

Catchment Strategic Plan

Part of our Drainage and Wastewater Management Plan (DWMP)



Co-creating resilient wastewater catchments

A long-term Strategic Plan for **Essex and Thurrock**

Contents

Preface	3
Catchment strategic plan glossary	6
Introduction	7
Our co-creators	9
Partners' policies	10
Issues today	12
Our predictions for the future	13
Sustainable solutions	14
Partnership working – case studies	15
Our shared plan	16
Developing our preferred plan for Essex and Thurrock	17
Our preferred plan for Essex and Thurrock	18
Our preferred 25 year plan for Essex and Thurrock	19
Next steps	20
Our shared plan at catchment level	21
L3 STW catchment summary table	26
Navigation index	28
Work with us	29

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.

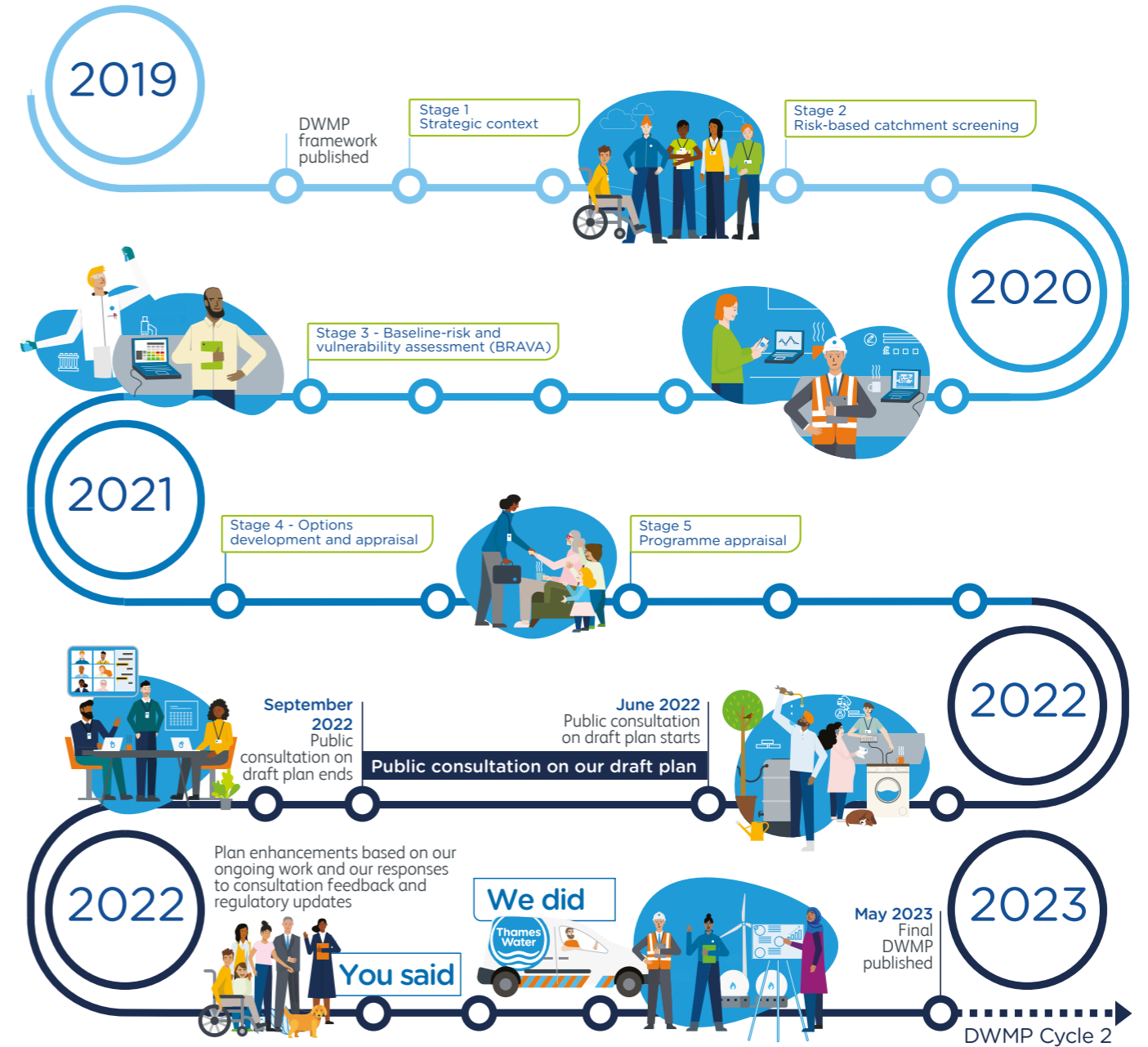
Our plan aligns with wider industry strategic plans and delivery programmes, such as the Water Industry National Environment Programme (WINEP) and the Long-Term Delivery Strategy (LTDS), and we'll make sure it continues to do so as we tackle current pressures and future challenges.

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

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

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

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.

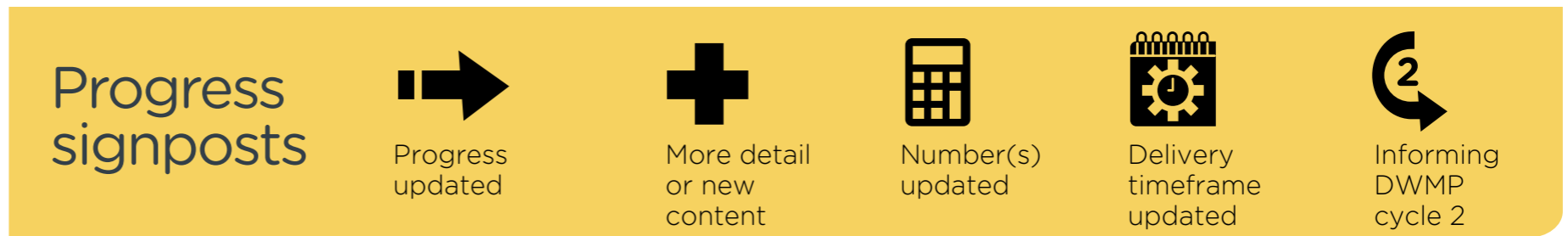
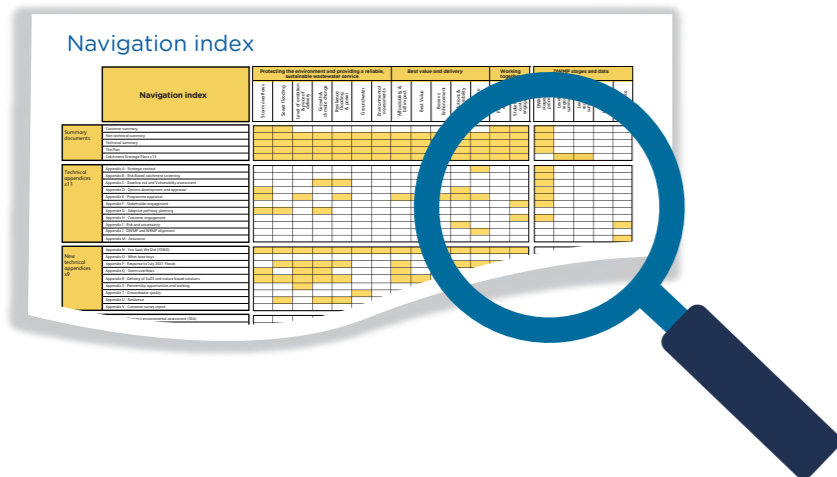
Preface

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.

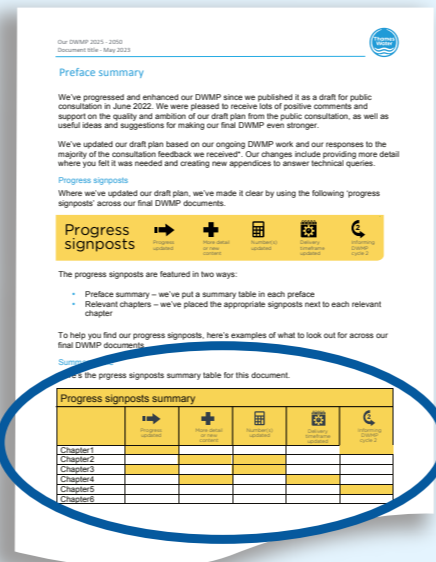
You can spot all the places we've updated our draft plan with our 'progress signposts', which we've used across all our final DWMP documents. Here's where they'll be:

- 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 CSPs



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 Essex and Thurrock 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 18 wastewater catchments 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 also provide links to allow readers to drill down further into 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 click on the following links:

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 storm 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

Our DWMP

The Plan




DWMP portal

Strategic Context

Technical Summary

Technical Appendices

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 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 sewer flooding risk in a 1 in 30-year storm The risk of properties flooding internally as a result of hydraulic sewer overload.	External 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 Essex and Thurrock TRFCC area

This area encompasses the middle part of the River Lee and its tributaries, including the River Stort and its tributaries, such as Princey Brook and Stansted Brook. River Lea sets the boundary between Essex and Hertfordshire TRFCC areas to the west. To the south, the TRFCC area follows the border with London and Epping Forest. The key conurbations in the region include Harlow, Walthamstead Abbey and Loughton.

