



Working together to protect and enhance our water environment

Co-creating a long-term plan for
the River Crane catchment



Working in partnership

Smarter Water
Catchment Plan

March 2021

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Foreword

Since joining Thames Water in September, I've been spending lots of time listening to and talking with colleagues, customers and stakeholders.

What's really struck me is the passion and dedication we all share for protecting and enhancing our environment, and how, by working together, we can really make a difference to the quality of our rivers.

In 2018, we set out our ambition to work more closely with our local partners and communities to look after our river catchments. Called our 'smarter water catchments' initiative, it looks at the environment as a 'system' and sees us working together in partnership with others in the region to make bigger and better improvements than we could make as individual groups and organisations. We face significant challenges to improve the quality of our catchments, however there is so much more opportunity when we work together. We're so excited about how this pioneering approach to catchment management sets a new direction for how we, and others, will manage our precious water cycle.

The River Crane is a valuable part of an urban community in West London, which I had the pleasure of visiting with our partners last Autumn. Over the last few years we've

already made good progress on protecting this environment through significantly improving 39 surface water outfalls - removing a total of seven Olympic-sized swimming pools of wastewater polluting the watercourses. These activities will make a difference, but there is so much more we can and need to do to protect this precious resource for current and future generations.

This joint catchment plan for the River Crane outlines our actions for the next ten years. I want to say a huge thank you to all the stakeholders who have worked with us to create it and to make sure it's the right one for the future of the wonderful River Crane. I can't wait to work with you as we restore this river catchment to its natural beauty.

Sarah Bentley
Chief Executive Officer,
Thames Water



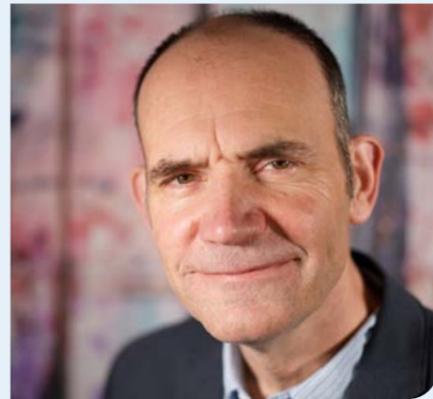
A message from our partners

The 'smarter water catchments' initiative is undoubtedly a key mechanism for delivering the vision of the Crane Valley Partnership (CVP) and our ambition for the Crane catchment.

It certainly represents one of the 'big opportunities' referred to in the CVP's 2018-2028 Strategy. It is an opportunity we are determined to make the most of as a catchment partnership, utilising the funding and new ways of working to tackle the issues that matter most to our Partners and the public. The focus on innovation and multi-benefit outcomes is exciting, as is the chance to raise CVP's profile among the communities of West London. We do of course face many significant environmental challenges, not least the need to address the climate emergency and tackle the nature crisis at a catchment and local level.

There is a lot to do. Success will depend on the rigorous application of an evidence-based approach to delivering the right projects in the right places at the right time. Promoting greater awareness and appreciation of the Crane river system amongst the public, and empowering

and supporting local communities to take an active environmental stewardship role, will be vital. Thames Water's 'smarter water catchment' initiative will help us do this and more.



John Waxman
Development Manager,
Crane Valley Partnership



For more information on this plan, or to work with us, please contact partnerships@thameswater.co.uk

Introduction

Catchment management can offer better value and greater benefits than more traditional hard-engineered solutions. However, it's usually restricted to an individual organisation working to address a single issue, such as pesticide run-off from agricultural land into local rivers.

We believe we can achieve more by taking a systems-based view of the environment, collectively addressing multiple challenges and co-delivering solutions that make the most of opportunities on an even bigger scale. This is the premise of our 'smarter water catchments' initiative.

We're putting this approach into practice to understand how we can achieve key benefits

while working in a more holistic way. The first step on this journey is to co-create a catchment plan with key stakeholders who either operate within this environment and/or have a vested interest in protecting and enhancing it.

This document, which has been written in partnership with our stakeholders, outlines our approach and sets out the actions which we'll collectively deliver over a 10-year time period, starting next month.

Between 2020 and 2025, we'll use a bespoke performance commitment to measure our progress with our regulator Ofwat. To be as transparent as possible, we'll provide annual updates on our progress and share any benefits we achieve.

Working in partnership

Managing the water cycle in England and Wales is a responsibility divided amongst several organisations, all with varying regulatory systems, funding mechanisms and external drivers. But there are also thousands more user groups and businesses that depend on, benefit from, and interact with water on a daily basis.

