Drainage and Wastewater Management Plan (DWMP)

Strategic Context

March 2026
Version 1

from Southern Water

Contents

1. Introduction

1.1 Context

The purpose of this document is to set the strategic context for the Drainage and Wastewater Management 2028 (DWMP28). This plan is under development in accordance with UK government guidelines. The Strategic Context sets out:

(a) The **future trends** that are likely to affect our drainage and wastewater systems need to be understood so we can plan effectively. This will help determine the investment required to make sure that our wastewater services are sustainable and can continue to meet the needs of our customers.

(b) The **value framework** that will be used to determine the benefits of investment for customers and the environment.

1.2 Wastewater systems

Wastewater systems, also known as sewage systems or sewerage catchments, are engineered networks designed to collect, transport, and recycle wastewater (a mix of sewage and trade effluent) from homes, businesses and industries. These systems are crucial for public health and environmental protection, preventing the spread of diseases and pollution.

There are two types of wastewater systems:

- Centralised systems: These are the most common in urban areas, consisting of a network of pipes (sewers) that convey wastewater to a central treatment facility.
- Decentralised (on-site) systems: These systems treat wastewater at or near the source, often used in rural areas where connection to a centralised system is not feasible. Examples include septic systems and package treatment plants. Many of these are privately owned and are therefore not subject to formal consideration in the DWMP.

Centralised system - Morestead Road WTW

Key components of wastewater systems:

1. Collection network:
This involves a network of pipes (sewers) that transport wastewater from various sources to a treatment facility. It may include sanitary sewers (carrying domestic wastewater), storm sewers (carrying rainwater runoff), and combined sewers (carrying both).

2. Pumping stations:
These stations are used to lift wastewater to higher elevations when gravity flow is not sufficient.

3. Wastewater treatment works (WTWs):
These facilities employ a combination of physical, chemical, and biological processes to remove contaminants from wastewater before discharge into the environment.

4. Treatment processes:

- **Primary treatment:** Involves physical processes like screening and sedimentation to remove large solids and debris
- **Secondary treatment:** Typically uses biological processes such as bacteria to break down organic matter
- **Tertiary treatment:** Advanced processes like filtration and disinfection to further purify the water and remove nutrients.

5. Discharge:
Treated wastewater is discharged into a receiving water body such as a river, lake or ocean, or reused for non-potable purposes.

All these components are critical to the operation of an effective and sustainable wastewater system and need to be considered as a whole unit or system.

Goddards Green WTW

We operate wastewater services across Kent, Sussex, Hampshire and the Isle of Wight. Our operating areas spans 11 river basin management catchments, which are the natural systems that receive treated wastewater.

Across this region, wastewater is management through 372 individual wastewater systems. Each system is made up of interconnected assets that collect wastewater from homes and business, transport it through a sewer network and treat the water so that it can be safely returned to rivers or the sea.

The map below, Figure 1, shows the scale and distribution of our wastewater services, alongside the key components that make them work together as a single system. Every day, these systems treat wastewater from millions of customers and rely on an extensive asset base to protect public health and the environment.

Figure 1: River basin management catchments across Southern Water's operating region

Not all our wastewater systems have a treatment works that we operate. In some of the communities we serve, wastewater flows into treatment works operated by neighbouring water companies, or vice versa. Smaller or remote communities may also rely on tankering from septic tanks rather than direct sewer connections.

Effective drainage and wastewater management is essential for a strong economy, safe society and a healthy environment. Understanding the scale, geography and connected nature of our systems is the starting point for planning how they need to adapt to the pressures of an ever-changing world. By doing this, we can make sure that we protect and enhance our services for the future.

1.3 Our vision and Environment Strategy

Our vision is to *"work together to provide sustainable water supplies and protect the environment, today and for future generations*". This is demonstrated in Figure 2.

Our vision informs our long-term priorities and short-term strategy co-created with customers. We exist to provide water for life:

- Protecting and improving the environment for future generations – we adapt to the impacts of climate change, protecting people, wildlife and nature, improving it where we can.
- Providing sustainable water to enhance health and wellbeing – we provide high-quality drinking water and remove and recycle wastewater responsibly for around 4.8 million people in the South East, safeguarding recreational areas and bathing waters for people to enjoy.
- Working together with partners to support the local economy and communities – we provide essential services, and extra support for customers in vulnerable situations while investing in local communities and creating thousands of local jobs.

Figure 2: Our vision

Our Environment Strategy, captured in Figure 3, looks out to 2050 and sets a clear route to deliver "Water for Life". It outlines measurable outcomes across five strategic goals that are underpinned by ISO 14001 principles and challenge from our Independent Climate and Environment Group (ICEG). It also supports our vision. The five strategic goals are found in Figure 2: Our vision

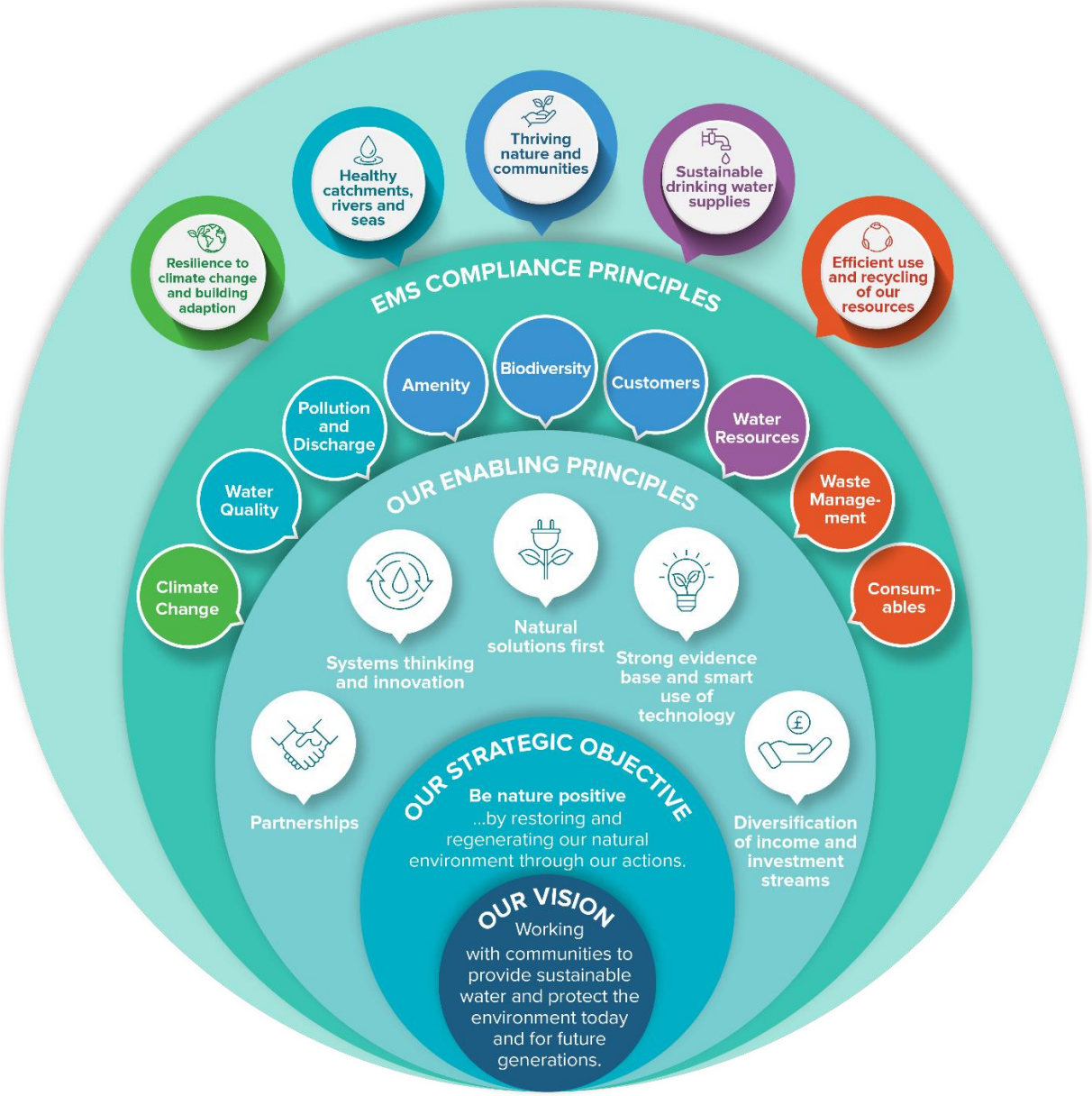
1. **Resilience to climate change and adaptation**: Net zero by 2050, reduced emissions and future-proofed network.
2. **Healthy catchments, rivers and seas**: Zero pollution incidents and dry spills by 2040. Reduced overflow releases and improved bathing water quality.
3. **Thriving nature and communities**: Restored habitats, Biodiversity Net Gain, strengthened biosecurity and inclusive recreation.
4. **Sustainable drinking water and supplies**: Reduced abstraction, new sources and transfers and reduced water use.
5. **Efficient use and recycling of resources**: ISO 50001 energy management, expansion of renewables and energy from biosolids, circular by-products and sustainable procurement.

Chichester harbour

Our DWMP embraces the enabling principles as follows:

(a) Working in partnership with external organisations involved in water management, drainage and public health.
(b) Adopting a systems thinking approach for each of the wastewater systems from the collection of wastewater from homes and business, through its transportation through the network of sewers, and through to the recycling of wastewater before it is safely released back to the environment.
(c) Prioritising the use of catchment and nature-based solutions to support the creation of greener, more climate resilient communities so they are fit for the future.
(d) Using data and evidence to identify and drive our investment decisions, so we are clear on the benefits for customers and the environment.

Figure 3: Our Environment Strategy



Our DWMP is the mechanism to plan and set out the actions we intend to take for our wastewater services over the next investment period and beyond to make sure that we deliver these goals.

1.4 What is a drainage and wastewater management plan?

Our Drainage and Wastewater Management Plan (DWMP) sets out the next 25-years for drainage and wastewater management across our operating region covering Kent, Sussex, Hampshire and the Isle of Wight. It details the future challenges and risks, and the investment needed to maintain and provide safe, resilient wastewater services for customers and to protect and enhance the environment.

The future investment needs in the DWMP will be based on the best available data and information available at the time of producing the plan. However, things are constantly changing, such as statutory and regulatory requirements, the water environment and asset deterioration, so future investment needs will evolve over time. Our DWMP will be reviewed annually to test whether any of the forecasted risks have changed since publication. New data and information will be considered as part of that process. If new risks or requirements emerge, then additional options will be evaluated for future investment and added into our plan.

The DWMP uses a risk-based approach so we can reduce service disruption to customers, especially where it could have adverse consequences. We use data on the current performance of our existing wastewater systems, and forecast data on future climate change, growth and asset deterioration to help predict what may happen in the future using a series of performance indicators. This process identifies how we may need to invest to manage and reduce the risks to make sure that they remain acceptable to customers and the environment.

