Catchment Strategic Plan

Part of our Drainage and Wastewater Management Plan (DWMP)

Co-creating resilient wastewater catchments

A long-term Strategic Plan for the **Riverside** System

Thames Water

Contents

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.

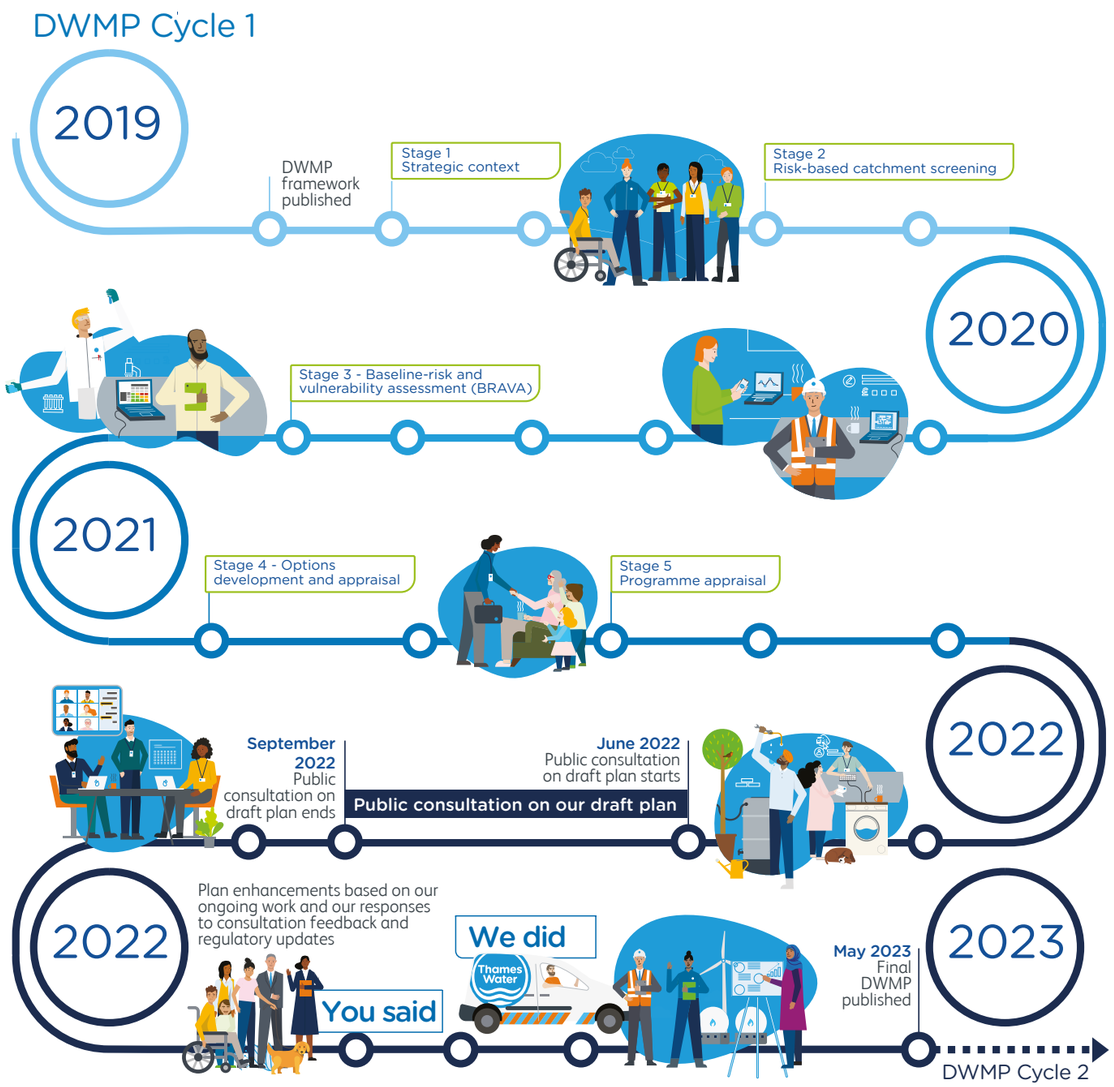
We'd like to say a big thank you to everyone who got involved and collaborated with us in the development of our shared plan. We're really happy it's having a positive impact already, and encouraged by the shared benefits we can deliver in the future as we continue to move forward together.

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.



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.

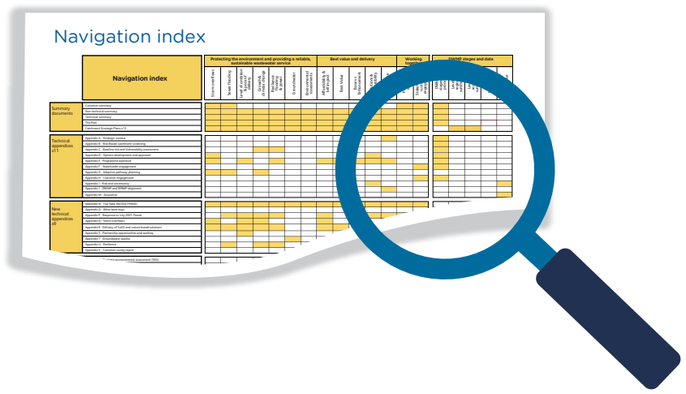
Preface

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

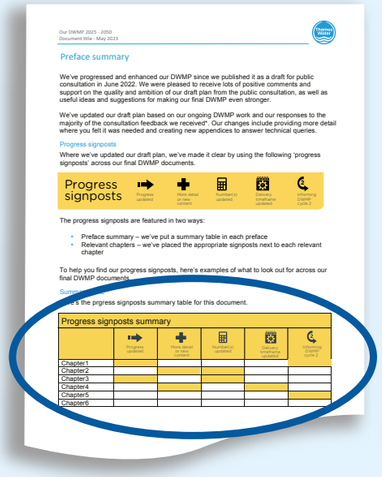


Progress signposts

- 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 Riverside system that covers much of the London boroughs of Barking and Dagenham, Newham and Havering.

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

In this document we summarise our long-term plan for this catchment and also provide links to allow readers to investigate into various risk zones. 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 links:

DWMP@thameswater.co.uk

Drainage and wastewater management plan

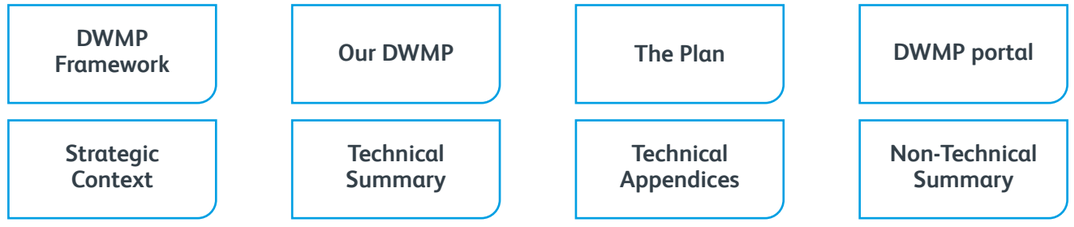
Our Goals

95% of properties not at risk of flooding in a 1 in 50-year storm by 2050

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

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

Our DWMP components



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 discharge 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 (classed 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 in a 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 Riverside system

