

Catchment Strategic Plan

Part of our Drainage and Wastewater Management Plan (DWMP)

Co-creating
resilient
wastewater
catchments

A long-term
Strategic Plan
for **Surrey**



Contents

Preface	3
Catchment strategic plan glossary	6
Introduction	7
Our co-creators	9
Issues today	11
Our predictions for the future	12
Sustainable solutions	13
Partnership working - case study	14
Our shared plan	15
Developing our preferred plan for Surrey	16
Our preferred plan for Surrey	17
Our preferred 25 year plan for Surrey	18
Next steps	19
Our shared plan at catchment level	20
L3 STW catchment summary table	27
Navigating our DWMP	30
Work with us	31

Foreword



Thames Water has been making considerable progress to bring to fruition their drainage and wastewater management plan (DWMP). The DWMP vision is to co-create a 25-year plan for drainage and wastewater that benefits communities and the natural environment in London and the Thames Valley. We can all agree that planning to adapt to the growing critical pressures facing the water industry, such as climate change, a growing population and urbanisation, is of paramount importance and it has been very good to see that these challenges have been faced head on in the development of this plan.

Thames Water’s commitment to achieve the DWMP vision through a collaborative process is one of the most important and admirable themes of this plan. Working alongside stakeholders and customers, including the Thames Regional Flood and Coastal Committee, ensures that the plan is reflective of our combined views and optimises overall efficacy and acceptability.

I have thoroughly enjoyed being part of this process and have been impressed by the extent of engagement that Thames Water has managed to undertake despite the challenging conditions of the coronavirus pandemic. As a result, I believe that the DWMP offers a significant step forward in planning for drainage and wastewater in our region.

Of course, the real changes will only happen once the plan is implemented on the ground, but the joined-up work and co-creation of the DWMP plan so far promises significant improvements for customers, communities and the natural environment across London and the Thames Valley. Continued focus on maintaining a tight relationship with all stakeholders is essential in moving forward to ensure Thames Water reaches their ambitious goals.

Professor Robert Van de Noort
Chair, Thames Regional Flood and Coastal Committee

Preface

Our DWMP progress and enhancements since our draft plan

We're proud of our first DWMP, and encouraged by the level of positive feedback we've received. By engaging and working collaboratively with around 2,000 of our customers and stakeholders, we've been able to deepen our shared understanding as well as develop new ways to approach drainage and wastewater management across our region.

We'd like to say a big thank you to everyone who got involved and collaborated with us in the development of our shared plan. We're really happy it's having a positive impact already, and encouraged by the shared benefits we can deliver in the future as we continue to move forward together.

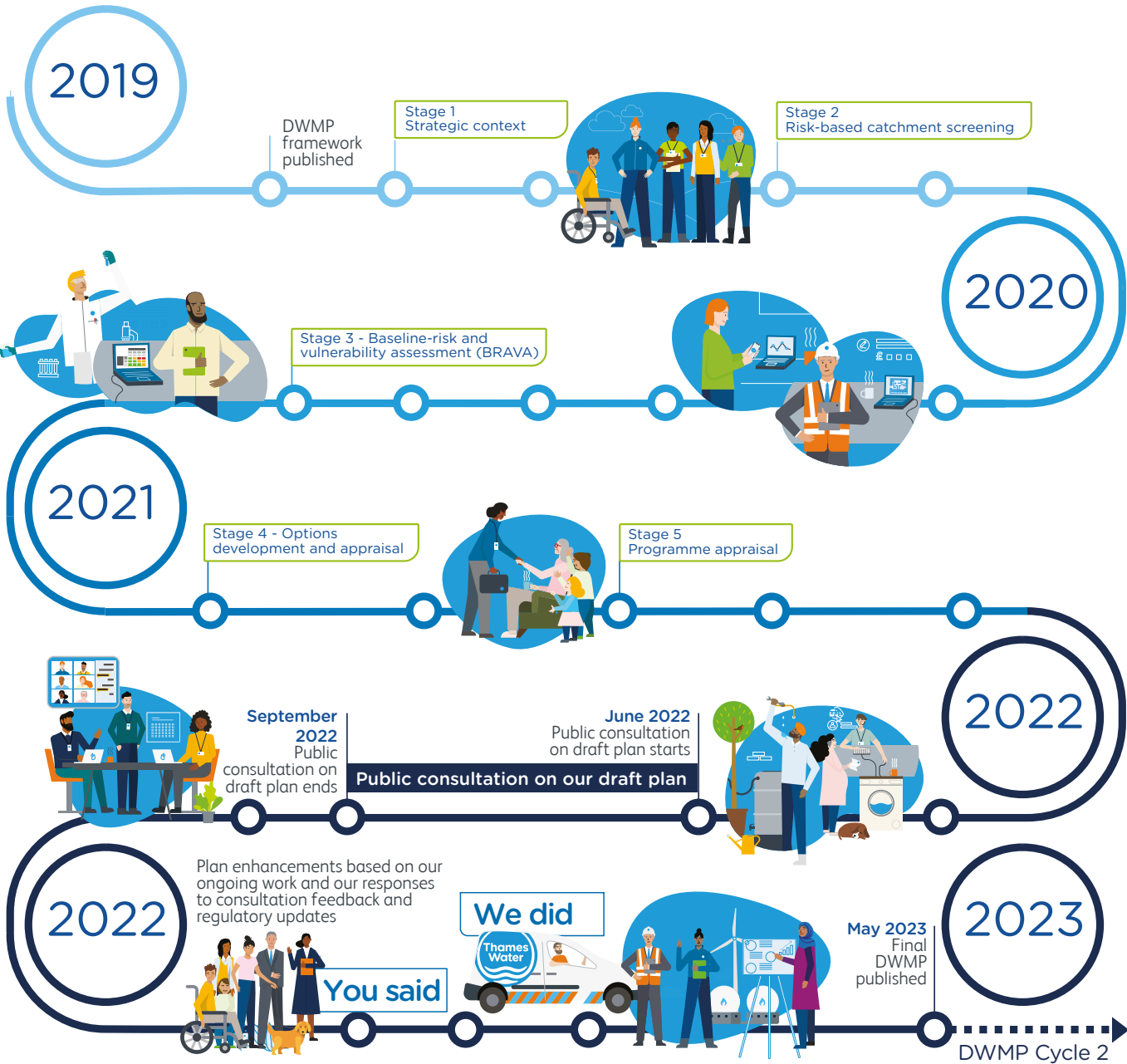
Our plan aligns with wider industry strategic plans and delivery programmes, such as the Water Industry National Environment Programme (WINEP) and the Long-Term Delivery Strategy (LTDS), and we'll make sure it continues to do so as we tackle current pressures and future challenges.

Over the past four years, we've developed, tested and enhanced our DWMP by engaging with customers and stakeholders and working with their valuable input and feedback to create a final plan we can all support. It's been almost a year since we first published our draft DWMP, and we've made some great progress since then. As customer and stakeholder requirements have evolved over time, our plan has evolved too.

We've enhanced our adaptive planning to increase the resilience of our final DWMP. We've also been testing its sensitivity against a range of alternative plans, risks and uncertainties to make sure our final plan is flexible to different potential futures. This approach will help us to make more proactive, adaptable and informed choices over time. It will also make sure that our interventions are set up for the future and can add the best value while providing ongoing opportunities for us to develop innovative solutions and ways of working.

The rest of this document summarises our final plan for this specific Catchment Strategic Plan (CSP) area, including the progress we've made from draft to final. We look forward to building on this progress and our collaborative approach as we implement our shared plan and evolve into DWMP Cycle 2.

DWMP Cycle 1



Preface

What you told us about the draft DWMP for our region

We published our draft DWMP for public consultation in June 2022, and asked our customers and stakeholders for their feedback on it. We received around 1,400 responses from a wide range of local, regional and national stakeholder groups, including responses from every CSP area across our region.

We received lots of positive comments on the quality and ambition of our draft plan as well as useful ideas for making our final DWMP even stronger.

The consultation feedback had six main themes, as outlined below. We’ve listened carefully and responded wherever possible within our final plan*.

This valuable feedback has further enhanced our DWMP and will help our customers, communities and the natural environment in our region to thrive now and in the future.

You said



You supported

- Our preferred plan with the majority of our customers and stakeholders agreeing with this choice
- Our proposed solution types from nature-based solutions to using the latest technologies to increase capacity in our sewer system
- Our partnership-working approach with our 200+ local authorities, organisations, action groups, catchment partnerships and national stakeholders

You challenged

- Our targets – you wanted amendments or some new ones to be added
- Our programme – you wanted quicker delivery in certain areas and were concerned about such an ambitious SuDS plan
- The cost – you were worried about the impact on customer bills

You offered ideas for

- New or amended solutions that we could consider including in our preferred plan
- Maximising the benefits of our preferred plan’s positive outcomes
- Enhancements to our stakeholder engagement approach and ongoing activities

You wanted more details on

- The resilience of our assets to flooding and power outage
- How our plan will be funded - by business-as-usual activities (base funding) or enhancement funds
- Adaptive planning scenarios to evidence how our plan could adapt to future influencing factors such as climate change

Feedback themes

**Protecting the environment**
Level of ambition and pace of delivery

**Evidencing best value**
Affordability and bill impact

**Delivering the plan**
Solutions and deliverability of the plan

**Enhancing the plan**
Technical clarifications and ease of navigation

**Working together**
Collaboration to achieve multiple benefits

**Valuing your input**
Stakeholder engagement

We did

We’ve used as much of your feedback as we could, together with the progress from our ongoing DWMP work and our responses to regulatory updates, to enhance our final plan including in the following ways:

**More** ambitious storm overflow target delivery to help protect the environment

**Increased** evidencing around best value and justification for our preferred plan

**Increased** alignment of DWMP to other strategies and delivery plans

**Increased** number of proposed solutions

**Rewritten** and restructured parts of the documents to be clearer and more accessible

**More** detailed content throughout, especially on strengthening partnership working and stakeholder engagement

**Additional** future scenario testing

**Increased** balancing of risk, ambition and deliverability

**Earlier** planned implementations

**New** dedicated technical appendices

* Some consultation feedback didn’t require further action or wasn’t relevant to the DWMP process. Other feedback was relevant to future DWMP planning cycles and will be used to inform this work.



This document focuses on the progress and updates we’ve made in our final DWMP for this specific CSP area.



Find out more about how we’ve addressed the wider consultation feedback in our [You said, We did](#) Technical appendix.

Preface

Navigating the final DWMP for our region

We’ve enhanced our final DWMP since we published it as a draft for public consultation in June 2022, and we want to make it easy for you to see what’s changed.


You can spot all the places we’ve updated our draft plan with our ‘progress signposts’, which we’ve used across all our final DWMP documents. Here’s where they’ll be:


- Preface summaries - We’ve put a summary table in each document’s preface, excluding Summary documents and the Catchment Strategic Plans (CSPs)
- Relevant chapters - We’ve placed the appropriate signposts next to each relevant chapter, including Summary documents and the CSPs


Navigation index


	Protecting the environment & providing a reliable, sustainable wastewater service	Best Value & Delivery	Wastewater	Wastewater & Data
Chapter 1				
Chapter 2				
Chapter 3				
Chapter 4				
Chapter 5				
Chapter 6				


Progress signposts

Progress updated

More detail or new content

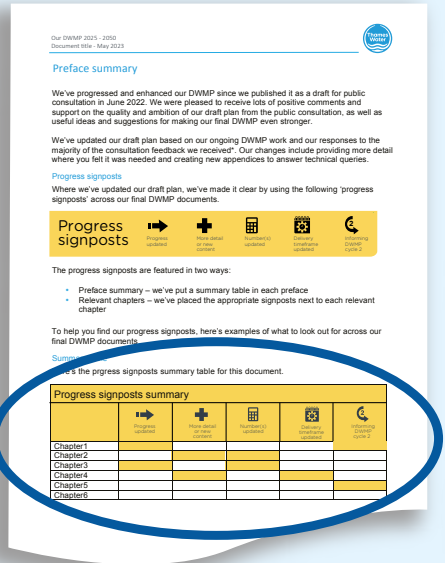
Number(s) updated

Delivery timeframe updated


Informing DWMP cycle 2


To help you find our progress signposts, across our final DWMP documents, here are examples of what to look out for:

Preface summaries



Relevant chapters



 If you need help navigating our final DWMP and locating key content, you can find a Navigation index at the back of this document.