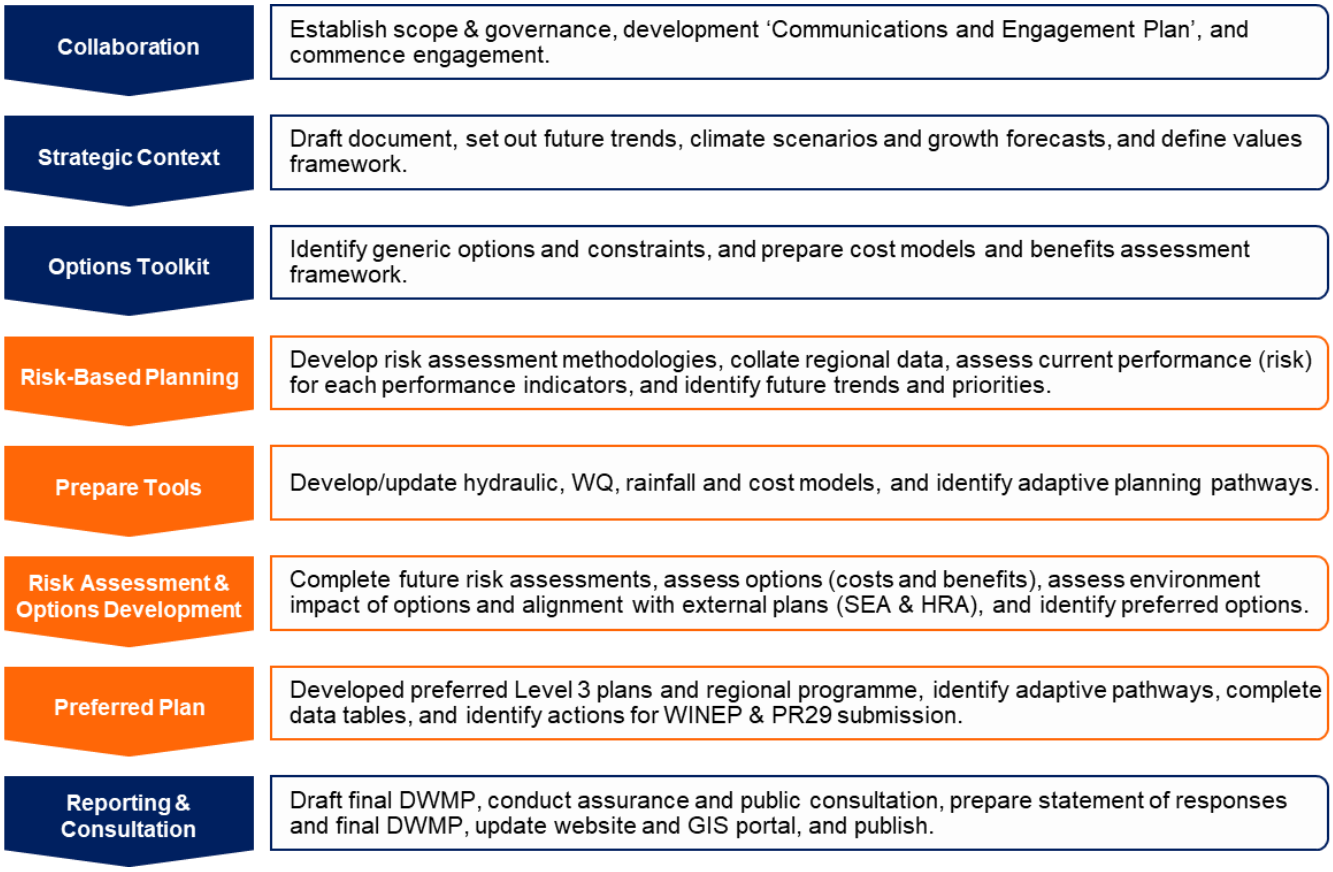
Weatherlees Hill Wastewater Treatment Works

The first cycle of DWMP was non-statutory. National Guidance was produced by Water UK in 2018, and water companies developed their first plans and published them by 31 May 2023.

The DWMP is now a statutory plan. The Environment Act 2021 section 79 sets out the requirements that must be met, which include focusing on system capacity, future demands, resilience, and environmental risk mitigation, with annual reviews and provisions for ministerial direction. Enabling legislation was passed in September 2024. Water companies are now required to publish a draft plan for public consultation by 1 November 2027 and publish a final plan before 31 August 2028. From that point the DWMP will be reviewed annually and updated and re-published within five years of the previous published final DWMP.

Defra has published guidance on how to form, publish and maintain your drainage and wastewater management plan. The main process for developing a DWMP is shown in Figure 4.

Figure 4: The process for developing a DWMP



2. Future trends

Our infrastructure and the work we do to provide drainage and wastewater services provides an essential service for communities within our operating area. We also protect a wealth of natural beauty, with over 80 bathing waters, 3,400 km of river, four National Landscapes and the South Downs and New Forest National Parks. A core focus of our wastewater service is to protect and further improve these natural assets, while continuing to build operational resilience in the face of high population growth and increasingly extreme weather.

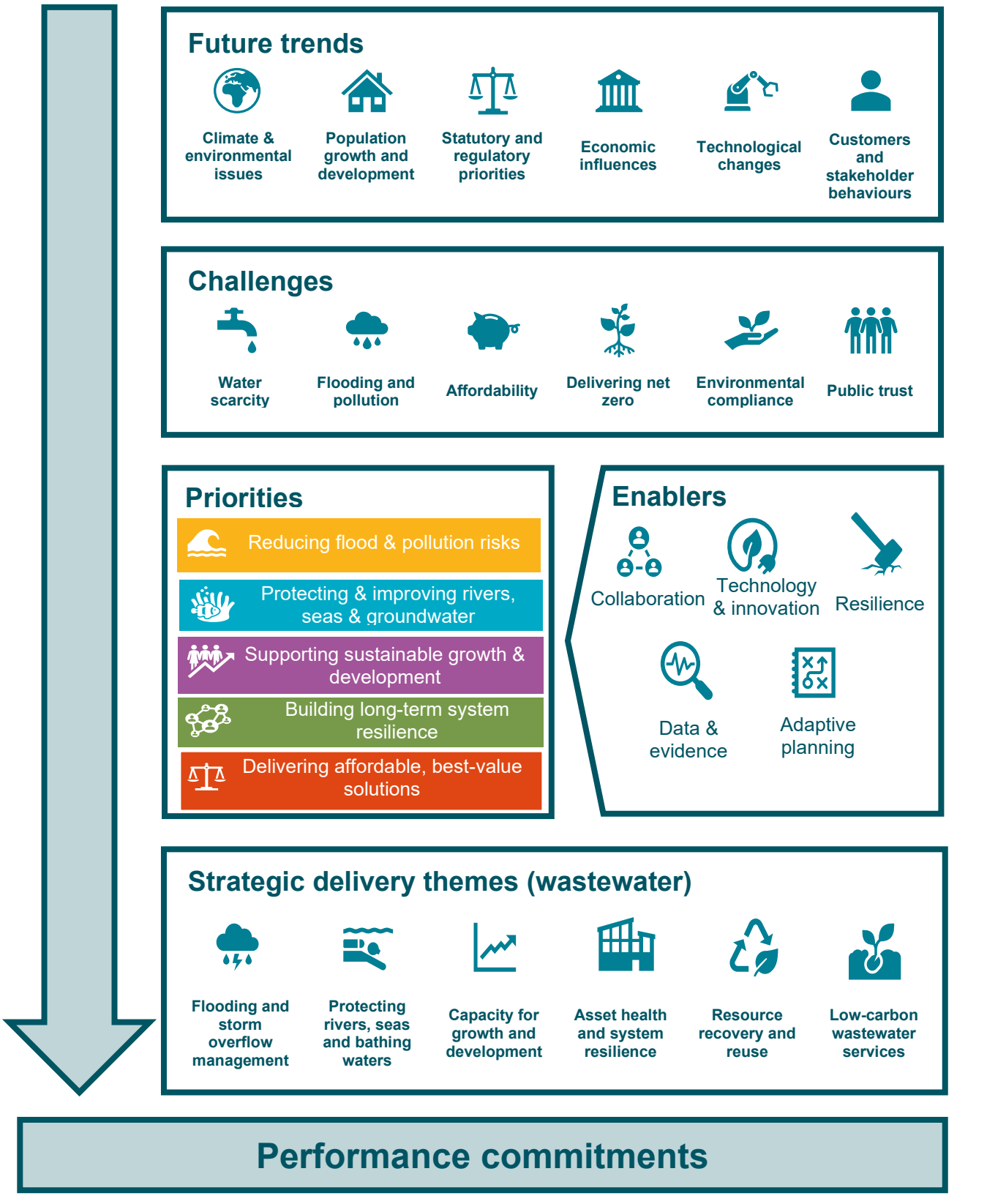
River Itchen

Over the next 25-years, climate change and population growth is likely to radically alter the world we live in. We will need to continue to invest in the systems, technology and infrastructure that provides these essential services.

This section assesses and defines the trends that will affect the future performance of our drainage and wastewater systems, which are then described in more detail in the following sections.

Figure 5 shows how the trends and challenges inform our priorities and strategy. The significance of these trends for each individual wastewater system is considered in the risk-based planning stages of the DWMP.

Figure 5: Future trends and challenges for wastewater services



Farming land adjacent to the River Test

There are additional trends that relate to agriculture, which could have an impact on drainage and wastewater, driven by climate change, sustainability goals, and technological innovation. For example, higher intensity summer storms are expected to increase runoff from fields and increase flood risk to the road network and rural communities. This may increase the volume and complexity of pollutants entering drainage networks. However, our wastewater networks are concentrated in urban areas and are less impacted by agricultural runoff. While agriculture is likely to remain a major source of nutrients and emerging contaminants in rivers, improved soil management and precision farming can help reduce diffuse pollution. Additionally, the agriculture sector has nutrient reduction targets to achieve.

In parallel, increasing water scarcity is accelerating the reuse of treated wastewater for irrigation, positioning agriculture as a partner in circular water economy. This, alongside other pressures, will require wastewater treatment works to adopt advanced treatment, nutrient recovery and more robust sludge management to meet tighter environmental and regulatory standards. Technological advances, such as smart farming, closed-loop systems, and on-farm water storage offer opportunities to reduce water demand, minimise runoff, and improve system resilience.

Overall, agriculture is transitioning from a primary pollution source to a key contributor to sustainable, integrated water management. We are assessing all our wastewater treatment works as part of the DWMP (as well as our Water Resources Management Plan (WRMP)) for the potential for water recycling for supply.

2.1 Climate and environment

Global action on climate change has tended to focus on reduction of greenhouse gas emissions and, more recently, has progressed towards achieving 'Net Zero' targets for carbon. Historic and current emissions mean that an element of climate change is inevitable, and we need to adapt to account for those impacts. According to Intergovernmental Panel on Climate Change (IPCC), even if we achieve the Paris commitment goals of limiting global temperature increase to 1.5ºC, we will face significant further changes in climate to 2050 and beyond.

The Climate Change Committee's (CCC's) third UK Climate Change Risk Assessment (CCRA3) (2021) notes that, by "2050 the heatwave summer of 2018 will be a typical summer, summer rainfall could fall by as much as 24% and winter rainfall increase by as much as 16%, changes that will impact our wellbeing, the natural environment and the economy".

The water sector is on the frontline when considering the effects from the climate emergency. We see a growing potential for more severe and frequent impacts to our critical infrastructure systems and the natural capital/ecosystem services we rely upon. Therefore, increasing our understanding of the impacts of higher temperatures, flooding, strains on water quality and availability, and changes to our environment, is vital so that we can adapt our business to improve resilience to these impacts.

We are committed to actively addressing the climate change risks to our business and to the services we provide. Our Climate Change Adaptation Report, published in 2024, sets out how we are meeting the challenge of adapting to climate change and where we have identified opportunities for improvement in our adaptation journey. The physical climate changes we are currently observing are expected to increase in severity and/or frequency. These relate to four key areas:

(a) increased temperature
(b) more rainfall/storminess
(c) less rainfall/drought; and
(d) sea level rise.

Changes in climate are affecting our weather patterns and the frequency and intensity of rainfall. For example, 2016 was confirmed as the warmest year on record, and the third warmest year in a row. The spring of 2025 was the driest on record for over 100 years.

Heavy rainfall is on the increase, and we expect more extremes of weather to create a challenging operational environment. As a result, we must do more to make sure our customers are not affected by flooding or pollution. This will be considered in our DWMP.

Electric storm over Brighton Pier

We have reviewed climate change projections for South East England from the latest Met Office UKCP18 (United Kingdon Climate Predictions 2018). We considered two Representative Concentration Pathway (RCP) emissions scenarios in our Climate Change Adaption Report, and for consistency we will use these in our DWMP. They are:

- RCP4.5 (Medium emissions scenario)
- RCP8.5 (High emissions Scenario)

The RCP4.5 (medium emissions) scenario broadly equates to a global average temperature increase of two degrees Celsius. We will use this to forecast climate change for the first 20 years of the DWMP. The RCP 8.5 (high emissions) scenario broadly equates to an average warming of four degrees Celsius. We will use this higher scenario for the period greater than 20 years.

The impacts of climate change will not be uniform across our operating area. The UKCP18 projections include a range of spatial and temporal forecasts. We use regional and local projections (down to 1.2km resolution) to provide enhanced spatial detail, so that we can better model extreme events, including summer storms. For example, projections suggest that the Isle of Wight will receive slightly more rainfall than other parts of our region, i.e., summers will be relatively less dry, but winters relatively wetter. Conversely, in summer, parts of the Kent coast could be significantly drier than other parts of our region under some climate scenarios. The spatial variation across our operating region means that we can consider the location of the wastewater system and how the trends in that part of the region will impact on the performance of each of our systems.

There are inherent uncertainties in both the assumed climate projection and the associated impacts, so our DWMP will consider how these uncertainties will impact on the timing of actions to respond to climatic changes, and support the creation of an adaptive plan.

The specific climate and environment trends considered in our DWMP are explained below.

