

Working together to protect and enhance our water environment

Co-creating a long-term plan for
the River Chess 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, including our precious and vulnerable chalk streams.

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 Chess is a breath-taking and unique chalk stream and I loved visiting this beautiful river with our partners last Autumn. Since then,

we've made good progress in finding and fixing sources of infiltration into our networks and have made some important steps to get closer to stopping abstraction at Hawridge and increasing the treatment capacity of Chesham sewage treatment works by around 30%. These initiatives will make a huge difference, but there is so much more we all can and need to do to protect this precious chalk stream for current and future generations.

This joint catchment plan for the River Chess 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 Chess. 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

Chalk streams are a very special and globally rare habitat. With 85 % of the world's 260 chalk streams in England, and nine of them rising in the Chiltern Hills, we all have a responsibility to cherish and protect them.

Indeed, our chalk streams are a key reason why the Chiltern Hills were designated an Area of Outstanding Natural Beauty (AONB) in 1965.

The River Chess is one of these special rivers. Their cool, crystal-clear waters, shallow fast flows and clean flinty gravels support an abundance of wildlife. They are attractive, precious habitats that are highly valued by local communities and visitors alike. But our chalk streams are in crisis, under pressure from a myriad of human threats including pollution, development, climate change, invasive non-native species and a high demand for water. It was due to these threats - and especially low flows - that the Chilterns Chalk Streams Project (CCSP) was established in 1997. A partnership project, led by the Chilterns Conservation Board, the CCSP includes local authorities, water companies, non-governmental organisations and voluntary bodies.

At a time when we all need to take bold and decisive action for chalk streams, we are very pleased to be a key partner in Thames Water's 'smarter water catchments' initiative. In piloting

a more intensive approach to catchment management and ensuring the necessary resources are available to make a difference, the initiative will provide a valuable evidence base to help secure a brighter future for both the River Chess and other river catchments in the future.



Dr Elaine King
Chief Executive Officer,
Chilterns Conservation Board



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.

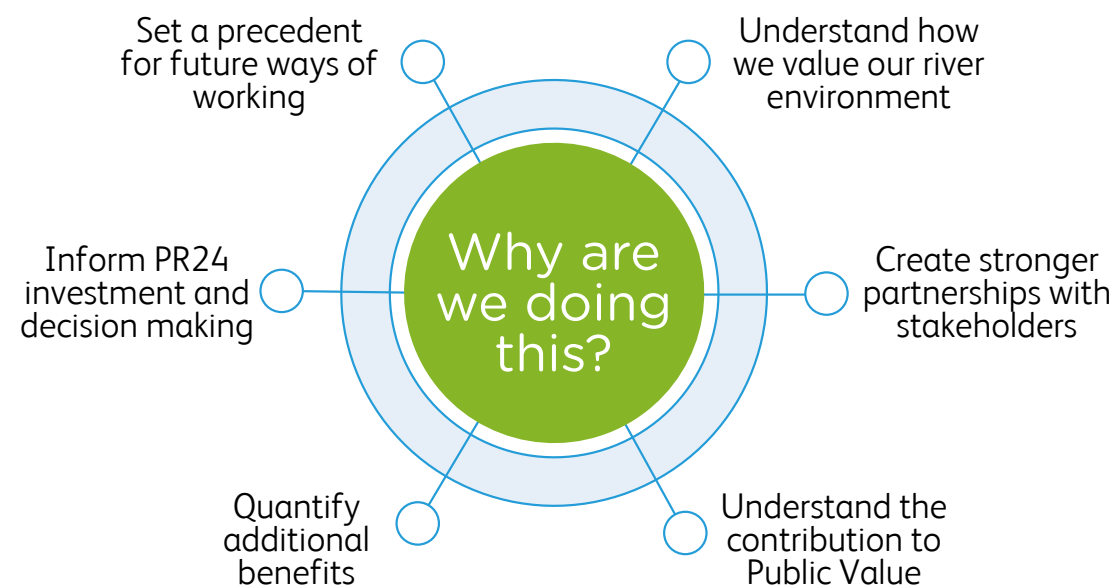
We're putting this approach into practice to understand how we can achieve key benefits

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.

Purpose of our new approach



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.

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.



Vision

- To build better functioning river catchments
- considering the most effective solutions
- without negatively impacting the environment

Strategy

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

Outputs

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

Outcomes

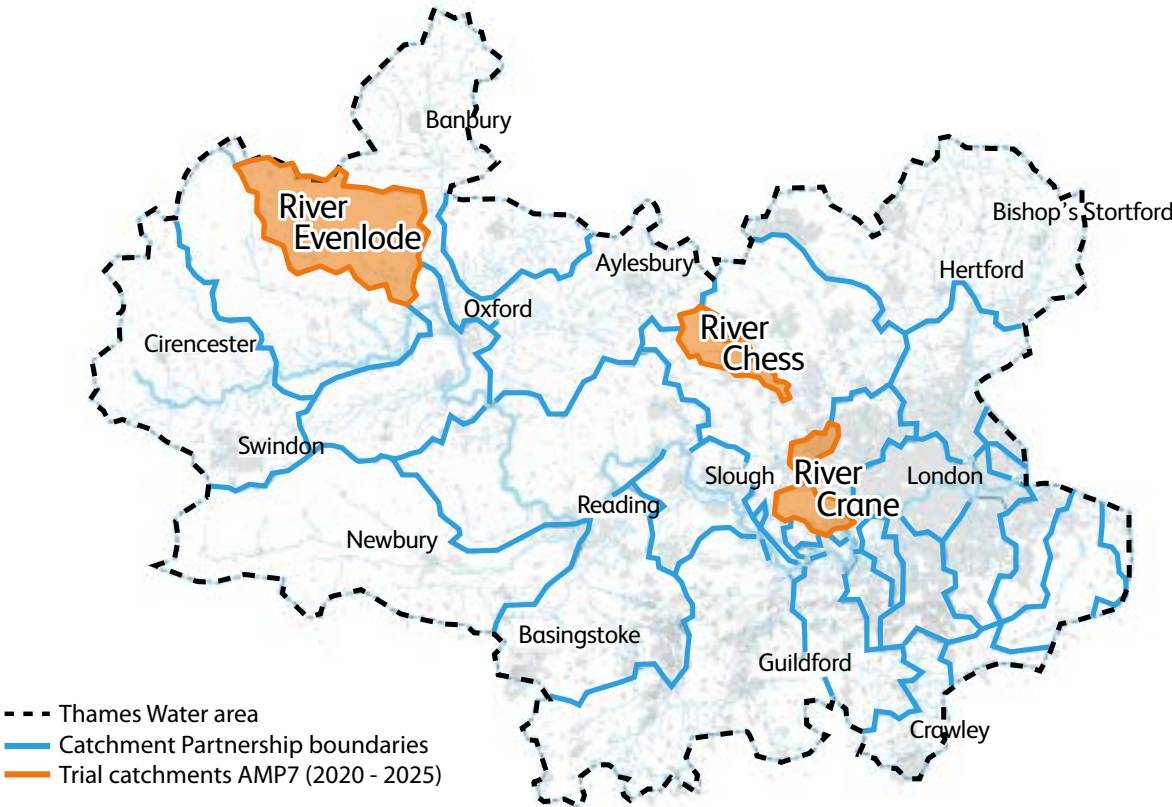
- Protecting and enhancing the environment**
We'll plan appropriate interventions over a longer timescale to realise environmental benefits and safeguard our most precious resource.
- Prioritising our partnership objectives**
Each catchment will have a unique ambition and set of objectives that are locally appropriate – and we'll deliver these by working together.
- 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.

