

Our Drainage and Wastewater Management Plan

May 2023



DWMP 2025-2050

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1. Foreword

I'm pleased to be able to share our final Drainage and Wastewater Management plan (DWMP) with you following robust stakeholder consultation and refinement this past year. This important document sets out our plans to manage and recycle water in our region over the next 25 years. In it, we address the triple challenge we face from our rapidly changing climate, a fast-growing population, and the need to protect our region's precious chalk streams and rivers. We set out the actions we plan to take and the investments we plan to make across every catchment in our region, to ensure our infrastructure is fit for the future - and we highlight how we've assessed risk and carefully balanced the needs of our customers and the environment. Importantly, we'll adapt our plans as we go, recognising that situations change, and we must be ready to address a range of future scenarios.

Our services touch the lives of almost seven million people across the East of England, and we take our responsibilities to them incredibly seriously. Our commitments to the communities and the environment we serve are woven in to the very fabric of our company constitution, articulated through our Purpose: to bring environmental and social prosperity to the region we serve through our commitment to love every drop.

Building resilience and planning for the long term has been hardwired into our business for many years. We first set our 25-year ambitions back in 2007 when we published our first Strategic Direction Statement. In it, we identified the four ambitions you can see on page 4 - and they remain our priorities today. This plan pursues those four ambitions: We are determined to make our region resilient to the risks of drought and flood, to enable sustainable economic and housing growth, and to achieve significant improvement in ecological quality across our catchments - and to reduce our carbon footprint as we do so.

In order to achieve them, it's crucial we continue to work with others, as we have done throughout the development of this document. We want to see the East of England flourish - but these complex challenges are not ones we can solve alone. That's why we are working across sectors and with national and local authorities to drive the action needed to drive resilience in our networks and across the region. Additionally, we've set out five bold commitments to help drive progress towards healthy rivers

through our Get River Positive commitments, and we are at the heart of a multitude of partnerships within and beyond our region that will see us adopt nature-based solutions to support a thriving environment. This document forms a crucial part of our ongoing conversation with stakeholders to establish the right solutions.

We are hugely grateful to the many stakeholders who have helped to develop this plan over the past three years. Their input has been invaluable as we carefully assessed the right course of action to help us deliver on our promises to communities and the environment, and sought to make this a plan which delivers for everyone, by carefully balancing the needs and obligations of all those who share our determination to see the East of England thrive.

Peter Simpson, Chief Executive, Anglian Water



2. What is the DWMP?

A Drainage and Wastewater Management Plan (DWMP) sets out how wastewater systems, and the drainage networks that impact them, are to be maintained, improved and extended over the next 25 years to ensure they're robust and resilient to future pressures.

Created over the past three years through engagement with key stakeholders, this collaborative document recognises the interdependencies between drainage systems and areas where we can generate efficiencies. It also identifies current and future risks to drainage and water quality and the solutions we need to deliver to address them.

This DWMP covers 2025-2050 and supports the development of our Long Term Delivery Strategy (LTDS) and our Price Review 2024 Business Plan (PR24 BP). An interactive version of the DWMP can be found on our website.



History of the DWMP

The DWMP follows guidelines published in the 2018 framework for production of Drainage and Wastewater Management Plans, commissioned by Water UK in collaboration with Defra, the Welsh government, Ofwat, the Environment Agency, Natural Resources Wales, the Consumer Council for Water, the Association of Directors of Environment Economy Planning and Transport and Blueprint for Water.

In August 2022, Defra alongside Ofwat and the Environment Agency, published Guiding Principles for Drainage and Wastewater Management Plans. We consulted with all organisations responsible for developing the DWMP concept, via an industry-wide steering group.

Long-term strategic planning isn't new to us. This first DWMP evolved from our Water Recycling Long Term Plan, published in 2018, and we'll refresh it in five years, in line with the Environment Act's requirements.

History of the DWMP



3. Introduction

This DWMP outlines how our water recycling service will cope with growth and climate change over the next 25 years, from 2025 to 2050.

In this summary you'll learn more about our drainage and wastewater services, our customers and the area we serve. We'll also explain why we need the DWMP, how we put it together and the timelines we're working to.

Our [Purpose](#) to bring environmental and social prosperity to the region we serve through our commitment to 'love every drop' - ensures we think beyond the water we provide and sewage we treat.

This purpose underpins our long-term strategies to enhance our customers' experience and protect and improve the environment.

All plans and strategies feed into our [Strategic Direction Statement](#) (SDS), which coupled with our [Strategic Context](#), sets out our vision for the future. Our four main ambitions are shown below. And in the development of our Long Term Delivery Strategy (LTDS) we are building upon our SDS to set out our long-term vision for for the next 25 years, including what we intend to deliver in terms of key performance outcomes.

-  Make the East of England resilient to the risks of drought and flooding
-  Enable sustainable economic and housing growth on the UK's fastest growing region
-  Be a carbon-neutral business by 2030
-  Working with others to achieve significant improvement in ecological quality across our catchments

As the first water company to publish a 25-year Water Recycling Long Term Plan (WRLTP) in 2018, we're well placed to understand the challenges facing our region; our area is the driest in the UK, it's prone to flooding (due to low-level topography and vast coastline), and has a rapidly-growing population.

The DWMP builds upon the WRLTP and given the uncertainties we face, we've made it more adaptive, meaning we can change our investment timescales as required, enabling us to address the right risks at the right time.

This approach is key to tackling long-term challenges and helps us progress to meet the [Water UK Public Interest Commitments](#).



Our DWMP sets out:

1. To meet the challenges we face over the next 25 years.
2. Be strategic to minimise the risks we all face.
3. Take a catchment-based approach to risks and challenges.
4. Promote the use of nature-based solutions, especially for surface water removal.
5. Protect the environment through discharge improvements.
6. Demonstrate how we'll serve our growing population over the next 25 years.
7. Show what's needed to protect our assets and customers from the impacts of heavy rainfall due to climate change.
8. Identify partnership opportunities where matched funding can release benefits and resolve risks.
9. Align with other strategic plans, such as the Long Term Delivery Strategy (LTDS), the Water Resources Management Plan (WRMP), the Water Resources East (WRE) Regional Plan, Flood Risk Management Plans (FRMP), River Basin Management Plans (RBMP) and Local Plans.
10. Include all water recycling customers, regardless of water supplier.

We know we have a huge challenge ahead, and in order to meet our goals at the lowest cost, with the lowest carbon impact and to achieve the best outcomes, we'll work in partnership with drainage and wastewater stakeholders, ensure that we maximise the benefits of emerging technologies and continue to monitor issues that may impact delivery, such as population growth and climate change.

We'll also re-publish the Plan in five years time and regularly review our progress and strategy.

We provided two opportunities for feedback on our draft DWMP; an initial consultation during summer 2022 and a second consultation on storm overflows in spring 2023. Thank you to everyone who responded - all comments appear in our published Statement of Response, enabling you to understand how you have helped shape this final DWMP.

We have also produced a summary overview document, as well as a technical document setting out the detail of our DWMP which can be found on [our website](#). This is our non-technical overview.



The **largest** water and water recycling company in England by geographic area



Serving almost

7 million
customers across the
East of England

The driest region in the UK with

2/3

of the national average
rainfall each year



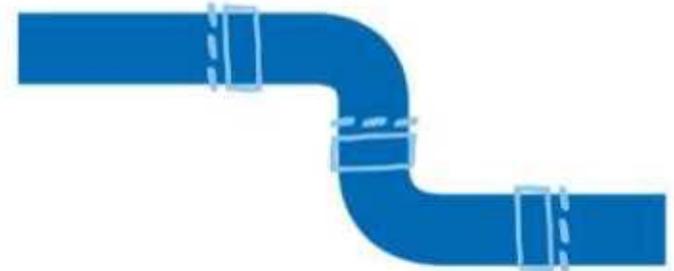
One of the UK's fastest-
growing regions,
projected to grow by

750,000
people by 2050

Operating

76,000km

of sewers – laid end-to-end
almost twice the earth's
circumference



Over

3,300km

of rivers and is home to UK's
only wetland national park



4. Our region

Within the DWMP, our water recycling boundary across the east of England is known as Level 1. Our 1,100+ water recycling catchments - covering areas with fewer than 50 people to urban densities of 300,000+ - are referred to as Level 3. We reviewed them at the first stage of the DWMP and having identified almost 600 potential risk catchments (eg from planned growth or climate change), we passed them through to the next stage of the process.

To ensure effective Plan engagement, and to collate risks and present information, we also provide a Level 2 summary. We followed a Catchment Based Approach for easy viewing (as agreed with stakeholders), and aggregated categories by county, Internal Drainage Board, Regional Flood and Coastal Committee, and local council areas.

5. The challenge

The next 25 years will bring significant population growth challenges, alongside more intense rainfall due to climate change, and 28% of our region being below sea level. Our region is also home to 47 sites of Special Specific Scientific Interest, the UK's only wetland national park, the Norfolk Broads, 48 bathing waters, 3,300km of rivers and 1,200km of coastline.

With increasing interest in transparency and how we impact these areas, in 2020 we published our Climate Change Adaption Report, outlining our historic performance and commitment to mitigate the impact of future challenges.

In order to address these risks, we undertook Baseline Risk and Vulnerability Assessments, enabling us to review the impact of growth and climate change against 10 planning objectives, linked to three themes: escape from sewers, Water Recycling Centre (WRC) capacity and environment & wellbeing. These are outlined further in [7.2 Planning objectives](#).

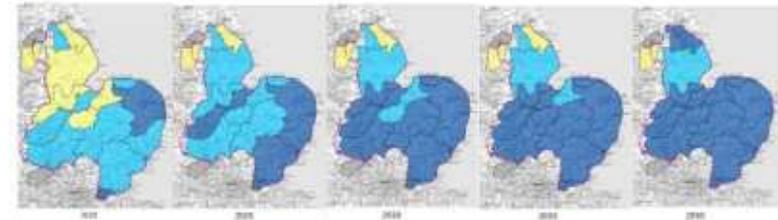
While almost all saw increased risk levels, the highest threat was increased risk of flooding and pollution, followed by the risk to Dry Weather Flow compliance at Water Recycling Centres. The maps below illustrate the increased risk of flooding and pollution if no action is taken.

BRAVA map pictures

Figure 1 Increase in risk for external flooding from 2020 to 2050 if no action is taken



Figure 2 Increase in risk for pollutions from 2020 to 2050 if no action is taken



6. Stakeholder and customer input

It's taken a huge team effort to produce this DWMP. Our DWMP was shared with as many stakeholders as possible and we actively engaged with 117 key organisations throughout the process, including: all country and district councils, Lead Local Flood Authorities, the Environment Agency, Internal Drainage Boards, River and Wildlife Trusts, Natural England, Ofwat, and local river and environmental groups.

There were eight opportunities for stakeholders to engage with us and co-create the DWMP, and the outputs from this collaboration have:

- Identified where risk is more than a water company issue.
- Prioritised where we should be focusing to find stakeholder partnership solutions.
- Provided information for our best value assessments.
- Shaped our final strategies.
- Influenced our response to the Storm Overflow Discharge Reduction Plan.
- Instilled confidence in this final DWMP.

Stakeholder and customer engagement on the DWMP, and other reports, is crucial to our strategic planning. Feedback influences our decision-making and provides the foundation for long-term ambitions, as detailed in our Long Term Delivery Strategy (LTDS), and short-term Price Review 2024 Business Plan (PR24).

For LTDS and PR24, our engagement strategy includes future customers and those in circumstances that may leave them vulnerable (short or long term) or hard-to-reach. This ensures we explore affordability issues and how we meet their needs.

Because our plans - at every stage - are subject to robust challenges, we're confident our decisions have been appropriately informed by stakeholders and customers' views, preferences and experiences.

6.1 Timeline of engagement

Here's the timeline showing our engagement strategy:

Customer and stakeholder engagement



We also talk to you, our customers, and stakeholders daily about our DWMP and share it with various groups, such as when presenting to scrutiny committees and at country/district council meetings.

6.2 Launch workshop

In January 2020, we held a launch workshop, attended by more than 50 delegates. Our discussions identified:

- Ideal planning objectives.
- How best to work together.
- What data could be shared.
- How to structure the DWMP.
- Lessons learned from previous collaborations.

6.3 Strategic context

The information shared at our launch workshop provided the framework for our strategic context. Published in October 2020, more information can be found [here](#).

6.4 Risk Based Catchment Screening (RBCS)

In 2020, we carried out RBCS to identify the water catchment areas we needed to cover in our DWMP. Stakeholder feedback added two more into the process.

6.5 Baseline Risk and Vulnerability Assessments (BRAVA)

These and problem characterisation stages enabled us to identify risks and concerns over the next 25 years. In summer, 2020, we met stakeholders to discuss their issues and how best we could resolve them, particularly medium or long-term concerns around growth, climate change and performance of the assets they owned. We also asked for information around catchments and stakeholders' long-term goals; these areas may pose higher risks, have complications or give us greater collaboration opportunities.

6.6 Optioneering

During our optioneering phase, we held workshops with interested stakeholders to identify catchments that needed special attention and where we could collaborate. This was followed by a second round of workshops in autumn 2021, to discuss 26 catchments and how we could potentially work together to find solutions over the next 25 years. We also identified partnership opportunities.



6.7 Customer engagement

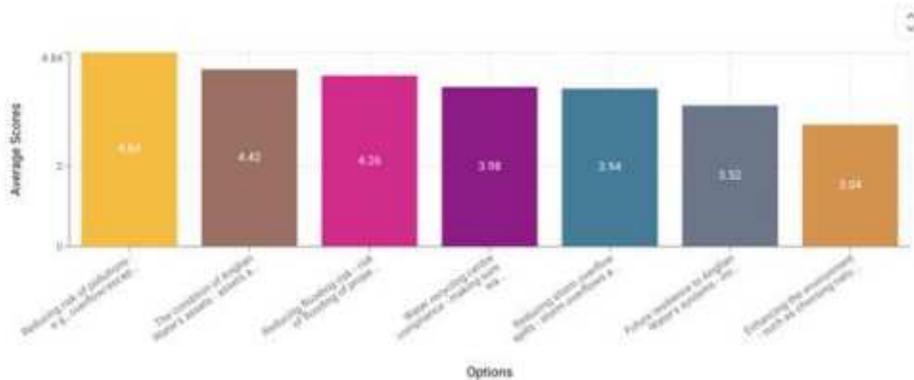
In order to understand what issues and areas you, our customers feel should be prioritised for short and long-term investment (and why), we shared our DWMP summary and asked you to complete a survey with open-ended questions.

As well as drawing on our extensive body of customer insight, we also held three customer engagement sessions on issues specific to our DWMP: two online platforms covering priorities and solution preferences, plus a focus group discussing storm overflows.

Online contributors comprise customers who agree to be contacted by Anglian Water to share their views on a range of topics related to our services. When asking customers about priorities and preferences, we use quantitative and qualitative research tools.

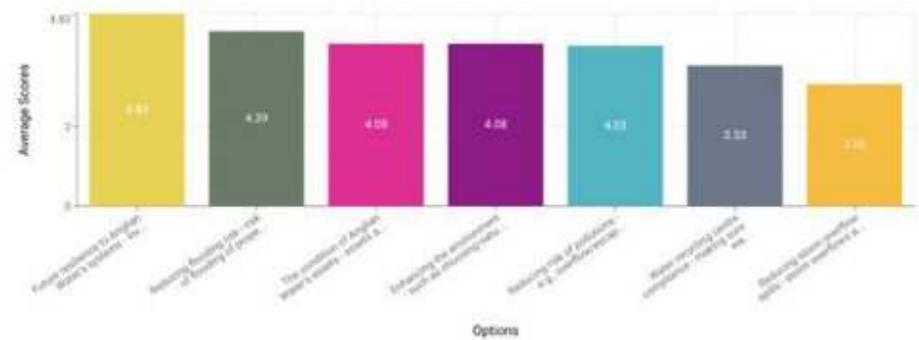
Over 170 customers responded and with many aware of pollution incidents, the majority felt reducing the risk of pollution, such as escape of sewage, was top priority. Equally important was reducing flood risk, a major impact on wellbeing and safety, and maintaining our assets (with suggestions asset protection would result in fewer incidents).

Figure 3 Customer feedback on medium term risk priorities



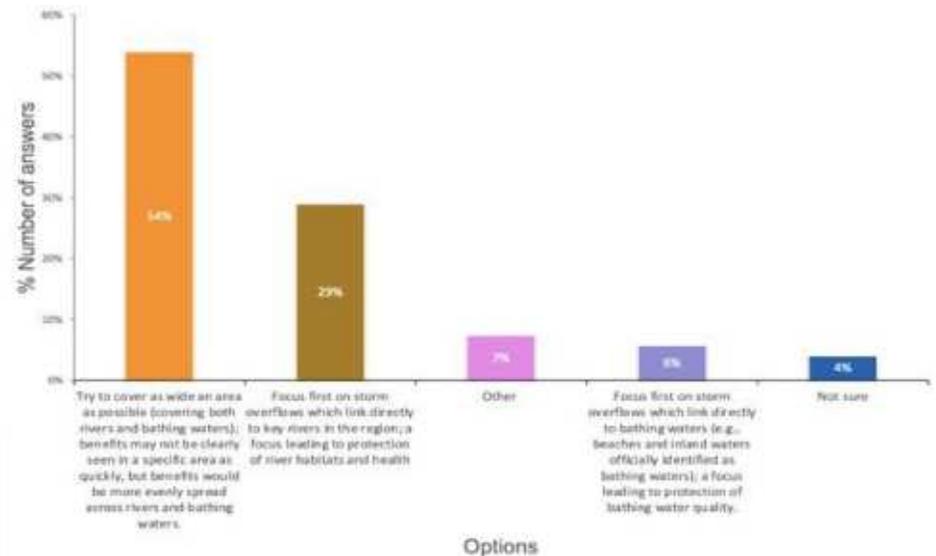
Seventy nine per cent of respondents agreed on areas for short and long-term investment. Those with different long-term priorities chose future-proofing our systems, flood risk reduction and asset maintenance as their top three.

Figure 4 Customer feedback on long term risk priorities



When asked about storm overflow improvement priorities, 54% felt we should cover as wide an area as possible, including rivers and designated bathing waters.

Figure 5 Customer feedback on storm overflow prioritisation



Many customers found it challenging to identify a specific priority, such as water recycling, and one of the DWMP take-home messages was you consider all areas to be equally important. Some advised they would like to see investment across multiple areas, rather than a fixed approach. With uncertain times ahead and threats posed by climate change, customers felt all plans must be flexible, enabling money to be invested when and where it's needed most.

At all times I think the plan needs to be flexible and responsive, so that if one area becomes more crucial it can be moved up the priority scale as required.”**45-54, Norfolk**
 “all of the options ultimately make a difference to water availability for the future.” **55-64, Bedfordshire**
 “I think that all items listed are of equal importance. It is difficult to rank seven items that all need to be considered. I think that Anglian Water has their work cut out to deliver carrying out all items.” **55-64, Essex**

We ran a second session asking you for feedback on our suggested solutions to address issues highlighted in the DWMP. Having outlined the pros and cons of green and grey solutions, we asked what you would like to see implemented in the future and why.

The majority, 78%, opted for green solutions, citing they'd provide greater long-term environmental benefits, including mitigating climate change, reducing flood/drought risks and supporting biodiversity. Advocates of grey solutions preferred 'tried and tested' methods that are cheaper to implement, particularly in the current financial climate.

Overall, feedback showed a mix is needed; while green solutions provide long-term benefits, grey solutions can deliver short-term value and in urgent situations.

“I believe that ideally green options would be better, but it may be that a combination of the two may work better in some circumstances.”**45-54, Suffolk**

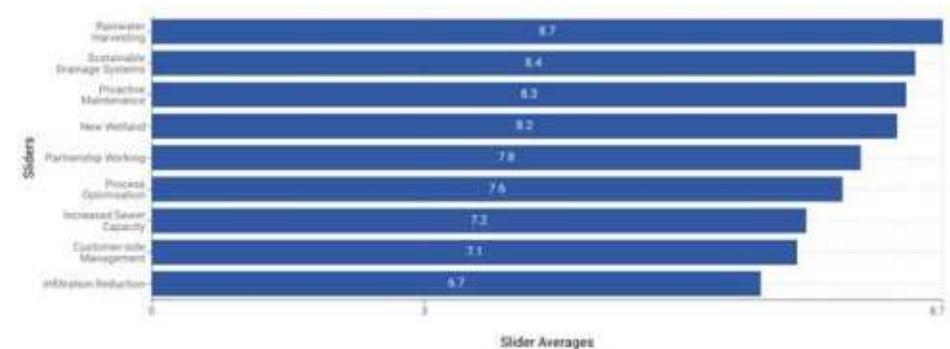
“I prefer 'green' and sustainable solutions although engineered solutions are typically faster to implement.”**55-64, Northamptonshire**

We also gave more detail on specific solutions used to address certain risks and whether they are green, grey or a customer education issue.

Popular solutions to address the risk of sewage escape were: rainwater harvesting, SuDS, proactive maintenance and new wetlands. Customers understood how they could be implemented and the positive impact on our regions.

Respondents were less confident about the benefits of lower-ranked options, such as infiltration reduction, customer management and education, and increasing sewer capacity. Working in partnership was viewed positively, but there were concerns how this would work in practise.