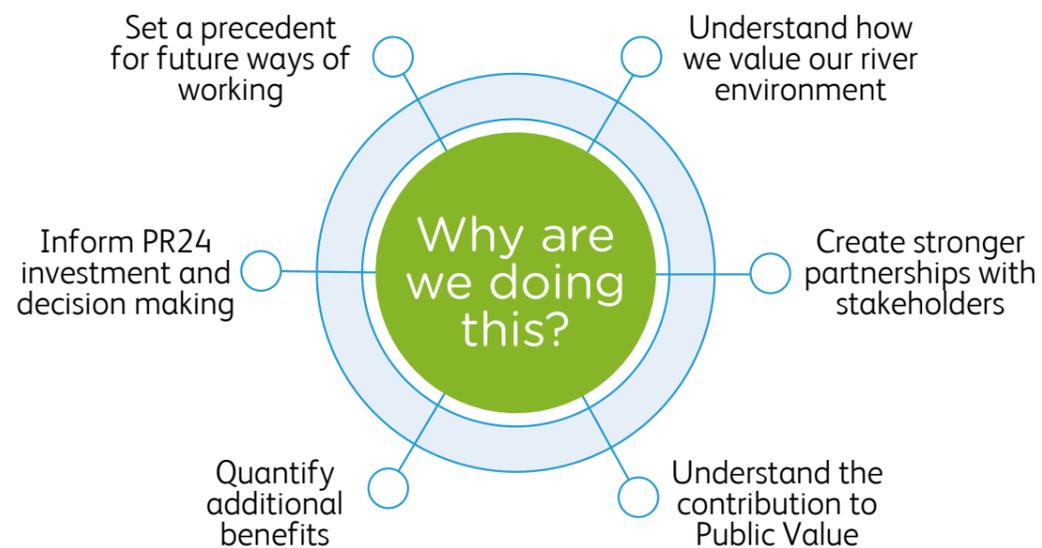
This creates a somewhat disjointed approach to planning, making it much harder to maximise the value of the work we do individually. To overcome these hurdles, we must work together.

Working within the framework of the Environment Agency's 'catchment based approach' provides us with an opportunity to put this into practice. It brings together partnerships made up of government, local authorities, water companies, environmental and community interest groups, academia and local businesses at the river catchment scale, all working towards a shared vision.

Within the Thames region, there are already over 400 stakeholders involved in the 27 established partnerships operating within this framework. However, these partnerships all vary in capacity and often depend on uncertain sources of funding.

By drawing on the collective understanding of all partners and bringing together expertise across different specialisms, we can create more robust, joint plans for the future. We'll also keep local communities up to date with our progress and encourage them to join us in delivering our plans.

Purpose of our new approach



We must all play our part in protecting and enhancing this precious resource for the future.



Managing our catchments

Water is more precious than ever as we face climate change, population growth and changes in consumer behaviours. Add in more extreme weather events, ongoing urbanisation and a fundamental shift in our land-use patterns, and it becomes even harder to manage this resource.

By 2045, we estimate they'll be an extra two million people living in the Thames region. We'll need to find new ways to meet their growing expectations for clean green and blue spaces to enjoy.

The water quality of our rivers is fundamental, not just for our customers but for the habitats and biodiversity of species that depend on them. Challenges around our ageing infrastructure and in some cases, outdated designs of our wastewater systems, combined with the public misconception of what can safely go down drains, can lead to unwanted pollution incidents.

We must take action to share the value of water and work with upstream and downstream users across our region to protect our river catchments for the future.



Opportunities

We're working closely with our partners to understand the challenges we're facing and uncover new opportunities to address them. In many cases, this will lead to activities that also meet the individual priorities of the organisations involved.

We're identifying opportunities across our catchment from headwaters, floodplains and rural communities through to our urban areas. The opportunities could include:

Headwaters

1. Working with farmers to reduce soil run-off
2. Using Natural Flood Management processes
3. Planting trees to reduce the risk of flooding
4. Improving fish passage
5. Managing pesticide and herbicide run-off
6. Monitoring water quality for diffuse sources of pollution

Floodplains and rural communities

7. Restoring and naturalising rivers
8. Rewilding our river corridors and enhancing biodiversity
9. Managing water resources for public value and recreation
10. Protecting homes from flooding
11. Creating natural carbon sinks
12. Making river corridors safe and clean
13. Protecting Sites of Special Scientific Interest
14. Improving accessibility
15. Returning water to rivers and solids to land

Urban areas

16. Monitoring water quality for point sources of pollution
17. Ensuring drainage is not misconnected
18. Creating innovative green spaces
19. Increasing access to blue/green spaces
20. Introducing Sustainable Drainage Systems (SuDS)
21. Connecting new developments
22. Correctly disposing fats, oil and grease
23. Raising awareness through education
24. Managing highway runoff

Creating a 'smarter water catchment'

Over the last few years, we've been looking for the best way to deliver a step change in holistic catchment management. We've now created a new methodology to help us achieve this.



Working together to protect and enhance our water environment

Vision

 <p>To build better functioning river catchments</p>	 <p>considering the most effective solutions</p>	 <p>without negatively impacting the environment</p>
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Strategy

<p>Evidence-based Identifying the most appropriate course of action through data collection, monitoring and analysis</p>	<p>Partnership-led Working in a unified way with a diverse set of committed stakeholders</p>	<p>Catchment-wide solutions Applying a 'systems thinking' approach to address multiple challenges holistically</p>
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Outputs

<p>Long-term plan Creating a 10-year delivery plan together for each selected catchment</p>	<p>Annual partnership actions Identifying key activities for delivery by all participants</p>	<p>Catchment-wide solutions Delivering solutions that achieve multiple benefits</p>
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Outcomes

<p>Protecting and enhancing the environment We'll plan appropriate interventions over a longer timescale to realise environmental benefits and safeguard our most precious resource.</p>	<p>Prioritising our partnership objectives Each catchment will have a unique ambition and set of objectives that are locally appropriate – and we'll deliver these by working together.</p>	<p>Embedding our approach in water industry planning We'll create a sustainable management model that understands the scale of benefits we can achieve, setting a precedent for future ways of working.</p>
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Putting it into practice

We've identified three trial catchments. They all have varying challenges that are representative of those found across our region:

- River Evenlode, Oxfordshire
- River Chess, Buckinghamshire
- River Crane, West London

To understand how we can best protect and enhance these areas, we've applied our new methodology to each of them. Working through the 'catchment based approach' framework, we've engaged with hundreds of stakeholders across each catchment to encourage them to take part in this initiative.