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.

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.

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.

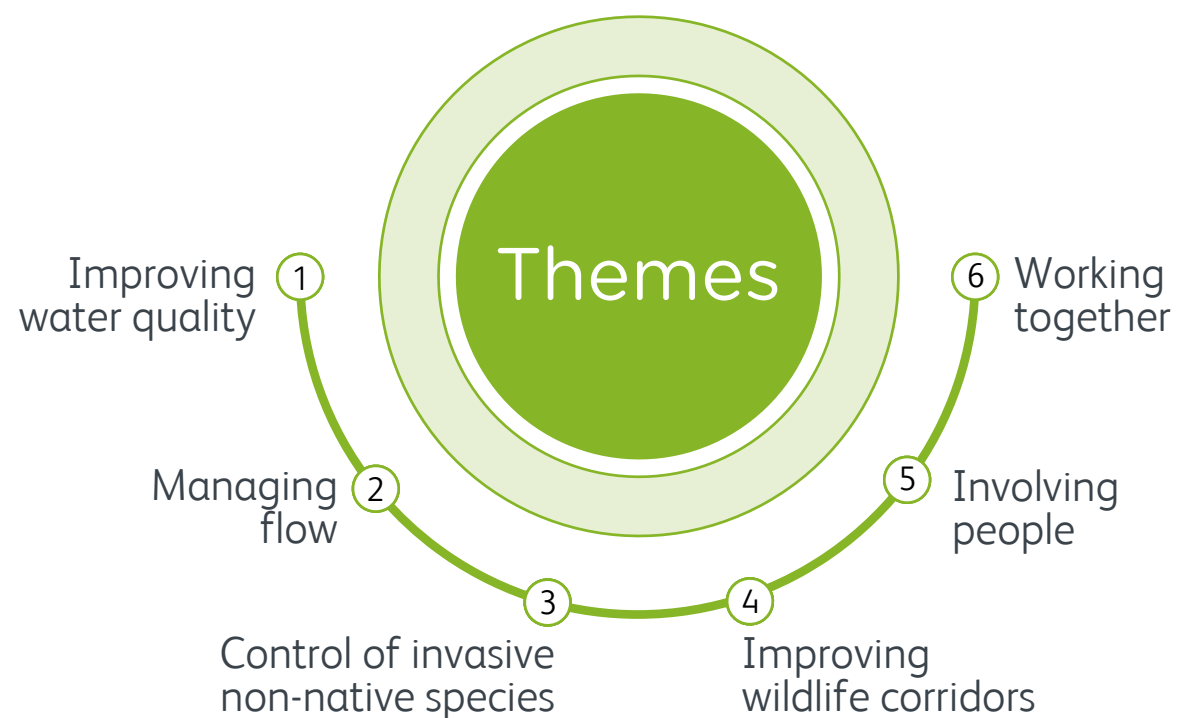
River Chess catchment planning

Following the flow of the River Chess

The River Chess is a precious chalk stream that makes up one of the nine rivers within the Colne catchment. It rises at Pednornmead End, near Chesham, and flows for 11 miles through the Chilterns Area of Outstanding Natural Beauty, to meet the River Colne in Rickmansworth. As one of only about 260 chalk streams in the world, the River Chess is renowned for its lush margins, clean gravel bed and crystal-clear, oxygenated waters. Plants like the white-flowered water crowfoot grow abundantly in its fast flow, and fish such as brown trout lay their eggs in the riverbed.

However, chalk streams in England are under pressure. Common factors affecting their health include over-abstraction for drinking water; urbanisation and agricultural activities, which can lead to water quality problems; and river modifications, which can alter flows and create areas where silt accumulates. These combined pressures lead to a river suffering from poor ecological health and a reduction in the unique biodiversity living in the catchment.

River Chess strategy



Building an action plan

As partners across the Chess catchment, we've come together to create a clear strategy and identify objectives under six key themes. For consistency, these correlate to the priorities set out by the Colne Catchment Action Network (ColneCAN).

With our new action plan, we're embarking on a journey to raise the quality and improve the habitat of the River Chess. As well as delivering bespoke schemes, we'll coordinate with others and integrate our activities with others impacting the river and wider Chess catchment.

This will include:

- Working with the Wilder Chess initiative
- Working with the Chesham Water Group
- Working with Impress the Chess group to support their plan
- Upgrading Chesham sewage treatment works (STW)
- Implementing the actions of the Groundwater Infiltration System Management Plan
- Aligning with water company morphological improvement programmes

While our plan will dictate the direction of travel, it will be subject to amendments and changes as more data becomes available. After ten years, we hope to have a sustainable structure in place that we can use to manage and maintain the improvements made to this globally rare habitat.