Figure 6 Customer solution preference - networks



"More of the green options to be more sustainable, rain water harvesting should be one of the first options to help reduce excessive water overwhelming the sewage system." **35-44, Cambridgeshire**

"I love the idea of new wetlands. Not only attractive but environmentally friendly. Will attract wildlife including birds. Could be a visitor attraction. And it's natural!" **65-74, Essex**

"I prefer the green option but a combination will more likely be more effective and long term." **35-44, Cambridgeshire**

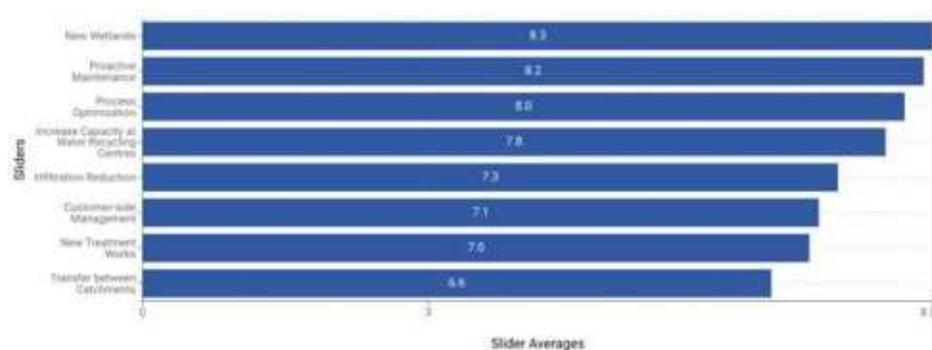
"We need to use all possible solutions in moderation to achieve the improvements required." **65-74, Norfolk**

"I think all these options need to be integrated based on balancing cost and green/neutral benefits." **45-54, Norfolk**

"I do not like the idea of building new treatment works or transferring between catchments. These seem like options that are less 'green' and will have negative environmental consequences." **45-54, Bedfordshire**

Popular solutions to address the risk of WRC non-compliance were: new wetlands, proactive maintenance, process optimisation and increasing capacity. Least preferred options: transfer between catchments and building new treatment works.

Figure 7 Customer solution preference - WRCs



"Wetlands where space allows, and where they can cope with the additional water levels, seems to be a win win - more natural water processing, better for the environment than just building more processing plants." **35-44, Suffolk**

6.8 Consultations

In order to explore awareness and perceptions around storm overflows, and to gauge confidence levels in our ability to meet Defra storm overflow targets, we ran an online video-based focus group with our Knowledge Hub customers. We also wanted to understand their preferences on how, when and where we meet these targets.

Although customers felt their storm overflow knowledge was limited, press coverage led them to recognise the issue as dangerous and toxic, with concerns in two areas: public health (particularly for those who spend time in water) and environmental and wildlife welfare (eg fish deaths).

Perception drivers:

- Ongoing negative press.
- Being environmentally-conscious.
- Limited information on why storm overflows are used (many opinions based on media coverage).

Supply and demand is a further concern. The key take-home from this session is that we need to give you more information about storm overflows, specifically their use (flood prevention), when we can't or won't reuse storm water and what we're doing to reduce our reliance on them.

These perceptions are driven by: · Recent and regular negative press on the issue · Being an environmentally conscious customer · A lack of widely shared knowledge and contextual information around why storm overflows are used; many opinions are based on what is seen or heard from media sources "[I have] opinions rather than a lot of knowledge, but I think locally in your local papers and in the media, [you see reports] on storm overflows going into rivers and things like that, and it basically just not being a good thing. then you see all these groups of people wild swimming and you wonder what it's doing to people." **32, Lincolnshire**

Response to Defra Storm Overflow Guidance

Customers were receptive to Defra's overflow targets, deadlines and requirements and generally confident we'll meet them. They equally support the need to reduce spill frequencies, but would like to see us increase our targets (reduce more spills than our target states) and hit them sooner. An area of concern is a lack of context around what we're doing to meet targets and how we measure success, eg the ecological impact.

Our draft DWMP was published in June 2022, with an 11 week consultation period, and in February 2023 we shared our Storm Overflow Discharge Reduction Plan, with a three week consultation. The consultations were accompanied by customer workshops, so we could find out more about your views. Thank you to all who gave us feedback.

After our first consultation we published an [open letter response](#), identifying key stakeholder concerns. Stakeholders, in general, supported a DWMP that was resilient to a two degree climate change increase, used green infrastructure where possible, and advocated surface water removal and working in partnership.

You can view all comments received and our response, online, in our [Statement of Response](#).

7. The building blocks of our DWMP

Companies must work through nine stages to create a DWMP. These comprise:

1. Strategic context - agree and outline the aims of our DWMP. Identify the issues we face, now and in the future, and the outcomes we want to achieve.
2. Risk Based Catchment Screening - identify areas most at risk and where we can address their vulnerabilities.
3. Baseline Risk and Vulnerability Assessment - understanding the risk over 25 years.
4. Problem characterisation - checking whether any complications may arise.
5. Options development - identifying integrated solutions that would deliver long-term benefits to the economy, society and the environment, taking into account risks, vulnerabilities and potential complications.
6. Programme appraisal - using a best value plan assessment to prioritise solutions.
7. Publish draft DWMP.
8. Consultation
9. Publish final DWMP



1. Strategic Context



2. Risk based catchment screening



3. Baseline risk and vulnerability assessment

4. Problem characterisation



5. Options development appraisal



6. Programme appraisal

7. Publish draft DWMP



8. Consultation



9. Publish final DWMP

7.1 Planning areas

To help us gather data and share results more effectively, we identified three planning areas:

Level 1

All water recycling facilities in the Anglian Water region.

Level 2

Following a stakeholder workshop in January 2020, and to support information sharing, we agreed to identify Catchment Based Approach areas (CaBA) for this level. CaBAs are community-led, engaging people and groups across society to help improve our water environments. Recognising this categorisation may not suit everyone, we added other L2 information options, such as county, Internal Drainage Board, Regional Flood and Coastal Committee, and local council areas.

Level 3

Our 1,100+ water recycling catchments - covering areas with fewer than 50 people to urban densities of 300,000+ - are referred to as Level 3.



7.2 Planning objectives

The next 25 years will bring significant population growth challenges, alongside more intense rainfall due to climate change, and 28% of our region being below sea level. Our region is also home to 47 sites of Special Scientific Interest, the UK's only wetland national park, the Norfolk Broads, 48 bathing waters, 3,300km of rivers and 1,200km of coastline.

To tackle these challenges, we focus on 10 planning objectives - measures to assess existing and future risks - encompassing three themes; escape from sewers, WRC performance and environment & well-being.

Agreed with stakeholders and discussed at our Strategic Context consultation, they're used at the [8. Understanding the risk](#) stage to understand catchment risk levels/actions needed to mitigate risk, and only apply to catchments progressing through the initial risk assessment stage.

Planning objectives should reflect company and stakeholder strategic goals and drive our strategic direction. They ensure we continually push to improve our catchments and meet our four Strategic Direction Statement ambitions. Some reflect our performance commitments, which we agree with Ofwat, and others relate to risks our stakeholders consider important.

It's important all planning objectives meet the criteria agreed in our initial stakeholder workshop:

- Have customer and/or stakeholder support.
- Are clear and understandable.
- Have performance thresholds that can be modelled and measured.
- Are consistent with our agreed Ofwat performance commitments.
- Contribute to long-term water recycling strategies.

7.3 What are the planning objectives?

Members of the Water UK DWMP steering group agreed that all water companies should include six common planning objectives:

- WRC quality compliance.
- Storm overflow performance.
- Sewer collapses.
- Internal sewer flooding.

- Risk of flooding in a 1 in 50 year storm.
- Pollution risk.

In addition to the nationally-agreed planning objectives, we worked with stakeholders to identify four more which met strategic goals:

- WRC Dry Weather Flow (DWF) compliance.
- External sewer flooding.
- Green infrastructure.
- Amenity value.

To ensure consistency, working groups helped us create a standard process to assess the objectives and we used modelling techniques/historical data to give us a baseline benchmark (ie what's happening today). We then used similar technology and baseline assumptions, such as would WRC permit standards be the same between 2020 and 2050, to predict risks in 2050.

Table 1 Planning Objectives

SDS Ambitions <i>What are we ultimately trying to achieve across the region</i>	Outcome <i>How does it track back to our outcomes</i>	Planning objective <i>What are we measuring</i>	Theme <i>What group does this fit in?</i>
Resilient to the risks of flooding Enable sustainable economic and housing growth Be a carbon neutral business by 2030 Work with others to achieve significant improvement in ecological quality	Resilient business	Risk of sewer flooding in a 1 in 50 year storm	Escape from sewers
	Flourishing environment	Storm overflow performance	
	Investing for tomorrow	External sewer flooding risk	
	Delighted customers	Internal sewer flooding risk	
	Flourishing environment	Pollutions risk	
	Investing for tomorrow	Sewer collapse	
	Investing for tomorrow	DWF Compliance	WRC Compliance
	Investing for tomorrow	Quality compliance	Environment and wellbeing
	Delighted customers	Access to amenity areas	
	Flourishing environment	Green infrastructure	

Planning Objective definitions

Risk of Sewer Flooding in a 1 in 50 year Storm

1 in 50 design storm event, which equates to a 2% probability of the rainfall event occurring in any given year.

Storm Overflow Performance

The number of spills from Storm Overflows (SOs)

External Sewer Flooding Risk

The number of outside areas within a boundary curtilage flooded by water from our sewers.

Internal Sewer Flooding Risk

The number of flooding incidences from our sewers within properties,

Pollutions Risk

Number of pollution incidents classed as Category 1-3 by the Environment Agency.

Sewer Collapses

Number of sewer collapses.

Dry Weather Flow (DWF) vs permitted DWF.

Percentage of measured DWF vs permitted DWF

WRC Quality Compliance

Compliance with the environmental obligations outlined as the sanitary standards in the permit.

Access to Amenity Areas

Amenity of land within a catchment.

Green infrastructure

The level of green infrastructure within a catchment.

7.4 Scoring planning objectives

To help us understand our catchments' future risk levels, we scored our planning objectives using bands; 0 (not significant), 1 (moderately significant) and 2 (very significant). This enabled us to assess areas at the BRAVA stage.

The objectives fed into three key areas - escape from sewers, WRC performance and environment & well-being. If concerns were raised over a particular objective during the initial risk assessment process, we went onto assess the L3 catchment in question against other planning objectives falling within the same theme. This ensures our DWMP focuses on the highest priority risks.

7.5 Implementing the planning objectives

To make sure our DWMP focused on the highest priority risks, not all L3 catchments were assessed against the planning objectives. We firstly grouped the 10 objectives across three themes:

1. Escape from sewers
2. WRC performance
3. Environment and wellbeing.

If a potential concern was raised during [8.1 Risk Based Catchment Screening \(RBCS\)](#) against one of the planning objectives, we then proceeded to assess the L3 catchment in question against all other planning objectives falling under the same theme, as per the table.



8. Understanding the risk

We've been producing strategic reports for many years so have highly effective processes to help us with planning. We used these, and the DWMP framework, to guide us in the right direction.

8.1 Risk Based Catchment Screening (RBCS)

RBCS is where we screen all our catchments to ensure our efforts are focused in the right place. Here we benchmark every water recycling catchment against 17 measures, as recommended by the DWMP framework, plus we've added two of our own. First undertaken in 2019, we've reviewed our lists since to ensure we're capturing risks correctly.

The measures used are mainly those impacting water companies and they take into account historic performance. Using RBCS, we assessed 1,130 water recycling catchments against the following measures:

1. Wastewater resilience metric catchment characterisation.
2. Intermittent discharge impacts upon bathing or shellfish waters.
3. Continuous or intermittent discharge impacts upon other sensitive receiving waters (part A).
4. Continuous or intermittent discharge impacts upon other sensitive receiving waters (part B)
5. Storm Overflow Assessment Framework (SOAF).
6. Common Assessment Framework (CAF).
7. Internal sewer flooding.
8. External sewer flooding.
9. Pollution incidents.
10. WRC quality compliance.
11. WRC flow compliance.
12. Storm overflows.
13. Other Risk Management Authority (RMA) assets.
14. Planned residential new development.
15. Water Industry National Environmental Programme (WINEP).
16. Sewer collapses.
17. Sewer blockages.
18. WRC biological capacity.
19. WRC descriptive permits.

We also assessed catchments for their resilience and ability to recover from difficulties; 618 required further investigation.

8.2 Baseline Risk and Vulnerability Assessment (BRAVA)

Six planning objectives fall into the 'escape from sewers' assessment theme.

Risk of flooding from a 1 in 50-year year storm

We carried out modelling to understand this risk and used supporting materials such as The Flood Estimation Handbook (UK Centre for Ecology & Hydrology), to help estimate rainfall and river flood frequency, and development site runoff rates.

Storm overflow performance

Storm overflows are an important part of the sewerage system as they allow a release from the system during periods of intense rainfall. We monitor our storm overflows to record performance and use their data to assess the baseline risk. We also model a number of catchments to understand potential future spill increases.

External and Internal sewer flooding risk and Pollution risk

Again we used a range of modelling techniques and scenario testing to understand the risk of flood and pollution overload, now and in the future.

Sewer collapse

We used 2019 sewer collapse data for our BRAVA scores, assessing the baseline risk for each catchment.

BRAVA takes the catchments identified in the RBCS and tests them against future pressures to understand the risks. Catchments were reviewed against the planning objectives, as agreed in the strategic context.

BRAVA allowed us to understand how the risk to planning objectives changes over the next 25 years if no interventions occur. Risk was assigned a score of 0 = low risk, 1 = medium risk and 2 = high risk. We assessed this for each L3 water recycling catchment which moved through our DWMP process.

Following the pre-screening of 618 catchments, 43 were removed from the DWMP process, so the total number of catchments progressed through BRAVA was 575.

BRAVA - WRC Compliance

DWF compliance

We used our forecast growth to understand the expected future flow our WRCs will receive. This was compared to our permitted DWF, assuming the permit remains the same.

Quality compliance

We used our forecast growth to understand the future load on our WRCs. This was compared to the current performance and our calculated WRC design capacity.

BRAVA - environmental and wellbeing

Access to amenity areas

Our water recycling catchments were mapped to see what the different land use was - for example housing, field, park. The percentage of green amenity areas were reviewed at both 2020 and 2050.

Green infrastructure

Many of our water recycling networks have combined sewers, that is they take both foul and surface water. However many catchments also have separate foul and surface water systems, or already have natural solutions implemented. For each DWMP water recycling catchment we reviewed the assets to see how green the catchment is. This was assessed at baseline only.

8.3 Extended BRAVA

Following the framework, an extra assessment was also carried out on some sites to review their sensitivity to population growth.

8.4 Problem characterisation

The main aim of the problem characterisation phase is to understand how complicated it might be to address the risks identified in BRAVA. To identify these risks, we asked stakeholders six questions in the following areas:

1. Potential stepped regulatory changes causing significant constraints.
2. Understanding of catchment performance.
3. Catchment complaint history.
4. Cross catchment capabilities.
5. Known sewer capacity constraints.
6. Growth potential.

And we asked for feedback on four concerns:

1. Short/medium term concerns on the impact of climate change and developments.
2. Long-term climate change and development concerns.
3. Short/medium term concerns of supply system performance.
4. Long-term supply system performance concerns.

Having totalled their answers, this gave us a catchment 'problem characterisation' score which combined with the BRAVA score, enabled us to focus our efforts, during the optioneering phase, on catchments most likely to have problems in the next 25 years.

This process also enabled us to identify any other concerns which may impact on how we address future risks.

9. Forecasting growth

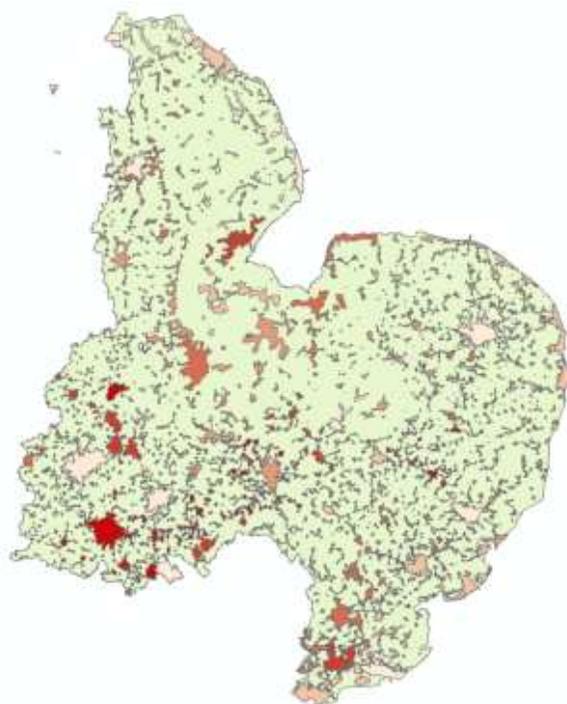
In line with the DWMP framework guidelines, we extended BRAVA and assessed some sites on how they would cope with population growth. This is one of the biggest challenges for us and one where we can do most to support our customers and our region. A key focus therefore is to support sustainable economic and housing growth.

We use the best available planning information to forecast housing and population growth; this helps us meet one of our four Strategic Direction Statement (SDS) goals - to enable sustainable economic and housing

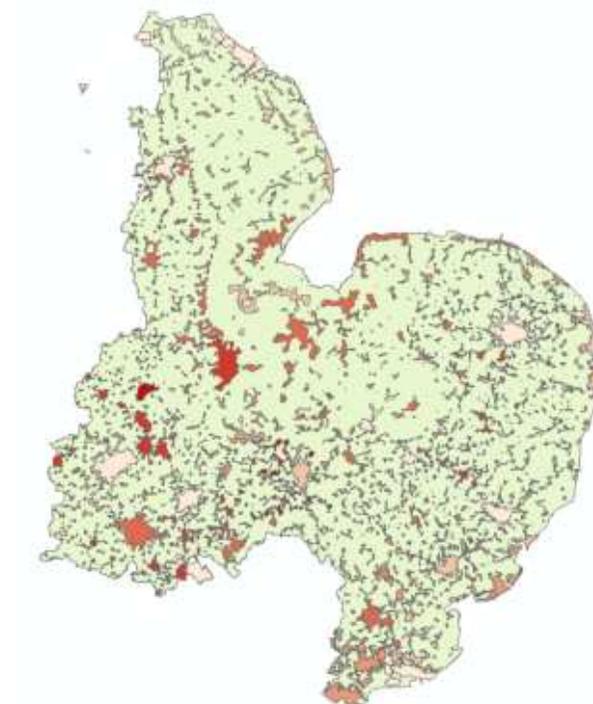
growth in the UK's fastest growing region. We also explore growth trajectories in our Long Term Delivery Strategy (LTDS), which will be published alongside our PR24 Business Plan.

The heat maps, below, show predicted growth to 2027 and 2045, the darker red areas indicate more intense growth.

Growth to 2027



Growth to 2045



These growth forecasts are aligned to our Water Resources Management Plan and Water Resources East (WRE) Regional Plan, and based upon local authority planning and Office for National Statistics (ONS) data. Where the local authority has confirmed its local plan growth figures, we use its data; if not, we rely on ONS forecast.

We continue to work with our local authorities to ensure we access the latest data, this in turn ensures our water recycling growth projections are robust and designed to support our investment and development planning.

9.1 Emerging growth areas and sites

Due to the scale of growth proposed across the east of England, the government and local authorities are working on plans to bring forward large-scale developments. This involves using public sector land, developments via Garden Village and Town Programme schemes, and potential economic corridors.

While many are at an early stage and not in adopted local plans, it's important to consider their long-term impact if they do go ahead, and liaise with local planning authorities and developers. Economic corridors would have a significant impact on drainage, but due to the uncertainty over timing and location, they are not included in this DWMP (we'll update catchment strategies if and when required).

Our DWMP, supported by Water Cycle Studies (to ensure there's enough water recycling capacity for new developments), provides a forum to resolve any issues before development plans are finalised. By working in partnership with our stakeholders, including local authorities and the National Infrastructure Commission, we're better equipped to meet the expectations of our growing community.

9.2 Per Capita Flow (PCF)

Per Capita Consumption (PCC) of water is the average consumption, or use, of water by a person per day. It's calculated by dividing the total volume of water supplied to a community by the total population in that community. The PCF is the volume of water returned as wastewater to a sewer system.

Our forecast assumes 90% of PCC (and non-household domestic consumption) is returned. Given the uncertainty around future industry requirements, we're assuming current flow levels for trade will remain the same.

Why is PCF important? It's used to calculate Dry Weather Flow (DWF) - the average daily flow to a WRC during a period without rain. The flow in a combined sewerage system increases when it rains, so we need to design our WRCs with enough capacity to treat the flows from the sewerage collection system they serve.

The Environment Agency also sets limits on the quality and quantity of treated effluent from a WRC so it doesn't negatively impact the environment. There is a limit on the flow discharged in dry weather, so we need to predict the DWF, PCC and PCF in order to estimate future investment.

10. Options development and programme appraisal

Once risks were identified in the BRAVA stage, optioneering helped us find the best way to address them. Optioneering ensures we consider in-depth, a wide range of options before choosing a best-fit solution that optimises our resources.