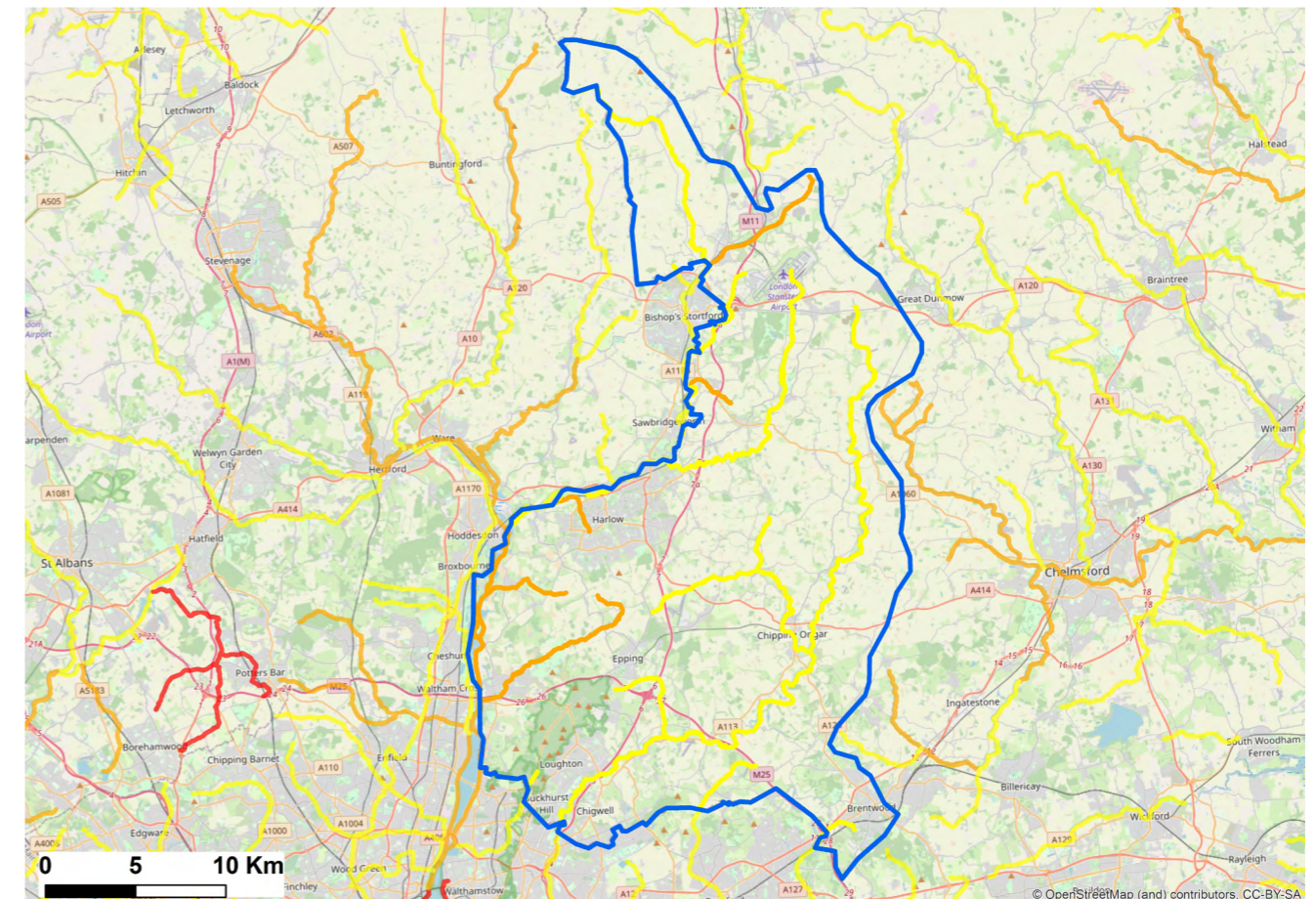
Stansted Airport is located at the north of the TRFCC area and east of the town of Bishops Cleeve. Although Bishops Cleeve geographically belongs to the Hertfordshire TRFCC area, it was deemed appropriate to include the town in this document due to its complex network connections with Stansted Airport and Takeley. A significant amount of growth is being proposed in the key towns in the region, such as Harlow and Bishops Cleeve. Also included in this area are Sites of Special Scientific Interest (SSSIs) at Roding Valley Meadows and Hundson Mead.

Every day, our sewerage network in this TRFCC area manages the needs of 124,000 customers. Our sewerage network consists of:

- 18 STWs and their associated networks
- An area covering 628 km²
- 2,658 km of sewers
- 174 pumping stations

The region mostly has separate sewer systems that convey wastewater and surface water from homes and businesses. Rainfall runoff is often collected by surface water sewers, highway drainage, or privately owned assets and discharged directly to nearby watercourses.

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



 L2 TRFCC Strategic Planning Area
Environment Agency WFD River Water Quality Status 2019
 High
 Good
 Moderate
 Poor
 Bad



Our co-creators

Who our stakeholders are

It's not possible for DWMPs to be developed by water companies alone. They're led by water companies but developed collaboratively with other organisations and groups that 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.

Environment Agency, Essex County Council, Thurrock Council, Roding, Beam and Ingrebourne Catchment Partnership (CP), Lea CP, Lower Lea CP, Defra, Ofwat, Natural England, Consumer Council for Water, Thames Water Customer Challenge Group (CCG), Thames21, Rivers Trust, Thames Rivers Trust and South East Rivers Trust.

Since 2019, we've been working with a wide variety of stakeholders from across this area 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 area we've engaged and worked with stakeholders from the following organisations and groups:



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 our stakeholders want our strategic plan to deliver 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 that records all of the plans and policies and how they align with the DWMP.

“ From what I have seen the plan does look really good with some of the adjustments highlighted today. ”

“ Seems to be a duplication of effort on modelling. Essex County Council (ECC) happy to share info. Thames Water network data contributed to Surface Water Management Plans. ECC have pluvial and network modelling integrated. Plan could be improved by utilising this information. ”



Partners' policies

Management Plan	Key aspects that align with the DWMP
Local Flood Risk Management Strategies	
<u>Essex County Council, Local Flood Risk Management Strategy</u>	<ul style="list-style-type: none"> The ambition of the strategy is to ensure that Essex is a great place to live and work, to enhance the environment, 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.'
Surface Water Management Plans	
<u>Essex County Council, Surface Water Management Plans</u>	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> - surface water drains - groundwater - small watercourses
<u>Harlow Surface Water Management Plan</u>	<ul style="list-style-type: none"> The report outlines the preferred surface water management strategy for Harlow.
<u>Surface Water Management Plan for Brentwood</u>	<ul style="list-style-type: none"> The need to manage local flood risk as a consequence of assessments performed under the Flood Risk Regulations, 2009 and the Flood and Water Management Act, 2010 The need to inform spatial planning and development control, develop a strategy for flood risk management, and provide evidence that future new development can be implemented and local flood risk safely managed
River Catchment Partnership Plans	
<u>Lea Catchment Partnership</u>	<ul style="list-style-type: none"> The vision of the plan is to see all watercourses flow year-round with plentiful, quality water that supports its characteristic flora and fauna.
<u>Lower Lea Catchment Management Plan</u>	<ul style="list-style-type: none"> Improve knowledge and understanding of the catchment Improve awareness of the impact of behaviour on the water environment Increase public engagement and participation Restore an ecologically complex structure to the channels Monitor, control and eradicate non-native species
<u>London Lea Catchment Management Plan</u>	<ul style="list-style-type: none"> Increase surface water management at source Improve knowledge and understanding of the catchment Increase public engagement and participation