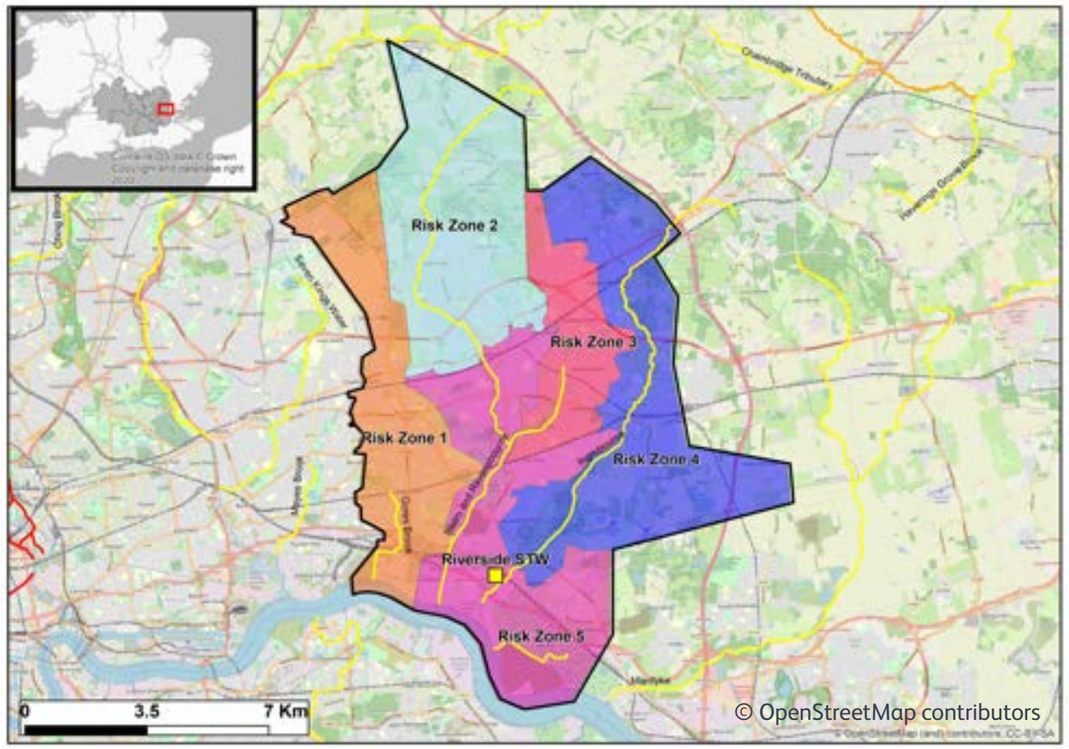
Riverside sewage system is located in North East London with a STW located in Rainham, East London. It currently serves an area that includes Romford, Hornchurch, Dagenham and Rainham. The system has over 2,800 km of sewer network and 41 pumping stations. The STW treats sewage serves of population of over 400,000.

The Riverside system is constructed with a series of trunk sewers, all with an exceptionally poor sewer gradient. This poses a flooding and blockage risk.

The system comprises of mixed domestic and industrial areas. Riverside is mainly characterised by suburban development, with almost half of the area dedicated to open green space, including 7 marshes where strict Green Belt restrictions have prohibited the extension of existing developments. Other areas of the system are densely populated and will therefore be influenced by increasing development and population change.

Riverside sewage treatment plant is located in Rainham, East London and was upgraded in 2015, including the re-commissioning of the sludge treatment plant to avoid transferring sludge to Beckton STW. Riverside STW also accommodates some sludge from Beckton STW.

The region overview map below highlights the watercourses in this area that are typically heavily modified with moderate water quality status. The map also shows the sub-division of the Riverside system into five risk zones. The risk zones allow the DWMP process to be applied and tailored to smaller discrete areas.



Our co-creators

Who our stakeholders are

It's 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, Greater London Authority, Transport for London, Department for Environment, Food and Rural Affairs (Defra), Consumer Council for Water, Thames Water Customer Challenge Group (CCG), Thames21, London Borough of Barking and Dagenham, London Borough of Redbridge, Roding, Beam, Ingrebourne Catchment Partnership and London Borough of Havering.

Thames Water Customer Challenge Group (CCG)

Roding, Beam and Ingrebourne Catchment Partnership

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.

> "Need to make clear within the document the delivery mechanism. It is assumed that TW won't be delivering all this themselves but there is a risk working with political bodies as their priorities may-not always align with delivering DWMP priorities."

> "Comment around Havering risk may need to be captured in the document, to explain what consideration is being given to river modelling. For Havering pluvial/fluvial risk is the same in terms of network, most of it is picked up through the rivers. Rainham Marshes also has tidal influence too."

Partners' policies

Management Plan (Hyperlink)	Key aspects that align with the DWMP
Local Flood Risk Management Strategies	
Essex County Council, Local Flood Risk Management Strategy	• "The ambition of the strategy is to ensure that Essex is a great place to live and work. We want to enhance the environment here, and create a place that is safe and sustainable. In terms of flooding, this means that you are informed about your flood risk, and understand why flooding is a problem for us all, and what is being done to manage it."
London Borough of Barking and Dagenham, Local Flood Risk Management Strategy	• The key aim of the local flood risk management strategy is to set out a long-term vision to reduce the likelihood and detrimental consequences of flooding.
Sustainability and Planning	
Thames Estuary TE2100 Plan, Environment Agency	• Take an adaptive approach to managing the risk of flooding to people, property and the environment • Protect the social, cultural and commercial value of the tidal Thames, tributaries and floodplain • Ensure sustainable and resilient development in the floodplain • Tackle the climate crisis by enhancing and restoring ecosystems and maximising benefits of natural floods
The London Plan	• This plan is an integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years.
Surface Water Management Plan	
Essex County Council, Surface Water Management Plan	The plan is a study to understand the risk from local flood sources and outlines a long-term action plan to manage these risks. Some of these flood sources include: • surface water drains • groundwater • small watercourses
River Catchment Partnership Plan	
Roding, Beam & Ingrebourne Catchment Plan	• The vision statement of this plan is 'to enhance, conserve and improve the health of the water environment in the Roding, Beam and Ingrebourne catchment, for the benefit of people and wildlife now and for future generations.'

Management Plan (Hyperlink)	Key aspects that align with the DWMP
Climate Change Action Plans	
The Havering Council Climate Change Action Plan	• Aims to tackle climate change, influence decisions and bring together existing environmental policies
Essex County Council, Adapting to Climate Change Action Plan	• Reduce carbon emissions • Protect biodiversity • Reduce flooding • Create and enhance Green Infrastructure (GI), including trees, meadows, marshes, parks and gardens
London Borough of Redbridge, Climate Change Action Plan	• This action plan sets out the start of the journey for reaching the council's commitment to become carbon neutral by 2030 for those emissions in its direct control whilst also outlining the council's ambition to become a community leader in climate change.
Epping Forest District Council Climate Change Action Plan 2021	• This plan supports the council's ambition to do everything within its power to become carbon neutral by 2030. The Action Plan identifies the main sources of carbon emissions, both within the council's own operations and across the district, and outlines actions to reduce them.
SuDS Design and Evaluation Guide	
The Sustainable Drainage Systems Design Guide for Essex	• Provides guidance on the planning, design and delivery of attractive and high-quality SuDS schemes which should offer multiple benefits to the environment and community alike.
Green/Blue Infrastructure Plans	
Barking and Dagenham's Green Infrastructure and Biodiversity Strategy	• Sets out in detail the Green Grid routes and the design principles for GI and biodiversity in the borough
Epping Forest District Council, Green Infrastructure Strategy	• The strategy is to ensure that a coherent and complementary approach is taken to the District's GI provision and a holistic and strategic approach is taken.
Essex Green Infrastructure Strategy	• Protect, create, and improve green infrastructure for biodiversity and people • Improve connectivity and inclusivity, by supporting healthier, more active lifestyles • Contribute to economic growth

Issues today

The initial risk-based catchment screening (RBCS) in this region, published in 2019, assessed system performance against a range of 17 indicators, using information from company reporting systems or from relevant stakeholders, to identify systems that are vulnerable to the risks of growth and climate change. We identified that this system warranted long-term planning with 7 of the 17 indicators being breached. As part of optioneering we have then assessed the catchment against a series of planning metrics as shown in the table below.