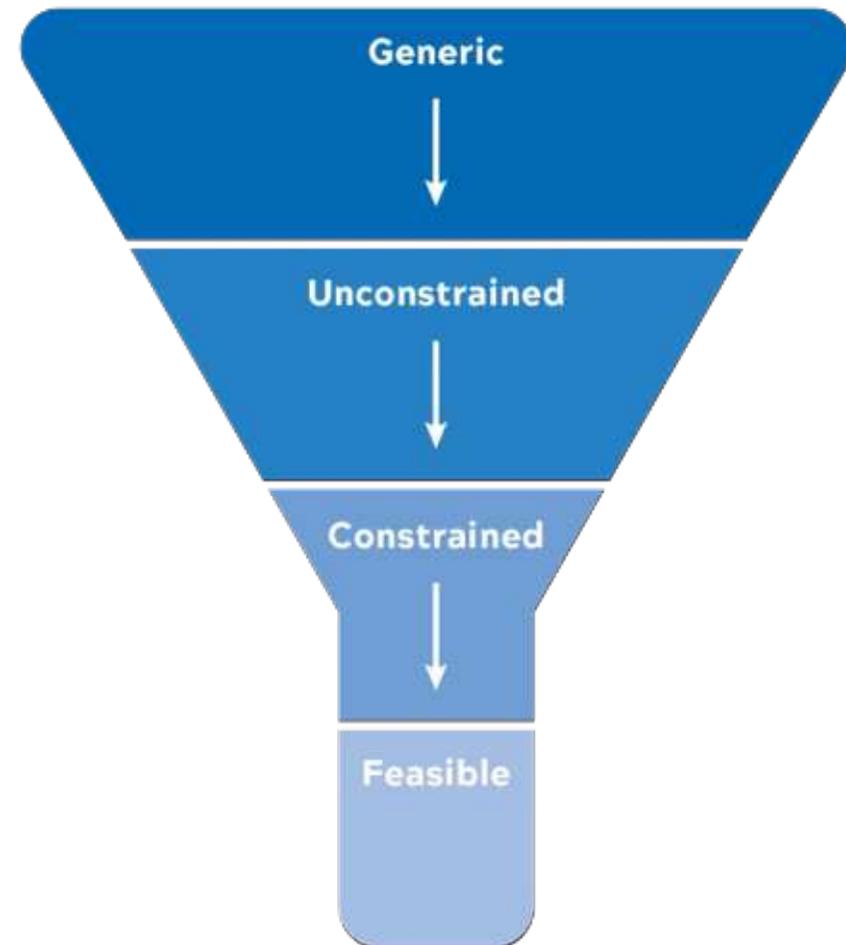
We used a four-step process in this stage, shown in the funnel diagram:

Generic options covered a wide area and were not all relevant for every risk; unconstrained options narrowed things down by being potential solutions for particular risks.

10.1 Constrained and feasible options

Constrained options were more appropriate for key areas and feasible considered more practical. Having reviewed all options, we settled on those within the feasible category. Our final list comprised 45 options with differing solutions. These included increasing maintenance regimes, nature-based solutions, building additional capacity, partnership working with others, as well as the potential to investigate or 'wait and see'.

Figure 8 Optioneering process



10.2 Constrained and feasible options review - escape from sewers

In order to find the best solution for catchments with escape from sewers risks, we used modelling techniques.

To combat long-term issues, we modelled each catchment on its flood volume in 2050 and overlaid it with differing solutions such as pump maintenance and surface water removal. The solution that proved most efficient in closing the flood volume gap was then assessed for its feasibility.

10.3 Constrained and feasible options review - WRC compliance

We matched catchments posing a WRC compliance risk with relevant unconstrained options, overlaying them with standardised rules and questions. Feedback enabled us to identify risks in 2030, 2035 and 2050, giving us a list of constrained options for each time frame.

10.4 Constrained and feasible options review - environment and wellbeing

The environment and well-being theme within our planning objectives gave us guidance on where we could do more to protect the natural environment. We didn't do a separate assessment where a risk was identified in the 'environment and wellbeing' planning objectives, however we incorporated this as part of our review of feasible and preferred options within those catchments.



10.5 Environmental assessment

During [10. Options development and programme appraisal](#) we carried out an environmental assessment to understand the potential environmental and social impact of our generic options, and review the environmental and social constraints for each L3 water recycling catchment.

After screening generic options for their environmental and social impact, those flagged up as potential risks were scoped and summarised to identify the key issues. Each option on the potential risk list, plus its impact and opportunities for improvement, was then grouped into nine topics which in turn were broken down into 20 objectives. This helped us focus on minimising the risk.

To ensure strategic consistency, the topics matched agreed, or proposed, environmental objectives for our Water Resources East (WRE) Regional Plan, our Water Resources Management Plan 2024 (WRMP24) and our Drought Plan 2022.

All L3 water recycling catchments progressing through the DWMP were reviewed against a range of environmental and social data sets to see if any key constraints needed to be considered. They were presented in a

Red, Amber, Green (RAG) format and scored Red =1, Amber = 3 and Green =5. A total score reflected the issues present within each catchment and this environmental assessment helped us with the benefits during best value planning.



10.6 Programme appraisal

Before we put forward our draft DWMP for consultation, we undertook a ‘best value plan’ assessment, reviewing our solution options to fully understand their benefits.

We did this using a framework that followed our strategic plans, aligning it to six capital themes, as detailed in our [business model](#). This ensures our responsibility to you, our customers, communities and the environment continues to take top priority when making business decisions.

Following feedback from the consultation, our best value plan assessment was reviewed again for the final DWMP.

Benefits

We benchmarked our options against 10 benefits, such as flooding/pollution risk reduction and environmental improvements, scoring each on its merits and ability to reduce costs and carbon emissions. We

also considered six additional benefits, but as we’re planning to include them in future planning processes following further evolution of the methodology, we opted to leave them out of this assessment.

Optimisation

This data was then put through an optimisation process, comparing vast combinations of options. Carried out separately for WRCs and water recycling networks, this helped us create a range of possible plans, each with differing solutions that maximised benefits while balancing risks and costs.

Each optimised plan had at least one solution for at-risk catchments, suggesting which to prioritise for early investment.

Best value planning

The plans were then filtered down further, reviewed against various scenarios and assessed to ensure they delivered the most adaptable solutions. We also reviewed them to ensure our investment timing would most effectively mitigate the risk and respond to climate change. Finally, we evaluated the solutions to ensure they aligned with our Water Resources Management Plan.

11. Creating a best value plan

Creating a best value plan is key to ensuring we create the right plan for customers and the environment,

It is designed to align with our six capital framework which encourages us to take wider social and environmental benefits into account during decision making. They are: people, financial, intellectual, social, manufactured and natural. This ensures our responsibility to customers, communities and the environment remains top priority when decision-making.

Six capitals themes



- Community engagement
- Traffic congestion
- Visual impact
- Amenity Access
- Noise impact



- Wellbeing
- Health and safety



- Biodiversity net gain
- Capital carbon
- Operational carbon
- Embedded water



- Partnership working
- New approaches
- New skills
- New technologies
- Lessons learnt



- Capex
- Opex
- Risk index



- Resilience:
- Hotter drier summers warmer winters
- More intense rain and flooding
- Rising sea levels
- More frequent wind and storms

To identify which solutions provided the most benefits we considered ten core elements:

1. Scalability - least regret.
2. Flooding reduction.
3. Pollution reduction.
4. WRC compliance.
5. Population growth.
6. Capacity at WRCs.

7. Environmental benefit - carbon, nature based solutions, environmental potential.
8. Amenity/recreational benefit.
9. Stakeholder preference.
10. Customer preference.

Our plan was optimised to either minimise or maximise these against the cost of solutions, to find the best value solutions. To do this, we optimised our plan based on 13 different scenarios, assessed to ensure they delivered the most adaptable solutions.

These scenarios were:

1. Low growth.
2. High growth.
3. Least cost.
4. Scalability - least regret solutions.
5. Recreational amenity.
6. Natural capital.
7. Pollution reduction.
8. Flooding reduction.
9. Stakeholder preference.
10. Overall best value plan for growth.
11. Increase in capacity.
12. Maximising WRC performance.
13. Maximising WRC DWF compliance.

Our goal was to create an adaptive plan within the best value framework. Using the 13 scenarios we identified which solutions were most regularly chosen, enabling us to create a best value plan that could be adaptive to a range of future scenarios.

We also reviewed them to ensure our investment timing would most effectively mitigate the risk and respond to climate change.

The plan was also tested against the six capitals we use in our business model when making investment decisions.

Our best value plan estimates the cost of medium and long-term interventions, ensuring we're well-placed to meet our strategic 2050 ambitions. It provides a least regret best value plan which aligns with our purpose.



12. Storm overflows

Storm overflows are an important part of the sewerage system as during periods of intense rainfall, they release diluted excess water into managed drains and water bodies, such as rivers, reducing the risk of property flooding. In recent years, climate change and more rainfall, plus population growth, has made it increasingly difficult for water infrastructure to cope with the pressures put upon it. Although storm overflows have a 1% or lower environmental impact on the water quality of areas they flow into (there are other polluting factors), we're keen to lessen the impact and work with others to improve river health.

In 2022 we launched our [Get River Positive](#) campaign with Severn Trent, which comprises five commitments to safeguard and improve river health in both our regions. One pledge is to ensure storm overflows and sewage treatment works do not harm rivers. This will help us to:

- Eliminate all serious pollutions by 2025.
- Reduce less serious pollutions by 45% and spills from storm overflows to an average of 20 per year, by 2025.

As part of this campaign, we're investing more than £200million to reduce storm spills across the east of England.

We're also smashing our current environmental programme goals by delivering a high number of schemes to reduce storm spills one to three years earlier than planned, helping protect the environment and improve our rivers.

In August 2022, Defra released their [Storm Overflow Discharge Reduction Plan \(SODRP\)](#) outlining targets and timeframes for water companies to improve their environmental performance. These include:

- Water companies only permitted to discharge from a storm overflow where they can demonstrate there's no local adverse ecological impact. By 2035, at least 75% of storm overflows, discharging into or close to high priority sites, are expected to achieve this, and by 2045, 100%. All remaining storm overflows to meet this target by 2050.
- Water companies must significantly lower the amount of harmful pathogens from storm overflows going into or near designated bathing waters by 2035, either by applying disinfectant or reducing the number of discharges to meet the Environment Agency's spill standards.
- By 2050, storm overflows will not be permitted to discharge more than, on average, 10 rainfall events per year.
- Water companies required to ensure all storm overflows have screening controls.

All overflows will have an Event Duration Monitor (EDM) by the end of 2023 and while we already have a huge amount of overflow data, 100% coverage will improve our performance understanding, enabling us to investigate those requiring improvement.

Such is the scale of improvements required, we're undertaking a separate assessment process to the DWMP. However we're confident our proposals will help us meet these statutory requirements and timelines.

Having listed all the storm overflows we own, we identified those that met one or more of the Environment Agency prioritisation criteria, such as overflows discharging into: a water body classified as confirmed or probable for intermittent sewage, sensitive inland water sites and designated shellfish and bathing waters.

We then asked stakeholders to identify their priorities, alongside those set by Defra. These included overflows that discharge: for more than 10 spills per year, into areas known for wild-swimming, close to limestone rivers and watercourses already suffering low flow/dilution.

We reviewed our list with local site knowledge to refine priorities and programmed these sites for investment in the short and medium term.

Event Duration Monitors (EDMs) provide data on how often, and for how long, our storm overflows are used. All overflows will have EDMs by the end of 2023, so we combined our existing data with modelling to assess spillage rates. As we get more data, and continue to investigate to ensure we improve our performance.

Once the highest priority overflows were identified, the remaining overflows were reviewed based on our current understanding of risk and performance to understand which need investment, which need further investigations, and which ones we will monitor.

For costing those which currently need further investigations before we can design a solution, we've currently given an allowance based on average costs. All at-risk storm overflows will continue to be reviewed and re-evaluated as and when updated information becomes available.

We have looked at a range of solutions to meet the targets set out in the Storm Overflow Discharge Reduction Plan, these include removing surface water from our system, building bigger tanks, changing operational practises and discussions with stakeholders to identify working in partnership opportunities.

Based on our current understanding of risk we are predicting it will cost almost £1.5billion over 25 years to meet the targets. However this will be reviewed and updated as we gather further data on performance and risk.

13. Resilience

Our region has a high proportion of flat and low-lying areas, including The Fens in Cambridgeshire and the Norfolk Broads. With a quarter of the area below sea level, we're acutely aware of the risk of flooding to our assets and the impact this has on you, our customers, and the environment.

Historically, our water and water recycling infrastructure has been built next to or near rivers, streams or the sea, supporting drinking water supply and returning recycled water back to the wider environment. Although efficient, it puts our assets at risk of flooding from watercourses, the sea, surface water and groundwater.

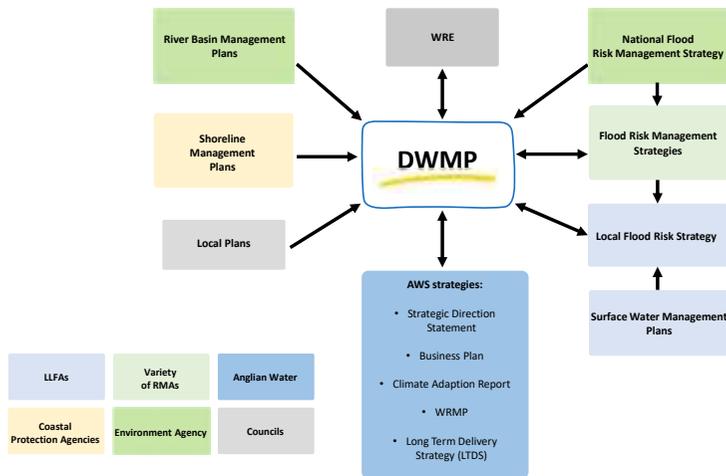
As part of our Price Review 2024 (covering 2025-2030), we've built upon previous flood risk reviews and added new climate change risk assessments, to ensure we better understand the current and future issues we face. Alongside developing response and recovery plans, solutions to protect our assets include: flood walls, doors and temporary barriers.

We also have an East Coast Flood Plan which draws upon our experiences of past flood events in 2007, 2013 and 2017. A tidal surge is the biggest single risk to our assets - with the flood risk at its highest over a 12 hour period - so it's essential we focus on how we maintain our service during this time.

14. Alignment with other strategies

This DWMP is only effective if it's aligned to other strategic plans which are created in-house and with external partners. Every plan interacts and complements the other.

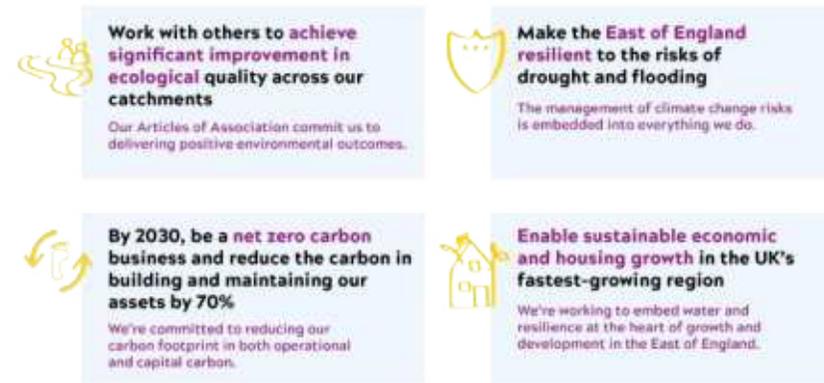
Figure 9 Strategy alignment



Strategic Direction Statement (SDS)

Our SDS outlines four long-term ambitions:

Figure 10 SDS ambitions



Water Resources Management Plan (WRMP)

This is our water plan for 2025-2050 - it helps us meet our strategic aims.

Business Plan

Our next business plan, known as PR24, will be published in October 2023. It will outline the next five years of our business investments, as agreed with Ofwat.

Long-Term Delivery Strategy

The water industry is facing a number of long-term challenges so in order to address them, Ofwat has introduced a Long-Term Delivery Strategy, requiring water companies to use adaptive planning to set out:

- Objectives for 2050.
- Strategies to meet the objectives.
- Enhancements needed to do so.

Through the development of our LTDS, we will continue to refine our DWMP strategy, and this will inform our PR24 Business Plan in turn. This includes:

- Building upon our Strategic Direction Statement to set out our long-term vision for the next 25 years, including what we intend to deliver in terms of key performance outcomes,
- Testing our strategy against the Common Reference Scenarios to develop adaptive pathways, and establish what investment is required now, and what can be delayed until later in the timeline,
- Developing our understanding of the potential benefits of emerging technology, and
- Reviewing proposed investment within the context of the wider enhancement programme, to ensure the strategy is both affordable and deliverable.

Figure 11 LTDS alignment



Get River Positive

River health is fundamental to improving ecological quality. That's why in 2022 we launched our Get River Positive programme with Severn Trent - a shared commitment to protect and revitalise rivers by 2030.

The programme has five key pledges:

- Ensure storm overflows and sewage treatment works do not harm rivers.
- Create more opportunities for everyone to enjoy our region's rivers.
- Support others to improve and care for rivers.
- Enhance our rivers and create new habitats so wildlife can thrive.
- Be transparent about our plans and performance.

Water Industry National Environmental Programme (WINEP)

WINEP is the framework water companies have to work to, to meet their statutory and non-statutory environmental delivery obligations. Created in collaboration with the Environment Agency, we'll publish our WINEP commitments, alongside our business plan, in 2023.

Within this will be suggestions for an advanced WINEP - schemes which look at doing things differently to address environmental risks - while minimising cost and risk to our customers. One of the opportunities we're exploring is identifying catchments for the holistic delivery of surface water management and partnership structures to facilitate this.

External Strategic Plans

Our stakeholders also produce strategic plans to understand future pressure on their assets and responsibilities. We therefore worked with the Environment Agency to ensure our DWMP reflects the strategic aims of the River Basin Management Plans and the Flood and Coastal Erosion Risk Management reports.

Other in-house and external plans our DWMP aligns with, include:

- Local plans - produced by councils to forecast expected development rates.
- Surface Water Management Plans - the risks were identified at our DWMP problem characterisation stage and areas for collaboration, during the optioneering process.

Being carbon neutral by 2030

We are committed to becoming a carbon neutral business by 2030 and our DWMP feeds into this strategy. Find out more [here](#).

Nutrient Neutrality

In March 2022, Natural England (NE) advised water companies and local planning authorities that plans and projects in certain areas increase nutrient levels beyond acceptable limits. Habitat Regulations state activities which would cause further damage to an at-risk site can only proceed when the impact is mitigated. This means neutralising the nutrients, rather than adding them.

For developments this means demonstrating a net zero increase in nutrient levels within certain catchments, by for example, constructing wetlands, making changes to land management or retrofitting sustainable urban drainage systems.

While nutrient neutrality is a new challenge, our work with the Norfolk Rivers Trust, William Morfoot and landowner James Wilson, to create a wetland treatment solution, downstream of a water recycling centre and the river Ingol, is a template for future nature-based solutions.

15. Regional plan and outputs

Following initial screening, almost 600 water recycling catchments were risk assessed to the year 2050; this helps us understand the impact of future growth and climate change. The DWMP is designed to be flexible, so we'll regularly monitor our suggested solutions, and timescales, across all catchments with stakeholders, to ensure we're taking the right action at the right time. Many of our strategies propose to reduce the risk to an acceptable level by 2050 or create an uncertainty that requires continual monitoring, post-intervention.

Here's a brief overview of what we plan to do:

Low risk catchments

We identified 218 low risk catchments and will continue to monitor them in future DWMPs.

Long term strategy only

The remainder of our catchments had needs identified earlier than 2050, including 63 that were low risk in 2035, but higher risk by 2050.

Removing up to 25% of surface water from our network was the most popular solution for addressing the escape from sewers risk. We're keen to use nature-based solutions where possible (and where they're identified as cost-beneficial), so many of our catchments will use green Sustainable Drainage Solutions (SuDS) and traditional infrastructure.

Our Water Recycling Centres (WRCs) face increasing pressure due to the extra loading caused by catchment growth and tightening river quality standards. This means we're going to have to think differently about how we address future risks in the next 25 years, perhaps through technology not yet invented or by adopting alternative strategies.

Strategies to address risks posed by WRCs include customer education, infiltration removal, reduced flows and more investment. For many WRCs we feel future risks should be addressed by traditional measures such as increasing capacity by building more treatment process plants and where appropriate, applying for new environmental permits.

There are some catchments where we can potentially close one WRC and transfer its flow to another. We've also identified the potential need to build a new WRC west of Norwich, dependent on the level and location of growth, and perhaps develop a wetland as part of the treatment process.

Medium term catchments (2025-2035)

We identified risks that were present, or would be by 2035, in 300 catchments. Some had investment planned in the current funding period so they will be monitored and assessed in the next DWMP cycle. Any L3 catchment identified with a risk by 2035 was put through the [10. Options development and programme appraisal](#) process.

When assessing our options we considered whether it was possible to address the risk in the short-term with no or little funding. If so, this was the preferred solution. Alternative strategies were assessed using the best value plan. While generic options were selected to reduce the risk to an acceptable level by 2050, we will continue to monitor some catchments.

As outlined in [17. DWMP to PR24](#) the DWMP indicates the long-term strategy for water recycling. As we develop our next business plan, and take into account wider business needs, in the first five years we may take a different trajectory. The DWMP will still however be valid for individual catchments and we'll keep reviewing with any new information we identify.

The DWMP uses a catchment strategy approach of costing one solution to address multiple risks in an area and our next business plan will prioritise which elements to prioritise.

In line with our 2050 view, our focus will be on removing surface water from the sewerage system using SuDS and traditional strategies. This provides resilience against a climate change two degree temperature increase, and in some cases, a four degree rise.

Removing unrequired network flows and increasing capacity is also crucial to address WRC risk. Sites with lower risk levels will be investigated further before adopting a solution.

We have worked with our partners to co-fund many solutions across our region. Throughout the DWMP we have identified some catchments, working with partners is a feasible solution to reduce risk, with options

including co-ordinated targeted education plans and partnership-funded schemes. Throughout the development of PR24 and throughout business as usual we will continue to engage with our partners to identify opportunities to work together to gain wider benefits for less.

