love every drop
anglianwater

Draft Drainage and Wastewater Management Plan (DWMP)

June 2022

Business in the Community Awards Winner 2017

Financial Times Climate Leaders 2022

The Queen's Awards for Enterprise: Sustainable Development 2020

Utility Week Awards 2021 Winner Utility of the Year

Draft DWMP 2025-2050

1. Foreword

I'm delighted to be able to share our draft Drainage and Wastewater Management plan (dDWMP) with you.

This important document sets out our plans for how we'll 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 that our infrastructure is fit for the demands of 21st century living - 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 stated purpose: to bring environmental and social prosperity to the region we serve through our commitment to love every drop.

And we plan for the long term. Long-term thinking has been part of our DNA as an organisation for many years - indeed 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.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. These aims were also central to the development of our Water Recycling Long Term Plan, developed alongside PR19 and published in 2018.

In order to achieve them, it's crucial that 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.

Working with fellow water company Severn Trent, we've set out five bold commitments to help drive progress towards healthy rivers (see 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 all the many stakeholders who have already contributed to the development of this plan over the past two years. Their input has been invaluable as we carefully assess the right course of action to help us deliver on our promises to communities and the environment.

We want to make sure that this is a plan which delivers for everyone, and carefully balances the needs and obligations of all those who share our determination to see the East of England thrive.

I urge you to take this opportunity to respond to this draft DWMP consultation to help shape our shared future.

Peter Simpson, Chief Executive, Anglian Water

2. What is the DWMP?

What is a DWMP?

A DWMP is a long-term strategic plan that sets out how wastewater systems - and the drainage networks that impact them - can be be maintained, extended and improved to make sure they're robust and resilient to future pressures.

It is also used to understand current and future risks to drainage and water quality.

Our DWMP recognises the interdependencies between drainage systems and identify the priorities and costs to achieve future aspirations and agree trade-offs where necessary.

It provide an opportunity to plan together, with other drainage and wastewater stakeholders, to generate efficiencies and to make the most of outcomes arising from co-creation and delivery of solutions that address the risks we face.

The DWMP will support the development of our Long Term Delivery Strategy (LTDS) and our business plan for the 2024 Price Review.

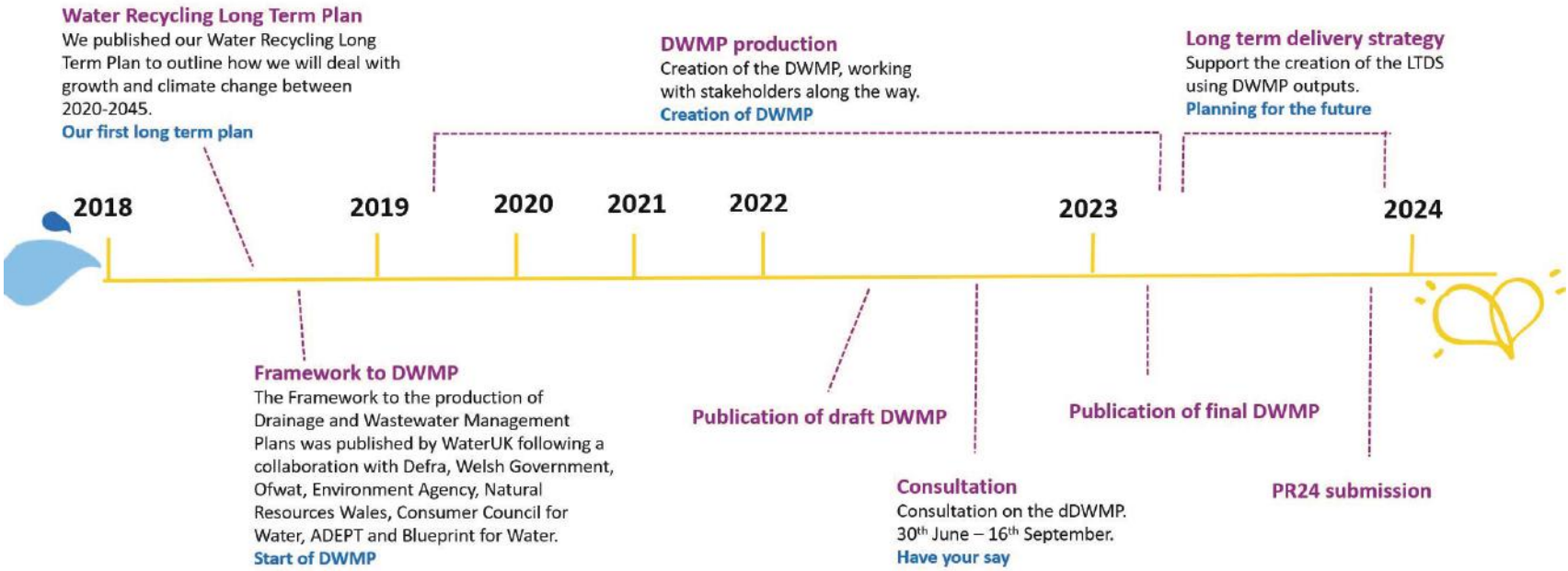
This is our draft DWMP (dDWMP) and we are now inviting you to share your thoughts and comments.

History of the DWMP

The DWMP follows guidelines outlined in the 'Framework' for Production of Drainage and Wastewater Management Plans, which were published in 2018. These plans were commissioned by Water UK in collaboration with Defra, the Welsh Government, Ofwat, The Environment Agency, Natural Resources Wales, Consumer Council for Water, The Association of Directors of Environment, Economy, Planning and Transport (ADEPT) and Blueprint for Water. This group of organisations was continually consulted with throughout the development of the plans through an industry DWMP steering group.

Long term strategic planning isn't new for us. We have always considered what our future ambitions are, and how we can get there, and we explore these various strategic plans later in this dDWMP.

Figure 1



3. Executive summary

Our Purpose is to bring environmental and social prosperity to the region we serve through our commitment to Love Every Drop.

Having a purpose makes sure we think wider than the water we provide and the sewage we treat. We're committed to using our purpose to develop long-term strategies which will enhance the experience we give to our customers while at the same time protecting and enhancing the environment.

For many years we have set our plans against a long term trajectory to help us achieve success. This is our Strategic Direction Statement (SDS) and it's got four big ambitions which are shown below.

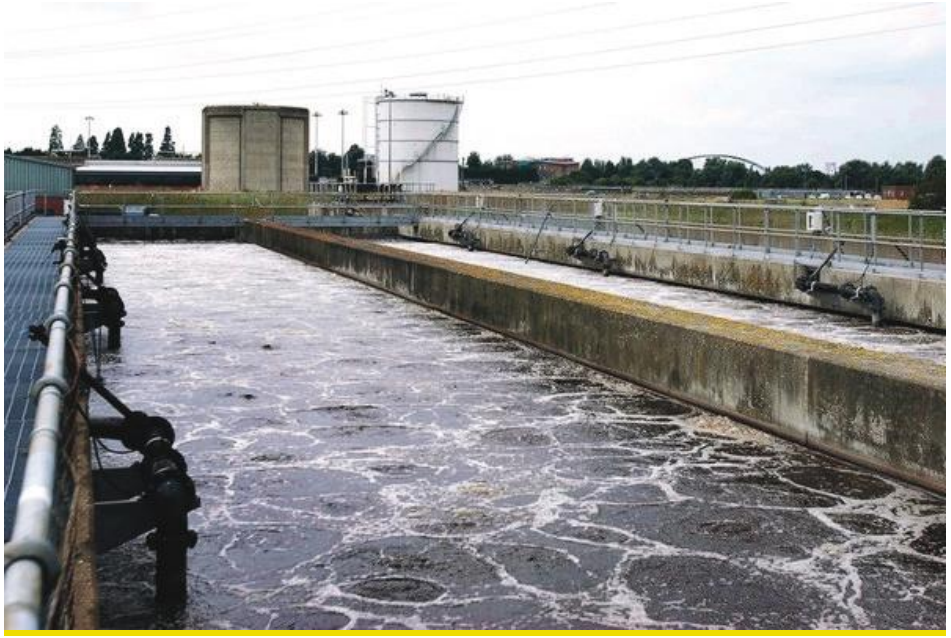
Our dDWMP builds on these to make sure we are serving our customers and meeting our purpose, against a backdrop of a changing climate, a growing population and the pressures facing the communities we serve. It also supports our other strategic plans by understanding these risks in the context of DWMP and builds on from our previous Water Recycling Long Term Plan (WRLTP) which we published in 2018.

Given the future uncertainties we've created an adaptive dDWMP. Meaning if we continue to monitor the current and projected futures, we can adjust the timing of the strategies identified to meet a range of future scenarios.

This allows us to ensure we're investing at the right time to address the right risks. As we move forward into delivery of these strategies we'll aim to be innovative in using new technological solutions where appropriate.

This is a collaborative plan and we all know we've got a huge challenge ahead. To deliver these strategies for the lowest cost, and with the lowest carbon impact, we will work in partnership with drainage and wastewater stakeholders to achieve the best outcomes.

We have also produced a technical document setting out the detail of our dDWMP which can be found on our website.



This is our non-technical overview, which we've summarised for you in 11 key points.

Our dDWMP:

1. Outlines our adaptive plan to meet the challenges we face over the next 25 years.
2. Sets out a strategic direction for our approach to minimise the risks we all face.
3. Takes a catchment-based approach to these risks and challenges we face.
4. Promotes the use of nature based solutions, especially when it comes to surface water removal.
5. Protects the environment through improvements to our discharges.
6. Demonstrates how we will serve our growing population over the next 25 years.
7. Shows what's needed to protect our assets and customers from the impacts of heavy rainfall caused by climate change.
8. Identifies opportunities for partnership working to release benefits and resolve risks through matched funding.
9. Aligns with our other strategic plans, such as the Long Term Delivery Strategy (LTDS), Water Resources Management Plan (WRMP), Water Resources East (WRE) Regional Plan, Flood Risk Management Plans (FRMPs), River Basin Management Plans (RBMP) and Local Plans.
10. Includes all of our water recycling customers, regardless of who serves their water.
11. Excludes upstream water supply and downstream resources, which will be reviewed separately through our business plan.

We know the future will be challenging and we need to be resilient to the uncertainties. Read on to see how we have created our adaptive plan, with a potential to invest up to £3.5 billion over the next 25 years to address the future risks highlighted in this dDWMP, as well as improvements from today's known issues.

This is our draft DWMP, and we invite your views on it here.

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

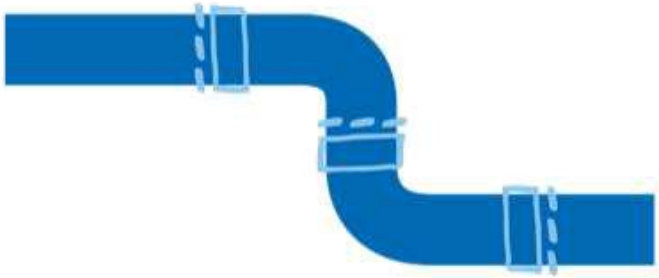
750,000

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. Introduction

Overview

This is a summary of the drainage and wastewater services covered by our plan. Here you'll learn more about our customers and the area we serve. We also explain why we need the plan and the approach we've taken.You'll also find a timeline and details about the area that we cover that were taken into account and screened.

This DWMP outlines our plan for water recycling to deal with growth and climate change over the next 25 years - from 2025 to 2050. It describes the risks we face against 10 planning objectives across three themes: escape from sewers, WRC capacity and environment and wellbeing.

We haven't done this on our own; throughout the process we've consulted, discussed and co-created with our stakeholders to make sure that the plan we put forward is the best value to address the risks. Where relevant, we've included the outputs from our stakeholders' strategies, as well as capturing concerns from other interested parties.

Because our DWMP is helping to set a strategic direction to address growth and climate change, the outputs will also feed into our Long-Term Delivery Strategy (LTDS) and our next business plan (for the 2024 Price Review that Ofwat will carry out "our PR24 Business Plan"). The DWMP outputs will be refined and assessed against wider business needs as part of PR24 planning, before being reported in our LTDS and our PR24 business plan submission to water regulator Ofwat.

This is our first DWMP which builds on from the Water Recycling Long Term Plan we published in 2018. The DWMP will be reviewed and refreshed in five years' time so we can adapt to whatever changes we see at that point. The DWMP is set to become a statutory document, currently from 2024, by the Environment Act.

Our 'strategic context' explains the aims for the DWMP and was created using the outputs of a stakeholder engagement workshop, then further refined through comments from the consultation held in 2020. It accompanies this DWMP report. You can also find a technical summary of the DWMP on our website, as well as an interactive DWMP.

We're reviewing our work in light of the Storm Overflow Action Plan consultation, which was announced by the Department for Environment, Food and Rural Affairs (Defra) in April 2022. The consultation outlines a step change in how water companies tackle the number of discharges of untreated sewage. When the consultation closes, we'll receive the final response from Defra in September 2022. In light of this, our full approach to storm overflows has not been included in the dDWMP, however we will review in autumn and include in our final DWMP.

5. Stakeholder engagement

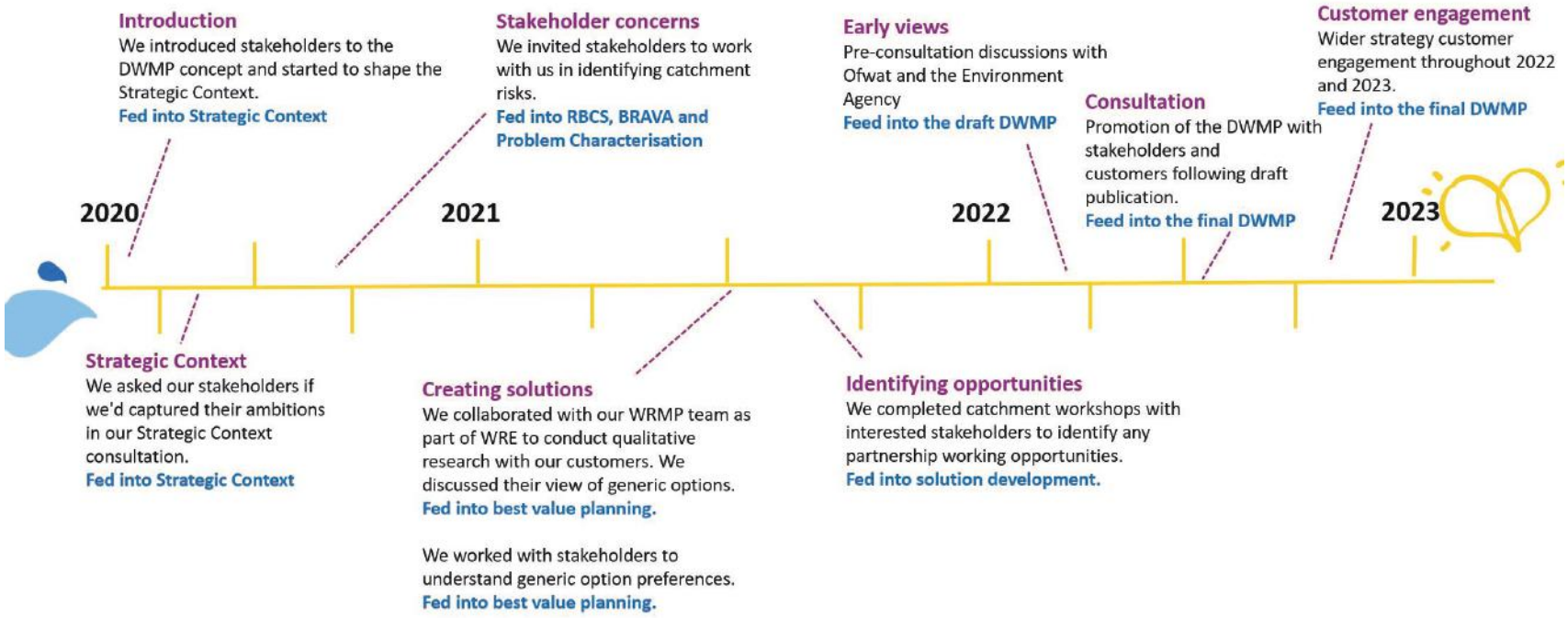
It's taken a huge team effort to provide this draft and we're extremely grateful to our stakeholders who have collaborated with us on a regular basis, at every stage, to co-create this strategy and inform this dDWMP.

Organisations lending vital support include county councils, district councils, unitary authorities, Lead Local Flood Authorities (LLFAs), the Environment Agency, Internal Drainage Boards (IDBs), River and Wildlife Trusts, Natural England and Ofwat, as well as local river and environmental groups.

5.1 Timeline of engagement

You can see the planned engagement strategy below.

Figure 2



Alongside this we talk to our customers and stakeholders daily. Where relevant we've highlighted the importance of the DWMP. We've had opportunities to do this at various groups and meetings such as when presenting at county and district council overview and scrutiny committees.

5.2 Launch workshop

In January 2020, we held a day long DWMP launch workshop for our stakeholders which was attended by more than 50 delegates. After our discussions, we jointly identified:

- Ideal planning objectives.
- How best to work together.
- What data was available to share.
- How the DWMP could be structured.
- Lessons learned from previous collaboration experiences.

5.3 Strategic context

The discussions held and information gathered from the DWMP launch workshop provided the backbone of our strategic context. The 'final' version of our strategic context was published in October 2020 and can be found on our website or by clicking here.

5.4 Risk Based Catchment Screening (RBCS)

In 2020, the RBCS exercise identified the water recycling catchments progressing through the DWMP. This list was shared with our stakeholders who added two more into the process.

5.5 Baseline Risk and Vulnerability Assessments (BRAVA)

The BRAVA, and problem characterisation stages, was our chance to identify the risks and concerns over the next 25 years. In the summer of 2020, we met our stakeholders to discuss their concerns and how complicated they thought it might be to resolve them. In particular we asked them about their medium or long-term concerns around growth, climate change and system performance for the assets in their ownership.

We also asked for data and general information about the catchment, including if the organisation had any long-term ambitions for the catchment. The responses from these meetings allowed us to focus on catchments which may have a higher risk, complications, or opportunities for greater collaboration.

5.6 Optioneering

During the optioneering phase, we met with our stakeholders at area workshops, which gave us the chance to identify any catchments that needed special attention, and where we could work together on them.

In the Autumn of 2022, we held a second round of workshops to discuss 26 catchments, and how we could potentially work together to find solutions for them over the next 25 years. We also identified a range of partnership working opportunities.

6. The building blocks of our DWMP

Companies must work through nine stages to create a DWMP. Here's an overview of those key stages and what we've done.

1. Our first job was agreeing the aims of the DWMP - the big issues we face now and in the future. We also identified the outcomes we want to achieve.

2. After this, we had to highlight the risks we already knew about, sharing information externally about problems and vulnerabilities that are already being experienced. This helped us identify any common issues that we could address. We focused our efforts on the areas that present the greatest risk to the environment and our communities. This is known as Risk Based Catchment Screening (RBCS) see 7.1 Risk Based Catchment Screening (RBCS)

3. Stage three was understanding what the risks and problems were going to be over the next 25 years. If we don't take action, how could it get worse in the future? This is known as the Baseline Risk and Vulnerability Assessment (BRAVA) see 7.2 Baseline Risk and Vulnerability Assessment (BRAVA)

4. Stage four was checking to see if there were any complicating factors, because we don't want any nasty surprises. We have to make sure we've thought of everything. You can see examples of these in 7.4 Problem characterisation.