This identified the highest risk for each metric that then progressed through optioneering and into the appraisal phases. The table identifies the risk areas and metrics that have passed through for solution development.

The DWMP process is iterative and will be repeated every 5 years, with the next version due in 2028. This will capture any changes in demands for this catchment, incorporate the outputs from the review of the 2021 floods and will look for opportunities to utilise future technologies and engineering solutions.

Risk						
Risk Zone	**Storm Overflow Performance**	**Internal Sewer Flooding**	**External Sewer Flooding**	**Resilience (1 in 50-year storm)**	**STW Quality Compliance**	**STW DWF Compliance**
STW	N/A	N/A	N/A	N/A	Yes	Yes
1	Yes	Yes	Yes	Yes	N/A	N/A
2	Yes	Yes	Yes	Yes	N/A	N/A
3	Yes	Yes	Yes	Yes	N/A	N/A
4	Yes	Yes	No	Yes	N/A	N/A
5	Yes	No	Yes	Yes	N/A	N/A

'N/A' indicates that a particular risk is not applicable/cannot be quantified either to/for the STW or risk zones

Our predictions for the future

We've modelled the entire system 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 sewer systems.

We modelled the impact of climate change, population growth and urban creep on flood risk, pipe capacity, treatment works compliance and storm overflow compliance from a 2020 baseline, which includes the Thames Tideway Tunnel, to 2050.

This has helped determine how risk will change over time due to these factors.

Our forecast network performance metrics are summarised opposite. By 2050 we forecast that, across the region, 9 % of properties will be at risk of hydraulic sewer flooding in a 1 in 50-year storm.

Based on our findings from the modelling and carrying out discussions with local stakeholders we forecast that, if we do nothing, over the next 25 years there will be an increased risk of hydraulic flooding and pollution from our sewer systems in this region.

Riverside STW water quality and DWF compliance

	2020	2025	2030	2035	2040	2045	2050
Water Quality (SS* & BOD*)	79 %	94 %	96 %	97 %	99 %	101 %	102 %
Water Quality (AmmN*)	65 %	72 %	76 %	77 %	80 %	84 %	88 %
DWF	88 %	90 %	91 %	91 %	92 %	94 %	95 %

* Suspended Solids (SS)

* Biochemical Oxygen Demand (BOD)

* Ammoniacal Nitrogen (AmmN)

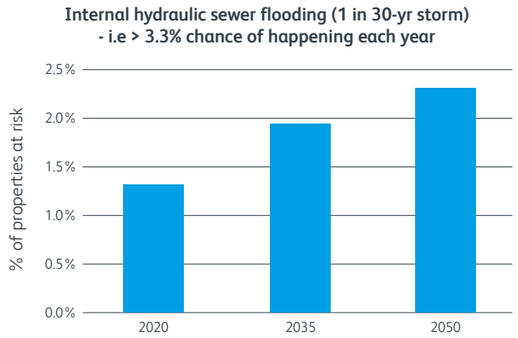
The ability of STW to treat and dispose of sewage in line with current water quality and dry weather flow (DWF) discharge permit conditions was assessed. The results presented above indicate that water quality performance has breached the current Thames Water target of being less than 80 % of the permitted level and will breach the permit by 2040. We are currently scoping an upgrade to the STW.

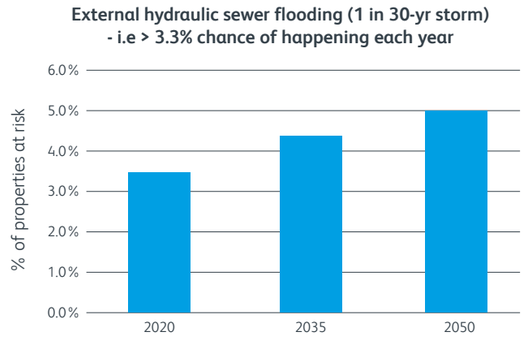
Therefore, there is an evident need for long-term planning and the implementation of the DWMP, to protect this region and support its future growth.

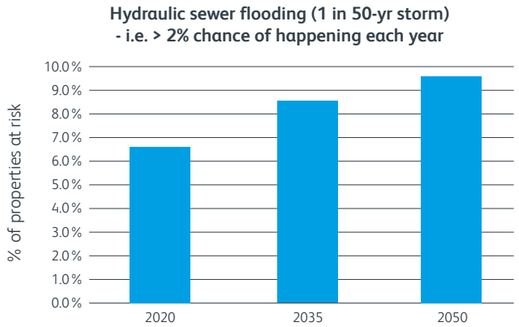
If you are a DWMP practitioner, further details can be found on our Practitioner portal.

DWMP Practitioner portal

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







Sustainable solutions

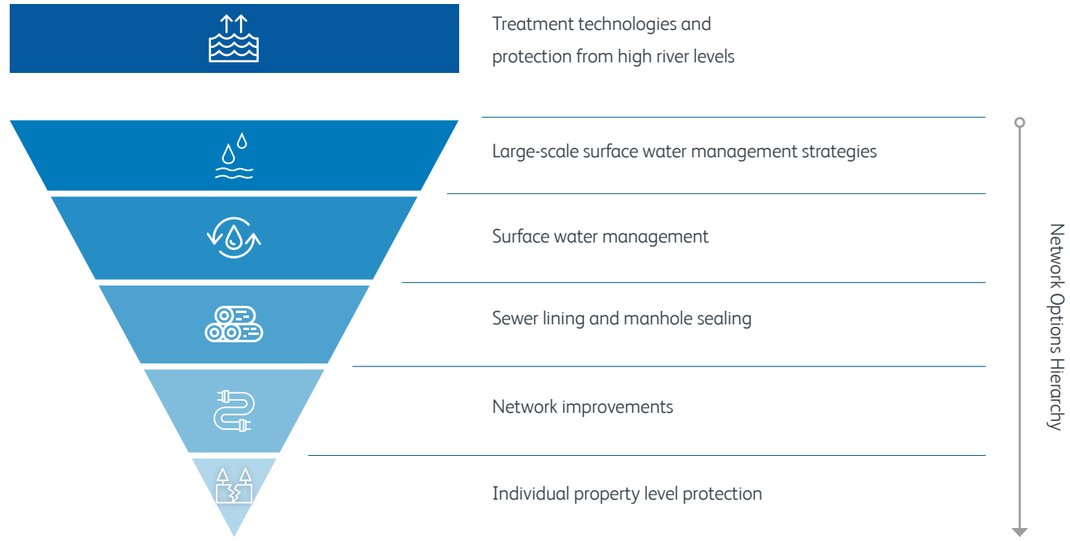
We've combined our knowledge of the catchments with the stakeholder feedback we've received to help us identify the solutions required to meet the future needs of this region. We've used a structured approach that started with over 40 generic solutions, to ensure broad thinking, and identified and assessed 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.

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 considered for this area are outlined below. Further information on the Options Development and Appraisal stage is available on our DWMP portal.



Solution options considered in optioneering

Large-scale surface water management strategies

Delivery of surface water management strategies across the risk zones to significantly reduce or remove the total rainfall runoff entering the separate foul sewer network at these locations.

Surface water management

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 or foul to surface water.