Each partnership, of which Thames Water is one part, has identified a set of key themes that underpin the unique challenges within each catchment. These key themes have influenced our joint objectives, which we'll work together to achieve over the next 10 years.

Over the next four years, we're investing £3 million in each catchment to trial this initiative. This is the seed funding we need to set up new and improved governance frameworks, financial models and delivery roadmaps to ensure we meet our objectives.

Collectively, we've created a bespoke plan that identifies all the milestones we need to hit to make this happen. We've also included subsequent year-on-year actions that we'll undertake to meet these milestones.

River Crane catchment planning

Following the flow of the River Crane

The Crane Valley is an urban lowland catchment covering an area of 125 km². It extends across five West London boroughs and is home to over 650,000 people. Several major highways (including the M4, M40 and A30) cross the valley, and much of Heathrow – Europe’s busiest passenger airport – lies within the catchment. Among its many residential and commercial developments, semi-natural river corridors of around 60km in length provide unifying green threads, linking a varied network of publicly accessible open spaces that cover well over 2,000 hectares.

The river system includes the River Crane and the two arms of the Yeading Brook (which form the headwaters), the two branches of the Duke of Northumberland’s River (constructed several hundred years ago as artificial channels) and several smaller tributaries. The Longford River (another historic artificial channel) and Portlane Brook flow through the catchment without connecting to the Crane.

Building an action plan

Using our strategy as a base, we’ll collect environmental, social and economic data through robust research and development to build a detailed action plan. Where appropriate, we’ll instigate field trials to test relevant concepts and techniques. We’ll also link with ongoing research projects that can provide the evidence and data we need for decision-making, and utilise over 15 years of experience in delivering partnership projects in the catchment.

All of the themes in our strategy connect to each other as well as to our overall aim of adapting to climate change. As our plan stretches over the next ten years, we’ll need to be as flexible as possible to respond effectively to changing circumstances, whether that’s preparing for extreme weather events, maximising carbon capture or promoting greater water efficiency. We’ll encourage decision makers to consider how our warming climate will increase the value of our river corridor’s ecosystem services in their local plans and strategic land-use policy documents. We’ll also tap into the public’s growing willingness to tackle climate change locally.

River Crane strategy



Newton Park

Promote public awareness, access, and participation

Making our rivers accessible to all

As major landscape assets, our river corridors offer a wide range of ecosystem services to local communities. But the benefits are not equally available to all, and the quality of the 'river experience' varies considerably by location. In a catchment of contrasts, the River Crane and its tributaries flows through areas of relative affluence and social deprivation. In some places there are pleasant river vistas, but in others the watercourse is hard to see and littering and fly-tipping is rife.

A number of voluntary groups help to maintain and enhance our river corridors, but there are also 'orphan' stretches with no community stewardship. While some stretches flow alongside the London Loop and Hillingdon Trail routes, connectivity is still an issue. Major roads like the A30 act as barriers, making it difficult or impossible to follow the river corridor in places.

Our vision is to:

- Place every section of our river corridors under community stewardship
- Enhance community resilience to flooding in at-risk areas
- Establish an unbroken Crane Valley trail from Headstone Manor to the Thames and along each major watercourse (Longford, Upper and Lower Duke's Rivers) complete with visitor facilities at regular intervals
- Encourage public use of the river corridor for recreation and health/wellbeing
- Continue growing environmental volunteering throughout the catchment
- Embed the Colne and Crane Valleys Green Infrastructure Strategy in local plans
- Establish a resilient, community-based Crane Valley Partnership host
- Enhance our river and associated open spaces so they're highly valued by local communities and policymakers

Our river corridors and their open spaces give us a huge and currently unfulfilled opportunity to provide major social and health benefits to more than half a million people.

Enhance biodiversity and ecological connectivity

Protecting local wildlife and habitats

Our green corridors enable the survival and movement of many plants and animals in an urban landscape. Along the main river, there are six designated nature reserves as well as larger areas of open space such as Cranford Park. There are even more parks and open spaces, including Bushy Park SSSI and the Kempton Park Ramsar Site, on the other corridors.

The wide variety of habitats – including wet and ancient woodlands; marshes and wetlands; unimproved pasture; acid grassland and heathland; ponds and reservoirs; allotments and domestic gardens – support many species, from kingfishers and owls to badgers and bats. The corridors are also home to at least 15 species of fish, with breeding flounder in the tidal reaches and eels throughout, as well as veteran trees like the nationally rare black poplar.

While much of the river corridor is designated as Metropolitan SINC (a Site of Importance for Nature Conservation), plus Green Belt or Metropolitan Open Land, it's still under pressure from urbanisation and human activity, causing open space loss and water, air, noise and light pollution.

Engineering interventions over many years, including straightening, widening and bank reinforcement have degraded river habitats, reducing species diversity and range. Weir structures along the river currently impede fish movement, while some Invasive Non-Native Species (INNS) have thrived, displacing native species.