5. Once all the risks, problems and complicating factors were identified, we developed a range of solutions needed to solve them (and their level of uncertainty). We also drew up a plan for how we'd work with others to achieve success. We focused on integrated solutions that would provide multiple benefits for the economy, society and the environment over the long term.

6. Stage six was looking again at these solutions to see what's the best thing to do, combining the solutions into a plan that gives the best value to you, our communities and the environment.

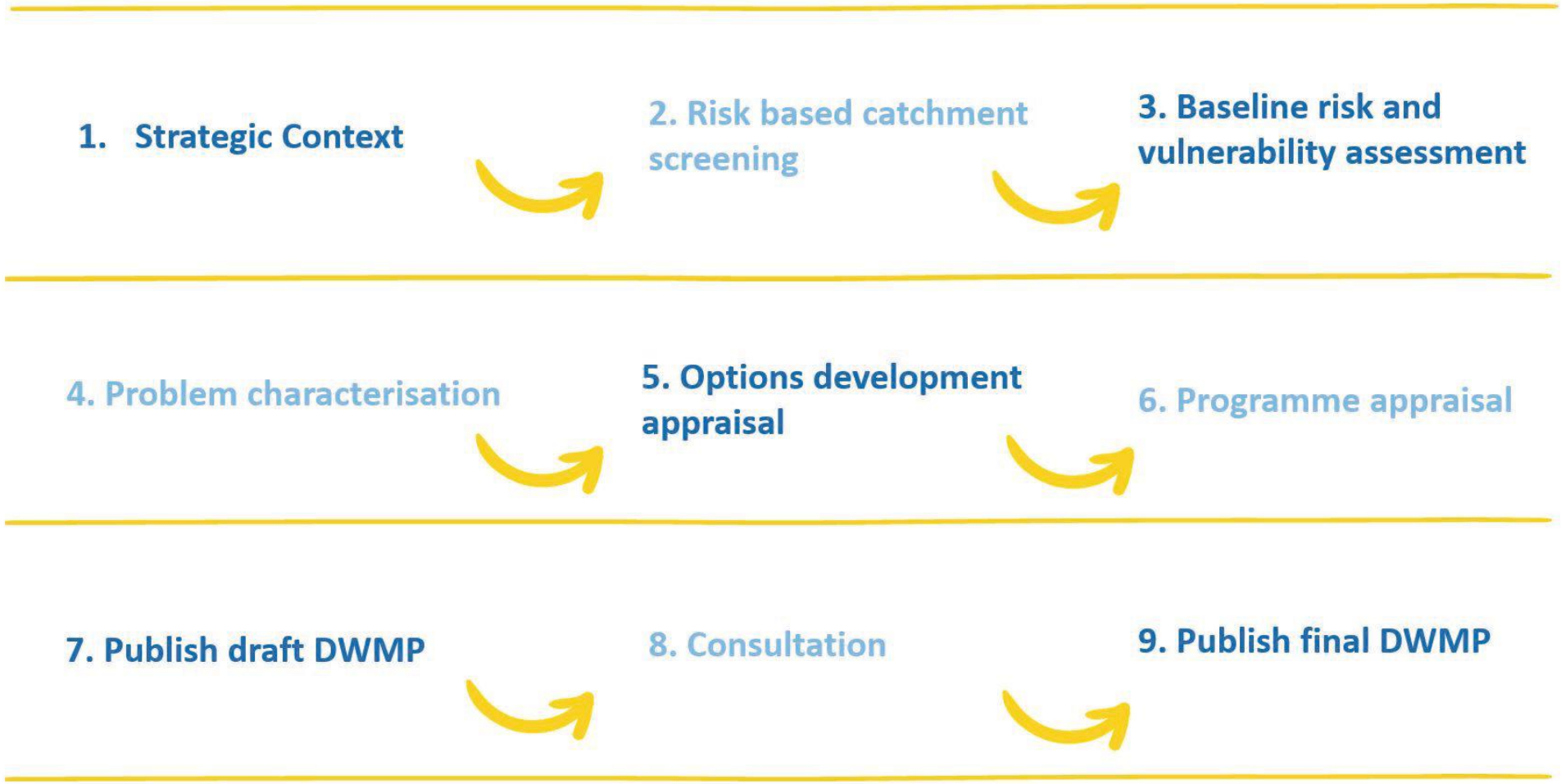
7. Which brought us here to stage seven, publishing the 'draft' version of our DWMP on 30 June 2022, so that everyone interested can take a look and share their comments.

8. We're now in the consultation period (stage eight) where we'll consider the priorities and trade-offs so that we can give you a range of choices. The consultation runs for 11 weeks until 16 September 2022.

9. After the consultation and once we've made all the changes, we'll move to stage nine, which is publishing our 'final' DWMP.

The approach we've used to complete stages one to six is outlined in this document.

Figure 3


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

6.1 Planning areas

To help us gather data and share results more effectively we've worked at the following three levels:

Level 1

The whole of the Anglian Water region covering our water recycling facilities makes up the Level 1 (L1) planning area.

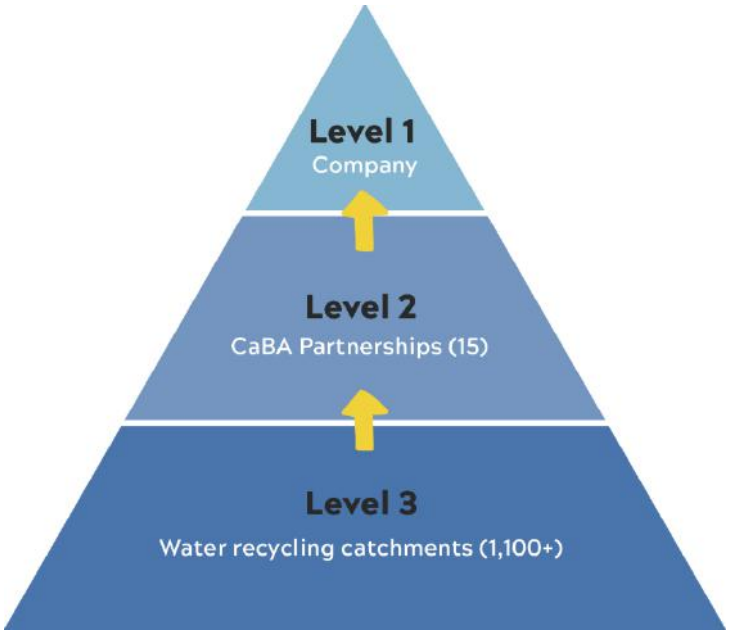
Level 2

Following a workshop held with stakeholders in January 2020 it was agreed that Catchment Based Approach areas (CaBA) would be a suitable Level 2 (L2) for the purpose of sharing documented information. CaBA is a community-led approach that engages people and groups from across our society to help improve our water environments. However, it was also acknowledged that CaBA as an L2 wouldn't be right for everyone, so we agreed that for our online DWMP, there would be a range of L2 options available for to select different levels to suit your needs. Our online DWMP includes L2 information at CaBA, council boundaries, Regional Flood and Coastal Committees (RFCC), Internal Drainage Board (IDB) areas and county.

Level 3

We serve more than 1,000 water recycling catchments, ranging from small rural catchments with fewer than 50 people, to large urban catchments serving more than 300,000. Each of these catchments is classed as a Level 3 (L3) planning area.

Figure 4



6.2 Planning objectives

The scale of our challenge is huge. Over the next 25 years we expect to see significant population growth in our region, alongside more intense rainfall from climate change, with 28% of our region being below sea level.

Additionally, our region is home to 47 sites of special scientific interest (SSSI) and the UK's only wetland national park, the Norfolk Broads. As well as 48 bathing water areas, 3,300km of rivers and 1,200km of coastline.

To tackle this challenge, we've focused our efforts on reviewing 10 planning objectives. The principles of planning objectives came from the collaborative write up of the DWMP framework, coordinated by Water UK and published in 2018Planning objectives are a list of measures on which existing risk and future risk have been assessed against.

These risks were agreed with stakeholders at a workshop and then through to the strategic context consultation. They're used in the BRAVA stage (see section 7.2 Baseline Risk and Vulnerability Assessment (BRAVA)) to understand the level of risk a catchment holds, and how complicated it might be to mitigate that risk. They only apply to catchments which have passed through the RBCS stage (see section 7.1 Risk Based Catchment Screening (RBCS)).

Planning objectives are expected to reflect our company and stakeholder strategic goals and are used to drive the direction of the strategies. They make sure we continually push to improve our catchments, and work towards meeting our four Strategic Direction Statement (SDS) ambitions. Some of these reflect our performance commitments, which we agree with Ofwat, and which provide significant contributions to the achievement of the planning objectives outlined in the section above.

Other performance commitments relate to risks that our stakeholders see as important.

It was important that the planning objectives all met a set list of criteria, as 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 the Ofwat performance commitments we agree with Ofwat.
- Contribute to long-term water recycling strategies.

6.3 What are the planning objectives?

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

1. WRC quality compliance.
2. Storm overflow performance.
3. Sewer collapses.
4. Internal sewer flooding.
5. Risk of flooding in a 1 in 50 year storm.
6. Pollution risk.

Above the nationally agreed planning objectives, we worked with our stakeholders to create a list which met both our strategic goals, and the criteria above. This led to an additional four planning objectives:

1. WRC Dry Weather Flow (DWF) compliance.
2. External sewer flooding.
3. Green infrastructure.
4. Amenity value.

To make sure we had consistency across all companies, we held working groups to create a standard process for assessing the planning objectives.

We used modelling techniques and historical data to assess each of the planning objectives which gave us a picture of what's happening today (our baseline assessment). We then used similar technology - together with assumptions* - to predict what the risk assessment would be like in the year 2050.

* So for example, assessing the WRC compliance planning objectives, we assumed that permit standards would remain the same between 2020 and 2050.

Table 1 Planning objectives

SDS Ambitions *What are we ultimately trying to achieve across the region?*	Outcome *How does it track back to our outcomes?*	Planning objective *What are we measuring?*	Theme *What group does this fit in?*
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	
	Delighted customers	Access to amenity areas	Environment and wellbeing
	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.

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 green infrastructure within a catchment.

6.4 Understanding the risk

After this, to help us understand the level of future risk within a catchment, we categorised the objectives into bands of 0, 1 and 2; with 0 being 'not significant', 1 being 'moderately significant' and 2 being 'very significant'. These bandings were then used to score catchments at the BRAVA stage.

6.5 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 the RBCS process (see 7.1 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 (see the table below).

7. Understanding the risk

We've been producing strategic reports for many years, so have highly effective processes in place to support us with our planning. Throughout the creation of our dDWMP, we've followed the DWMP framework to guide us in the right direction to achieve each task and used our existing processes where appropriate.

7.1 Risk Based Catchment Screening (RBCS)

RBCS is where we review all of our catchments to make sure we're focusing our efforts in the right place. This screening exercise was completed in 2019 and we've reviewed the list since to make sure we're capturing the risks correctly.

As outlined in the DWMP framework, the screening focuses on 17 suggested measures to review each L3 water recycling catchment against. We used all 17 measures and added two more. The measures, listed below, are mainly focused on measures which impact water companies, and based on historic performance. In total we put 1,130 water recycling catchments through RBCS.

RBCS 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 Environment Programme (WINEP).
16. Sewer collapses.
17. Sewer blockages.
18. WRC biological capacity.
19. WRC descriptive permits.

We also completed a resilience assessment on our catchments to test their toughness, and how quickly they can recover from difficulties.

618 catchments triggered further investigation following the RBCS stage.

7.2 Baseline Risk and Vulnerability Assessment (BRAVA)

BRAVA escape from sewers 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 on our catchments to understand the risk of a 1 in 50-year storm. We also used supporting materials, such as the Flood Estimation Handbook from the UK Centre for Ecology & Hydrology. This helped us estimate rainfall and river flood frequency, together with 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 in periods of intense rainfall. We're using monitors at our storm overflows to record their performance. Data from these monitors allowed us to assess the baseline risk. We also modelled a number of catchments to understand the spill increases likely to be seen.

As outlined earlier, we're reviewing our work in light of the Storm Overflow Action Plan consultation, which was announced by the Department for Environment, Food and Rural Affairs (Defra) in April 2022. The consultation outlines a step change in how water companies tackle the number of discharges of untreated sewage. We're due to receive the final response from Defra in September 2022 and we'll update with the impact of this and include in our final DWMP.

External and Internal sewer flooding risk and Pollution risk

Again we used a range of modelling techniques and scenario testing using the most recent catchment model to understand the overload risk of flooding and pollution now, and into the future.

Sewer collapse

Sewer collapses was reviewed at baseline only to indicate the risk we hold in each catchment. We used our 2019 sewer collapses data to provide BRAVA scores.

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 well-being

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.

7.3 Extended BRAVA

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

7.4 Problem characterisation

The main aim of the problem characterisation phase is to understand how complicated it might be to resolve the risks identified in BRAVA.

To understand the risks, we asked a number of questions and scored the answers. We also asked our stakeholders about their concerns and scored their answers. The combined totals of the scores gave us a ‘problem characterisation score’ for the catchment.

Using this scoring system and combining it with the BRAVA score meant we could focus our efforts during optioneering on the catchments which were likely to have the most problems over the 25-year period.

Questions in this section focused on six areas for us:

1. Potential 'stepped' changes in regulation result in significant constraints.
2. Level of understanding of catchment performance.
3. Catchment history.
4. Cross catchment capabilities.
5. Known sewer capacity constraints.
6. Potential for growth fluctuations.

And four further question areas for stakeholders:

1. Short/medium term concerns on impacts of climate change and developments.
2. Long term concerns on impacts of climate change and developments.
3. Short/medium term concerns on stakeholders' systems performance.

4. Long term concerns on stakeholders' systems performance.

This stage also provided opportunity to identify any other particular concerns which might create complications in addressing risks over the next 25 years.

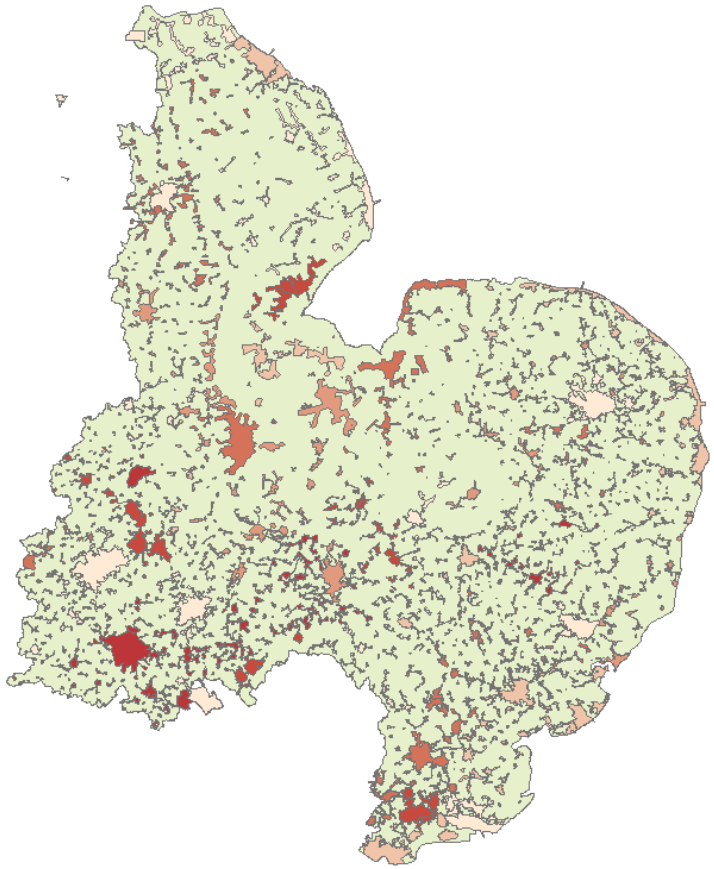
8. Forecasting growth

Ongoing rapid growth is one of our biggest challenges, but it's also one of the areas where we can do most to support our customers and our region. That's why we've taken the decision to help sustainable economic and housing growth.

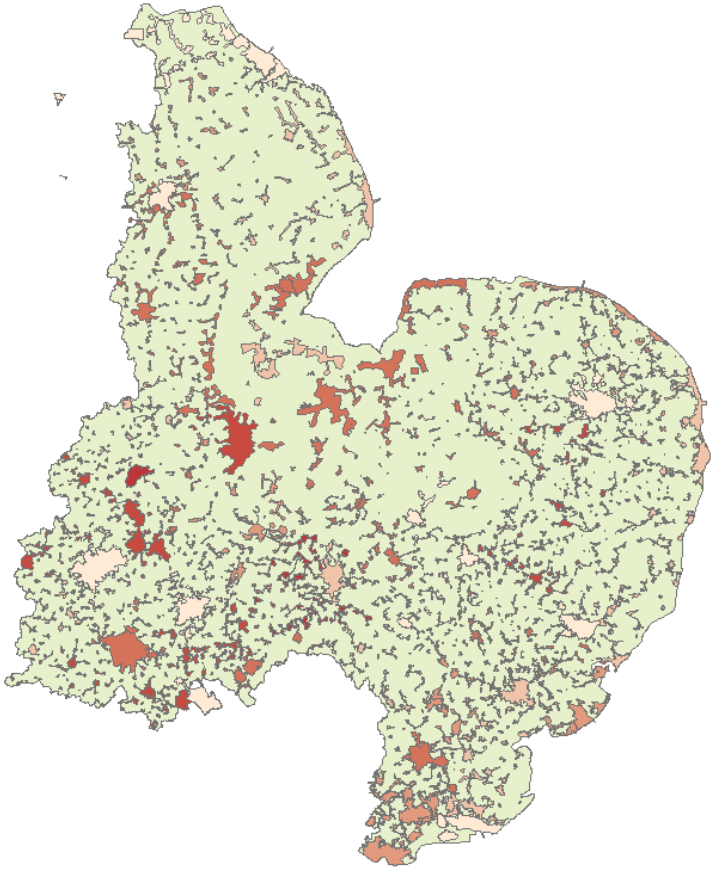
We're working hard to create reliable, future forecasts of both housing and population growth in our region, using the best available planning information. This helps us to meet one of our four SDS goals - to enable sustainable economic and housing growth in the UK's fastest growing region. We'll explore various growth trajectories during our production of the Long Term Delivery Strategy (LTDS) which will be published alongside our PR24 business plan submission.

The heat maps below show the growth in our region to the year 2027, and then long-term to 2045, with a darker red indicating more intense growth.

Growth to 2027



Growth to 2045



The outputs of our DWMP growth demand forecast are aligned to our Water Resources Management Plan and the forecasting processes of Water Resources East, both of which are based on local authority planning data which has been put together by expert, external consultants.

The result is a robust range of water recycling growth projections, designed to support investment planning and options development.

8.1 Emerging growth areas and sites

The government and local authorities are working on plans to bring forward large-scale development to stimulate economic development. This involves the use of public sector land to develop new communities, the Garden Village and Town Programme, and the study of potential economic corridors.

While many of these schemes are at an early stage and, therefore, not included in adopted Local Plans, it's important to consider their impact on the long-term strategy, should they come forward.

The strategic growth corridor would have significant impact on our drainage area if it came forward. Due to the uncertainty of timing and location it has not been included in this dDWMP. However we are actively involved in the progression and will update catchment strategies if and when required.

Our dDWMP, supported by Water Cycle Studies (which make sure there's enough wastewater capacity for new development) provides a forum where these issues can be resolved before development plans are finalised. Using this opportunity to work in partnership with our stakeholders, including local authorities, and the National Infrastructure Commission, we can all be better equipped to meet the expectations of our growing community.