Sewer lining and manhole sealing

Undertaking a programme of sewer lining and manhole sealing, we will target as a priority the areas of high infiltration and with a high potential to reduce unwanted flows into our sewer system that currently take up much of its capacity.

Network improvements

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.

Individual property level protection

Providing vulnerable homes with active and passive flood protection measures such as flood proof doors, self-sealing bath/shower systems (non-return valves) and installation of household pumping stations.

Treatment process technologies and protection from high river levels

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.

Partnership working – case studies

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.

Ravensbourne Catchment Study

Areas within the Ravensbourne catchment have historically experienced surface water and sewer flooding affecting properties and posing water quality risks to the River Ravensbourne. Following an impermeable area study undertaken as part of the Ravensbourne Catchment Study, three areas – Osbourne Road, Bruce Avenue and Ashlyn Grove – have been selected to explore potential SuDS implementation. These locations are ideal to trial various types of residential property source control including:

- rerouting roof drainage
- water butts
- property rain gardens, and
- permeable paving (potential).

Partnership working with London Borough (LB) of Havering is essential for this opportunity as the cost of reducing flood risk is high. There is strong partner support and interventions can be scaled to achieve DWMP goals depending on funding availability.

Opportunity	Partners
Gallows Corner	LB of Havering
Barking Town Centre SuDS, East London	Environment Agency and Transport Agencies LB of Barking and Dagenham
Ravensbourne Catchment Study	LB of Havering
Wantz River	LB of Barking and Dagenham

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.

Barking Town Centre Regeneration SuDS

Barking Town Centre regeneration offers a unique collaborative opportunity to develop an overarching strategy to reduce water flows in three key areas with a SuDS attenuation basin. Through collaborative working with the Environment Agency, Barking and Dagenham London Borough Council and the local highways authority, we will support opportunities to incorporate SuDS features to provide multiple benefits including flood reduction, amenity and biodiversity wherever possible in the design of public space and green infrastructure.

Our shared plan

Our shared long-term plan for the Riverside system 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. The challenges this region has presented to us in delivering that balance include:

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

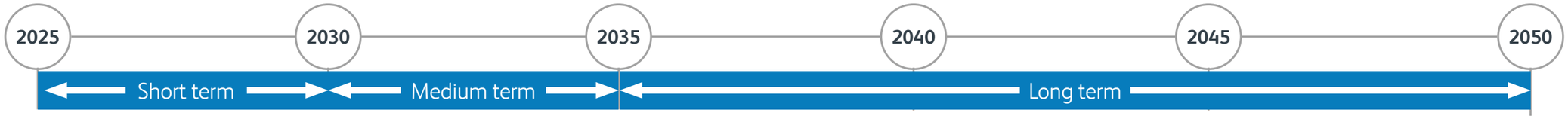
We propose an asset strategy that fundamentally addresses the inputs to our system i.e. removal of unwanted flows to reduce the amount of rainwater taking up the capacity of foul sewers and bringing foul systems back to their original intent of taking foul flows only. We will achieve this through an adaptive approach whereby we will aggressively target unwanted flows to restore capacity in our foul network incrementally throughout the system over the next 25 years.

This will include 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 Riverside catchments in the most resilient and sustainable way for foul, combined and surface water systems. We will work in partnership, where possible, to evolve surface water systems, championing green infrastructure.

In the short and medium term, we will focus on our hotspots to maximise the benefit for our customers of addressing sewage escapes to the environment in the shortest possible time. Those assets linked to the most sensitive watercourses will also be prioritised.

The diagram below outlines the sequencing of our proposed interventions for this area:



Restore

- **Effective surface water drainage -** Reducing misconnections will ensure capacity is available for growth

Sewer lining

- **Informed surface water plans –** Mapping and modelling surface water systems will increase confidence in our plans for surface water management solutions

Enhance

- **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

- **Improve STW performance –** Providing enhanced sewage treatment capacity will ensure our works can manage the increases created by future growth in the area and are 100% compliant

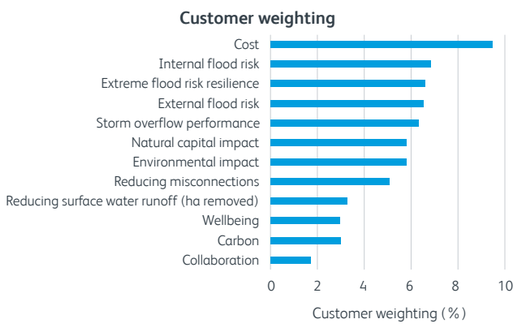
Developing our preferred plan for Riverside

Defining a best value framework

A best value framework is one that considers broader criteria than just economic cost. So our DWMP maximises 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 London catchments our approach has focused on a programme of storm discharge and flooding reduction that meets targets in each of the thirty-five risk zones. We identified and agreed scenarios to cover the range of our ambitions through discussion with our regional stakeholders.

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 define how quickly options are implemented. We also considered a better information plan that includes factors such as improvements in overflow and river monitoring data and improved accuracy 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.

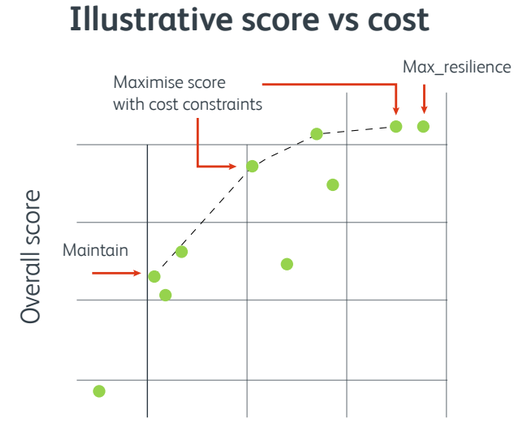
Natural capital (NC) impact
We used data from Natural England on the existing NC in the catchment and assessed whether the option would improve or reduce this baseline based on additional green space generated. Surface water management schemes scored highly whilst new sewers and tanks scored lower.

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 our 'value criteria'. We tested multiple alternative plans to allow us to assess different scenarios and compare their outcomes.



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 Riverside

From the first iteration of our preferred plan for Riverside we estimate that to tackle growth and climate change we need to invest an additional £0.6bn 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.

Our asset strategy for our systems in London is to deliver a storm discharge and flooding reduction programme that will meet our targets in each of the 35 risk zones by 2050 allowing for climate change and growth.

Our preferred plan comprises options that have been developed to meet medium term (2035) and long term (2050) performance targets.

Our hierarchy of solution types commences with, and seeks to maximise the implementation of and benefit from sustainable urban drainage solutions.