Rainfall intensity

Climate change impacts of rainfall are the expected changes in rainfall patterns and the river flows (and associated levels) that could impact on drainage and wastewater systems.

The two rainfall scenarios that increase the risk of surface water and sewer flooding are:

(a) High intensity rainfall over a short duration which leads to localised surface water and sewer flooding, and

(b) Sustained heavy rainfall over a longer period that leads to widespread river and associated surface water and sewer flooding.

Climate change will alter the frequency and durations of rainfall, meaning that more extremes of rainfall will be experienced more often.

The frequency of short, high-intensity rainfall events is likely to increase in both summer and winter. Overall, winters are likely to be wetter, resulting in higher groundwater levels and associated flooding and increased flows to wastewater treatment works. We also expect to see more prolonged periods of reduced rainfall in future, particularly in summer. Changes in seasonal rainfall will potentially affect river levels, with lower river levels in summer impacting water resources and water quality. By the end of the century, winters are likely to be wetter and summers much drier.

Winter rainfall	Summer rainfall
50% chance of being 10-20% wetter	50% chance of being 20-30% drier
10% chance of being 30-40% wetter	10% chance of being 50-60% drier
10% chance of being 0-10% drier	

The impacts are defined in our DWMP as the expected percentage increase in intensities of short duration rainfall in design storms and timeseries. The likely future change varies across our operating region, along with the duration, return period and planning horizon.

UKWIR report 22/CL/10/19 provides guidance on applying a climate change rainfall tool for long term drainage and wastewater management in the water industry. This tool is called RED-UP, and the latest is Version 4 (v4), was released in 2025 and is developed and owned by UKWIR. It provides users with a tool to influence timeseries rainfall data so that it is representative of future climate scenarios across the UK. We use RED-UP to provide inputs to sewer network models.

In our first DWMP, we used rainfall uplifts based on the Flood Estimation Handbook (FEH) of 10% for 2030–35 and 20% for 2050. Since then, the industry has moved towards using the Future Drainage dataset, which is based on the UKCP18 local convection permitting model. This dataset is now widely considered the most reliable source for short duration extreme rainfall. The Future Drainage uplift factors vary by storm duration and return period and are available for two epochs (2050 and 2070), but the variation is relatively small and does not meaningfully change DWMP-scale strategic conclusions. The central estimates for the South/South East region are broadly around 20% for 2050 and 20–25% for 2070, depending on storm duration. We are therefore adopting the following uplift values, using the central (50th percentile) of:

• **2035: 10%**	• **2045: 10%**	• **2055: 20%**

These align well with the Future Drainage trend and reflect a simple interpolation for the earlier epochs where direct data isn't published.

The upper-end values (based on Future Drainage) to support any sensitivity testing and/or resilience assessment will be the High-end (90th percentile) of:

• **2035: 20–25%**	• **2045: 30–35%**	• **2055: 35–40%**

This approach will ensure consistency across all our wastewater systems.

High and Low River Flows

Climate change impacts can also be considered as the expected increase or decrease in river flows (and associated levels) that could impact on drainage systems. The impact of climate on river flows varies across the region and over time.

High river flow on the River Itchen

Guidance published by the Environment Agency (EA) (Flood risk assessments: climate change allowances - GOV.UK) sets out the allowances to be used in flood risk assessments for peak river flows. We are using these river basin management catchments and the associated climate change allowances in our DWMP. The forecast changes in peak river flow are shown in Table 1. High river flows could impact on drainage systems, especially the ability for gravity surface water drainage systems to discharge when river levels are high.

Table 1: Peak river flow climate change allowances by management catchment (based on a 1981 to 2000 baseline). Version date: 21 March 2022

River Basin Management Catchment	River Basin District	2020s			2050s			2080s		
		Central	Higher Central	Upper End	Central	Higher Central	Upper End	Central	Higher Central	Upper End
Adur and Ouse	South East	16%	23%	40%	18%	28%	57%	37%	55%	107%
Arun and Western Streams	South East	11%	16%	27%	13%	19%	36%	25%	36%	64%
Cuckmere and Pevensey Levels	South East	18%	23%	35%	19%	26%	44%	32%	43%	76%
East Hampshire	South East	19%	23%	37%	22%	30%	51%	37%	51%	88%
Isle of Wight	South East	15%	22%	37%	17%	26%	51%	33%	49%	99%
New Forest	South East	11%	16%	29%	16%	25%	47%	35%	50%	86%
Rother	South East	15%	19%	29%	16%	23%	38%	28%	38%	66%
Stour	South East	18%	25%	40%	20%	30%	55%	38%	44%	101%
Test and Itchen	South East	16%	24%	45%	17%	28%	61%	35%	56%	127%
Medway	Thames	14%	19%	29%	15%	21%	37%	27%	37%	62%
North Kent	Thames	10%	15%	28%	9%	17%	36%	22%	34%	67%

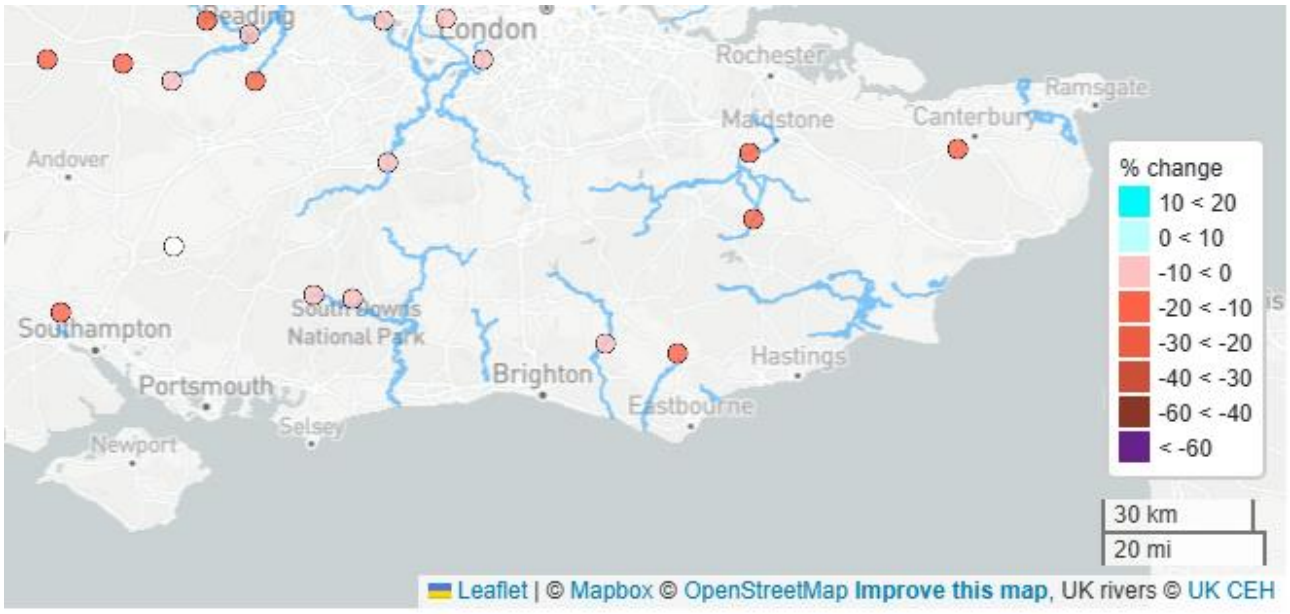
Low river flows are also a concern. Climate change could lead to a reduction in river flows in summer due to reduced summer rainfall. Current estimates are for a long-term median 33% reduction in summer flows. This could have an impact on the discharge permits for wastewater treatment works (WTWs) and storm overflows to make sure that our discharges do not cause ecological harm.

However, in many cases, inland rivers need the additional water discharged from our treatment processes to sustain the ecology in the river during low flow conditions. Discharges from storm overflows may not achieve the required level of dilution during periods of low flow in the river, although any discharges should coincide with high rainfall and higher river flows.

Current estimates for the longer-term are for a 10% to 20% reduction in river flow during summer months. This can impact on periodic review of the discharge permits for WTWs and Combined Sewer Overflows (CSOs). The impact of climate on river flows varies by region and planning horizon. The EA has published guidance on this. In addition, there is the Enhanced Future Flows and Groundwater (eFLaG) dataset hosted by UK Centre for Ecology and Hydrology (CEH), which provides simulations of future river flow, groundwater level and groundwater recharge time series for 200 catchments, 54 boreholes and 558 groundwater bodies in Great Britain and Northern Ireland.

The percentage changes in future river flows in the South East are shown in Figure 6Figure 6.

Figure 6: Change in transient river flows in South East England, UK CEH



The EA's Storm Overflow Assessment Framework sets out a requirement to make sure that ecological and bathing water targets are met. These include a limit of one spill per summer for bathing waters and where the Q95 flow in a river is less the five litres/second. This will become an increasingly challenging target to meet unless there is a fundamental shift in urban design to manage rainwater at source and keep rainwater out of sewers carrying wastewater.

Temperature

The UKCP18 projections suggest that, in a world of 2°C global mean warming, the UK will experience, on average, 1 to 2°C higher annual temperatures by the end of the century compared to the baseline period (1981-2000). The South East of England will experience higher warming with average summer temperatures increasing by 3 to 4°C relative to the 1981-2000 baseline.

The EA's Chief Scientist's Group published research in January 2025 on water temperature projections to the year 2080 for England's rivers (report SC220018/R1). Temperature changes will affect water quality and the health of river ecosystems. This research considered the potential impacts of climate change and informed where adaptation measures may be needed. It concluded that the average monthly daytime river water temperatures are projected to increase throughout England affecting freshwater species and water quality.

Average water temperature of the warmest summer month is projected to rise by about 0.6°C each decade. The projections indicate that adult brown trout will be under threat from high summer water temperatures at almost all sites by 2080, as their upper growth and feeding temperature range of 19.5°C could be exceeded. Salmonid eggs survive best at winter temperatures below 12°C. This threshold could be exceeded at over 70% of sites by 2080.

The models developed for the various river types showed differences in the projected temperature, with arable/grassland sites on permeable rock experiencing the highest decadal changes in maximum temperatures (0.66°C per decade) and chalk streams the lowest (0.51°C per decade). Grass upland sites are projected to experience the warmest summer months by 2080 (>28°C) and chalk the coolest summer months (<26°C).

These monthly average daytime projections may not reflect local temperature variations and will miss short-term heatwaves, which may have important ecological effects.

The impact of temperature changes on wastewater systems is mainly around the efficacy of the biological processes and the localised impact of our discharges on the temperature of the receiving water body, especially if the receiving waterbody is a river in a state of very low flow from drought conditions. The ability and capacity of the receiving water body to receive our discharges could reduce as the ambient air temperature increases. This is because the solubility of the oxygen in water falls as the temperature goes up, which puts pressure on the ecology of the waterbody and increases the likelihood of eutrophication and nutrient neutrality type issues arising.

The Defra Storm Overflows Discharge Reduction Plan (SODRP) sets an expectation that WaSCs (Water and Sewerage Companies) will make sure that their infrastructure keeps pace with increasing external pressures (such as urban growth and climate change) and prevent these pressures leading to greater numbers of discharges. We will use our DWMP to plan for current and future pressures to proactively manage risks to and from our systems, including storm overflow compliance.

Sea level rise

Sea level rise is a significant threat to South East England, increasing coastal erosion, flooding, and storm surge risks that could damage infrastructure, homes, and natural habitats. The region's low-lying areas and coastal towns are particularly vulnerable to being overwhelmed by rising

waters. This poses risks to property, public health, and vulnerable populations, as well as increasing the potential for saltwater intrusion into crucial freshwater resources.

Our region has a long coastline, and the main centres of population lie along the coast. Some areas are close to current sea level and in a few cases below, which means they have high water levels. Several borehole sources are relatively close to the shoreline and, in conditions of extreme drought, are vulnerable to saline contamination. Sea-level rise is therefore likely to have an impact on the company's operations, both water and wastewater. Sea levels around the UK, including in the South East, will continue to rise well beyond 2050 under all future emissions scenarios.

Sea level rise also significantly impacts drainage and wastewater infrastructure through rising groundwater tables and saltwater intrusion that corrodes pipes, reduces efficacy of biological treatment processes and contaminates groundwater. It also reduces the capacity of drainage systems, causing backflow during rain events and increasing the risk of flooding for both surface water and subsurface infrastructure like sewers. This can compromise treatment efficacy, increase public health risks from emerging untreated wastewater, and damage foundations and building integrity. Saline intrusion is a particular issue for our treatment works located on the shore, such as Eastbourne WTW.