8.2 Per Capita Flow (PCF)

Per Capita Consumption (PCC) of water is the average consumption, or use of water by a person each day. It's calculated by dividing the total volume of water supplied to a community by the total population in that community. The Per Capita Flow (PCF) is the volume of water that's returned as wastewater to a sewer system. Our forecast assumes 90% of PCC and of non-household domestic consumption is returned. Given the uncertainty around the future requirements of industries, we assume that current flow levels remain constant for trade.

We're forecasting this because PCF is used to calculate dry weather flow (DWF), which is the average daily flow to a WRC during a period without rain. The flow in a combined sewerage system will increase when it rains, so we need to design our WRCs with enough capacity to treat the flows from the sewerage collection system it serves.

The Environment Agency also sets limits on the quality and quantity of treated effluent from a WRC so that it doesn't cause any negative impacts on the environment. The flow that may be discharged in dry weather is one of these limits, so we need to predict the DWF, PCC and PCF to inform the potential future and use this to guide the options for any potential investment.

9. Options development and programme appraisal

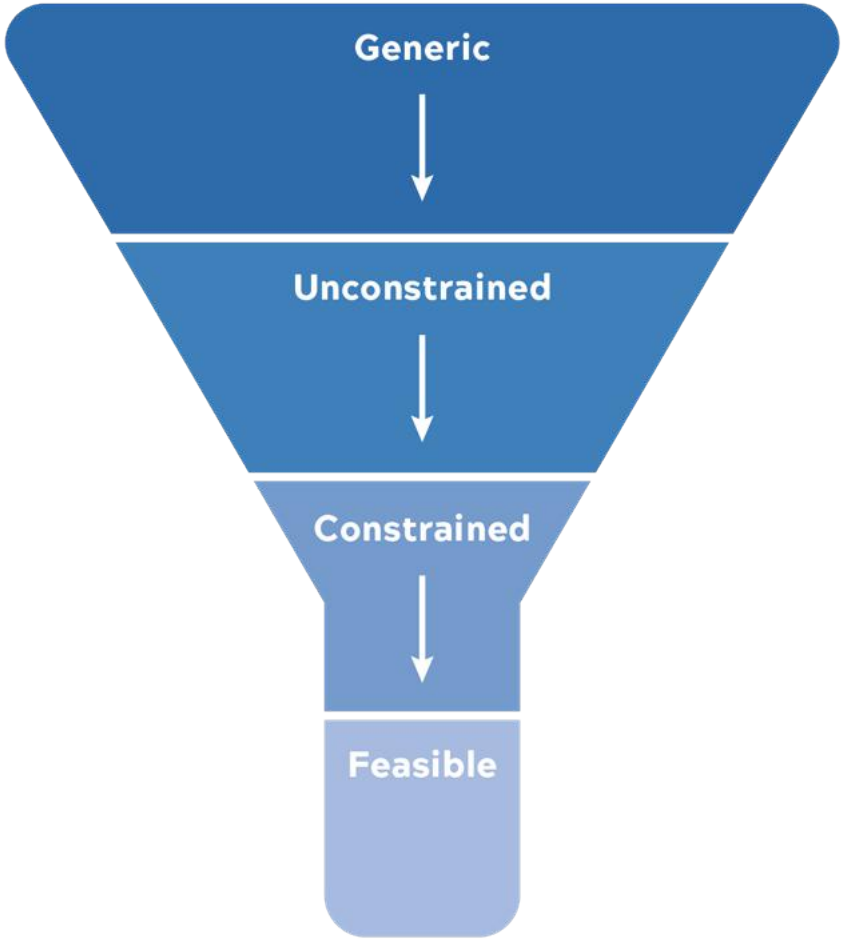
Once risks had been identified in the BRAVA stage, the optioneering stage looked at finding the best way to solve the problems. Optioneering is an in-depth consideration of the various choices we have to select the preferred plan. Doing this makes sure that our solution is the best fit and makes the best use of resources. We used a four-step process, shown in the funnel diagram below, to make sure all options were considered, and created a range of 45 ‘generic options’, ranging from rainwater harvesting to smart consenting.

9.1 Generic and unconstrained options

Generic options is a long list, unconstrained are potential options for that risk, constrained are more relevant for that area, and feasible would actually work. We reviewed all available options before settling on feasible options that were relevant for that risk.

This list of 45 options contained a variety of solution strategies. 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 5



9.2 Constrained and feasible options review - escape from sewers

All catchments with ‘escape from sewers’ risks, were assessed using modelling techniques to find the best solutions for their risk.

To combat long-term risks, each catchment was modelled to see what flood volume would be like in the year 2050. Each catchment was then modelled against a range of solutions strategies, such as pump maintenance and surface water removal. The option scenario which reduced flooding closest to the predicted flood volumes was considered the most efficient option. This option was then reviewed to check its feasibility.

9.3 Constrained and feasible options review - WRC compliance

We reviewed all catchments identified with a WRC compliance risk against the most relevant unconstrained options. To do this, we used a standardised set of rules and questions. These were answered for the risks identified in the years 2030, 2035 and 2050 and gave us the constrained list of options available at each time frame.

9.4 Constrained and feasible options review - environment and wellbeing

The 'environmental and wellbeing' planning objectives provided an indication of where we could do more to improve the natural environment, rather than creating a risk that required a solution. Therefore 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.

9.5 Environmental assessment

During the optioneering stage (see chapter 9. Options development and programme appraisal), we carried out an environmental assessment to get clarity on two areas of our dDWMP. The first was to understand the potential environmental and social impact of all the generic options. The second was to review the environmental and social constraints for each L3 water recycling catchment.

For the generic options, we carried out a screening process to find out which generic options are likely to result in significant environmental or social impacts. Those flagged as having a potential risk went through a further ‘scoping’ process to identify the main impacts. This ultimately gave us a summary of issues that needed attention, but also a list of opportunities where we could improve existing performance or achieve additional benefits or enhancement.

For each option on the ‘potential risk’ list, the issues and opportunities were grouped into nine topic areas, which in turn were broken down into 20 objectives that we need to focus on to minimise the risk. To make sure there’s consistency across all of our strategic plans, these topics match

the agreed, or proposed, environmental objectives for Water Resources East (WRE), our Water Resources Management Plan 2024 (WRMP24), and our Drought Plan 2022.

For the water recycling catchment, all L3 water recycling catchments progressing through the DWMP were reviewed against a range of environmental and social data sets to see if there were any key constraints that would need to be taken into consideration.

These were presented in a red, amber, green format (RAG). The RAG was then scored, red=1, amber=3 and green =5. A total score was provided for each catchment to provide an indication of the number of considerations that need to be made in each catchment. The outputs from this part of the assessment will be used during the detailed design stage of the options.

This environmental assessment helped us with the benefits during best value planning.

9.6 Programme appraisal

Before we packaged up our draft DWMP for consultation, we carried out a 'best value plan' assessment, reviewing our solution options to fully understand the benefits they'd bring.

We did this using a framework shaped by our SDS and aligned to our 'six capital' themes, as outlined in our business model, which will help us keep our responsibility to customers, communities and the environment at the front of our minds when making future business decisions.

Benefits

We reviewed the options against 10 benefits such as flooding risk reduction, pollution risk reduction and improvements to the environment. Each benefit was assessed and scored so that we could develop a plan that generated the most benefits, while at the same time reducing costs and carbon emissions. We considered seven additional benefits, but are working on developing these further and therefore did not assess them at the point of best value planning. These included biodiversity net gain and customer preference but we'll include these further on in our planning process.

Optimisation

Our benefit data was then put through an 'optimisation process', which compares vast combinations of options. This helped us to create a range of possible plans, each with a selection of solutions that maximised benefits, while balancing risks and costs.

This optimisation was carried out for WRCs and water recycling networks separately. Each optimised plan created at least one solution for catchments which had risks identified. It then suggested which solutions to prioritise for early investment.

Best value planning

The optimised plans were then narrowed down to a smaller selection and investigated further, using a range of scenarios. Once complete, they were assessed yet again to find the most adaptable solution strategy. The plan was then reviewed to make sure the investments were being promoted at the most accurate time to mitigate the risk. We also reviewed the extent to which climate change had been addressed. Finally, solutions were evaluated to make sure they aligned with our Water Resources Management Plan.

10. Choosing our draft plan

To identify which plans we would put forward as our draft DWMP we optimised our plan based on 13 different scenarios. These 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 looked at the number of climate change solutions chosen across the scenarios, and our adaptive plan reflects a range of resilience levels. In 11. Alternative plan options you'll see how much climate change benefit we've prioritised within the draft plan.

Using this method we identified four plans which could be appropriate depending on where you focused your priorities. The section below identifies the differences between these four plans.

11. Alternative plan options

The result of all this work was four adaptive plans, created using best value assessments. All four proposed plans were presented to our management and main board. After reviewing them, they chose plan 3 as being the right balance between level of ambition, risk acceptance and potential impact on customer bills. Plan 3 suggests a £3.5 billion investment over the next 25 years to address a conservative growth scenario, with slightly less climate change resilience than plans 1 and 2. It would remove 306,000 m^3 of modelled flood risk and promotes green infrastructure.

Table 2 Scenario details

Plan	Number of catchments	Climate change	Green solutions	Modelled flooding (m3)	Modelled pollutions	Scalability	Benefits (higher better)	Benefits (lower better)
1. £5.1 billion	283	Highest CC including some 4 degree	75%	360,000	82	802	3.49	-12.71
2. £4 billion	270	2 degree	74%	310,000	73	775	3.15	-12.22
3. £3.5 billion	**259**	**Mostly 2 degree**	**71%**	**306,000**	**69**	**720**	**3.21**	**-11.99**
4. £2.4 billion	236	Least CC resilience	68%	240,000	64	646	2.85	-11.27

Therefore we've taken plan 3 forward as our dDWMP.

The DWMP outlines our strategic direction for water recycling and will feed into our Long Term Delivery Strategy. It will be subject to affordability testing and the breakdown of the investment expenditure across the five AMP periods covered will be reviewed at each Price Review period.

This consultation provides the opportunity to comment on whether you agree with the priorities we have used to build this plan.

12. Regional plan and outputs

Following the initial screening, almost 600 of our water recycling catchments were risk assessed to the year 2050 to understand the impact from future growth and climate change. Our DWMP now contains the solution strategies for these catchments, together with timescales. Our plan is designed to be flexible, with regular monitoring, and we'll continue to work with our stakeholders to make sure the right solutions are carried out at the right time. Here's a brief overview of some of things we're proposing to do.

Low risk catchments

Our process identified 166 catchments which presented low risk. We'll continue to monitor these catchments in future DWMP cycles.

Long term strategy only

We identified 68 catchments to be a low-risk concern by 2035, but an increase in risk by 2050, so we put together a range of options to address these risks.

Removing up to 25% of surface water from our network was the most frequently selected long-term strategy during optimisation for addressing the risk from 'escape from sewers'. We'll aim to use nature-based Sustainable Drainage Solutions (SuDS) as much as possible to achieve this. Whilst SuDS aren't new, drainage owners across all organisation are exploring how to overcome the challenges of the responsibilities and ongoing maintenance. Given the benefits these solutions provide we're keen to continue with stakeholder engagement to promote a partnership approach.

For our WRCs, we're facing an increase in pressure between the extra water received from catchment growth and the standards required to meet river water quality, so a range of different strategies is needed here. For example, we're going to:

- Educate our customers more about the issues.
- Prevent groundwater entering the sewer system through broken or leaking pipes to reduce flows.
- Build more treatment processes to increase capacity.
- Apply for new environmental permits from the Environment Agency.

We've also identified the potential need to:

- Build a new WRC to the west of Norwich.
- Close a WRC and transfer flow to another.

Medium term catchments

For L3 catchments where a risk was identified by 2035, we completed a full optioneering process (see 9. Options development and programme appraisal). Across all catchments a range of the generic options were selected as being feasible, although we feel it's appropriate to keep monitoring some catchments.

12.1 2050 Level 1 costs

Our dDWMP suggests that over the next 25 years, investment of up to £3.5 billion is needed to address the future risks highlighted in our DWMP, as well as fixing some existing problems. And please note, while we await outputs from the Storm Overflow Action Plan (see 7.2 Baseline Risk and Vulnerability Assessment (BRAVA)) this estimate of investment doesn't include the assessment of costs required to meet the new storm overflow targets.

This draft plan and the 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 our plans, we're going to monitor things every step of the way and adapt where necessary to make sure we're investing money in the right places at the right time.

Below you'll find a summary of what we plan to do in the medium and long term in your area, categorised into level 2 and level 3.

13. Programme outputs

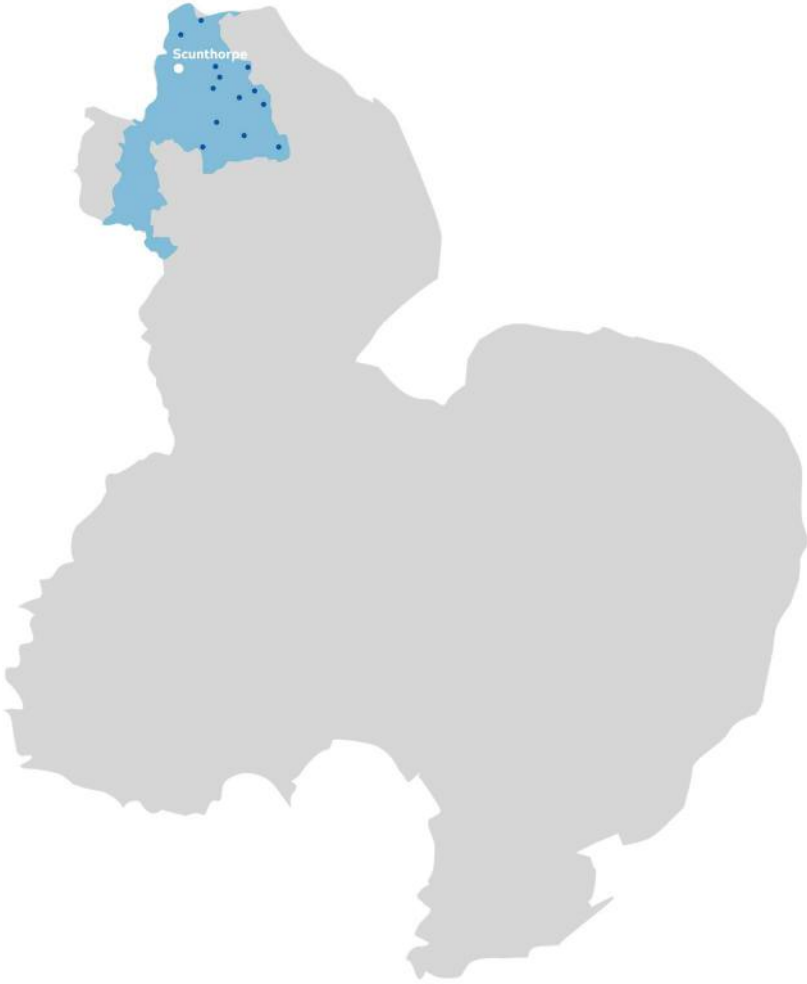
In the following sections you can find an overview of all the water recycling catchments which progressed through the DWMP. These have been summarised to the CaBA partnership (level 2).

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 increase the capacity and apply for a new permit. Within the network, we plan to increase capacity to manage the additional flow.

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

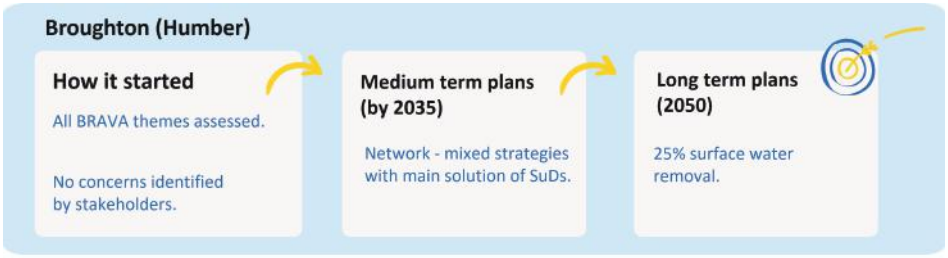
WRC - new permit with increased capacity.

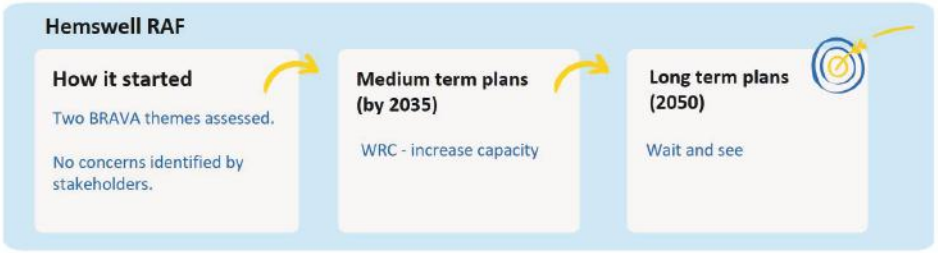
Networks – increased capacity.

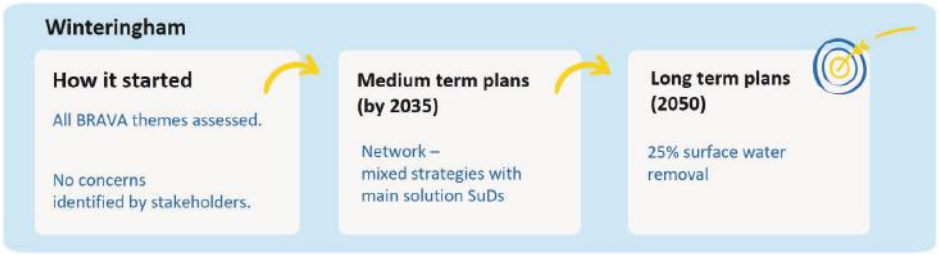
Long term plans

Infiltration reduction.

25% surface water removal.







