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This document sets out how the water industry of England will reduce spills from storm overflows. It is accompanied by an interactive map with information on each overflow.



Our Plan achieves or exceeds every single Government target for storm overflows.



It does this by improving nearly 9,000 overflows right across England's sewer system.



This will remove an average 150,000 spills each year by 2030 - 2.5 times more than the Government asked for. Over its 25-year delivery, the Plan will remove nearly four million spills from our rivers and coasts.



For 'high priority' areas (e.g. chalk streams) spills are almost halved by 2030 and cut by 80% by 2045. For bathing areas, the Plan cuts spills by over 60% by 2030 and nearly 80% by 2050.



In the first phase of the Plan, from 2025 - 2030, companies have proposed tripling investment, taking this to £10.2 billion and making it the most expansive overflows programme in the world.

The proposals making up this Plan are being scrutinised by regulators and Government and will not be agreed until December 2024. However, this document and accompanying map reflects industry's current expectation as of March 2024.

To accelerate progress even further, Government has within its gift ten policy changes that could be made at no cost to billpayers.



In October 2023, the water industry of England and Wales proposed an investment of £96 billion to secure our water supplies and upgrade our sewage systems<sup>1</sup>.

This represents a near-doubling of annual investment and will account for nearly a third of all investment in water across Europe.

If approved by the regulator, companies' proposals will cut water leaks by 28% over a decade and enable ten new reservoirs to be built.

The investment will also install advanced technology at sewage works to remove more pollutants before they pass into water – for example, by preventing 800,000 tonnes of phosphorus from entering rivers and causing fish-killing algae.

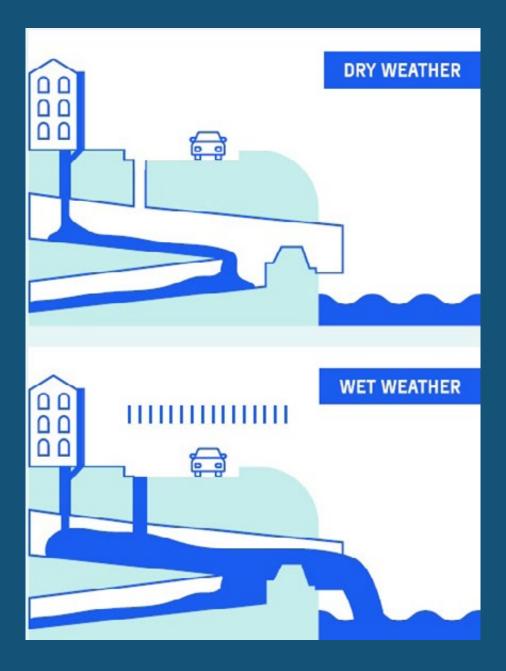
Crucially, £10.2 billion of this investment will fund the first phase of the largest plan for storm overflows in the world<sup>2</sup>.

# What is a storm overflow?

A storm overflow (sometimes referred to as a 'Combined Sewer Overflow' or 'CSO') is typically an outlet built into public sewers to allow excess rainwater to escape when sewers become inundated during wet weather. They do this to prevent the combined mixture of rainwater and sewage flooding back up into homes. Storm overflows have not been routinely built into sewers since the 1960s, but over 14,000 of them remain in England. They are much less environmentally harmful than many other sources of pollution like sewage from treatment works or agricultural run-off, but can still cause harm while often having a significant impact on the aesthetic and enjoyment of many rivers and beaches.

The complete removal and replacement of storm overflows would require an entire new parallel sewer network at a cost of up to £600 billion, adding up to

£1,000 to the annual household bill<sup>3</sup> while also requiring a huge number of roadworks and construction sites over many decades. However, it is possible to significantly reduce the frequency and impact of spills by upgrading and modernising the existing sewer network.



A typical storm overflow in the sewer system: many of England's sewer pipes carry wastewater from street drains and sewage from homes

We are today setting out the detail of the full National Storm Overflows Plan for England.