Margate Wastewater Pumping Station

Our DWMP considers the effects of climate change on sea level rise for each planning horizon, and the associated impacts on gravity outfalls. However, our wastewater final effluent discharges to sea are mostly pumped outfalls, often through long sea outfalls away from the shoreline. The sea level rise allowances for South East England are shown in Table 2.

Table 2: Sea level allowances for the South East river basin district

	2000 to 2035	2036 to 2065	2066 to 2095	2096 to 2125
Incremental	5.7 mm	8.7 mm	11.6 mm	13.1 mm
Cumulative	5.7 mm	14.4 mm	26 mm	39.1 mm

Groundwater

The South East of England is heavily reliant on groundwater, which accounts for over 75% of its public water supply. The main impacts on groundwater levels will be driven by warmer, wetter winters and hotter, drier summers with an increase in extreme weather events. We can expect to see:

- Increased groundwater levels in winter and flooding: Milder, wetter winters will result in more rainfall during the typical recharge season (September-April). This can lead to rapid and significant increases in groundwater levels, heightening the risk of flooding events.

- Decreased groundwater levels in summer and drought: Hotter, drier summers will lead to lower summer rainfall (projected to be 16-25% less by 2050) and increased evaporation rates. This means a shorter groundwater recharge season and lower overall summer levels, which increases the risk and frequency of droughts and potential water use restrictions.
- Saline intrusion: Rising sea levels (predicted to rise 0.4m to 1m by 2100) will raise average groundwater levels in coastal aquifers, increasing the risk of saline intrusion and impacting the quality of this important water resource.
- Variable recharge: The overall pattern of change is complex, with a wide range of potential outcomes for specific boreholes. Some models suggest annual recharge potential might be broadly unchanged, but the increased variability will put stress on water management systems.

The region's existing water and sewerage infrastructure is already under pressure from population growth and ageing pipes. Climate change will exacerbate the risks of:

- Sewer flooding: More intense and frequent heavy rainfall events will overwhelm surface water and combined drainage systems, leading to a significant increase in the risk of sewer and surface water flooding.
- Infrastructure damage: Increased ground movement caused by alternating cycles of drought (shrinkage) and heavy rain (swelling) will likely cause more damage to buried infrastructure, including wastewater pipes, exacerbating existing leakage problems.
- Pollution incidents: Lower river flows during summer months will provide less dilution for treated wastewater discharges, potentially increasing nutrient levels and causing ecological harm (eutrophication).
- Operational site flooding: Wastewater treatment works and pumping stations are at risk of flooding during extreme weather events, leading to potential long-term disruption and high repair costs.

Emsworth sewer separation works

The climate uncertainties and the potential impacts on drainage and wastewater systems needs constant monitoring and adaptation. We will consider the potential adaptation pathways and set them out in our DWMP. The need for future investment to tackle climate-related risks is set out in the DWMP, based on the trends explained in this document. We will need to monitor and review the trends in the actual performance of our systems to understand if it is consistent with the scenarios used in our investment planning. Where there are deviations, we will need to bring forward or delay the planned investment to manage and reduce those risks. The annual review of each performance indicator will provide the trigger to identify any unexpected changes in risks. When a risk moves through a threshold to a higher band, it will trigger an investigation to understand the causes. It may be necessary to develop additional options for actions we plan to take to control, manage and reduce the risks to customers and the environment.

Our first DWMP highlighted the need for greener, more sustainable approaches to build climate resilience in drainage and wastewater systems. This is essential to adapt to changing rainfall patterns and intensity. We demonstrated that building storage tanks at our treatment works will not prevent discharges from storm overflows in the longer term, especially where there is significant groundwater infiltration. Keeping rainwater out of foul sewers, will keep wastewater in. This approach for storm overflows will mean that the need for the storm overflows within the foul and combined systems will be reduced and, as a result, there will be less spills. Less rainwater and groundwater in our foul systems also means there will be improved performance and compliance with permits at our wastewater treatment works.

We were asked by Ofwat during the development of our first DWMP to produce a Long-Term Delivery Strategy (LTDS) for the Price Review 2025–30 (PR24). This set out the need to develop planning scenarios and adaptation plans. We anticipate that Ofwat may issue further guidance on scenario planning and adaptation for the next Price Review (PR29). We will therefore develop our approach to adaptation planning in our DWMP later in the programme, so we can align our plans with any new regulatory guidance.

2.2 Development and population

We experienced the highest rate of growth (5.3%) of all water companies during the period 2009 to 2013. This rate of growth has continued to increase and is forecast to step up with a further 800,000 people living in our area by 2040.

There is no single published figure for the population growth in South East England by 2055. However, official forecasts from the Office for National Statistics (ONS) indicate it will see the **greatest percentage increase in population growth**. This growth is a key factor in regional planning for infrastructure needs.

Key projections and context

National Context by 2055

Forecasts used by water companies, based on Office for National Statistics (ONS) data, show the total population of England is expected to reach over 71 million people by 2055, an increase of more than 8 million from the current population.

Regional Growth

The South-East is projected to experience a significant population increase, driven primarily by net international and internal migration. This trend is higher than many other parts of England and Wales.

Local Authority Variation

The growth is not uniform across the region. Some areas like Dover are expected to see a large population increase.

Infrastructure Impact

The anticipated population boom means the South-East faces significant pressure on resources, particularly water supply, with a projected shortfall of over two billion litres per day by 2055.

During this investment period (2025–30) we will be delivering 20 infiltration reduction schemes, major growth schemes at 38 treatment works (approximately 175,000 additional total population equivalent (PE) served), partnership resilience schemes, and 73km of sewers and rising main rehabilitation. However, our DWMP will help us identify the need to continue to invest to make sure that our wastewater systems meet future demand.

Our DWMP will consider the impacts of development and population growth on our drainage and wastewater systems' capacity and performance. We will include these factors in the performance indicators to make sure that we consider where additional investment is needed to keep pace with the future demand. The DWMP will consider three aspects of development and population growth: planned development, urban creep, and other future changes. These are explained further below.

How growth and development affect drainage and wastewater

Planned Development

Planned residential, commercial and industrial development increases the number of people and activities connected to drainage and wastewater systems.

We use agreed growth data and local authority development plans to understand where development is expected to take place and how this may affect wastewater treatment capacity over time.

Urban Creep

Urban creep occurs when gardens and green spaces are gradually built over or paved, creating more hard surfaces such as driveways, patios and extensions.

These changes reduce how much rainwater can soak into the ground, increasing runoff into drainage systems and raising the risk of surface water flooding and storm overflow discharges.

Other Future Changes

Changes to other drainage systems, such as highway drainage, culverted watercourses, or new development drainage layouts, can increase flows entering the wastewater network.

These changes are not always known in advance and often involve multiple organisations, making long-term planning uncertain. Where information is available, it is included in our DWMP.

(a) New development

We are using growth data from EDGE v1.3 in our DWMP. The updated EDGE for WRMP28 will not be ready until April 2026 and so is not available for the DWMP modelling. However, when this data is available, we will review and explore the differences in datasets to determine if and where there are any material differences.

Development data is obtained from our planning policy and Future Growth teams with various status categories. These teams are in regular contact with planning authorities to support them in meeting their requirements under the national planning policy framework for information on wastewater infrastructure provision. We also gain information from this engagement on proposed development sites and land allocations to feed into the DWMP. Developments marked as under construction/in construction will be added to our growth forecasts. We will exclude planning applications for future developments where the status is marked as refused, withdrawn, dismissed, or expired.

Our performance indicator on dry weather flow compliance is a measure of the impact of future growth on the capacity of our treatment works. The development data is used in this process to monitor the scale of headroom available in the capacity and when additional capacity will be required.

The risk-based planning stage of the DWMP will screen all our wastewater systems to identify where the highest growth is planned across the region. The results will be made available on our website.

(b) Urban creep

Urban creep is where green land that naturally soaks up water is resurfaced or built over to create an impermeable surface, such as flagstones, block paving, tarmac or concrete. It is a significant issue in the South East of England, primarily because it increases the risk of surface water flooding.

An increasing number of homes now have two or more cars, so homeowners are paving over their front gardens into driveways, often not realising they are contributing to a build-up of serious urban flooding problems in the future and, potentially, an increase in the frequency of discharges from storm overflows.

Urban creep means that rainwater is no longer able to soak into the ground, but instead it is channelled and conveyed into drainage systems. Climate change means that the intensity of rain is increasing so, combined with more rapid runoff in urban areas, the existing drainage systems will be overwhelmed more often, causing floods and increasing discharges from storm overflows.

The South East of England has experience higher levels of creep due to the higher cost of housing than the national average, which means homeowners have extended their homes rather than moving to a larger home.

The impact of urban creep was researched by UKWIR in their 2009 report 10/WM/07/14. The report's conclusions are presented in Appendix A: Urban .

Case Study: Urban Creep and Green Space Loss in Edinburgh, UK

A study commissioned by the Centre of Expertise for Water (CREW) and conducted by the Centre for Ecology & Hydrology (CEH) quantified urbanisation in Edinburgh between 1990 and 2015. The city loses an average of **11.3 hectares of green land annually**, equivalent to about **15 football pitches**.

This loss is primarily due to:

Urban creep (small-scale changes like driveways, extensions, and garden developments): **6.4 ha/year**

Urban expansion (new housing or industrial estates)**: 4.8 ha/year**

Although some regeneration projects, such as the Quartermile development, have added about **1 hectare of green space annually**, the overall trend is a net loss of vegetation.

This reduction in permeable surfaces increases **surface water flooding risk**, as urban drainage systems struggle to cope with runoff.

The study used aerial photography from 1990, 2005, and 2015 to create high-resolution maps, offering a method that could be applied across Scotland. **Researchers emphasize the need for improved flood management and awareness of urban creep's cumulative impact.**

(c) Future changes

Future changes associated with other drainage systems will be captured in our DWMP, where known. This is a challenging issue as the details relating to how drainage and wastewater will be managed in a development may not be known until the planning application is submitted and detailed designs provided. The application of the drainage hierarchy for developments means that the way that rainwater is managed in developments varies considerably. It is, therefore, not possible to plan for how a developer will manage rainwater runoff from a future development when the development site is identified in a local plan.

In addition, the responsibilities for drainage and wastewater are complex. New appointments and variations (NAVs) are limited companies that provide a water and/or sewerage service to customers in an area previously provided by the incumbent monopoly provider. A new appointment is made when a limited company is appointed by Ofwat to provide water and/or sewerage services for a specific geographic area. A new appointee has the same duties and responsibilities as the previous statutory water company, although they are not required to produce a DWMP. A variation is where an existing appointed company (an "appointee") asks Ofwat to vary its appointment so it can extend the areas it provides services to a NAV. It, therefore, involves one company replacing another as the appointee for a specific geographic area. The DWMP will not be able to forecast the entrance and impact of NAVs on the future actions that we need to take.

The Lead Local Flood Authority (LLFA) is responsible for surface water drainage, and they often work closely with the Highways Authority to co-ordinate the drainage of land and highways through combined surface water drainage systems. Some of the surface water drainage systems are owned by water companies, but this is not a common and consistent position across the country. Some culverted watercourses and surface water drains fall under the remit of the EA, where they are designated as a 'main river' or the local council, if it is an 'ordinary' watercourse. However, the remit of these public bodies may not include the ownership of the culverted drain, as it will be owned by the adjacent landowner. This mixed position causes challenges in terms of planning and managing urban drainage, which is why the Floods and Water Management Act 2010 sets out the roles and responsibilities and is supported by Statutory Instruments that place a duty on all these flood risk management authorities to co-operate and the share data.

Creating a long-term investment plan for wastewater infrastructure to support unknown future changes is not possible, but actions we propose to take will be identified where it is possible to do so. These actions are likely to be in the short-term (i.e. next investment period).

2.3 Statutory and regulatory priorities and challenges

This section considers changing statutory and regulatory priorities and challenges, as these could have a significant impact on the investment needed in drainage and wastewater services in the future.

Some of the challenges are already known but cannot yet be quantified, or the technology is currently not available to tackle the issues. The following are evaluated in terms of the potential likelihood and implications of potential changes:

(a) Changing environmental and regulatory requirements.
(b) Designation of additional sensitive catchment areas for nutrients.
(c) Requirements to protect public water supplies.
(d) Designation of additional bathing waters.
(e) Carbon net zero by 2050.