Storm overflows

As outlined in [12. Storm overflows](#) we've put in place a plan to meet the targets in the Storm Overflow Discharge Reduction Plan, currently indicating a required spend of £1.42 billion. This plan will evolve as we gain further data and complete investigations to increase our understanding of performance and impact.

15.1 2050 Level 1 costs

The DWMP indicates that over the next 25 years we can expect investment of up to £5 billion to manage the future risks as highlighted in our DWMP. This value takes into account a medium level of risk acceptance, and includes:

- A proportional view of local authority growth forecasts.
- Most solutions responding to a two degree climate change temperature increase, and preparing for a four degree rise in some catchments.
- Addressing the flood and pollution concerns in over 200 catchments.
- Addressing WRC compliance concerns in almost 100 catchments.
- Choosing scalable 'least regret' solutions to meet differing future scenarios.
- Meeting the Storm Overflow Discharge Reduction Plan targets.

This DWMP and its costs have been approved by our Board as being the right balance between what needs to be done and the potential impact on customers' bills.

As with all strategic plans, we'll continue to monitor what's happening in our region and make changes when necessary, ensuring we invest in the right places at the right time. We'll monitor our progress against our strategic goals and adapt our shorter term investments where relevant.

To ensure we meet our [guiding principles](#), this DWMP has been through a rigorous assurance process, following [framework guidelines](#) and agreement from our Board. Our Board Assurance Statement is published online alongside this document.

To follow is a summary of what we plan to do in the medium and long term, in your area.

16. Alternative plan options

Following DWMP framework, our plan has been created using a [11. Creating a best value plan](#), and least regret solutions. This provides the widest benefits for the cost and has been agreed through consultation.

Whilst this best value plan takes a medium level of risk with regards to growth and climate change projections, we wanted to understand how the plan would differ if we were to take a more conservative, or adverse view of the future. These adaptive pathways align with the approach we're undertaking within the Long Term Delivery Strategy.

Adaptive pathways	25 year view (£bn)	Description	Alignment with expectations
DWMP - Best Value Plan	5	<p>Low regret.</p> <p>Most likely growth forecast.</p> <p>Mostly 2 degree climate change.</p> <p>Solutions based a best value plan decision.</p> <p>Storm overflow discharge reduction plan targets met within outlined timeframe.</p>	<p>Meets DWMP framework.</p> <p>Manages risk.</p> <p>Meets green ambitions.</p> <p>Supports net zero targets.</p> <p>Assumes scope for innovation.</p>
DWMP - 4 degree scenario	5.7	<p>Least regret.</p> <p>Most likely growth forecast.</p> <p>4 degree climate change.</p> <p>Storm overflow discharge reduction plan targets met within outlined timeframe.</p>	<p>Meets DWMP framework.</p> <p>Manages risk.</p> <p>Meets green ambitions.</p> <p>Supports net zero targets.</p>
Least cost	2.5	<p>Least cost plan as per optimisation to minimise spend.</p> <p>All overflow solutions grey post AMP8.</p>	<p>Does not meet DWMP requirements.</p> <p>Leaves significant risk.</p> <p>Traditional carbon intensive solutions.</p>
High demand	5.9	<p>Low regret</p> <p>Local authority growth forecast.</p> <p>Mostly 2 degree climate change.</p> <p>Costed on unit rate.</p> <p>Storm overflow discharge reduction plan targets met within outlined timeframe.</p>	<p>Meets DWMP framework.</p> <p>Manages risk.</p> <p>Meets green ambitions.</p> <p>Supports net zero targets.</p>
Low demand	4.9	<p>Low regret</p> <p>ONS growth forecast.</p> <p>Mostly 2 degree climate change.</p> <p>Costed on unit rate.</p> <p>Storm overflow discharge reduction plan targets met within outlined timeframe.</p>	<p>Meets DWMP framework.</p> <p>Leaves some risk.</p> <p>Meets green ambitions.</p> <p>Supports net zero targets.</p>

17. DWMP to PR24

This final DWMP - focusing on the risks to the water recycling system, where solutions are required and how we can adapt them in the future - follows three years of stakeholder collaboration. With the information gathered throughout the creation of the DWMP we can now create our PR24 business plan having highlighted the correct risks. Our proposed solutions are supported by our stakeholders and have been informed by our customers.

Our plan outlines our strategic direction for water recycling and will feed into our Long Term Delivery Strategy. It informs PR24, having identified the initial risks for water recycling, but will be reviewed in wider business context and subject to affordability testing. The breakdown of the investment expenditure across the five AMP periods covered will be reviewed at each Price Review period, with the business plan agreed with Ofwat.

The DWMP follows two timeframes - 2035 and 2050. This was purposely done so we could share the medium and long term risks we face and the strategies to address them, while recognising the need for flexibility when meeting affordability challenges and adaptation to new information.



18. Programme outputs

Here are the details of all the water recycling catchments that progressed through the DWMP, categorised into CaBA partnership Level 2.

Ancholme Catchment Partnership

 **4 organisations involved**

3,000
Increase in
population
2025-2050 

Up to
£45 million
investment
from 2025-2050



Hibaldstow



Hibaldstow is a village and civil parish in North Lincolnshire with a current population equivalent of 5042. The predicted growth is not significant, though it gradually rises in the medium term and flattens towards 2050. We have identified a DWF compliance risk in the medium to long term.

No concerns were identified by stakeholders during the engagement sessions. All BRAVA themes have been assessed and the key themes found were escape from sewers, WRC compliance and environment and well-being.

The medium-term plan for the WRC is to apply for a new permit. Within the network, we plan to implement mixed strategies with main solution of SuDS to remove or attenuate additional surface water flows.

Within the network there are additional long-term plans to remove 25% surface water and reduce potential infiltration. This will also mitigate the risk of DWF compliance at the WRC by reducing multiple sources of excess flow.

	2020	2025	2030	2035	2050
Population equivalent (PE)	5043	5287	5394	5411	5487
DWF compliance	2	2	2	2	2
Quality compliance	0	0	0	0	0
Internal sewer flooding risk	0	2	2	2	2
External sewer flooding risk	0	1	1	1	2
Risk of a sewer flooding in a 1 in 50 storm	0	0	0	0	0
Pollution risk	0	2	2	2	2
Sewer collapses	2	-	-	-	-
Storm overflow performance	0	-	-	-	0
Access to amenity areas	2	-	-	-	2
Green infrastructure	0	0	0	0	0

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans

WRC - new permit with increased capacity.

Networks – Mixed strategies with main solution of SuDS.

Long term plans

Infiltration reduction.

25% surface water removal.





Long term strategy only

Table 2

L3 water recycling catchment	2050 strategy
Kirkby Cum Osgodby	WRC - increase in capacity.

Catchment	Medium Term	Long Term
Brigg	 	 
Broughton (Humber)		
Caistor		
Grasby	-	-
Hibaldstow	  	 
Hemswell R.A.F.		-
Kirkby cum Osgodby	-	
Melton Ross	-	-
North Kelsey		
Owmbly	 	-
Tealby	-	-
Thealby		
Waddingham	 	
Winteringham		

Key			
	New permit		New process streams
	Infiltration removal		Attenuation
	Partnership working		Water efficiency
	Investigate		Wetlands
	Customer education		Surface water removal
			Transfer between catchments
			Mixed strategy
			New treatment works
			Process optimisation
			Conveyance

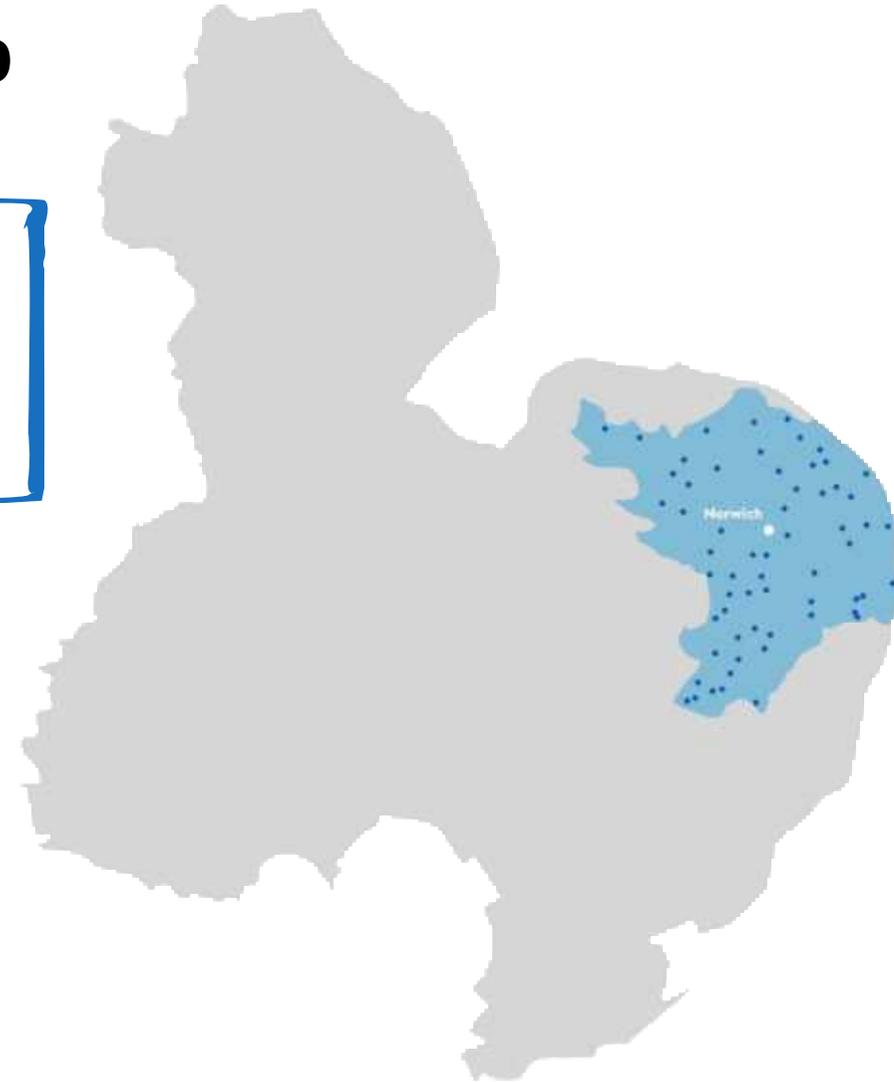
Broadland Catchment Partnership

 **9 organisations involved**

67,000
Increase in population
2025-2050 

Up to
£434 million
investment
from 2025-2050

4 Partnership opportunities identified 



Beccles



Beccles is a market town and civil parish in Suffolk with a current population equivalent of 12465. It is predicted to experience significant growth in the medium term, with a steadier rise towards 2050.

During the engagement sessions, stakeholders raised concern of the impact climate change may have on river levels. There was also concern raised over the systems resilience to climate change. The catchment was highlighted as a flood risk priority catchment. We also assessed all BRAVA themes and key themes were escape from sewers, WRC compliance and environment and wellbeing.

Based on the risk of DWF compliance, internal and external flooding and pollutions, we identified the need to reduce excess flows in the network. The medium term plan is mixed strategies with a main solution of SuDS and 25% surface water removal as a long term strategy.

The WRC will have its capacity increased to provide additional capacity to treat the increasing population.

	2020	2025	2030	2035	2050
Population equivalent (PE)	12465	13391	13239	13416	13695
DWF compliance	2	2	2	2	2
Quality compliance	0	0	0	0	0
Internal sewer flooding risk	2	2	2	2	2
External sewer flooding risk	0	1	1	2	2
Risk of a sewer flooding in a 1 in 50 storm	0	0	0	0	0
Pollution risk	2	2	2	2	2
Sewer collapses	0	-	-	-	-
Storm overflow performance	2	-	-	-	0
Access to amenity areas	0	-	-	-	0
Green infrastructure	0	0	0	0	0

How it started

All BRAVA themes assessed.
Stakeholders concerns over system performance and resilience to climate change.

Medium term plans

WRC – Increased capacity.
Networks – mixed strategy with main solution SuDS.

Long term plans

25% surface water removal.

Ludham



Ludham is village and civil parish in Norfolk with a current population equivalent (PE) of 3536.

Stakeholders identified the catchment as an area of concern due to the risk of climate change and the impact it may have on the system performance and river levels. Ludham has been highlighted as a flood risk priority catchment. All BRAVA themes were assessed and identified 3 priority themes: WRC compliance, escape from sewers and environment and wellbeing.

The medium term plan include multiple solutions at the WRC and in the network. A new permit with increased capacity is proposed at the WRC. Mixed strategies are planned for the network with a main solution of SuDS.

The long term strategy includes infiltration reduction and 25% surface water removal as a solution to address the pollution risk, internal and external sewer flooding risk and the DWF compliance risk at the WRC.

	2020	2025	2030	2035	2050
Population equivalent (PE)	3536	3707	3786	3862	3995
DWF compliance	1	2	2	2	2
Quality compliance	0	0	0	0	0
Internal sewer flooding risk	0	0	2	2	2
External sewer flooding risk	1	1	2	2	2
Risk of a sewer flooding in a 1 in 50 storm	0	0	0	0	0
Pollution risk	2	2	2	2	2
Sewer collapses	2	-	-	-	-
Storm overflow performance	0	-	-	-	0
Access to amenity areas	2	-	-	-	2
Green infrastructure	0	0	0	0	0

How it started

All BRAVA themes assessed.
Stakeholders concerns over flood risk and resilience to climate change.

Medium term plans

WRC – new permit with increased capacity.
Networks – mixed strategy with main solution SuDS.

Long term plans

Infiltration reduction.
25% surface water removal.

Acle

How it started
All BRAVA themes assessed.
Stakeholder concerns on impact of climate change. Ongoing work identified.

Medium term plans (by 2035)
WRC - increase capacity.
Networks - Mixed strategy with main solution of SuDs.

Long term plans (2050)
25% surface water removal.

Partnership working




Bacton

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
Networks - mixed strategies with main solution of SuDs.

Long term plans (2050)
50% surface water removal.



Aldborough

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
WRC - increase capacity.

Long term plans (2050)
Customer education.



Barford

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
WRC - new permit.
Networks - mixed strategies with main solution of SuDs.

Long term plans (2050)
50% surface water removal.
WRC - increase capacity.



Aldeby

How it started
Two BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
WRC - increase capacity.

Long term plans (2050)
Wait and see.



Bedfield

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
WRC - new permit.

Long term plans (2050)
Infiltration reduction.



Aylsham

How it started
All BRAVA themes assessed.
Concerns on the impact of climate change to river levels. Flood risk priority catchment. Habitats area identified.

Medium term plans (by 2035)
WRC - new permit with increase capacity.

Long term plans (2050)
Customer education.



Briston

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
Networks - mixed strategy with main solution of SuDs.

Long term plans (2050)
50% surface water removal.
Customer education.





Fornett-Fornett End

How it started

Two BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC - increase capacity.

Long term plans (2050)

WRC - new permit with increased capacity.

Horning

How it started

All BRAVA themes assessed.

Stakeholders concerns on existing flooding issues.

Medium term plans (by 2035)

WRC – new permit with increased capacity.

Networks - mixed strategies with main solution of SuDS.

Long term plans (2050)

25% surface water removal.



Freethorpe

How it started

Two BRAVA themes assessed.

Stakeholders identified Habitats area.

Medium term plans (by 2035)

WRC - increase capacity.

Long term plans (2050)

WRC - New permit with increased capacity.

Long Stratton

How it started

All BRAVA themes assessed.

Stakeholders identified the Habitats area.

Medium term plans (by 2035)

WRC – Increase in capacity

Networks - Mixed strategy with main solution of SuDS.

Long term plans (2050)

50% surface water removal.

Gislingham

How it started

Two BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC - increase capacity.

Long term plans (2050)

Wait and see.

Lowestoft

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Networks - increase in capacity.

Long term plans (2050)

25% surface water removal.

Hempnall-Fritton Rd

How it started

All BRAVA themes assessed.

Stakeholders concerns on climate change.

Medium term plans (by 2035)

Networks - mixed strategies with main solution of SuDS.

Long term plans (2050)

50% surface water removal.

Mattishall

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Networks - mixed strategies with main solution of SuDS

Long term plans (2050)

50% surface water removal.

North Walsham

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Networks - mixed strategies with main solution of SuDs

Long term plans (2050)

Increased conveyance.

Saxlingham

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Networks - mixed strategies with main solution of SuDs.

Long term plans (2050)

50% surface water removal.

Norwich – Whittingham Trowse

How it started

All BRAVA themes assessed.

Stakeholder concerns on impact of climate change. Ongoing work identified.

Medium term plans (by 2035)

Networks – increase capacity.

Long term plans (2050)

WRC - new WRC or infiltration removal, or new permit and increase capacity.
25% surface water removal.

Partnership working



Sisland

How it started

All BRAVA themes assessed.

Stakeholders identified nearby Habitats areas.

Medium term plans (by 2035)

Networks - mixed strategies with main solution of SuDs.

Long term plans (2050)

25% surface water removal.

Pulham St Mary

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Networks - mixed strategies with main solution of SuDs.

Long term plans (2050)

50% surface water removal.

Stalham

How it started

All BRAVA themes assessed.

Stakeholders identified the Habitats area.

Medium term plans (by 2035)

WRC - increase capacity.

Long term plans (2050)

WRC - new permit and increase capacity.
25% surface water removal.

Reepham (Norfolk)

How it started

All BRAVA themes assessed.

Stakeholders identified the Habitats area and future WRC permit concerns.

Medium term plans (by 2035)

Networks - mixed strategies with main solution of SuDs.

Long term plans (2050)

50% surface water removal.
WRC - wetland.

Stoke Ash

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC - Transfer between catchments.

Long term plans (2050)

Wait and see.



Long term strategy only

Table 3

L3 water recycling catchment	2050 strategy
Belaugh	25% surface water removal.
Harleston	25% surface water removal.

Catchment	Medium Term	Long Term
Acle 	 	
Aldeby		-
Aldborough		
Ashwellthorpe	-	-
Aylsham	 	
Bacton		
Barford	 	
Bedfield		
Beccles	 	
Belaugh	-	
Briston		 
Bungay		
Bylaugh		
Caister 	-	-
Coltishall	-	-
Cotton		
Dereham		

Catchment	Medium Term	Long Term
Dickleburgh	-	-
Dingley		
Diss		
Ditchingham	 	 
East Ruston	-	-
Eye		
Fakenham		
Forncett		
Foulsham	-	-

Key			
	New permit		New process streams
	Infiltration removal		Attenuation
	Partnership working		Water efficiency
	Investigate		Wetlands
	Customer education		Surface water removal
			Transfer between catchments
			Mixed strategy
			New treatment works
			Process optimisation
			Conveyance

Catchment	Medium Term	Long Term
Freethorpe		
Gislingham		-
Harleston	-	
Hempnall		
Horsey	-	-
Horning		
Lowestoft		
Long Stratton		
Ludham		
Mattishall		
Mautby Runham Village	-	-
North Elmham	-	-
North Walsham		
Oakley	-	-
Pulham St Mary		
Rackheath	-	-
Reepham (Norfolk)		

Catchment	Medium Term	Long Term
Reps with Baswick	-	-
Saxlingham		
Sculthorpe	-	-
Sisland		
Eye	-	
Smallburgh	-	-
Spooner Row	-	-
Southrepps	-	-
Stalham		
Stoke Holy Cross		
Stoke Ash		-
Swardeston-Common		
Thorndon- Catbridge	-	-
Tibenham	-	-
Weybread	-	-
Wheatacre	-	-
Whitlingham- Norwich		

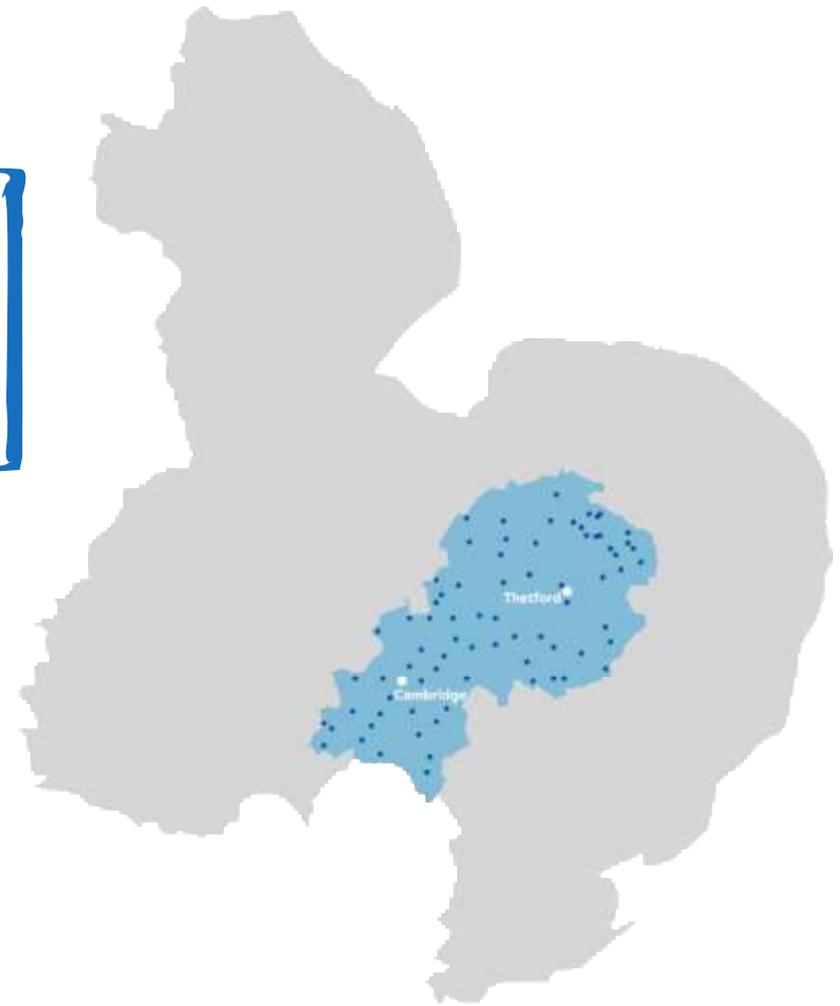
Catchment	Medium Term	Long Term
Winfarthing Goose Green	-	-
Worlingham-Ashtree		
Wymondham	-	-

CamEO Catchment Partnership

 **6 organisations involved**

88,800
Increase in
population
2025-2050 

Up to
£462 million
investment
from 2025-2050



Attleborough



Attleborough is a market town and civil parish between Norwich and Thetford, with a current population equivalent of 13316.