- £261m 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
- £112m on improvements to surface water management, with a particular focus on removing surface water from impacting on the networks
- £2m upgrading the Riverside STW
- £250m on sewer lining

Storm overflow performance
Reduce the number of average annual storm discharges by 357. By 2050, the 2 storm dicharge locations in this catchment will not overflow more than ten times per annum on average

Property flooding
Protect 1,449 properties from internal sewer flooding up to a 1 in 30-year storm event
Protect 2,721 properties from external sewer flooding up to a 1 in 30-year storm event
Protect 4,096 properties from sewer flooding up to a 1 in 50-year storm event
If we don't invest, over 7.8 % of properties would be at risk in a storm up to 1 in 50-year in 2050. As a result of implementing our plan, this would decrease to 5.5 %

Still supporting an overall goal of 95 % of properties not at risk across London

Treatment capacity enhancements and/or protection from high river levels at the STW
Upgrade the Riverside STW by 2050

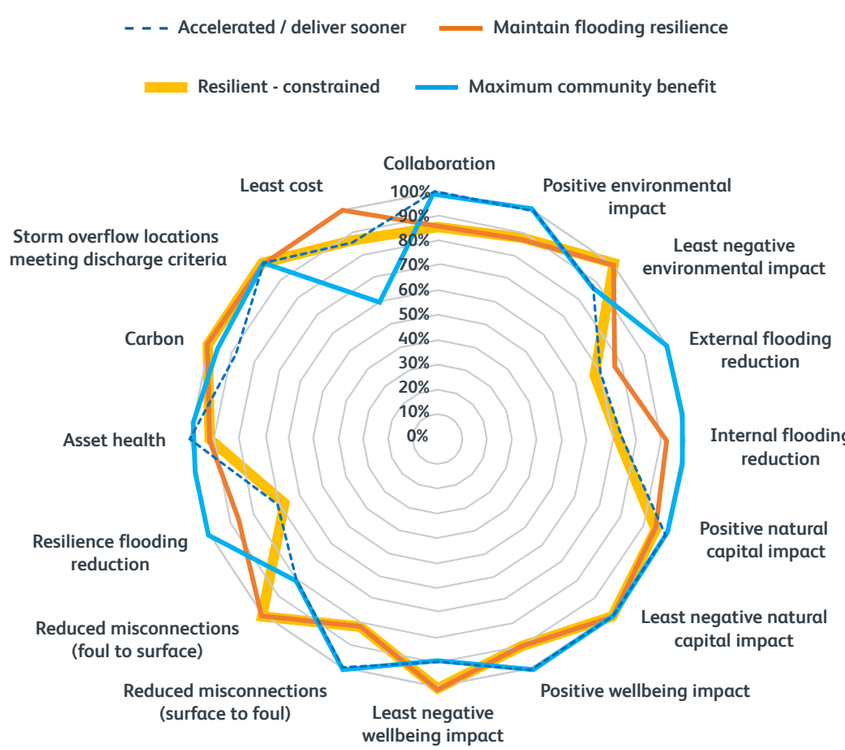
Asset improvements
Reline 201 km of sewers

Reduce misconnections / Reduce surface water runoff
79 ha (equivalent to 5,300 properties) to be disconnected from our sewers and reconnected to a surface water sewer with attenuation or to a soakway

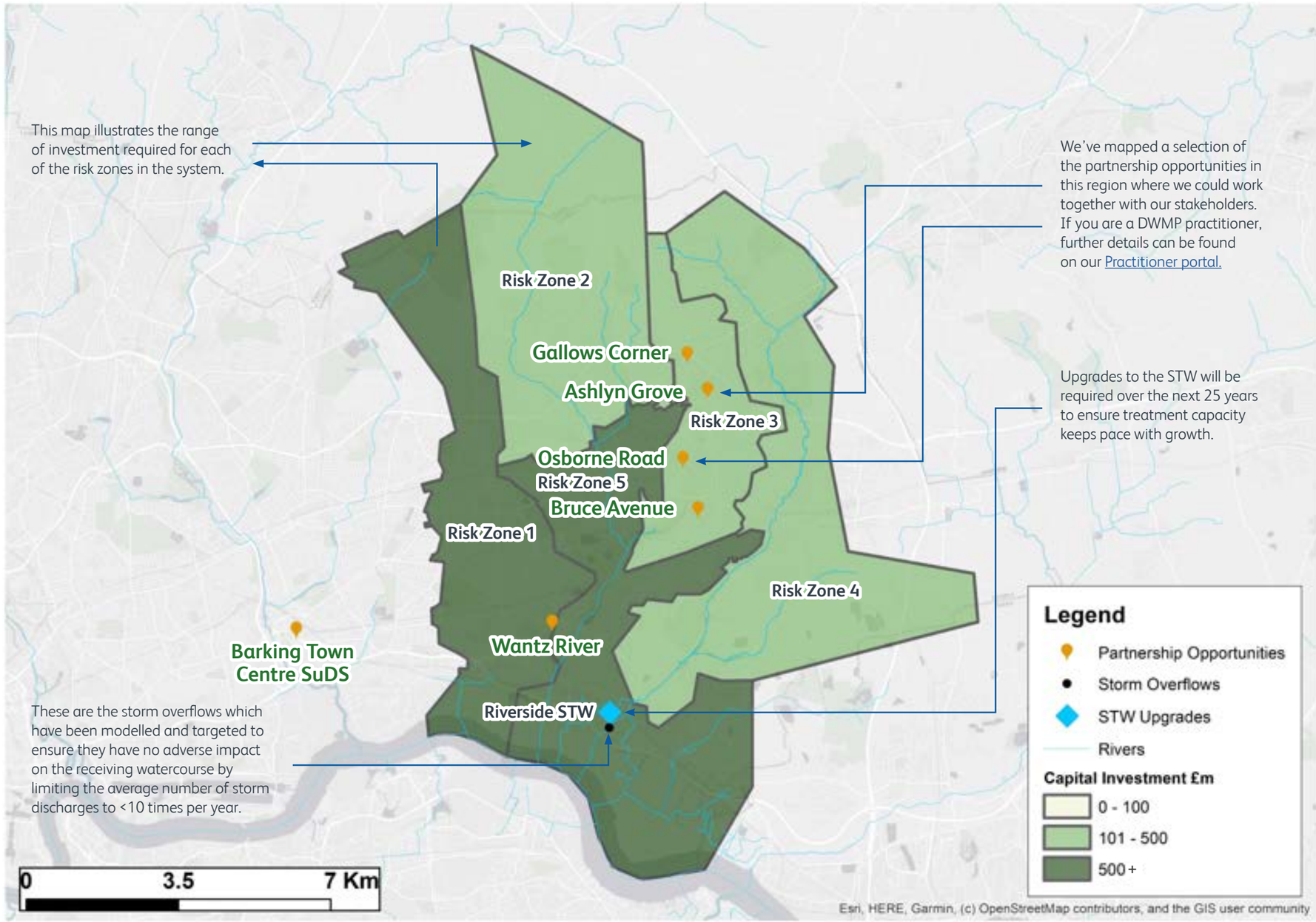
Carbon
86,132 tonnes of carbon embodied in delivering the plan, with 642 tonnes of carbon sequestered in delivering the plan

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 Riverside



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.