Latimer Meadows

Improving water quality

Reducing pollution

Chalk streams naturally have an excellent water quality. Because they are fed by spring water held in the chalk aquifer, they contain dissolved calcium carbonate and other beneficial nutrients that support the diverse ecology found in the Chess catchment. But if other chemicals enter the river, it can cause water quality issues and reduce the number of natural flora and fauna.

The River Chess currently fails to meet Good Ecological Status (GES), as defined by the Water Framework Directive (WFD), because of nutrient enrichment, the poor health of its fish and macrophyte populations and low flows. This is partly due to a combination of point-source pollution (unplanned discharges from Chesham STW when large volumes of groundwater enter the system) and diffuse pollution (urban and rural run-off) throughout the catchment.

As well as Environment Agency data, we can see this problem highlighted in a range of reports, our 10-year set of Riverfly data, and most recently through the water quality information being collected by the collaborative ChessWatch project – you can find more detailed information [here](#).

Some activities, such as infrastructure upgrades to the sewer network and STW, are already underway. However, we need to go beyond this if we want to improve water quality across the catchment. This means pinpointing any gaps in our datasets, building a clearer picture of the problem and assessing the best solutions for the future.

Diffuse rural and urban pollution entering the River Chess at Duck Alley, Chesham.



Managing flow

Restoring river levels

Flow in the Chess is already highly variable. This is because of seasonal variations common to most chalk streams – high spring flows tail off as summer progresses into a low point in autumn and gradually improve as the chalk aquifer recharges in winter.

But recent weather patterns are showing longer periods of low rainfall, some three to four dry winters in succession, leading to longer and more frequent drying events in the upper Chess. These dry periods are then followed by one or two excessively wet winters, causing groundwater flooding.

We've recently discovered that the volumes of groundwater infiltration into the sewer network could be contributing to the problem. Recent surveys show that this could be happening across 25 % of the network in Chesham, and work is ongoing to understand the full impact this has on the river.

We're also seeing periods of short, sharp and more intensive rainfall, particularly in summer, which deliver surges of polluted run-off into the river. Our plan will look at ways of slowing these surges and cleaning the run-off before it hits the river.

Work is already underway to address some of these challenges, and solutions are being identified through groups such as Water Resources South East (WRSE). Affinity Water closed two pumping stations that abstract water in the upper Chess in the summer of 2020, and final closure of the Thames Water pumping station is planned for April 2025. We're continuing to carry out CCTV surveys and investigations of the sewer network, with more plans in place to re-line over 10km to prevent infiltration. Our catchment plan will go even further and look at ways of managing excessive flows using sustainable urban drainage, flood plains and water meadows.

Over the last 10 years, Meades Water Gardens in Chesham has been dry for over 50% of the time leading to significant declines in diversity of invertebrates.



Meades Water Gardens

Control of invasive non-native species

Protecting our native wildlife

Like many other rivers in the Colne catchment, the River Chess is facing a growing threat from invasive non-native species. Species such as Himalayan balsam, Japanese knotweed, Signal crayfish and North American mink are either already well established, or are frequent visitors to the catchment; whilst species such as the Quagga mussel and Demon shrimp are emerging threats.

Although we face existing problems with invasive species in the Chess Valley, we've had some success controlling them. For example, with the help of the Chesham Environmental Group, we've eradicated Himalayan balsam completely. But we need to remain vigilant. There are several other species that are still high on the watch list, such as the American signal crayfish.

Our focus is currently on controlling non-native North American mink with the help of local landowners, as it can devastate the populations of native water voles. We're also considering the growing problem with Japanese knotweed along the riverbanks. This is known for out-competing native vegetation, eroding banks and increasing the risk of flooding.

Despite the work that's been carried out already, including the advice provided to riparian landowners through the Impress the Chess project, controlling invasive species remains a challenge we must consistently stay on top of. Moving forwards, we'll improve the mapping we use to track these species and create new protocols to stop their introduction and spread within the catchment.

Invasive non-native species such as Japanese knotweed are having a significant impact on the health of the River Chess and the wildlife that it supports.



Improving wildlife corridors

Protecting local biodiversity and habitats

For wildlife to flourish, the river and its riparian habitats need to be healthy and connected together to provide refuge, feeding and breeding grounds and enable species to migrate safely. The good news is many initiatives are already producing results. We've seen our colony of extant water voles extend their range from their stronghold around Chenies downstream to Rickmansworth and the edge of urban Chesham. In 2019/20, an otter was also spotted on the Chess – the first in living memory.

However, the Chess has seen a marked reduction in fish populations over the last 20 years, including the loss of one of its key indicator species. Five years ago, grayling were a common sight from Blackwell Hall down to Rickmansworth, but none have been recorded in the last five years. Alongside improving water quality, removing weirs or creating bypass channels around them will improve fish passage and help their populations to be more resilient in future, which will help to reverse this trend.

We'll work with the Wilder Chess initiative, farmers and landowners to build robust and sustainable wildlife corridors. We'll also continue our programme of weir removal and mill bypasses to help increase populations of brown trout and introduce breeding fish back to the centre of Chesham.

The Chess supports the recovery of the water vole; one of the last two remaining extant populations in Buckinghamshire which have declined by 90% since the 1960's.