Stakeholders raised concerns about with the future of WRC permit limits due to environmental constraints. During the BRAVA stage Attleborough was not scored as a high-risk catchment; however, after further investigation and taking stakeholder concerns into account, we decided to bring the plan forward prior to 2050. All BRAVA themes were assessed and 3 priority themes were identified: WRC compliance, escape from sewers and environment and wellbeing.

The current and predicted growth in Attleborough means that the WRC may require upgrades to increase the capacity to meet DWF compliance by 2050. Within the network there are plans to apply mixed strategies with a main solution of SuDS.

The long-term strategy aims to remove 25% surface water in the network, whilst bringing forward upgrades to the WRC should mitigate long term risk.

	2020	2025	2030	2035	2050
Population equivalent (PE)	13316	16266	19043	21066	23280
DWF compliance	1	1	1	1	2
Quality compliance	1	1	1	1	1
Internal sewer flooding risk	0	0	1	1	2
External sewer flooding risk	0	1	2	2	2
Risk of a sewer flooding in a 1 in 50 storm	0	0	0	0	0
Pollution risk	2	2	2	2	2
Sewer collapses	0	-	-	-	-
Storm overflow performance	0	-	-	-	0
Access to amenity areas	1	-	-	-	1
Green infrastructure	0	0	0	0	0

How it started

All BRAVA themes assessed.

Stakeholders concerned with future WRC permit limits.

Medium term plans

WRC – increased capacity.

Networks – mixed strategy with main solution SuDS.

Long term plans

25% surface water removal.

Over



Over is a large village in Cambridgeshire, near the Great River Ouse, with a population equivalent (PE) of 13351. Significant growth is forecasted over the next 30 years with an increase of over 5500 PE.

Over was identified as a high-risk catchment due to the DWF compliance risk in the medium and long term. All BRAVA themes were assessed, themes highlighted as key concerns were as follows: escape from sewers, WRC compliance and environment and wellbeing. Stakeholders were also concerned about the implications of flooding in the area.

The medium-term plan at the WRC is to increase capacity and reduce infiltration in the catchment to address the DWF and quality compliance risk. We will also look at mixed strategies in the network with a main solution of SuDS to reduce risk of surface water flooding.

The long-term plan is to remove 50% of surface water in the network. These solutions aim to address the high risk of pollution, internal and external sewer flooding risks.

	2020	2025	2030	2035	2050
Population equivalent (PE)	13351	14378	15627	16675	18875
DWF compliance	2	2	2	2	2
Quality compliance	1	1	1	1	1
Internal sewer flooding risk	0	2	2	2	2
External sewer flooding risk	0	2	2	2	2
Risk of a sewer flooding in a 1 in 50 storm	0	0	0	0	0
Pollution risk	0	2	2	2	2
Sewer collapses	2	-	-	-	-
Storm overflow performance	1	-	-	-	1
Access to amenity areas	1	-	-	-	1
Green infrastructure	0	0	0	0	0

How it started

All BRAVA themes assessed.

Stakeholders identified flood risk concerns.

Medium term plans

WRC – increased capacity.

Networks – mixed strategy with main solution SuDS.

Long term plans

50% surface water removal.



East Harling

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
Networks - mixed strategies with main solution of SuDs.

Long term plans (2050)
50% surface water removal.



Fordham

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
Networks - mixed strategies with main solution of SuDs.

Long term plans (2050)
25% surface water removal.



Elmswell

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
Networks - mixed strategies with main solution of SuDs.

Long term plans (2050)
50% surface water removal.



Fornham All Saints

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
Networks - mixed strategies with main solution of SuDs.

Long term plans (2050)
WRC - investigate, increase capacity.
25% surface water removal.



Ely-New

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
WRC - New permit with increased capacity.
Networks - Mixed Strategies with main solution of SuDs.

Long term plans (2050)
WRC - Investigate with other Ely WRC.



Foxton (Cams)

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
Networks - mixed strategies with main solution of SuDs.

Long term plans (2050)
WRC - new permit with increased capacity.
25% surface water removal.



Feltwell

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
Networks - mixed strategies with main solution of SuDs.

Long term plans (2050)
10% surface water removal.



Haslingfield

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

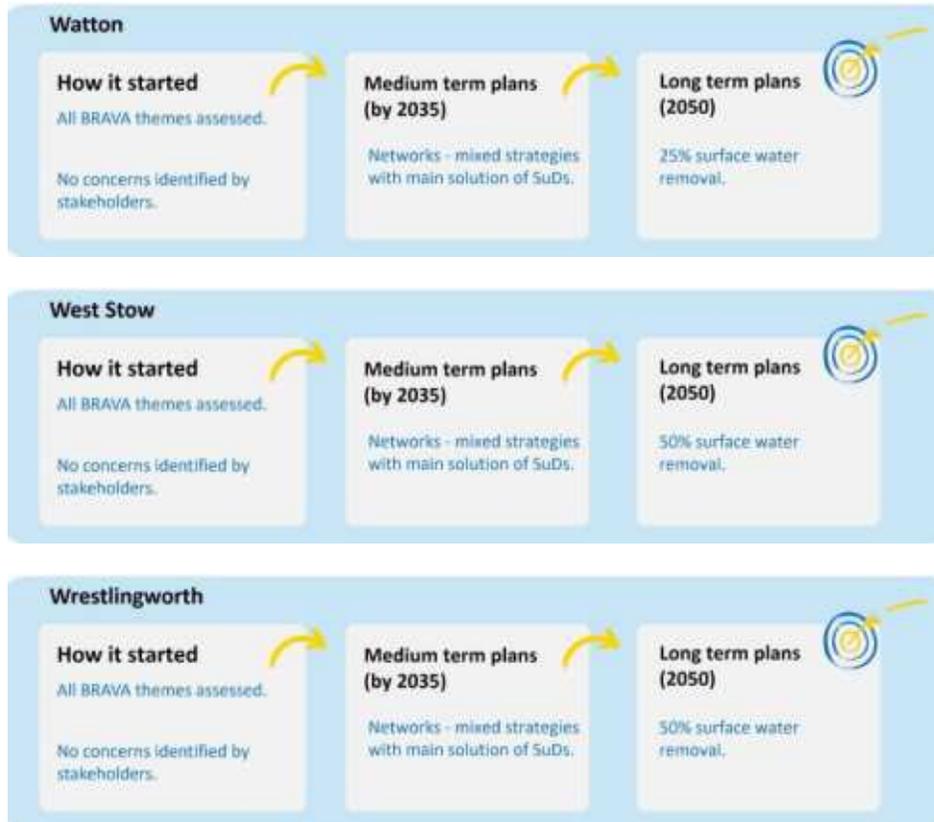
Medium term plans (by 2035)
WRC - infiltration reduction.
Networks - Attenuation.

Long term plans (2050)
25% surface water removal.









Long term strategy only

Table 4

L3 water recycling catchment	2050 strategy
Arrington	WRC - increased capacity.
Balsham	Increased conveyance.
Barrow	Investigate.
Dullingham	WRC - increase capacity.
Ely	WRC - Investigate with other Ely WRC. 25% surface water removal
Haddenham	50% surface water runoff removal.
Newmarket	WRC - increased capacity. 25% surface water removal.
Royston	WRC - Process optimisation.
Stretham	WRC - increase capacity.

Catchment	Medium Term	Long Term
Arrington	-	
Ashwell	-	-
Attleborough		
Attleborough – Poplar Road	-	-
Badwell Ash		
Balsham	-	
Barley		
Barnham	-	-
Barrow	-	
Bottisham		
Bourn		
Brandon	-	-
Bridgham – The St	-	-
Burwell		
Cambridge		
Carbrooke – Church End		
Carbrooke – Drury Lane	-	-

Catchment	Medium Term	Long Term
Chedburgh	-	-
Coton		
Dullingham	-	
East Harling		
Elmswell		
Ely	-	
Ely - New		
Feltwell		

Key			
	New permit		New process streams
	Infiltration removal		Attenuation
	Partnership working		Water efficiency
	Investigate		Wetlands
	Customer education		Surface water removal
	Transfer between catchments		Mixed strategy
			New treatment works
			Process optimisation
			Conveyance

Catchment	Medium Term	Long Term
Fordham		
Fornham All Saints		
Foxton		
Great Chesterford	-	-
Great Ellingham	-	-
Great Welnetham	-	-
Guilden Morden	-	-
Haddenham	-	
Haslingfield		
Hawstead	-	-
Hilborough	-	-
Isleham	-	-
Kennett	-	-
Lakenheath		
Linton		
Little Downham		
Melbourn		

Catchment	Medium Term	Long Term
Merton	-	-
Methwold Hythe	-	-
Mildenhall		
Mundford		
Newmarket	-	
Newport		
Old Buckenham		
Over		
Ovington	-	-
Prickwillow	-	-
Royston	-	
Saffron Walden		
Sawston		
Shropham	-	-
Snetterton	-	-
Soham		
Southrey – Mill Drove	-	-

Catchment	Medium Term	Long Term
Stanton		
Stoke Ferry	-	-
Stow Bedon – Mere Road	-	-
Stow Bedon – Station road	-	-
Stretham	-	
Swaffham	-	-
Swaffham Prior	-	-
Teversham	 	
Thetford		
Thompson	-	-
Thurston		
Tuddenham		
Waterbeach	 	
Watton		
West Stow		
Wrestlingworth		

East Suffolk Catchment Partnership

 **4** organisations involved

24,750
Increase in population
2025-2050 

Up to
£178 million
investment
from 2025-2050

1 Partnership opportunity identified 







Long term strategy only

Table 5

L3 water recycling catchment	2050 strategy
Felixstowe	10% surface water removal.
Halesworth	25% surface water removal.
Kessingland	10% surface water removal.
Leiston	10% surface water removal.
Woodbridge-Creek FM	25% surface water removal.

Catchment	Medium Term	Long Term
Aldeburgh		
Benhall		
Chelmondiston		
Debenham	-	-
Dunwich – Bridge FM	-	-
Elmsett	-	-
Felixstowe	-	
Framlingham		
Gedding	-	-
Halesworth	-	
Haughley		
Hollesley	-	-
Ipswich – Cliff Quay	-	
Kessingland – Marsh Lane		
Kirton		
Leiston	-	
Levington	-	-

Catchment	Medium Term	Long Term
Melton		
Needham Market		
Rattlesden – Workhouse Lane	-	-
Shotley – Overhall Farm		
Southwold		
Stonham Aspall		
Stowmarket		
Tuddenham	-	-

Key			
	New permit		New process streams
	Infiltration removal		Attenuation
	Partnership working		Water efficiency
	Investigate		Wetlands
	Customer education		Surface water removal
	Transfer between catchments		Mixed strategy
	New treatment works		Process optimisation
	Conveyance		

Catchment	Medium Term	Long Term
Whickham Market	-	-
Woodbridge – Creek Farm	-	

Essex Rivers Catchment Partnership

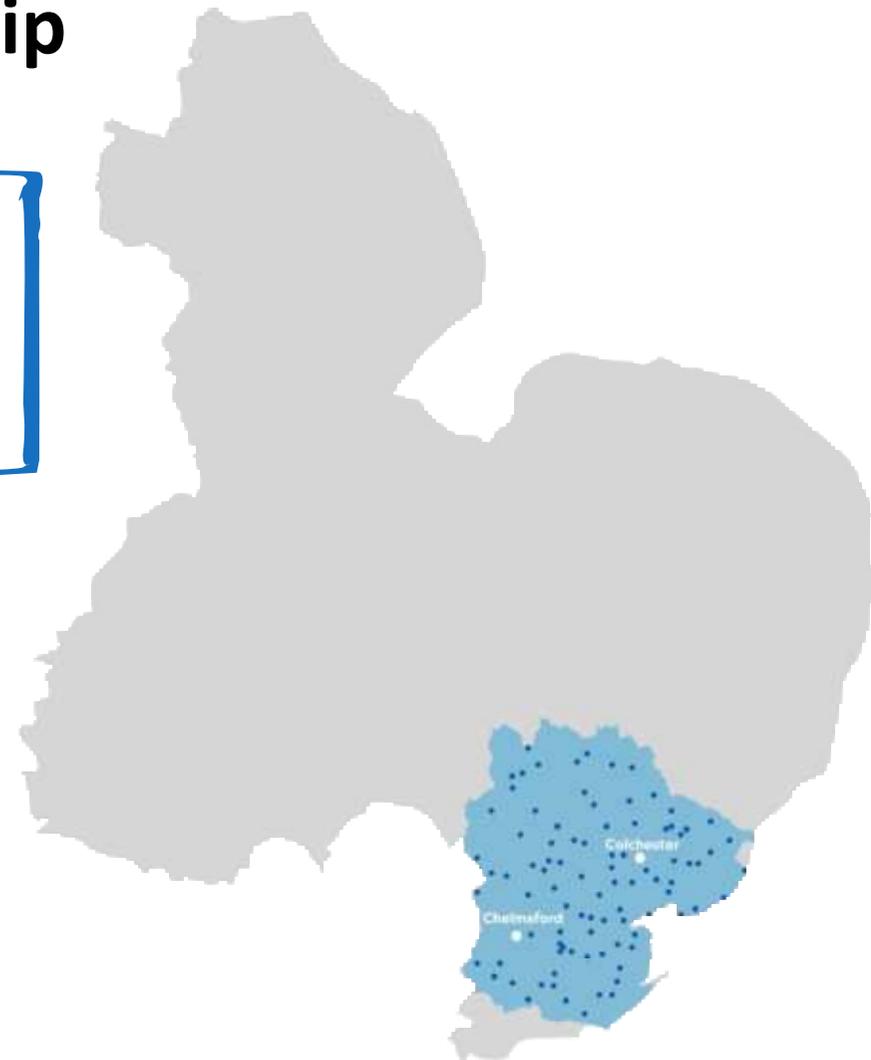
 **11** organisations involved

118,000
Increase in
population
2025-2050

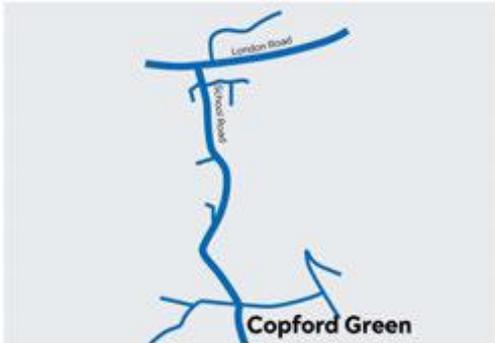


Up to
£836 million
investment
from 2025-2050

4 Partnership opportunities identified



Copford



Copford is a village and civil parish in Essex, with a current population equivalent (PE) of 4884. It is predicted to have growth of over 1000 PE in the next 25 years, with a particular risk in DWF compliance.

Copford has been identified as a sensitive area and watercourse. Stakeholders were particularly concerned with the habitats in the area. All BRAVA themes were assessed with escape from sewers, environment and wellbeing and WRC compliance as the priority themes.

The medium-term strategy is to undertake infiltration reduction to reduce flows towards the WRC and apply for a new DWF Permit. The medium to long-term strategy identifies a potential to transfer additional flows to a nearby WRC, with capacity and the potential to upgrade (Eight Ash Green). There are also plans for Mixed strategies with main solution of SuDS.

The long-term strategy is to remove 50% of surface water in the catchment to reduce risk of internal and external sewer flooding, pollution risk and WRC compliance.

	2020	2025	2030	2035	2050
Population equivalent (PE)	4884	5778	5970	6110	6469
DWF compliance	2	2	2	2	2
Quality compliance	0	1	1	1	1
Internal sewer flooding risk	2	2	2	2	2
External sewer flooding risk	0	1	2	2	2
Risk of a sewer flooding in a 1 in 50 storm	0	0	0	0	0
Pollution risk	0	2	2	2	2
Sewer collapses	0	-	-	-	-
Storm overflow performance	0	-	-	-	0
Access to amenity areas	2	-	-	-	2
Green infrastructure	0	0	0	0	0

How it started

All BRAVA themes assessed.

Stakeholders identified Habitats area.

Medium term plans

Infiltration reduction.
WRC – new permit.

Networks – Mixed strategy with main solution of SuDS.

Long term plans

50% surface water removal.

Latchingdon



Latchingdon is a village in Essex with a current population equivalent (PE) of 2728. It has received a lot of positive engagement from stakeholders, helping us identify the potential for partnership working opportunities and to understand our risk. There are currently investigations and ongoing projects in the area.

Stakeholders highlighted their concerns on the system performance and the uncertainty of climate change. All BRAVA themes were assessed and the areas of key concern are as follows: escape to sewers, WRC compliance and environment and wellbeing.

Both DWF and quality compliance were considered a high risk through the BRAVA assessment. The medium-term plans include a new permit and increasing WRC capacity with new process streams to meet the demand of both quality and DWF compliance. Within the network it includes a mixed strategy with a main solution of SuDS. The long-term plan is for 25% surface water removal in the catchment.

There are existing projects and investigations in the catchment which aim to reduce some of the high risks identified in the BRAVA process.

	2020	2025	2030	2035	2050
Population equivalent (PE)	2728	2741	2824	2896	3101
DWF compliance	2	2	2	2	2
Quality compliance	2	2	2	2	2
Internal sewer flooding risk	0	2	2	2	2
External sewer flooding risk	0	2	2	2	2
Risk of a sewer flooding in a 1 in 50 storm	0	0	0	0	0
Pollution risk	0	2	2	2	2
Sewer collapses	2	-	-	-	-
Storm overflow performance	2	-	-	-	2
Access to amenity areas	1	-	-	-	1
Green infrastructure	0	0	0	0	0

How it started

All BRAVA themes assessed.

Stakeholder concerns on climate change. Existing projects ongoing.

Medium term plans

WRC - new permit with increased capacity.

Networks – mixed strategy with main solution SuDS.

Long term plans

25% surface water removal.



Maldon



Maldon is a town and civil parish on the Blackwater estuary in Essex with a population equivalent (PE) of 22990.

Maldon is a catchment that received the highest level of stakeholder engagement. It was identified as part of the surface water management plan and as a flood risk priority catchment with ongoing projects and investigations with other organizations. There was also concern raised regarding the impact of climate change, environmental constraints and the importance of protecting the watercourse due to the Shellfish. We have identified partnership working opportunities here.

The medium-term plan is to increase the capacity of the WRC to ensure quality compliance. It has also been identified that it may benefit from proactive maintenance to improve the performance of existing assets. In the catchment mixed strategies are proposed with a main solution of providing additional capacity. This aims to reduce the risk of internal and external sewer flooding and improving the storm overflow performance.

Due to the increased risks of some key themes from 2035 onwards there is a long-term plan to reduce 10% of surface water in the catchment.

	2020	2025	2030	2035	2050
Population equivalent (PE)	22990	23675	24268	24827	25951
DWF compliance	0	1	1	1	1
Quality compliance	2	2	2	2	2
Internal sewer flooding risk	0	0	0	1	2
External sewer flooding risk	0	0	1	2	2
Risk of a sewer flooding in a 1 in 50 storm	0	0	0	0	0
Pollution risk	0	0	0	2	2
Sewer collapses	2	-	-	-	-
Storm overflow performance	2	-	-	-	2
Access to amenity areas	0	-	-	-	0
Green infrastructure	0	0	0	0	0

How it started

All BRAVA themes assessed.

Stakeholder concerns on current and future flood risk.

Medium term plans

WRC – increased capacity.

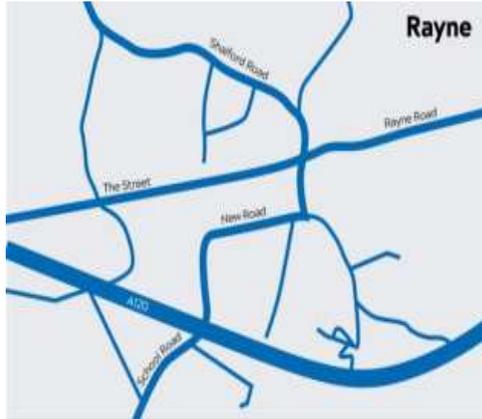
Networks – mixed strategy with main solution of additional capacity.

Long term plans

10% surface water removal.



Rayne



Rayne is a village in the Braintree district of Essex, with a current population equivalent (PE) of 3056. Whilst the predicted growth is not substantial up to 2050, there is an existing flood risk in the catchment with a future DWF compliance risk.

Rayne is currently identified as part of the Surface Water Management Plan. Multiple stakeholders shared the concern of the potential impact climate change may have on the current systems performance. All BRAVA themes have been assessed, with the following key themes identified: escape from sewers, environment and wellbeing and WRC compliance.

The medium-term plan is to apply for a new permit and increase capacity at the WRC to remain DWF compliant. It is an option that catchment wide customer interventions may help contribute to reducing excess flows. Mixed strategies will be planned for the network, with a main solution of SuDS.