Management Plan	Key aspects that align with the DWMP
<u>Roding, Beam & Ingrebourne Catchment Plan</u>	<ul style="list-style-type: none"> 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."
SuDS Design and Evaluation Guide	
<u>The Sustainable Drainage Systems Design Guide for Essex</u>	<ul style="list-style-type: none"> 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	
<u>Essex Green Infrastructure Strategy</u>	<ul style="list-style-type: none"> Protect, create, and improve green infrastructure for biodiversity and people Improve connectivity and inclusivity, by supporting healthier, more active lifestyles Contribute to economic growth
<u>Essex Green Infrastructure Standards</u>	<ul style="list-style-type: none"> Provides support for policy and decision-making in the planning and delivery of multifunctional Green Infrastructure (GI) for placemaking and placekeeping
<u>Epping Forest District Council, Green Infrastructure Strategy</u>	<ul style="list-style-type: none"> Ensure that a coherent and complementary approach is taken to the District's GI provision and a holistic and strategic approach is taken
<u>A Green Infrastructure Plan for the Harlow Area</u>	<ul style="list-style-type: none"> The vision for GI in the Harlow Area is an attractive, distinctive, accessible, diverse and multi-functional network of green spaces and links, landscapes, biodiversity and heritage assets in and around Harlow that seeks to meet the social, economic and environmental needs of all communities.
<u>Anglian Water Drainage and Wastewater Management Plan - particularly in Brentwood</u>	<ul style="list-style-type: none"> This DWMP aligns with the Thames Water DWMP as it is a collaborative long-term strategic plan highlighting the known and expected future risks to drainage and identifying solution strategies to mitigate the risks.
<u>Essex Climate Action Commission, Net Zero: Making Essex Carbon Neutral</u>	<ul style="list-style-type: none"> The goal of this plan is for Essex to become a net zero county by 2050 which aligns with the DWMP.

Management Plan	Key aspects that align with the DWMP
<u>Essex County Council, Adapting to Climate Change Action Plan</u>	<ul style="list-style-type: none"> • Reduce carbon emissions • Protect biodiversity • Reduce flooding • Create and enhance GI, including trees, meadows, marshes, parks and gardens
<u>Uttlesford Climate Crisis Strategy</u>	<ul style="list-style-type: none"> • Resources • Energy use • Planning and development • Council assets and operations • Natural environment • Adapting to climate change
<u>Epping Forest District Council Climate Change Action Plan (Draft)</u>	<ul style="list-style-type: none"> • Behaviour change • Natural environment • Climate change adaption



Issues today

The initial [risk-based screening](#) in this TRFCC area, published in December 2019, found that 86% of L3 catchments (98.8% of population served) were vulnerable to the risks of growth and climate change and warranted long-term planning.

Our analysis has identified increased risks of pollution and sewer collapses in this TRFCC area, but sewer collapses in this area are historically very low compared to the wider industry performance. 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 overload as a result of storm flows.

In addition, sewer collapses do not materially affect our performance in relation to hydraulic sewer flooding, pollution and storm discharges. However, we're committed to maintaining and improving our sewers in this TRFCC area to further protect our customers and communities and enhance our existing performance.

'Click here to see the details' blue box on the magnifying glass as in West Berkshire CSP

Therefore, we're focussing on sewer maintenance as a priority within our shared plan for this area. We will tackle the potential risk of hydraulic sewer flooding in accordance to our goals through a medium to long term plan that will afford us time to implement sustainable solutions. This will help us improve the resilience of our systems.

The DWMP process is dynamic 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

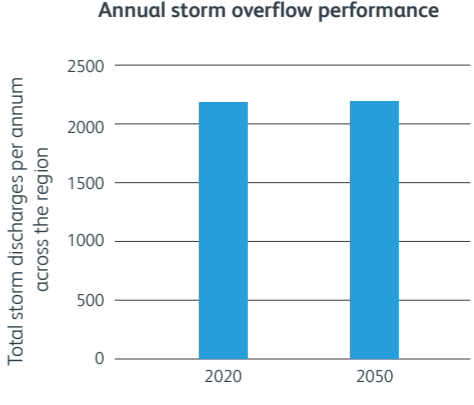
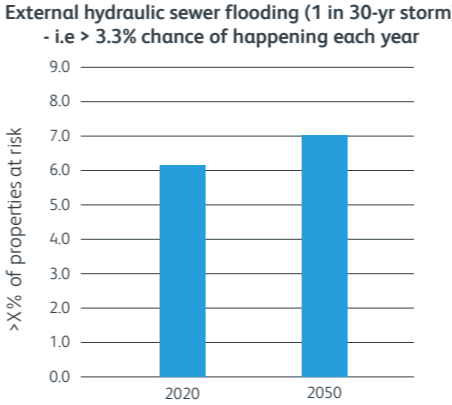
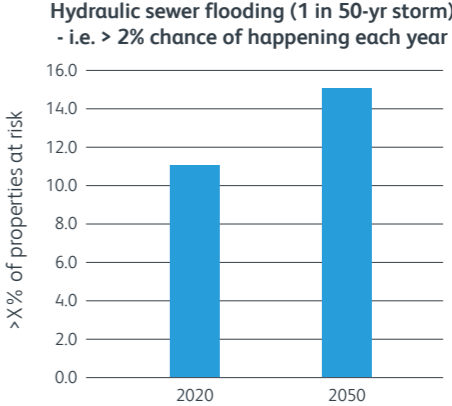
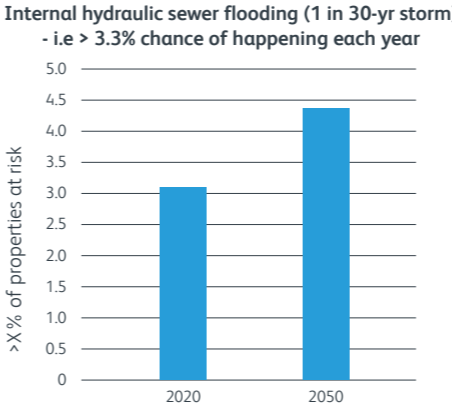
We've modelled those sewerage catchments identified as vulnerable in the RBCS against future challenges, assessed targets and carried out discussions with local stakeholders. We forecasted that the current system capacity will increase the risk of hydraulic sewer flooding and pollution from our sewerage systems in this TRFCC area over the next 25 years. Our forecast performance metrics have been summarised in the accompanying bar charts. By 2050 we forecast that over 14% of the properties across the region will be at risk of hydraulic flooding internally from the sewerage system for up to a 1 in 50-year storm, for example in areas such as Epping and Loughton.

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 74% of L3 catchments having an average storm discharge rate >10 storm discharges per annum per overflow, to rivers including the Upper Lee, Rodding and Beam.

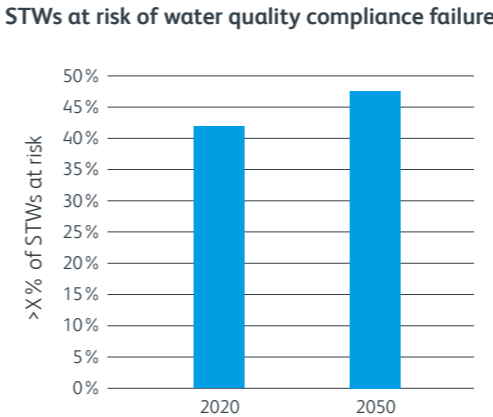
Therefore, there is an evident need for long-term planning and the implementation of the DWMP to protect this TRFCC area and support its future growth. In addition, the permit compliance of our treatment works could be at risk for 9 catchments leading to a detriment in river water quality. If you are a DWMP practitioner, further details can be found on our Practitioner portal.

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

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



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



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.