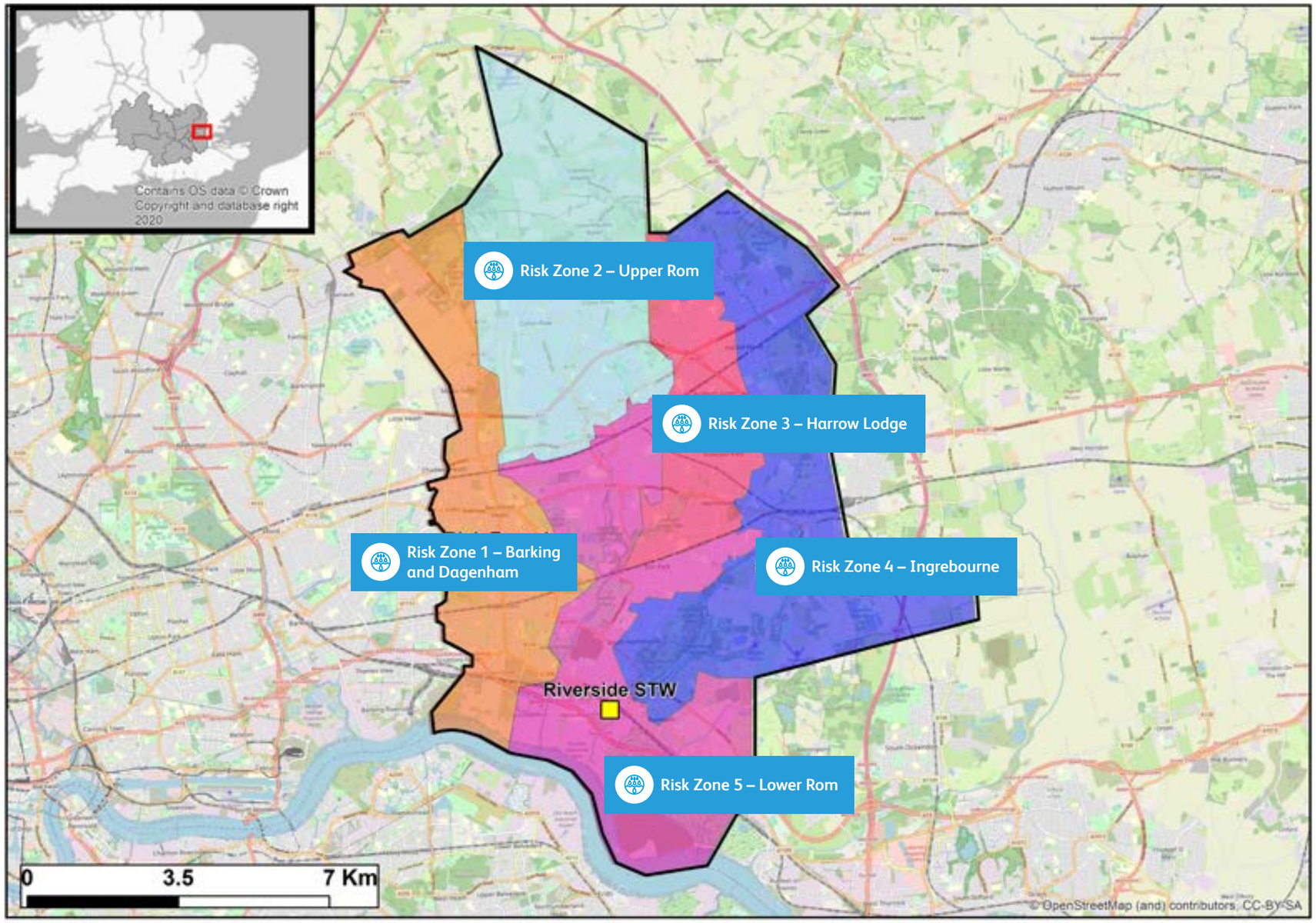
Funding and delivery

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.

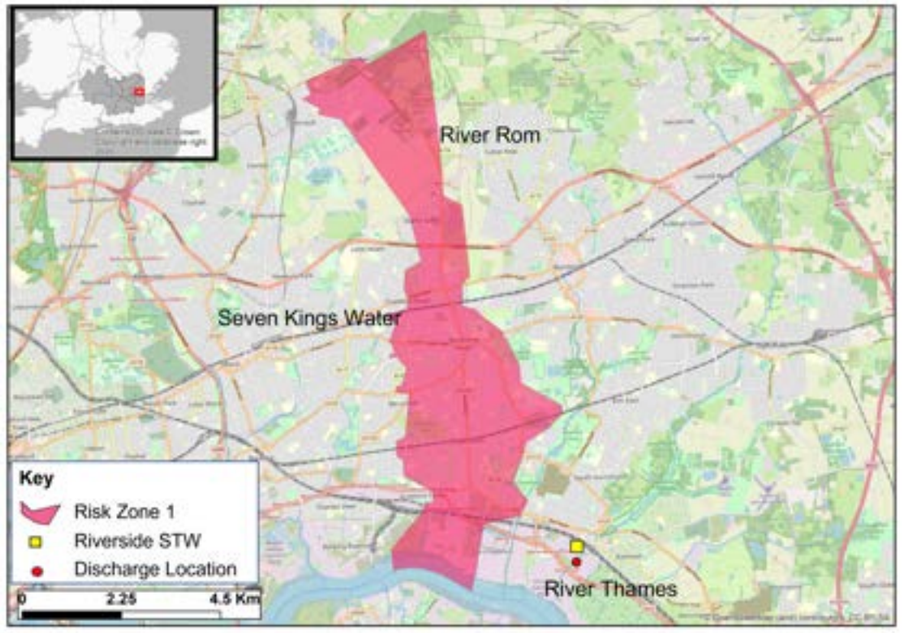
Our shared plan at catchment level

Use this interactive map by clicking on the blue boxes to find out more about our plans for the five risk zones.



Risk Zone 1 – Barking and Dagenham

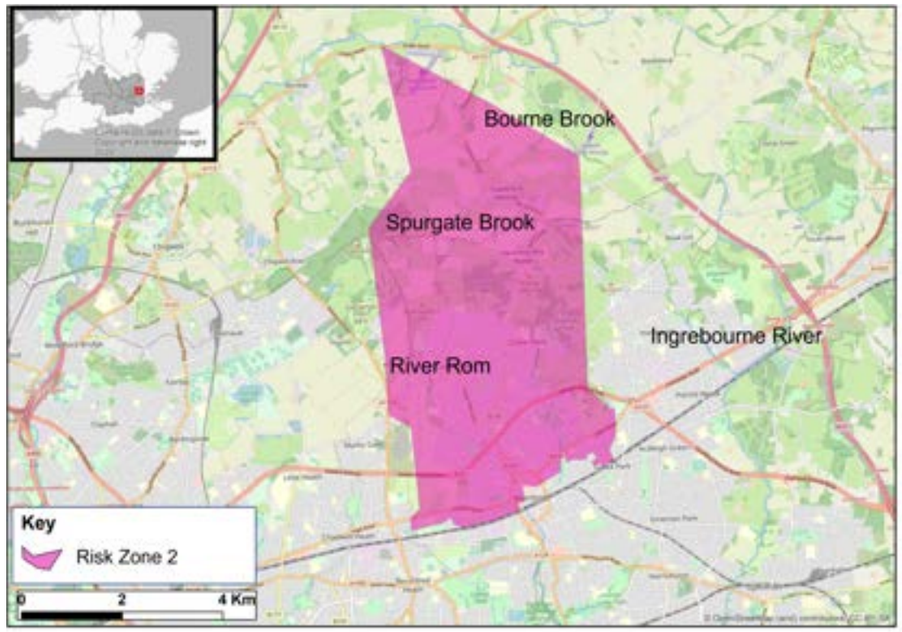
What are the challenges?	• Increased internal hydraulic sewer flooding - from 0.6% to 1.3% of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.6% of properties (330) at risk up to a 1 in 30-year storm in 2025 to 1.3% of properties (686) at risk by 2050 • Increased external hydraulic sewer flooding - from 2.3% to 5.2% of properties: Calculated as increased modelled risk of external hydraulic sewer flooding from 2.3% of properties (1172) at risk up to a 1 in 30-year storm in 2025 to 5.2% of properties (2670) at risk by 2050 • Increased hydraulic sewer flooding - from 5.2% to 9.0% of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 5.2% of properties (2657) at risk up to a 1 in 50-year storm in 2025 to 9.0% of properties (4632) at risk by 2050
Which of our solutions are best suited?	• Large-scale surface water management • Sewer lining to target infiltration hotspots • Network improvements • Construct deep tanks and tunnels