The medium-term strategy for the WRC should mitigate the risk up to 2050 due to the predicted slow in growth from 2040 onwards. In the network we aim to remove 50% of surface water from 2050.

	2020	2025	2030	2035	2050
Population equivalent (PE)	3056	3040	2997	3006	3145
DWF compliance	0	1	2	2	2
Quality compliance	1	1	1	1	1
Internal sewer flooding risk	0	0	0	0	0
External sewer flooding risk	0	1	1	2	2
Risk of a sewer flooding in a 1 in 50 storm	0	0	0	0	0
Pollution risk	0	0	0	0	2
Sewer collapses	2	-	-	-	-
Storm overflow performance	0	-	-	-	0
Access to amenity areas	1	-	-	-	1
Green infrastructure	0	0	0	0	0

How it started

All BRAVA themes assessed.

Stakeholders identified existing flood risk.

Medium term plans

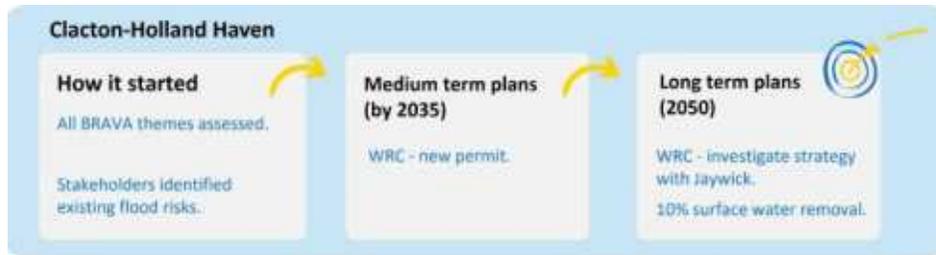
WRC - new permit and additional capacity.

Networks – mixed strategy with main solution SuDS.

Long term plans

50% surface water removal.







Halstead

How it started
All BRAVA themes assessed.

Stakeholders concerned with current and future flooding, and future WRC permit limits.

Medium term plans (by 2035)
WRC - New permit.
Network - Attenuation.

Long term plans (2050)
50% surface water run off removal.

Keddington

How it started
All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)
Network - mixed strategies with main solution of SuDS.

Long term plans (2050)
50% surface water removal.

Harwich and Dovercourt

How it started
All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)
Network - mixed strategies with main solution of SuDS.

Long term plans (2050)
25% surface water removal.

Lavenham

How it started
All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)
Network - mixed strategies with main solution of SuDS.

Long term plans (2050)
50% surface water removal.

Haverhill

How it started
All BRAVA themes assessed.

Stakeholder concerns on future WRC permit limit and flooding.

Medium term plans (by 2035)
WRC - process optimisation.
Network - Mixed strategy with main solution of SuDS.

Long term plans (2050)
10% surface water removal.

Lt Totham

How it started
All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)
WRC - New permit.
Network - mixed strategies with main solution of SuDS.

Long term plans (2050)
WRC - transfer between catchments.
50% surface water removal.

Ingatestone

How it started
All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)
Network - mixed strategies with main solution of SuDS.

Long term plans (2050)
50% surface water removal.

Manningtree

How it started
All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)
WRC - increased capacity
Network - mixed strategies with main solution of SuDS.

Long term plans (2050)
25% surface water removal.







Long term strategy only

Table 6

L3 water recycling catchment	2050 strategy
Chelmsford	WRC - process optimatisation and increased capacity.
High Roding	WRC - increased capacity.
Jaywick New	10% surface water removal.
Sudbury	WRC - Investigate with Great Conard. 25% surface water removal.
Walton on the Naze	10% surface water removal.
Wickford	WRC - increase capacity. 25% surface water removal.
Witham	25% surface water removal.

Catchment	Medium Term	Long Term
Basildon		
Billericay		-
Birch		
Bocking	-	-
Boxford	-	-
Bradwell on Sea		
Braintree		
Brantham		
Brightlingsea – Church road		
Bures – Wissington Road	-	-
Burnham on Crouch		
Chelmsford	-	
Clacton – Holland Haven		
Cock Clarks Hackmans Lane	-	-
Coggeshall		
Colchester		-
Copford		

Catchment	Medium Term	Long Term
Dedham		
Doddinghurst		
Earls Colne		
East Bergholt	-	-
Eight Ash Green		
Felsted		-
Fingringhoe		
Glemsford		

Key			
	New permit		New process streams
	Infiltration removal		Attenuation
	Partnership working		Water efficiency
	Investigate		Wetlands
	Customer education		Surface water removal
	Transfer between catchments		Mixed strategy
			New treatment works
			Process optimisation
			Conveyance

Catchment	Medium Term	Long Term
Gosfield		
Great Bromley	-	-
Great Cornard		
Great Dunmow	 	
Great Easton		-
Great Leighs		-
Great Sampford		-
Great Totham	-	-
Great Wenham	-	-
Hadleigh		-
Halstead	 	
Harwich and Dovercourt		
Haverhill	 	
Hazeleigh Goat Lodge Lane	-	-
High Roding	-	
Highwood		-
Holbrook	-	-

Catchment	Medium Term	Long Term
Hundon	-	-
Ingatestone		
Jaywick New		
Keddington		
Latchingdon	  	
Lavenham		
Layer de la Hay	-	-
Little Bentley		
Little Totham	 	
Maldon	  	
Manningtree		
Maylandsea		
Monks Eleigh	-	-
Nayland		
Paglesham – East End		
Purleigh		
Rayleigh East		

Catchment	Medium Term	Long Term
Rayleigh West		
Rayne		
Rochford		
South Woodham Ferrers		
Salcott		
Shenfield and Hutton		
Shimpling		
Sible Hedingham	-	-
Southend		
Southminster		
St Osyth		
Steeple Bumpstead	-	-
Stisted	-	-
Stone St Lawrence		
Stradishall Highpoint	-	-
Sudbury	-	
Tendring Green	-	-

Catchment	Medium Term	Long Term
Thorrington		
Tillingham	-	-
Tiptree		
Tollesbury		
Tolleshunt – Darcy	-	-
Toppesfield	-	-
West Bergholt		
Walton on the Naze	-	
West Mersea		
Wethersfield	-	-
W'ham Mortimer Post Office Road	-	-
White Notley		-
Wickford	-	
Witham	-	
Wix	-	-
Woodham Walter	-	-

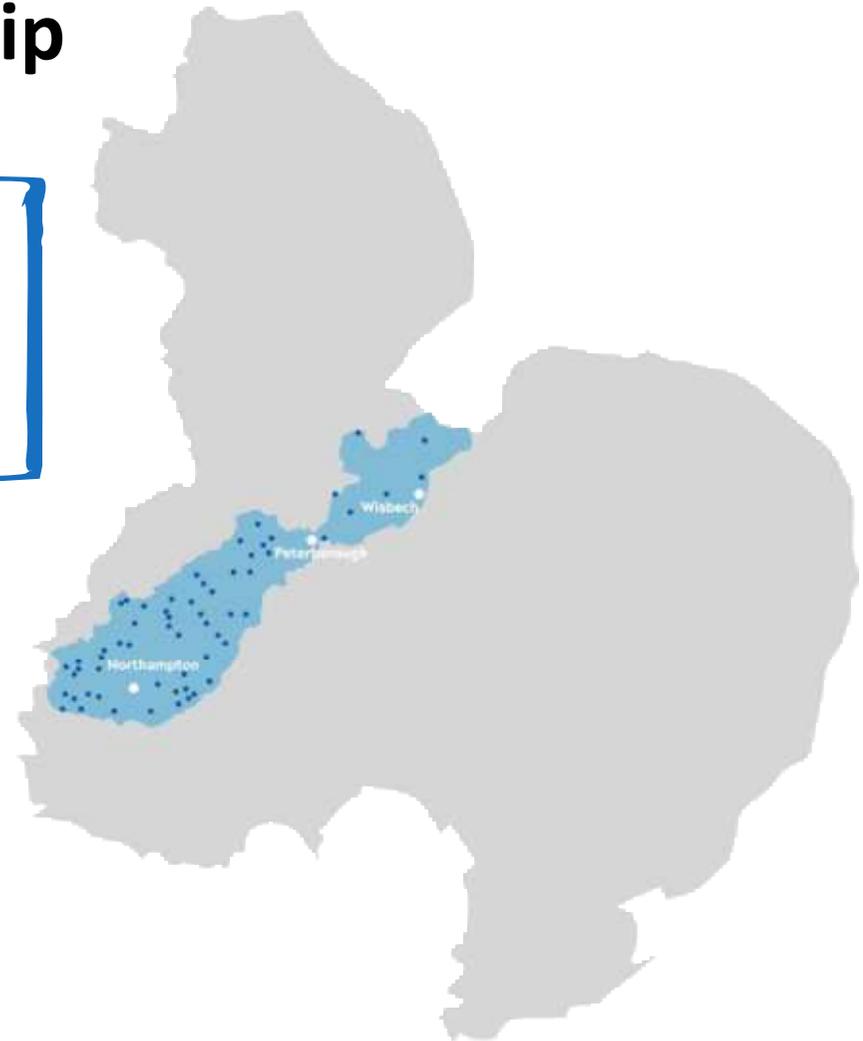
Nene Valley Catchment Partnership

 **8 organisations involved**

126,800
Increase in population
2025-2050 

Up to
£258 million
investment
from 2025-2050

2 Partnership opportunities identified 



Broadholme



Broadholme is a catchment that takes flows from Wellingborough, Kettering and parts of East Northamptonshire, including Rushden and Irthlingborough. It currently receives a population equivalent (PE) of 229169 with a significant increase predicted over the next 30 years.

Stakeholders raised concern regarding the future WRC permit and the environment constraints surrounding the WRC. All BRAVA themes were assessed, and the key concerns were as follows: escape from sewers, WRC compliance and environment and wellbeing.

Broadholme is at high risk for DWF compliance and a medium compliance risk for quality from 2025 onwards. The medium-term plan is to increase the capacity at both the WRC and within the network, with aim to address the risk of internal and external sewer flooding, pollution risk and to improve storm overflow performance.

The long-term strategy is to remove 10% surface water in the catchment to remove additional flow.

	2020	2025	2030	2035	2050
Population equivalent (PE)	229169	242605	252179	256689	269592
DWF compliance	1	2	2	2	2
Quality compliance	1	1	1	1	1
Internal sewer flooding risk	1	1	2	2	2
External sewer flooding risk	0	1	1	2	2
Risk of a sewer flooding in a 1 in 50 storm	0	0	0	0	0
Pollution risk	2	2	2	2	2
Sewer collapses	0	-	-	-	-
Storm overflow performance	2	-	-	-	2
Access to amenity areas	0	-	-	-	0
Green infrastructure	0	0	0	0	0

How it started

All BRAVA themes assessed.

Stakeholders concerned about future WRC permit.

Medium term plans

WRC - Increased capacity.

Network - Increased capacity.

Long term plans

10% surface water removal.



Gayton (S Northants)

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
Network - mixed Strategies with main solution of SuDs.

Long term plans (2050)
25% surface water removal.



Islip

How it started
All BRAVA themes assessed.
Stakeholders identified ongoing projects.

Medium term plans (by 2035)
WRC - Infiltration reduction.

Long term plans (2050)
10% surface water removal.

Partnership working 



Geddington

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
Network - mixed strategy with main solution of SuDs.

Long term plans (2050)
Reduce infiltration.
25% surface water removal



Loddington

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
WRC - Increase capacity.

Long term plans (2050)
Wait and see.



Great Oxendon

How it started
Two BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
WRC - Increased capacity.

Long term plans (2050)
Wait and see.



Long Buckby

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
WRC - Increase Capacity.
Network - mixed strategies with main solution of SuDs.

Long term plans (2050)
25% surface water removal.



Hackleton

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
Network - mixed strategies with main solution of SuDs.

Long term plans (2050)
50% surface water removal.



Newnham (Northants)

How it started
All BRAVA themes assessed.
No concerns identified by stakeholders.

Medium term plans (by 2035)
Network - mixed strategies with main solution of SuDs.

Long term plans (2050)
25% surface water removal.







Long term strategy only

Table 7

L3 water recycling catchment	2050 strategy
Great Billing	WRC - increase capacity. 10% surface water removal.
Moulton	Reduce infiltration. Transfer between catchments.
Nassington	WRC - increase capacity Customer education. Water efficiency.
Ravensthorpe	Customer education.
Wittering	WRC - process optimisation. Increase WRC capacity - new process.

Catchment	Medium Term	Long Term
Benefield	-	-
Bozeat		
Brigstock		
Brington	-	-
Brixworth		
Broadholme		
Broughton		
Bugbrooke		
Castle Ashby	-	-
Clipston	-	-
Corby		-
Cranford	-	-
Creaton	-	-
Crowland		-
Draughton	-	-
East Haddon		-
Easton Maudit	-	-

Catchment	Medium Term	Long Term
Elton	-	-
Everdon	-	-
Gayton		
Geddington		
Grafton Underwood	-	-
Great Billing	-	
Great Doddington	-	-
Great Oxendon		-

Key			
	New permit		New process streams
	Infiltration removal		Attenuation
	Partnership working		Water efficiency
	Investigate		Wetlands
	Customer education		Surface water removal
	Transfer between catchments		Mixed strategy
	New treatment works		Process optimisation
	Conveyance		

Catchment	Medium Term	Long Term
Grendon	-	-
Hackleton		
Harrington	-	-
Islip	 	
Kingscliffe	-	-
Litchborough	-	-
Little Addington	-	-
Loddington		-
Long Buckby	 	
Moulton	-	 
Nassington	-	  
Newnham		
Norton	-	-
Oundle		
Parson Drove	-	-
Peterborough		
Preston Capes St	-	-

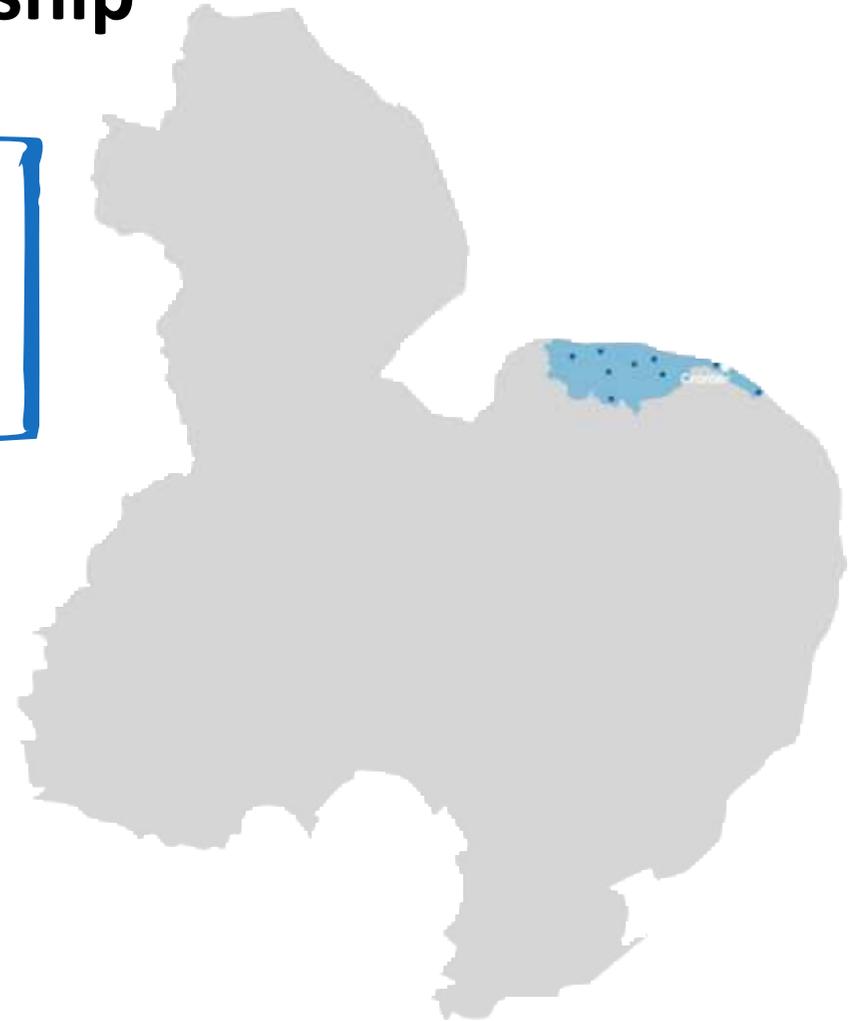
Catchment	Medium Term	Long Term
Pytchley	-	-
Raunds	 	-
Ravensthorpe	-	
Rushton		-
Stantion	-	-
Stibbington		
Sutton Bridge		
Thorney	-	-
Thorpe Malsor		-
Titchmarsh		
Weedon	 	
Welton	-	-
West Walton		
Whilton		-
Wittering	-	 
Woodnewton	-	-
Yardley Hastings		

North Norfolk Catchment Partnership

 **3 organisations involved**

6,700
Increase in
population
2025-2050 

Up to
£43 million
investment
from 2025-2050



Mundesley



Mundesley is a coastal village and civil parish in the county of Norwich with a current population equivalent of 7494.

During the initial stages of the DWMP process, stakeholders highlighted concerns on the current and future flood risk based on climate change, elevated river levels and the impact this may have on drainage. All BRAVA themes were assessed and highlighted some key risks in the area, with pollution risk, external sewer flooding from 2035 onwards. Both DWF and quality compliance are a moderate risk in the short, medium and long term.

Whilst DWF and quality compliance risk were scored at a medium level of 1 from 2020 onwards, we identified a possible need for additional capacity in the initial process stage at the WRC to remain compliance to meet the additional growth in the catchment. Mixed strategies have been identified for medium term plans in the network with a main solution of SUDs.

The long-term strategy focuses on 25% surface water removal in the network as the upgrades in the WRC should mitigate the long-term risk.

	2020	2025	2030	2035	2050
Population equivalent (PE)	7494	7724	8071	8232	8657
DWF compliance	1	1	1	1	1
Quality compliance	1	1	1	1	1
Internal sewer flooding risk	0	0	0	0	2
External sewer flooding risk	0	0	0	1	2
Risk of a sewer flooding in a 1 in 50 storm	0	0	0	0	0
Pollution risk	0	0	0	2	2
Sewer collapses	0	-	-	-	-
Storm overflow performance	2	-	-	-	2
Access to amenity areas	1	-	-	-	1
Green infrastructure	0	0	0	0	0

How it started

All BRAVA themes assessed.

Stakeholder concerns on current and future flood risk.

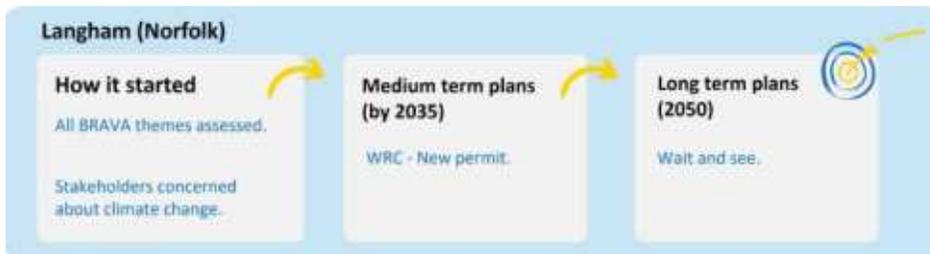
Medium term plans

WRC – increased capacity.

Networks – mixed strategy with main solution SuDS.

Long term plans

25% surface water removal.



Long term strategy only

Table 8

L3 water recycling catchment	2050 strategy
Burnham Market	25% surface water removal.
Cley - Glandford Road	WRC - transfer between catchments or relocate outfall. 25% surface water removal.
Little Snoring	Infiltration reduction.

Catchment	Medium Term	Long Term
Burnham Market		
Cley	-	
Cromer		
Great Walsingham	-	-
Holt - Main Road	-	-
Langham		-
Little Snoring	-	
Mundesley		
Wells		

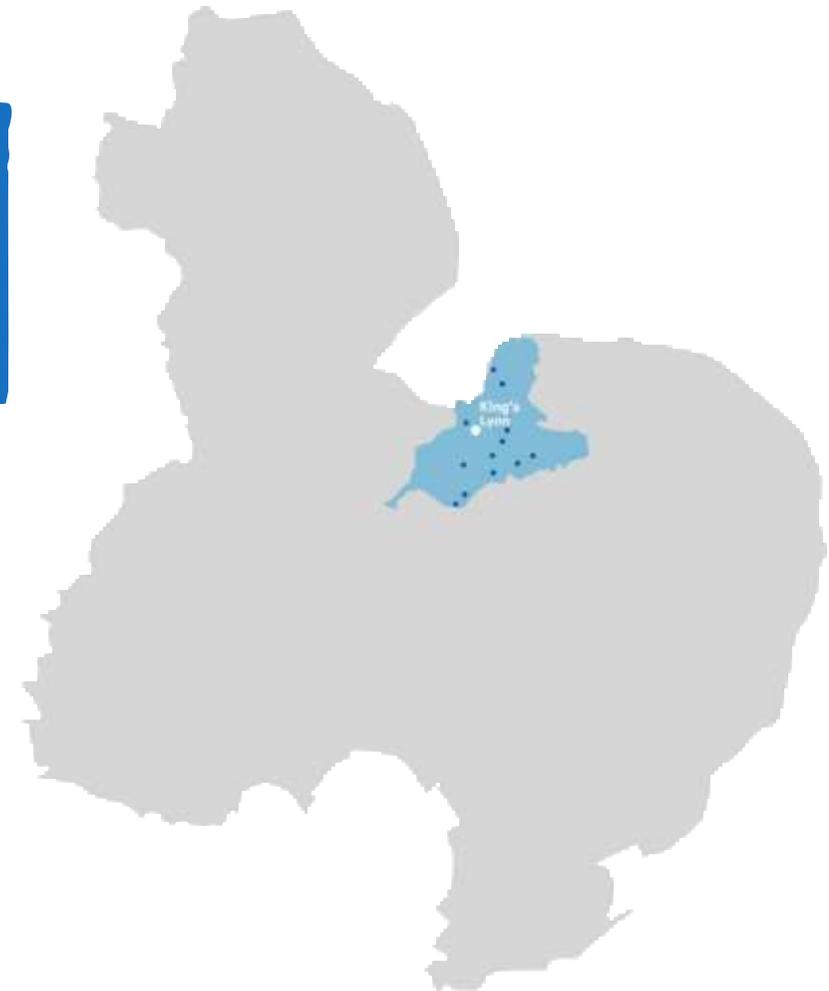
Key			
	New permit		New process streams
	Infiltration removal		Attenuation
	Partnership working		Water efficiency
	Investigate		Wetlands
	Customer education		Surface water removal
			Transfer between catchments
			Mixed strategy
			New treatment works
			Process optimisation
			Conveyance

North West Norfolk Catchment Partnership

 **3 organisations involved**

9,900
Increase in
population
2025-2050 

Up to
£53 million
investment
from 2025-2050





Long term strategy only

Table 9

L3 water recycling catchment	2050 strategy
Ingoldisthorpe	10% surface water removal.