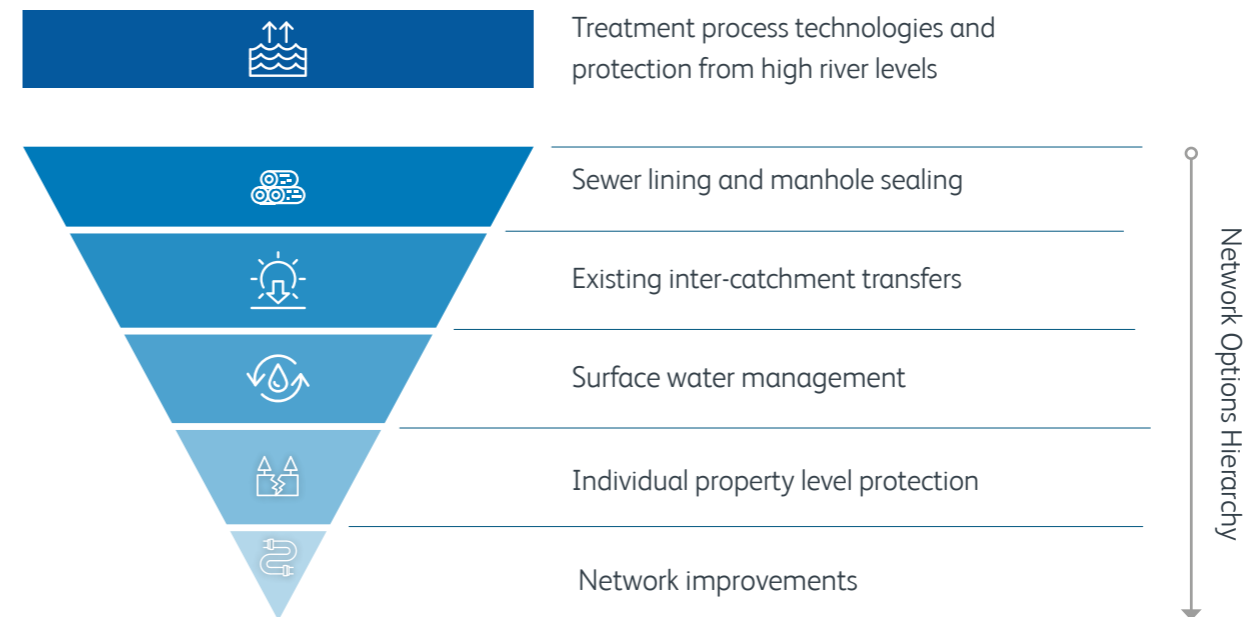
We've used a structured approach that started with over 40 generic solutions, to ensure broad thinking, and identified and assessed the feasibility of a wide range of potential interventions and the extent to which they resolve the area's future needs.

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.

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 considered in optioneering

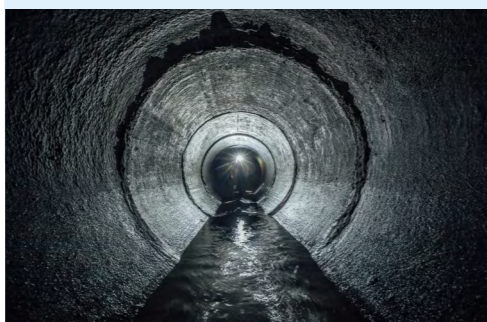
Large-scale surface water management strategies

Delivery of large-scale surface water management strategies in specific areas of development in this area to significantly reduce rainfall entering the separate foul sewer network.



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.



Rain garden installation

Rain gardens are one example of a surface water management feature and they allow rainwater to naturally soak into the ground. Installations will be targeted and include residential properties, schools and other public, commercial and industrial buildings.



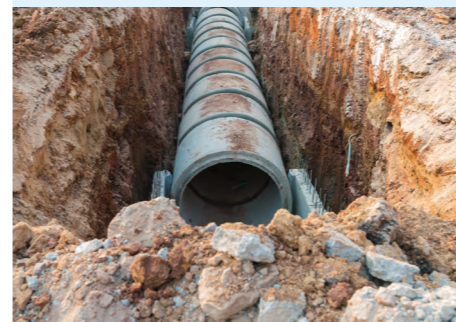
Individual property level protection

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.



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.



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.

Lower Sheering

Essex County Council (ECC) have completed a Surface Water Management Plan study for the Lower Sheering area, to understand the causes of surface water flooding, and identify opportunities to manage surface water flood risk. This has identified an opportunity to implement natural flood management to attenuate surface water to reduce the flood risk to residential properties.

The wider benefits of natural flood management, such as improving water quality, enhancing biodiversity and capturing carbon, are increasingly more recognised and is therefore the preferred approach. The scheme aligns with the Essex Climate Action Commission to utilise nature-based solutions in tandem with more traditional engineering approaches.

Theydon Bois SuDS

This opportunity involves taking a catchment-wide approach within the Theydon Bois Critical Drainage Area, to implement SuDS and Green Infrastructure to reduce surface water flows into the Thames Water sewer network and downstream watercourse. Measures would include retrofitting SuDS and Green Infrastructure on buildings and in the public highway, enhancing amenity value and biodiversity as well as reducing flood risk.

Opportunity	Partners
Lower Sheering	ECC
Theydon Bois SuDS	ECC

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 Essex and Thurrock TRFCC area has been formulated based on a balance of how deliverable and sustainable the proposed interventions are, and how cost-efficiently they can deliver multiple benefits across our stakeholder groups.

The challenges this area 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. 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 Essex and Thurrock TRFCC area will no longer be reliant on storm overflows to manage 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 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.

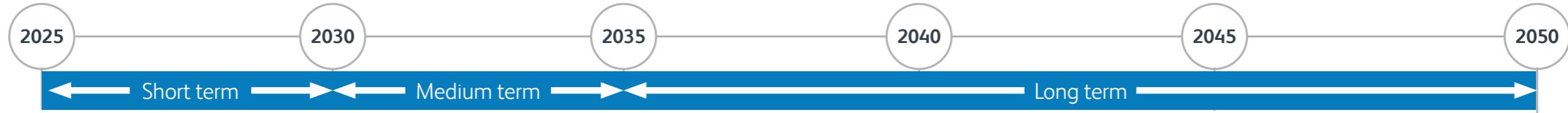
Our approach is to address the systems holistically to provide wide-ranging benefit to

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 systems, championing green infrastructure, where possible.

In the short to medium terms, we will focus on delivering the maximum benefit to our customers by reducing sewage escapes to the environment in our smaller catchments. 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

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

Enhance

- **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

- **Ensure our STWs can manage the increase created by future growth in the area and are 100% compliant**
- **Treatment capacity enhancement at 15 sites**

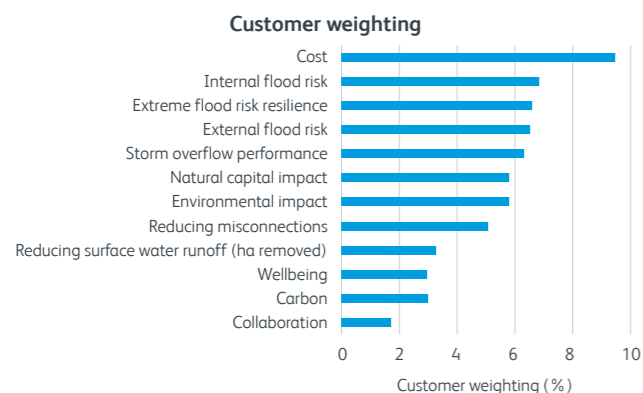
Developing our preferred plan for Essex and Thurrock

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. Provides time to improve our understanding of surface water interactions with our networks and develop innovation in partnership schemes

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.

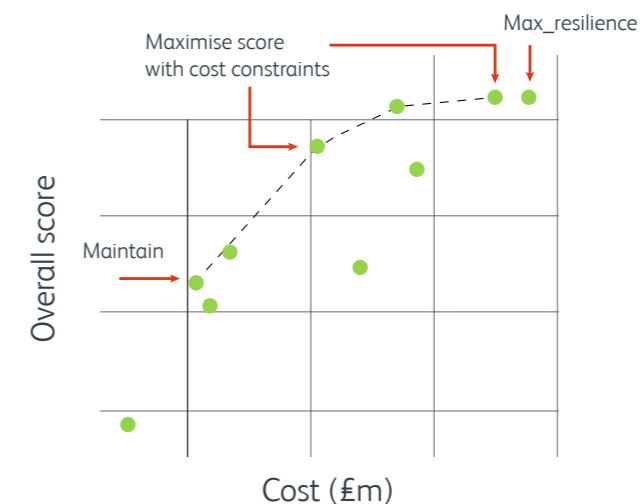
Wellbeing impact
 We used data on environmental factors in the catchment that influence population and human health, including improved access to recreation and the environment, and assessed whether the option would improve or reduce this baseline.

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 scenarios

We used a decision support tool to optimise our plan based on the '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 Essex and Thurrock

We believe we will need to invest £0.4bn in Essex and Thurrock to achieve our long-term ambitious targets by 2050 to mitigate growth and climate change.

