volunteers	15	46	22
Outfalls evaluated	221	223	146
Impact Score*			
0	162	172	115
1 to 4	26	24	1
5 to 9	24	19	27
10+	9	8	3

* Impact score is based on visual pollution indicators using the methodology developed by Water UK and The Environment Agency’.

Figure 4.6 Outfall safari comparison of data from 2016, 2021 and 2024.

What do we want to achieve in the next five years?

- 1 Achieve Good Ecological Status for natural water bodies or Good Ecological Potential for heavily-modified water bodies throughout the catchment.
- 2 Track the impacts that restoration/improvement initiatives have had on biodiversity e.g. the enhancement project at Spider Park and improvements soon to take place as a result of the Yeading Brook Unbound Project.
- 3 Track the history of, and compare, Thames Water’s outfalls using the new referencing system.
- 4 Resolve chronic pollution issues identified on the Yeading Brook East.
- 5 Continue river restoration work across the catchment to improve water quality.
- 6 Recruit more volunteers to ensure Citizen Crane project continuity beyond 2030.

Geomorphology

This theme focuses on returning our rivers to a more natural state, restoring natural form and function. The overall aims are to:

- Deliver the Lower River Crane Restoration (LRCR) Strategy.
- Use historical maps and field surveys to establish current river condition, propose appropriate restoration measures, and reveal significant overall improvements in river physical condition to support the river ecosystem.
- Ensure our river system meets a river restoration standard sufficient to support identified priority species.
- Achieve Good Ecological Status for natural water bodies or Good Ecological Potential for heavily-modified water bodies throughout the catchment.

Headlines

Identified broad restoration opportunities for the accessible parts of the River Crane and its tributaries, detailed site evaluations with suggested restoration measures for 11 sites, and early post-project evaluations for two sites to track restoration impacts.

Trained ~40 volunteers to conduct river physical habitat (MoRPh) surveys and contribute to monitoring and improving the river.

Constructed a comprehensive understanding of the geomorphological state of the catchment, informed by analysis of historical maps, walkover surveys of over 40km of the river, 22 Urban River Surveys (URS) (total 11km river length), and 324 MoRPh surveys (total 6.5km river length).

Indicators

From Ordnance Survey maps, the position of the river channel has changed remarkably little over more than a century.

Indicators computed from URS show that modifications of the river channel plan, cross profile and bed and bank reinforcement are widespread.

MoRPh surveys have delivered detailed assessments and indicators of the current physical condition of the river, how these condition indicators and overall condition may be improved and where river restorations are increasing indicator scores and improving overall river physical condition.

Background

River geomorphology seeks to understand the physical character of a river and its floodplain, in particular how flow, sediments and vegetation work together to shape the physical river environment. A naturally shaped and functioning geomorphology is the foundation of a healthy river and catchment. The Crane river system has been extensively modified, initially in relation to agriculture and then as London expanded into the catchment and industries established in the valley.

If we want to restore the natural river forms and processes that underpin a healthy river we need to understand where the river has been modified and the scale and extent of these changes. We also need to know where the river continues to function in a reasonably natural way. Only then is it possible to plan how best to work with the natural processes of the river to restore the channel and floodplain.

What has been achieved in the last five years?

Over the past five years we have gained an understanding of the geomorphological state of the river network and its floodplain. Based on this, we have identified broad opportunities for improvements and detailed site assessments to support restoration plans. So far, we have proposed strategies for 11 river and floodplain restoration schemes affecting a total river length of 5.8km.

Our understanding of the geomorphological state of the catchment is based on a comprehensive set of map and field surveys that have built on previous investigations, as follows:

① Historical map assessment:

We compared the current alignment of river channels in the catchment with those shown on Ordnance Survey maps from the 1890s to get an initial impression of the recent scale and extent of modifications to the river network.

② URS:

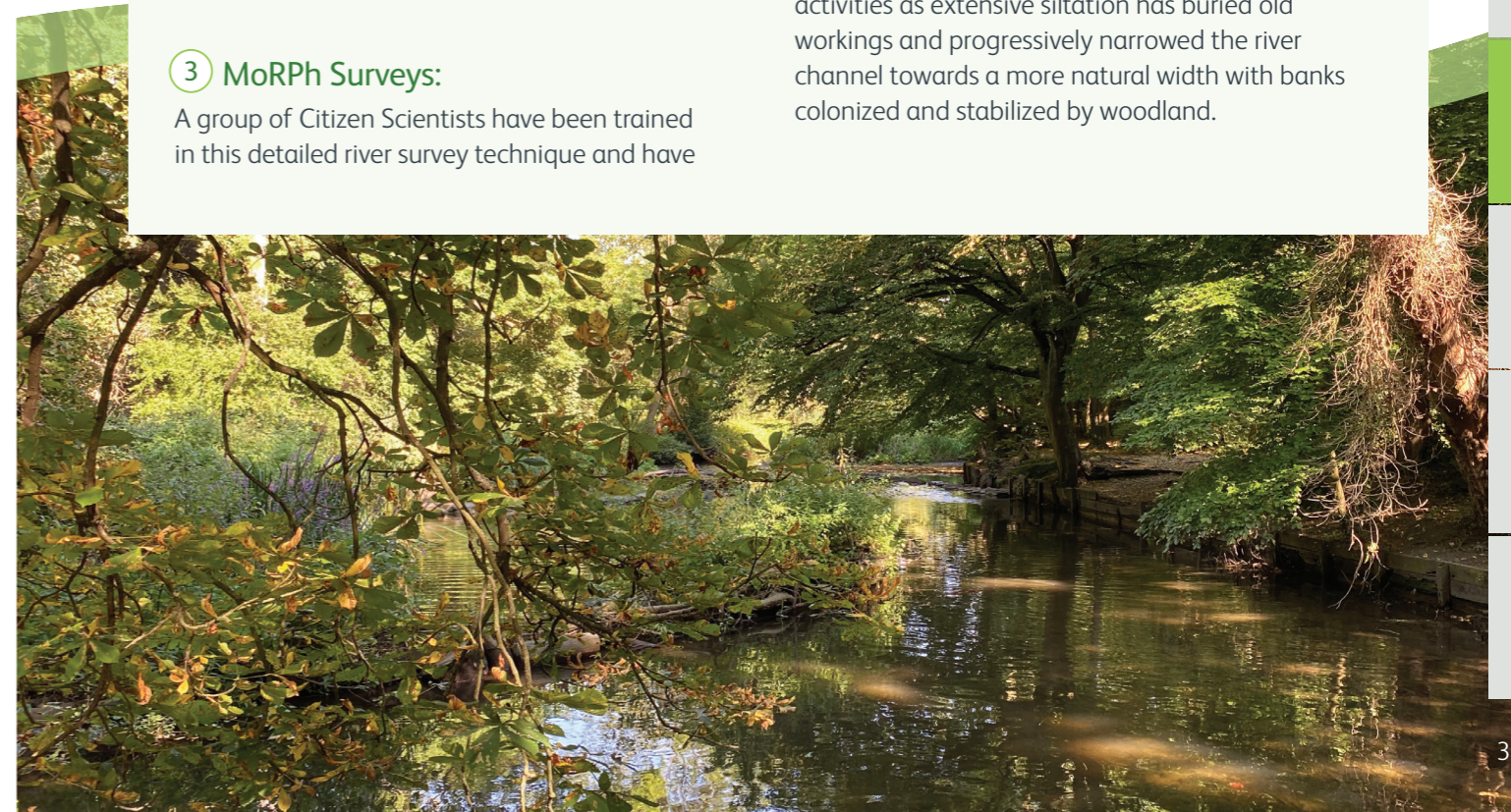
We have added 22 surveys to ~40 500m long URS previously carried out by river professionals and volunteer citizen scientists providing information on over 30km of the river network. These provide a broad picture of channel modifications and the state of sediments, physical habitats and vegetation across the catchment.

③ MoRPh Surveys:

A group of Citizen Scientists have been trained in this detailed river survey technique and have

contributed to surveys of over 6.5km of the river network. MoRPh surveys quantify in detail the nature of modifications and the condition of sediments, physical habitats and vegetation along a river's bank tops, bank faces and bed. They also capture indicators of the processes driving and sustaining natural physical features. URS and MoRPh surveys have revealed a surprisingly diverse catchment.

Much of the river has been compromised by straightening, re-sectioning or enlargement to accommodate human activities, particularly in the lower reaches of the Crane, much of the Longford River and the channels bordering Heathrow Airport. Figure 5.1 summarises URS surveyors' visual assessments of the broad effects of human activities on the plan and cross-sectional shape of river channels and the extent of artificial reinforcement of river channel bank faces and beds across the Crane catchment. The figure shows that whilst much of the channel network displays evidence of modification, many reaches have or are recovering towards a semi-natural shape in many parts of the river network, particularly where bed and bank reinforcement are absent. Some of the middle reaches of the Crane are an excellent example of how flow, sediment and vegetative processes have been restoring natural form. Here the channel has recovered remarkably from 19th century industrial activities as extensive siltation has buried old workings and progressively narrowed the river channel towards a more natural width with banks colonized and stabilized by woodland.