Catchment strategic plan glossary

Term	Definition
1 in 30-year storm	A storm that has a 1 in 30 chance (3.33 % probability) of being equalled or exceeded in any given year. This does not mean that a 30-year flood will happen regularly every 30 years, or only once in 30 years.
1 in 50-year storm	A storm that has a 1 in 50 chance (2 % probability) of being equalled or exceeded in any given year. This does not mean that a 50-year flood will happen regularly every 50 years, or only once in 50 years.
Baseline Risk And Vulnerability Assessment (BRAVA)	Following Risk Based Catchment Screening (RBCS) detailed risk assessments on those catchments where we believed there was an adverse risk to performance over time, we modelled their performance for future epochs (2020, 2035 and 2050).
Combined Sewer	A combined sewer is a sewer designed to carry both wastewater and surface water from domestic and/or industrial sources to a treatment works in a single pipe.
Dry Weather Flow (DWF)	Dry Weather Flow (DWF) is the average daily flow to a Sewage Treatment Works (STW) during a period without rain.
EA Pollution Categories 1 to 3	Category 1 incidents have a serious, extensive or persistent impact on the environment, people or property. Category 2 incidents have a lesser, yet significant, impact. Category 3 incidents have a minor or minimal impact on the environment, people or property with only a limited or localised effect on water quality. Further guidance available here .
Event Duration Monitoring (EDM)	Event Duration Monitoring measures the frequency and duration of storm discharges to the environment from storm overflows.
Foul Sewer	A foul sewer is designed to carry domestic or commercial wastewater to a sewage works for treatment. Typically, it takes from sources including toilets, baths, showers, kitchen sinks, washing machines and dishwashers from residential and commercial premises.
Hydraulic Overload	When a sewer or system is unable to cope with a high flow.
L2 Area (Strategic Planning Area)	An aggregation of level 3 catchments (tactical planning units) into larger level 2 strategic planning areas. The level 2 strategic planning areas allow us to describe strategic drivers for change (relevant at the level 2 strategic planning area scale) as well as facilitating a more strategic level of planning above the detailed catchment assessments.

Term	Definition
L3 Catchment (Tactical Planning Unit)	Geographical area in which a wastewater network drains to a single sewage treatment works. Stakeholders may be specifically associated with this area. Includes for surface water sewerage that may exist which serves the wastewater geographical area but drains to a watercourse.
Lead Local Flood Authorities (LLFAs)	LLFAs are Risk Management Authorities as defined by the Flood and Water Management Act. They have statutory duties with respect to flood risk management, investigating flooding and the compilation of surface water management plans.
Risk Based Catchment Screening (RBCS)	A first pass screening exercise of catchment vulnerability against 17 different risk indicators to understand which catchments are low risk catchments and those that are likely to be at risk in the future if not supported by our long-term plan.
Sewage Treatment Works (STW)	A Sewage Treatment Works is a site where wastewater is received and treated to a standard legally agreed with the Environment Agency before it is released back into the environment.
Storm Overflow Discharges	Storm overflows are used to manage excess flows, which typically occur as a result of heavy rainfall. Excess flow that may otherwise have caused flooding is released through a designated outfall to a waterbody, land area or alternative drainage system.
Surface Water Sewer	A surface water sewer collects rainwater from domestic and commercial roofs, driveways, patios, etc to a local watercourse or suitable surface water drainage system.
Sustainable Drainage Systems (SuDS)	Drainage solutions for surface runoff that mimic natural drainage regimes and provide an alternative to a network of pipes and sewers.
Thames Regional Flood and Coastal Committee (TRFCC) Area	Thames Regional Flood and Coastal Committee (TRFCC) area was established by the Environment Agency under the Flood and Water Management Act 2010 that brings together members representing the Constituent Authority. Featured TRFCCs are listed here on our DWMP portal.

Introduction

Since 2019, we've been working with you, our stakeholders, to develop our first long-term strategy for wastewater and drainage issues within the Surrey Thames Regional Flood and Coastal Committee (TRFCC) area.

We're developing a strategy for the next 25 years to meet future challenges such as climate change, population growth and urban creep which could impact the sewerage and drainage systems in our region.

We want to make sure we increase the resilience of our sewerage and drainage assets and network so that we can protect our customers, communities and the environment from the impacts of these challenges.

This long-term strategic plan outlines our shared vision for the future and details how, through working together, we can improve and enhance our wastewater and surface water services in this TRFCC area to achieve the following ambitious goals.

In this document we'll explain:

- How we've worked in partnership to develop our strategic plan
- Our predictions of the future challenges we face in this region
- How this plan is expected to address these challenges and who else needs to be involved
- Our shared strategy for maintaining the safe and reliable delivery of wastewater and surface water services in the long-term

This TRFCC area covers 28 wastewater catchments, each with networks draining to a single treatment works site and, where present, surface water sewerage. In this document we summarise our long-term plan for this TRFCC area (L2) and provide links to allow readers to drill down into to our catchment-level plans (L3). If you want to contact us or want to find out more about our DWMP and the set of documents it comprises, please use the following link:

DWMP@thameswater.co.uk

[Drainage and wastewater management plan](#)

Our Goals

Stop internal and external property sewer flooding up to a 1 in 50-year storm event (2% probability in any given year) where possible

Eliminate harm from storm overflows - no more than an average of 10 discharges per annum by 2045 at overflow locations

Enhancing resilience at our sewage treatment works to ensure 100% permit compliance and protect river water quality

Our DWMP components

DWMP Framework

Strategic Context

Our DWMP




Technical Summary

The Plan

Technical Appendices

DWMP portal

Non-Technical Summary

Theme		How we will measure performance			
	Environment	Sewage treatment works quality compliance The ability of Sewage Treatment Works (STW) to treat and release treated sewage in line with the consented discharge permit quality conditions.	Sewage treatment works DWF compliance The ability of STWs to treat and release treated sewage in compliance with the flow discharge permit Dry Weather Flow (DWF) conditions.	Risk of pollution incidents The risk of polluting the environment through uncontrolled escape of sewage (classified as Category 1 to 3 by the Environment Agency) arising from either network or treatment sites.	Storm overflow performance The number of storm overflow discharges to the environment, both in the network and at the STWs.
	Property hydraulic sewer flooding	Internal hydraulic sewer flooding risk in a 1 in 30-year storm The risk of properties flooding internally as a result of hydraulic sewer overload.	External hydraulic sewer flooding risk in a 1 in 30-year storm The risk of sewer flooding to gardens and other land within the property curtilage as a result of hydraulic sewer overload.	Risk of hydraulic sewer flooding up to 1 in 50-year storm (resilience sewer flooding) The risk of residential properties experiencing sewer flooding as a result of hydraulic sewer overload based on a modelled assessment of the performance of our sewers in a storm that statistically occurs once every 50 years on average.	
	Asset health	Sewer collapses The risk of sewers collapsing or rising mains bursting that leads to a loss of / interruption to continued service.			

The Surrey TRFCC area

Key challenges for the Surrey region include sewer flooding, river health and the need to accommodate planned growth without increasing the risk to the environment or existing communities.

The accompanying map shows the boundary of the Surrey TRFCC area that extends from Staines and Walton-on-Thames in the north, over the North Downs to Haslemere in the south. The border with Kent is to the east and Hampshire and Berkshire to the west. The map also shows the river quality status across the region for the main rivers.

These include the Wey and its tributaries, the Mole with its smaller tributaries, the Rye and Bookham Brook, and also some middle reaches of the River Thames. This is an area of environmental importance, housing a variety of rural and urban communities. For example, the Holmwood catchment is very rural, and contrasts with the many towns in the region such as Guildford, Woking, Staines, Dorking, Crawley, Epsom, Egham, Farnham, Leatherhead and Reigate.

There is a large commuter population in Surrey, so much of the region has good road and rail links, including the M25. There are many environmentally important areas in Surrey including Local Nature Reserves (LNRs), Special Areas of Conservation (SACs), Sites of Special Scientific Interest (SSSIs) and Ancient Semi-Natural Woodland Sites (ASNW).

Although the region is known for the Surrey Hills and North Downs, many other parts of Surrey are flat and low lying, like large parts of the Chertsey catchment for example. This results in an increased flooding risk from several sources including sewer flooding. Some areas suffer infiltration into the drainage network, particularly in areas of the region underlain by chalk geology.

The geology of the region includes chalk and greensands, both of which are permeable, so surface water soaks through the ground to recharge groundwater aquifers. Designated Source Protection Zones (SPZs) are areas where extra care and attention is paid to the protection of sources of groundwater that may form part of potable water supply in the area.

Every day, our sewerage network in this TRFCC area manages the needs of 941,000 customers. Our sewerage network consists of:

- 28 sewage treatment works (4 non Thames Water STWs)
- An area covering 1,502 km²
- 10,589 km of sewers
- 849 pumping stations

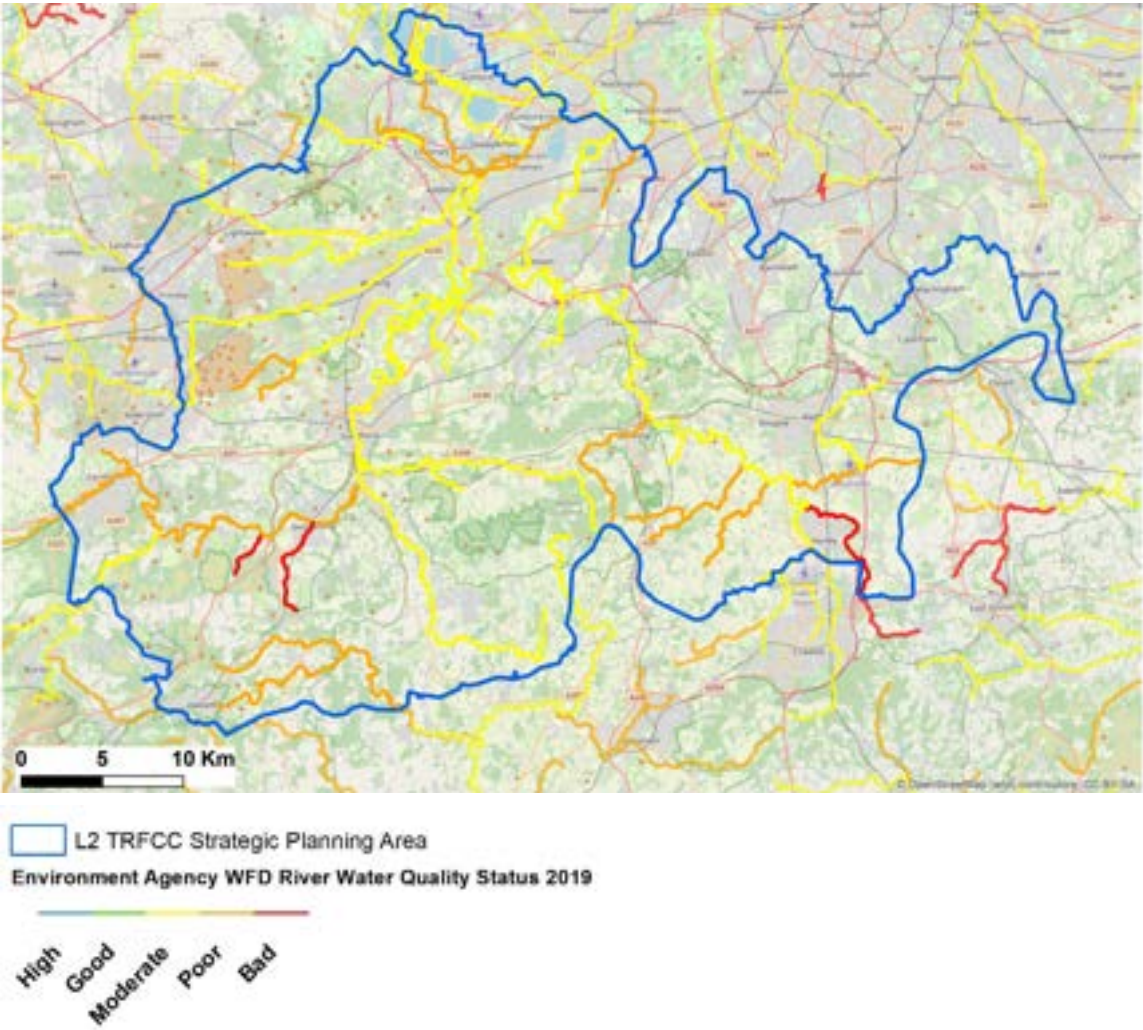
Drainage infrastructure in Surrey has developed over centuries, along with the ways that drainage is managed. Guildford and Dorking were mentioned in the Domesday Book of 1086. Commuter towns, including Reigate and Dorking, grew significantly in 1849 with the development of the railway.

Population increase, improved environmental awareness and climate change means the drainage infrastructure of the past needs to adapt to meet future needs. Virtually all of the region benefits from a separate foul and surface water sewerage system, but some rural areas only have a single foul network, with soakaways or land drainage systems.

In separate systems, rainfall runoff is typically collected by surface water sewers, highway drainage, or privately owned assets and flows directly to streams and rivers as examples of positive drainage. However, where soil conditions permit some domestic surface water maybe served by soakaway allowing rainwater to recharge the groundwater supply as it would naturally. Unfortunately, on occasions, misconnections happen between the separate systems with connections for surface water being connected to a foul only system or foul to a designated surface water system, these misconnections in a separate system are what drive the reason overflows operate and/or flooding in the foul sewerage system due to overload occur.

Prior to the 70s on occasions, particularly in built up areas, combined sewerage systems were used, where rainfall and domestic wastewater discharge into a single pipe and then on to the sewage treatment works before returning to the environment. These types of systems are now strongly discouraged through the planning process and in the Thames Region will mostly be found in London.

The river water quality status in this region is generally moderate as shown in the figure below:



Our co-creators

Who our stakeholders are

It is not possible for all the benefits identified in the DWMPs to be developed by water companies alone. They are led by water companies but created collaboratively with other organisations and groups that, with Thames Water, have a shared responsibility and/or interest in drainage, flooding and environmental protection. Active engagement with these stakeholders is vital for the consultation, planning and refinement of our DWMP.

Since 2019, we've been working with a wide variety of stakeholders from across this region to understand the local issues and opportunities so that we could create a long-term plan that provides the best outcome for everyone.