Long term strategy only

Table 3

L3 water recycling catchment	2050 strategy
Caistor	25% surface water removal.
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		
Tealby	-	-
Thealby		-
Waddingham		
Winteringham		

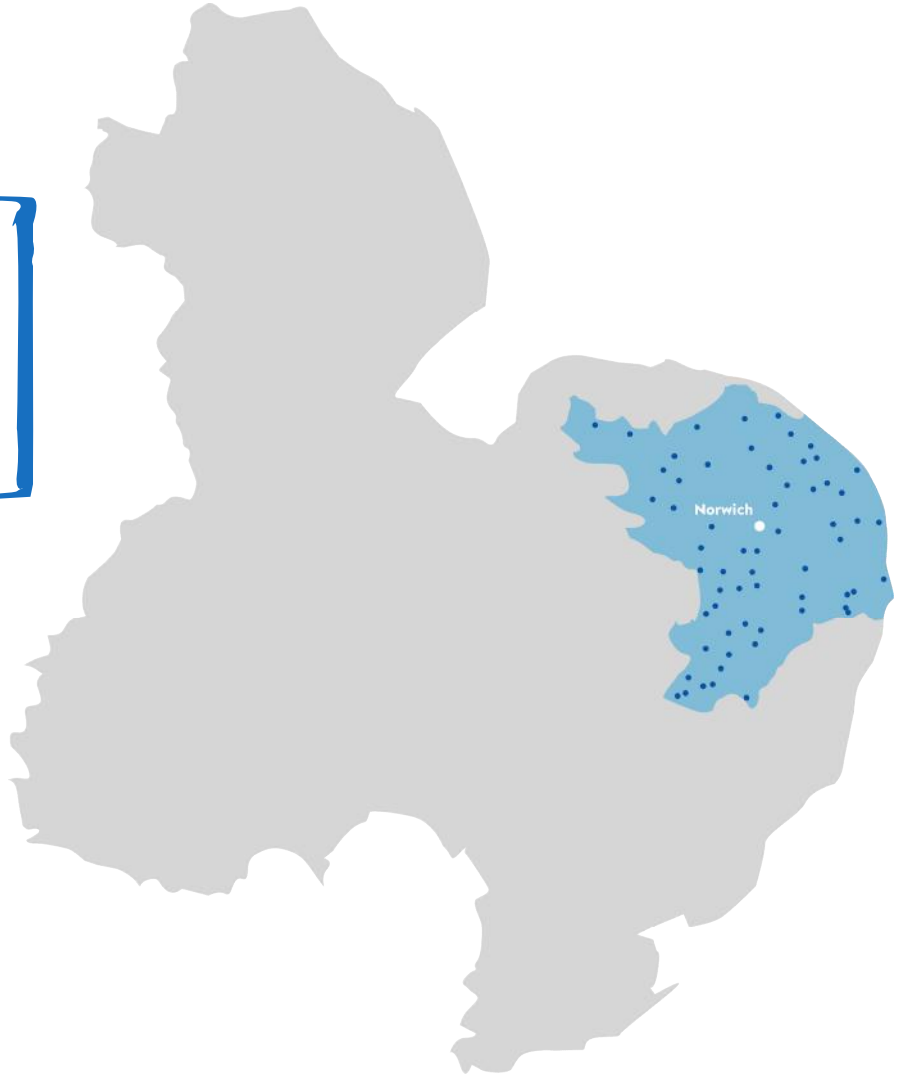
Broadland Catchment Partnership

9 organisations involved

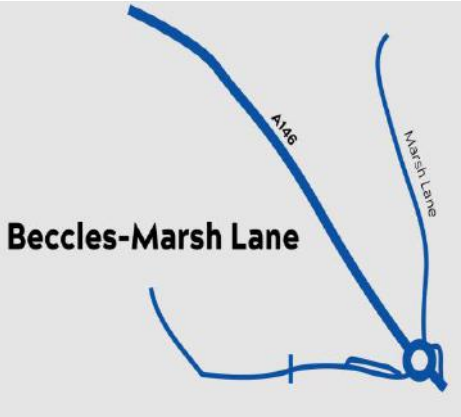
67,000
Increase in population 2025-2050

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.

After further investigation we identified the WRC has process capacity for the proposed growth and will only require a new DWF consent for 2050 flows.

	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 - new permit.

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.

Long term plans (2050)

25% surface water removal.

Partnership working

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.

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.

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.

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.

Bedfield

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC - new permit.

Networks - mixed strategy with main solution of SuDs.

Long term plans (2050)

Infiltration reduction.

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.

Bungay

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.

Bylaugh

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

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.

Dereham

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.

Dingley

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.

Ditchingham

How it started

All BRAVA themes assessed.

Stakeholders identified Habitats area.

Medium term plans (by 2035)

WRC - transfer between catchments.

Networks - mixed strategy with main solution of SuDs.

Long term plans (2050)

25% surface water removal.

WRC - transfer between catchments.

Fakenham

How it started

All BRAVA themes assessed.

Stakeholder concerns on impact of climate change. Habitats area identified.

Medium term plans (by 2035)

Networks - mixed strategies with main solution of SuDs.

Long term plans (2050)

25% surface water removal.

Forncett-Forncett 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.

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.

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.

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.

Long Stratton

How it started

All BRAVA themes assessed.

Stakeholders identified the Habitats area.

Medium term plans (by 2035)

WRC - new permit and new process stream.

Long term plans (2050)

50% surface water removal.

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.

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.

Norwich – Whitlingham 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.

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.

Long term strategy only

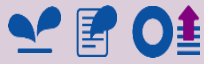
Table 4

L3 water recycling catchment	2050 strategy
Aylsham	Customer education.
Belaugh	25% surface water removal.
Harleston	25% surface water removal.
Sisland	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		
Ditchingham		
East Ruston	-	-
Eye	-	-
Fakenham		
Forncett		
Foulsham	-	-

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 		

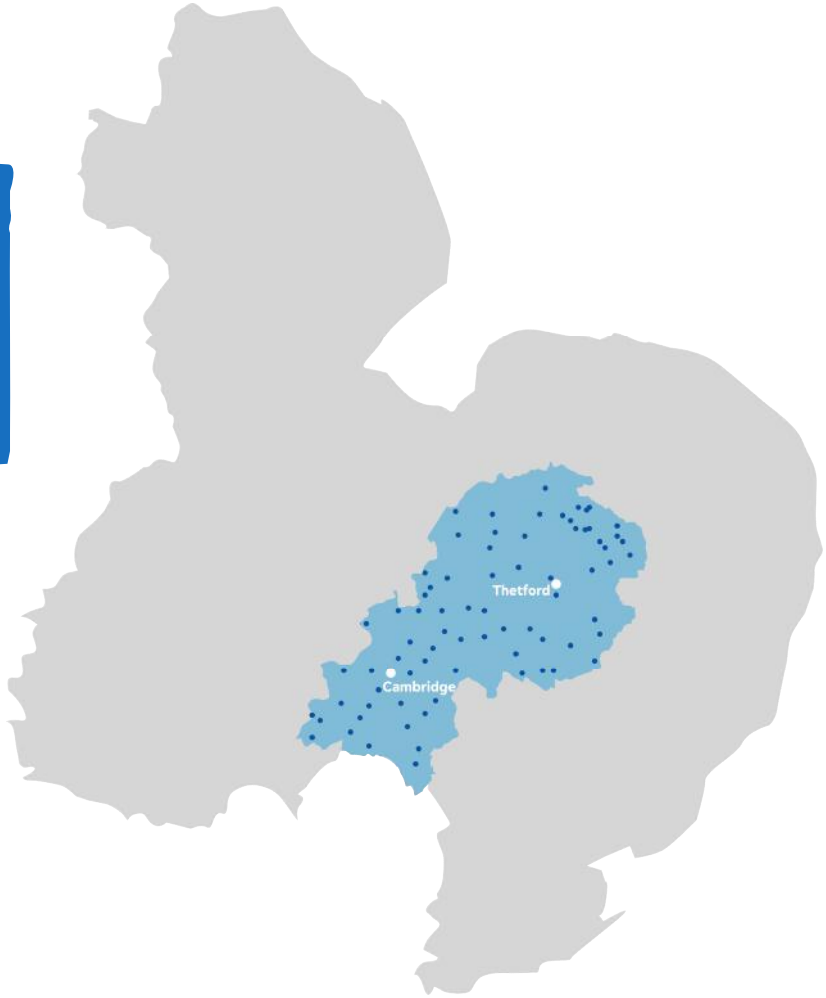
Catchment	Medium Term	Long Term
Winfarthing Goose Green	-	-
Worlingham-Ashtree		
Wymondham	-	-

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

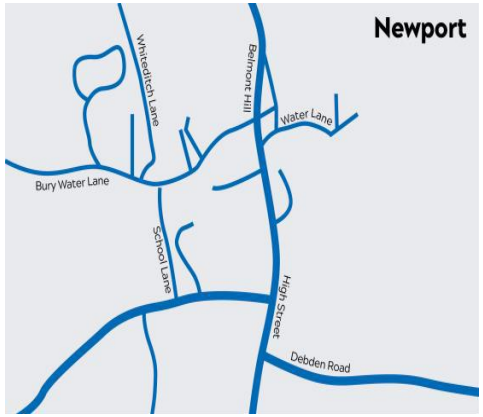
WRC – increased capacity.

Networks – mixed strategy with main solution SuDS.

Long term plans

25% surface water removal.

Newport



Newport is a large village in Essex, near Saffron Walden, with a current population equivalent (PE) of 3093. The growth is forecasted to be gradual over the next 25 years with an overall increase of approximately 500 PE.

Stakeholders did not raise any concerns regarding the area; however, during BRAVA we identified that DWF compliance is a high risk at the WRC with a pollution risk in the network by 2030. All BRAVA themes were assessed and 3 priority themes were identified: WRC compliance, escape from sewers and environment and wellbeing.

The medium and long-term strategies are predominantly focused on solutions in the network. The medium-term plan is mixed strategies with a main solution of SuDS and an infiltration reduction for the network, with the aim to reduce incoming flow to the WRC. From 2050 onwards, the plan is to remove 50% of surface water. At the WRC, increased capacity may be required to maintain compliance with a new permit in the medium term.

It has also been identified as an area which may benefit from customer education and promoting domestic customer greywater re-use.

	2020	2025	2030	2035	2050
Population equivalent (PE)	3093	3239	3301	3338	3616
DWF compliance	2	2	2	2	2
Quality compliance	0	0	0	0	1
Internal sewer flooding risk	0	0	0	0	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	0	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.

No concerns identified by stakeholders.

Medium term plans

WRC- increase capacity. Infiltration reduction.

Networks – mixed strategy with main solution SuDS.

Long term plans

50% 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.

Badwell Ash

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.

Barley

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 SuDS.

Long term plans (2050)

50% surface water removal

Bottisham

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC – process optimisation

Networks – mixed strategy with main solution SuDS.

Long term plans (2050)

WRC – new permit with additional capacity.

50% surface water removal

Bourn

How it started

All BRAVA themes assessed.

Stakeholders identified watercourse concerns.

Medium term plans (by 2035)

WRC - infiltration reduction.

Long term plans (2050)

WRC - increased capacity.

Burwell

How it started

All BRAVA themes assessed.

Habitats area.

Medium term plans (by 2035)

Networks - mixed strategies with main solution of SuDs.

Long term plans (2050)

WRC - new permit with increased capacity.

Potential to move outfall.

50% surface water removal.

Cambridge

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC - new treatment works.

Networks – attenuation, increase capacity.

Long term plans (2050)

10% surface water removal.

Carbrooke-Church End

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.

Coton

How it started

Two BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC - infiltration reduction.

Long term plans (2050)

WRC - increase capacity.

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.

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.

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

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.

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.

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.

Foxton (Cambs)

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.

Haslingfield

How it started
All BRAVA themes assessed.

No concerns identified by stakeholders.

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

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

Lakenheath

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.

Linton

How it started
All BRAVA themes assessed.

Stakeholders identified existing flood risk.

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

Long term plans (2050)
WRC - increased capacity.

50% surface water removal.

Little Downham

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.

Melbourn

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)
Reduce infiltration.

25% surface water removal.

Mildenhall

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.

Mundford

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.

Old Buckenham

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.

Saffron Walden

How it started
All BRAVA themes assessed.

Stakeholders identified existing flood risk.

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

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

Sawston

How it started
All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)
WRC – process optimisation, Increased capacity.

Networks - mixed strategies with main solution of SuDs.

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

Soham

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.

Stanton

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.

Teversham

How it started
All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)
WRC - process optimisation.

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

Thurston

How it started
All BRAVA themes assessed.

Stakeholders concerned with future WRC permit limits.

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

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

Tuddenham

How it started
All BRAVA themes assessed.

Stakeholders concerned with future WRC permit limits.

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

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

Waterbeach

How it started
All BRAVA themes assessed.

Stakeholders identified existing flood risk.

Medium term plans (by 2035)
WRC - transfer between catchments.

Networks - mixed strategies with main solution of SuDs.

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

Watton

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.

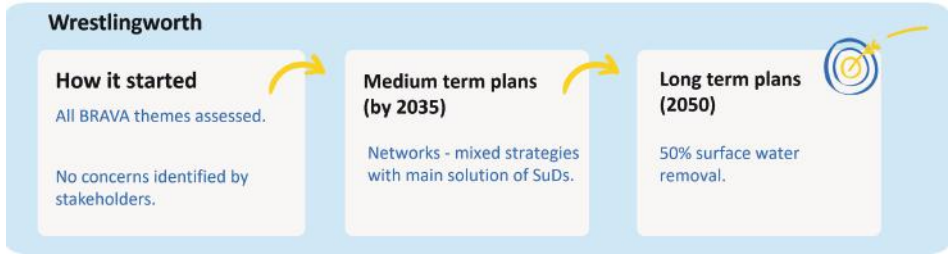
West Stow

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.


Wrestlingworth
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.

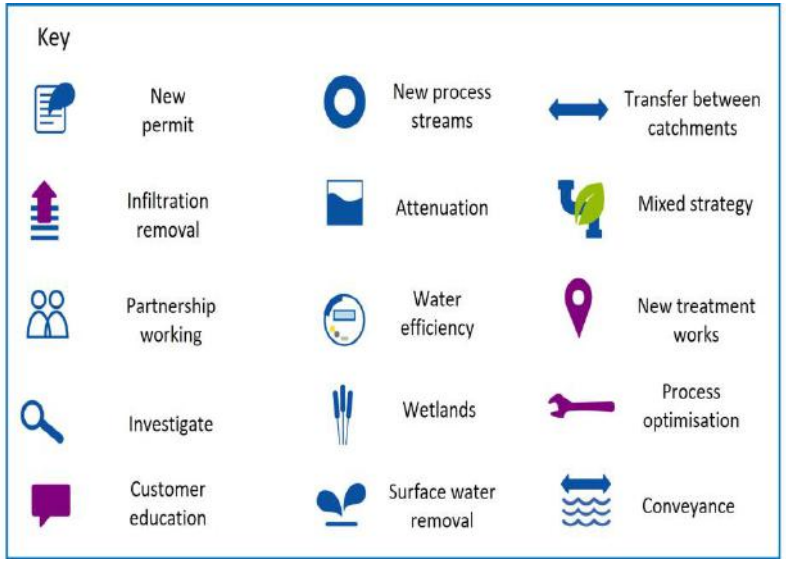
Long term strategy only

Table 5

L3 water recycling catchment	2050 strategy
Arrington	WRC - increased capacity.
Balsham	Increased conveyance.
Barrow	Investigate.
Dullingham	WRC - increase capacity.
East Harling	50% surface water removal.
Ely	WRC - Invesitgate 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.
Thetford	25% surface water removal.

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		



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

Aldeburgh

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.

Benhall

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.

Chelmondiston

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)

10% surface water removal.

Framlingham

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)

50% surface water removal.

Haughley

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.

Kessingland

How it started

All BRAVA themes assessed.

Stakeholders identified ongoing projects.

Medium term plans (by 2035)

Networks - attenuation, increased capacity.

Long term plans (2050)

10% surface water removal.

Partnership working

Kirton

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.

Melton

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)

WRC - transfer between catchments.

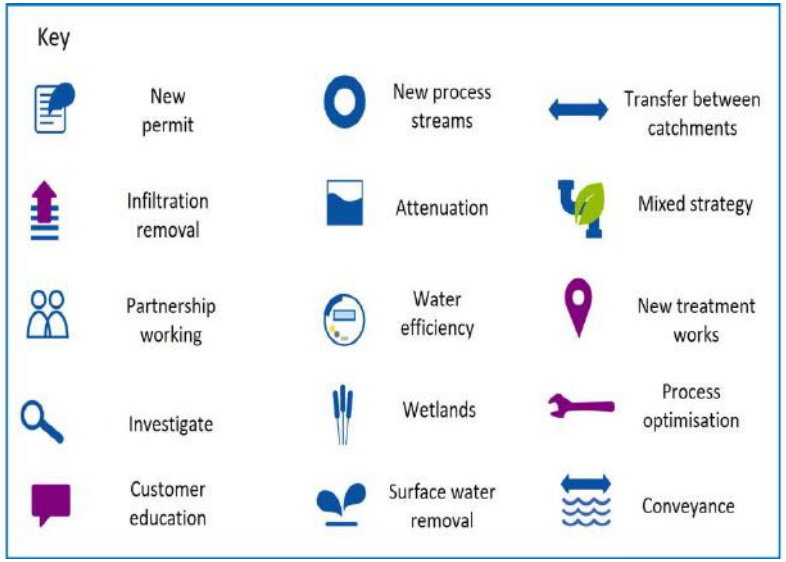
Long term strategy only

Table 6

L3 water recycling catchment	2050 strategy
Felixstowe	10% surface water removal.
Halesworth	25% 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 Aspal		
Stowmarket		
Tuddenham	-	-



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

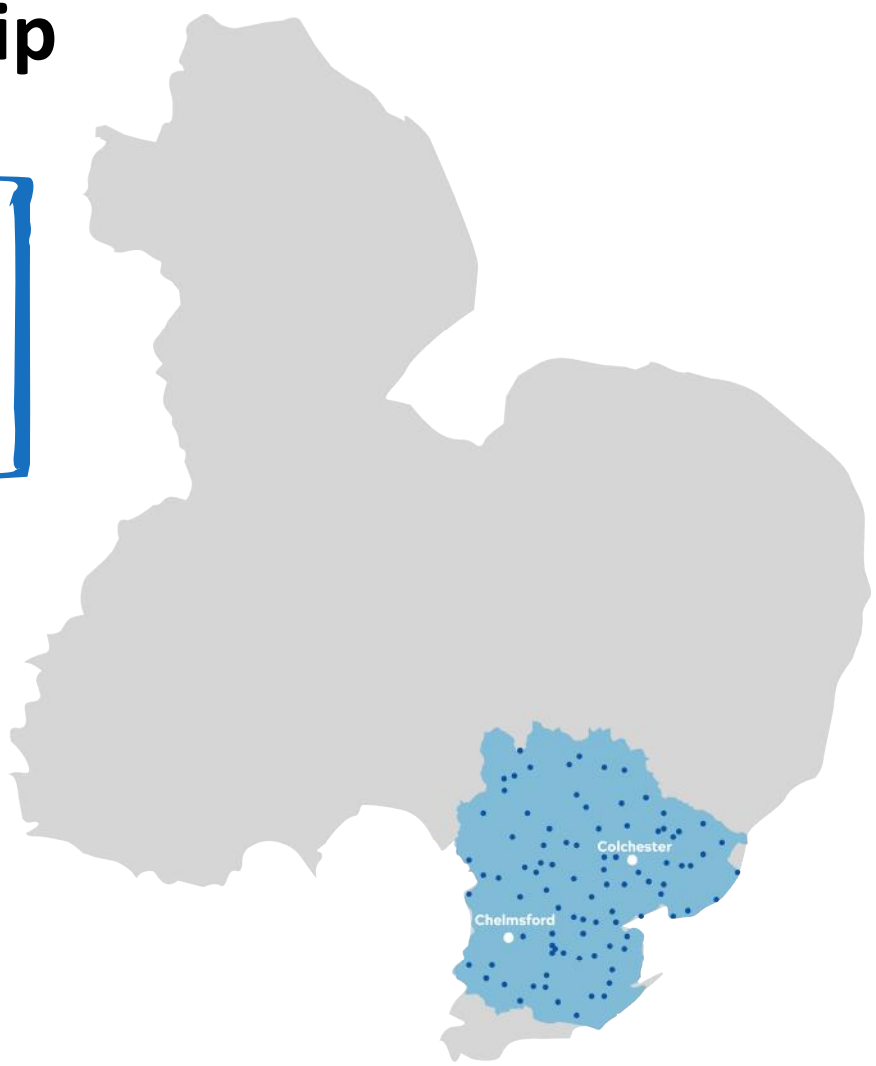
Essex Rivers Catchment Partnership

11 organisations involved

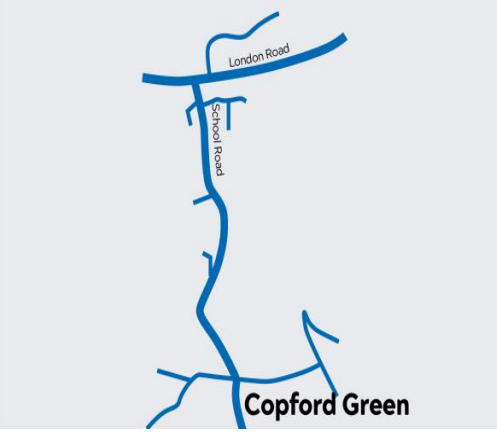
118,000
Increase in population 2025-2050

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. 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 to increase the capacity in the networks with attenuation.