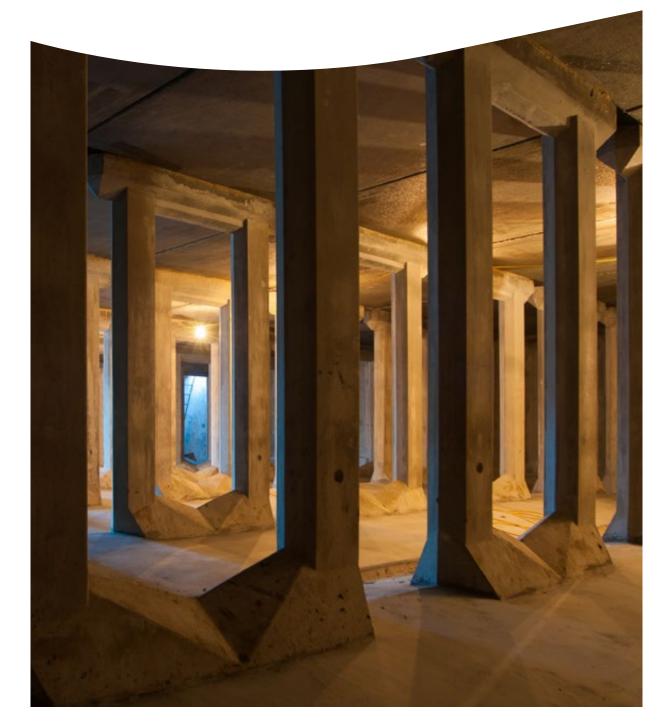
Based on an analysis of over half a million pieces of data across every storm overflow, this Plan sets out the detail of nearly 9,000 improvement projects across the entire national sewer network.

The scale of this endeavour is enormous.

The sewer network is aging and vast, stretching to the moon and halfway back if laid out end to end. The projects needed to upgrade this network are also unprecedented in number and size. For example, storm tanks at large sewage works can already hold the equivalent of 40 Olympic swimming pools of rainwater, even before capacity is expanded.

It will take time to fully modernise our sewer network and the water industry recognises it should have started this process much sooner.

While huge progress has been made in tackling pollution from sewage works, with a reduction of up to 80% in key pollutants, progress on overflows has been much slower.



An example of scale: The size of several Olympic-sized swimming pools in volume, this image shows a typical storage tank.

That is why this National Storm Overflows
Plan for England aims to radically accelerate
action, delivering more investment into
improving storm overflows than any other
country at any other point in history.

#### What is the Plan?

The National Storm Overflows Plan for England represents the industry's most up to date set of proposals for dealing with the 14,187 overflows in England. This overview document summarises the action being taken and results expected, and is accompanied by an interactive map with details of each individual overflow.

These proposals are subject to approval from Ofwat (the regulator in charge of funding), the Environment Agency (in charge of environmental standards) and Defra (officials from which are closely scrutinising proposals). The Government has said that it expects Ofwat to support and challenge companies to meet its overflow targets and we call on Government and Ofwat to honour that requirement<sup>4</sup>.

This Plan covers the period 2025 to 2050, with the first phase running to 2030.

# This Plan sets out the minimum we want to achieve. Five changes may increase ambition further:

In some locations, investigations are ongoing (or will start shortly) into specific overflows and their local impact. Where this confirms opportunities to do more, or detects that an overflow is having more of an impact than thought, this may require further improvements to be added to the Plan or changes made to how projects have been prioritised.

Additional improvements are likely to be added over time where the Government decides to designate new areas for the purpose of bathing. This is likely to apply the stringent 'public health' target (see next section) to more locations, which means that tighter controls will be applied.

The Government has said it will formally review all overflow targets in 2027. While the outcome of that is hard to predict, it is quite likely to result in additional or different activity or improvements.

In parallel with the improvement projects in this Plan, companies are already making day to day operational changes that help manage their networks in better ways. This can sometimes reduce spills - activity that may not always be captured by this data.

Government could make a series of simple policy changes that could greatly accelerate action further - for free. We strongly urge them to make use of these (see final section).

These changes mean the Plan is not final. In fact, following companies' first submission of proposals in October 2023 the Government and regulators have been actively scrutinising schemes.