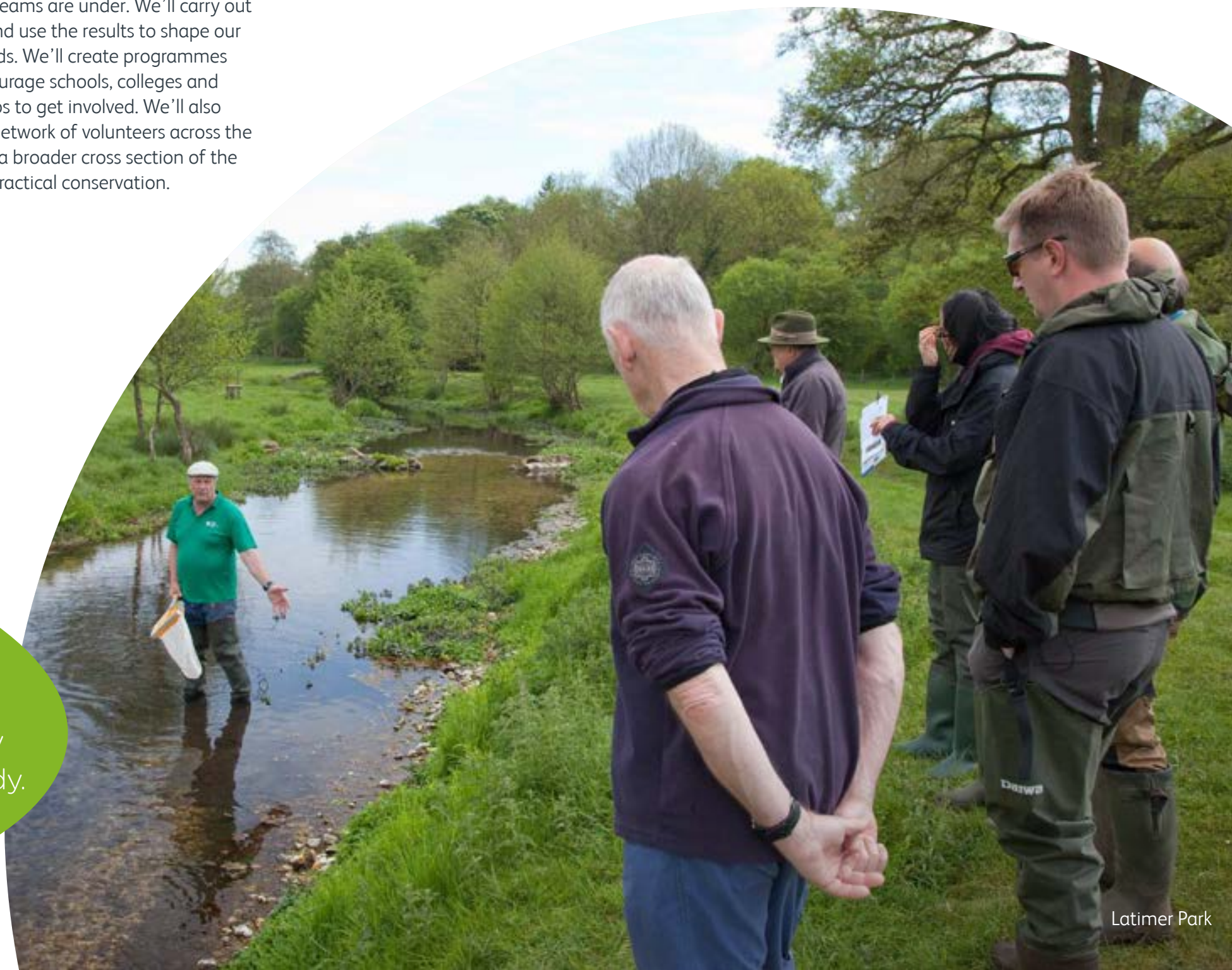
Involving people

Making our rivers accessible to all

Due to its unique landscape, the Chess catchment is popular amongst both the local community and those travelling to visit it. Lined with beautiful scenery and home to diverse wildlife, the 10-mile Chess Valley Walk runs between Rickmansworth and Chesham and is easy to access via the London tube network. During the coronavirus pandemic, visiting the catchment became even more popular with individuals who wanted to enhance both their physical and mental wellbeing. Part of our work will be to improve opportunities for access by all user groups to the river and the wider valley landscape.

We want to promote the value of water and the connection that these communities have with our precious river. But first, we need to establish how much the public already understands about the pressure our chalk streams are under. We'll carry out awareness surveys and use the results to shape our actions going forwards. We'll create programmes of education to encourage schools, colleges and special interest groups to get involved. We'll also work to expand our network of volunteers across the catchment involving a broader cross section of the local community in practical conservation.

Using the Chess catchment as a 'living' laboratory for scientific study.



Latimer Park

Working together

Using our insights to create change

We need to work in a holistic way to benefit the environment and its users. Having a collective plan stemming from a shared ambition will not only encourage individual organisations from across the sector to become more involved in river management but also provide opportunities to draw in additional sources of funding across public and private sectors.

As part of our long-term shared plan, we'll work with both established groups and new stakeholders to make the most of existing know-how and initiatives as well as foster new ideas and ways of working. Where appropriate, we'll create new sub-groups to focus on specific issues, such as interacting with the farming community and improving public access.