Changing environmental and regulatory requirements

In January 2026, the UK Government published a Water White Paper that sets out the most comprehensive overhaul of the water sector since privatisation. It aims to rebuild trust, bring regulators together, reduce pollution, secure investment for long-term infrastructure, and make the sector fairer, cleaner, and more resilient for the next generation. A summary of the White Paper is set out in **Error! Not a valid bookmark self-reference.**Box 1. A Transition Plan will be published later in 2026 to explain how the water sector will move from today's regulatory system to the new one set out in the Water White Paper.

Box 1: Summary of a New Vision for Water (2026 White Paper), Defra, January, 2026

Overall goals. The White Paper sets out to deliver:

- Safe and secure water supplies
- Cleaner rivers, lakes, and seas
- Better protection for customers
- A more investable, stable water sector
- Long-term water security and resilience.

1. Major regulatory overhaul – A single integrated water regulator. The government will replace Ofwat, the EA's water functions, the DWI, and some of Natural England with one unified water regulator that will mean:

- A "whole firm" regulatory view combining economic, environmental, and public health oversight.
- Stronger, proactive supervision focused on company-specific risk.
- More direct scrutiny on asset health, resilience, and wastewater performance.

2. Long-term direction and planning. The government will introduce:

- 25-year strategic priorities for water supply, environment, public health, and investment.
- A shift to two planning frameworks: (a) Water supply (b) Water environment
- A new regional planning function coordinating water, development, flood risk, and environmental outcomes.

3. Clean water and environmental expectations. Accelerated action on:

- Storm overflow reductions (building on the £11bn national programme).
- Wastewater treatment upgrades, especially for phosphorus reduction.
- Tackling sewer misuse and promoting pre-pipe (surface water) solutions.
- Ending operator self-monitoring and moving to open, real-time environmental monitoring.

4. Customer focus and public trust. Reforms include:

- A new Water Ombudsman with binding decisions.
- Reinforced customer protection, especially for vulnerable groups.
- Strong customer voice in regional planning and corporate governance.
- Clearer, smoother bill profiles, not large step increases.

5. Investment stability and long-term funding. Reforms to make the sector more investible by:

- Retaining a five-year price review but embedding five/10/25-year certainty around funding needs.
- Simplifying performance commitments and reducing volatility in returns.
- Supporting long-term investors and ensuring financial resilience.
- Strengthening procurement mechanisms for major infrastructure.

6. Water security and resilience. Key actions include:

- Stronger asset health baselines and new statutory resilience standards.
- Ringfenced capital maintenance funding.
- Accelerated delivery of new infrastructure, including reservoir programmes.
- New powers to ensure water sufficiency and system reliability.

There is a trend towards tighter environmental standards and regulations for discharges into rivers and the sea in England, which is driven by government plans and an increased focus on pollution. New legislation has introduced stricter penalties and requires infrastructure upgrades to meet ambitious targets for nutrient neutrality and discharges from storm overflows.

Discharges from UK wastewater treatment works are facing ever-tightening environmental standards, with regulators increasing scrutiny, imposing stricter limits for nutrients and emerging contaminants (like microplastics), mandating significant investment in infrastructure upgrades, expanding monitoring and increasing penalties for non-compliance, all driven by government plans to reduce pollution and improve water quality.

These will be needed to make sure that important habitats are protected in the future and remain resilient to environmental pressures. Over 24% of our WTWs already have challenging quality permits and we are using the best available technology on sites to achieve these. However, we expect that the EA will need to tighten permits further so they become more stringent to protect the environment in the future.

Currently the need for tighter environmental discharge permits is identified as part of the development of the five-yearly Water Industry National Environment Programme (WINEP), which specifies the requirement for enhancements to wastewater services. The EA decides on the improvements required, and the water companies develop the options and identify a best value option for customers. Ofwat then supports these through the funding allowances granted to water companies. The WINEP is a fantastic programme and has delivered many environmental enhancements to protect and enhance the environment from discharges from water company operations. It is a statutory programme and enables the industry to deliver any new statutory requirements, such as the recent Defra Storm Overflows Discharge Reduction Plan.

The five-year cycle of the WINEP means that requirements have a short-term focus, and water companies find that they keep returning to the same sites to deliver a major capital scheme every five years to ‘bolt on’ additional treatment processes. The DWMP presents an opportunity to overcome this key issue by considering the longer-term environmental needs for discharges over the next 25 years and agreeing a programme to deliver these requirements over several five-year investment cycles.

Peacehaven Wastewater Treatment Works

The performance indicator for good ecological status and good chemical status is the opportunity to look ahead to future investment to meet Water Framework Directive requirements and/or Common Standard Monitoring Guidance (CSMG) requirements. The EA and Natural England will be critical to engage in this approach to include these investment needs in our DWMP.

It will always be difficult to predict future legislative requirements or changing public opinions, so any emerging requirements will still need to be considered as part of the annual review of the DWMP.

Persistent and biologically active chemicals/pharmaceuticals

These have the potential to disrupt hormones systems in both humans and wildlife. They are entering the drainage network from homes and businesses, but also in rainwater draining from farmland and roads.

There is also a growing number of products that could have a significant but yet not fully understood impact on people and the environment if allowed to flow unchecked through the water cycle. These include plastics and micro-plastics.

We expect that these issues, including pharmaceuticals, microplastics and per-and poly fluoroalkyl substances (PFAS), will require significant future investment to improve wastewater treatment processes. Investigations and research are progressing on how to tackle these future challenges and to develop the technologies to address them.

Case study: Tackling zinc pollution in East Sussex

We took enforcement action against a textile printing company based in rural East Sussex that consistently breached its trade effluent consent.

Paint used for screen printing contains high levels of zinc. The company was washing down the screens and disposing of the wastewater into our sewers before it was treated at a small wastewater treatment works nearby. Our sampling showed that zinc levels were higher than they should be and were affecting reedbeds used at the treatment works. Reed beds typically last eight to 10 years but the beds at the site needed replacing more regularly.

We worked hard to encourage the company to invest in appropriate treatment facilities, however they continued breach their consent. They were prosecuted and received a £20,000 fine plus £10,000 legal costs for threat of environmental harm.

What we'll do next

We'll invest £70 million in ongoing monitoring of chemical levels and chemical removal schemes at four sites. This includes adding extra treatment and a wetland area to enhance the treatment process.

The next phase of the water industry's chemical investigation programme will focus on:

- new and emerging substances and forever chemicals such as PFAS
- the impact of chemicals on estuaries
- the role of specially constructed wetlands in chemical treatment and management
- the impact of endocrine disrupters (hormones) in our waters
- the impact of microplastics on our rivers and groundwater.

Designation of additional sensitive catchment areas for nutrients

The population of the South East of England is growing, which means that more wastewater is being generated and needs treatment. There are urgent concerns about the additional nutrients from wastewater enriching our coastal and inland waters and affecting the ecology of the natural environment. These impacts could be exacerbated by an increase in global temperatures.

The Government has designated several river and coastal areas as nutrient significant catchments. This designation places a requirement on water companies to upgrade any wastewater treatment works serving more than 2,000 customers to the highest Technically Achievable Limits (TAL) of treatment by 31 March 2030 to protect the environment.

We are already deploying the best available technologies at many of our larger works and expect further investment to be needed to help reduce the discharge of nutrients and restore internationally designated habitat sites where we have identified the need for improvement to a favourable condition.

Protecting public water supply

We expect droughts to happen more often as our climate changes. To make sure that we have enough water supplies to meet the needs of our customers, industry and the environment, we need to change how we look at and use wastewater. Treated wastewater that is currently released out to sea is a valuable resource which could instead be recycled and used again to provide additional drinking water supplies. Our draft Water Resources Management Plan includes several schemes that will recycle treated wastewater. In some areas, this will be into rivers where we can abstract it again and in others it will be into a storage facility, such as a reservoir, where it will mix with other sources of water. Doing this means we can store the water until we need it, and it will help to protect the environment, as we are not abstracting as much groundwater from aquifers and impacting on the flow or quality of local rivers.

The quality of our groundwater drinking water supplies can be degraded by poorly maintained sewers and septic tanks, and from discharges direct to ground in areas that are not connected to our mains sewerage networks.

Our DWMP will consider the risks to groundwater supplies from wastewater operations through the performance indicators on groundwater pollution. We will publish our method for this risk assessment. The focus will be on protecting drinking water protected areas (DWPAs) and groundwater safeguard zones (GSZs).

Keeping rivers, lakes, reservoirs and coasts healthy and clean

High quality open waterbodies are fundamental in supporting local tourism, shell fisheries and recreation. The Water Environment (Water Framework) (England and Wales) Regulations 2017 is the primary legislation that protects our rivers and lakes, estuaries, coastal waters and groundwater, and drives the need to ensure all aquatic ecosystems meet ‘good status’ by 2027.

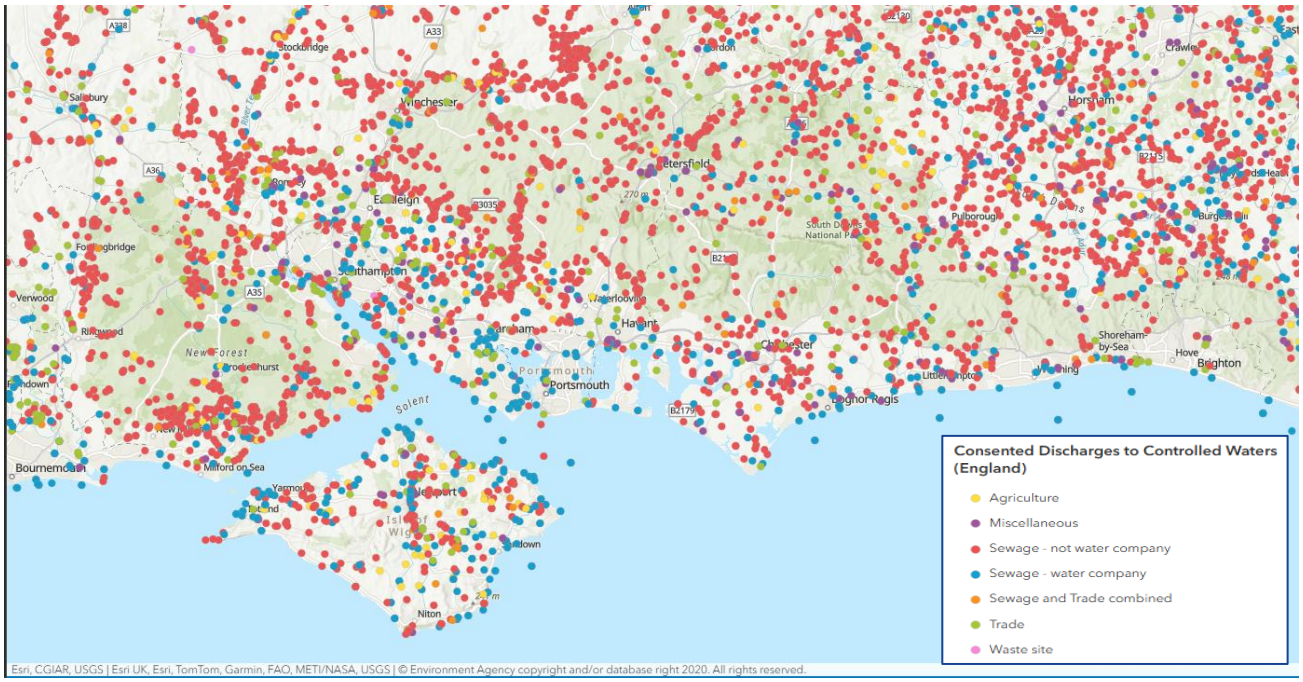
Only around **14% to 15% of rivers in England achieve Good Ecological Status (GES)** under the Water Framework Directive

River Itchen

(WFD) (WFD) as classed by the EA[1]. This figure has stagnated for years despite aims for significant improvement. This means the vast majority (over 80%) are failing to meet standards for healthy wildlife and water quality, with no single river achieving good overall health. The reasons for this are complex, however the WFD criteria are strict, and many rivers struggle with multiple pressures. The "One Out, All Out" rule means that failure in just one area (e.g., a specific chemical or invertebrate group) prevents a "good" rating. The EA and Defra acknowledge the poor state of England's rivers and aim to improve the waters. We are keen to work more closely with the EA and the Catchment Partnerships to understand a long-term profile for investment to achieve good ecological status and to make sure that co-ordinated action is taken across all sectors.