That process is still ongoing and regulators or Government may ask for further changes. Those discussions have traditionally taken place behind closed doors, but, recognising the public's expectation of greater transparency, we are publishing our Plan now to allow communities to see the proposed actions and where investment is likely to take place first. We expect final approval of the Plan's first phase in December 2024.

### The effects of climate change

Reducing spills is made harder by climate change, population growth and urbanisation. In effect, we have to 'run to stand still' because some improvements will be needed simply to avoid spills becoming worse.

Climate change will cause more intense rainfall. It will also exacerbate the impact of spills as lower river flows concentrate pollutants and higher temperatures reduce oxygen. Meanwhile, 'urban creep' and more tarmac means that, each time it rains, far more water rushes into drains rather than into the ground. This leads to longer and more frequent activation of storm overflows and is an important and growing source of pressure: for example, over the last 25 years urban land cover has increased by 30% and suburban cover by 40%<sup>5</sup>.

These effects mean that without the proposals in this plan, we would likely see an increase of 13% in the number of water bodies harmed by storm overflows<sup>6</sup>.

# Approval Process: agreeing funding to 2030

March 2024 June 2024

December 2024

Ofwat gives initial view of funding ('draft determinations')

Ofwat makes final determinations on funding

October 2023

Individual proposals and implications summarised as the National Storm Overflows Plan for England

Individual company plans finalised

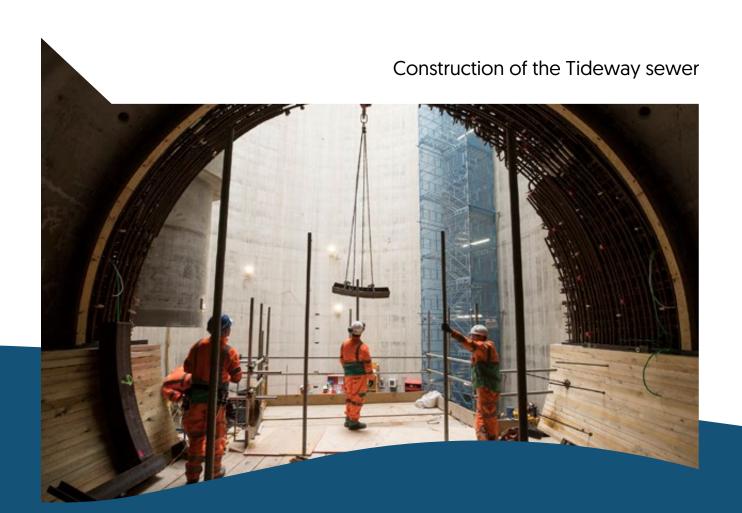
Discussion between Ofwat, Environment Agency, Government and water companies

# While waiting for approval, companies recognise the urgent need to get on with improvements in the meantime. This work is ongoing. For example...

...the Thames Tideway Tunnel (also known as the London 'Super Sewer') is one of the largest infrastructure programmes in Europe and due to complete construction in 2024, commencing operation in 2025.

Alongside other upgrades (including the £700 million Lee Tunnel) this will capture 95% of the volume of untreated sewage typically entering the tidal Thames.

The tunnel is so large that three London buses could drive down it side-by-side<sup>7</sup>.