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

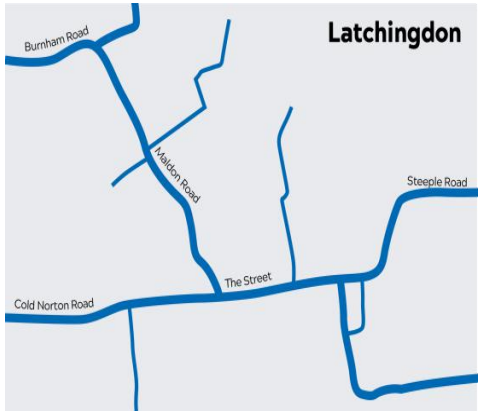
Infiltration reduction.
WRC – new permit.

Networks – attenuation, increased capacity.

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.

Partnership working

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.

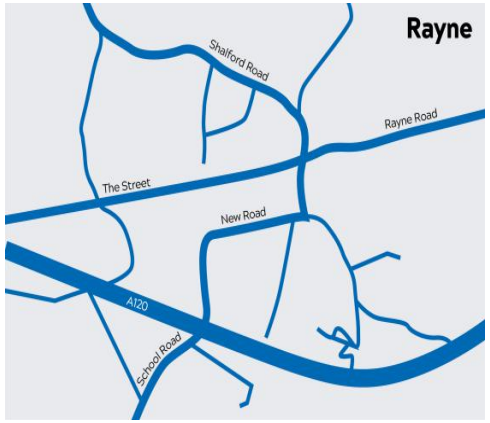
Networks – mixed strategy with main solution of additional capacity.

Long term plans

10% surface water removal.

Partnership working

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.

Basildon

How it started

All BRAVA themes assessed.

Stakeholders identified current flood risk concerns.

Medium term plans (by 2035)

Network – attenuation, increased capacity.

Long term plans (2050)

10% surface water removal.

Billericay

How it started

All BRAVA themes assessed.

Stakeholders identified flood and future WRC permit concerns.

Medium term plans (by 2035)

Network - mixed strategies with main solution of SuDs.

Long term plans (2050)

10% surface water removal.

Birch

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.

Bradwell on Sea

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.

Brantham

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)

10% surface water removal.

Brightlingsea

How it started

All BRAVA themes assessed.

Bathing and shellfish waters.

Medium term plans (by 2035)

Network - mixed strategies with main solution of SuDs.

Long term plans (2050)

25% surface water removal.

Burnham on Crouch

How it started

All BRAVA themes assessed.

Shellfish waters.

Stakeholders identified climate change as a concern.

Medium term plans (by 2035)

Network - mixed strategies with main solution of SuDs.

Long term plans (2050)

10% surface water removal.

Clacton-Holland Haven

How it started

All BRAVA themes assessed.

Stakeholders identified existing flood risks.

Medium term plans (by 2035)

WRC - new permit.

Long term plans (2050)

WRC - investigate strategy with Jaywick.

10% surface water removal.

Coggeshall

How it started

Two BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC - infiltration reduction.

Long term plans (2050)

Customer education.

Eight Ash Green

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.

Dedham

How it started

All BRAVA themes assessed.

Stakeholders identified current and future risk, and Habitats area.

Medium term plans (by 2035)

Network - mixed strategies with main solution of SuDs.

Long term plans (2050)

50% surface water removal.

Felsted

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.

Doddinghurst

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.

Fingringhoe

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC – additional capacity

Networks – mixed strategy with main solution SuDS.

Long term plans (2050)

50% surface water removal

Earls Colne

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Infiltration reduction

Network - mixed strategies with main solution of SuDs.

Long term plans (2050)

25% surface water removal.

Glemsford

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.

Gosfield

How it started

All BRAVA themes assessed.

Stakeholders concerned with future WRC permit limits.

Medium term plans (by 2035)

Network - mixed strategies with main solution of SuDs.

Long term plans (2050)

50% surface water removal.

Great Cornard

How it started

All BRAVA themes assessed.

Stakeholders concerned with future WRC permit limits.

Medium term plans (by 2035)

Network - Mixed strategies with main solution of SuDs

Long term plans (2050)

50% surface water removal.

Great Dunmow

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Infiltration reduction.

Network - mixed strategies with main solution of SuDs.

Long term plans (2050)

WRC – additional capacity.

25% surface water removal.

Great Easton (Essex)

How it started

All BRAVA themes assessed.

Stakeholders highlighted potential large growth areas.

Medium term plans (by 2035)

WRC - new permit with increased capacity.

Long term plans (2050)

Wait and see.

Great Leighs

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC - infiltration reduction.

Long term plans (2050)

Wait and see.

Great Sampford

How it started

Two BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC - infiltration reduction. Investigation.

Long term plans (2050)

Wait and see.

Hadleigh

How it started

Two BRAVA themes assessed.

Stakeholders concerned with future WRC permit limits. Habitats area.

Medium term plans (by 2035)

WRC - infiltration reduction.

Long term plans (2050)

Wait and see.

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)

Network - mixed strategies with main solution of SuDs.

Long term plans (2050)

50% surface water run off 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.

Lt Totham

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)

WRC - transfer between catchments.

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.

Networks – attenuation, additional capacity.

Long term plans (2050)

10% 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.

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.

Maylandsea

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.

Paglesham-East End

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Investigate.

Long term plans (2050)

WRC - increase capacity, potential wetland.

Rochford

How it started

Two BRAVA themes assessed.

Stakeholders identified current projects and flood issues. Shellfish water.

Medium term plans (by 2035)

Network - increased capacity.

Long term plans (2050)

WRC - pro-active maintenance. Increase capacity.

10% surface water removal.

Partnership working

S Woodham Ferrers

How it started

All BRAVA themes assessed.

Shellfish water.

Medium term plans (by 2035)

Network - mixed strategies with main solution of SuDs.

Long term plans (2050)

WRC - increase capacity.

10% surface water removal.

Salcott

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Investigate.

Long term plans (2050)

WRC - potential wetland.

Shenfield and Hutton

How it started

All BRAVA themes assessed.

Stakeholders identified current flood concerns.

Medium term plans (by 2035)

Network - increased capacity.

Long term plans (2050)

25% surface water removal.

Shimpling

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.

Southend

How it started

All BRAVA themes assessed.

Stakeholders identified current flood concerns.

Medium term plans (by 2035)

Network - increased capacity.

Long term plans (2050)

25% infiltration reduction.

Southminster

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)

WRC - increase capacity.

25% surface water runoff removal.

St Osyth

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.

Walton on the Naze

How it started

All BRAVA themes assessed.

Stakeholders concern about climate change.

Medium term plans (by 2035)

Networks - increased capacity.

Long term plans (2050)

10% surface water removal.

Stone St Lawrence

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Infiltration reduction

Network - mixed strategies with main solution of SuDs.

Long term plans (2050)

WRC – smart permitting.

10% surface water removal.

West Bergholt

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC - new permit.

Long term plans (2050)

50% surface water removal.

Thorrington

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)

10% surface water removal.

West Mersea

How it started

All BRAVA themes assessed.

Stakeholders identified ongoing projects. Bathing and shellfish waters.

Medium term plans (by 2035)

Network - mixed strategies with main solution of SuDs.

Long term plans (2050)

25% surface water removal.

Tollesbury

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.

White Notley

How it started

Two BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC - infiltration reduction.

Long term plans (2050)

Wait and see.

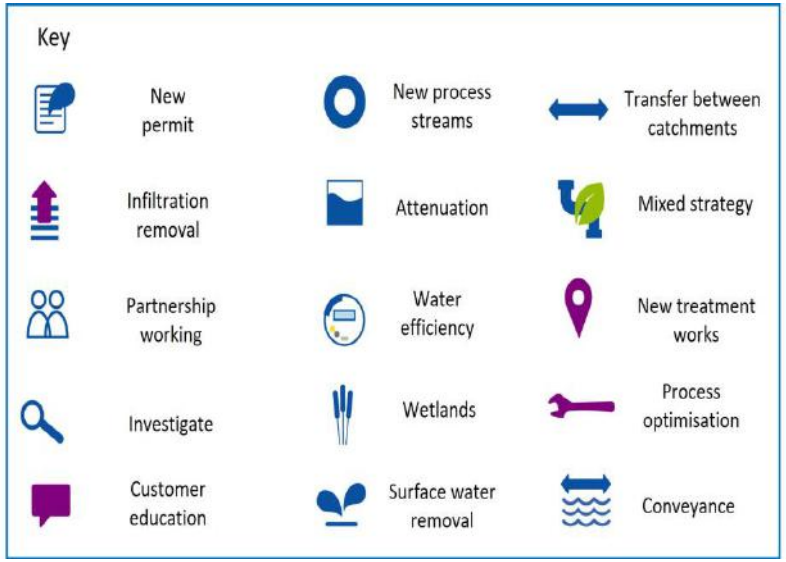
Long term strategy only

Table 7

L3 water recycling catchment	2050 strategy
Braintree	WRC - increased capacity. 25% surface water removal.
Chelmsford	WRC - process optimatisation and increased capacity.
High Roding	WRC - increased capacity.
Jaywick New	10% surface water removal.
Kedington	50% surface water removal.
Rayleigh-East	10% surface water removal.
Rayleigh-West	WRC - increase capacity. 25% surface water removal.
Sudbury	WRC - Investigate with Great Conard. 25% surface water removal.
Tiptree	50% 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		



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	-	
Holbrook	-	-
Hundon	-	-

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

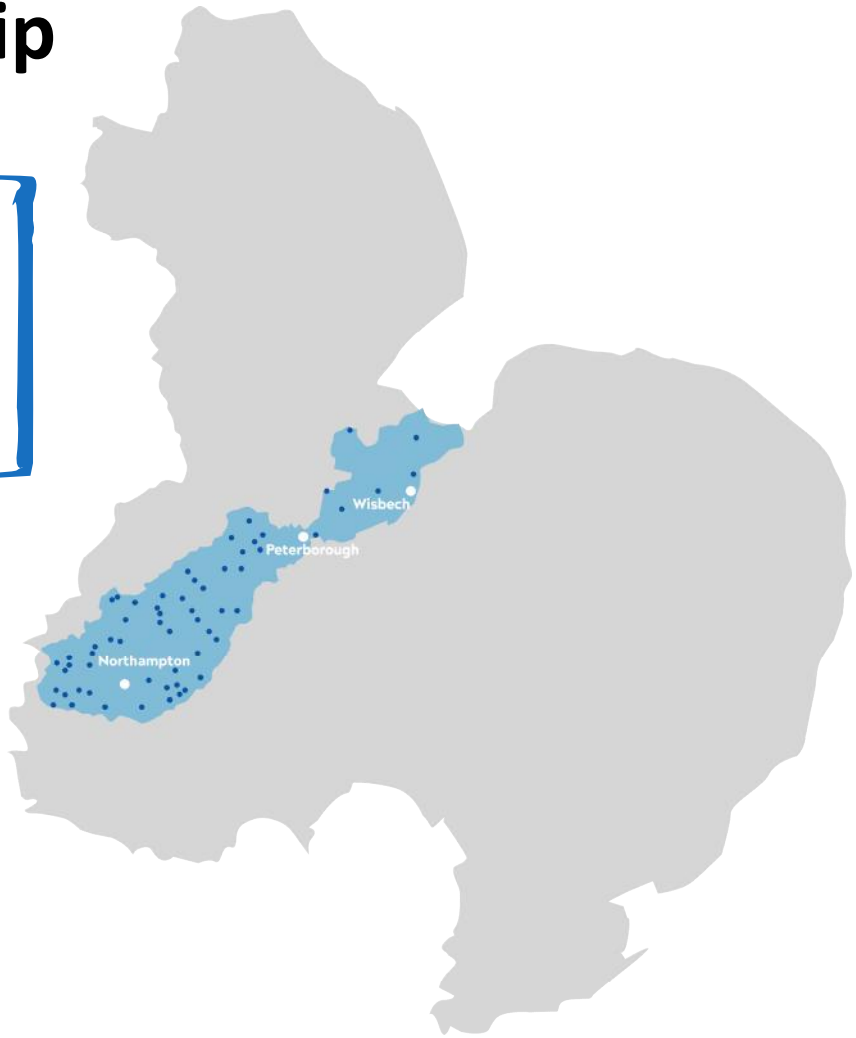
Catchment	Medium Term	Long Term
Rayne		
Rochford		
South Woodham Ferrers		
Salcott		
Shenfield and Hutton		
Shimpling		
Sible Hedingham	-	-
Southend		
Southminster		
St Osyth		
Steeple Bumpstead	-	-
Stisted	-	-
Stone St Lawrence		
Stradishall Highpoint	-	-
Sudbury	-	
Tendring Green	-	-
Thorrington		

Catchment	Medium Term	Long Term
Tillingham	-	-
Tiptree	-	
Tollesbury		
Tolleshunt – D arcy	-	-
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

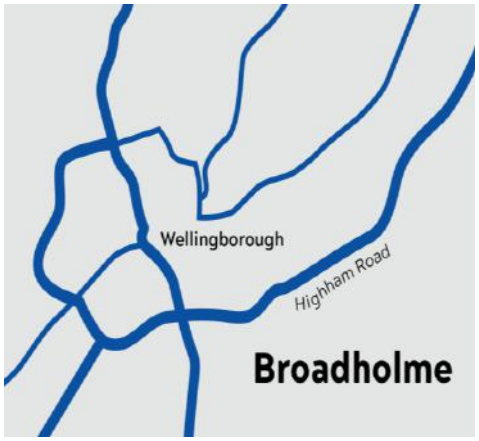
126,800
Increase in population 2025-2050



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.

Bozeat

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)
25% surface water removal.

Bugbrooke

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.

Brigstock

How it started
All BRAVA themes assessed.
Stakeholders concerned about climate change.

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

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

Corby

How it started
All BRAVA themes assessed.
Stakeholders concerned about future WRC permit.

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

Long term plans (2050)
Wait and see.

Brixworth

How it started
All BRAVA themes assessed.
Stakeholders concerned about future WRC permit.

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

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

Crowland

How it started
All BRAVA themes assessed.
Stakeholders concerned about climate change.

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

Long term plans (2050)
Wait and see.

Broughton (Northants)

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.

East Haddon

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.

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.

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.

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

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.

Great Billing

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Network - increased capacity.

Long term plans (2050)

WRC - increase capacity.

10% 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.

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.

Stibbington

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.

Oundle

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.

Sutton Bridge

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.

Raunds

How it started

All BRAVA themes assessed.

Stakeholders identified ongoing projects.

Medium term plans (by 2035)

WRC - Relocate outfall.

Long term plans (2050)

Wait and see.

Thorpe Malsor

How it started

All BRAVA themes assessed.

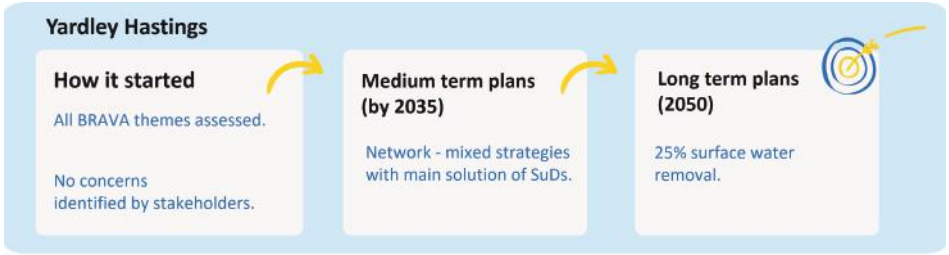
No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC - Increase capacity.

Long term plans (2050)

Wait and see.



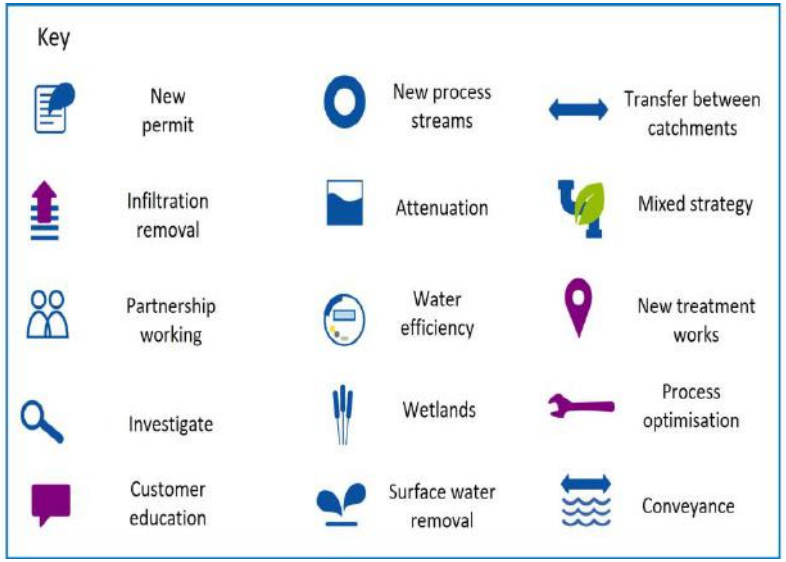
Long term strategy only

Table 8

L3 water recycling catchment	2050 strategy
Moulton	Reduce infiltration. Transfer between catchments.
Nassington	WRC - increase capacity Customer education. Water efficiency.
Peterborough	10% surface water removal.
Ravensthorpe	Customer education.
West Walton	25% infiltration reduction.
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		-



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

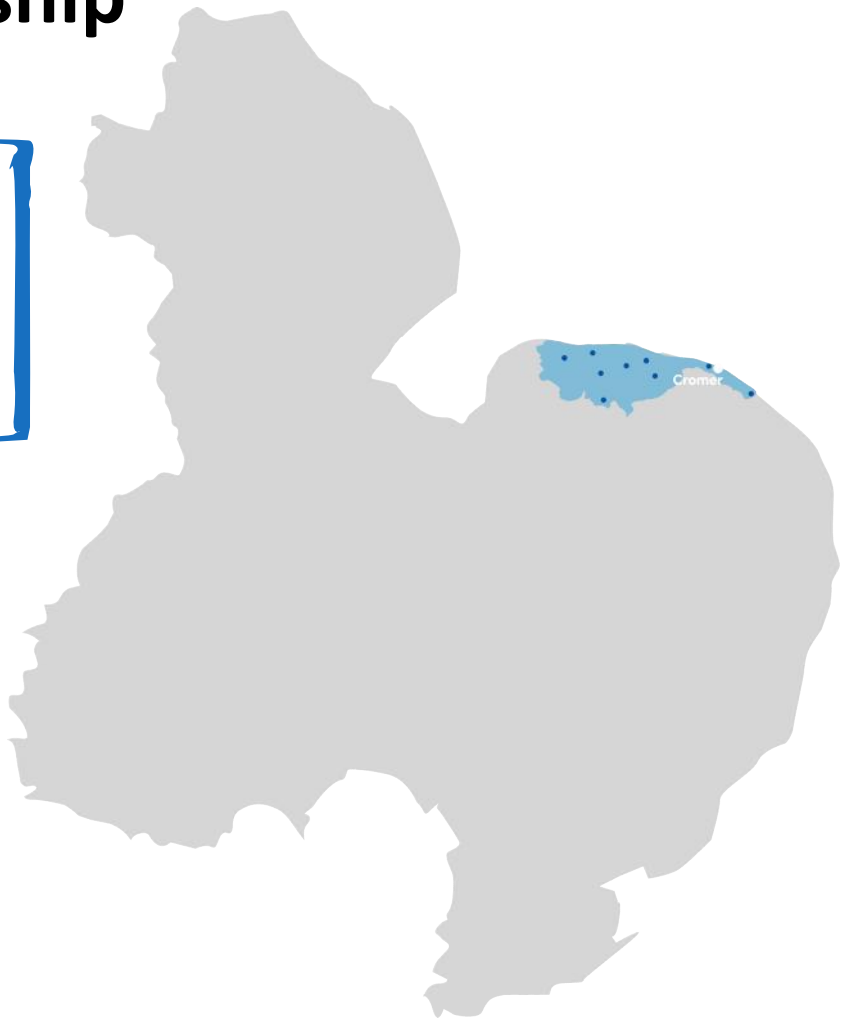
Catchment	Medium Term	Long Term
Raunds		-
Ravensthorpe	-	
Rushton	-	-
Stantion	-	-
Stibbington		
Sutton Bridge		
Thorney	-	-
Thorpe Malsor		-
Titchmarsh		
Weedon		
Welton	-	-
West Walton	-	
Whilton		-
Wittering	-	
Woodnewton	-	-
Yardley Hastings		

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.