Our vision is 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 INNS
- Protect and enhance key habitats
- Achieve Good Ecological Status or Good Ecological Potential (as appropriate) throughout the catchment



Enhance flood resilience for at-risk areas

Protecting local homes and businesses

Our catchment's largely clay geology, combined with hardstanding areas and artificial drainage systems, means that rainwater reaches river channels quickly. This means the river is 'flashy' – water levels rise rapidly during storms, putting nearby properties at risk of flooding. In the northern part of the catchment, there's also a risk of sewer and surface water flooding.

Over the years, backwaters have disconnected from the main river and urbanisation has reduced the area of available floodplain. The main channel has been widened and straightened in many places, while smaller tributaries and drainage ditches have been turned into surface water sewers. These hard engineering solutions have reduced the habitat quality and aesthetic appeal of the river.

A mix of changing climate and growing population is also increasing flood risk. Mogden sewage treatment works (STW) receives large volumes of surface water due to misconnections, unsealed dual manholes and combined sewers. If we can't manage and reduce these inflows, a costly expansion may be necessary.

Our vision is 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
- 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 STW to accommodate increased surface water inflows

Improve water quality in the catchment

Reducing pollution

The water quality of the River Crane is relatively good for a largely urban catchment, but there are still significant problems. The UK's first Outfall Safari, run in 2016 by the Citizen Crane team, identified significant pollution problems in 20 out of 235 surface water outfalls. Ongoing work by this volunteer team, plus an active community network, has resulted in earlier reporting and quicker resolution of many pollution incidents over the last five years.

While there are no STW outfalls into the catchment, misconnections and sewer overflows do cause pollution incidents, particularly in the upper catchment. Thames Water's 10-year Surface Water Outfalls Programme (SWOP) has already identified and removed many misconnections.

Road run-off can also cause problems, especially when heavy rain follows an extended dry period. Much of Heathrow Airport drains to the Crane, and while new measures are in place to store and treat rainwater containing glycol (used as a de-icer) on site, there's still a risk to the catchment downstream.

Our vision is 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 or Good Ecological Potential (as appropriate) throughout the catchment

Research and investment in ambitious and innovative approaches to pollution control and prevention will have a transformational effect on water quality.



Improve geomorphology in the catchment

Returning rivers to a natural state

For many years, and largely for urban flood control reasons, much of the river channel has been widened, straightened or culverted and the banks reinforced. This has reduced the aesthetic, amenity and habitat value of our river corridors.

Over the past 15 years, through the efforts of the Crane Valley Partnership and other stakeholders, we've begun returning the river system to a more natural state. We've re-introduced meanders through river enhancements and created new in-stream and backwater habitats. But there's still much to be done to fully restore natural form and function – a task that is made harder in many places by a lack of bankside space for channel re-profiling.

Although much of the river system has been adversely affected by hard engineering, it's in the downstream reaches where the impact of such interventions is most profound. Here the river is largely contained within a high-sided rectangular concrete channel of a uniform cross-section. In other places, the river is completely invisible – a significant proportion of the Yeading Brook East runs through a culvert, for example, while the Smarts Ditch is completely culverted.

Our vision is to:

- Deliver the Lower River Crane Restoration (LRCR) Strategy
- Use Modular River Surveys to reveal significant overall improvements in river ecosystem value
- Ensure our river system meets a river restoration standard sufficient to support identified priority species
- Achieve a Good Ecological Status or Good Ecological Potential (as appropriate) throughout the catchment