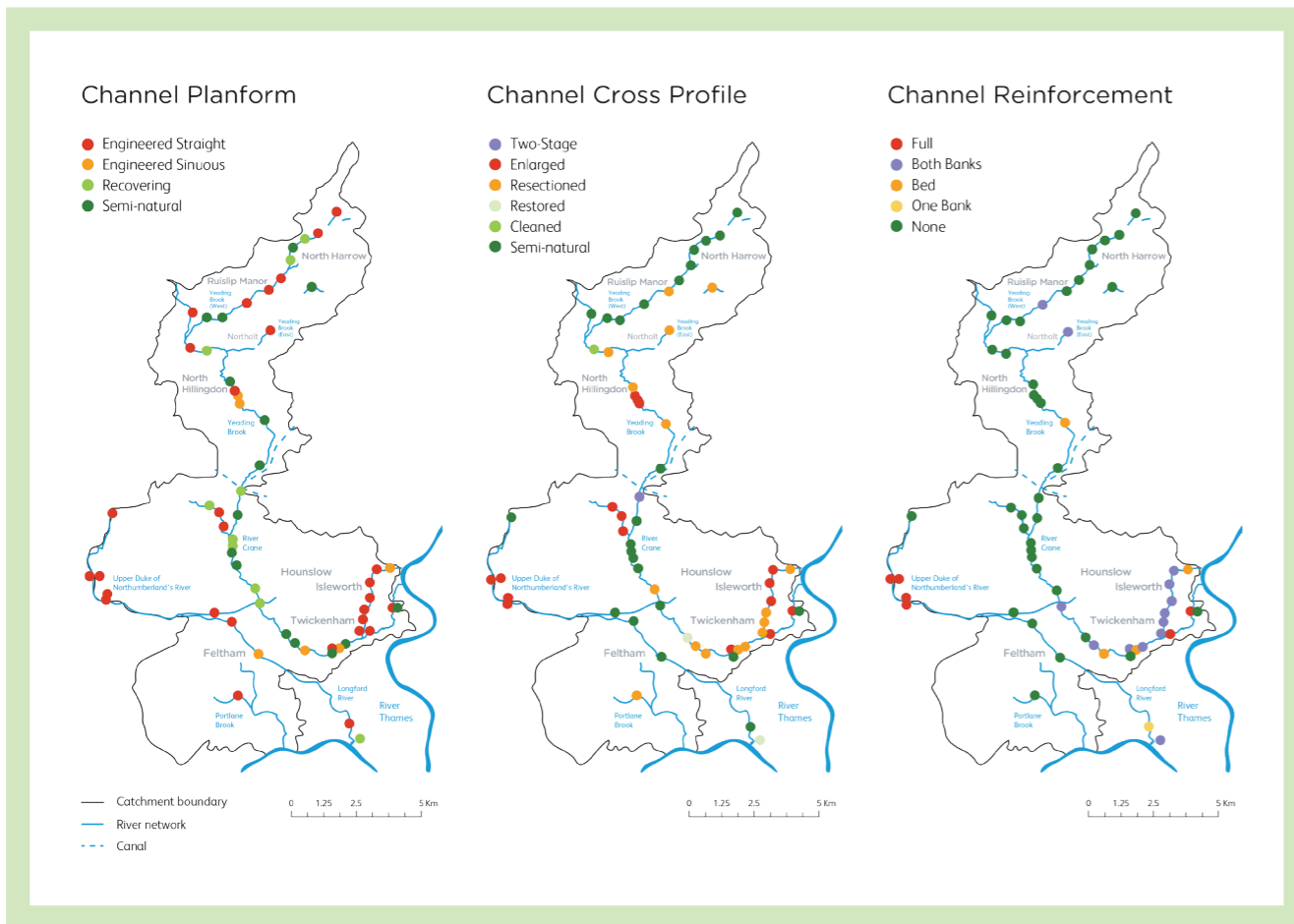
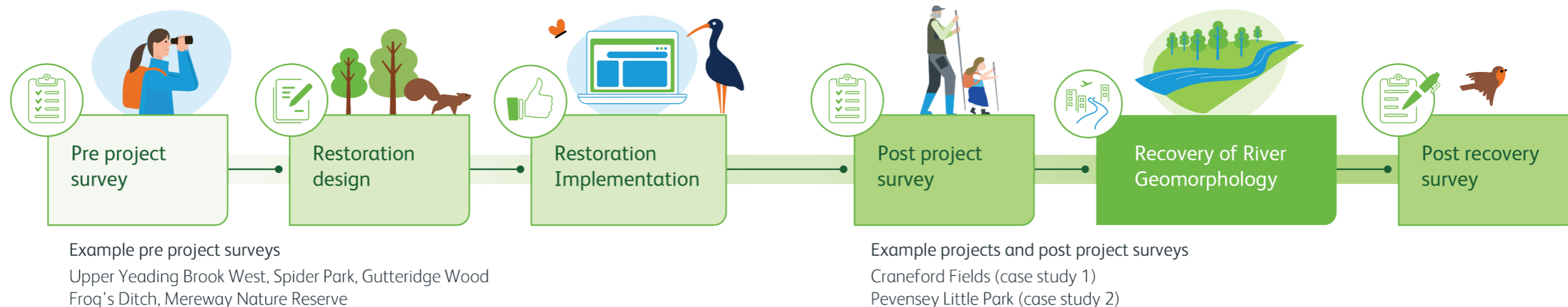