Catchment	Medium Term	Long Term
Downham Market		
Grimston		
Heacham		
Ingoldisthorpe	-	
Kings Lynn	-	-
Leziate	-	-
Middleton		
Narborough	-	-
Shouldham	-	-
Salters Lode Watermans Way	-	-
West Acre River Road	-	-
Watlington		 

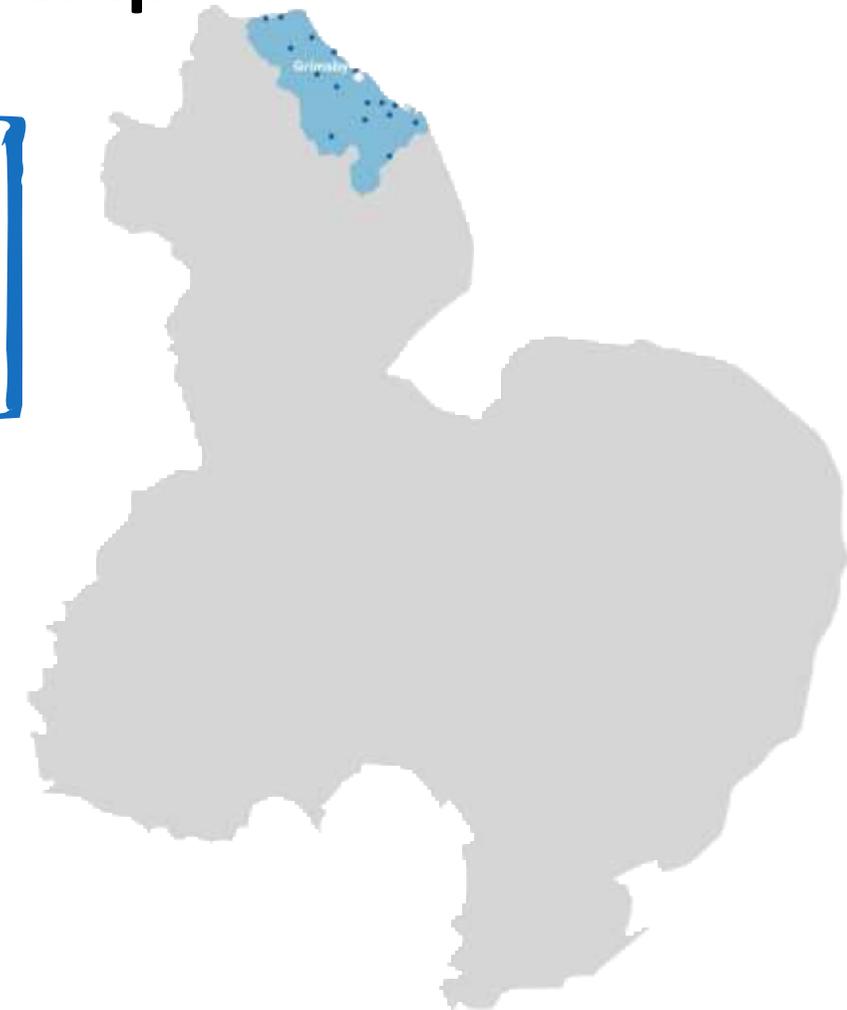


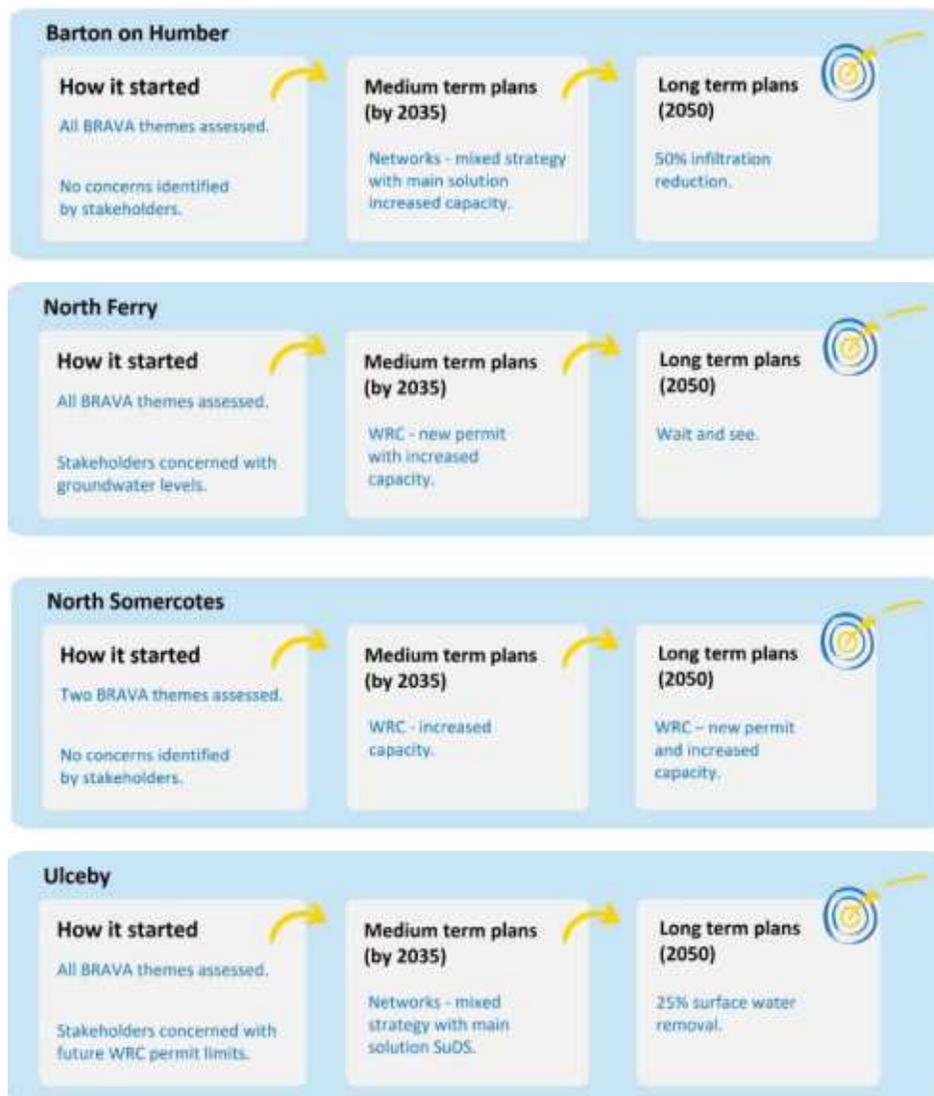
Northern Becks Catchment Partnership

 **6 organisations involved**

5,000
Increase in
population
2025-2050 

Up to
£12 million
investment
from 2025-2050





Long term strategy only

Table 10

L3 water recycling catchment	2050 strategy
Holton le Cley	50% surface water run off removal.
Immingham	5% surface water removal.
Louth	WRC - new permit and increase capacity. 10% surface water removal.
South Killingholme	WRC - new permit and increase capacity.

Catchment	Medium Term	Long Term
Barton on Humber		
Binbrook	-	-
Holton le Clay	-	
Immingham	-	
Keelby	-	-
Laceby	-	-
Louth	-	  
North Cotes (RAF)	-	-
North Cotes	-	-
North Ferry	 	
North Somercotes		 
North Thoresby	-	-
Tetney – Newton Marsh	-	-
Grimsby - Pyewipe	-	-
South Killingholme		 
Ulceby		

Key			
	New permit		New process streams
	Infiltration removal		Attenuation
	Partnership working		Water efficiency
	Investigate		Wetlands
	Customer education		Surface water removal
	Transfer between catchments		Mixed strategy
			New treatment works
			Process optimisation
			Conveyance

River Idle Catchment Partnership Area



Catchment	Medium Term	Long Term
Elkesley		-

Key

	New permit		New process streams		Transfer between catchments
	Infiltration removal		Attenuation		Mixed strategy
	Partnership working		Water efficiency		New treatment works
	Investigate		Wetlands		Process optimisation
	Customer education		Surface water removal		Conveyance

South Essex Catchment Partnership

 **6** organisations involved

24,800
Increase in population
2025-2050 



Up to
£151 million
investment
from 2025-2050

2 Partnership opportunities identified 



Long term strategy only

Table 11

L3 water recycling catchment	2050 strategy
Benfleet	25% infiltration reduction.

Catchment		Medium Term	Long Term
Benfleet		-	
Canvey Island			
Pitsea			
Tilbury			 
Upminster			

Key

	New permit		New process streams		Transfer between catchments
	Infiltration removal		Attenuation		Mixed strategy
	Partnership working		Water efficiency		New treatment works
	Investigate		Wetlands		Process optimisation
	Customer education		Surface water removal		Conveyance

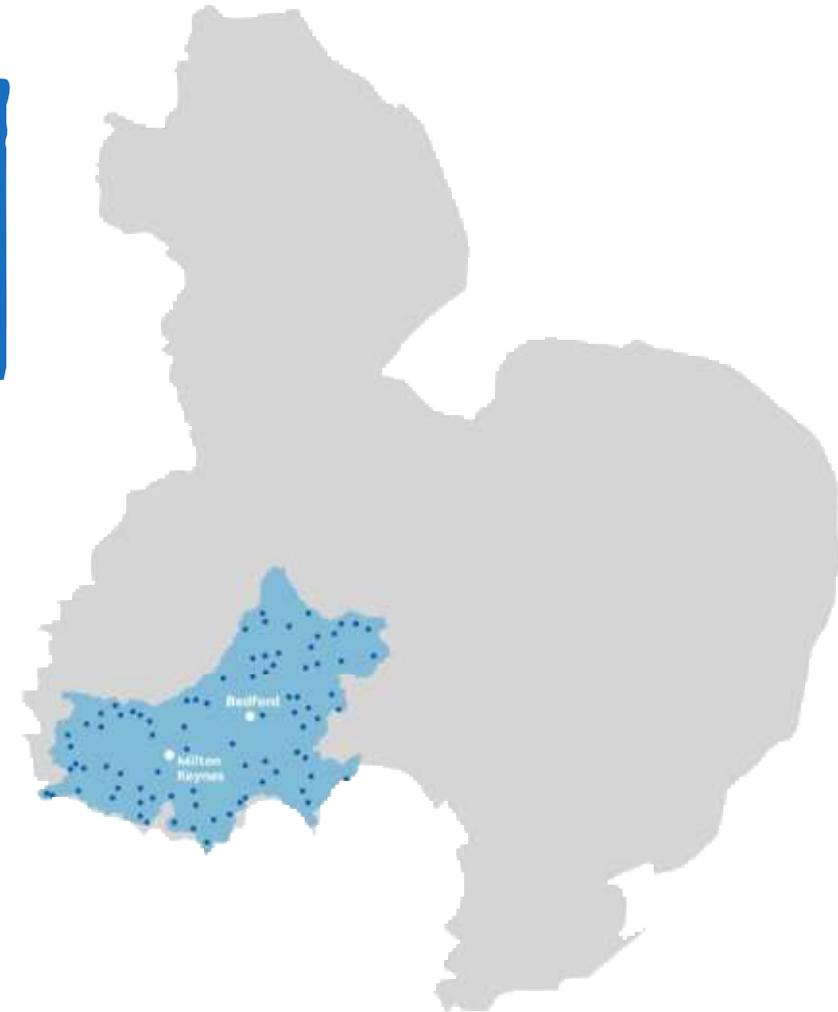
Upper and Bedford Ouse Catchment Partnership

 **4 organisations involved**

136,350
Increase in
population
2025-2050 

Up to
£476 million
investment
from 2025-2050

2 Partnership
opportunities
identified 



Brampton



Brampton is a village and civil parish in Huntingdon with a current population equivalent of 5673. The growth is predicted to be gradual from 2025 to 2050; however, it has been assessed as having a DWF compliance risk.

Stakeholders were concerned with the environment constraints surrounding the area due to the sensitivity of habitats. They were also concerned with the future of the WRC permit limits.

Medium-term plans include a new permit with increased capacity at the WRC to take additional flow. Mixed strategies are planned for the network, with a main solution of SuDS.

The long-term strategy from 2050 onwards is for 25% surface water removal in the network and process optimization at the WRC. By increasing the capacity at the WRC in the medium term, process optimization aims to enhance the process of the WRC using the existing assets on site.

	2020	2025	2030	2035	2050
Population equivalent (PE)	5673	6043	6037	5959	6215
DWF compliance	2	2	2	2	2
Quality compliance	0	0	0	0	0
Internal sewer flooding risk	0	0	2	2	2
External sewer flooding risk	0	2	2	2	2
Risk of a sewer flooding in a 1 in 50 storm	0	0	0	0	0
Pollution risk	0	0	2	2	2
Sewer collapses	0	-	-	-	-
Storm overflow performance	0	-	-	-	0
Access to amenity areas	0	-	-	-	1
Green infrastructure	0	0	0	0	0

How it started

All BRAVA themes assessed.

Stakeholder concerns on future WRC permit limit and identified Habitats area.

Medium term plans

WRC – new permit with increased capacity.
Smart consenting.

Networks – mixed strategy with main solution SuDS.

Long term plans

WRC process optimisation.

25% surface water removal.



Chackmore

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

50% surface water removal.



Fritwell

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.



Chalton

How it started

Two BRAVA themes assessed.

Stakeholders identified future WRC permit concerns.

Medium term plans (by 2035)

Investigate.

Long term plans (2050)

Wait and see.



Great Brickhill

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.



Cotton Valley

How it started

All BRAVA themes assessed.

Habitats area identified.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

10% surface water removal.



Great Horwood

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.



Clophill

How it started

All BRAVA themes assessed.

Stakeholders identified ongoing projects and potential wetland location.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

WRC - process optimisation.

50% surface water removal.



Greens Norton

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Infiltration reduction.

Long term plans (2050)

WRC - new permit and increase capacity.

Potential wetland.



Hanslope

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC – increased capacity.

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

10% surface water removal.

Leighton Linslade

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.

Huntingdon (Godmanchester)

How it started

All BRAVA themes assessed.

Stakeholders identified current flood risks and potential projects.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.



Letchworth

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Networks - increased capacity.

Long term plans (2050)

25% surface water removal.

Kimbolton

How it started

All BRAVA themes assessed.

Habitats area.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.

Marston Moretaine

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC - new permit with increased capacity.

Long term plans (2050)

Wait and see.

Lavendon

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.

Needingworth

How it started

All BRAVA themes assessed.

Stakeholders identified current flood risk.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.





Long term strategy only

Table 12

L3 water recycling catchment	2050 strategy
Barton Le Clay	WRC - transfer between catchments. 25% surface water reduction.
Brackley	WRC - process optimisation.
Dunstable	10% surface water removal.
Easton (Cambs)	WRC - increase capacity and pro-active maintenance.
Fringford	WRC - increase capacity.
Flitwick	25% surface water removal.
Hitchin	25% surface water removal.
Olney	25% surface water removal.
Upper Sundon	WRC - new permit with increased capacity.

Catchment	Medium Term	Long Term
Alconbury		
Ardley	-	-
Ashbrook		
Ashton		
Barton le Clay	-	
Bedford		-
Biggleswade		
Brampton		
Bolnhurst	-	-
Brackley (New)	-	
Buckden		
Buckingham		
Catworth - Hostel	-	-
Chackmore		
Chalton		-
Clifton	-	
Clophill		

Catchment	Medium Term	Long Term
Cotton Valley		
Castlethorpe		-
Drayton Parslow	-	-
Dunstable	-	
Easton	-	
Evenley	-	-
Everton	-	-
Flitwick	-	

Key			
	New permit		New process streams
	Infiltration removal		Attenuation
	Partnership working		Water efficiency
	Investigate		Wetlands
	Customer education		Surface water removal
	Transfer between catchments		Mixed strategy
	New treatment works		Process optimisation
	Conveyance		

Catchment	Medium Term	Long Term
Fringford	-	
Fritwell		
Great Brickhill		
Great Horwood		
Greens Norton		  
Hanslope	 	
Hargrave	-	-
Helmdon	-	-
Hitchin	-	
Hatley St George	-	-
Huntingdon	 	
Ivinghoe	-	-
Kimbolton		
Lavendon		
Letchworth		
Leighton Linlade		
Little Staughton	-	-

Catchment	Medium Term	Long Term
Marston Moretaine	 	-
Mentmore	-	-
Molesworth	-	-
Needingworth		
North Marston	-	-
Odell		
Olney	-	
Oving		-
Padbury	-	-
Papworth Everard	-	-
Paxton	-	-
Pertenhall	-	-
Poppyhill		 
Potton	-	-
Radstone	-	-
Riseley	-	-
Roxton	-	-

Catchment	Medium Term	Long Term
Sandy		
Sandon (New)	-	-
Stoke Bruerne	-	-
Steeple Claydon		
Sherington	-	-
Shillington		
Silverstone		
St Ives		
St Neots		
Stanbridgeford		
Swanbourne	-	-
Tempsford		
Thurleigh	-	-
Tiffield	-	-
Towcester	-	-
Turvey – Cottage/N Blovil Road	-	-
Upper Sandon	-	

Catchment	Medium Term	Long Term
Uttons Drove		
Wappenham	-	-
Waresley		
Westbury	-	-
Whaddon	-	-
Wing – Cublington Road		
Winslow		
Wyton (RAF)	-	-

Water Care Catchment Partnership

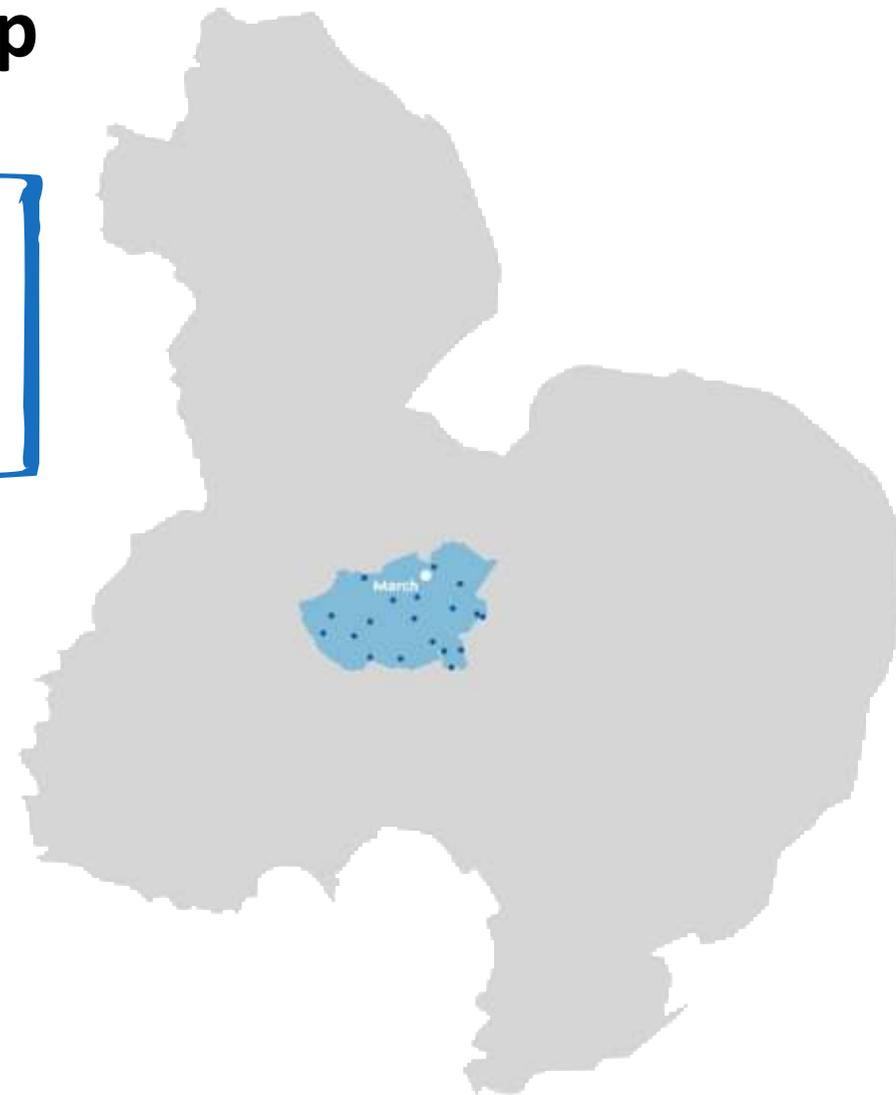
 **5 organisations involved**

12,500
Increase in
population
2025-2050



Up to
£112 million
investment
from 2025-2050

1 Partnership
opportunities
identified







Long term strategy only

Table 13

L3 water recycling catchment	2050 strategy
Littleport	WRC - transfer between catchments.
Wilburton	WRC - increase capacity.