In this region we've engaged and worked with stakeholders from the following organisations and groups:

Environment Agency, Water Services Regulation Authority (Ofwat), Natural England, National Highways, Department for Environment, Food and Rural Affairs (Defra), Surrey County Council, Woking Borough Council, Waverley Borough Council, Tandridge District Council, Mole Valley District Council, Reigate and Banstead Borough Council, Runnymede Borough Council, Spelthorne Borough Council, Epsom and Ewell Borough Council, Elmbridge Borough Council, Guildford Borough Council, Surrey Heath Borough Council, Wey Landscape Catchment Partnership (CP), River Mole CP and Maidenhead to Teddington CP.



The stakeholder feedback we've received

To ensure our stakeholders' views have been considered and are a fundamental part of our final DWMP, we've carried out a variety of stakeholder engagement activities. From 2020 to 2022 much of the interaction was online due to coronavirus restrictions, but over the years they've included workshops, drop-in sessions, 1-2-1 calls, recorded webinar updates, newsletters, surveys, feedback forms as well as online discussions.

From our engagement throughout each of the DWMP framework stages we know that our stakeholders want our strategic plan to deliver the following things in this region (see quotes on the right).

We've spoken to our stakeholders to identify their strategic management plans and policies that could interact with our DWMP. The strategic themes are displayed below and the following table records all of the plans and policies and how they align with the DWMP.

“ We need to aim bigger and better, so not just restore back but create better. ”

“ Need a catchment approach not just focusing on the sewerage treatment plant at the end of the pipeline. Interaction of all sources of flood risk. ”



Management Plan (Hyperlink)	Key aspects of Partners Policies that align with the DWMP
Local Flood Risk Management Strategy	
Surrey Local Flood Risk Management Strategy	<ul style="list-style-type: none">• Make Surrey more resilient to flooding on a long-term basis through a coordinated approach with residents and partners• Supporting flood alleviation work where appropriate• Investing in natural and engineered flood alleviation schemes, influencing policy and supporting residents• Partnership working
River Catchment Partnership Plans	
The Hogsmill Catchment Partnership	<ul style="list-style-type: none">• Deliver projects to enhance and restore habitats, biodiversity and natural processes along the Hogsmill• Misconnections along the river are identified and resolved, future misconnections to surface water sewers are prevented• Storm overflows in the catchment do not have a detrimental effect on the river’s ecology and recreational value• Hogsmill STW is improved to reduce the impact of the final effluent on water quality• Urban diffuse pollution is addressed, or mitigated for, across the river basin catchment• Community engagement and awareness sessions• Facilitate the sharing of current, relevant and accurate data between organisations• Planning and development
Arun and Western Streams Catchment Management Plan	<ul style="list-style-type: none">• Provides an overview of the flood risk in the Arun and Western Streams catchment and sets out the preferred plan for sustainable flood risk management over the next 50 to 100 years
Loddon Catchment Plan	<ul style="list-style-type: none">• Provision of support and advice to aid business in reducing their impacts upon the environment• Taking a strategic approach to delivering habitat enhancements across the catchment• Delivering habitat enhancements in priority areas across the catchment• Promoting, demonstrating and delivering sustainable drainage to reduce flood risk and protect water quality• Promoting, demonstrating and delivering multiple benefits through delivery of Water Framework Directive objectives

Management Plan (Hyperlink)	Key aspects of Partners Policies that align with the DWMP
River Catchment Partnership Plans	
A Catchment Plan for the River Wandle	<ul style="list-style-type: none">• Engagement: everyone in the catchment aware of the river and knowing how their actions can affect it. Councils, businesses, government agencies and the public working together for the river
Maidenhead to Teddington Catchment Plan	<ul style="list-style-type: none">• ‘A Healthy River Thames for all. Our vision is to protect, improve and enhance all rivers within the Lower Thames Catchment by 2027, making them cleaner, more accessible and more attractive, to benefit local communities and wildlife, both now and for the benefit of future generations.’
Darent and Cray Partnership	<ul style="list-style-type: none">• Develop sustainable surface water management within the catchment• Improve water quality
The Colne Catchment Action Network	<ul style="list-style-type: none">• Improve wildlife corridors• Improve water quality• Work together
The Beverley Brook	<ul style="list-style-type: none">• Restoring rivers and catchments• Connecting communities• Catchment planning
Ravensbourne Catchment Plan	<ul style="list-style-type: none">• New developments enhance the river and allows nature to thrive• A locally supported Catchment Plan creates a path toward a healthy future for the rivers within the catchment
AONB Management Plans	
Surrey Hills Management Plan	<ul style="list-style-type: none">• “The Surrey Hills AONB is recognised as a national asset in which its natural and cultural resources are managed in an attractive landscape mosaic of farmland, woodland, heaths, downs and commons. It provides opportunities for business enterprise and for all to enjoy and appreciate its natural beauty for their health and wellbeing.”
Guildford Surface Water Management Plan	<ul style="list-style-type: none">• Develop a sustainable approach to the management of surface water flood risk throughout Guildford borough
Sustainability and Planning	
Chalk Stream Restoration Strategy	<ul style="list-style-type: none">• Enhanced status for all chalk streams

Issues today

The initial [risk-based screening](#) in this TRFCC area, published in December 2019, found that 88 % of L3 catchments (99 % of population served) were vulnerable to the risks of growth and climate change and warranted long-term planning.

The results from our hydraulic sewer flood risk modelling indicate that this TRFCC area is at risk. However, our experience suggests that in some locations flooding is many more times likely to occur as a result of blockages, rather than hydraulic sewer flooding as a result of storm flows. We will tackle the potential risk of hydraulic sewer flooding in accordance with our goals, where predicted flows entering the sewer exceed the capacity of the sewer, through a medium to long term plan, that will afford us time to implement sustainable solutions. This will help us to improve the resilience of our sewerage systems to climate change, further protect our customers and communities and enhance our 2025 baseline performance.

Our analysis has also identified risks of pollution and a lower risk of sewer collapses in this TRFCC area. In addition to them being uncommon, sewer collapses do not materially affect our performance in relation to hydraulic sewer flooding, pollution and storm discharges. However, as a company we’re committed to maintaining and improving our sewers in this TRFCC area to address this risk.

The DWMP process is iterative and will be repeated every 5 years, next version due in 2028. This will capture any changes in demands for this TRFCC area and will look to incorporate future technologies and engineering solutions.



L3 Internal Sewer Flooding - Baseline (2020) Risk
■ 0 - Not Significant (performance is at/below industry thresholds)
■ 1 - Moderately Significant ■ 2 - Very Significant
[BRAVA link regarding classification](#)

Our predictions for the future

We've modelled those sewerage catchments identified as vulnerable in the RBCS against future challenges, assessed targets and carried out discussions with local stakeholders and forecast that, if we do nothing and do not implement the DWMP, over the next 25 years there will be an increased risk of hydraulic sewer flooding and pollution from our sewerage systems in this TRFCC area. Our forecast performance metrics are summarised opposite. We forecast that by 2050, over 8% of properties will be at risk of hydraulic flooding from the sewerage system for up to a 1 in 50-year storm, for example in areas such as Guildford, Reigate and Epsom.

In terms of protecting our rivers, if we don't act, our modelling predicts that by 2050 growth and climate change would impact on our storm overflow performance with 90% of L3 catchments having an average storm discharge rate >10 storm discharges per annum per overflow to rivers including the Lower Thames, Wey and Mole.

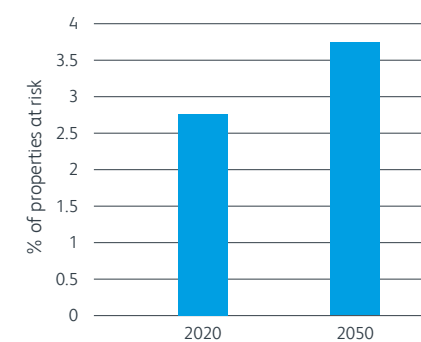
Therefore, there is an evident need for long-term planning and the implementation of the DWMP, to protect this TRFCC area and support its future growth.

In addition, the permit compliance of our treatment works for 20 catchments could be at risk, leading to a detriment in river water quality. If you are a DWMP practitioner, further details can be found on our Practitioner portal.

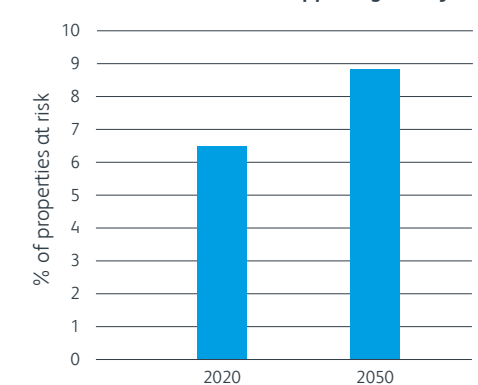
[Practitioner portal \(thameswater.co.uk\)](https://thameswater.co.uk/practitioner-portal)

Change in risk if we do nothing and do not implement the DWMP

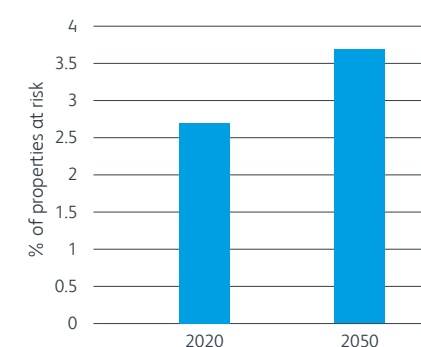
Internal hydraulic sewer flooding (1 in 30-yr storm)
- i.e. >3.3% chance of happening each year



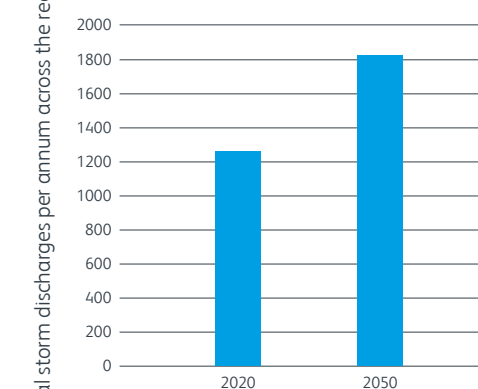
Hydraulic sewer flooding (1 in 50-yr storm)
- i.e. >2% chance of happening each year



External hydraulic sewer flooding (1 in 30-yr storm)
- i.e. >3.3% chance of happening each year

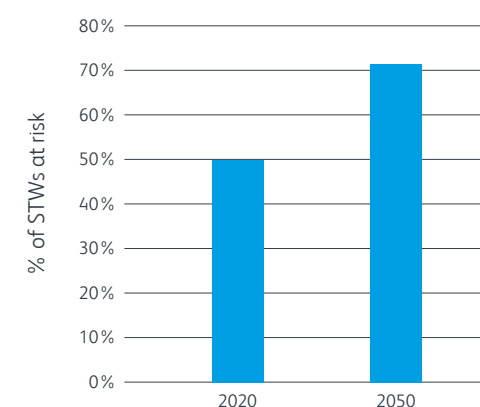


Annual storm overflow performance



2020 and 2050 modelled overflow data in DWMP catchments due to hydraulic incapacity

STWs at risk of water quality compliance failure



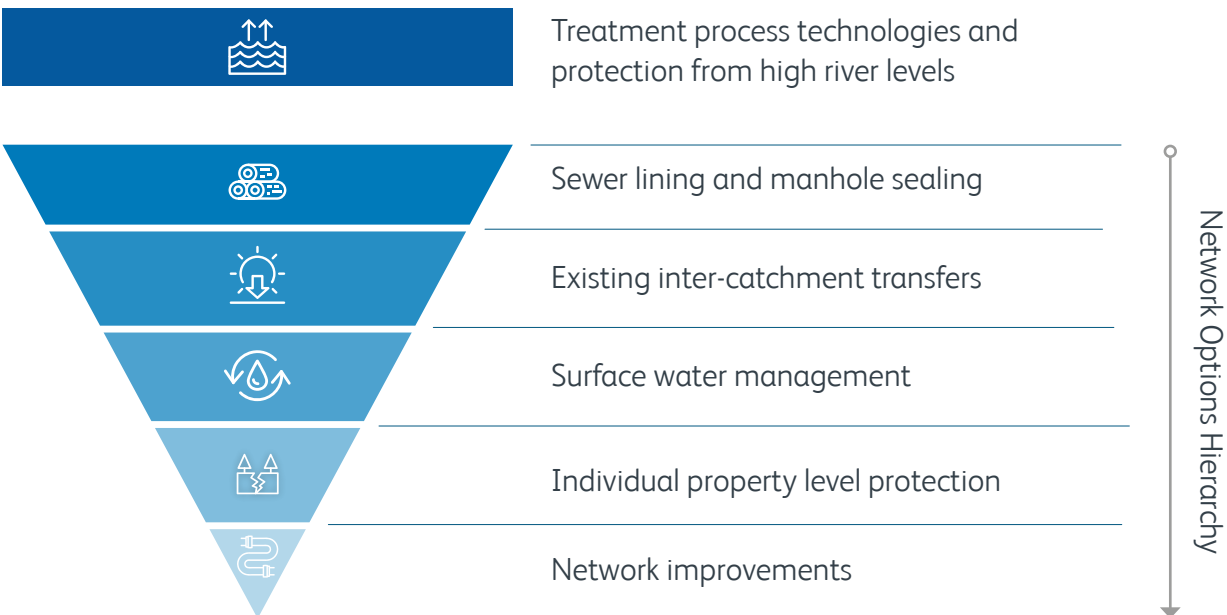
Sustainable solutions

We've combined our knowledge of the catchments with the stakeholder feedback we've received to help us identify the solutions required to meet the future needs of this area. We've used a structured approach that started with over 40 generic solutions, to ensure broad thinking, and identified and assessed the feasibility of a wide range of potential interventions and the extent to which they resolve the area's future needs.