Figure 5.1 URS surveyors' visual assessments of the broad effects of human activities on the plan and cross-sectional shape of river channels and the extent of artificial reinforcement of river channel bank faces and beds across the Crane catchment

This comprehensive baseline understanding of the geomorphological state of the environment has been a solid foundation for moving on to identifying opportunities, and then plan and implement river restoration schemes that improve the river environment

for people and nature. The process of river restoration is illustrated in Figure 5.2. We currently have 11 projects with completed pre project surveys and assessments. In addition, two implemented projects have received post-project surveys and are now in the recovery phase.

Figure 5.2 Process of river restoration



Case study 1

The Crane at Pevensey Road Nature Reserve and Little Park.

The river here has shown remarkable recovery from historical industry-related modifications. Through silt deposition, the river has created a complex floodplain containing a variety of wetland patches and remnant near-naturally-functioning ponds and side channels. The floodplain has also benefitted from being colonised by woodland. The river channel continues to adjust its size, shape and path very slowly and so remains quite wide and straight.

Figure 5.3 Photograph (a) shows the river channel in 2022 before restoration measures were introduced in 2023. The restoration used locally sourced wood to accelerate channel narrowing, encourage a more sinuous course, and help to build a more complex mosaic of physical habitats on the river bed. Where trees had already entered the river channel they were left to continue influencing the channel around them (Figure 5.3 photograph b). Elsewhere, log (Figure 5.3 photo c) and brash (Figure 5.3 photo d) deflectors were added to the channel to disrupt flow hydraulics, sediment scour and deposition and so encourage the development of pool, riffle and bar habitats. Increased light conditions following tree coppicing coupled with the reactivation of



Figure 5.3 (a-d) Photos of river restoration interventions

ditches has enhanced local habitat for water voles. The implementation of such works causes disturbance to the river's bank tops, bank faces and bed and so a period of several years of recovery is needed to fully appreciate the physical habitat benefits of this work.

Case study 2

The Crane at Craneford Fields.

The river here was straight, trapezoidal in cross section, and fully reinforced with concrete. This site was not suitable for a full restoration but some rehabilitation measures were introduced to provide a range of physical habitats in and around a 30m length of the concrete-lined channel. Gravel and a vegetated berm were added to the channel bed. The concrete reinforcement was removed along part of one bank to allow local lowering of the bank profile and excavation of a marginal pond that connected to flows in the main channel. This work was implemented early in 2022.

MoRPh surveys of the rehabilitation reach (Figure 5.4, photograph a) and an adjacent reach that had not been rehabilitated ((Figure 5.4, photograph b) were conducted approximately six months after project completion. The photographs show that very hot weather and extremely low flows at this time had resulted in extensive algal growth on the river bed but the physical habitat improvements from the works were clear. The MoRPh surveys were fed into the River Condition Assessment tool of Defra's Biodiversity Metric. The condition of the rehabilitated reach was Moderate whereas the reach that was not rehabilitated was classified as Fairly Poor, showing an uplift of one class as a result of the rehabilitation measures.



Figure 5.4. a) Rehabilitated reach
b) non-rehabilitated reach

What do we want to achieve in the next five years?

During the next five years we will focus on:

- 1 Detailed identification of restoration opportunities and the delivery of proposals for restoration projects throughout the catchment. We now understand where investment in restoration will deliver the greatest benefits for people and nature and have identified broad restoration opportunities for all parts of the river network.
- 2 The identified opportunities will be progressively translated into pre-project surveys and proposals for specific locations that will be ready for implementation as funding becomes available.
- 3 Volunteers who would like to join us in this work and monitoring its outcomes will be welcomed and integrated into any aspects in which they express an interest.
- 4 We will use post project and post recovery surveys to understand how effective schemes have been at improving the river environment and use this information to inform design of future schemes.



Enhance biodiversity and environmental connectivity

This theme considers the habitats and species found within the Crane catchment. The overall aims are to:

- Understand the distribution of key species and habitats.
- Remove barriers to fish movement.
- Promote sustainable populations of totemic species.
- Halt and reverse the spread of target Invasive Non-Native Species (INNS).
- Protect and enhance key habitats.
- Achieve Good Ecological Status or Good Ecological Potential (as appropriate) throughout the catchment.