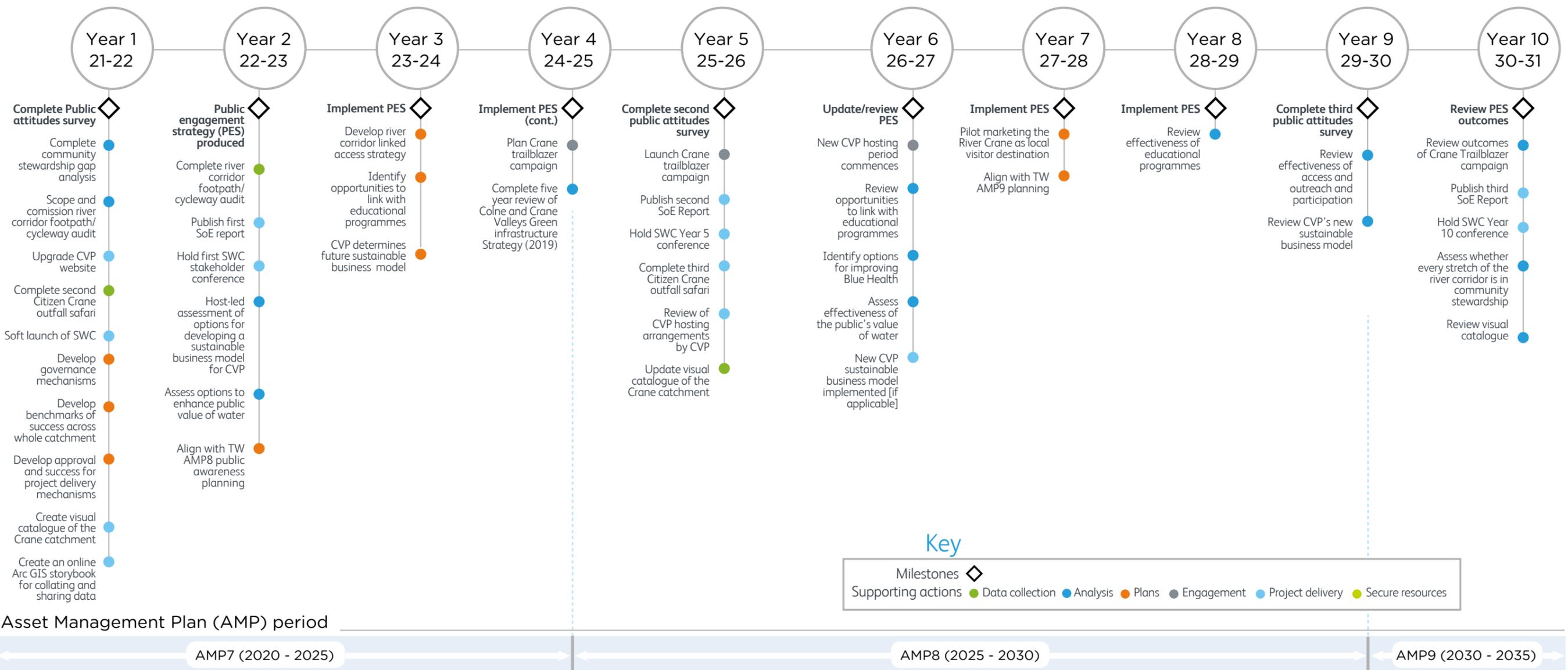


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Working together to protect and enhance our water environment

Our shared long-term plan

Promote public awareness, access and participation action plan



The collective vision for the Crane catchment

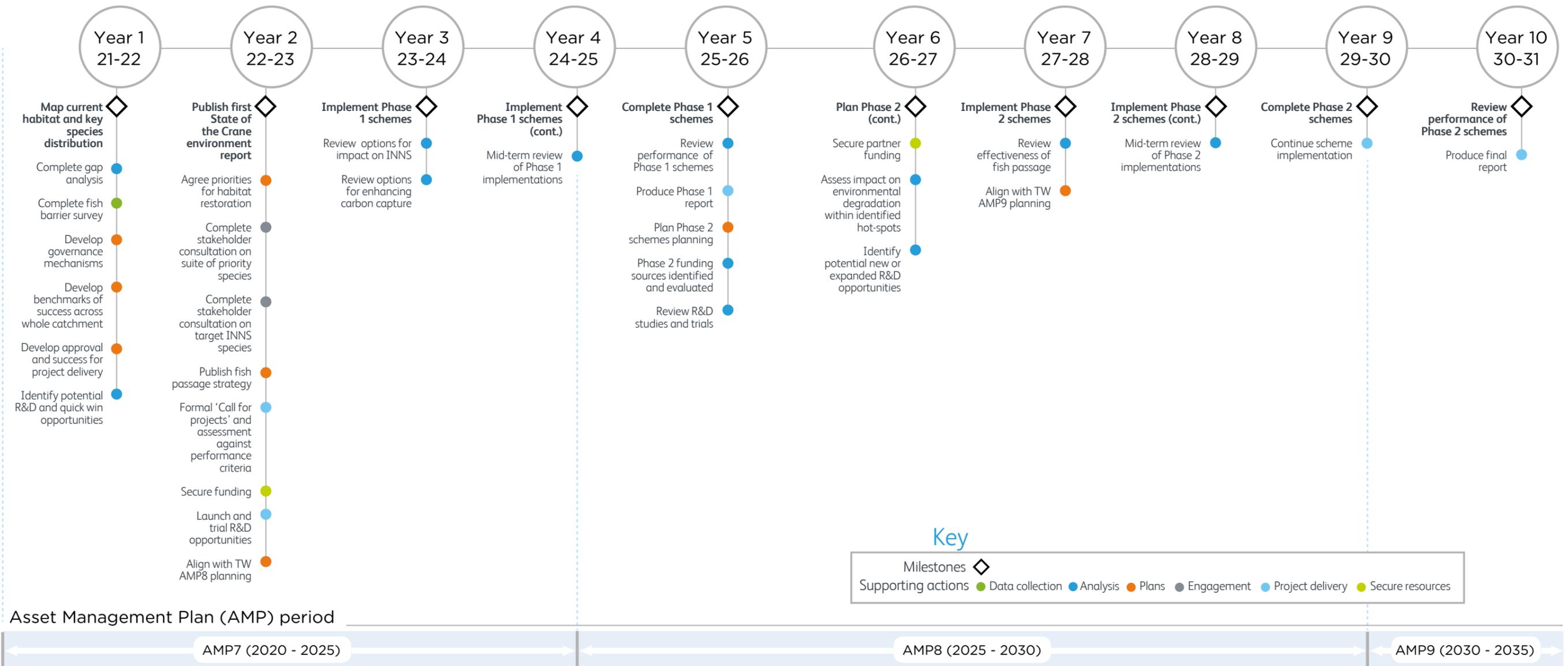
As part of the Crane Valley Partnership's Strategy 2018-2028, we want the rivers and waterbodies in the catchment to be widely recognised and valued as the 'central thread' that links together the natural environment around the north-west quadrant of London.

Those living and working in the catchment should be able to easily access rivers, waterbodies and surrounding green spaces where wildlife thrives and pollution levels are low. They should see the river as an essential component of the area's prosperity, health and wellbeing.