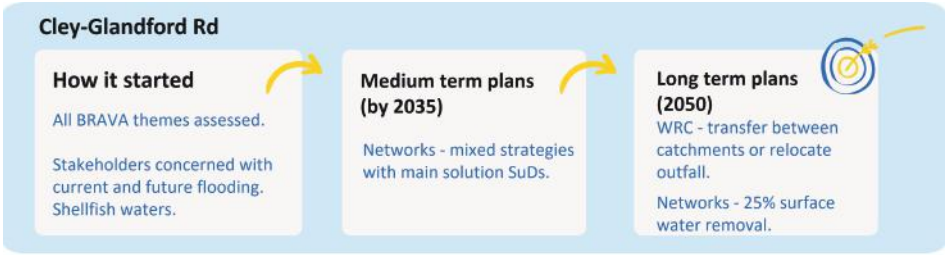
Medium term plans

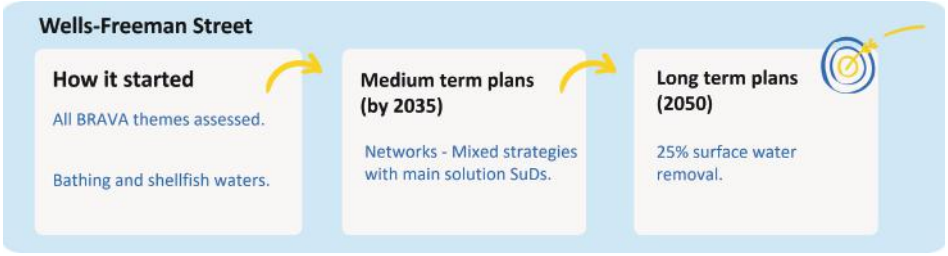
WRC – increased capacity.

Networks – mixed strategy with main solution SuDS.

Long term plans

25% surface water removal.



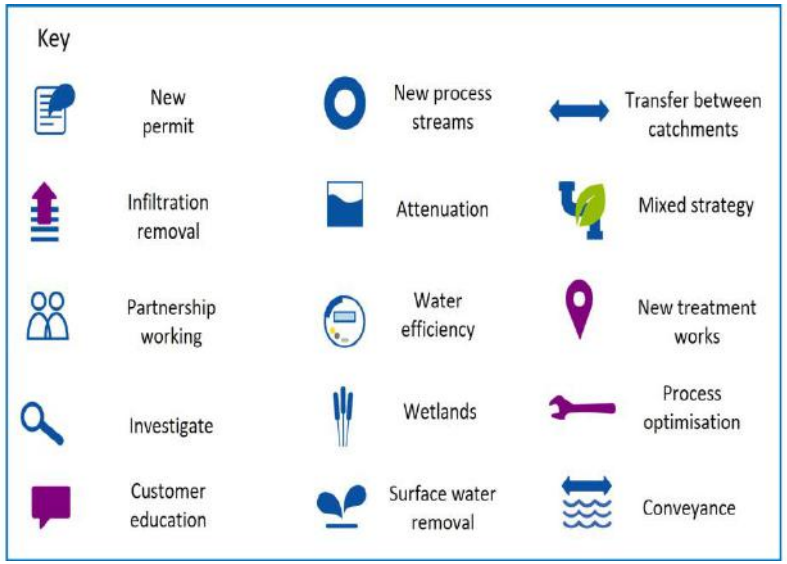


Long term strategy only

Table 9

L3 water recycling catchment	2050 strategy
Burnham Market	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		

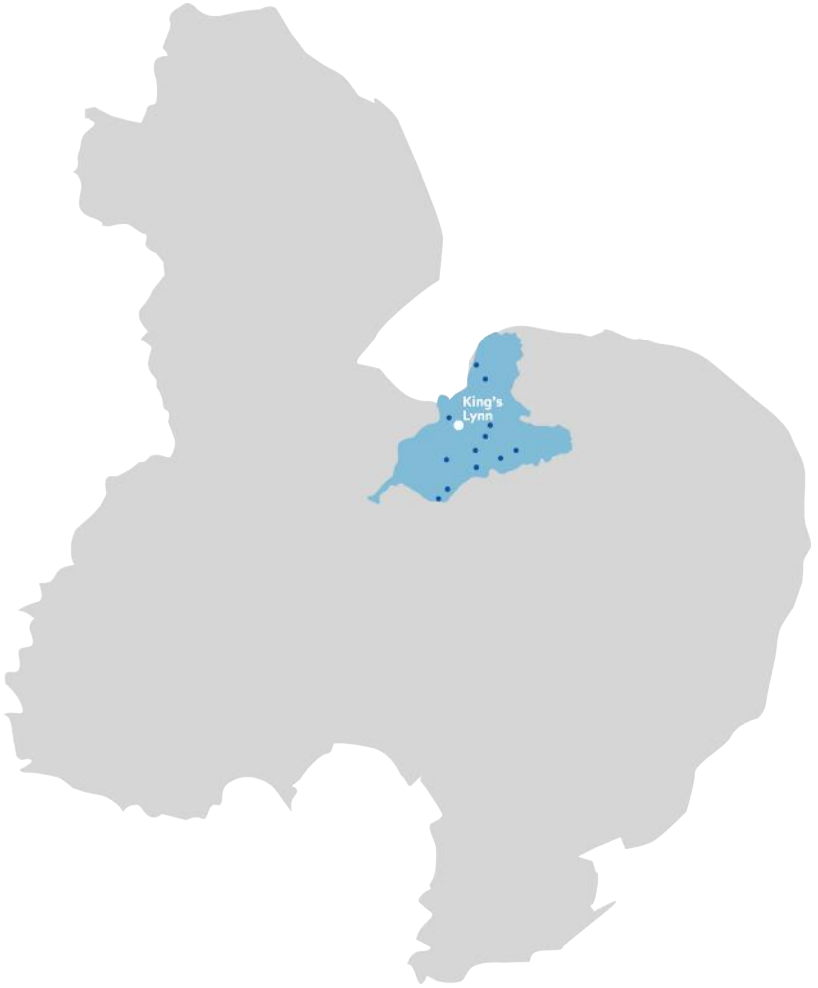


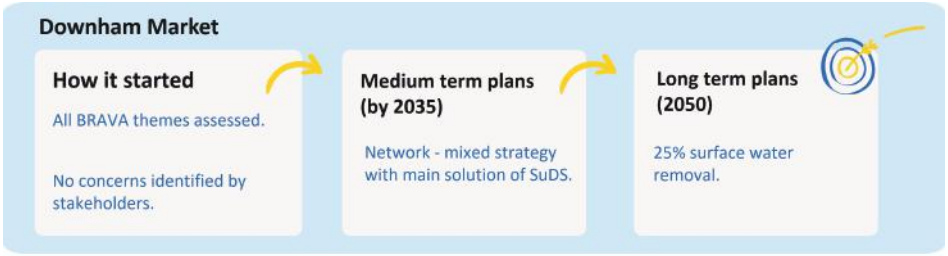
North West Norfolk Catchment Partnership

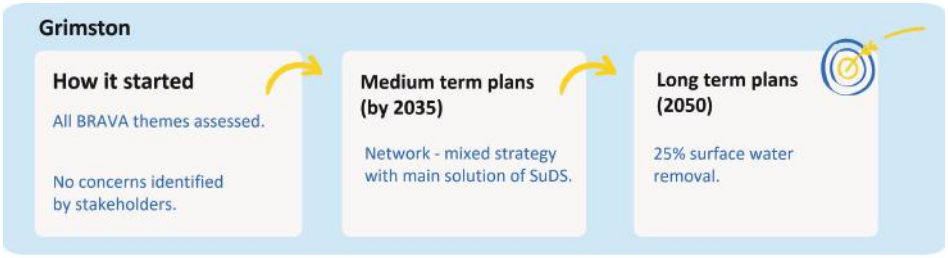
3 organisations involved

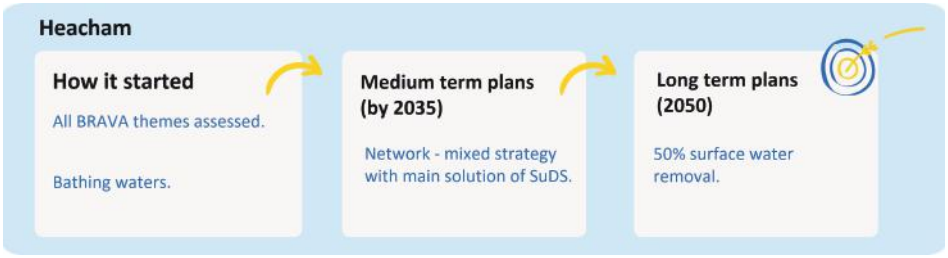
9,900
Increase in population 2025-2050

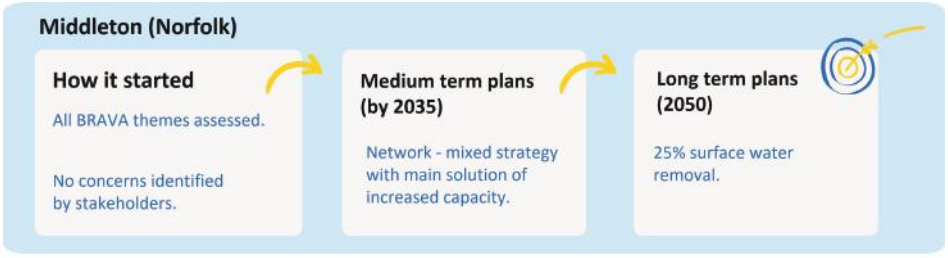
Up to
£53 million
investment
from 2025-2050

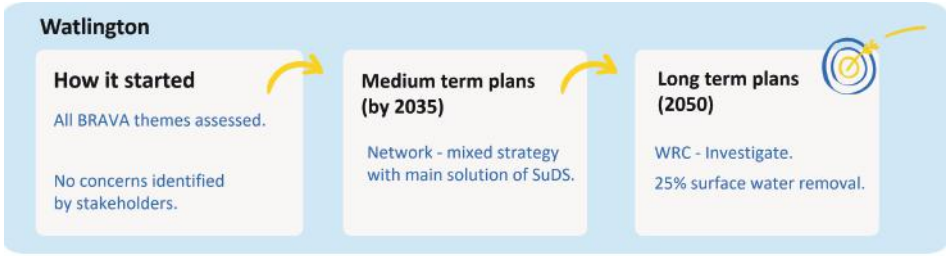










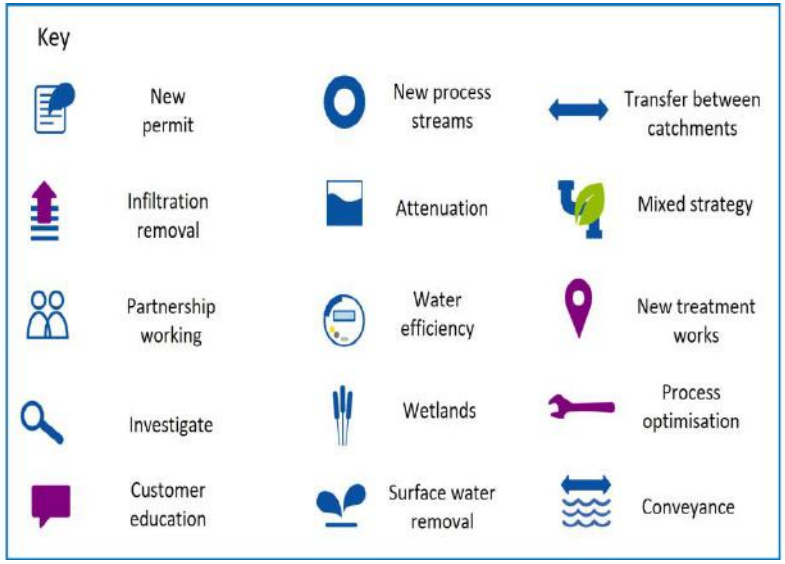


Long term strategy only

Table 10

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		

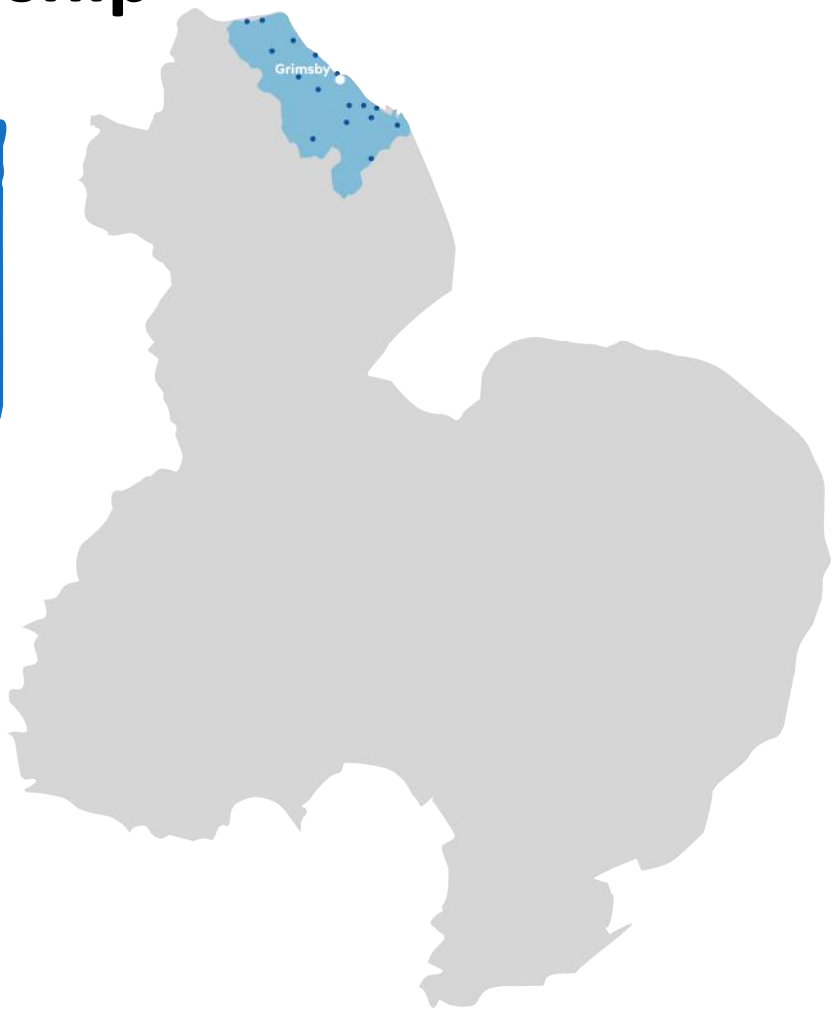


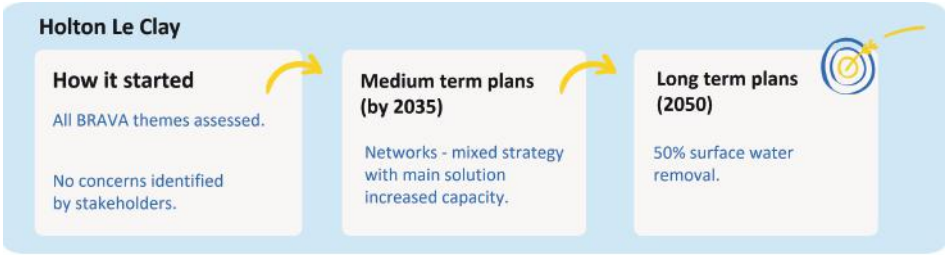
Northern Becks Catchment Partnership

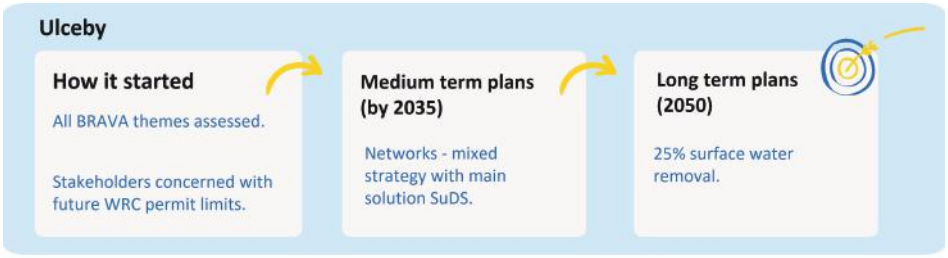
6 organisations involved

5,000
Increase in population 2025-2050

Up to
£12 million
investment
from 2025-2050





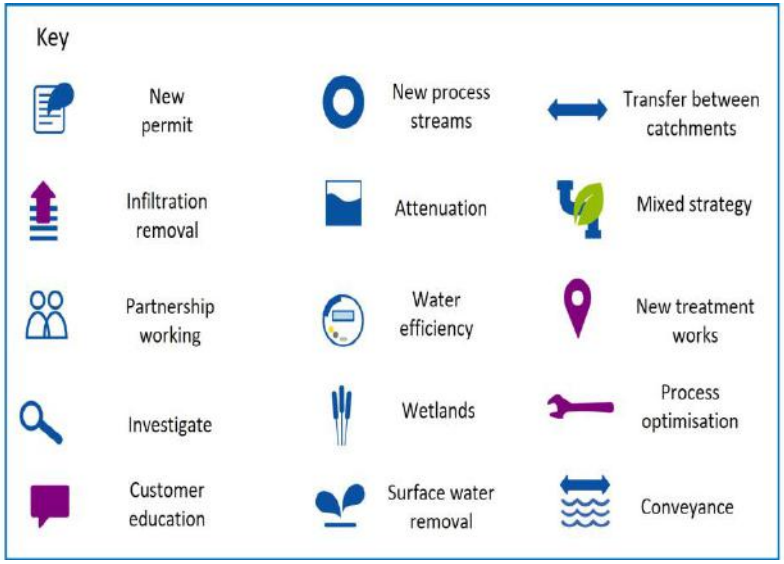


Long term strategy only

Table 11

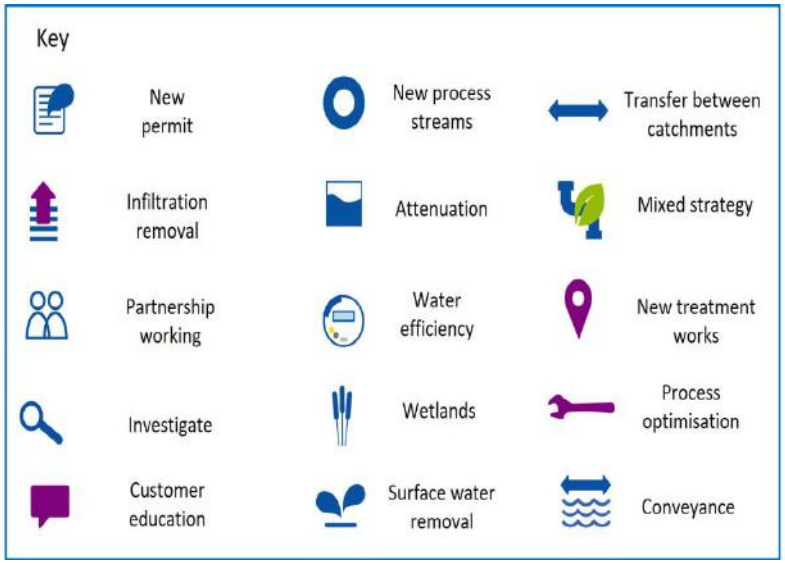
L3 water recycling catchment	2050 strategy
Barton on Humber	50% infiltration reduction.
Immingham	5% surface water removal.
Louth	WRC - new permit and increase capacity. 10% surface water removal.
North Somercotes	WRC - new permit and increase capacity.
South Killingholme	WRC - new permit and increase 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		