Headlines

Water voles reintroduced to the catchment

Restoration projects showing early signs of success

Completion of Mereway Fish Pass

Indicators

Fish diversity starting to show signs of improvement across the catchment

Invertebrate data shows early signs of improvement across the catchment. However the upper catchment continues to have lower invertebrate diversity and RMI scores than the lower catchment.

Background

The Crane catchment supports a rich, biodiverse ecosystem and provides essential habitat to a range of species. This is supported and well documented in the Crane Valley by long-term datasets such as invertebrate data that has been gathered since 1993 as well as

systematic Environment Agency monitoring and 5-year averages for fish and invertebrates. However, there are several key threats and pressures still impacting native biodiversity and ecological connectivity such as INNS, barriers to fish migration, pollution and poor habitat quality and availability.

What has been achieved in the last five years?

1 Installation of the Mereway fish pass:

The pass has been installed to allow fish (including eels) to swim upstream, avoiding the barrier created by the Mereway Road Weir. The tilting weir, refurbished in 2020, helps to protect over 500 properties in the Twickenham area, allowing more water down the main channel at times (e.g. after heavy rainfall) when water levels are high. The fish pass is designed to provide the connection between the River Crane above and below the weir via the Lower Duke of Northumberland's River which flows off the main river at Mereway. The presence of more fish above the weir will attract other wildlife, enhancing local biodiversity.



2 Restoration of Pevensey Road Nature Reserve/Little Park:

See case study (pg39).

3 Vole reintroduction and monitoring:

See case study (pg47).

4 Northcote Nature Reserve improvements:

Northcote Nature Reserve has been created, turning a formerly long-neglected recreation ground into a valuable tidal habitat, an ecosystem unique within the Crane Valley. The project was championed by the Friends of Northcote Nature Reserve and funded by the London Borough of Hounslow with the goal to create new habitat such as a tidal inlet into the reserve from the Crane and vegetated terracing along the artificial channel.



5 Newton Park West and Headstone Manor Park Wetlands Monitoring - optimism for the future:

See case study (pg33).

6 Management of INNS:

Through the SWC funded biodiversity report, the key INNS that threaten biodiversity in the Crane catchment have been identified as American mink and floating pennywort. Practical action is being



Figure 6.1 Development of Northcote Nature Reserve improvements.

taken to address priority species in key locations. American mink are now being eradicated with the coordinated roll out of 17 traps in the catchment. In addition, the distribution mapping of four key invasive plants – giant hogweed, floating pennywort, Japanese knotweed and Himalayan balsam has been completed.

A catchment wide INNS Control Strategy is in development with the support of landowner partners, and plans are in place to start the eradication of giant hogweed over the next few years with floating pennywort to follow. Schemes to deal with the other two species will follow on from this over the next five years whilst further species such as Crassula and tree of heaven are starting to be investigated.

6 Launch of the Lower Crane Valley Management Plan:

This has been developed by the London Borough of Richmond upon Thames for the preservation and

enhancement and monitoring of local biodiversity. The vision of the plan is to conserve, maintain and improve the quality of habitats for people and wildlife while also providing detailed habitat and species prescriptions.



Figure 6.2 - River Crane through Donkey Wood.

Fish Diversity

Building on the last State of the Crane Environment Report that looked at data until 2018, we can now see a clearer increase in annual fish diversity at sites on the Lower and Upper Duke of Northumberland's Rivers in particular. Although less data was available for the River Crane, an increase in fish diversity can be seen, which is

also reflected in the improvement of WFD status for fish in the River Crane from 'Moderate' to 'Good'. Greater fish species diversity is a good indicator of improved ecosystem health. This improvement may also be a function of the fish population recovering from the serious pollution events of 2011 and 2013.