Our approach has followed the same method that has been developed and implemented successfully over many years for our Water Resources Management Plans (WRMP).

Our stakeholders, like us, want this DWMP to work in balance with the natural environment and make the best use of available land. The rural/urban mix in this region aligns to balancing grey/green engineering solutions with the need for traditional storage, predominantly in urban areas.

Our hierarchy of options follows this principle - it focuses first on maximising the efficient use of existing assets, then prioritising natural surface water management solutions over network improvements. The common sustainable solution options we've identified for this area are outlined below. To view our spatial analysis of the potential solutions that have been reviewed, scoped out or selected visit our [DWMP portal](#).



Solution options

<h3>Sewer lining and manhole sealing</h3> <p>Undertaking a programme of sewer lining and manhole sealing. We will target as a priority the areas of high infiltration risk that lead to unwanted flows in our sewerage systems and that currently take up valuable capacity.</p> 	<h3>Existing inter-catchment transfers</h3> <p>Optimise existing connections between catchments and STWs to transfer flows in stressed areas to catchments with available capacity.</p> 	<h3>Surface water management</h3> <p>Surface water separation and the installation of features to collect, store and/or infiltrate surface water from buildings and impermeable areas, such as driveways and car parks as part of enhancing our surface water sewerage system. This option also looks to reinforce the fundamental basis of our sewerage systems being separate by addressing property misconnections of surface water into the foul sewer system network or foul to surface water.</p> 	<h3>Individual property level protection</h3> <p>Providing vulnerable homes with active and passive sewer flood protection measures such as flood proof doors, self-sealing bath/shower systems (non-return valves) and installation of household pumping stations.</p> 	<h3>Network improvements</h3> <p>Managing the impact of surface water on the sewerage system through the identification of network improvements to address deficiencies in the sewerage network capacity, specifically in areas with deliverability constraints and a high risk of sewer flooding now or in the future. This includes the construction of large attenuation sewers, new surface water and foul water sewers.</p> 	<h3>Treatment process technologies and protection from high river levels</h3> <p>Implementation of a range of different technologies identified to enhance the performance of the STW, through either retrofitting or new-build options. This will include the use of more intensive wastewater treatment processes which have the capacity to meet future demands and the construction of flood bunds to protect our assets from high river levels.</p> 
--	---	--	---	--	--

Partnership working - case study

Working in partnership with our stakeholders is a fundamental component of our plan. It can provide significant potential to support delivery of mutually beneficial outcomes, address multiple drivers and deliver multiple benefits. In this section we present a few examples of partnership working opportunities in this region.

Caterham on the Hill

Thames Water and Surrey County Council have been working in an established partnership since 2017 with the publication of the Local Flood Risk Management Strategy which looks, at a tactical level, to coordinate works to support flooded residents and, at an operational level, to develop suitable flood risk management schemes for areas at risk of flooding and its delivery.

Caterham Hill and Old Coulsdon catchment is one of these areas. In mid-2016, over 100 properties were affected by foul and surface water flooding. Surrey County Council led the statutory investigation into the flooding and formed a multi-agency programme board to fund, steer and agree a series of maintenance, capital, and community projects to reduce the risk and impacts of flooding. This has included:

- extensive maintenance and surveying of the foul and surface water drainage systems
- confirmation of ownership of previously unknown drainage systems
- the establishment of a Government Grant in Aid capital scheme (this is currently in delivery phase with 12 months to run)
- support of a community flood group formed to coordinate the concerns of the residents straight to the delivery end of the Risk Management Authorities.



Thames Water has been a consistent decision-making partner to the two lead local flood authorities (Surrey County Council and London Borough of Croydon) and Tandridge District Council. This has been essential in Caterham on the Hill where, at present, no straight forward risk mitigation scheme is technically or financially viable. This partnership has developed a forward-looking plan taking into consideration a number of options, the sum of which will address foul and surface water flooding.

Opportunity	Partners
Sanway Flood Alleviation Scheme (FAS)	Environment Agency
Brooklands (FAS)	Environment Agency
Addlestone Bourne Catchment (FAS)	Environment Agency
Caterham on the Hill (FAS)	Surrey County Council, Croydon Council, Tandridge District Council, Environment Agency and Flood Action Group

These opportunities have been identified following a detailed screening and prioritisation exercise with our partners. This approach is explained in the [Appendix S Partnership Opportunities and Working](#) report.

Our shared plan

Our shared long-term plan for the Surrey TRFCC area has been formulated based on a balance of how deliverable and sustainable the proposed interventions are, and also how cost-efficiently they can deliver multiple benefits across our stakeholder groups.

The challenges this area has presented to us in delivering that balance have included:

- Population growth uncertainties
- Incomplete mapping of surface water systems e.g. sewer, highway or land drainage and the extent of our hydraulic surface water sewerage network model coverage.
- Locations of property level misconnections

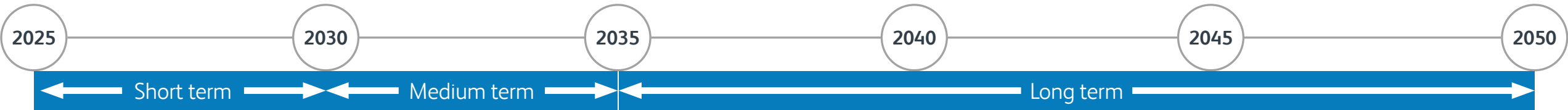
- Pipe materials e.g. pitch fibre sewers impacting asset health
- Ownership and maintenance of SuDS

We propose an asset strategy that fundamentally addresses the inputs to our system i.e. unwanted flow removal in our foul or surface water sewers and bringing our sewerage systems back to their original intent of taking foul or surface water flows only. This will necessitate us ensuring our surface water sewers are fit for purpose. By 2050 our foul sewerage systems in the Surrey TRFCC area will no longer be reliant on storm overflows to manage the risk of flooding due to rainfall in storms with a greater than 2 % probability of occurring in any one year.

The catchments we serve with positive surface water systems will function as greenfield systems. We will achieve this through an adaptive approach whereby we will aggressively target unwanted flows to create capacity in our foul only network incrementally at system level over the next 25 years. This will include sewer and manhole sealing to reduce groundwater infiltration and fluvial/pluvial inundation of flows, and disconnecting surface water misconnections from foul and combined sewers and redirecting it to surface water drainage.

Our approach is to address systems holistically, to provide wide-ranging benefit to the catchments

we service in the most resilient and sustainable way for both foul and surface water systems. We will work in partnership, where possible, to understand and evolve integrated surface water management, championing green infrastructure, where possible. We will focus on our smaller catchments in the short to medium term to deliver the maximum benefit of reducing sewage escapes to the environment in the shortest time possible for our customers. Those assets linked to the most sensitive watercourses will be prioritised. The diagram below outlines the sequencing of our proposed interventions for this area:



Restore

- **Reduced risk of flooding and pollution** – Enhancing our networks to resolve infiltration in the highest priority areas will reduce the risk of flooding and pollution



Enhance

- **Informed surface water plans** – Mapping and modelling surface water systems will increase confidence in our plans for surface water management solutions
- **Managing surface water drainage** – Reducing surface water misconnections to foul will ensure capacity is available for future growth
- **Reduced risk of flooding and pollution** – Implementing surface water management solutions will reduce the risk of flooding and pollution
- **Positive environmental and community impacts** – Creating a positive impact on environment and community wellbeing in key locations through partnership work



Maintain

- **Resilient and compliant STWs** – Providing enhanced sewage treatment capacity will ensure our works can manage the increases created by future growth in the area and are 100 % compliant
- **Treatment capacity enhancements and/or protection from high river levels at 20 sites**



Developing our preferred plan for Surrey

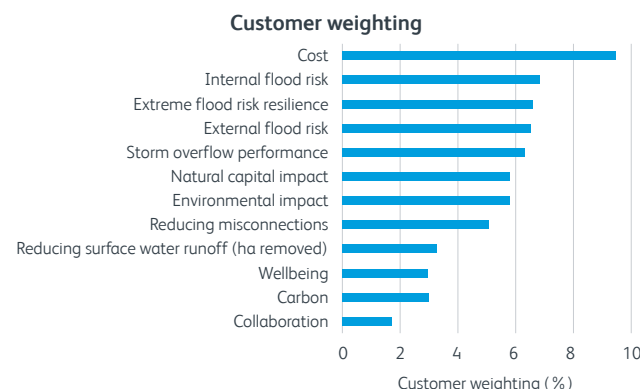
Progress +

Defining a best value framework

A best value framework is one that considers broader criteria than just economic factors. Our DWMP will maximise outcomes for the communities it serves. Our criteria are based on the 12 planning objectives of the DWMP with additional criteria to capture broader environmental impact.

Defining what our customers and stakeholders value

We have used quantitative customer research to determine the relative priorities of the different criteria.



Agreeing scenarios with stakeholders

For our catchments outside London, over fifty possible alternative plans were identified to achieve various combinations of our planning objective targets. These were further refined and agreed through discussions with our regional stakeholders and the public consultation on our draft DWMP.

Alternative plans and outcomes

Maintain flooding resilience - delivers the statutory storm discharge reduction requirements and maintains property flooding at 2025 levels

Maximum community benefit - meets our DWMP sewer flooding objectives and delivers our storm discharge reduction plan for high priority sites by 2035 and all sites by 2045 whilst also creating the most benefit to communities and the environment

Resilient - constrained - meets our sewer flooding planning objectives and delivers our storm discharge reduction plan for high priority sites by 2035 and all sites by 2045. Delivers a feasible level of surface water management within the first 10 years of the plan

Accelerated / deliver sooner - accelerates investment to deliver our performance outcome targets sooner, including our storm discharge reduction at all sites by 2035, reflecting views expressed by stakeholders in the public consultation

To avoid customer bill volatility, we also explored alternative investment profiles that consider how quickly options are implemented. We also considered a better information plan that considers factors such as improvements in overflow and river monitoring data, and refinement in our hydraulic modelling to predict flood risk.

Scoring our options against our planning objectives

Scores have been generated for every option for each of our planning objectives and weighted based on our customer priorities. For example, DWMP with additional criteria to capture broader environmental impact.

Natural capital (NC) impact

We used data from Natural England on the existing NC in the catchment and assessed whether the option would improve or reduce this baseline based on additional green space generated. Surface water management schemes scored highly whilst new sewers and tanks scored lower.

Wellbeing impact

We used data on environmental factors in the catchment that influence population and human health, including improved access to recreation and the environment, and assessed whether the option would improve or reduce this baseline.

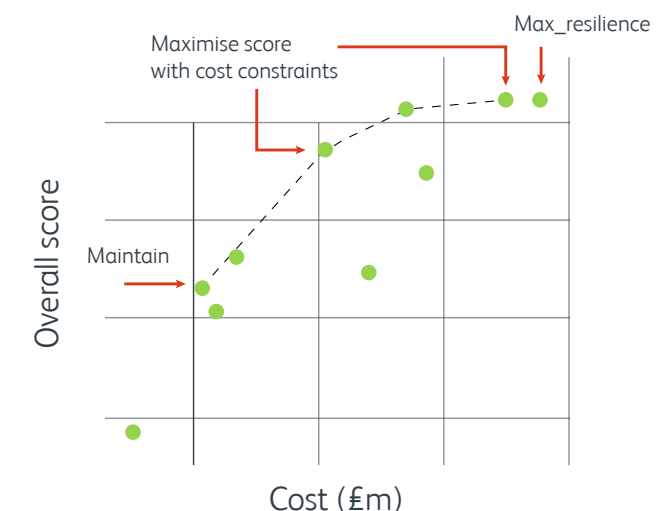
Reducing misconnections

We assessed the area to be disconnected from our foul and connected into our surface water systems as part of our options

Assessing different alternative plans

We used a decision support tool to optimise our plan based on a 'value criteria'. We tested multiple alternative options to allow us to assess different scenarios and compare their outcomes.

Illustrative score vs cost



Determining our preferred plan

Our preferred plan has been developed by considering a range of factors including:

- affordability
- deliverability
- performance outcomes
- strategic environmental appraisal
- stakeholder feedback

This has allowed us to develop an adaptive plan that recognises areas of risk and uncertainty, where improved understanding will be used to prioritise interventions at key decision points over those that can be deferred. Our preferred plan balances our ambitions, our stakeholder and customer desires, our planning objectives and affordability.

Our preferred plan for Surrey

From the first iteration of our preferred plan for Surrey, we estimate that to meet the challenges posed by growth and climate change we need to invest an additional £2.1bn over the period 2025 to 2050, on top of our day-to-day maintenance activities. We aim to reduce this cost requirement in subsequent iterations of our DWMP through partnership benefits, innovation and better targeting with enhanced surface water system knowledge.

	£bn
Best cost estimate	2.1
Embodied carbon 326, 234 tonnes	

Over the next 25 years this budget will be prioritised to invest in both surface water management and network improvements.