The Rivers Trust has created and published a map showing the location of permitted discharges of sewage into rivers. An extract for part of our region is shown below in Figure 7. This data was extracted from the EA's Public Register in March 2025 and republished by The Rivers Trust. However, the current permitting regime only applies to discharges greater than 2,000 litres per day, which is equivalent to a household of around 15 people. There are, therefore, many smaller private septic discharges that are not shown in Figure 7 because they are outside the permitting regime. The data shows that there is a need to work collaboratively and act across many sectors to improve the ecological status of rivers.

Figure 7: Map of permitted discharges to rivers and the sea (© Rivers Trust)



[1] https://www.gov.uk/government/publications/state-of-the-water-environment-indicator-b3-supporting-evidence/state-of-the-water-environment-indicator-b3-supporting-evidence

The rise in popularity of wild open water swimming and recreational pursuits means there is pressure to designate inland waters as bathing waters. There is a real concern for public health due to the bacteria found in rivers and often significant investment will be required to achieve bathing water standards. Public safety is an important consideration. First and foremost, locations for wild swimming need to be safe for people to access, egress and swim without other hazards prior to being considered for bathing water designation. We are aware of locations in Southampton, Pulborough and Barcombe that are used for wild swimming, and we will work with local councils should they identify whether any inland locations may need designation as bathing waters.

Carbon net zero by 2050

Our carbon reduction plan aims for net zero by 2050, with an interim target of operational net zero by 2030. This focuses on energy efficiency, renewable energy (onsite generation and purchasing), decarbonising our fleet (EVs by 2035, HGVs by 2040), improving bioresource processes, tackling process emissions, sustainable procurement, and natural carbon storage on our land, all while balancing affordability and service delivery for customers. We will use a hierarchy of reduction, replacement, and removal (including carbon removal via land management) and report emissions transparently, as shown in Figure 8.

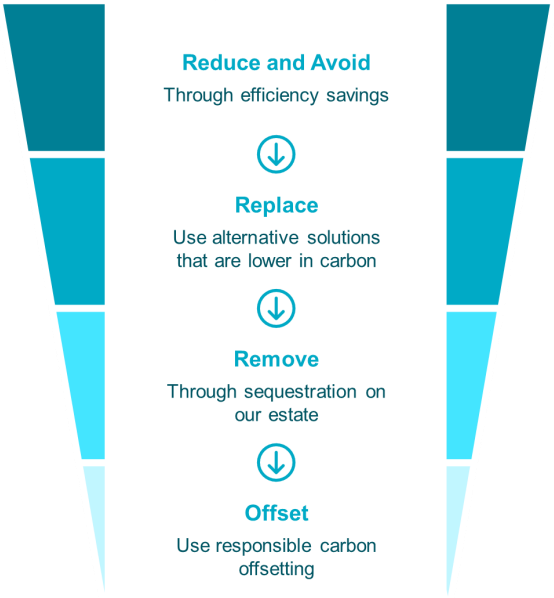


Figure 8 Our carbon reduction hierarchy

Our DWMP will consider carbon targets in the development of options to determine the actions we intend to take to reduce risks to the environment and customers. We need to find and promote actions that support the reduction in carbon and our journey to net zero as shown in Figure 9.

Figure 9: Our Carbon net zero plan

Case study: Using wetlands as a low carbon, nature-based solution to cleaning wastewater.

Where possible we're working with nature and collaborating with partners to protect and improve the environment, rather than relying on expensive, carbon intensive engineering solutions.

At our Staplefield wastewater treatment works near Haywards Heath, we've invested £2.1 million in a new wetland as an alternative to traditional treatment methods to remove substances such as phosphorous which can have a negative impact on river ecology.

It mimics nature by creating a unique treatment system of specially-identified water tolerant plants in shallow water, where wastewater can be fed in from the treatment works at one end and removed at the other.

The wetland covers about 2.29 hectares – with 1.3 hectares of water, and has been designed to integrate into the local environment, sympathetically replacing land currently used for agriculture with minimal infrastructure required.

This approach means we're continuing to meet strict standards for wastewater leaving our works as well as reducing our carbon emissions, chemical usage and increasing biodiversity. These extra benefits make it a best value option compared to traditional treatment options.

We're also using the wetland to treat screened stormwater flows – providing an extra level of treatment to protect and improve river water quality using a nature-based solution.

We've worked closely with the EA, Natural England, the Rivers Trust and local authorities to deliver this and measure the benefits.

We hope to invite local schools and communities to use the wetlands, increasing their access to nature and proving a valuable local amenity.

The wetland was operational and treating wastewater by the end of 2025.

2.4 Ageing assets and infrastructure

Much of our sewer network is more than 50 years old and is not built with the capacity to cope with the current levels of population or the intensity of rainfall in today's climate. Many sewers are deteriorating because of their age as well as impacts from ground movements and tree root ingress, all of which can cause collapses, blockages or sewage leaks.

Asset failure is the largest cause of pollution incidents. We are continuing to understand the causes of failure and the health of our assets, so we can invest in the right things, at the right time, to prevent failure and loss of service that could result in adverse impacts on customers and the environment.

We are currently working with Ofwat to develop a roadmap to enhance asset health. This programme of work between 2025 and 2027 seeks to identify priority assets and define consistent data collection methods to determine whether there are asset health issues that need addressing before 2030. Ofwat may support additional funding in the current investment period for any sector-wide issues that cannot be resolved within existing base expenditure allowances.

Asset deterioration is a factor for several of the performance indicators when it comes to forecasting future risks, if we do nothing different. We are developing a method and process for each performance indicator to set out how the future performance will be determined. The method will include consideration of asset condition and deterioration where this is relevant to future performance. We will publish these methods and processes on our website.

2.5 Economic influences

We've started delivering our largest ever investment programme. We've committed to invest around £8.5 billion across our water and wastewater services between 2025–30. A lot of the funding we need comes from our shareholders, who have invested around £2.5 billion since 2021, with no payments made to external shareholders since 2017. However, to fully deliver on our

commitments we needed to increase customer bills, which rose by 46.7% on average for households in 2025.

The cost of living is placing financial pressure on our customers, and our price rises to support the 2025–30 investment programme came at a very unwelcome time. We need to carefully consider the cost of managing future challenges and achieving our environmental ambitions. The rate of investment will need to increase to keep pace with these challenges and prevent us passing costs onto future generations, but we want our water bills to be affordable, especially for those with a vulnerability. The public consultation on the DWMP will seek views from our customers on the scale and pace of investment and the impact on customer bills.

Factors that also impact on affordability include changing economic conditions including inflation, value of materials and cost of natural resources. All these factors can increase the delivery and construction costs for critical infrastructure like wastewater systems. The DWMP will include costs for actions based on the value of materials, plant and labour at the time of producing the plan. The price base will be known and uplifted in future as the plan is revised or the actions taken forward into the Price Review process with the industry regulators.

Economic uncertainty and the affordability and financeability of our investment plan will be considered as we review the scale of investments that have been identified in the DWMP for inclusion in our business plan 2030–35. If our overall plan is too large then actions may need to be delayed or deferred to the following price review period (2035–40). The affordability and economic trends will need consideration in our adaptive planning for the DWMP. There is a trade-off between what is affordable and the rate at which we can achieve the performance that is expected.

2.6 Technological changes

We have observed significant developments and improvements because of technological changes within the water and associated industries. These are described below. However, it is challenging to forecast or predict the scale, the availability of new and innovative technologies becoming available in the future, and the rate of adoption. Our innovation programme is continuing to work with the water industry, other water companies and other sectors to identify better use of technologies and those that will improve wastewater treatment and deliver our services in more sustainable ways, at a lower cost to customers. The magnitude, rate of adoption, and uncertainty of new technologies in the water industry involves a multi-faceted approach to evaluate the readiness levels of technology and existing systems, cyber security, skills and costs.

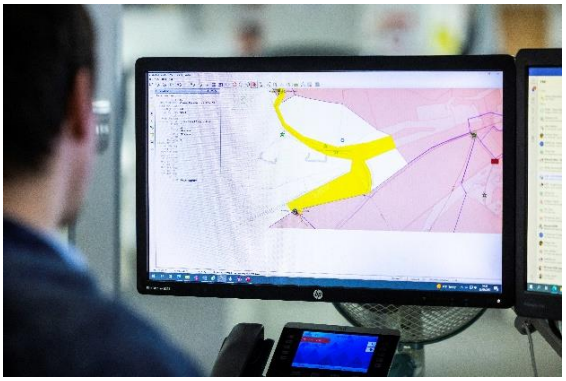
Monitoring and control

We have already invested more than £15 million in artificial intelligence and installed more than 32,000 state-of-the-art monitors to dramatically cut the impact of fatbergs and other blockages that currently cause hundreds of pollution incidents every year. Machine learning software, developed in the UK, powers the system and alerts our Control Centre to risks before they become incidents.

Most sewer blockages are caused by ‘unflushables’ like wet wipes and plastics, as well as fat, oil and grease (FOG), gathering in pipes. These blockages can lead to environmentally damaging flooding outdoors, and deeply distressing flooding inside homes and properties.

Tackling this issue is a priority for us, and this innovative technology is expected to cut pollution incidents by up to 40%. This equates to around 500 fewer internal floods by 2025 and about 7,000 fewer external floods.

The roll-out of Smart Sewers across our sewer networks and catchments builds on our existing improvement in tackling external sewer flooding, where in 2024–25 we reported a total of 3,047 incidents – well below the 4,409 incidents that occurred in 2020–21. Meanwhile, sewer network cleaning, other blockage reduction activities and an intensive focus on repeat issues are also helping us maintain our best performance in this area.



Monitoring our systems

The monitors, which are being installed across high-risk areas of the 40,000km sewer network, communicate digitally with our Control Centre. Technicians are warned about potential blockages forming long before any risk of a pollution spill from a manhole takes place, or flooding occurs directly into homes, schools, businesses or any other property.

Internal sewer flooding is incredibly distressing for customers. We believe these systems will have a real impact on all flooding incidents.

We are also rolling out a programme of continuous water quality monitoring (CWQM). These new devices will monitor upstream and downstream of all our discharges into rivers. The data, to be published in near real time, will provide much better data and transparency into the impact of our discharges on river water quality.

Case Study: 'Digital Sewers' stop West Sussex village flooding

Artificial Intelligence beneath a West Sussex community's feet saved homes from flooding when a fatberg formed.

Residents of East Lavington, near Petworth, were put at risk by the **buildup of fat, oil, grease and other 'unflushables'** in a sewer - but thanks to our **system of digital sensors**, our teams were able to tackle the blockage before it could cause gardens and homes to flood with wastewater.

Blocked sewers are the single biggest cause of pollution incidents – from manholes spilling into streams to gardens filling with sewage. But the very worst kind is internal flooding where sewers back up and pour into sinks, showers and loos.

Now, thanks to **around 32,000 sewer lever monitors**, we can constantly check on flows and spot anything out of the ordinary which might highlight a blockage or leak. This is what led us to East Lavington to clear out the nasty fatberg.

Daniel McElhinney, Proactive Operations Control Manager at Southern Water, said:

*"The **sensors measure the level of sewage** flowing under manholes in blockage hotspots, but the real innovation is how **machine learning or artificial intelligence learns the normal behaviour of sewers** and can tell the difference between morning and evening rushes, rain in the system and a blockage forming.*

*Instead of turning up after the event to clean up and commiserate with devastated customers **we're spotting hundreds of potential blockages before it's too late** so our teams can scramble round with high pressure water jets to clear the sewer."*

Most customers do not **realise the average suburban sewer is only the diameter of an orange** or a tennis ball. It doesn't take much cooking fat to combine with other 'unflushables' such as sanitary products, wet wipes or even ear cleaning sticks, to form a fatberg.

After detecting a sewer blockage, **our teams call round the neighbourhood to tell them about the close call and educate them on how to keep sewers flowing freely**.

Innovative treatment

Our newest treatment works in Southampton (Woolston), uses innovative Membrane Bioreactor (MBR) technology with ultrafiltration membranes for advanced, compact treatment, replacing traditional tanks and significantly improving effluent quality. This new technology uses biological treatment with ultrafiltration membranes to remove tiny particles including bacteria. At the time of construction, this was the UK's largest MBR system, using precast concrete for faster construction, with advanced odour control systems and specialised valves for the coastal environment, boosting capacity and environmental protection for the River Itchen, an internationally important chalk stream.

These membranes replace traditional final settlement tanks, creating a smaller footprint (about 1/5 the size) and producing superior effluent quality. The benefits include near 100% removal of solids and bacteria, better nutrient removal, and elimination of long-standing odour issues. These upgrades transformed Woolston into a modern facility, utilising cutting-edge membrane technology and clever engineering to meet stringent environmental targets.