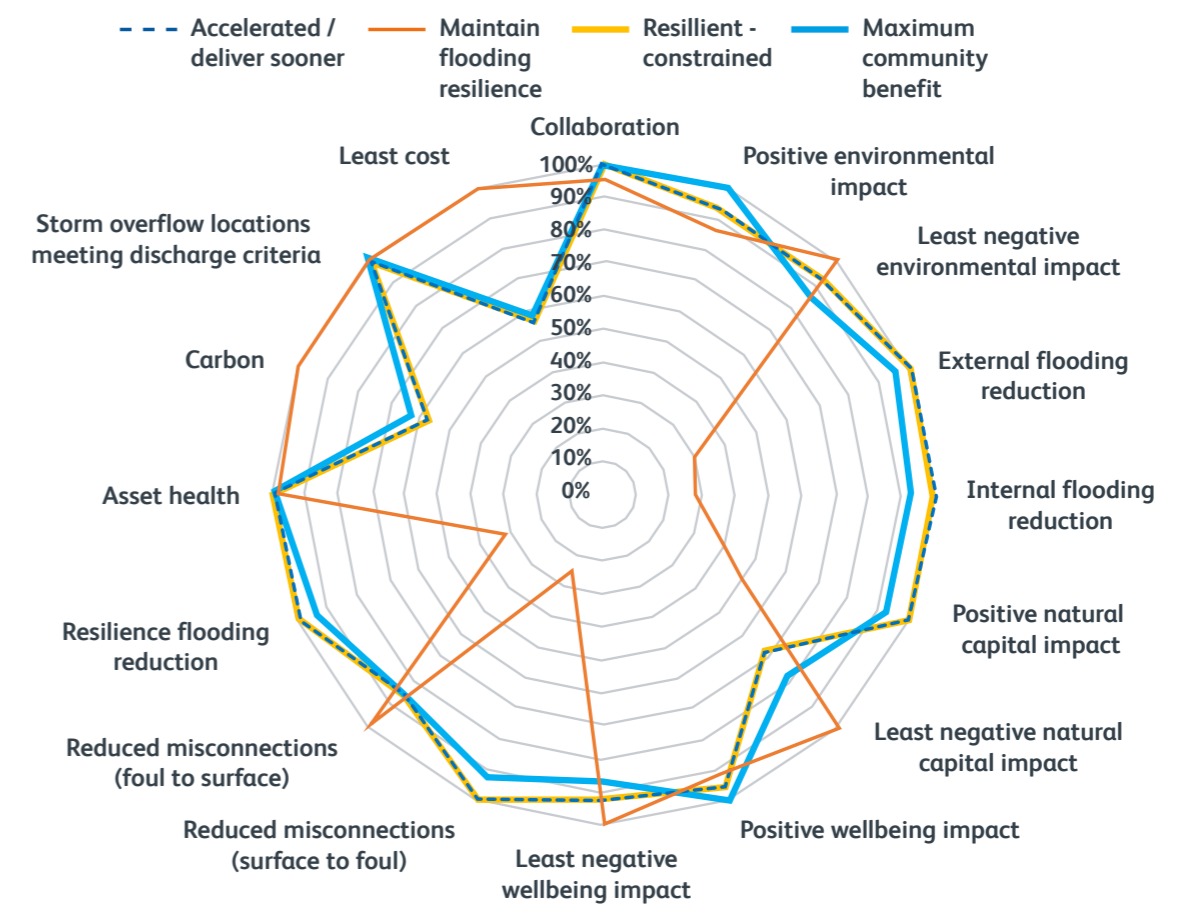
	£bn
Best cost estimate	0.4
Embodied carbon 50,667 tonnes	

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

- £298m 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
- £55m on improvements to surface water management, with a particular focus on removing surface water from impacting on the networks
- £24m upgrading 15 STWs
- £18m on sewer lining
- £3m on individual property level protection

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



Storm overflow performance

Reduce the number of average annual spills by 452. By 2050, none of the 28 storm discharge locations in this catchment will overflow more than ten times per annum on average



Property flooding

Protect 130 properties from internal sewer flooding up to a 1 in 30-year storm event
 Protect 242 properties from external sewer flooding up to a 1 in 30-year storm event
 Protect 475 properties from sewer flooding up to a 1 in 50-year storm event

If we don't invest, over 0.8% 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 15 sites

Upgrade 15 STWs by 2050



Asset Improvements

Reline 17 km of sewers



Reduce misconnections / Reduce surface water runoff

19 ha (equivalent to 1,300 properties) disconnected from our sewers, reconnected to a surface water sewer with attenuation or to a soakaway



Carbon

50,667 tonnes of carbon embodied in delivering the plan, with 9 tonnes of carbon sequestered in delivering the plan

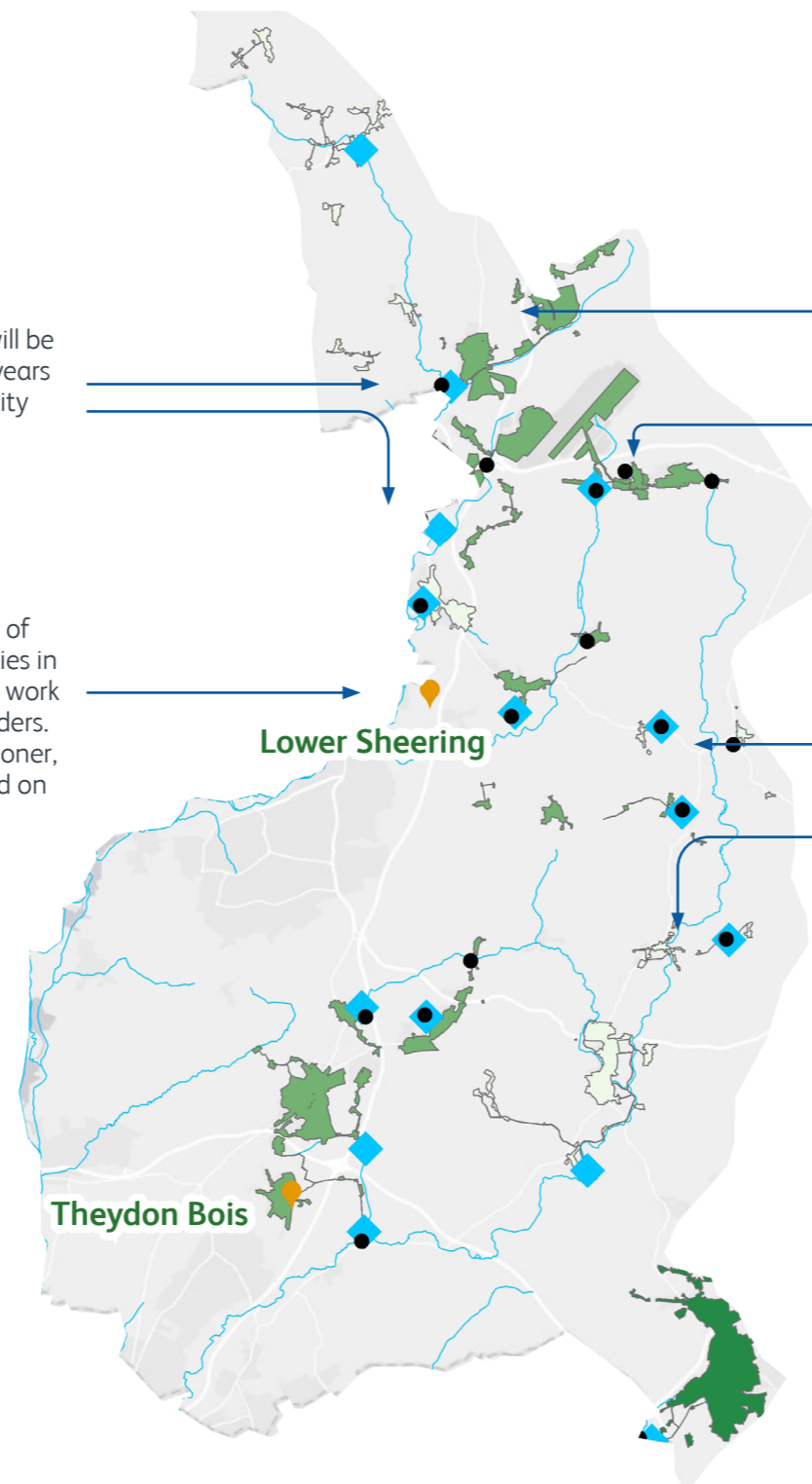
Our preferred 25 year plan for Essex and Thurrock

Upgrades to these STWs will be required over the next 25 years to ensure treatment capacity keeps pace with growth.