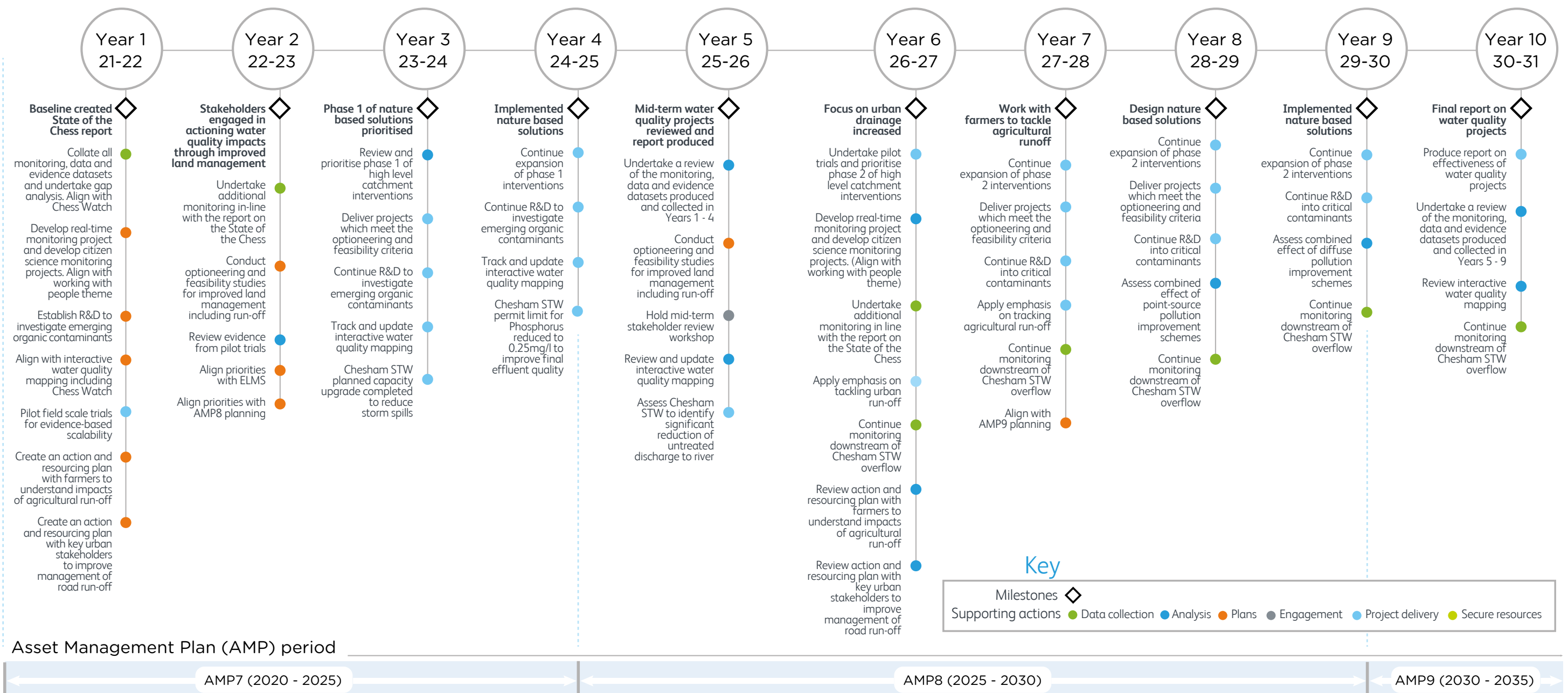
We'll take an evidence-based approach to build on the ChessWatch project as a data and research tool while asking the public and stakeholders for their ongoing feedback.

Conservation groups and landowners working together to improve habitat along the River Chess at Sarratt Bottom.