- £1.7bn on managing the impact of surface water on the sewerage system including construction of new sewers, sewer upsizing and attenuation storage to provide additional capacity
- £312m on improvements to surface water management, with a particular focus on removing surface water from impacting on the networks
- £33m upgrading 20 STWs
- £24m on sewer lining
- £26m for individual property level protection



Storm overflow performance

Reduce the number of average annual storm discharges by 1,465. By 2050, none of the 65 storm discharge locations in this catchment will overflow more than ten times per annum on average



Property flooding

Protect 1,349 properties from internal sewer flooding up to a 1 in 30-year storm event
Protect 2,607 properties from external sewer flooding up to a 1 in 30-year storm event
Protect 5,072 properties from sewer flooding upto a 1 in 50-year storm event
If we don't invest, over 1.3 % of properties would be at risk in a storm up to a 1 in 50-year in 2050. As a result of implementing our plan, this would reduce to zero



Treatment capacity enhancements and/or protection from high river levels at 20 sites

Upgrade 20 STWs by 2050



Asset improvements

Reline 23km of sewers



Reduce misconnections / Reduce surface water runoff

115 ha (equivalent to 7,700 properties) to be disconnected from our sewers, reconnected to a surface water sewer with attenuation or to a soakaway

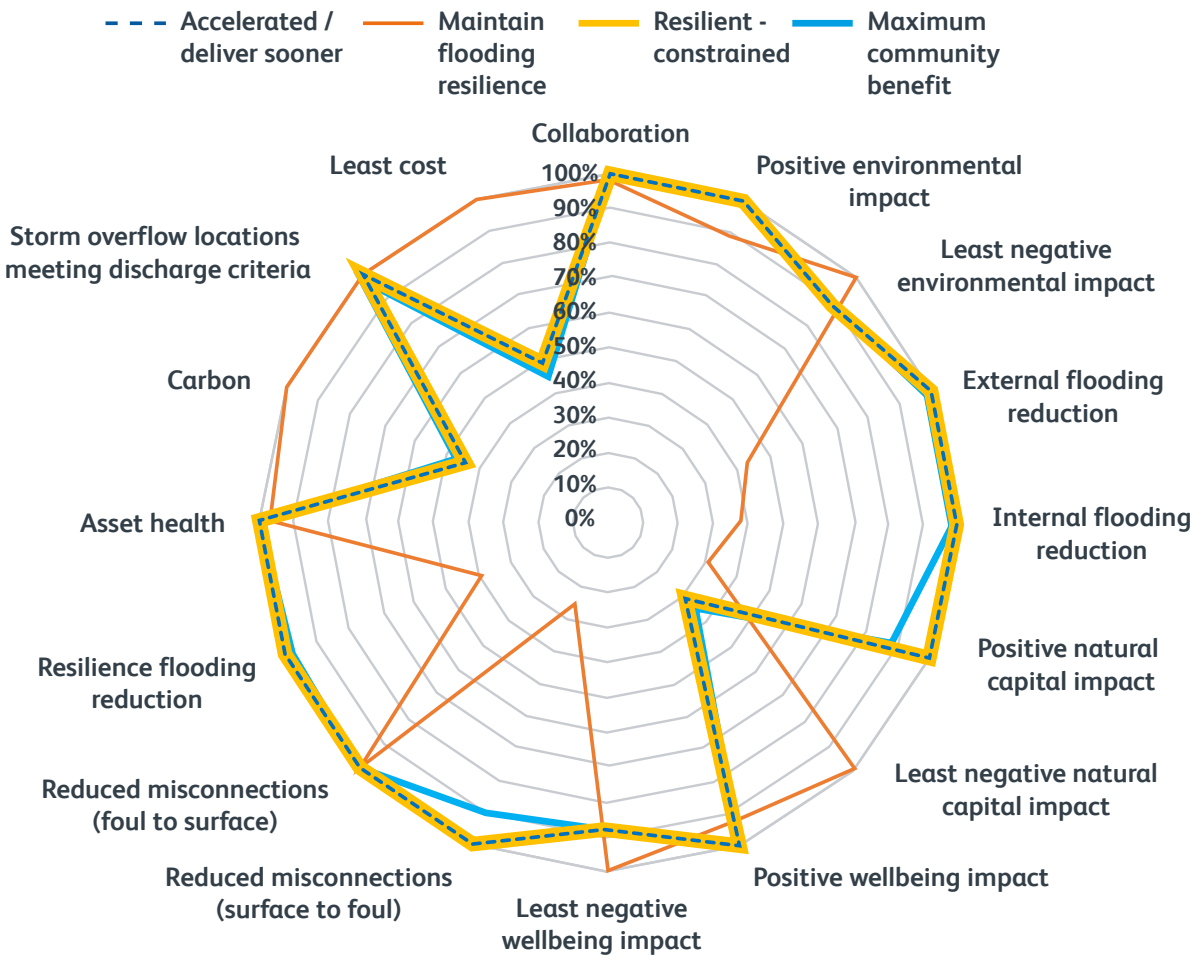


Carbon

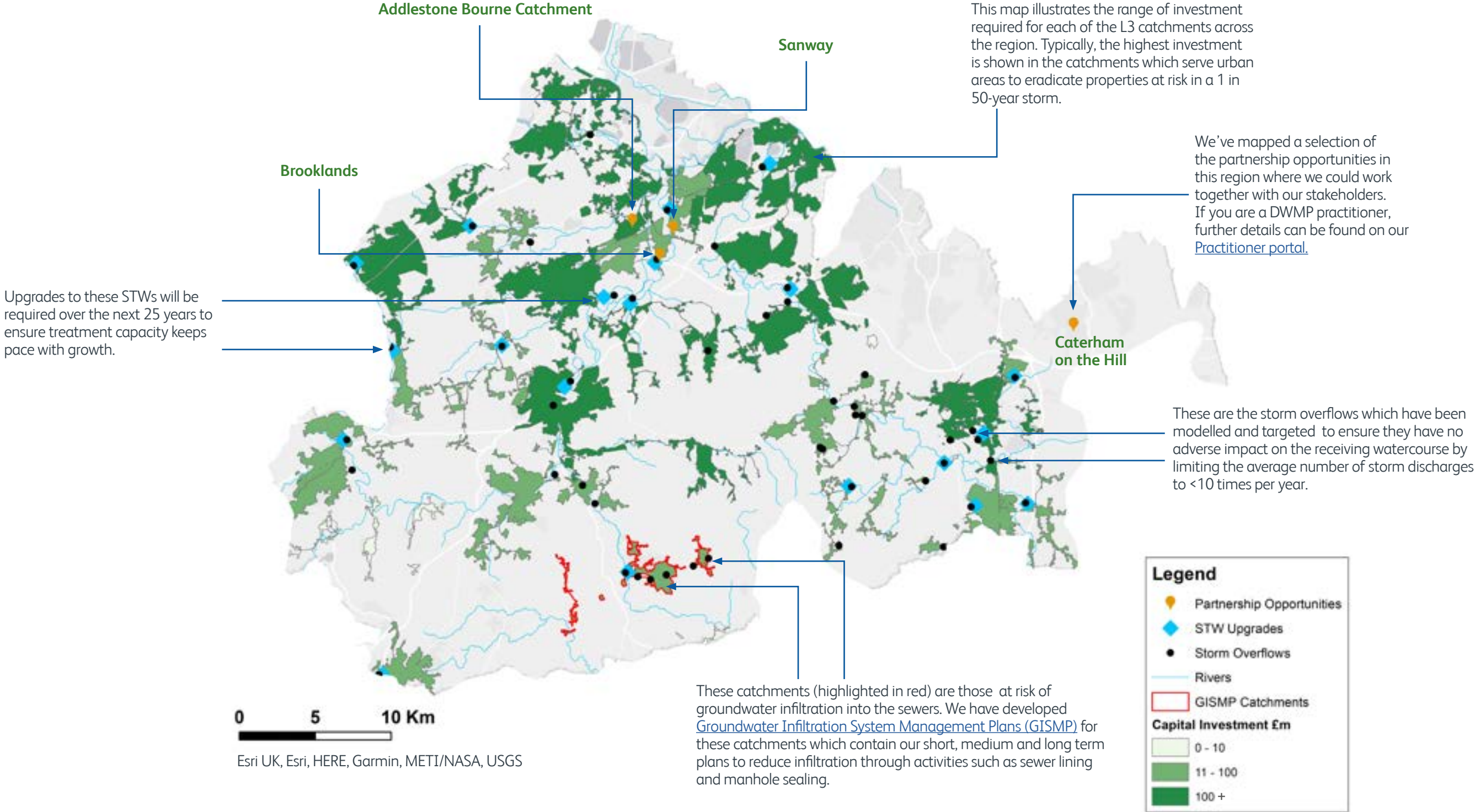
326, 234 tonnes of carbon embodied in delivering the plan, with 282 tonnes of carbon sequestered each year in delivering the plan

Our preferred plan (resilient - constrained) has been optimised to offer the best value solution to reduce sewer flooding, protect the environment, and enhance natural capital as shown in the relative performance of our preferred plan figure.

Relative performance of our preferred plan



Our preferred 25 year plan for Surrey



Next steps

Final version of the plan

We've progressed and enhanced our DWMP since we published it for public consultation in June 2022. We've updated our draft plan based on our ongoing DWMP work and our responses to regulatory updates and the majority of the feedback received during the 12-week consultation period.

Our preferred plan balances our ambitions, our stakeholder and customer desires, our planning objectives and affordability.

Further stakeholder input

This is our first DWMP and it will be the launch pad for future DWMP cycles that will occur every five years where growth, risks and system performance will be re-assessed and reviewed and the DWMP process repeated. We hope that we will receive a similar level of engagement and co-creation from our stakeholders in the next iteration as it has been a valuable contribution to this first iteration.

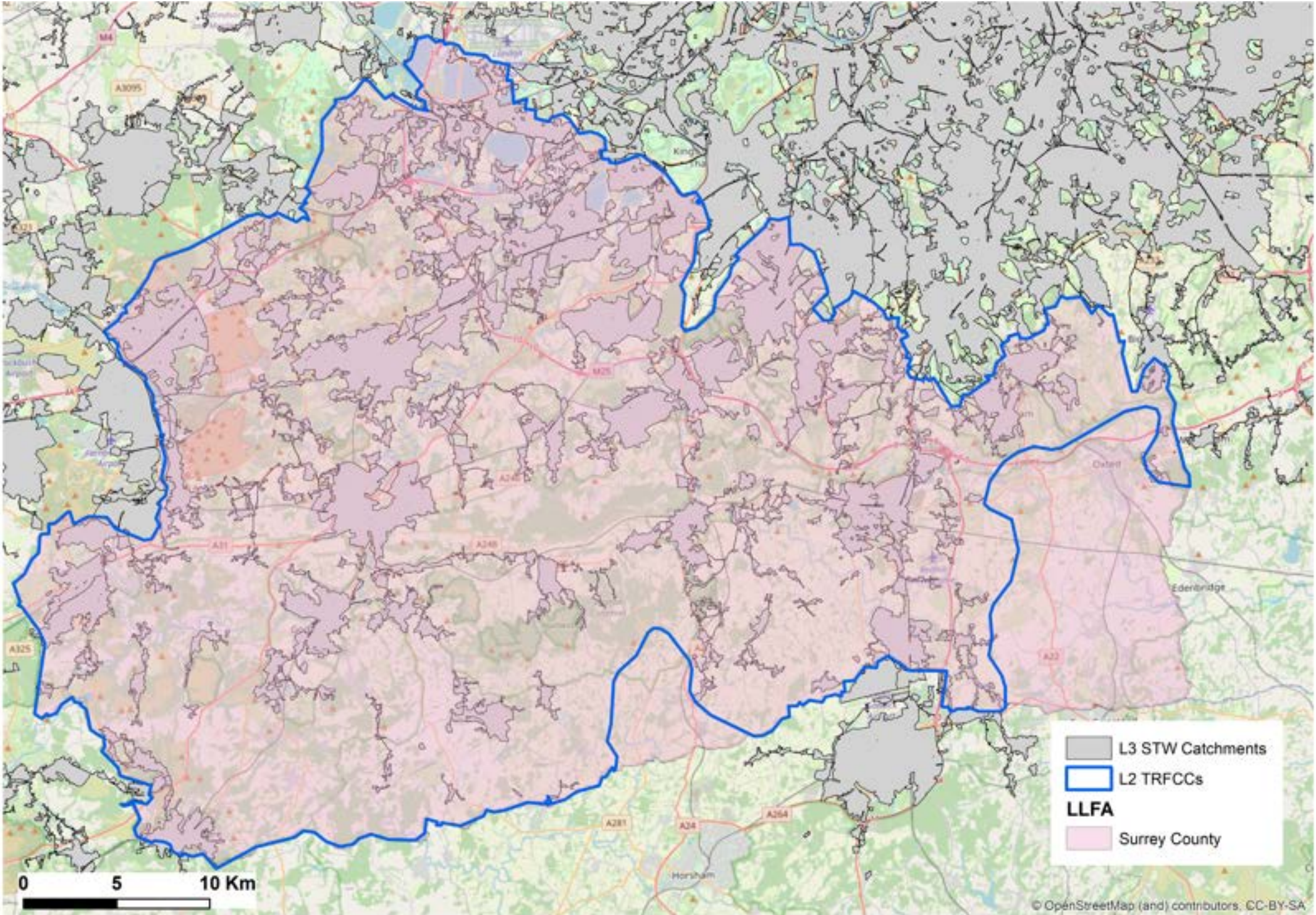
Funding and delivery

This DWMP is a 25-year rolling strategic plan. The first 5-years of the plan will be assessed through the price review process to confirm the funding to deliver the initial phase between 2025 and 2030.