Catchment	Medium Term	Long Term
Benwick	-	-
Chatteris – Nightlayer Fen	-	-
Doddington		
Holme	-	-
Littleport		
Littleport Plains Lane	-	
Manea – Town Lots		-
March 		
Mepal		-
Oldhurst	-	-
Ramsey		
Sawtry		
Somersham		-
Tipps End	-	-
Upwood	-	-
Whittlesey		
Wilburton	-	

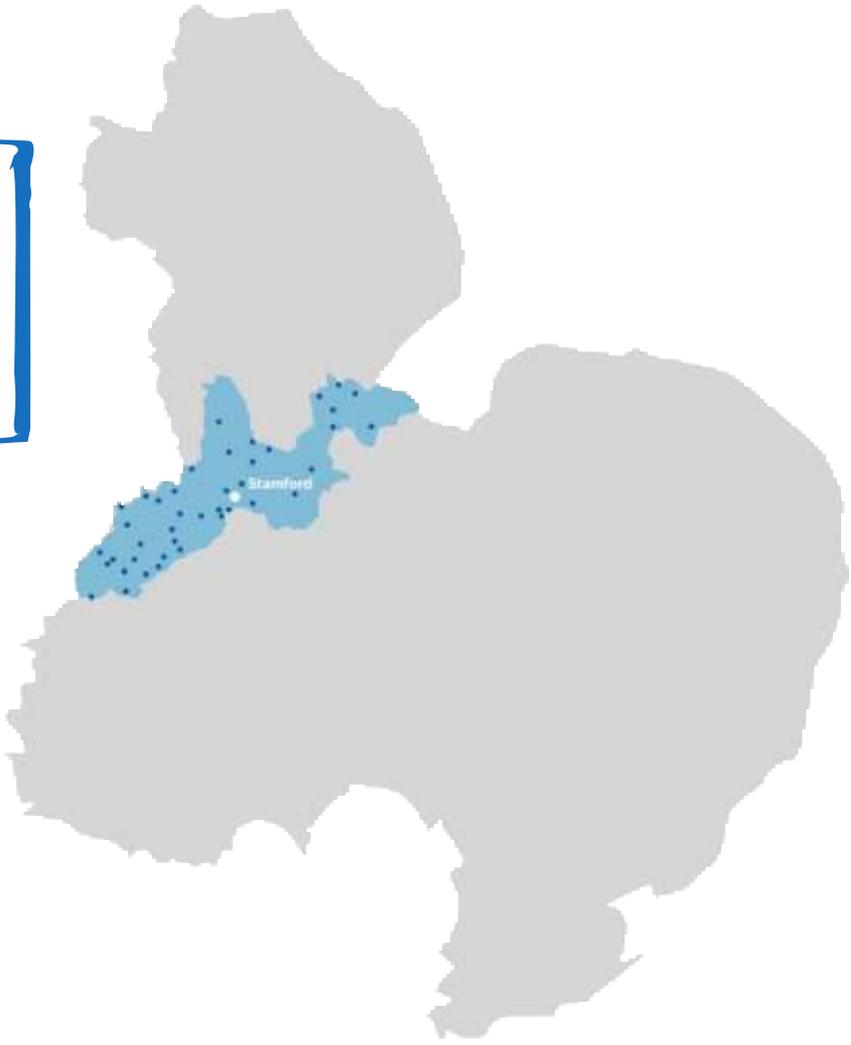
Catchment	Medium Term	Long Term
Witcham		-
Witchford	-	-

Key					
	New permit		New process streams		Transfer between catchments
	Infiltration removal		Attenuation		Mixed strategy
	Partnership working		Water efficiency		New treatment works
	Investigate		Wetlands		Process optimisation
	Customer education		Surface water removal		Conveyance

Welland Catchment Partnership

 **4** organisations involved

29,700
Increase in population
2025-2050 



Up to
£99 million
investment
from 2025-2050

1 Partnership opportunities identified 

Market Harborough



All BRAVA themes were assessed, with the key focus on environment and wellbeing, WRC compliance and escape from sewers.

The medium-term plan is to increase capacity at the WRC with new process streams to address the additional DWF. Quality compliance has been reviewed and the WRC has capacity for the additional flow to remain quality compliant. There are also medium-term plans for attenuation and additional capacity in the network. The long-term strategy is for 10% surface water removal in the network, as the short to medium term plans should mitigate future risk.

Market Harborough is a market town in Leicestershire with a population equivalent of 25151. Due to the capacity at the WRC, we have identified a DWF compliance risk.

Stakeholders highlighted their concerns about the impact that climate change may have on surface water flooding and the future WRC permit limit for quality compliance. Stakeholders also informed us of ongoing and potential future projects in the area that may influence the flows in the catchment, including the updated Welland Action Plan, Slow the Flow proposal and the Surface Water Management Plan. This catchment has potential for partnership working.

	2020	2025	2030	2035	2050
Population equivalent (PE)	25151	26291	27220	28251	31229
DWF compliance	2	2	2	2	2
Quality compliance	1	1	1	1	1
Internal sewer flooding risk	1	1	1	1	1
External sewer flooding risk	0	1	2	2	2
Risk of a sewer flooding in a 1 in 50 storm	0	0	0	0	0
Pollution risk	0	2	2	2	2
Sewer collapses	2	-	-	-	-
Storm overflow performance	2	-	-	-	2
Access to amenity areas	0	-	-	-	0
Green infrastructure	0	0	0	0	0

How it started

All BRAVA themes assessed.
Stakeholder concerns on future WRC permit limit and flood risk. Ongoing projects identified.

Medium term plans

WRC – increased capacity.
Networks – attenuation, additional capacity.

Long term plans

10% surface water removal.









Long term strategy only

Table 14

L3 water recycling catchment	2050 strategy
Fosdyke	WRC - increased capacity. Potential wetland.
Great Easton	Infiltration reduction.
Holbeach	Customer education. Water efficiency. 25% surface water removal.

Catchment	Medium Term	Long Term
Braunston		
Braybrooke	-	-
Burton Coggles	-	-
Collyweston	-	-
Cottersmore		
Deeping		
Deeping St Nicholas	-	-
East Langton	-	-
Easton on the Hill	-	-
Edenham		-
Fosdyke Whitecross Gate	-	
Foxton	-	-
Gosberton		-
Great Casterton	-	-
Great Easton	-	
Gretton		
Hallaton		-

Catchment	Medium Term	Long Term
Holbeach	-	
Ketton		
Kibworth		-
Knossington	-	-
Little Bytham		
Lyddington		
Manthorpe	-	-
Market Harborough		

Key			
	New permit		New process streams
	Infiltration removal		Attenuation
	Partnership working		Water efficiency
	Investigate		Wetlands
	Customer education		Surface water removal
	Transfer between catchments		Mixed strategy
	New treatment works		Process optimisation
	Conveyance		

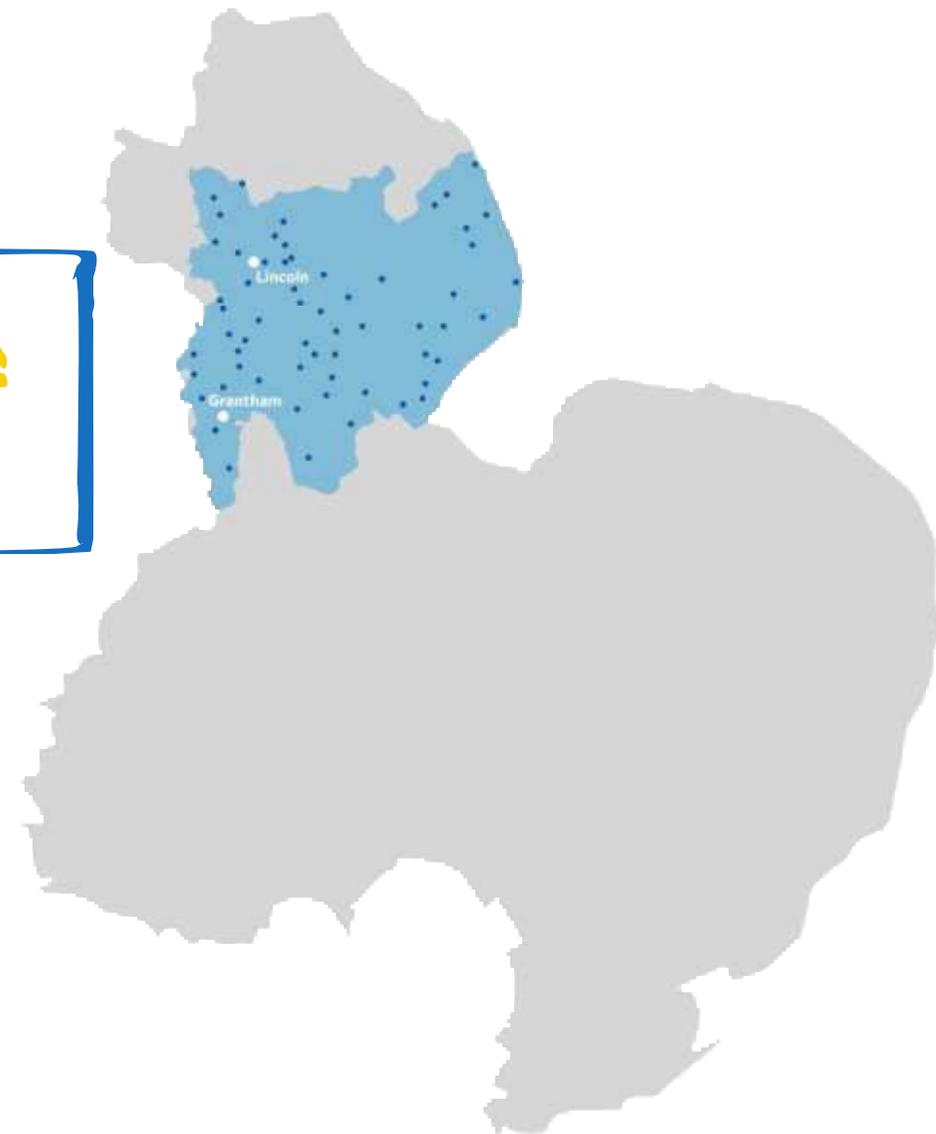
Catchment	Medium Term	Long Term
Medbourne		-
Middleton		
North Luffenham		
Oakham		
Ryhall	-	-
Sibbertoft	-	-
Spalding		-
Stamford		
Stoke Albany	-	-
Surfleet		-
Sutterton - Wigtoft	 	-
Tilton on the Hill		
Tugby	-	-
Uppingham		
Weston by Welland	-	-
Wing	-	-

Witham Catchment Partnership

 **4 organisations involved**

50,100
Increase in
population
2025-2050 

Up to
£266 million
investment
from 2025-2050



Marston



Marston is a village and civil parish in Lincolnshire with a current population equivalent (PE) of 61569. The growth is predicted to rise to a PE of 70473 by 2030, increasing to 77587 by 2050.

During the engagement sessions, stakeholders raised concern over the potential impact that climate change will have on the frequency of high flows. All BRAVA themes were assessed, and the key themes of concern were escape from sewers, WRC compliance and environment and wellbeing.

The medium-term plan to address additional flows is for creating attenuation in the network. To further contribute to reducing the risk, the long-term strategy is to reduce 10% surface water.

Due to the predicted significant growth in the catchment, there are also medium-term plans to improve the WRC capacity to meet the demand of the DWF and quality compliance.

	2020	2025	2030	2035	2050
Population equivalent (PE)	61569	63472	70473	73613	77587
DWF compliance	1	1	2	2	2
Quality compliance	1	1	1	1	1
Internal sewer flooding risk	1	1	1	1	2
External sewer flooding risk	0	1	1	2	2
Risk of a sewer flooding in a 1 in 50 storm	0	0	0	0	0
Pollution risk	1	2	2	2	2
Sewer collapses	1	-	-	-	-
Storm overflow performance	2	-	-	-	2
Access to amenity areas	1	-	-	-	1
Green infrastructure	0	0	0	0	0

How it started

All BRAVA themes assessed.

Stakeholder concerns on the impact of climate change.

Medium term plans

WRC - Increase process capacity.

Networks - Attenuation.

Long term plans

10% surface water removal.









Long term strategy only

Table 15

L3 water recycling catchment	2050 strategy
Boston	Water efficiency. 10% surface water removal.
Bourne	Customer education and water efficiency.
Donington	WRC - new permit with increased capacity.
Ingoldmells	Sewer maintenance.
Mablethorpe	50% surface water run off removal.
Navenby	Customer education and water efficiency.
Reepham (Lincs)	WRC - new permit with increase capacity.
Sibsey	WRC - transfer to another catchment.
Skellingthorpe	Infiltration reduction.
Sturton by Stow	Infiltration reduction.
Swinderby	WRC - increase process capacity with potential wetland. Or transfer to another catchment.

Catchment	Medium Term	Long Term
Aisthorpe		-
Alford		
Allington		
Ancaster		
Anwick		
Bardney	-	-
Bassingham		
Billinghay		
Boston	-	
Bourne		
Brant Broughton		
Canwick		
Caythorpe		
Claypole		-
Colsterworth	-	-
Coningsby	-	
Donington		

Catchment	Medium Term	Long Term
Dorington		-
Dunholme	-	-
Dunsby	-	-
Fishtoft	-	-
Fiskerton		
Frampton		-
Fulbeck	-	-
Glentworth	-	-
Heckington		

Key			
	New permit		New process streams
	Infiltration removal		Attenuation
	Partnership working		Water efficiency
	Investigate		Wetlands
	Customer education		Surface water removal
	Transfer between catchments		Mixed strategy
	New treatment works		Process optimisation
	Conveyance		

Catchment	Medium Term	Long Term
Helpringham	-	-
Harlaxton		
Horncastle		
Ingoldmells	-	
Kirkby la Thorpe		-
Leadenham	-	-
Legbourne		-
Lond bennington	-	-
Londonthorpe		-
Mablethorpe	-	
Manby		
Marston (Lincs)		
Martin		
Metheringham		
Navenby	-	
Nettleham		
North Hykeham		

Catchment	Medium Term	Long Term
New Leake	-	-
Nocton (RAF)		-
Old Leake-Skip Marsh Lane	-	-
Osbourneby	-	-
Reepham (Lincs)	-	
Rowston		-
Saxilby	-	-
Sibsey	-	
Skellingthorpe	-	
South Kyme	-	-
Sleaford		
Saltfleet	-	-
Spilsby		
Stickney	-	-
Strubby	-	-
Sturton by Stow	-	
Swinderby	-	

Catchment	Medium Term	Long Term
Swineshead (Lincs)	-	-
Wainfleet	-	-
Washingborough		
Willingham	-	-
Woodhall Spa	-	-
Wragby	-	-

19. Next steps

We know that changes over the next 25 years may impact this plan and new technology may come in which will alter our direction. Growth may also follow a differing trajectory, and climate change may be more, or less intense than projected. That's why we'll continue to monitor everything before implementing solutions. We'll also publish an updated DWMP again in five years' time.

We've proposed a plan that's resilient and adaptable to change, and a plan that enables us to work with our stakeholders to achieve all the goals.

We'd like to thank all of our stakeholders who have worked with us to create this plan, and we look forward to continuing these discussions.

If you want to get in touch, you can also contact us at DWMP@anglianwater.co.uk

20. Glossary

Glossary of terms

Table 16

Acronym	Extended	Definition
AQMA	Air quality management area	An area within a local authority assessed for its quality.
AONB	Areas of outstanding natural beauty	An area of countryside designated for conservation.
AMP	Asset Management Plan	A five-year time period used in the English and Welsh water industry. The water regulator Ofwat uses each AMP period to set the allowable price increase for consumers.
AMP7	Asset Management Plan 7	2020-2025
ADEPT	Association of Directors of Environment, Economy, Planning and Transport	A group of directors who are responsible for providing day to day services.
	Attenuation ponds	Reservoirs in the countryside are part of the solution to stormwater management and surface water runoff to avoid downstream flooding.
BRAVA	Baseline risk and vulnerability assessment	Stage 3 of the DWMP.
BNG	Biodiversity Net Gain	An approach which aims to leave the natural environment in a measurably better state than beforehand.
	Blueprint for Water	A coalition of environmental, water efficiency, fisheries and recreational organisations.
CaBA	Catchment Based Approach areas	A partnership group aiming to maximise the benefit to the environment.
	Combined sewer	Sewer with a system of pipes, tunnels and pumping stations to transport sewage and urban runoff together to a WRC of disposal site.
CSO	Combined sewer overflow	A release point in the sewerage network.
CAF	Common assessment framework	A framework designed to help companies which are using quality management techniques to improve their performance.
Defra	Department for Environment, Food and Rural Affairs	The government department responsible for the protection of the environment, food production and standards, and rural communities.

Acronym	Extended	Definition
dDWMP	Draft Drainage and Wastewater Management Plan	These plans are the new way for organisations to work together to improve drainage and environmental water quality.
DWMP	Drainage and Wastewater Management Plan	
DWF	Dry Weather Flow	A statistical assessment of flow into the WRC.
	Effluent	An outflowing of water to a natural body of water from a WRC.
EPA	Environmental Performance Assessment	An assessment the Environment Agency makes of water companies.
EDM	Event duration monitoring	Measures the frequency and duration of spills to the environment from storm overflows using Defra's 12/24 spill counting methodology.
	Exceedance pathways	A pathway to move floodwater away from properties.
	Exceedance storage	Places to store exceedance runoff.
FFT	Flow to full treatment	The maximum flow a WRC can treat.
	Fluvial	Flooding related to rivers.
	Foul water drainage	The system of pipework that carries wastewater away.
	Green roof	A roof that's covered in plants, which reduces stormwater runoff.
	Greywater	Waste bath, sink and washing water.
HRA	Habitats Regulations Assessment	An assessment to meet the Habitats and Species Regulations (2017)
	Hydraulic modelling	Using a collection of mathematical equations to provide a simple representation of reality. This will estimate flow, water level and velocity in river channels and pipe networks for example.
IRZ	Impact Risk Zone	An area around SSSI.
IDB	Internal Drainage Board	A local public authority that manages water levels.
INNS	Invasive and non-native species	Species in an area outside of their natural range.
LLFA	Lead Local Flood Authority	Lead in managing the local flood risks.
LTDS	Long Term Delivery Strategy	A plan provided by the water companies to Ofwat.
	Ofwat	The UK water regulator, responsible for overseeing the 32 private water companies.

Acronym	Extended	Definition
	Optioneering	The in-depth consideration of various alternatives and options to find the best or preferred option.
ODA	Options development appraisal	Stage 5 in the DWMP.
	Pluvial	Flooding related to heavy rain.
	Potable water	Water that is safe to drink.
PR19	Price Review 2019	This is the 2019 'Price Review' for water companies in England and Wales. It's a process led by water regulator Ofwat to determine prices for the period 2020-2025.
PR24	Price Review 2024	Our main business plan.
	Ramsar sites	Wetlands of international importance.
RFCC	Regional Flood and Coastal Committees	A group of members appointed by Lead Local Flood Authorities and appointed members.
RBCS	Risk based catchment screening	Stage 2 in the DWMP.
RMA	Risk Management Authorities	Those who deliver flood risk protection. Typically the LLFA, highways authorities, water and sewerage companies and the Environment Agency.
SSSI	Site of Special Scientific Interest	A formal conservation designation.
SAC	Special areas of conservation	A protected area of conservation.
SPA	Special protection areas	An area protected due to rare, vulnerable or migratory birds.
	Stakeholders	People, companies or organisations with an interest in our DWMP.
SO	Storm overflow	A release point in the sewerage network.
SOAF	Storm Overflow Assessment Framework	Guidance from the Environment Agency.
SDS	Strategic Direction Statement	A document outlining the long term aims and ambitions of the company.
	Surface water drainage	The system of pipework that carries rainwater away from gutters, driveways, roads. The rainwater, which is not contaminated and hence is not harmful, will be transported to a stream or river.
SuDS	Sustainable Drainage Systems	These are a natural approach to managing drainage in and around properties and other developments. SuDS work by slowing and holding back the water that runs off from a site, allowing natural processes to break down pollutants.

Acronym	Extended	Definition
	Swales	Shallow, broad and vegetated channels designed to store and/or convey runoff and remove pollutants.
	Trade effluent	A liquid waste (effluent), other than surface water or domestic sewage, discharged from premises being used for a business, trade or industrial process.
WFD	Water Framework Directive	A European Directive to manage, protect and improve the water environment.
WINEP	Water Industry National Environment Programme	This is the programme of work water companies in England are required to do to meet their obligations from environmental legislation and UK government policy.
WRC	Water Recycling Centre	Where sewerage is treated before being returned to the environment.
WRE	Water Resources East	A group planning to safeguard the future supply of water to the East of England.
WRMP	Water Resources Management Plan	The 25 year strategic plan for water.
WTW	Water Treatment Works	Where water is treated before being put into supply.
	Water UK	The trade association representing the water companies of the United Kingdom



Anglian Water Services Limited

Lancaster House
Lancaster Way
Ermine Business Park
Huntingdon
Cambridgeshire
PE29 6XU

www.anglianwater.co.uk

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