Woolston Wastewater Treatment Works

It is expected that such upgrades of traditional treatment processes and use of this innovative technology will be required in the future to meet ever increasing and tighter environmental standards set by the environmental regulator. This will create a huge demand for investment in the water industry, although this type of treatment has a significant environmental impact due to the high carbon costs for this treatment process. For example, we are required to extend the use of ultraviolet treatment to more discharges, especially into shellfish and bathing waters, although this is challenges as er focus more on achieve our net zero carbon objectives.

Transport sector

Future trends in the transport sector include the growth of electric vehicles (EVs), autonomous vehicles (AVs), and evolving urban mobility. These trends will create significant new challenges and opportunities for drainage and wastewater systems. Heavier EVs are expected to increase tyre wear, generating higher levels of microplastics and chemical pollutants that are washed into drainage networks. At the same time, the expansion of charging infrastructure is likely to accelerate “urban creep,” reducing permeable surfaces and increasing surface water runoff and flood risk.

Advances in AV technology may enable a fundamental redesign of road infrastructure. More precise vehicle movement could allow narrower lanes and alternative road layouts that incorporate permeable surfaces and integrated water retention features, reducing reliance on traditional stormwater drains. The reduced need for parking and road space could also free up land for sustainable drainage systems (SuDS), improving urban flood resilience.

Highway drainage systems will increasingly rely on smart, sensor-based monitoring and AIdriven maintenance to detect blockages, predict failures, and operate more efficiently. Rising levels of

road derived pollutants are expected to drive stricter environmental standards and greater emphasis on treating runoff before discharge. Overall, future transport systems present both increased risks to drainage infrastructure and opportunities to re-engineer roads and communities to make them 'greener' and more resilient to climate change, keep rainwater out of foul sewers and prevent discharges from storm overflows.

2.7 Customer and stakeholder behaviours

Water use

Our customers are projected to use significantly less water in the future due to the widespread implementation of smart metering and various water efficiency measures. We have worked with the government and regulators to set ambitious targets to detect and address leaks and reduce consumption, supported by evidence showing that metering effectively changes customer behaviour.

Water use across our region is much lower than in other parts of the country due to our widespread metering programme that started several years ago. This is supported by research that shows a decrease in household water consumption of between 16% and 22% after meters are installed. Metered customers are more likely to take actions to reduce their water consumption because their bills reflect the exact amount they use, rather than a flat rate based on property value.

We have made a huge effort on leak detection to reduce leaks further. We are now starting an important programme to roll out smart water meters. These will provide detailed, real-time data that helps us, and our customers, identify and repair leaks on their properties quickly, preventing significant water loss.

Alongside metering, a range of water efficiency programs and regulatory changes are contributing to reduced future demand:

Government targets: The Environment Act 2021 sets a legally binding target to reduce public water supply use per head of population in England to 122 litres per person per day by March 2028, and a long-term target of 110 litres per person per day by 2050.

Efficiency programs: Water companies run campaigns and offer free water-saving devices (like low-flow showerheads and cistern displacement devices) to encourage customers to use water more wisely.

New building standards: Tighter water efficiency requirements for new homes will mandate lower water consumption (as low as 85 litres per person per day) in future developments.

Our smart metering programme and our ongoing efficiency efforts are projected to meet a significant proportion of the future water demand deficit caused by population growth and climate change. Overall, almost two-thirds of the water needed by 2050 is expected to come from demand reductions, including efficiency measures and leakage control.

Our Water Resources Management Plan (WRMP) is being developed alongside our DWMP. We are also working with Water Resources South East and water supply companies across our region so we can move towards more integrated water management in the South East.

The benefit of reduced water consumption on the sewerage network means that more homes can be connected to our pipes with smaller upgrades. It also means that upgrades to our treatment works need to focus on treating sewage biologically and not in increasing capacity. In some cases, this can lead to changes in the preferred technology for future upgrades.

Customer behaviour

Customer behaviour is expected to improve in the next few years due to a combination of enhanced **water company campaigns**, a forthcoming **ban on plastic-containing wet wipes**, and clearer government messaging. However, the issue still requires a "step change" in thinking to achieve significant, lasting reductions in blockages.

We are working with government, regulators and others in the industry to change and influence customer behaviour at a national level through initiatives such as:

Bans on plastic wet wipes: A ban on the sale of all wet wipes containing plastic will be implemented in England in the spring of 2027. Since around 94% of sewer blockages are caused by wet wipes, this legislation is a major step towards reducing the core problem at its source.

Clearer messaging and labelling: The "Fine to Flush" certification was discontinued to avoid consumer confusion. The new, universal message from water companies and the government is the "Bin the Wipe" campaign, reinforcing that only the "three Ps" (pee, paper, and poo) should be flushed. Mandatory "do not flush" labelling on all wet wipe packaging is also being called for.

Targeted education campaigns: Water companies are using data and behavioural science to run more effective, localised campaigns (for example, Southwest Water, Scottish Water's Nature Calls) to highlight the local risks of personal actions, such as sewer flooding and environmental pollution.

Incremental investment and enforcement: Over the next five years (2025-30), water companies are planning record levels of investment (£11 billion in England and Wales) in the sewerage network and infrastructure improvements to mitigate blockage issues and reduce pollution incidents. Businesses that do not manage FOG (fats, oils, and greases) properly already face potential prosecution, a measure that may become more widespread.

We also run local community level campaigns to influence our customers' behaviour. The challenges to overcome include:

Persistent lack of awareness: Despite existing campaigns, a widespread lack of awareness persists regarding the link between personal disposal habits and sewer blockages/flooding.

Market growth of wipes: The market for wet wipes is projected to grow, meaning continued vigilance in consumer education and product regulation is essential.

Responsibility shift: Some customers still shift responsibility for disposal issues to manufacturers and water companies, highlighting the need for sustained, high-impact public awareness campaigns.

While a total elimination of the problem is unlikely in the next few years, the combined effect of legislation, clearer communication, and targeted campaigns is expected to lead to a measurable reduction in the disposal of unflushables.

Some factors and changes in customer behaviours are unforeseen and out of our direct control. During the COVID-19 pandemic, we experienced significant shifts in water consumption patterns, driven by lockdown restrictions, increased home working, and higher temperatures. Key changes and impacts included increase in household consumption. Household water use increased by approximately 10%. The per capita consumption (PCC) in our supply areas rose by 7.4% to 137.5 litres per head per day in 2020–21. Overall, the water industry average saw consumption rise by 10.4%. Conversely, business and commercial water use fell during the lockdown periods. There was also a shift in the peak demand. The increased time spent at home resulted in a higher, more consistent demand for water, which put pressure on supply systems, especially during hot weather.

The pandemic accelerated a shift in working patterns, with many continuing to work from home, resulting in long-term increases in domestic water use, such as more frequent showers and, in some cases, increased garden water usage.

2.8 Prioritisation of trends

The trends above will be used to support the development of our DWMP. They will be incorporated and considered in:

(a) Risk-based Planning – to identify the recent and 2030 performance, as well as the vulnerability of wastewater systems to future trends and strategic issues
(b) Risk assessment – to establish the baseline risks for each performance indicator from 2030 through to 2055
(c) Options development – to make sure that options are workable and sustainable for the potential futures that could occur.

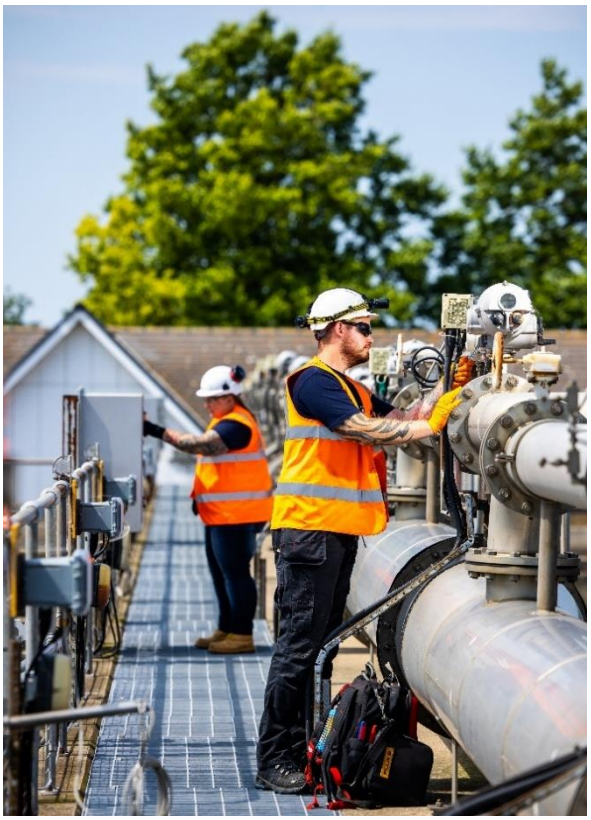
These stages of our DWMP will identify and highlight the trends that matter most and have the most impact on future performance of our drainage and wastewater systems. We will provide and publish details of how we have used the future trends in these stages of the DWMP, and the results for each of these stages in the development of our plan.

3. Value frameworks

A core principle of our DWMP is to use best practice when deciding where, when and how to invest in wastewater assets and systems. There are often many choices and decisions. These need to be informed and underpinned by data and evidence, including the costs and benefits associated with any investment. We aim to make our investment decisions using a 'best value' approach.

A best value option is the one that maximises the benefits delivered over the whole life compared to the costs. It is therefore important to determine the approach to defining the value of the benefits that will be delivered by any intervention. Doing this will allow robust comparison against the whole life costs of the investment. The relationship between benefit and whole life costs will be used to inform the selection of preferred options.

A value framework is used to quantify the benefits of an option. A value framework is a structured set of decision criteria systematically implemented that helps with the comparison of different potential options to determine which one maximises overall value for money. It provides a consistent, transparent basis for rational decision-making, moving beyond simple cost considerations to a more holistic view of benefits and impacts. A value framework transforms decision-making from a financial process into a holistic process that aligns options to our core principles and long-term considerations.



Weatherlees Hill Water Treatment Works

The DWMP guidance sets out performance indicators to understand recent and future performance such that the risks to customers and the environment can be identified and evaluated. The benefits of taking action to reduce these risks are evaluated using a value framework. These indicators are provided in Appendix B: Performance indicators.

The approach for options development and appraisal in the DWMP will start with a standard set of "generic options". These generic options will be used to create unconstrained options (referred to as 'applicable' options in the DWMP guidance) that may be effective in reducing the risks identified within the specific wastewater system. The unconstrained options may provide a location for the action, and a sense of size or scale of work required to achieve the desired outcomes. At this stage of the process no account has been taken of limitations including investment cost, technical feasibility, or environmental planning hurdles. These issues are considered next through a screening exercise to form a reduce set of options, known as the constrained options (referred to as "effective options" in the DWMP guidance).

A final screening, incorporating the Strategic Environmental Assessment (SEA) criteria, reduces the constrained options to a set of feasible options. At this stage, the value framework is applied. This quantifies the benefits associated with the option. The cost for each option is also calculated.

From these feasible options, a preferred option is determined which will be used in the 25-year investment plan. We propose to continue with the use of the terms unconstrained and constrained options to ensure consistency with our existing DWMP and the WRMP planning guidance from the EA.

Historically we have monetised improvements to our core services in investment decision-making. These have been essential in such a highly regulated environment and have helped us in prioritising the investment.

Recently we have improved our decision-making for the 2024 Price Review. Our current decision-making framework develops, compares and prioritises options across all our wastewater investments. Our approach considers the wider social, environmental and economic benefits, and enables adaptive planning pathways to be explored through scenario testing.

We have embedded into our decision making Ofwat's set of guiding public value principles, published in March 2022. Applying these principles help us to explore and deliver better social and environmental outcomes. The principles, Table 3, provide a framework, parameters and flexibility for us to propose best value options.

Table 3: Ofwat's Public Value Principles

	The principle
Principle 1	Companies should seek to create further social and environmental value in the course of delivering their core services, beyond the minimum required to meet statutory obligations. Social and environmental value may be created both in direct service provision and through the supply chain.
Principle 2	Social and environmental benefits should be measurable, lasting and important to customers and communities. Mechanisms used to guide activity and drive decision-making should support this, for example through setting and using company purpose, wide external engagement and explicit consideration of non-financial benefits.
Principle 3	Companies should be open with information and insights on operational performance and impacts (both good and bad). This will support stakeholder engagement, facilitate collaboration and help identify opportunities for delivering additional social and environmental value.
Principle 4	Delivery of social and environmental value outcomes should not come at greater cost to customers without customer-support.
Principle 5	Companies should consider where and how they can collaborate with others to optimise solutions and maximise benefits, seeking to align stakeholders interests where possible, and leveraging a fair-share of third-party contributions where needed. Companies' public value activities should not displace other organisations who are better placed to act.
Principle 6	Companies should take account of their capability, performance and circumstances in considering the scope for delivering greater environmental and social value.