River Idle Catchment Partnership Area

Catchment	Medium Term	Long Term
Elkesley		-



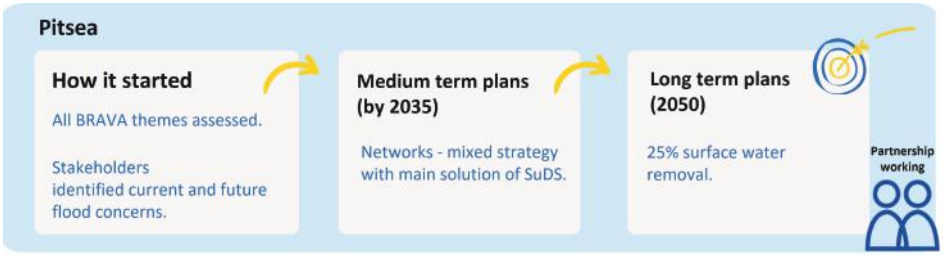
South Essex Catchment Partnership

6 organisations involved

24,800
Increase in population 2025-2050

Up to
£151 million
investment
from 2025-2050

2 Partnership opportunities identified

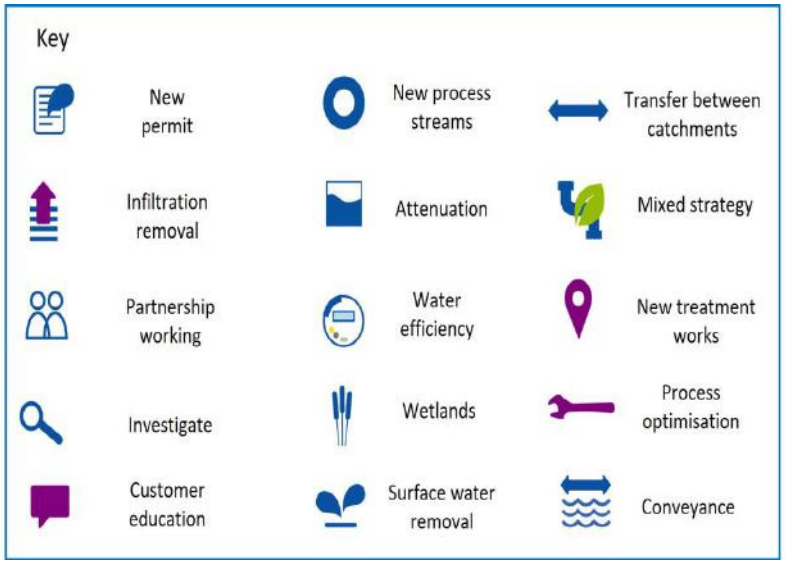


Long term strategy only

Table 12

L3 water recycling catchment	2050 strategy
Canvey Island	10% surface water removal.
Upminster	10% surface water removal.

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



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.

Alconbury

How it started

All BRAVA themes assessed.

Stakeholders identified existing flood risk and future WRC permit concerns.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.

Ashbrook

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.

Ashton

How it started

All BRAVA themes assessed.

Stakeholders identified future WRC permit concerns.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.

Bedford

How it started

All BRAVA themes assessed.

Habitats area.

Medium term plans (by 2035)

WRC - new permit with increased capacity.

Long term plans (2050)

Wait and see.

Buckden

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.

Buckingham

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 strategy with main solution SuDS.

Long term plans (2050)

25% surface water removal.

Castlethorpe

How it started

Two BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC - process optimisation.

Long term plans (2050)

Wait and see.

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.

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.

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.

Partnership working

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.

Flitwick

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.

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.

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.

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.

Partnership working

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.

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.

Odell

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)

Infiltration reduction.

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.

Oving

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.

Sandy

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Networks - increased capacity.

Long term plans (2050)

WRC - transfer between catchments or increase in capacity.

10% surface water removal.

St Neots

How it started

All BRAVA themes assessed.

Habitats.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

50% surface water removal.

Shillington

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)

50% surface water removal.

Stanbridgeford

How it started

All BRAVA themes assessed.

Stakeholders identified historic flood issues.

Medium term plans (by 2035)

Networks - increased capacity.

Long term plans (2050)

25% surface water removal.

Silverstone

How it started

All BRAVA themes assessed.

Stakeholders concerned with future WRC permit limits.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

50% surface water removal.

Steeple Claydon

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.

St Ives

How it started

All BRAVA themes assessed.

Stakeholders identified historic flood issues.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

10% surface water removal.

Tempsford

How it started

All BRAVA themes assessed.

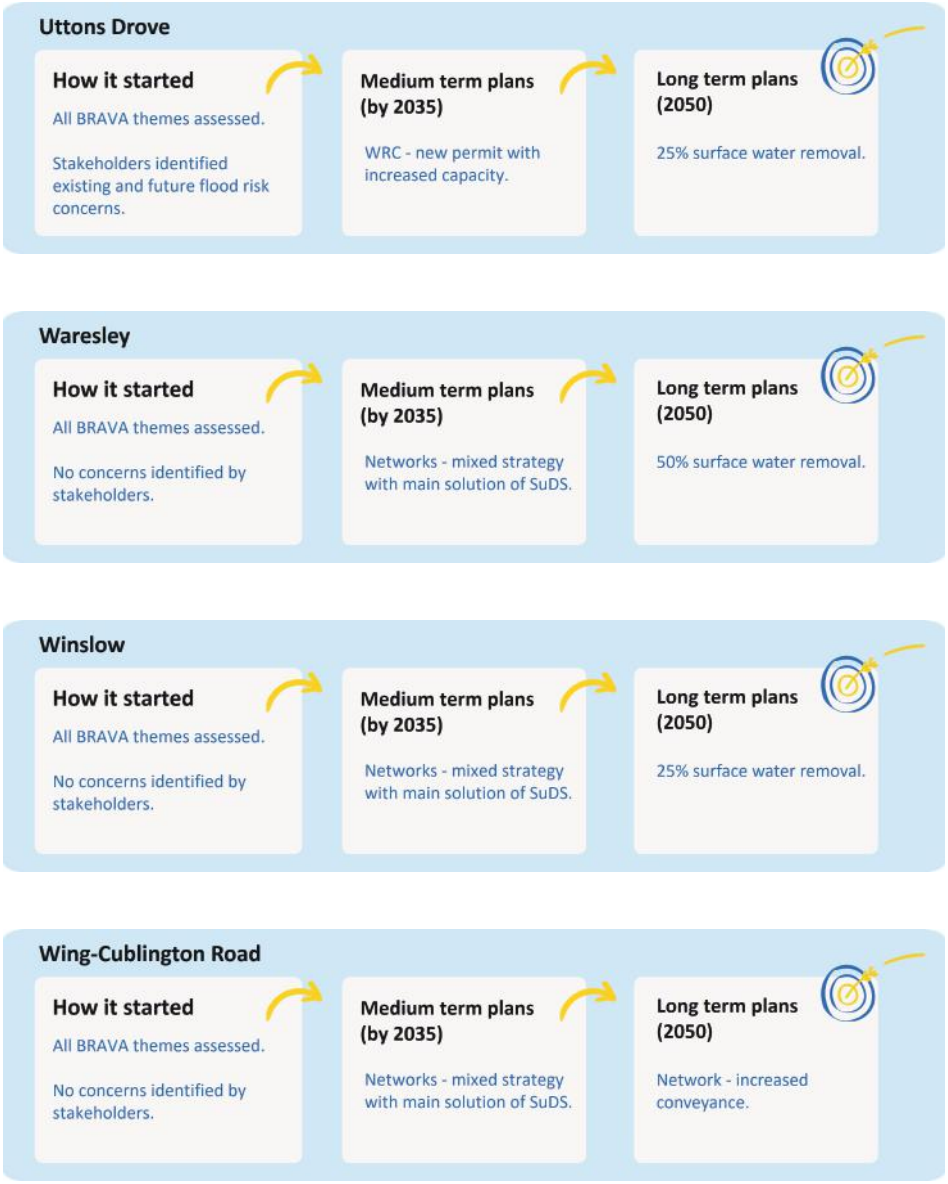
Habitats.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.



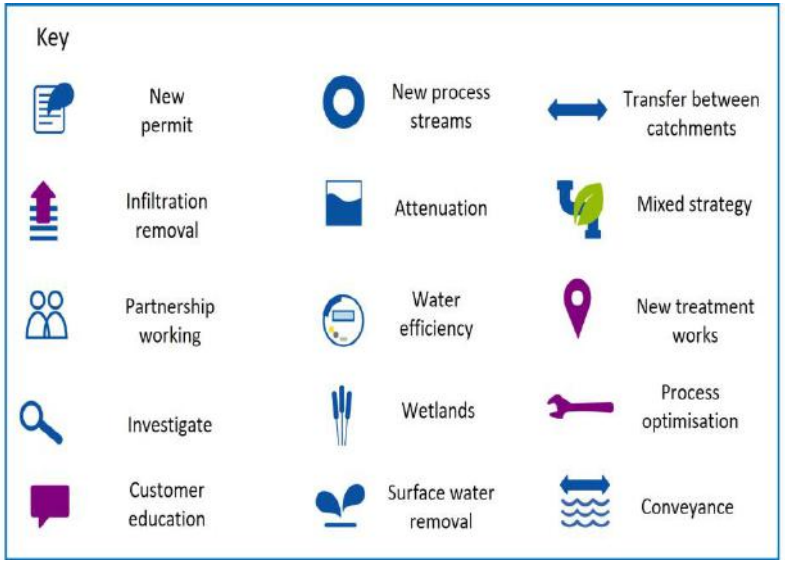
Long term strategy only

Table 13

L3 water recycling catchment	2050 strategy
Barton Le Clay	WRC - transfer between catchments. 25% surface water reduction.
Biggleswade	50% surface water removal.
Brackley (New)	WRC - process optimisation.
Clifton	WRC - increase in capacity.
Cotton Valley	10% surface water removal.
Dunstable	10% surface water removal.
Easton (Cambs)	WRC - increase capacity and pro-active maintenance.
Fringford	WRC - increase capacity.
Greens Norton	WRC - new permit and increase capacity. Potential wetland.
Hitchin	25% surface water removal.
Olney	25% surface water removal.
Poppyhill	WRC - new permit and increase capacity. Or transfer between catchments.
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		



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 Linslade		
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	-	-

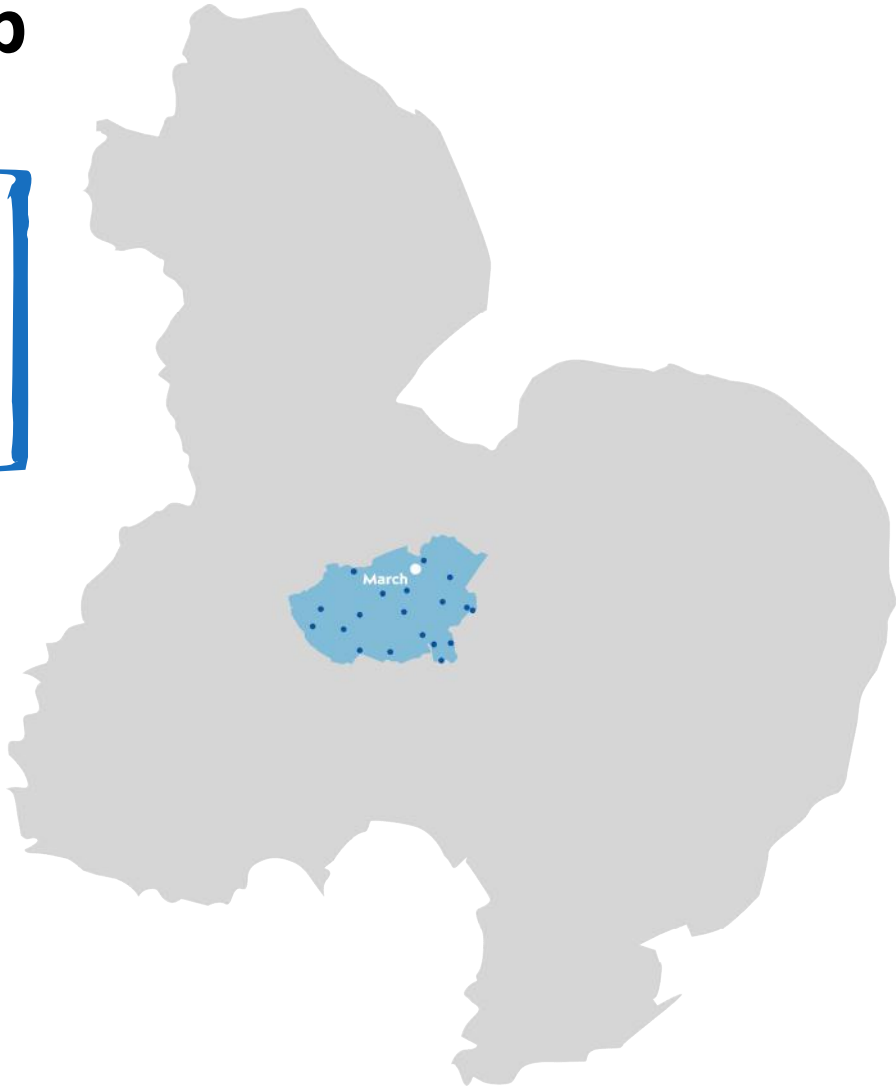
Catchment	Medium Term	Long Term
Sandy		
Sandon (New)	-	-
Stoke Bruerne	-	-
Steeple Claydon		
Sherington	-	-
Shillington		
Silverstone		
St Ives		
St Neots		
Stanbridgeford		
Swanbourne	-	-
Tempsford		
Thurleigh	-	-
Tiffield	-	-
Towcester	-	-
Turvey – Cottage/N Blovil Road	-	-
Upper Sandon	-	

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

Doddington

How it started

All BRAVA themes assessed.

Stakeholders concerned with future flood risk.

Medium term plans (by 2035)

Network - Mixed strategies with main solution of SuDs.

Long term plans (2050)

25% surface water removal.

Mepal

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.

Littleport

How it started

All BRAVA themes assessed.

Stakeholders identified historic flooding.

Medium term plans (by 2035)

Network - Mixed strategies with main solution of SuDs.

Long term plans (2050)

25% surface water removal.

Ramsey

How it started

All BRAVA themes assessed.

Stakeholders concerned with future flood risk.

Medium term plans (by 2035)

Network - Mixed strategies with main solution of SuDs.

Long term plans (2050)

25% surface water removal.

Manea-Town Lots

How it started

Two BRAVA themes assessed.

Stakeholders concerned with future flood risk.

Medium term plans (by 2035)

Infiltration reduction.

Long term plans (2050)

No risk identified.

Sawtry

How it started

All BRAVA themes assessed.

Stakeholders concerned with future flood risk.

Medium term plans (by 2035)

Network - Mixed strategies with main solution of SuDs.

Long term plans (2050)

25% surface water removal.

March

How it started

All BRAVA themes assessed.

Stakeholders identified existing flood risk and ongoing projects.

Future Fens Strategy.

Medium term plans (by 2035)

Network - Mixed strategies with main solution of SuDs.

Long term plans (2050)

25% surface water removal.

Partnership working

Somersham (Cambs)

How it started

Two BRAVA themes assessed.

Stakeholders identified current river concerns.

Medium term plans (by 2035)

Infiltration removal.

Long term plans (2050)

Wait and see.