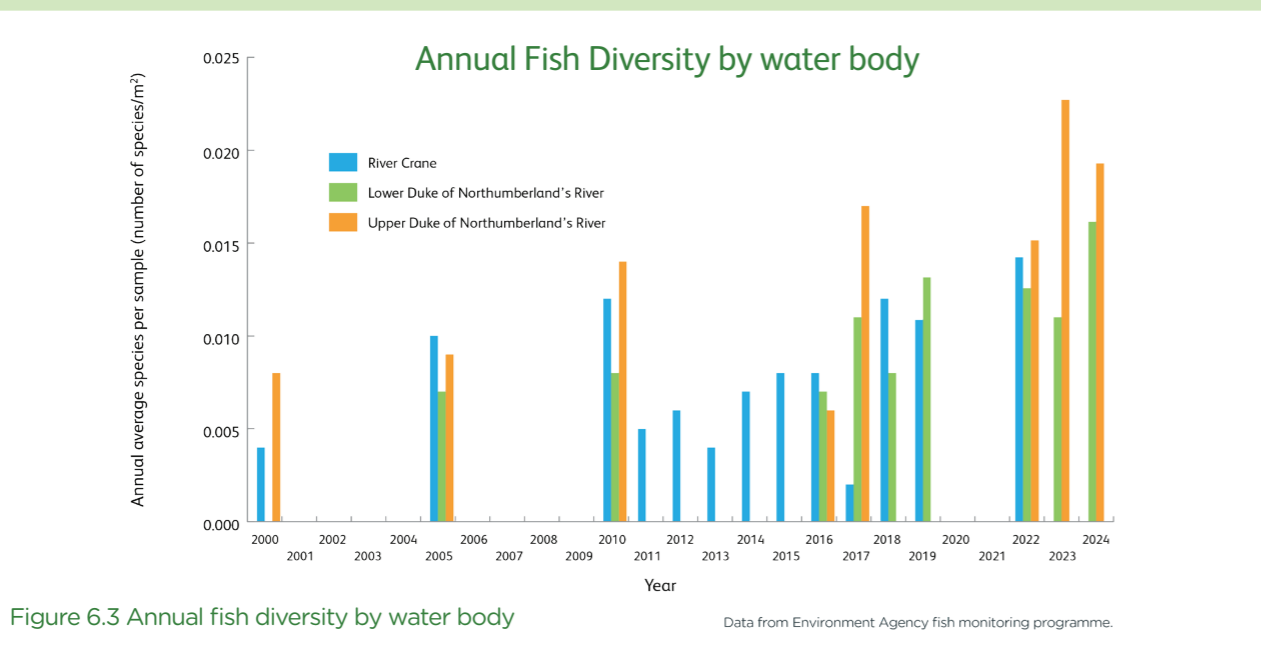


Figure 6.3 Annual fish diversity by water body

Data from Environment Agency fish monitoring programme.

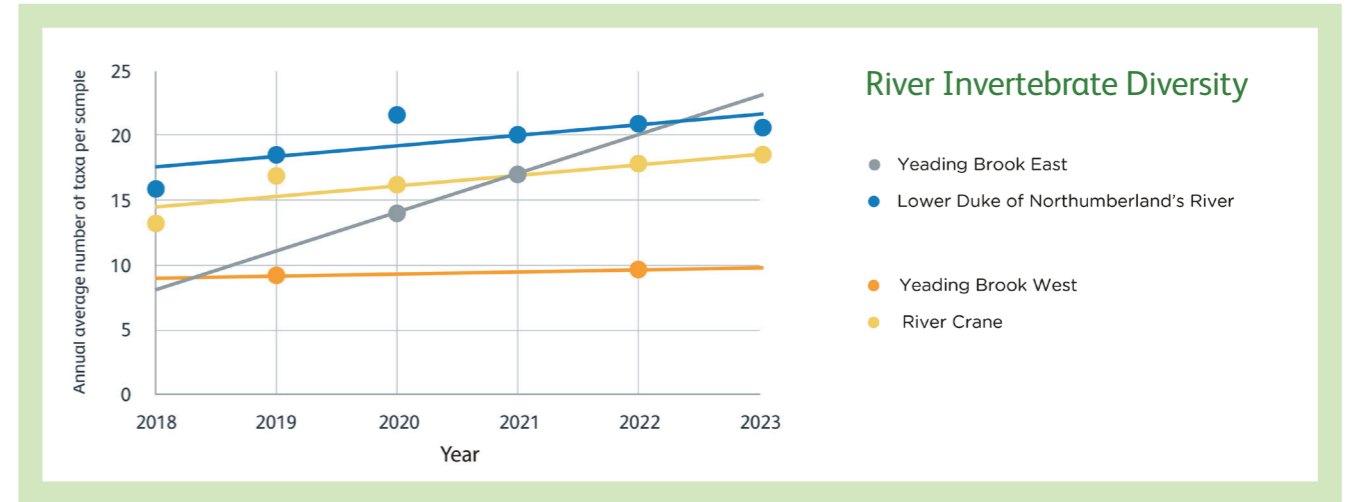


Figure 6.4 5-year trends in annual average number of invertebrate taxa per sample.

In line with the previous report, rivers in the lower catchment continue to show higher invertebrate diversity compared to the Yeading Brook and the Yeading Brook West further upstream in the catchment (no new Environment Agency data was available for the Yeading Brook East). However, an average increase in invertebrate taxa continues to be seen at the Yeading Brook between 2020 and 2021. The previous report showed declining invertebrate diversity across all sites over the last 20 years. Although 2024 data is not yet available, looking at the most recent 5-year period between 2018 and 2023, invertebrate diversity is starting to improve in rivers across the catchment. However, it should be noted that it is difficult to get reliable trends with limited data points at Yeading Brook and Yeading Brook West, but more data in future years will show whether the increases seen at these sites has been sustained.

show that the annual average RMI score at seven sites (out of ten analysed) has improved. These early signs of improvement in both fish and invertebrate diversity link with improvements in the water quality and geomorphology of the rivers and as these improve further so will the biodiversity of these freshwater ecosystems.