The DWMP Guidance sets a range of value frameworks that can be used to value the benefits of investments and support decision making. They include:

- UKWIR – 'Review of Cost Benefit Analysis and Benefits Valuation' (2010).
- Ofwat – Public Value Principles.
- International Financial Reporting Standards – Integrated Reporting, 2013.
- CIRIA – Benefits Estimation Tool (B£ST).
- Multi Coloured Manual – Multi Coloured Manual – valuation of flood risk.
- HM Treasury – Green Book (2026).
- Construction Innovation Hub – Value Toolkit.
- EA – FCERM Appraisal.

In addition, a Common Value Framework (CVF) has recently been published as part of an Ofwat funded innovation project. We will utilise this CVF to determine and value the benefits of our investment.

This range of frameworks is helpful, and where they are applicable varies throughout the steps in the DWMP. Some of them support decision making at strategic plan level and some at project level. The EA is currently developing a Common Options Appraisal and Assurance Framework (COAAF) for use across the DWMP, WRMP, WINEP and Price Reviews. The exact approach that we will adopt for the DWMP will be developed once the COAAF has been published.

We are planning to expand our approach to decision making to better align with the six capitals approach developed by the International Integrated Reporting Council (IIRC). The six capitals are defined as: **Financial, Manufactured, Intellectual, Human, Social and Relationship, and Natural Capital**. These help to identify and quantify the holistic benefits from the allocation of resources, including intangible assets like knowledge and community trust, and environmental assets, providing a comprehensive understanding of long-term value creation.

The use of the six capitals approach will ensure greater alignment with our Environmental, Social and Governance (ESG) reporting. We use the ESG reporting to assess our sustainability and ethical impact beyond traditional financial metrics so we can guide our investors and stakeholders in evaluating risks, opportunities, and overall performance related to climate, human rights, diversity, and corporate accountability. It covers how a company manages its impact on the planet (Environmental), its relationships with people (Social), and its leadership/internal controls (Governance).

In December 2024, Defra published guidance on seeking to further the purposes of Protected Landscapes. 'Protected Landscapes' refers to National Parks and National Landscapes in England. The guidance sets out how the Protected Landscapes duty is intended to operate and provides broad principles to guide relevant authorities in complying with it. Section 245 (Protected Landscapes) of the Levelling-up and Regeneration Act 2023 (LURA) amends the duty on relevant authorities in respect of their functions which affect land in Protected Landscapes. We must now 'seek to further' the statutory purposes of Protected Landscapes, rather than our previous duty to 'have regard to' their statutory purposes. This is of particular importance to our region due to the South Downs and the New Forest National Parks and therefore needs to be included as an element of our value framework.

The duty is intended to facilitate better outcomes for England's Protected Landscapes, which are in line with their statutory purposes. The duty does not prevent us from undertaking our statutory functions and discharging our legal duties and other responsibilities. The duty is intended to complement these requirements by ensuring that the purposes that Protected Landscapes are designated for are recognised in reaching decisions and undertaking activities that impact these areas.

We will apply the duty and consider the relevant Protected Landscape's Management Plan when developing our DWMP. We will develop the process to apply this duty as we develop the DWMP.

In planning and delivering our DWMP, we also need to comply with the strengthened Biodiversity Duty that was introduced in the 2021 Environment Act. Our DWMP must consider what we can do to conserve and enhance biodiversity. We have incorporated biodiversity as a criterion in our appraisal of options and decision making. This will ensure it is a key consideration, provides visibility and a record of how we have made our decisions on the actions we plan to take. The DWMP will help show how we have complied with the duty.

Our DWMP will be developed to comply with the requirements for a Strategic Environmental Assessment (SEA), a Water Framework Directive (WFD) regulations assessment and a Habitats Regulations assessment (HRA). The SEA and WFD assessments are incorporated into the decision-making process for the DWMP. We will publish a SEA Scoping Report to set out how we will do this. The HRA is completed at a later stage once the actions we are intending to take are known.

We realise the opportunity that the DWMP provides to deliver wider multiple objectives and deliver outcomes that matter to us, our customers and protect the environment.

We will publish a more detailed approach to options development, including the scoring and weighting criteria to be used, before beginning the optioneering stage of the DWMP.

4. Summary

The DWMP is an exciting opportunity to work with other water companies, regulators, planning authorities, Catchment Partnerships and other flood risk management authorities to consider wastewater and drainage issues in river basin catchments over the long term.

The new statutory requirements for the DWMP have broadened the scope such that both water quantity and water quality are considered together in our long-term strategic plan. This is a significant improvement for the water industry and will deliver better environmental outcomes across our operating region.

Our approach to implementing the DWMP will improve our understanding of risk, the resilience levels of our wastewater systems and drive the delivery of resilient solutions. The benefits we will gain from the DWMPs include:

	**Risk identification and assessment** consistently applied across all 11 river basin catchments.
	**Understanding of our systems** and how they interact with other infrastructure systems through collaboration with stakeholders and customers.
	**A systematic and collaborative approach** to solution development for identified risks with resilience principles included in the decision-making process.
	An iterative process enabling **coverage of the whole of our operating region** and will be refined over time.
	Providing **visibility to stakeholders** of the decisions for investment into the future.

As a result of the DWMP, our customers and local businesses will see greater collaboration between drainage risk management authorities and environmental groups, more aligned investment programmes that will deliver better outcomes for people and the environment, and improved management of water across the whole river basin. These plans will also enable us to reduce costs through better planning, managing future risks and resilience, and by doing the right thing.

Appendix A: Urban creep

The conclusions of the UKWIR 2009 report 10/WM/07/14 on urban creep:

The study demonstrated that high-resolution remote sensing and analytical tools can reliably detect urban creep, across large areas, including locations that are difficult to access.

Analysis over both a four- and seven-year period showed consistent evidence of urban creep, with average increases of 0.4–1.1 m² per house per year. More than 533,000 houses were included in the assessment, and results appear representative of long-term trends. Rates have accelerated compared to the mid-1970s, reflecting changes in household behaviour and construction patterns.

The study found no single dominant factor driving urban creep; instead, rates vary according to a combination of socio-economic influences. The only strong predictor identified was the postcode plan area. Four techniques were recommended for projecting future creep, including regression-based approaches and sampling methods.

A methodology was also developed to allow urban creep allowances to be incorporated into hydraulic models. This typically requires modellers to apply a base year and then adjust impermeable area within the model through simple functions or spreadsheet-based calculations.

Catchment modelling using these allowances showed significant impacts including:

- increased flooding volumes
- higher CSO spill volumes, and
- a rise in flood frequency.

In one case, a 20-year planning horizon with urban creep resulted in a 23% increase in total flooding volume and a 29% increase in CSO spills.

While some water companies have begun including urban creep in their planning, the report highlighted inconsistencies and noted that most approaches do not yet account for climate change. Wider initiatives such as the Pitt Review[2] recommendation to limit paved front gardens were seen as positive but insufficient. The report concludes that urban creep will continue to affect sewer capacity, spill frequencies and flood risk, and that further work is required to properly integrate it into long-term planning frameworks.

[2] Pitt, M. (2008). *Learning Lessons from the 2007 Floods* (The Pitt Review). Cabinet Office, London. Available at: https://webarchive.nationalarchives.gov.uk/ukgwa/20100702215619/http://archive.cabinetoffice.gov.uk/pittreview/thepittreview/final_report.html

5. Appendix B: Performance indicators

The performance indicators for cycle 2 DWMP are set out in the table below.

Table A1: Performance indicators

Category	Metric	Details
Flooding	Internal flooding	Annual number of internal sewer flooding incidents normalised per 10,000 sewer connections, in line with the latest Ofwat Performance Commitment definition. The annualised figure is to be based on reported and forecast incidents based on 1/10, 1/20, 1/30 and 1/50 return periods.
Flooding	External (curtilage) flooding	Annual number of external sewer flooding incidents normalised per 10,000 sewer connections, in line with the latest Ofwat Performance Commitment definition. The annualised figure is to be based on reported and forecast incidents based on 1/10, 1/20, 1/30 and 1/50 return periods.
Water environment	Storm overflow performance (England)	Number of storm overflows predicted to be at risk of not meeting Storm Overflow Discharge Reduction Plan (SODRP) targets and/or permit non-compliance for the relevant planning horizon. Baseline of spills is based on a minimum of 10 years' worth of time series rainfall data (2014-2024). 10-year dataset needs to be uplifted to recognise baseline and future pressures.
Water environment	Treatment works compliance (numeric)	Annual number of WTWs predicted to fail numeric effluent quality permit limits.
Water environment	Treatment works compliance (descriptive at numeric sites)	Annual number of WTWs predicted to fail to meet descriptive conditions at numeric permit sites.
Water environment	Treatment works compliance: DWF	Annual number of WTWs predicted to fail to meet discharge permit conditions for Dry Weather Flows.
Water environment	Treatment works compliance: FFT	Annual number of WTWs predicted to fail to meet discharge permit conditions for annual Flow to Full Treatment.
Water environment	Good Ecological and/or Chemical Status: Public sewerage	Number of RNAGS (Reasons for Not Achieving Good Status / Deterioration) associated with sewerage assets discharges (including surface water networks).

Water environment	Pollution incidents: serious	Annual number of serious (Category 1 and 2) pollution incidents from sewerage undertaker sewerage assets (including public surface water networks). Excludes sludge/biosolids incidents.
Water environment	Pollution incidents: total	Annual number of pollution incidents (Category 1-3) per 10,000 km of wastewater network from SU sewerage assets (including surface water networks). Excludes sludge/biosolids incidents.
Economy and community	Bathing water quality	Number of current and future (if known) inland and coastal bathing waters where predicted performance of sewerage assets discharges will pose a risk to compliance with "sufficient" quality classification and not deteriorating from current standards, with a view to increasing the number as "good" or "excellent".
Economy and community	Shellfish water quality	Number of current and future (if known) designated shellfish waters where predicted performance of sewerage assets discharges will pose a risk to compliance with the microbial standard specified in the Shellfish Waters Protected Areas (England and Wales) Directions.

Further common performance indicators to trial in Cycle 2

There are several performance indicators which are emerging or complex risks which are difficult to forecast. We are developing and trialling methods for assessing these indicators in DWMP Cycle 2. These indicators are shown below.

Table 3: Performance Indicators for Cycle 2 Development

Category	Metric	Details
Flooding	Surface water flooding (Shared responsibility)	Annual number of properties per 10,000 properties indicated as at medium (3.3%AEP – 1%AEP) and/or high (greater than 3.3%AEP) areas of risk of surface water flooding estimated from reported incidents, local models from other RMAs and/or most recent EA surface water flood risk maps. This only covers surface water flooding within companies' drainage and wastewater catchments.
Water environment	Good Ecological and/or Chemical Status: Urban and transport (Shared responsibility)	Number of RNAGS (Reasons for Not Achieving Good Status / Deterioration) attributed to discharges of urban or highway runoff and misconnections that will not be remedied through investment by you or other organisations. This only covers runoff or connections entering companies' drainage and wastewater catchments.

Water environment	Emergency overflow performance	Number of emergency overflows that operate once or more per year.
Water environment	Treatment works compliance (descriptive)	Annual number of WTWs predicted to fail to meet descriptive permits.
Water environment	Groundwater pollution	Length (km) of sewer within Source Protection Zone (SPZ) 1s (and 2s in Groundwater Safeguard Zones (SGZ)) where there are likely risks to groundwater from sewer exfiltration.
Water environment	Groundwater infiltration	Annual number of discharges during 'dry weather' caused by increase in sewer flow from groundwater infiltration.
Bioresources/Sludge	Treatment Process: Sludge Treatment Capacity	The percentage of annual sludge production that is processed through sludge treatment facilities compliant with environmental waste permits The treatment capacity will be expressed as a percentage of the amount of sludge produced regionally by WASCs wastewater treatment process
Bioresources/Sludge	Treatment Process: Satisfactory Sludge Recycling and Disposal	The percentage of sludge production that is satisfactorily recycled to agricultural land, undergone further energy recovery or disposal of.

Southern Water
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