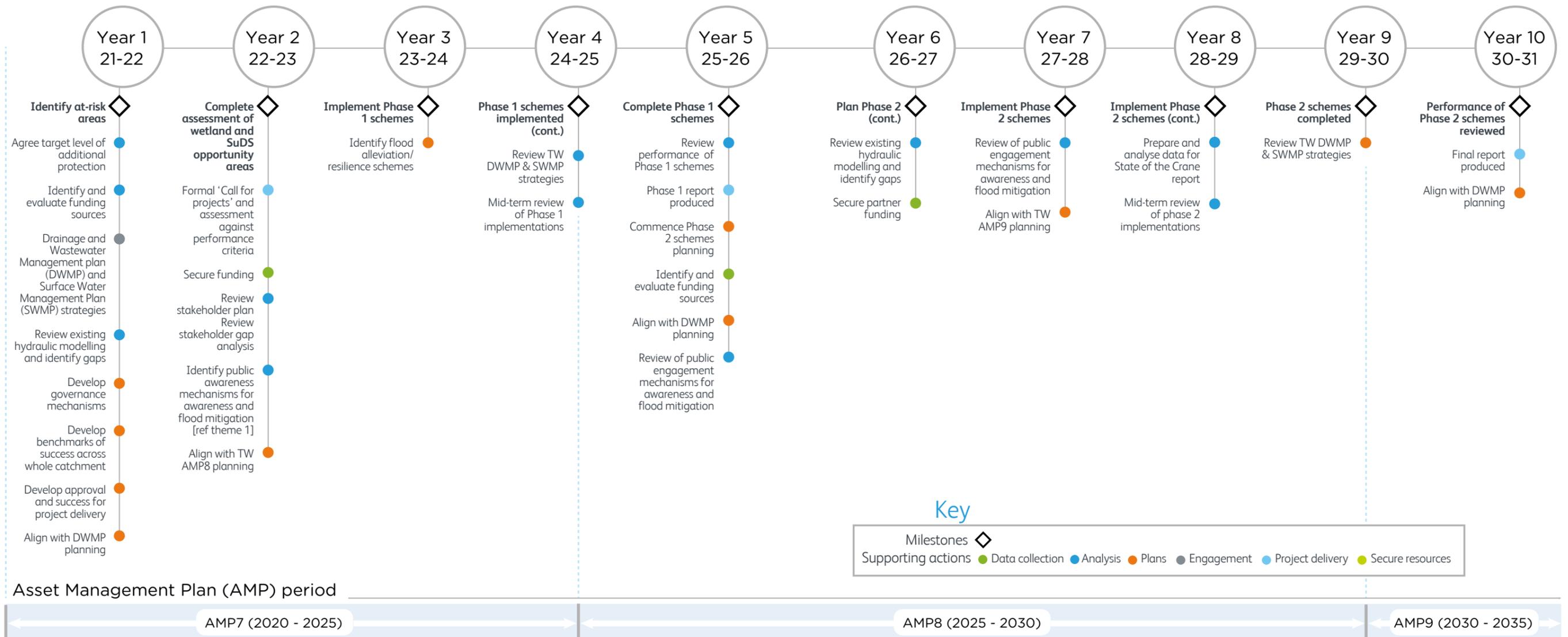
We want local residents, businesses and policy makers to understand how the catchment's natural capital enriches people's lives.

We also want local communities, businesses and policy makers in this diverse metropolitan area to be actively involved in caring for the catchment's natural capital, feeling a shared sense of responsibility to look after it and ensure that it thrives in the future.

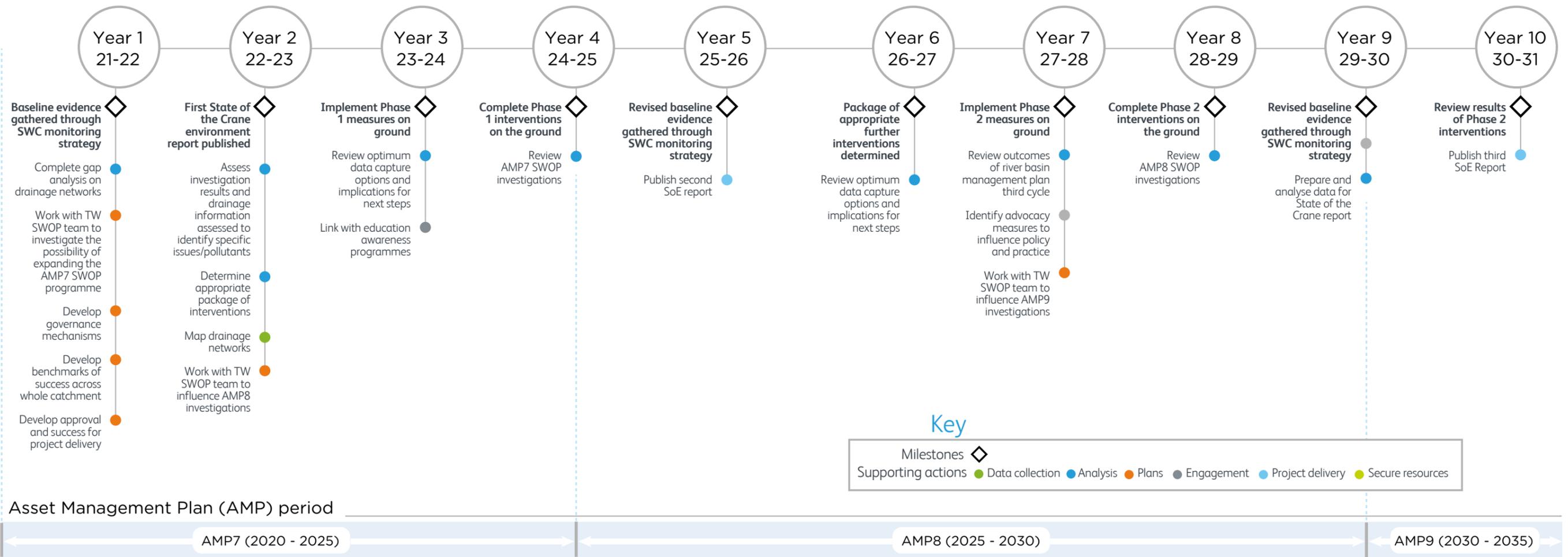
Enhance biodiversity and ecological connectivity action plan