Our shared long-term plan

Improving water quality action plan

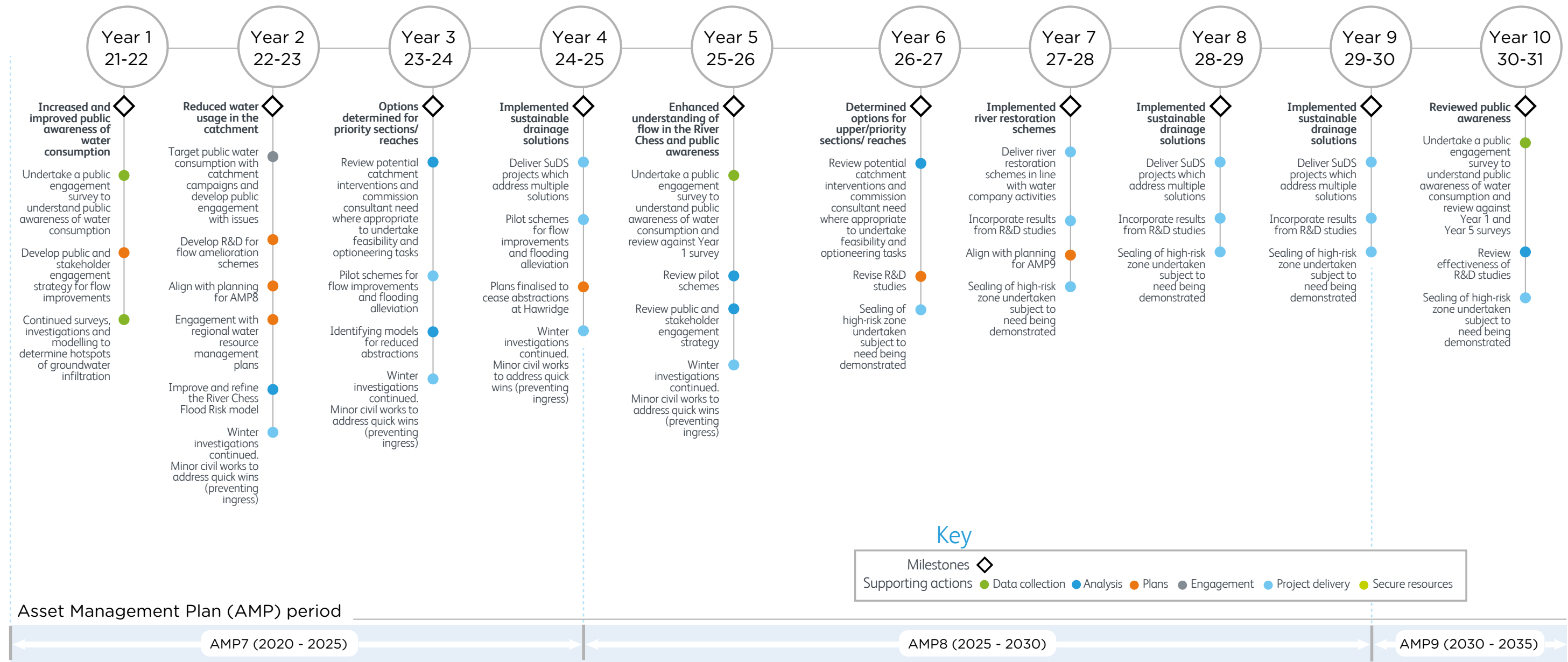


The collective vision for the Chess catchment

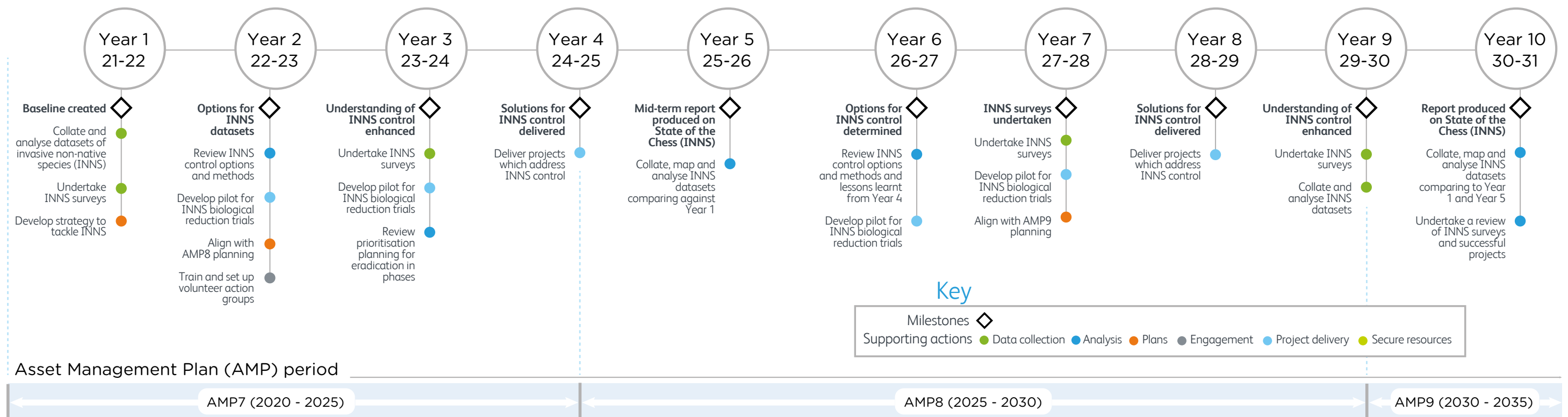
Our collective vision is that the Chess catchment is a jewel in the heart of the Chilterns landscape. We want to create a place where people are working together to protect and improve the water environment for everyone. From the headwaters in Chesham to its confluence with the River Colne in Rickmansworth, we want the River Chess to possess the clean, plentiful, flow characteristics of a healthy chalk stream. We want to ensure that the river is sensitively managed, meeting the needs of all those that rely on its resource whilst enabling it to reach its full biological potential, supporting rich and diverse populations of fish, birds and other wildlife.

We also want the wider catchment to be a working landscape that is managed for the benefit of both people and wildlife. We want to minimise the impact of pollution, flooding and non-native invasive species and conserve a connected mosaic of wildlife-rich habitats. We want to create a natural and attractive amenity for people to enjoy and improve social wellbeing for present and future generations. We've identified year-on-year actions under each of our key themes so that we can work towards this vision together.