We've mapped a selection of the partnership opportunities in this region where we could work together with our stakeholders. If you are a DWMP practitioner, further details can be found on our [Practitioner portal](#).

This map illustrates the range of investment required for each of the L3 catchments across the region. Typically, the highest investment is shown in the catchments which serve urban areas to eradicate properties at risk in a 1 in 50-year storm.

These are the storm overflows which have been modelled and targeted to ensure they have no adverse impact on the receiving watercourse by limiting the average number of storm discharges to <10 times per year.

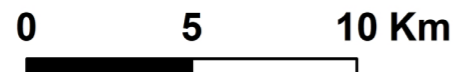


Legend

- Partnership Opportunities
- STW Upgrades
- Storm Overflows
- Rivers

Capital Investment £m

- 0 - 10
- 11 - 100
- 100 +



Esri UK, Esri, HERE, Garmin, METI/NASA, USGS

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.

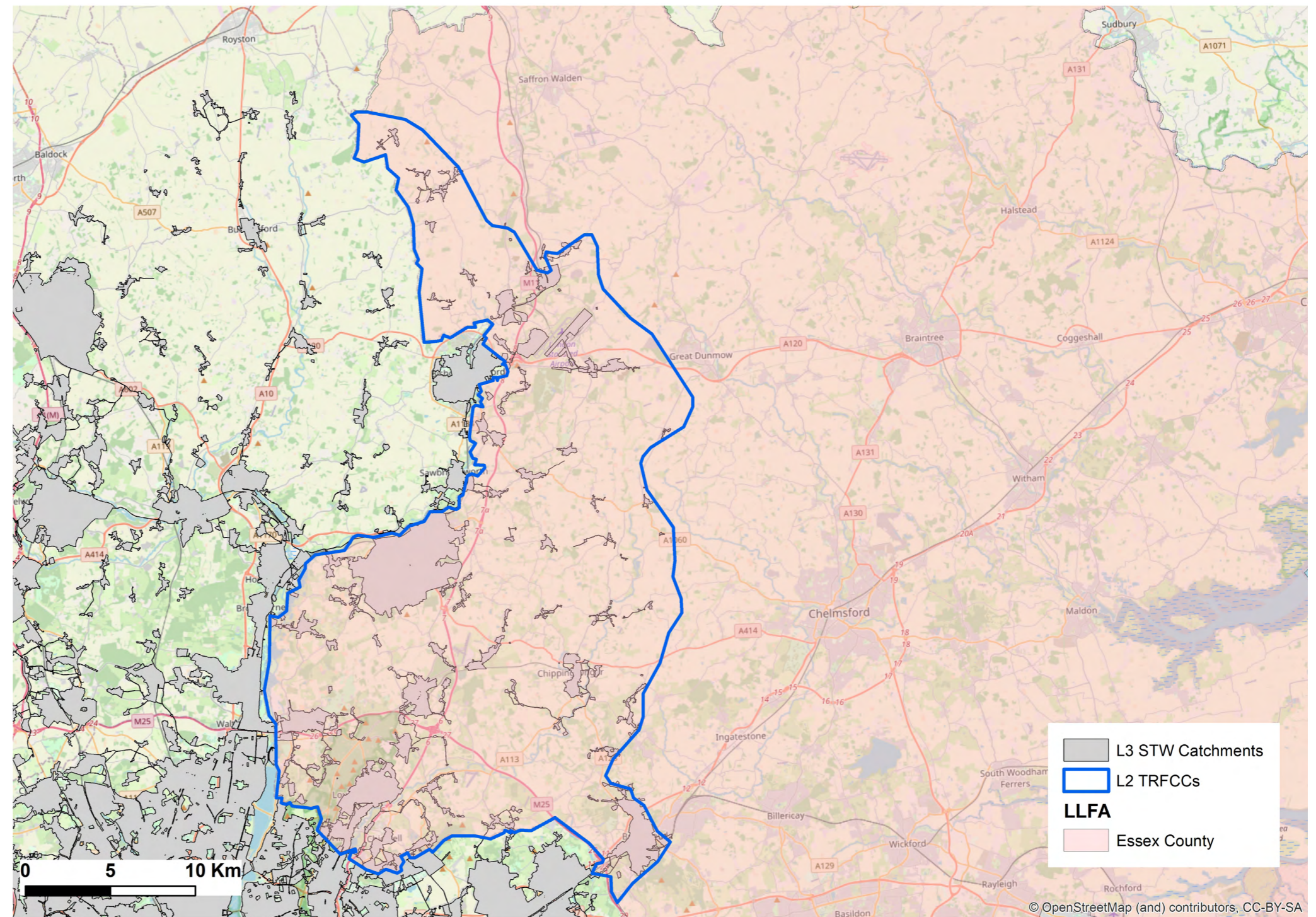
Funding and delivery

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.

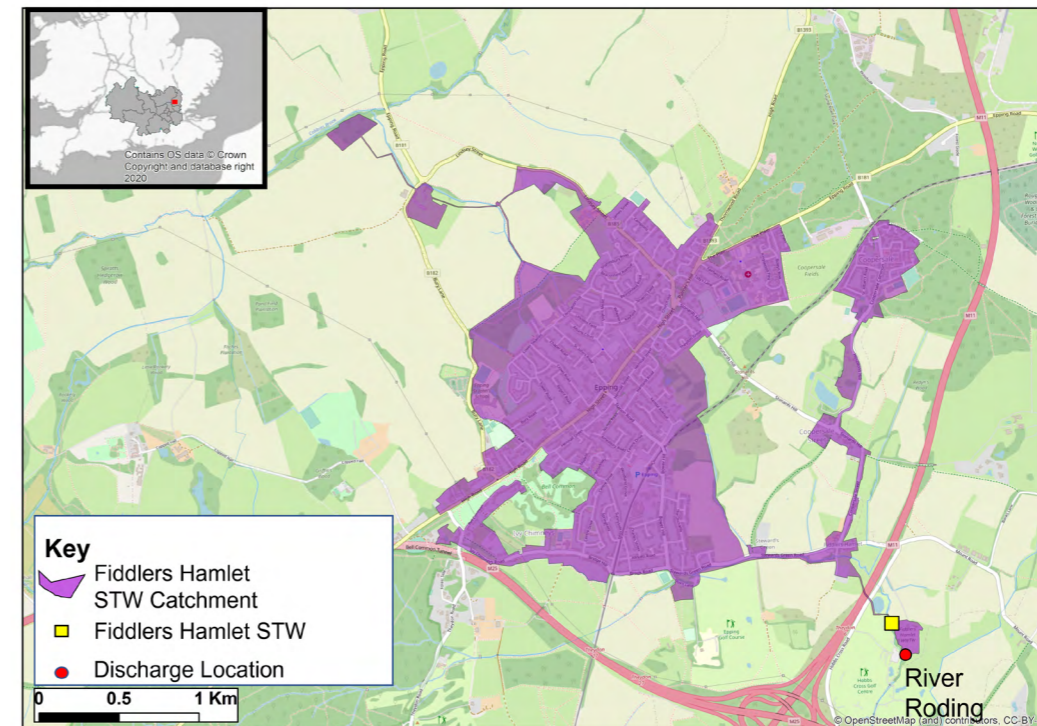
Our shared plan at catchment level

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.