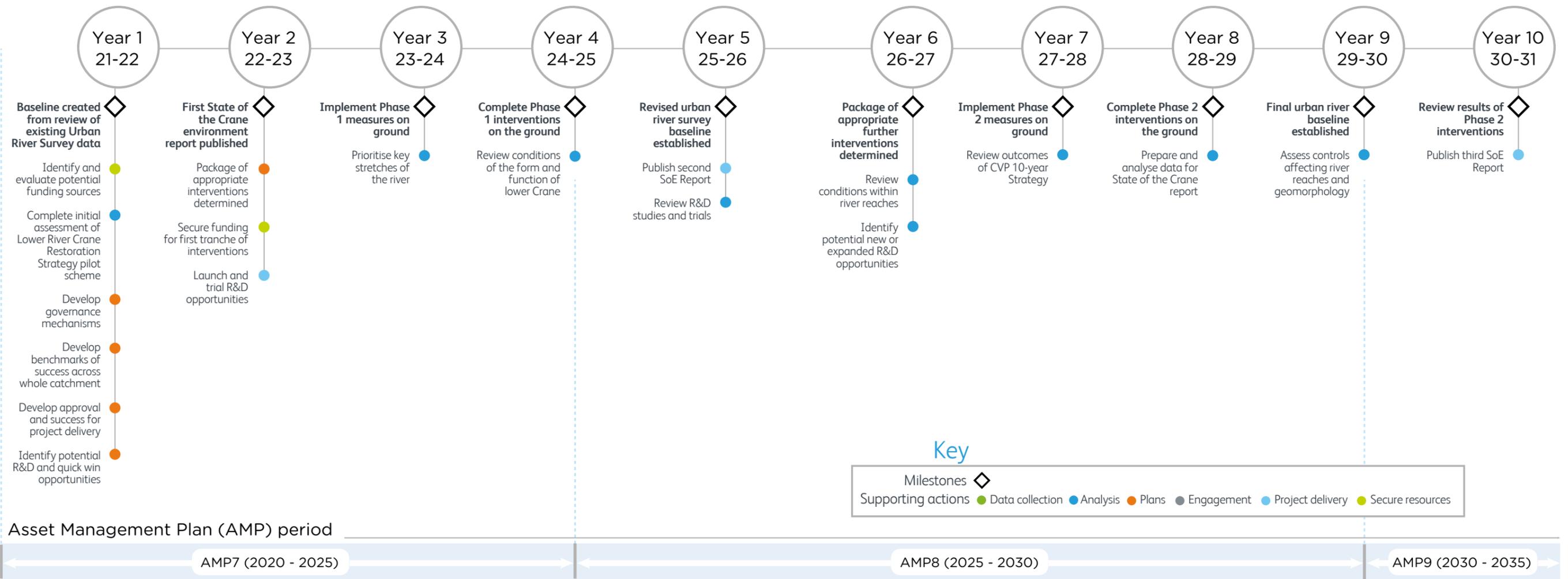
Enhance flood resilience for at-risk areas action plan



Improve water quality in the catchment action plan



Improve geomorphology in the catchment action plan



Achieving multiple benefits

We can't assess nature-based solutions using the same methods and cost-benefit calculations as we would to justify investing in hard-engineered infrastructure. This is because they provide many more benefits to local communities and user groups across the catchment and beyond.