Future iterations on the plan will address elements that can't be progressed due to funding restrictions, as well as changes in customer priority or technical issues

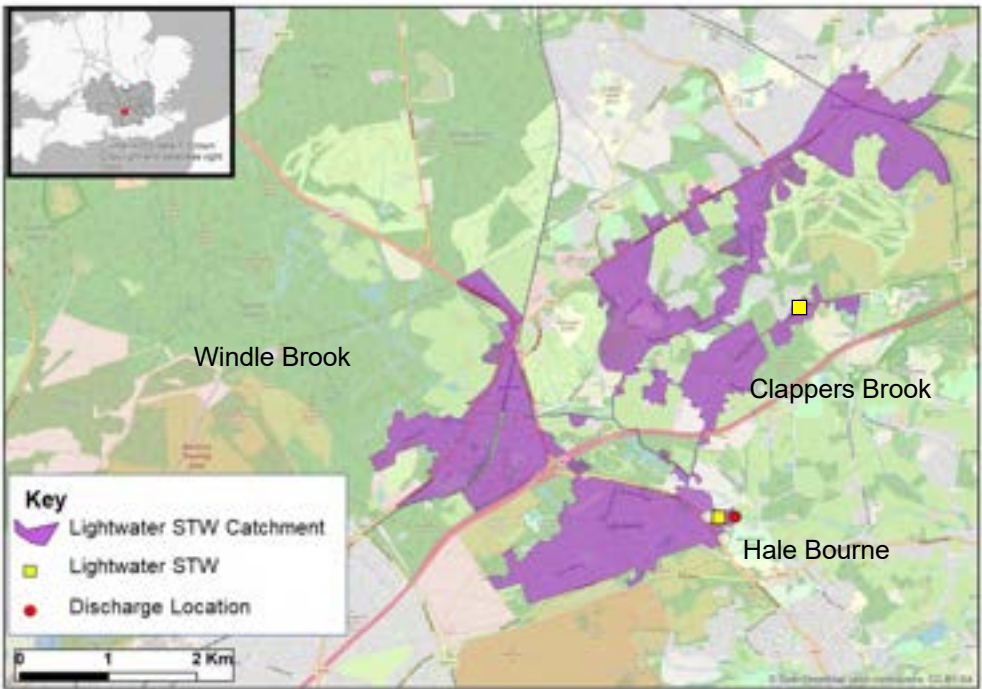
Our shared plan at catchment level

Use this interactive map by clicking on the blue boxes to find out more about our plans for a selection of large and small catchments.



Lightwater STW Catchment

What are the challenges?	<ul style="list-style-type: none">Increased internal hydraulic sewer flooding - from 0.5 % to 0.7 % of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.5 % of properties (49) at risk up to a 1 in 30-year storm in 2025 to 0.7 % of properties (64) at risk by 2050Increased external hydraulic sewer flooding - from 0.6 % to 0.7 % of properties: Calculated as increased modelled risk of external hydraulic sewer flooding from 0.6 % of properties (55) at risk up to a 1 in 30-year storm in 2025 to 0.7 % of properties (67) at risk by 2050Increased hydraulic sewer flooding 2025 to 2030 from - from 1.6 % to 2.0 % of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding of properties from 1.6 % of properties (146) at risk up to a 1 in 50-year storm in 2025 to 2.0 % of properties (178) at risk by 2050The only overflow in this area, at the STW, discharged 23 times in 2021
Which of our solutions are best suited?	<ul style="list-style-type: none">Surface water managementProperty level protection measures to prevent individual buildings from hydraulic sewer floodingNetwork improvementsInvest in our sewage treatment works to achieve 100 % compliance

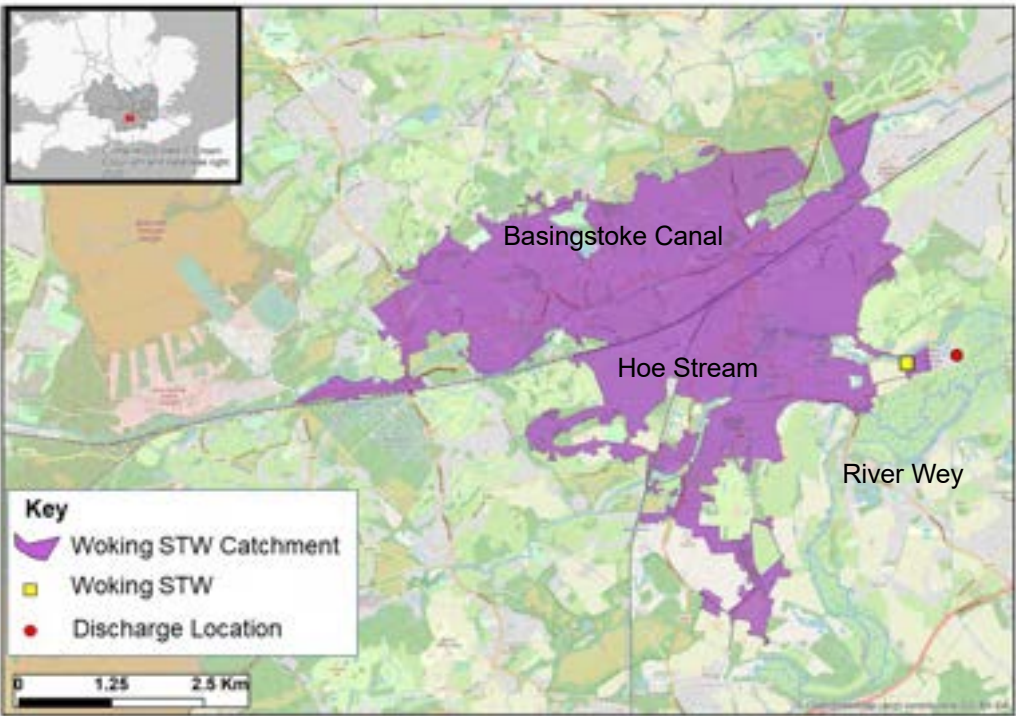


	2025		2030		2035		2050
Timescale	<div>← Short term →</div> <div>← Medium Term →</div> <div>← Long Term →</div>						
What targets are we seeking?	<div>To:</div> <ul style="list-style-type: none">• Reduce the number of customers at risk of internal and external hydraulic sewer flooding up to a 1 in 50-year storm by 100 %• Reduce storm discharges (where overflows are present) to <10 in an average year by 2050• Achieve 100 % STW permit compliance						
How will we achieve the targets?	<div>We will:</div> <ul style="list-style-type: none">• Increase the confidence in our plans for long-term investment to reduce the risk of internal and external hydraulic sewer flooding and enable catchment-level planning of surface water management solutions• Provide sewer network improvements to meet growth and climate change drivers		<div>We will:</div> <ul style="list-style-type: none">• Further develop our catchment-level planning to reduce the risk of hydraulic sewer flooding by removing rainfall runoff that is entering our foul sewer system and enhance our surface water sewerage systems		<div>We will:</div> <ul style="list-style-type: none">• Reduce the risk of hydraulic sewer flooding by removing surface water from our foul sewer systems through the implementation of surface water management solutions• Implement property level protection measures• Continue to provide sewer network improvements• Invest in our sewage treatment works to ensure compliance		

Lightwater STW catchment spans two L2 strategic planning boundaries and the costs and benefits of the proposed solutions are allocated solely to the West Berkshire, Reading, Wokingham, Bracknell Forest, Windsor and Maidenhead, Hampshire and West Sussex catchment strategic plan.

Woking STW Catchment

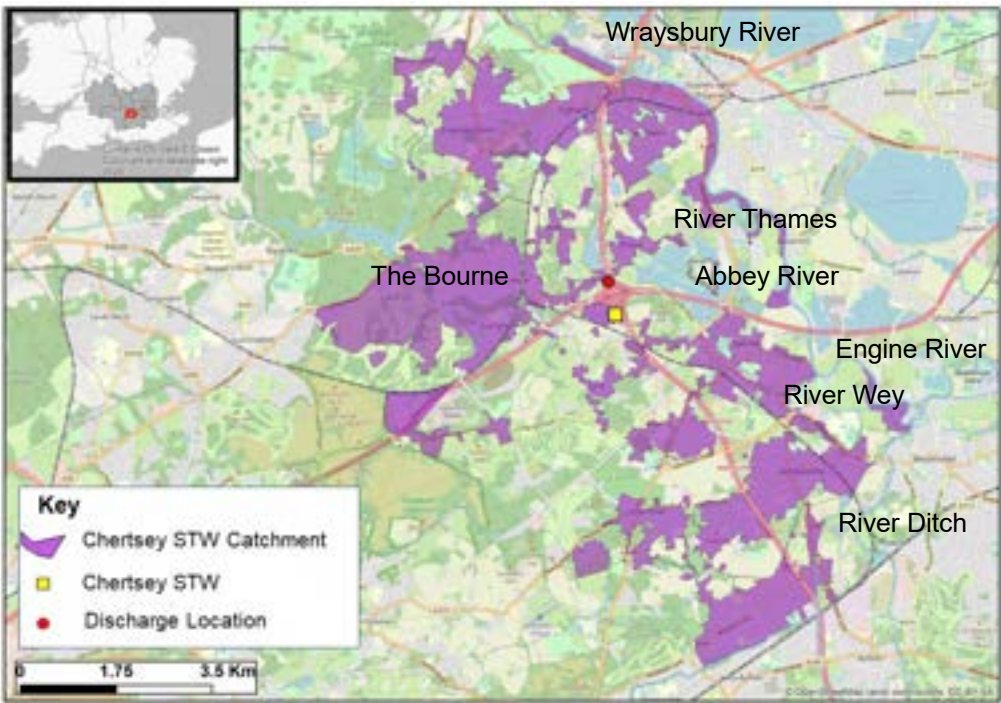
What are the challenges?	<ul style="list-style-type: none">Increased internal hydraulic sewer flooding - from 0.2 % to 0.5 % of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.2 % of properties (75) currently at risk up to a 1 in 30-year storm in 2025 to 0.5 % of properties (183) at risk by 2050Increased external hydraulic sewer flooding - from 0.5 % to 1.0 % of properties: Calculated as increased modelled risk of external hydraulic sewer flooding from 0.5 % of properties (162) currently at risk up to a 1 in 30-year storm in 2025 to 1.0 % of properties (355) at risk by 2050Increased hydraulic sewer flooding - from 0.9 % to 2.0 % of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.9 % of properties (322) at risk up to a 1 in 50-year storm in 2025 to 2.0 % of properties (698) at risk by 2050The only overflow in this area, at the STW, discharged 17 times in 2021
Which of our solutions are best suited?	<ul style="list-style-type: none">Surface water managementNetwork improvementsInvest in our sewage treatment works to achieve 100 % compliance



	2025		2030		2035		2050
Timescale	<div>← Short term →</div> <div>← Medium Term →</div> <div>← Long Term →</div>						
What targets are we seeking?	To: <ul style="list-style-type: none">• Reduce the number of customers at risk of internal and external hydraulic sewer flooding up to a 1 in 50-year storm by 100 %• Reduce storm discharges (where overflows are present) to <10 in an typical year by 2050• Achieve 100 % STW permit compliance						
How will we achieve the targets?	We will: <ul style="list-style-type: none">• Increase the confidence in our plans for long-term investment to reduce the risk of internal and external hydraulic sewer flooding and enable catchment-level planning of surface water management solutions• Provide sewer network improvements to meet growth and climate change drivers		We will: <ul style="list-style-type: none">• Further develop our catchment-level planning to reduce the risk of hydraulic sewer flooding by removing rainfall runoff that is entering our foul sewer system and enhance our surface water sewerage systems		We will: <ul style="list-style-type: none">• Reduce the risk of hydraulic sewer flooding by removing surface water from our foul sewer systems through the implementation of surface water management solutions• Continue to provide sewer network improvements to meet growth and climate change drivers• Invest in our sewage treatment works to ensure compliance		