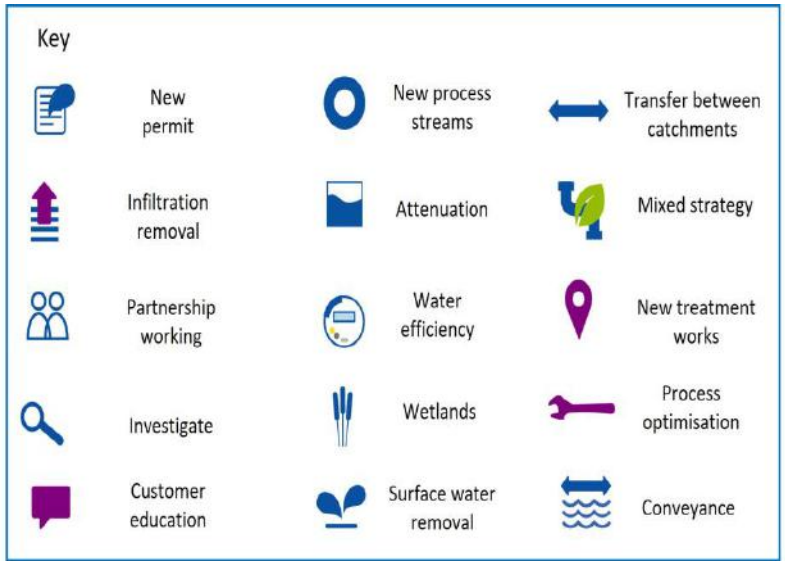
Long term strategy only

Table 14

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	-	

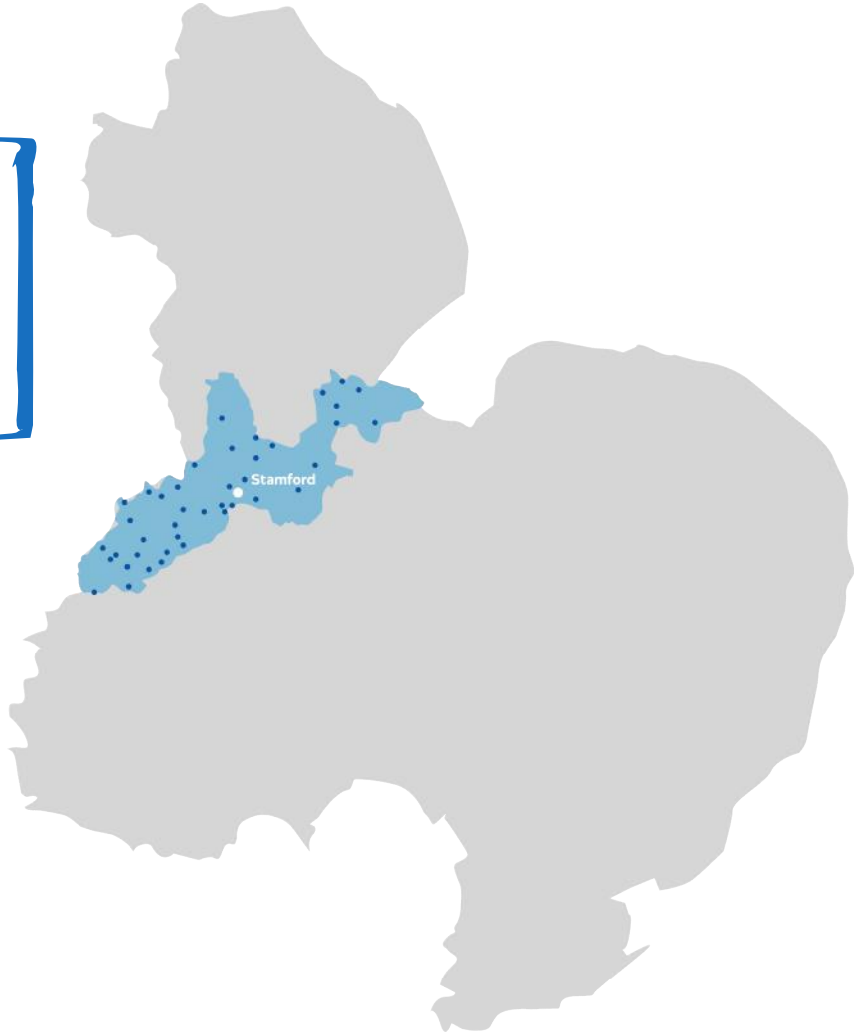
Catchment	Medium Term	Long Term
Witcham		-
Witchford	-	-



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

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.

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.

	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.

Partnership working

Braunston

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC – new permit and increased capacity

Networks – mixed strategy with main solution SuDs

Long term plans (2050)

25% surface water removal.

Cottesmore

How it started

All BRAVA themes assessed.

Stakeholders identified current and future flood concerns.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.

Foxton (Leics)

How it started

Two BRAVA themes assessed.

Stakeholders identified future flood concerns.

Medium term plans (by 2035)

WRC - increase capacity.

Long term plans (2050)

Wait and see.

Gosberton

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.

Gretton

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)

Customer education.

25% surface water removal.

Hallaton

How it started

Two BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Infiltration reduction.

Long term plans (2050)

Wait and see.

Ketton

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.

Kibworth

How it started

All BRAVA themes assessed.

Stakeholders identified current flood risk concerns.

Medium term plans (by 2035)

WRC - increase capacity.

Long term plans (2050)

Wait and see.

Little Bytham

How it started

All BRAVA themes assessed.

Stakeholders identified future WRC permit concerns.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of increased sewer capacity.

Long term plans (2050)

25% surface water removal.

Lyddington

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)

Customer education. Water efficiency.

25% surface water removal.

Middleton (Northants)

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.

North Luffenham

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.

Spalding

How it started

All BRAVA themes assessed.

Stakeholders identified concerns about historic flooding. Shellfish water.

Medium term plans (by 2035)

WRC - increase capacity.

Long term plans (2050)

Wait and see.

Stamford

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Network - Increased capacity.

Long term plans (2050)

25% surface water removal.

Surfleet

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Investigate.

Long term plans (2050)

Wait and see.

Sutterton-Wigtoft

How it started

All BRAVA themes assessed.

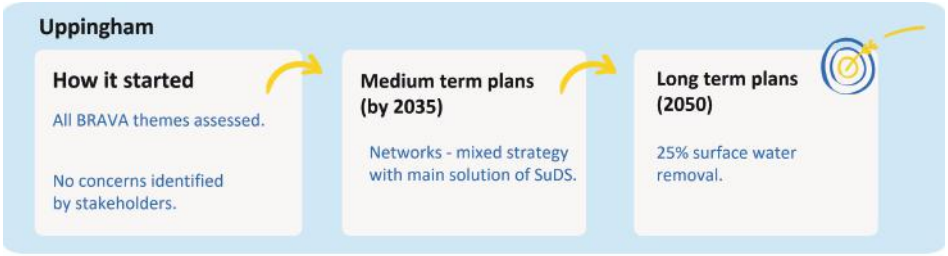
No concerns identified by stakeholders.

Medium term plans (by 2035)

WRC - new permit with increased capacity.

Long term plans (2050)

Wait and see.



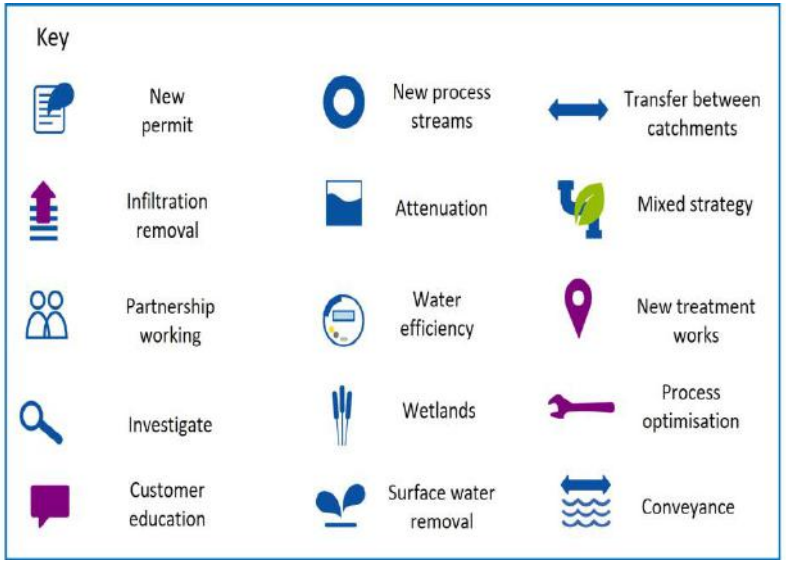
Long term strategy only

Table 15

L3 water recycling catchment	2050 strategy
Deeping	Customer education.
Fosdyke	WRC - inreased capacity. Potential wetland.
Great Easton	Infiltration reduction.
Holbeach	Customer education. Water efficiency. 25% surface water removal.
Oakham	25% surface water removal.
Tilton on the Hill	Infiltration reduction.

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		

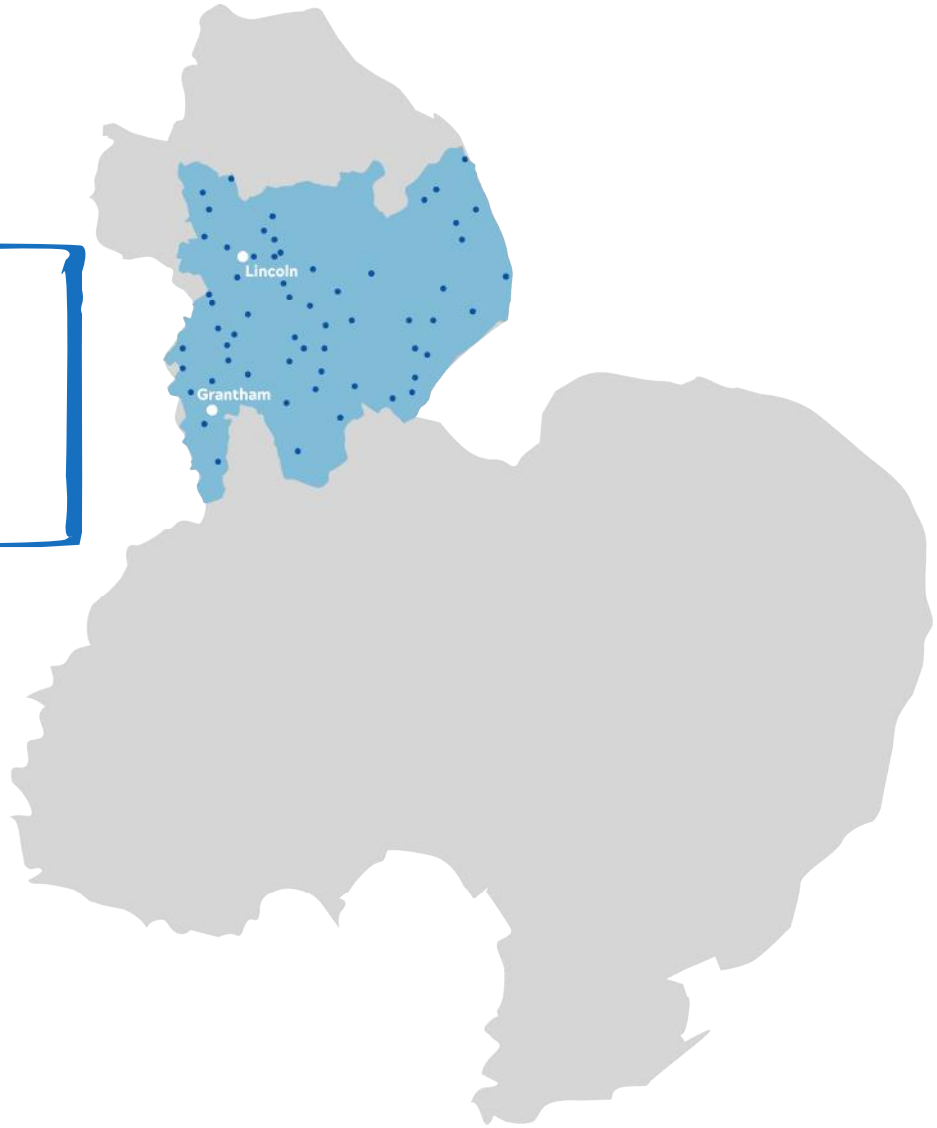


Catchment	Medium Term	Long Term
Middleton		
North Luffenham		
Oakham	-	
Ryhall	-	-
Sibbertoft	-	-
Spalding		-
Stamford		
Stoke Albany	-	-
Sutterton - Wigtoft		-
Tilton on the Hill	-	
Tugby	-	-
Uppingham		
Weston by Welland	-	-
Wing	-	-

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 is for a mixed strategy in the network with a main solution of SuDS to reduce pollution risk, internal and external sewer flooding risk and improve storm overflow performance. 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 by adding new process streams 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 – increased capacity.

Networks – mixed strategy with main solution SuDS.

Long term plans

10% surface water removal.

Alford

How it started

All BRAVA themes assessed.

Stakeholders identified future WRC permit concerns.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.

Billinghay

How it started

All BRAVA themes assessed.

Stakeholders concerned about climate change.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

WRC –process optimisation. Infiltration reduction.

50% surface water reduction.

Ancaster

How it started

Two 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.

Brant Broughton

How it started

All BRAVA themes assessed.

Stakeholders concerned about climate change.

Medium term plans (by 2035)

WRC - new permit with increased capacity.

Long term plans (2050)

Reduce infiltration.

50% surface water removal.

Anwick

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)

WRC - new permit with increased capacity.

25% surface water removal.

Caythorpe

How it started

All BRAVA themes assessed.

Stakeholders concerned about climate change.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.

Claypole

How it started

Two 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.

Frampton

How it started

All BRAVA themes assessed.

Stakeholders identified current flood concerns.

Shellfish waters.

Medium term plans (by 2035)

WRC - increase capacity.

Long term plans (2050)

Wait and see.

Dorrington

How it started

Two 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.

Harlaxton

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)

10% surface water removal.

Fishtoft

How it started

Two BRAVA themes assessed.

Shellfish waters.

Medium term plans (by 2035)

WRC - new permit with increased capacity.

Long term plans (2050)

Wait and see.

Heckington

How it started

TwoBRAVA 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.

Fiskerton

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 reduction.

Horncastle

How it started

All BRAVA themes assessed.

Stakeholders concerned with future WRC permit limits. Ongoing projects identified.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

50% surface water reduction.

Legbourne

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.

Nocton (RAF)

How it started

Two BRAVA themes assessed.

No concerns identified by stakeholders.

Medium term plans (by 2035)

Investigate.

Long term plans (2050)

Wait and see.

Manby

How it started

All BRAVA themes assessed.

Stakeholders concerned with future WRC permit limits.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.

North Hykeham

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.

Metheringham

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 increase capacity.

Sleaford

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)

Infiltration reduction.

Nettleham

How it started

All BRAVA themes assessed.

Stakeholders concerned with future WRC permit limits.

Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

25% surface water removal.

Spilsby

How it started

All BRAVA themes assessed.

No concerns identified by stakeholders.

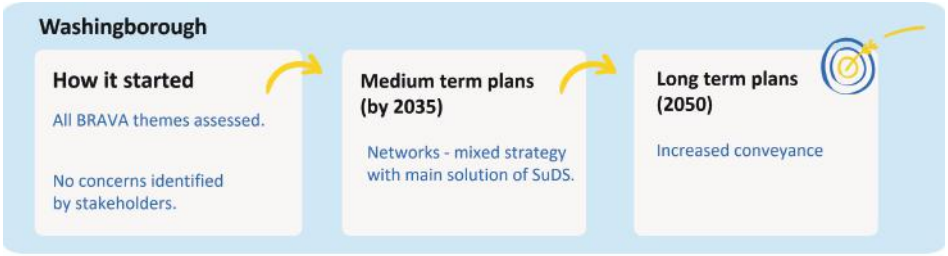
Medium term plans (by 2035)

Networks - mixed strategy with main solution of SuDS.

Long term plans (2050)

WRC - new permit with increase capacity.

Customer education and water efficiency.



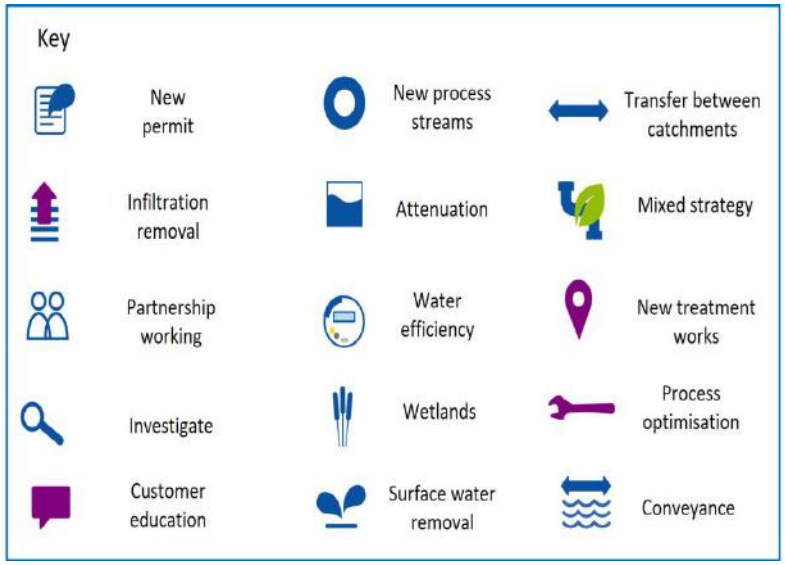
Long term strategy only

Table 16

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
Alford		
Allington	-	-
Ancaster		
Anwick		
Bardney	-	-
Bassingham	-	-
Billinghay		
Boston	-	
Bourne	-	
Brant Broughton		
Canwick	-	-
Caythorpe		
Claypole		-
Colsterworth	-	-
Coningsby	-	-
Donington	-	
Dorington		-

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



Catchment	Medium Term	Long Term
Helpringham	-	-
Harlaxton		
Horncastle		
Ingoldmells	-	
Lond bennington	-	-
Leadenham	-	-
Legbourne		-
Mablethorpe	-	
Manby		
Marston (Lincs)		
Martin	-	-
Metheringham		
Navenby	-	
Nettleham		
North Hykeham		
New Leake	-	-
Nocton (RAF)		

Catchment	Medium Term	Long Term
Old Leake-Skip Marsh Lane	-	-
Osbourneby	-	-
Reepham (Lincs)	-	
Saxilby	-	-
Sibsey	-	
Skelingthorpe	-	
South Kyme	-	-
Sleaford		
Saltfleet	-	-
Spilsby		
Stickney	-	-
Strubby	-	-
Sturton by Stow	-	
Swinderby	-	
Swineshead (Lincs)	-	-
Wainfleet	-	-
Washingborough		

Catchment	Medium Term	Long Term
Willingham	-	-
Woodhall Spa	-	-
Wragby	-	-

14. 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 review everything 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.

Now it's over to you. We'd like to capture your views and comments on our draft DWMP and invite responses to the consultation questions on this draft publication. Your comments and thoughts will shape our final DWMP, due to be published in spring 2023.

To get involved please respond to the consultation by answering the questions below through the consultation form here:

Draft DWMP Consultation 2022

You can also contact us with your thoughts atDWMP@anglianwater.co.uk

The consultation is open until 16 September 2022.

Consultation questions

1. What are your highest priorities for future drainage investments over the next 25 years?
2. What are your highest priorities for future drainage investments over the medium term (to 2035)?
3. We've prioritised planning for a 2 degree increase in temperature due to climate change, where it is cost beneficial to do so over the whole 25 years of the dDWMP. Do you think this is the right assumption to plan against? Should we plan for no climate change, a 2 degree temperature rise, a 4 degree temperature rise, or not sure?
4. What level of climate change should we be planning to invest against in the medium term (to 2035)?
5. We've used local authority data to align our growth forecast with the Water Resources Management Plan (WRMP). Our preferred dDWMP option takes a mid range view of future growth, between a local plan and Office for National Statistics (ONS) forecast. Do you agree with this approach?
6. Where it is shown to be cost beneficial we're promoting green solutions, such as sustainable drainage (SuDS) and wetlands. When they are a feasible solution, how much of our plan do you think should implement these green solutions?
7. The majority of our long term strategies involve removing surface water from our sewerage system, to reduce the number of flood events, pollutions and storm overflow spills. Do you agree with this approach?
8. We believe that we can achieve more collective benefits by working with partners and have identified catchments where we would like to have further conversations. On a scale of 1-5 (with 5 being high), how much do you support a partnership working approach?
9. Protecting the environment is important to us. To support our Get River Positive commitment we're re-assessing all of our storm overflows in line with the recent Storm Overflow Action Plan consultation. The costs for managing storm overflows are not in this draft. Where would you expect us to focus first? Protecting bathing waters, protecting river habitats, both, other or not sure?
10. We've identified and shared with our stakeholders the risks and proposed solution strategies over the next 25 years. On a scale of 1-5 (with 5 being high), how confident are you that the plan sufficiently addresses the risks we face between now and 2050?
11. Our Purpose is to bring environmental and social prosperity to the region we serve through our commitment to love every drop. Do you believe the draft DWMP meets our purpose?
12. Do you have any further comments about our draft DWMP?

15. Glossary

Glossary of terms

Table 17

Acronym	Extended	Definition
AQMA	Air quality management area	An area within a local authority assessed for it's 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 wasewater 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.

Acronym	Extended	Definition
	Ofwat	The UK water regulator, responsible for overseeing the 32 private water companies.
	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.

Acronym	Extended	Definition
	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.
	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

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