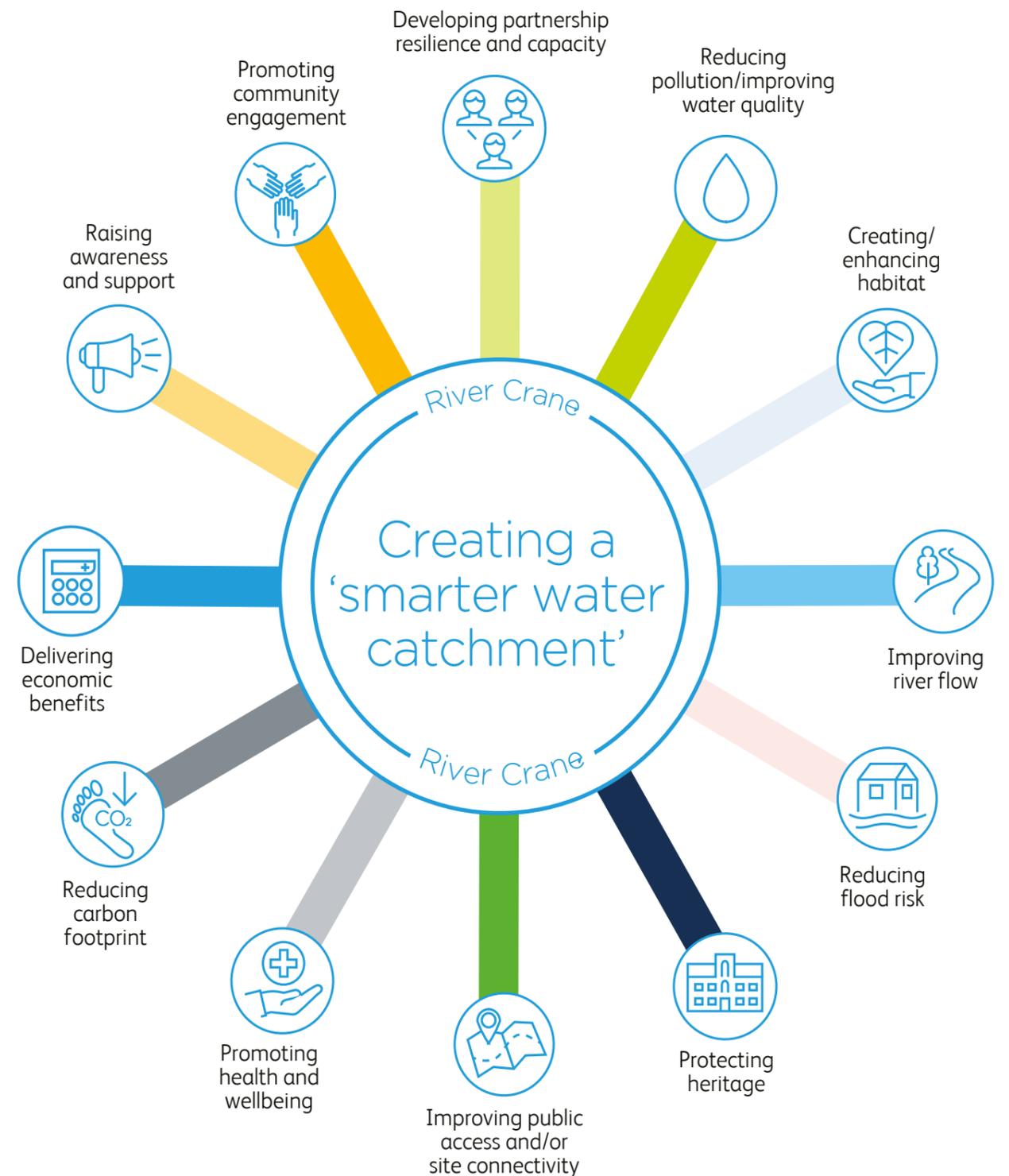
Across the industry, there's been a huge drive to create new assessments and use the right tools to demonstrate the value these solutions can add. So far, evidence is limited, and one single approach is yet to be adopted for the mainstream price review process.

We believe a collaborative and cross-sector approach will deliver multiple environmental, social and financial benefits. So, while we deliver our catchment plans, we'll collect as much evidence of this as we can using an agreed set of criteria across the whole programme. We'll shape these criteria using input from several sources, and wherever possible, seek to quantify our success.

Collecting this evidence will help us to demonstrate the value of our approach as well as:

- Identify which measures are most effective to achieve benefits
- Help our partners assess their progress in achieving their own objectives
- Provide the water sector with an increased understanding of the potential that partnerships can offer when making investment decisions

We'll finalise the criteria at the start of the programme and provide annual updates on our progress.



Next steps

From April 2021, we'll begin to deliver the Year 1 actions of our 'smarter water catchment' plans.

For each catchment partnership, we've established a new project steering group made up of representatives from different organisations and sectors, and chaired by the catchment host organisation. They will oversee the delivery of our goals and drive forward our overall approach.

We'll set up relevant sub-groups to draw in subject matter experts and enhance the progress that can be made. Wherever possible, we'll exchange knowledge and best practice across the whole programme to identify the most efficient and effective ways of working.

Our initial investment of £3 million in each catchment will make a huge difference, but our partnership members will also seek additional funding and resources and capitalise on external opportunities wherever possible to deliver our joint aims.

While we're keen to get going with our plans, understanding the most effective governance structures and financial models will also be a key priority over the next year to enable our new way of working.

If you'd like to help us make a step change and care for water across this catchment, we'd love for you to join in.



Acknowledgements

Thames Water would like to thank all of the organisations and individuals representing the partnership who have contributed their valuable technical inputs, insights and time during the process, through various forums and engagement platforms, to enable the joint development of this plan. We greatly appreciate the commitment and

enthusiasm expressed to achieve this vision and look forward to working together to deliver the plan.

The information provided to develop this plan is correct as of 31st March 2021, and has the formal support of key stakeholders.

Partners

CAMELLIA project:

- British Geological Survey
- Imperial College London,
- University College London
- University of Oxford

Environment Agency

Friends of Headstone Manor Park (FoHMP)

Friends of the River Crane Environment (FORCE)

Frog Environmental

Green Corridor

Heathrow Airport Limited

London Borough of Ealing

London Borough of Harrow

London Borough of Hillingdon

London Borough of Hounslow

London Borough of Richmond upon Thames

London Wildlife Trust

Thames Anglers' Conservancy

Thames21

Wild Future

Zoological Society of London (ZSL)

Photography

- Front cover photo and the photos on pages 12, 18 and 31 taken by John Waxman, Crane Valley Partnership

- Pages 2 and 6 photos taken by Thames Water
- Pages 4 and 16 photos taken by Harrow Council
- Page 13 photo taken by Alison Horwood, FORCE



Working in partnership

We welcome your views on this 'smarter water catchment' plan. Please share them with our dedicated team via partnerships@thameswater.co.uk.