Timescale	2025 ← Short term → 2030	2030 ← Medium Term → 2035	2035 ← Long Term → 2050
What targets are we seeking?	To: • Reduce property hydraulic sewer flooding to 1.5% (internal) and 3% (external) for rainfall up to a 1 in 30-year storm event in any given year • Reduce storm discharges (where overflows are present) to <10 in an average year by 2050		
How will we achieve the targets?	We will: • 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 by installing larger sewers to increase network capacity	We will: • 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: • Reduce the risk of hydraulic sewer flooding by removing surface water from our foul sewer systems through the implementation of large-scale surface water management strategies • Improve the resilience of our sewers at greatest risk of groundwater inflows by undertaking sewer lining work • Construct deep tanks and tunnels to store combined sewage

Risk Zone 2 – Upper Rom

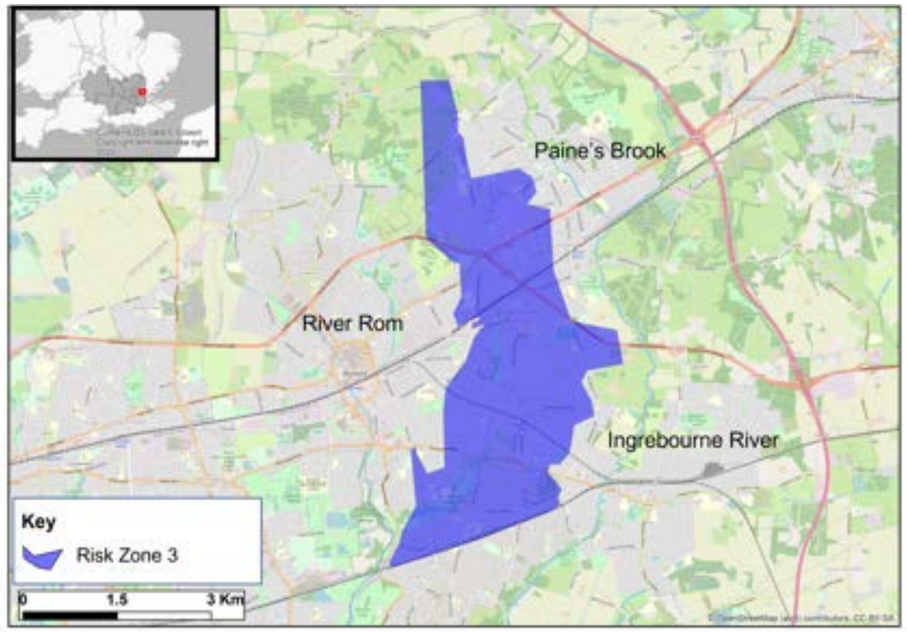
What are the challenges?	• Increased internal hydraulic sewer flooding - from 1.4% to 2.0% of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 1.4% of properties (404) at risk up to a 1 in 30-year storm in 2025 to 2.0% of properties (570) at risk by 2050 • Increased external hydraulic sewer flooding - from 2.2% to 2.8% of properties: Calculated as increased modelled risk of external hydraulic sewer flooding from 2.2% of properties (643) at risk up to a 1 in 30-year storm in 2025 to 2.8% of properties (809) at risk by 2050 • Increased hydraulic sewer flooding - from 4.3% to 6.2% of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 4.3% of properties (1224) at risk up to a 1 in 50-year storm in 2025 to 6.2% of properties (1770) at risk by 2050
Which of our solutions are best suited?	• Large-scale surface water management • Sewer lining to target infiltration hotspots • Network improvements



Timescale	2025 – Short term	2030 – Medium Term	2035 – Long Term
What targets are we seeking?	To: • Reduce property hydraulic sewer flooding to 1.5% (internal) and 3% (external) for rainfall up to a 1 in 30-year storm event in any given year • Reduce storm discharges (where overflows are present) to <10 in an average year by 2050		
How will we achieve the targets?	We will: • 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 by installing larger sewers to increase network capacity	We will: • 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: • Reduce the risk of hydraulic sewer flooding by removing surface water from our foul sewer systems through the implementation of large-scale surface water management strategies • Improve the resilience of our sewers at greatest risk of groundwater inflows by undertaking sewer lining work

Risk Zone 3 – Harrow Lodge

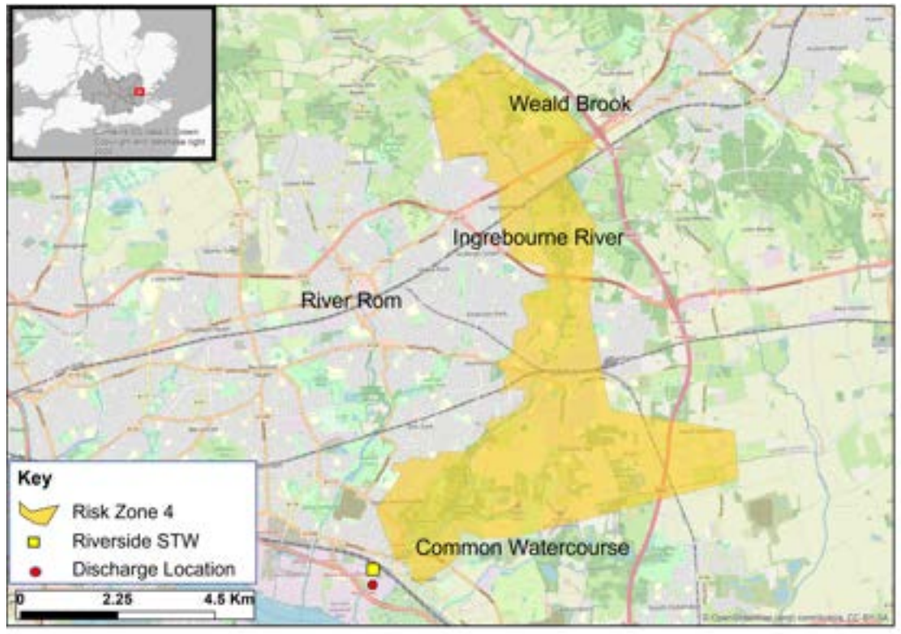
What are the challenges?	• Increased internal hydraulic sewer flooding - from 2.5% to 3.7% of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 2.5% of properties (693) at risk up to a 1 in 30-year storm in 2025 to 3.7% of properties (1023) at risk by 2050 • Increased external hydraulic sewer flooding - from 4.8% to 6.4% of properties: Calculated as increased modelled risk of external hydraulic sewer flooding from 4.8% of properties (1328) at risk up to a 1 in 30-year storm in 2025 to 6.4% of properties (1749) at risk by 2050 • Increased hydraulic sewer flooding - from 9.1% to 12.4% of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 9.1% of properties (2490) at risk up to a 1 in 50-year storm in 2025 to 12.4% of properties (3400) at risk by 2050
Which of our solutions are best suited?	• Surface water management and large-scale surface water management • Sewer lining to target infiltration hotspots • Network improvements



Timescale	2025 – Short term	2030 – Medium Term	2035 – Long Term
What targets are we seeking?	To: • Reduce property hydraulic sewer flooding to 1.5% (internal) and 3% (external) for rainfall up to a 1 in 30-year storm event in any given year • Reduce storm discharges (where overflows are present) to <10 in an average year by 2050		
How will we achieve the targets?	We will: • 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 by installing larger sewers to increase network capacity	We will: • 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: • Reduce the risk of hydraulic sewer flooding by removing surface water from our foul sewer systems through the implementation of surface water management solutions and large-scale surface water management strategies • Improve the resilience of our sewers at greatest risk of groundwater inflows by undertaking sewer lining work