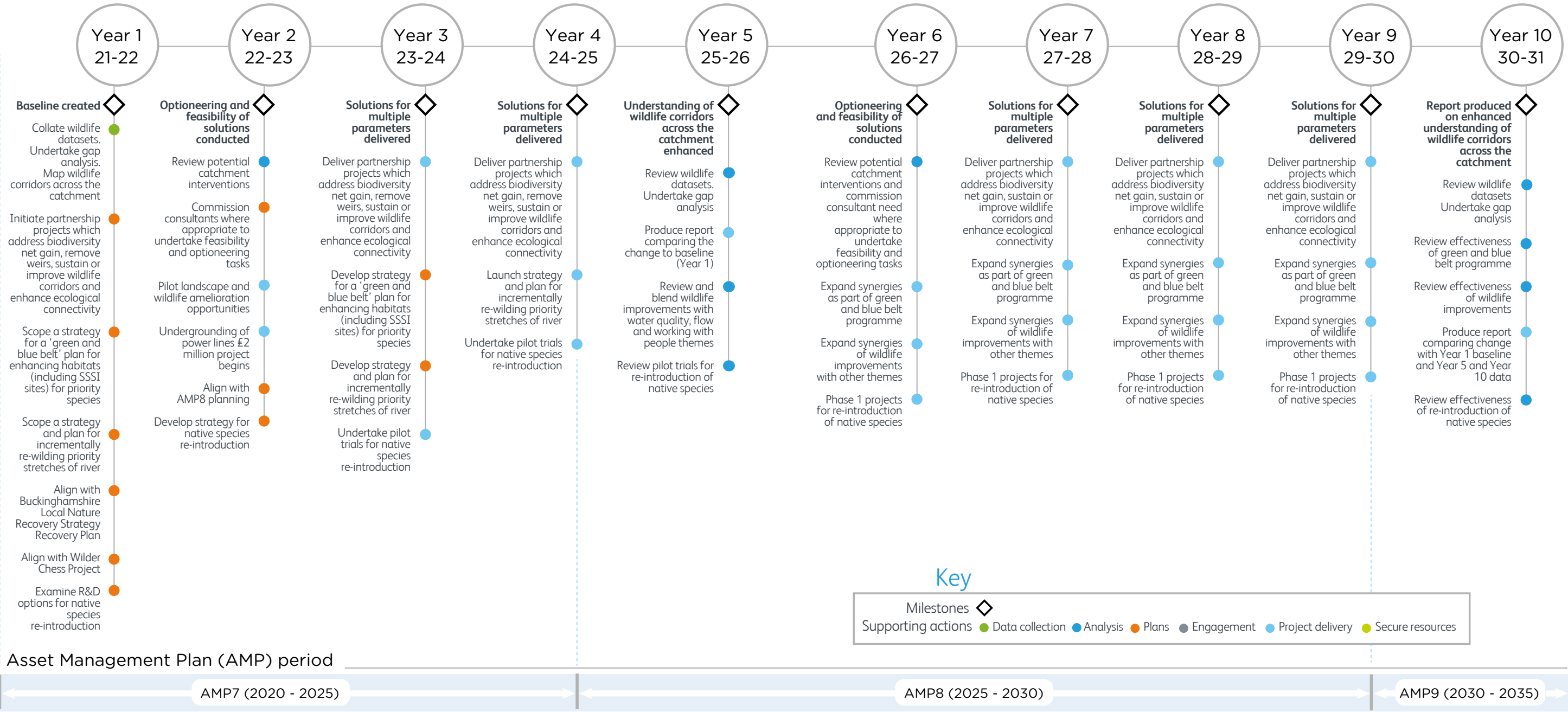
Managing flow
action plan



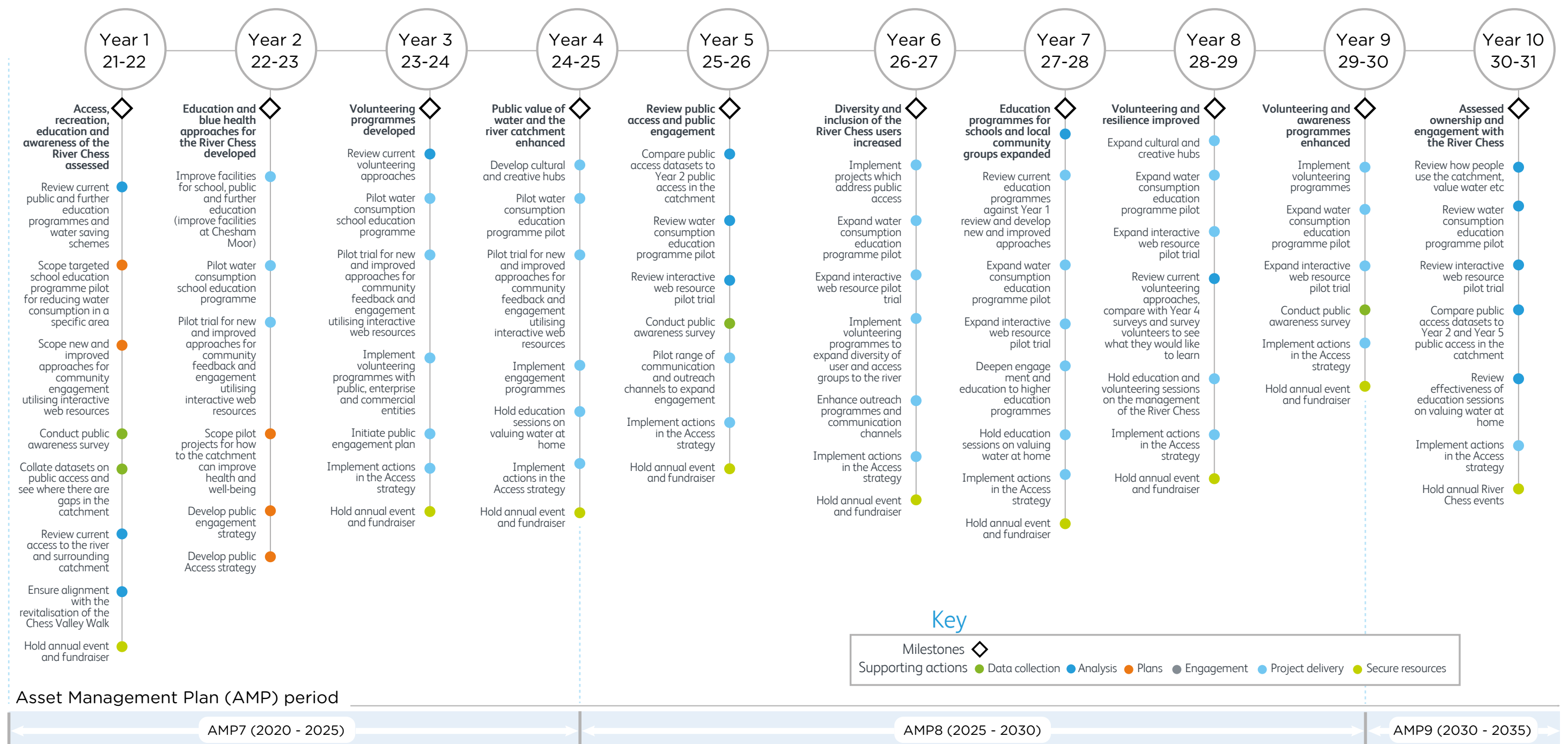
Control of invasive non-native species action plan



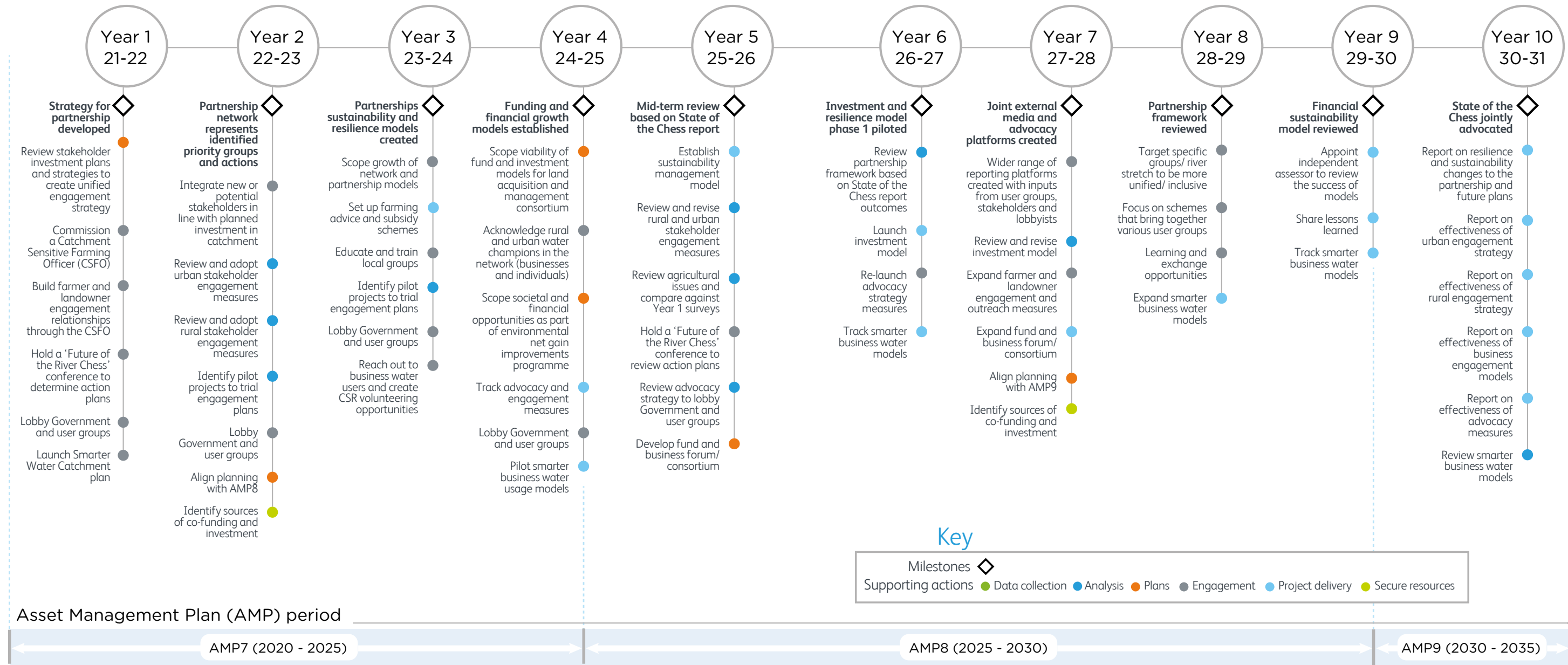
Improving wildlife corridors action plan