Chertsey STW Catchment

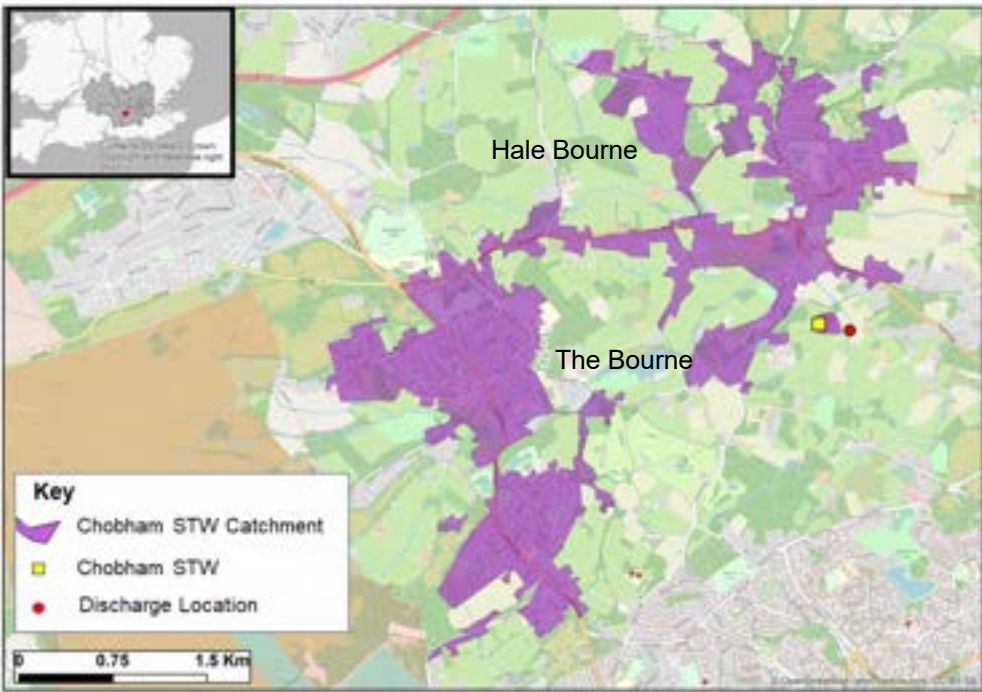
What are the challenges?	<ul style="list-style-type: none">Increased internal hydraulic sewer flooding - from 0.3 % to 0.5 % of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.3 % of properties (131) at risk up to a 1 in 30-year storm in 2025 to 0.5 % of properties (183) at risk by 2050Increased external hydraulic sewer flooding - from 0.4 % to 0.5 % of properties: Calculated as increased modelled risk of external hydraulic sewer flooding from 0.4 % of properties (140) at risk up to a 1 in 30-year storm in 2025 to 0.5 % of properties (194) at risk by 2050Increased hydraulic sewer flooding - from 1.0 % to 1.3 % of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 1.0 % of properties (377) at risk up to a 1 in 50-year storm in 2025 to 1.3 % of properties (529) at risk by 2050The only overflow in this area discharged 48 times in 2021
Which of our solutions are best suited?	<ul style="list-style-type: none">Surface water managementNetwork improvements



	2025		2030		2035		2050
Timescale	<div>← Short term →</div> <div>← Medium Term →</div> <div>← Long Term →</div>						
What targets are we seeking?	<div>To:</div> <ul style="list-style-type: none">• Reduce the number of customers at risk of internal and external hydraulic sewer flooding up to a 1 in 50-year storm by 100 %• Reduce storm discharges (where overflows are present) to <10 in an average year by 2050• Maintain 100 % STW permit compliance						
How will we achieve the targets?	<div>We will:</div> <ul style="list-style-type: none">• Increase the confidence in our plans for long-term investment to reduce the risk of internal and external hydraulic sewer flooding and enable catchment-level planning of surface water management solutions• Provide sewer network improvements to meet growth and climate change drivers		<div>We will:</div> <ul style="list-style-type: none">• Further develop our catchment-level planning to reduce the risk of hydraulic sewer flooding by removing rainfall runoff that is entering our foul sewer system and enhance our surface water sewerage systems		<div>We will:</div> <ul style="list-style-type: none">• Reduce the risk of hydraulic sewer flooding by removing surface water from our foul sewer systems through the implementation of surface water management solutions• Continue to provide sewer network improvements to meet growth and climate change drivers		

Chobham STW Catchment

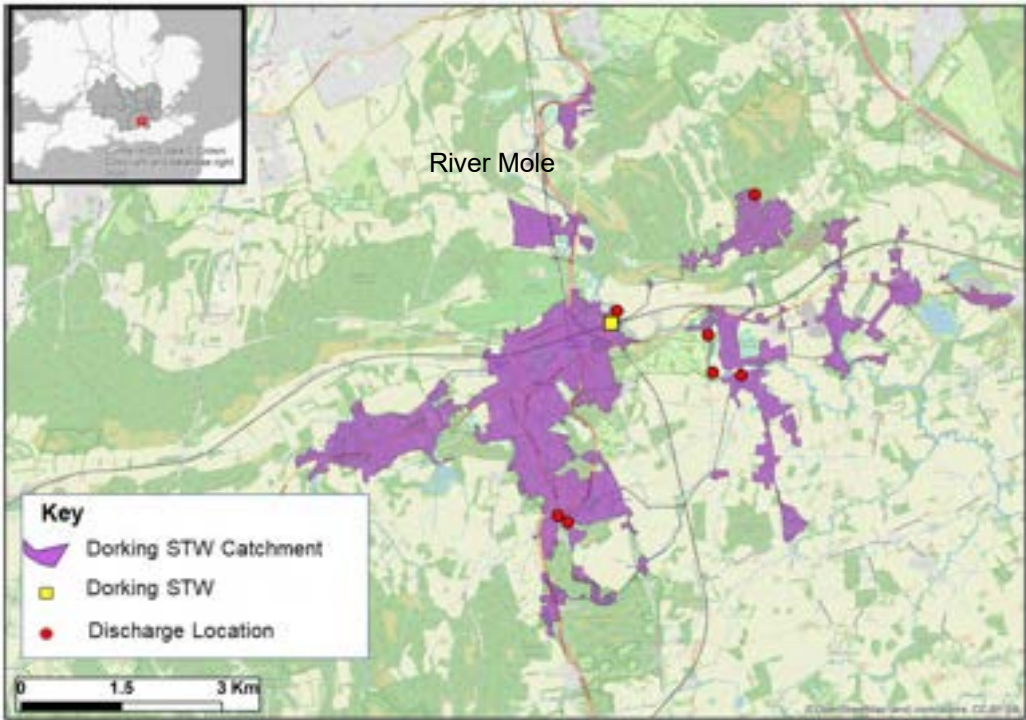
What are the challenges?	<ul style="list-style-type: none">Increased internal hydraulic sewer flooding - from 0.2 % to 0.3 % of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.2 % of properties (8) at risk up to a 1 in 30-year storm in 2025 to 0.3 % of properties (14) at risk by 2050Increased external hydraulic sewer flooding - from 0.6 % to 0.9 % of properties: Calculated as increased modelled risk of external hydraulic sewer flooding from 0.6 % of properties (33) at risk up to a 1 in 30-year storm in 2025 to 0.9 % of properties (47) at risk by 2050Increased hydraulic sewer flooding - from 0.9 % to 1.6 % of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.9 % of properties (50) currently at risk up to a 1 in 50-year storm in 2025 to 1.6 % of properties (83) at risk by 2050The only overflow in this area, at the STW, discharged 98 times in 2021
Which of our solutions are best suited?	<ul style="list-style-type: none">Surface water managementProperty level protection measures to prevent individual buildings from hydraulic sewer floodingNetwork improvements



	2025		2030		2035		2050
Timescale	<div>← Short term →</div> <div>← Medium Term →</div> <div>← Long Term →</div>						
What targets are we seeking?	<div>To:</div> <ul style="list-style-type: none">• Reduce the number of customers at risk of internal and external hydraulic sewer flooding up to a 1 in 50-year storm by 100 %• Reduce storm discharges (where overflows are present) to <10 in an average year by 2050• Maintain 100 % STW permit compliance						
How will we achieve the targets?	<div>We will:</div> <ul style="list-style-type: none">• Increase the confidence in our plans for long-term investment to reduce the risk of internal and external hydraulic sewer flooding and enable catchment-level planning of surface water management solutions		<div>We will:</div> <ul style="list-style-type: none">• Further develop our catchment-level planning to reduce the risk of hydraulic sewer flooding by removing rainfall runoff that is entering our foul sewer system and enhance our surface water sewerage systems		<div>We will:</div> <ul style="list-style-type: none">• Reduce the risk of hydraulic sewer flooding by removing surface water from our foul sewer systems through the implementation of surface water management solutions• Implement property level protection measures to prevent individual buildings from hydraulic sewer flooding• Provide sewer network improvements to meet growth and climate change drivers		

Dorking STW Catchment

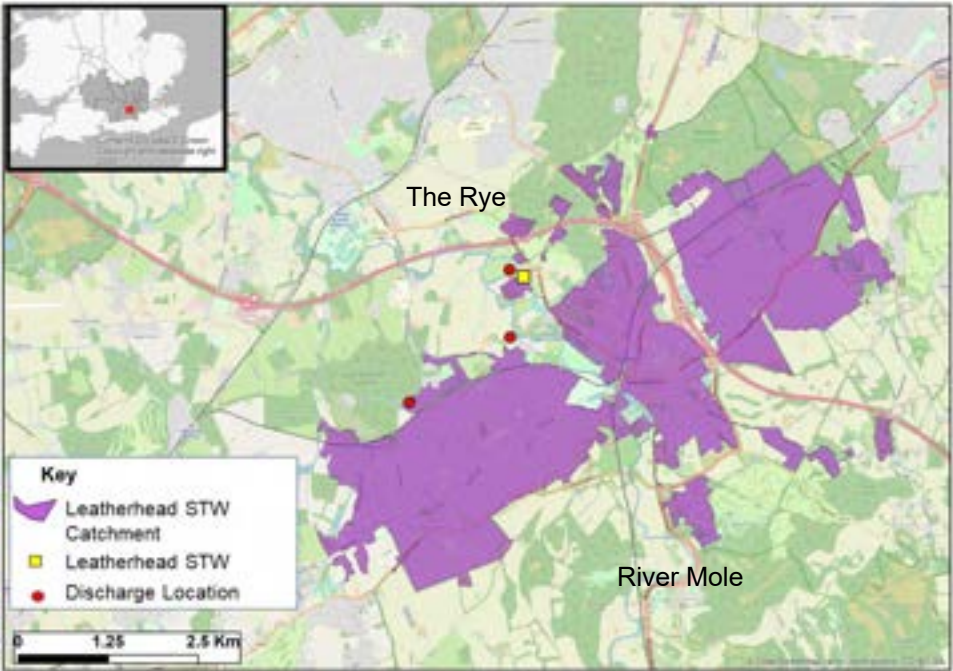
What are the challenges?	<ul style="list-style-type: none">Increased internal hydraulic sewer flooding - from 0.1 % to 0.1 % of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.1 % of properties (14) at risk up to a 1 in 30-year storm in 2025 to 0.1 % of properties (18) at risk by 2050Increased external hydraulic sewer flooding - from 0.2 % to 0.3 % of properties: Calculated as increased modelled risk of external hydraulic sewer flooding from 0.2 % of properties (23) at risk up to a 1 in 30-year storm in 2025 to 0.3 % of properties (36) at risk by 2050Increased hydraulic sewer flooding - from 0.4 % to 0.5 % of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.4 % of properties (54) at risk up to a 1 in 50-year storm in 2025 to 0.5 % of properties (71) at risk by 2050The seven overflows in this area discharged 126 times in 2021
Which of our solutions are best suited?	<ul style="list-style-type: none">Surface water managementProperty level protection measures to prevent individual buildings from hydraulic sewer floodingNetwork improvements



	2025		2030		2035		2050
Timescale	<div>← Short term →</div> <div>← Medium Term →</div> <div>← Long Term →</div>						
What targets are we seeking?	<div>To:</div> <ul style="list-style-type: none">• Reduce the number of customers at risk of internal and external hydraulic sewer flooding up to a 1 in 50-year storm by 100%• Reduce storm discharges (where overflows are present) to <10 in an average year by 2050• Maintain 100% STW permit compliance						
How will we achieve the targets?	<div>We will:</div> <ul style="list-style-type: none">• Increase the confidence in our plans for long-term investment to reduce the risk of internal and external hydraulic sewer flooding and enable catchment-level planning of surface water management solutions• Provide sewer network improvements to meet growth and climate change drivers		<div>We will:</div> <ul style="list-style-type: none">• Further develop our catchment-level planning to reduce the risk of hydraulic sewer flooding by removing rainfall runoff that is entering our foul sewer system and enhance our surface water sewerage systems• Continue to provide sewer network improvements to meet growth and climate change drivers		<div>We will:</div> <ul style="list-style-type: none">• Reduce the risk of hydraulic sewer flooding by removing surface water from our foul sewer systems through the implementation of surface water management solutions• Implement property level protection measures to prevent individual buildings from hydraulic sewer flooding• Continue to provide sewer network improvements to meet growth and climate change drivers		

Leatherhead STW Catchment

What are the challenges?	<ul style="list-style-type: none">Increased internal hydraulic sewer flooding - from 0.2 % to 0.3 % of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.2 % of properties (35) at risk up to a 1 in 30-year storm in 2025 to 0.3 % of properties (70) at risk by 2050Increased external hydraulic sewer flooding - from 0.6 % to 0.7 % of properties: Calculated as increased modelled risk of external hydraulic sewer flooding from 0.6 % of properties (119) at risk up to a 1 in 30-year storm in 2025 to 0.7 % of properties (154) at risk by 2050Increased hydraulic sewer flooding - from 1.0 % to 1.4 % of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 1.0 % of properties (210) currently at risk up to a 1 in 50-year storm in 2025 to 1.4 % of properties (294) at risk by 2050The three overflows in this area discharged 70 times in 2021
Which of our solutions are best suited?	<ul style="list-style-type: none">Surface water managementNetwork improvementsInvest in our sewage treatment works to achieve 100 % compliance