Fiddlers Hamlet STW Catchment

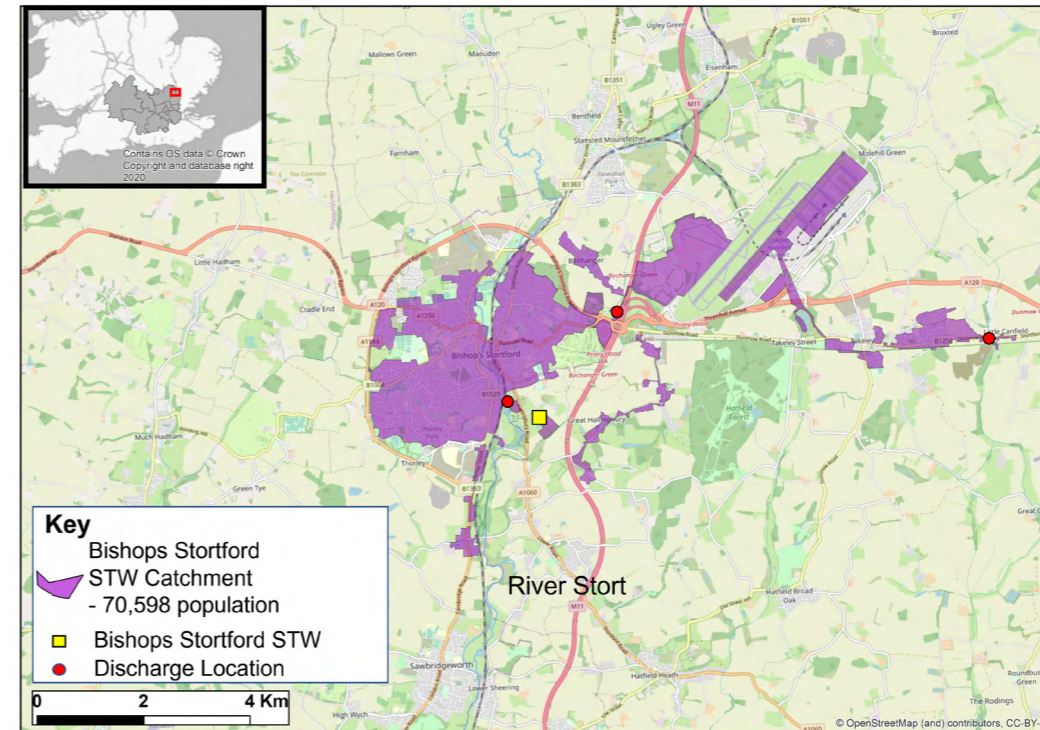
What are the challenges?	<ul style="list-style-type: none"> Increased internal hydraulic sewer flooding - from 0.2% to 0.3% of properties Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.2% of properties (12) at risk up to a 1 in 30-year storm in 2025 to 0.3% of properties (19) at risk by 2050 Increased external hydraulic sewer flooding - from 0.3% to 0.5% of properties Calculated as increased modelled risk of external hydraulic sewer flooding from 0.3% of properties (20) at risk up to a 1 in 30-year storm in 2025 to 0.5% of properties (29) at risk by 2050 Increased hydraulic sewer flooding - from 0.7% to 0.9% of properties Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.7% of properties (42) at risk up to a 1 in 50-year storm in 2025 to 0.9% of properties (56) at risk by 2050 The only overflow in this area, at the STW, discharged 55 times in 2021
Which of our solutions are best suited?	<ul style="list-style-type: none"> Surface water management Property level protection measures to prevent individual buildings from hydraulic sewer flooding Network improvements Invest in our sewage treatment works to achieve 100% compliance



Timescale	2025	2030	2035	2050
What targets are we seeking?	<div style="display: flex; justify-content: space-around;"> ← Short term → ← Medium Term → ← Long Term → </div>			
How will we achieve the targets?	<p>To:</p> <ul style="list-style-type: none"> Reduce the numbers 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 		<p>We will:</p> <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 Invest in our sewage treatment works to ensure compliance 	
	<p>We will:</p> <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 		<p>We will:</p> <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 	

Bishops Stortford STW Catchment

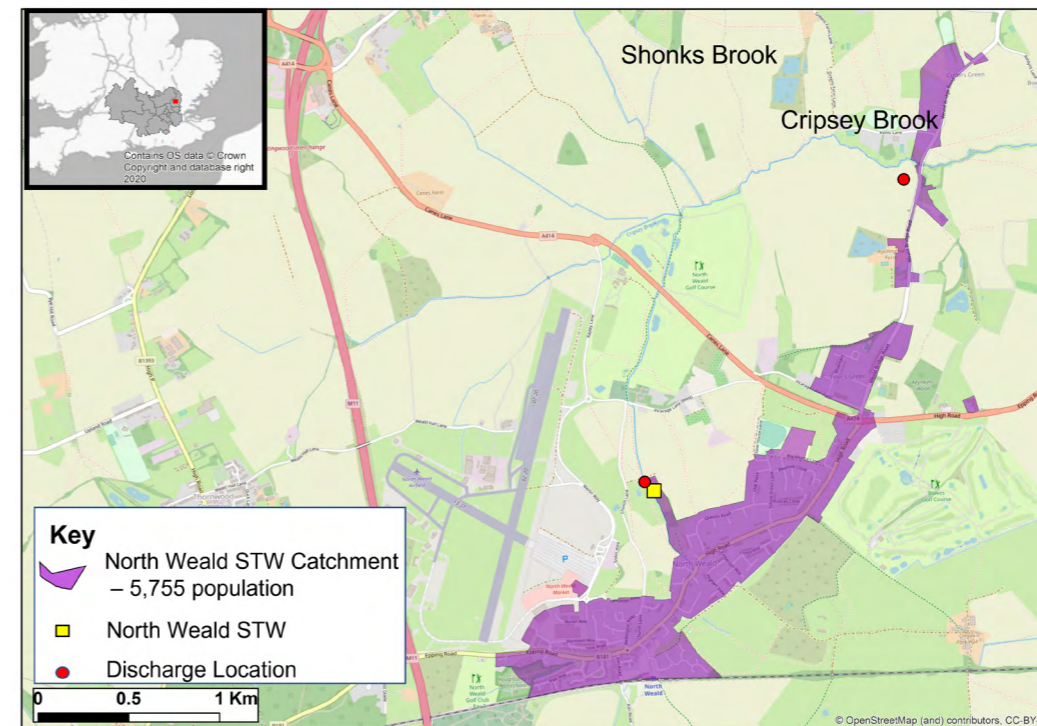
What are the challenges?	<ul style="list-style-type: none"> Increased internal hydraulic sewer flooding - from 0.1% to 0.2% of properties Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.1% of properties (29) at risk up to a 1 in 30-year storm in 2025 to 0.2% of properties (37) at risk by 2050 Increased external hydraulic sewer flooding - from 0.1% to 0.2% of properties Calculated as increased modelled risk of external hydraulic sewer flooding from 0.1% of properties (26) at risk up to a 1 in 30-year storm in 2025 to 0.2% of properties (38) at risk by 2050 Increased hydraulic sewer flooding - from 0.4% to 0.6% of properties Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.4% of properties (80) at risk up to a 1 in 50-year storm in 2025 to 0.6% of properties (112) at risk by 2050 The three overflows in this area discharged 14 times in 2021
Which of our solutions are best suited?	<ul style="list-style-type: none"> Surface water management Network improvements Invest in our sewage treatment works to achieve 100% compliance



Timescale	2025	2030	2035	2050
	← Short term →		← Medium Term →	
What targets are we seeking?	<p>To:</p> <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 by 2050 Achieve 100% STW permit compliance 			
How will we achieve the targets?	<p>We will:</p> <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 	<p>We will:</p> <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 	<p>We will:</p> <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 	

North Weald STW Catchment

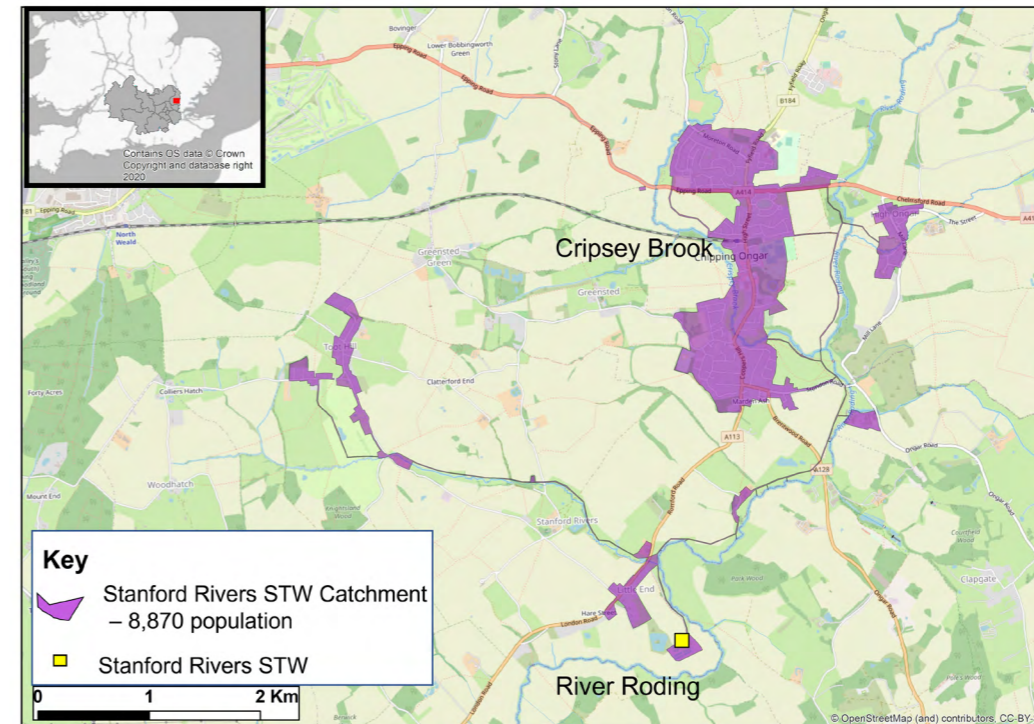
What are the challenges?	<ul style="list-style-type: none"> Increased internal hydraulic sewer flooding - from 0.0% to 0.1% of properties Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.0% of properties (1) at risk up to a 1 in 30-year storm in 2025 to 0.1% of properties (3) at risk by 2050 Increased external hydraulic sewer flooding - from 0.4% to 0.8% of properties Calculated as increased modelled risk of external hydraulic sewer flooding from 0.4% of properties (8) at risk up to a 1 in 30-year storm in 2025 to 0.8% of properties (17) at risk by 2050 Increased hydraulic sewer flooding - from 0.5% to 0.9% of properties Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.5% of properties (10) at risk up to a 1 in 50-year storm in 2025 to 0.9% of properties (20) at risk by 2050 The two overflows in this area discharged 115 times in 2021
Which of our solutions are best suited?	<ul style="list-style-type: none"> Surface water management Network improvements Invest in our sewage treatment works to achieve 100% compliance