Data are not currently available for the Longford River. The Longford River is a separate important river and wildlife corridor that runs through the Crane catchment, feeding water from the River Colne to the west into the water features of Bushy Park and Hampton Court. LB Hounslow are leading a project to enhance Hanworth Park, and as part of this work are investigating daylighting the Longford where it currently runs in a 400 metre culvert through the park. This is the largest de-culverting project currently envisaged by the Partnership and would greatly enhance the biodiversity of the river and the park.

Similar trends were seen in the Citizen Crane Riverfly Monitoring data, which over the same 5-year period



Figure 6.5 a) dragonfly larva, b) water vole and c) fish being measured.

Case study 1

Lower Crane Restoration (Phase 1).

Project Location	Twickenham (TQ152734)
Watercourse	River Crane
Project dates	Pre-works survey = Autumn 2019, Start = February 2022, completion March 2022
Project area	Total project area = 273m ² (berm = 60m ² , back water = 76m ² , banks = 137m ²).
Total cost	£110k
Delivery	Led by: London Borough of Richmond Upon Thames Funded by: Environment Agency, Richmond Upon Thames London Borough Council
Techniques	Removal of concrete bank, creation of backwater habitat and installation of vegetation berm, gravel augmentation, plans to create viewing area.
Outcomes	<ul style="list-style-type: none"> Increased the diversity of macroinvertebrates present within the channel and the backwater. Increase in the River Condition Assessment score from 'Poor' in the downstream reach to 'Fairly Poor' in the restored reach. Positive public perception survey showing that following river improvements – local community members felt more inclined to visit the area and would like to see more restoration works carried out across the Lower Crane.
Next Steps	<p>Phase 2 works will include:</p> <ul style="list-style-type: none"> Potential re-meandering of the river channel (creation of an oxbow shape). Extension of the newly installed vegetation berm to the weir downstream. Reinstatement of previously washed-out gravels which will be retained using deflectors.



Case study 2

Water Vole Restoration on the Crane.



Project background and aims:

London Borough of Richmond upon Thames (supported by funding from the Mayor of London, the Environment Agency and the CVP via Thames Water), collaborated with ZSL, Friends of the River Crane Environment (FORCE), CVP, the Environment Agency, London Wildlife Trust volunteers, The Conservation Volunteers (TCV) and Wild Future to reintroduce water voles into Crane Park. The two-year long operation began with wetland habitat restoration at Crane Park Island and Little Park in 2022.

Aims:

- Restore self-sustaining water vole populations within the lower Crane.
- Remove the primary threat to water voles by catching and removing mink.
- Recruit volunteers for long term data collection/ monitoring.
- Raise public awareness on water vole conservation.

Outcomes and post-release monitoring:

- 137 captive-bred water voles released along over 1km of river and riparian habitat (103 soft released, 34 hard released).
- Within release site, latrine rafts placed at every ~50m (~35 rafts). Outside of the core release area, across 100m ~45 rafts were deployed up to 1km from release project boundary.

- Three National Water Vole Monitoring Programme transects were set up, one within the release site, and a further two 1km upstream and downstream of the release site to look for any signs of water voles.
- Early results have provided good evidence that the voles have survived within the release site and have successfully bred (young water voles recorded on camera traps deployed within the release site). Monitoring of the latrine rafts has shown some signs that the voles have survived in the upstream release site in Little Park.

Next steps:

- Continued promotion of water vole recovery and mink eradication.
- Use and promotion of Greenspace Information for Greater London (GiGL) and Waterlife Recovery Trust data portals for water vole and mink sightings respectively.
- Develop a citizen science monitoring methodology to assess post-winter water vole distribution.
- Identification of further areas of suitable habitat/ determine habitat quality along the Crane River corridor.

What do we want to achieve in the next five years?

- 1 Achieve 'Good Ecological Status' or 'Good Ecological Potential' (as appropriate) throughout the Crane catchment.
- 2 Track the impacts that restoration/improvement initiatives have had on biodiversity e.g. the enhancement project at Spider Park and improvements soon to take place as a result of the Yeading Brook Unbound Project.
- 3 Water voles re-establish across catchment/habitat expanded across the catchment.
- 4 Improve fish passage between the Thames and Crane.
- 5 INNS management at a catchment-wide level for mink and floating pennywort.
- 6 Develop management plans for each local borough.
- 7 Improve ecological connectivity between habitat patches.
- 8 Obtain more information about the ecology of the Longford River.
- 9 Work with Cartographer to gather and explore natural riparian zone data across the catchment to better understand the impacts of recent and potential future river restoration activities and subsequent links to biodiversity improvements.