Risk Zone 4 – Ingrebourne

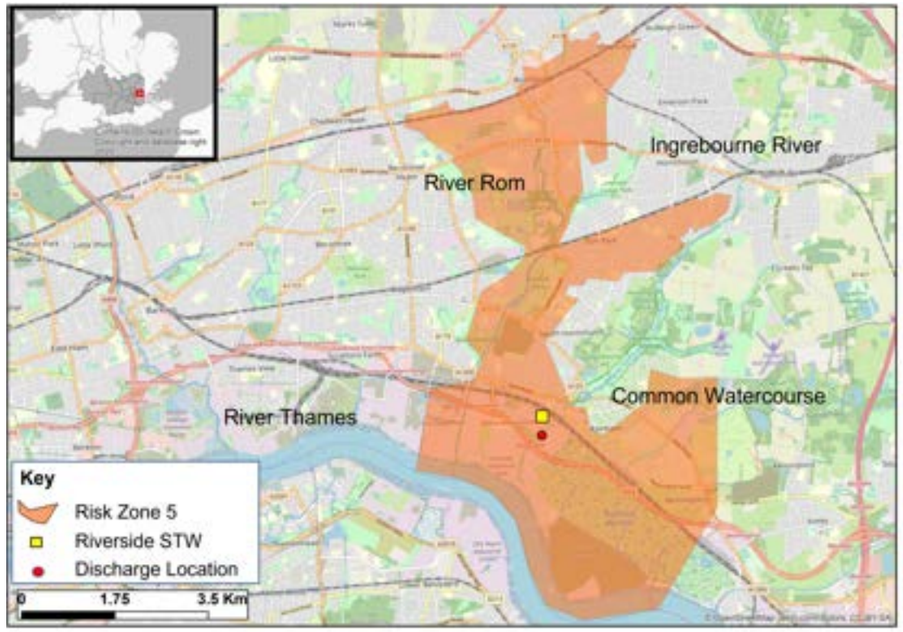
What are the challenges?	• Increased internal hydraulic sewer flooding - from 1.2% to 1.9% of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 1.2% of properties (380) at risk up to a 1 in 30-year storm in 2025 to 1.9% of properties (620) at risk by 2050 • Increased external hydraulic sewer flooding - from 1.9% to 3.3% of properties: Calculated as increased modelled risk of external hydraulic sewer flooding from 1.9% of properties (623) at risk up to a 1 in 30-year storm in 2025 to 3.3% of properties (1054) at risk by 2050 • Increased hydraulic sewer flooding - from 4.4% to 6.7% of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 4.4% of properties (1393) at risk up to a 1 in 50-year storm in 2025 to 6.7% of properties (2153) at risk by 2050
Which of our solutions are best suited?	• Large-scale surface water management • Sewer lining to target infiltration hotspots



Timescale	2025 ← Short term → 2030	2030 ← Medium Term → 2035	2035 ← Long Term → 2050
What targets are we seeking?	To: • Reduce property hydraulic sewer flooding to 1.5% (internal) and 3% (external) for rainfall up to a 1 in 30-year storm event in any given year • Reduce storm discharges (where overflows are present) to <10 in an average year by 2050		
How will we achieve the targets?	We will: • 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	We will: • Further develop our catchment-level planning and implement large-scale surface water management strategies 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: • Continue to reduce the risk of hydraulic sewer flooding by removing surface water from our foul sewer systems through the implementation of large-scale surface water management strategies • Improve the resilience of our sewers at greatest risk of groundwater inflows by undertaking sewer lining works

Risk Zone 5 – Lower Rom

What are the challenges?	• Increased internal hydraulic sewer flooding - from 0.5 % to 1.1 % of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.5 % of properties (178) at risk up to a 1 in 30-year storm in 2025 to 1.1 % of properties (426) at risk by 2050 • Increased external hydraulic sewer flooding - from 1.7 % to 2.9 % of properties: Calculated as increased modelled risk of external hydraulic sewer flooding from 1.7 % of properties (664) at risk up to a 1 in 30-year storm in 2025 to 2.9 % of properties (1105) at risk by 2050 • Increased hydraulic sewer flooding - from 3.3 % to 5.0 % of properties: Calculated as increased modelled risk of internal hydraulic sewer flooding from 3.3 % of properties (1257) at risk up to a 1 in 50-year storm in 2025 to 5.0 % of properties (1942) at risk by 2050 • The only overflow in this area, at the STW, discharged 102 times in 2021
Which of our solutions are best suited?	• Large-scale surface water management • Network improvements • Additional storage at our sewage treatment works • Invest in our sewerage treatment works to achieve 100 % compliance



Timescale	2025 – Short term	2030 – Medium Term	2035 – Long Term	2050
What targets are we seeking?	To: • Reduce property hydraulic sewer flooding to 1.5 % (internal) and 3 % (external) for rainfall up to a 1 in 30-year storm event in any given year • 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: • 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 by installing larger sewers to increase network capacity	We will: • Further develop our catchment-level planning and implement large-scale surface water management strategies 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 • Invest in our sewage treatment works to ensure compliance	We will: • Continue to provide sewer network improvements by installing larger sewers to increase network capacity • Provide additional storage at our sewage treatment works	

Risk zone summary table

	2025 modelled baseline (no.& % of properties)					2050 Performance without DWMP (no.& % of properties)					2050 Performance with DWMP (no.& % of properties)				Preferred solutions			
Risk Zone	**Internal flooding (2025)**	**External flooding (2025)**	**Resilience flooding (2025)**	**Number of monitored storm overflows (2021)**	**Recorded (EDM) storm overflow discharges in 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 (£)**
Riverside STW	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	CP	CP, STW		Low
Riverside RZ1	330 (0.6%)	1172 (2.3%)	2657 (5.2%)	No data	No data	686 (1.3%)	2670 (5.2%)	4632 (9%)	1	11	448 (0.9%)	1383 (2.7%)	3067 (6%)	<=10	CP, NI	CP	DT, LSSWM, SL	High
Riverside RZ2	404 (1.4%)	643 (2.2%)	1224 (4.3%)	N/A	N/A	570 (2%)	809 (2.8%)	1770 (6.2%)	N/A	N/A	298 (1%)	418 (1.5%)	1142 (4%)	N/A	CP, NI	CP	LSSWM, SL	Medium
Riverside RZ3	693 (2.5%)	1328 (4.8%)	2490 (9.1%)	N/A	N/A	1023 (3.7%)	1749 (6.4%)	3400 (12.4%)	N/A	N/A	447 (1.6%)	1488 (5.4%)	2590 (9.4%)	N/A	CP, NI	CP	LSSWM, SL, SWM	Medium
Riverside RZ4	380 (1.2%)	623 (1.9%)	1393 (4.4%)	N/A	N/A	620 (1.9%)	1054 (3.3%)	2153 (6.7%)	N/A	N/A	387 (1.2%)	478 (1.5%)	1434 (4.5%)	N/A	CP	CP, LSSWM	LSSWM, SL	Medium
Riverside RZ5	178 (0.5%)	664 (1.7%)	1257 (3.3%)	1	102	426 (1.1%)	1105 (2.9%)	1942 (5%)	1	366	296 (0.8%)	898 (2.3%)	1568 (4.1%)	<=10	CP, NI	CP, LSSWM, STW	NI, STR	High

Note: We will achieve our London-wide flood reduction targets. However, there are a number of risk zones where this is not possible that are offset by other zones where the risks are reduced below the target.

CP = Catchment-level planning including mapping and modelling

SWM = Surface water management

LSSWM = Large-scale surface water management

NI = Network improvements

DT = Deep tanks and tunnels

STW = Treatment process technologies and protection from high river levels

SL = Sewer lining

STR = Additional storage at sewage treatment works

Navigation index

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																		■	

Find all the documents in our DWMP suite on our website.

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.