Timescale	← Short term →	← Medium Term →	← Long Term →
What targets are we seeking?	<p>To:</p> <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?	<p>We will:</p> <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 	<p>We will:</p> <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 Invest in our sewage treatment works to ensure compliance 	<p>We will:</p> <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

Stanford Rivers STW Catchment

<p>What are the challenges?</p>	<ul style="list-style-type: none"> Increased internal hydraulic sewer flooding - from 0.0% to 0.1% of properties Calculated as increased modelled risk of internal hydraulic sewer flooding from 0.0% of properties (1) at risk up to a 1 in 30-year storm in 2025 to 0.1% of properties (2) at risk by 2050 Increased external hydraulic sewer flooding - from 0.1% to 0.2% of properties Calculated as increased modelled risk of external hydraulic sewer flooding from 0.1% of properties (4) at risk up to a 1 in 30-year storm in 2025 to 0.2% of properties (9) at risk by 2050 Increased 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 (7) at risk up to a 1 in 50-year storm in 2025 to 0.5% of properties (17) at risk by 2050
<p>Which of our solutions are best suited?</p>	<ul style="list-style-type: none"> Surface water management Property level protection measures to prevent individual buildings from hydraulic sewer flooding Network improvements Invest in our sewage treatment works to achieve 100% compliance



Timescale	2025 ← Short term → 2030	2030 ← Medium Term → 2035	2035 ← Long Term → 2050
<p>What targets are we seeking?</p>	<p>To:</p> <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 		
<p>How will we achieve the targets?</p>	<p>We will:</p> <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 	<p>We will:</p> <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 Invest in our sewage treatment works to ensure compliance 	<p>We will:</p> <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 Provide sewer network improvements Continue to invest in our sewage treatment works to ensure compliance

L3 STW catchment summary table

L3 STW Catchments	2025 modelled baseline			Number of monitored storm overflows (2021)	Recorded (EDM) storm overflow discharges (2021)	2025 Performance without DWMP					2025 Performance with DWMP				Preferred solutions			
	(no.& % of properties)					(no.& % of properties)					(no.& % of properties)				2025-2030	2030-2035	2035-2050	Investment Band (£)
	Internal flooding (2025)	External flooding (2025)	Resilience flooding (2025)			Internal flooding (2050)	External flooding (2050)	Resilience flooding (2050)	Number of monitored 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				
ABBESS RODING	N/A	N/A	N/A	1	92	N/A	N/A	N/A	3	50	N/A	N/A	N/A	<=10	CP, SL, SWM	CP	NI, STW	Medium
BISHOPS STORTFORD	29 (0.1%)	26 (0.1%)	80 (0.4%)	3	14	37 (0.2%)	38 (0.2%)	112 (0.6%)	5	164	0	0	0	<=10	CP, NI	CP, NI, STW	NI, STW, SWM	Medium
CLAVERING	1 (0.1%)	0 (0%)	1 (0.1%)	N/A	N/A	1 (0.1%)	0 (0%)	1 (0.1%)	N/A	N/A	0	0	0	N/A	CP	CP	NI, STW, SWM	Low
FIDDLERS HAMLET	12 (0.2%)	20 (0.3%)	42 (0.7%)	1	55	19 (0.3%)	29 (0.5%)	56 (0.9%)	1	20	0	0	0	<=10	CP	CP, STW	IPP, NI, SWM	Medium
HATFIELD HEATH	0 (0%)	0 (0%)	0 (0%)	2	153	0 (0%)	1 (0.1%)	1 (0.1%)	3	52	0	0	0	<=10	CP, SL, SWM	CP	NI, STW	Medium
LEADEN RODING	N/A	N/A	N/A	1	0	N/A	N/A	N/A	1	0	N/A	N/A	N/A	<=10	CP	CP	NI	Low
LITTLE HALLINGBURY	N/A	N/A	N/A	1	59	N/A	N/A	N/A	1	10	N/A	N/A	N/A	<=10	CP, NI, SL, SWM	CP, STW	NI, STW	Low
MANUDEN	0 (0%)	2 (0.6%)	2 (0.6%)	N/A	N/A	0 (0%)	2 (0.6%)	2 (0.6%)	N/A	N/A	0	0	0	N/A	CP	CP, IPP		Low
NAGS HEAD LANE	41 (0.3%)	95 (0.6%)	155 (1%)	1	60	50 (0.3%)	117 (0.8%)	205 (1.3%)	2	45	0	0	0	<=10	CP	CP, NI, STW	IPP, NI, SWM	High
NORTH WEALD	1 (0%)	8 (0.4%)	10 (0.5%)	2	115	3 (0.1%)	17 (0.8%)	20 (0.9%)	2	28	0	0	0	<=10	CP, NI	CP, STW	NI, SWM	Medium
STANFORD RIVERS	1 (0%)	4 (0.1%)	7 (0.2%)	N/A	N/A	2 (0.1%)	9 (0.2%)	17 (0.5%)	N/A	N/A	0	0	0	N/A	CP	CP, STW	IPP, NI, STW, SWM	Low
STANSTED MOUNTFITCHET	8 (0.2%)	8 (0.2%)	21 (0.4%)	1	30	9 (0.2%)	10 (0.2%)	32 (0.6%)	2	31	0	0	0	<=10	CP, STW	CP	NI, SWM	Medium
TAKELEY	4 (0.5%)	7 (0.9%)	15 (1.9%)	2	94	5 (0.6%)	9 (1.2%)	21 (2.7%)	3	120	0	0	0	<=10	CP, NI, SL, SWM	CP	NI, STW	Medium

L3 STW Catchments	2025 modelled baseline			Number of monitored storm overflows (2021)	Recorded (EDM) storm overflow discharges (2021)	2050 Performance without DWMP					2050 Performance with DWMP				Preferred solutions			
	(no.& % of properties)					(no.& % of properties)			(no.& % of properties)		(no.& % of properties)		2025-2030	2030-2035	2035-2050	Investment Band (£)		
	Internal flooding (2025)	External flooding (2025)	Resilience flooding (2025)			Internal flooding (2050)	External flooding (2050)	Resilience flooding (2050)	Number of monitored 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				
THEYDON BOIS	1 (0.1%)	6 (0.3%)	10 (0.6%)	1	97	3 (0.2%)	6 (0.3%)	13 (0.7%)	1	49	0	0	0	<=10	CP, NI, SL, SWM	CP	IPP, NI, STW	Medium
THORNWOOD	1 (0.3%)	2 (0.4%)	2 (0.4%)	1	52	1 (0.2%)	3 (0.6%)	3 (0.6%)	2	69	0	0	0	<=10	CP, NI, SL, SWM	CP	IPP, NI, STW	Medium
WHITE RODING	N/A	N/A	N/A	1	0	N/A	N/A	N/A	1	44	N/A	N/A	N/A	<=10	CP	CP, STW	NI	Low
WILLINGALE	1 (0.3%)	4 (1.1%)	5 (1.4%)	1	62	1 (0.3%)	4 (1.1%)	5 (1.4%)	1	4	0	0	0	<=10	CP, NI, SL, SWM	CP, STW		Low

CP = Catchment-level planning including 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

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																			



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](#).