Involving people action plan



Working together
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.

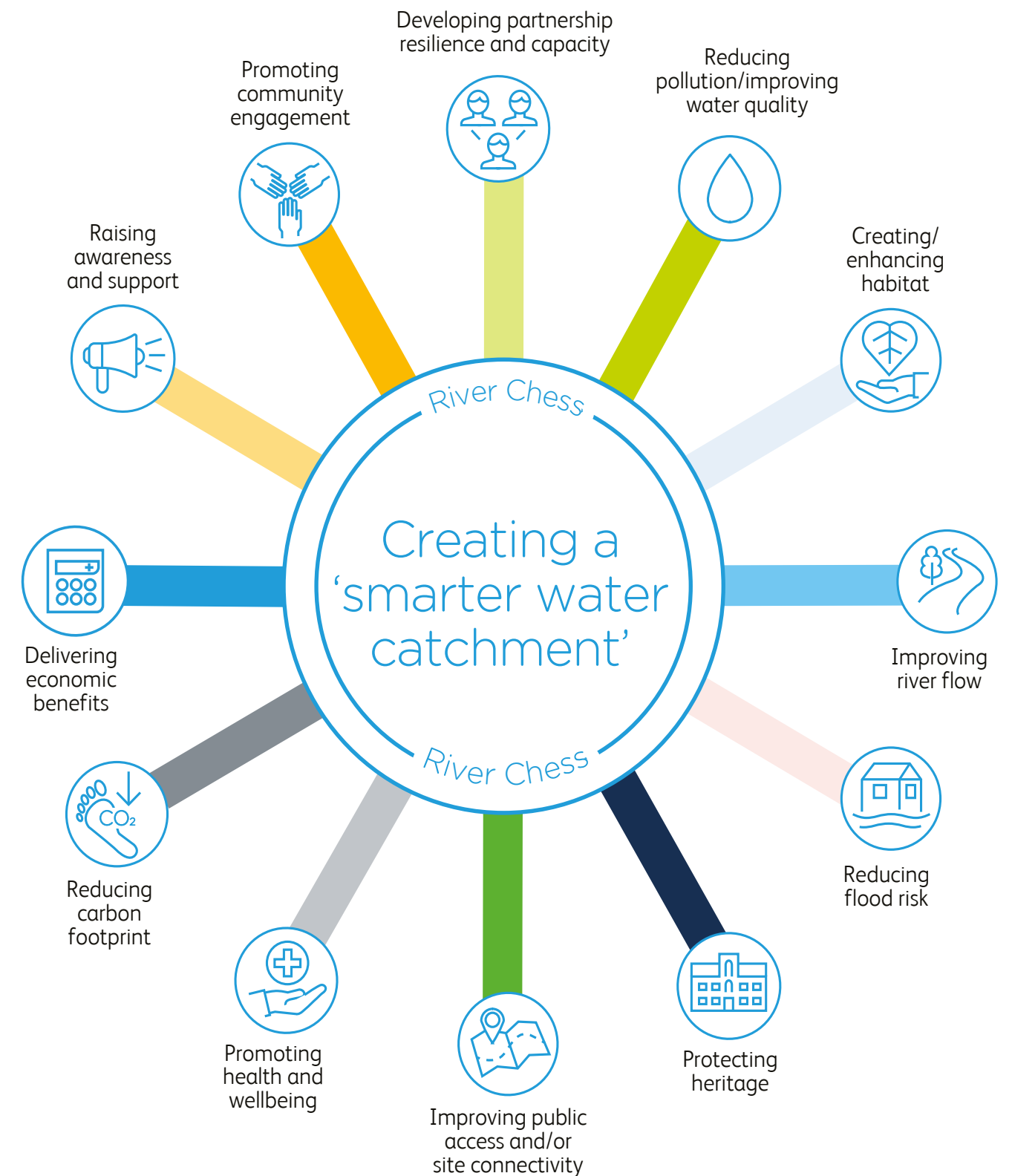
Across the industry, there's been a huge drive to create new assessments and use the right tools to demonstrate the value these solutions can add. So far, evidence is limited, and one single approach is yet to be adopted for the mainstream price review process.

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.



Latimer Park

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

Affinity Water
Amersham Birdwatching Club
Blackwell Farm
Buckinghamshire Council
Chenies Fly Fishers
Chenies Parish Council
Chesham & District Natural History Society
Chesham Environment Group
Chesham Renaissance CIC
Chesham Town Council
Chess Rivers Association
Chiltern Society
Chilterns Chalk Streams Project

Chilterns Conservation Board
Environment Agency
Hertfordshire & Middlesex Wildlife Trust
Hertfordshire County Council
Latimer Park Fly Fishers
Loudwater Residents Association
Queen Mary University of London
Restore Hope
River Chess Association
Sarratt Parish Council
Sustainable Chesham
Three Rivers District Council

Photography

- Front cover and pages 12, 16, 18, 20, 22 and 24 photos taken by Allen Beechey, Chilterns Conservation Board
- Pages 2, 4, 6 and 39 photos taken by Thames Water
- Page 14 photo taken by Paul Jennings, River Chess Association



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.