	2025		2030		2035		2050
Timescale	← Short term →		← Medium Term →		← Long Term →		
What targets are we seeking?	To: <ul style="list-style-type: none">• Reduce the number of customers at risk of internal and external hydraulic sewer flooding up to a 1 in 50-year storm by 100 %• Reduce storm discharges (where overflows are present) to <10 in an average year by 2050• Achieve 100 % STW permit compliance						
How will we achieve the targets?	We will: <ul style="list-style-type: none">• Increase the confidence in our plans for long-term investment to reduce the risk of internal and external hydraulic sewer flooding and enable catchment-level planning of surface water management solutions• Provide sewer network improvements to meet growth and climate change drivers		We will: <ul style="list-style-type: none">• Further develop our catchment-level planning to reduce the risk of hydraulic sewer flooding by removing rainfall runoff that is entering our foul sewer system and enhance our surface water sewerage systems• Continue to provide sewer network improvements to meet growth and climate change drivers• Invest in our sewage treatment works to ensure compliance		We will: <ul style="list-style-type: none">• Reduce the risk of hydraulic sewer flooding by removing surface water from our foul sewer systems through the implementation of surface water management solutions• Continue to provide sewer network improvements to meet growth and climate change drivers• Continue to invest in our sewage treatment works to ensure compliance		

L3 STW catchment summary table

	2025 modelled baseline					2050 Performance without DWMP					2050 Performance with DWMP				Preferred solutions			
	(no.& % of properties)					(no.& % of properties)					(no.& % of properties)							
L3 STW Catchments	Internal flooding (2025)	External flooding (2025)	Resilience flooding (2025)	Number of monitored storm overflows (2021)	Recorded (EDM) storm overflow discharges (2021)	Internal flooding (2050)	External flooding (2050)	Resilience flooding (2050)	Number of modelled storm overflows (2050)	Modelled average annual storm discharges (2050)	Internal flooding (2050) DWMP	External flooding (2050) DWMP	Resilience flooding (2050) DWMP	Modelled average annual storm discharges (2050) DWMP	2025-2030	2030-2035	2035-2050	Investment Band (£)
ASH VALE STW	14 (0.2%)	64 (0.9%)	119 (1.7%)	1	9	38 (0.5%)	111 (1.6%)	215 (3%)	2	51	0	0	0	<=10	CP	CP, NI, STW	IPP, NI, SWM	Medium
BURSTOW STW	7 (0.2%)	59 (1.4%)	93 (2.2%)	1	112	36 (0.8%)	70 (1.6%)	195 (4.5%)	1	0	0	0	0	<=10	CP, NI, SL, SWM	CP, STW	NI	Medium
CAMBERLEY STW	79 (0.1%)	256 (0.5%)	469 (0.9%)	1	17	136 (0.3%)	424 (0.8%)	839 (1.6%)	3	50	0	0	0	<=10	CP	CP, NI, STW, SWM	IPP, NI, SWM	High
CHERTSEY STW	131 (0.3%)	140 (0.4%)	377 (1%)	1	48	183 (0.5%)	194 (0.5%)	529 (1.3%)	2	55	0	0	0	<=10	CP, NI	CP	NI, SWM	High
CHOBHAM STW	8 (0.2%)	33 (0.6%)	50 (0.9%)	1	98	14 (0.3%)	47 (0.9%)	83 (1.6%)	1	15	0	0	0	<=10	CP	CP	IPP, NI, SWM	Medium
CRANLEIGH STW	23 (0.4%)	38 (0.6%)	85 (1.3%)	6	104	31 (0.5%)	53 (0.8%)	110 (1.7%)	8	92	0	0	0	<=10	CP, NI	CP, NI, STW	IPP, NI, SL, STW, SWM	Medium
DORKING STW	14 (0.1%)	23 (0.2%)	54 (0.4%)	7	126	18 (0.1%)	36 (0.3%)	71 (0.5%)	8	115	0	0	0	<=10	CP, NI	CP, NI	IPP, NI, SWM	Medium
EARLSWOOD STW	55 (0.2%)	98 (0.3%)	217 (0.8%)	4	115	76 (0.3%)	149 (0.5%)	286 (1%)	4	90	0	0	0	<=10	CP, NI	CP, NI	IPP, NI, STW, SWM	High
ELSTEAD STW	4 (0.2%)	6 (0.3%)	13 (0.6%)	N/A	N/A	5 (0.2%)	15 (0.7%)	45 (2%)	N/A	N/A	0	0	0	N/A	CP	CP, NI, SWM	NI, SWM	Low
ESHER STW	186 (0.3%)	117 (0.2%)	370 (0.7%)	2	100	220 (0.4%)	122 (0.2%)	417 (0.8%)	4	92	0	0	0	<=10	CP, NI	CP, NI, STW	IPP, NI, SWM	High
FARNHAM STW	11 (0.1%)	34 (0.2%)	62 (0.3%)	2	40	17 (0.1%)	53 (0.3%)	94 (0.5%)	2	19	0	0	0	<=10	CP, NI	CP, NI	NI, STW, SWM	Medium
GODALMING STW	12 (0.1%)	80 (0.5%)	118 (0.8%)	1	9	37 (0.2%)	179 (1.2%)	289 (1.9%)	1	365	0	0	0	<=10	CP, NI	CP, NI	IPP, NI, SWM	Medium
GUILDFORD STW	84 (0.2%)	103 (0.3%)	205 (0.5%)	2	11	98 (0.3%)	119 (0.3%)	245 (0.6%)	2	39	0	0	0	<=10	CP, NI	CP, NI	IPP, NI, STW, SWM	High
HASLEMERE STW	2 (0%)	10 (0.1%)	17 (0.3%)	1	52	3 (0%)	16 (0.2%)	27 (0.4%)	1	3	0	0	0	<=10	CP	CP, NI, STW	IPP, NI, SWM	Medium

	2025 modelled baseline					2050 Performance without DWMP					2050 Performance with DWMP				Preferred solutions			
	(no.& % of properties)					(no.& % of properties)					(no.& % of properties)							
L3 STW Catchments	Internal flooding (2025)	External flooding (2025)	Resilience flooding (2025)	Number of monitored storm overflows (2021)	Recorded (EDM) storm overflow discharges (2021)	Internal flooding (2050)	External flooding (2050)	Resilience flooding (2050)	Number of modelled storm overflows (2050)	Modelled average annual storm discharges (2050)	Internal flooding (2050) DWMP	External flooding (2050) DWMP	Resilience flooding (2050) DWMP	Modelled average annual storm discharges (2050) DWMP	2025-2030	2030-2035	2035-2050	Investment Band (£)
HEADLEY STW	0 (0%)	1 (0.8%)	1 (0.8%)	N/A	N/A	0 (0%)	1 (0.8%)	1 (0.8%)	N/A	N/A	0	0	0	N/A	CP	CP	NI, SWM	Low
HOCKFORD STW	2 (0%)	37 (0.6%)	58 (0.9%)	1	25	6 (0.1%)	122 (2%)	125 (2%)	1	4	0	0	0	<=10	CP	CP, NI	NI, STW, SWM	Medium
HOLMWOOD STW	4 (0.2%)	16 (0.6%)	26 (1%)	3	154	4 (0.2%)	19 (0.7%)	46 (1.7%)	3	81	0	0	0	<=10	CP, NI	CP, NI	NI, STW	Medium
HORLEY (SURREY) STW	32 (0.3%)	23 (0.2%)	99 (0.9%)	2	86	45 (0.4%)	31 (0.3%)	121 (1%)	2	31	0	0	0	<=10	CP, NI	CP, NI, STW	IPP, NI, STW	Medium
IRONSBOTTOM STW	0 (0%)	0 (0.1%)	0 (0.1%)	1	0	0 (0%)	1 (1.8%)	1 (1.8%)	1	85	0	0	0	<=10	CP, NI	CP, NI, STW	NI	Low
LEATHERHEAD STW	35 (0.2%)	119 (0.6%)	210 (1%)	3	70	70 (0.3%)	154 (0.7%)	294 (1.4%)	5	436	0	0	0	<=10	CP, NI	CP, NI, STW	NI, STW, SWM	High
LIGHTWATER STW	49 (0.5%)	55 (0.6%)	146 (1.6%)	1	23	64 (0.7%)	67 (0.7%)	178 (2%)	1	17	0	0	0	<=10	CP, NI	CP	IPP, NI, STW, SWM	High
MERSTHAM STW	2 (0%)	17 (0.4%)	25 (0.6%)	1	30	3 (0.1%)	23 (0.6%)	37 (0.9%)	2	44	0	0	0	<=10	CP	CP, NI	IPP, NI, STW, SWM	Medium
RIPLEY STW	23 (0.3%)	33 (0.4%)	64 (0.8%)	2	22	29 (0.4%)	39 (0.5%)	77 (1%)	2	69	0	0	0	<=10	CP	CP, STW	IPP, NI, SWM	High
RUDGEWICK (SW) STW	N/A	N/A	N/A	No data	No data	N/A	N/A	N/A	1	25	N/A	N/A	N/A	<=10	CP	CP	NI	Low
SHAMLEY GREEN STW	2 (0.1%)	5 (0.2%)	8 (0.3%)	2	12	3 (0.1%)	6 (0.2%)	8 (0.3%)	2	37	0	0	0	<=10	CP, NI	CP	IPP, NI, SWM	Medium

	2025 modelled baseline					2050 Performance without DWMP					2050 Performance with DWMP				Preferred solutions			
	(no.& % of properties)					(no.& % of properties)					(no.& % of properties)							
L3 STW Catchments	Internal flooding (2025)	External flooding (2025)	Resilience flooding (2025)	Number of monitored storm overflows (2021)	Recorded (EDM) storm overflow discharges (2021)	Internal flooding (2050)	External flooding (2050)	Resilience flooding (2050)	Number of modelled storm overflows (2050)	Modelled average annual storm discharges (2050)	Internal flooding (2050) DWMP	External flooding (2050) DWMP	Resilience flooding (2050) DWMP	Modelled average annual storm discharges (2050) DWMP	2025-2030	2030-2035	2035-2050	Investment Band (£)
WEYBRIDGE STW	10 (0.1%)	20 (0.2%)	36 (0.3%)	1	32	15 (0.1%)	27 (0.3%)	51 (0.5%)	2	61	0	0	0	<=10	CP	CP, NI	IPP, NI, STW, SWM	Medium
WISLEY STW	15 (0.1%)	56 (0.5%)	74 (0.7%)	1	7	24 (0.2%)	183 (1.7%)	167 (1.6%)	2	69	0	0	0	<=10	CP, NI	CP	NI, STW, SWM	Medium
WOKING STW	75 (0.2%)	162 (0.5%)	322 (0.9%)	1	17	183 (0.5%)	355 (1%)	698 (2%)	2	44	0	0	0	<=10	CP, NI	CP	NI, STW, SWM	High

CP = Catchment-level planning mapping and modelling
SWM = Surface water management
NI = Network improvements
SL = Sewer lining
STW = Treatment process technologies and protection from high river levels
IPP = Individual property level protection

Navigating our DWMP

We’ve developed a comprehensive document suite to share our final DWMP. This includes five summary documents, that contain increasing levels of detail, as well as Catchment Strategic Plans. To help you to navigate around our document suite and to find key DWMP content, we provide a navigation index below.

Navigation index		Protecting the environment and providing a reliable, sustainable wastewater service						Best value and delivery					Working together		DWMP stages and data					
		Storm overflows	Sewer flooding	Level of ambition & pace of delivery	Growth & climate change	Resilience: flooding & power	Groundwater	Environmental assessments	Affordability & bill impact	Best Value	Base vs Enhancement	Solutions & deliverability	Programme alignment	Partnership working	Stakeholder & customer engagement	DWMP stages & process	Level 2 regional summaries	Level 3 regional summaries	Data tables	Risk & Assurance
Summary documents	Customer summary																			
	Non-technical summary																			
	Technical summary																			
	The Plan																			
	Catchment Strategic Plans x13																			
Technical appendices x11	Appendix A - Strategic context																			
	Appendix B - Risk-Based catchment screening																			
	Appendix C - Baseline risk and Vulnerability assessment																			
	Appendix D - Options development and appraisal																			
	Appendix E - Programme appraisal																			
	Appendix F - Stakeholder engagement																			
	Appendix G - Adaptive pathway planning																			
	Appendix H – Customer engagement Part A – Draft DWMP																			
	Appendix I - Risk and uncertainty																			
	Appendix J - DWMP and WRMP alignment																			
Appendix M - Assurance																				
New technical appendices x9	Appendix N - You Said, We Did (YSWD)																			
	Appendix O - What base buys																			
	Appendix P - Response to July 2021 Floods																			
	Appendix Q - Storm overflows																			
	Appendix R - Delivery of SuDS and nature-based solutions																			
	Appendix S - Partnership opportunities and working																			
	Appendix T - Groundwater quality																			
	Appendix U - Resilience																			
	Appendix V – Customer engagement Part B – Consultation Survey Report																			
Environmental assessments	Appendix K - Strategic environmental assessment (SEA)																			
	Appendix L - Habitats regulations assessment (HRA)																			
Portals and data	Customer portal																			
	Practitioner portal																			
	Data tables																			
	Data tables commentary																			



Work with us

We want to continue to draw on your expertise and local knowledge and invite you to work further with us to meet the future needs of drainage and wastewater services in our region.

Please get in touch with us or provide feedback on this document by emailing our DWMP team at DWMP@thameswater.co.uk

For more information on our DWMP work or to share your views, please visit the DWMP portal on our website [here](#).