Looking forward

Overall findings

This report considers the current state of the environment in the Crane catchment, the changes since 2020 and the opportunities to 2030, as viewed by the Crane Valley Partnership. We consider that good progress has been made as follows:

- The delivery model of 'Theme Leads' developing their programmes and supported by open bids through the Crane Valley Project and Community Funds has proven very effective.
- Over 80 projects have been taken forward across the five key themes through the main Project Fund (35 larger projects) and Community Fund (50 smaller community led projects) in the SWC initiative.
- The Partnership has identified (and in many cases helped to develop and support) over 70 further projects (with a value of around £20m) that are assisting delivery across one or more themes.
- Pilot projects have been delivered across each theme and in many of the priority areas across the catchment.
- These projects are helping to showcase the value of the Crane Valley and the benefits of delivery at a larger and more comprehensive scale to both the local communities and the key decision-makers across the catchment.

- Networks of expertise are now available to address each theme.
- There has been a step change in community engagement – including volunteering, citizen science and training as integral parts of scheme delivery, monitoring and maintenance.
- There have been many new collaborations - and existing connections have been strengthened - between diverse groups (such as local authority and private landowners, utilities, technical experts in consultancies and academia, third sector charities and community groups).

The partnership approach has developed a coherent and enabling environment for project development and implementation – by the creation of “connective tissue” across these diverse interested parties. This had proved very challenging to achieve previously in this crowded urban environment with unclear lines of responsibility and many competing pressures.

The “connective tissue” is difficult to measure but is clear to see through the relative ease that new projects can now be delivered and the number of positive things happening (as well as the relative lack of difficult and negative things happening) across the catchment.



Looking forward

Challenges and Opportunities

We are at the halfway point of the SWC programme. The networks for delivery are in place and implementation has started across all the themes. Key issues and objectives for the next five years include:

- Wider engagement with key decision makers and the community across the catchment to showcase the existing value of the Crane Valley and to help co-create further improvements. The Partnership has been enhancing its communications across all sectors through the SWC programme and has recently developed a “Story of the Crane Valley” which provides a coherent story arc for promoting the improvements we wish to deliver over the next five years.
- Implementation needs to be scaled up for delivery across the catchment and this requires further funding beyond the existing programme, for example aligning to Thames Water’s DWMP programme, as well as the further development of delivery and project management capacity.
- We will be using our network to both support bids for additional funding for delivery of improvements at scale and then help to deliver the funded projects with landowner partners.

- We will continue to grow the capacity of the voluntary sector to engage with and support projects – including delivery and ongoing maintenance and improvement.
- This will be allied to our EDI plan and developing new audiences to promote a growth in links to the health, education and training agendas to support improvements in quality of life and new employment opportunities.
- We will continue to investigate and develop innovative finance opportunities – through e.g. biodiversity, health and wider social as well as carbon metrics – to support the long term delivery and maintenance of catchment scale improvements.

We believe strongly that the catchment and partnership-based approach is the best available solution to the major challenges and opportunities of urban rivers and open spaces and the only reliable means of delivering long term sustainable benefits for communities and the environment.

We have been very encouraged by the progress to date through the SWC initiative and we look forward to this expanding and delivering catchment scale changes over the next five years.

Acknowledgements

The Crane Valley Partnership and Thames Water would like to thank all the organisations and individuals who have contributed their valuable technical inputs, insights and time to enable the joint development of our catchment plan and subsequently this report.

Contributors to this report:

Atkins Realis www.atkinsrealis.com - Document production lead	Metis www.metisconsultants.co.uk - Flood risk
Cartographer www.cartographer.io - Geomorphology	Thames Water www.thameswater.co.uk - Smarter Water Catchment lead
Crane Valley Community Interest Company www.cvcic.org.uk - Partnership host	Zoological Society of London www.zsl.org/ - biodiversity and water quality
Habitats and Heritage www.habitatsandheritage.org.uk - Communities	Environment Agency www.gov.uk/government/organisations/environment-agency - water quality
Let’s Go Outside and Learn CIC www.lgoal.org - Communities	

Photography:

All images by Crane Valley Partnership except:	Pages 33-34, 45-48 Zoological Society of London
Page 20 - Let’s Go Outside and Learn	Pages 39-40 - Angela Gurnell
Page 21 - London Borough of Richmond upon Thames	Page 39 - Helen Moggridge
Page 22 - London Borough of Hillingdon	Page 39 - Lucy Shuker
Page 27 - London Borough of Hounslow and Ground Control	Page 44 - Friends Of the River Crane Environment
Page 28 - London Borough of Hounslow	Page 46 - Wild Future

Working in partnership



Printed on
recycled paper