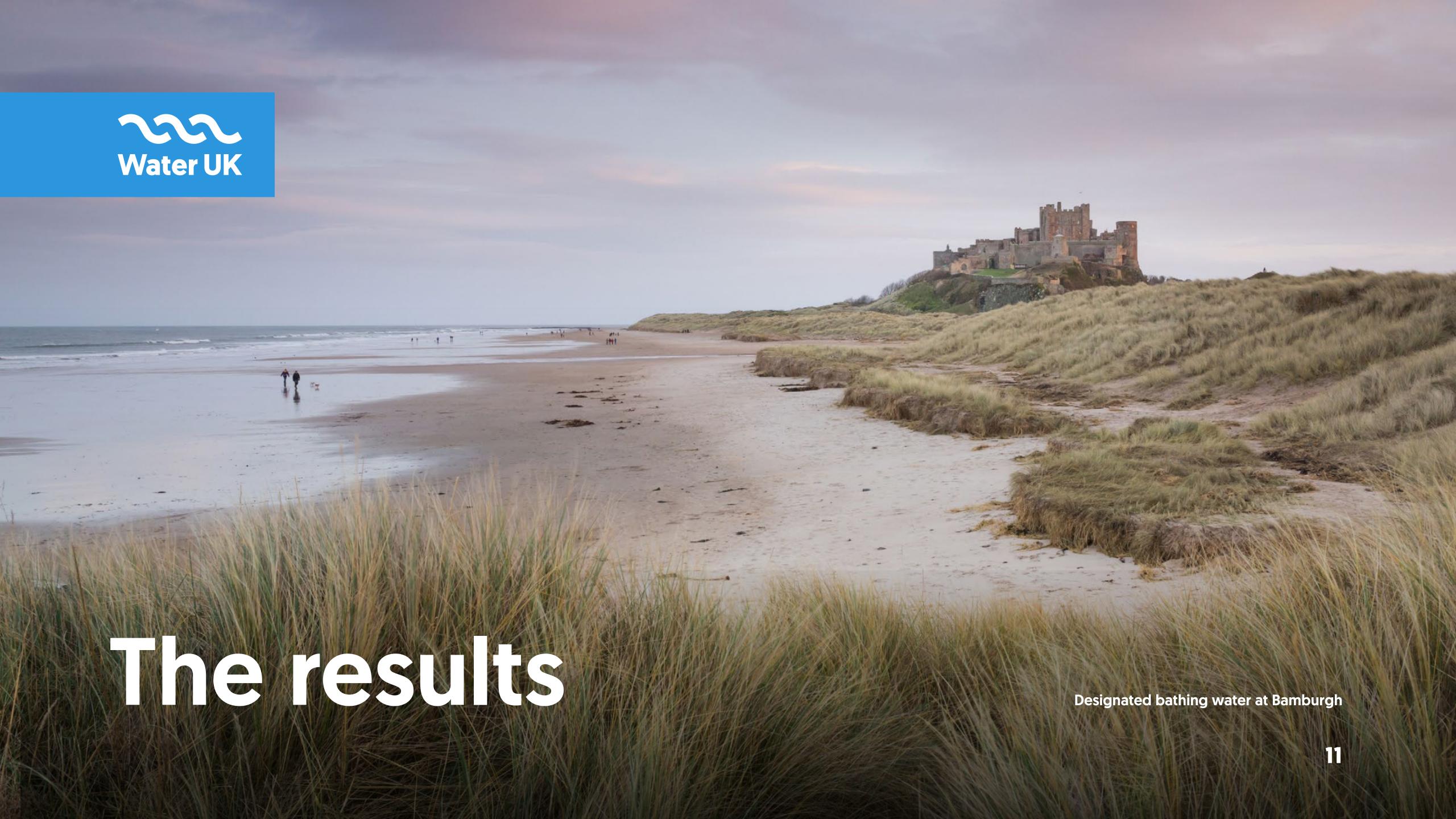
...companies have recently confirmed<sup>8</sup> that they have completed the installation of monitors at every storm overflow in England. Over the next couple of months all of them will start publishing information on spills as 'live' data right across the country, allowing everyone to see exactly what is happening at every location – the only place in the world where this happens.

...accelerating schemes across the country to deliver benefits faster. This includes £35 million from Southern Water to reduce spills across 30 overflows via new wetlands, improved rainwater management and sealing private drains that were becoming inundated; United Utilities' overflow improvement programme to improve discharges to Lake Windermere, part of its accelerated £1.5bn investment to tackle over 150 overflows in the region; and £25 million from Severn Trent to upgrade Stroud's sewer network with four miles of new sewer pipe and rainwater storage tanks the size of three Olympic swimming pools.









## Reducing spills

Subject to Ofwat's approval of company proposals for 2025-2030, by 2030 our Plan will remove an average of 150,000 annual spills compared with the start of the decade. By 2050 it forecasts the removal of over 325,000 spills each year.

Over its period of delivery,

the National Overflows Plan

for England will remove

nearly four million spills

from our rivers and coasts9.

# This plan incorporates four different types of improvements:

- building more storage within sewers to hold peaks of rainwater and upgrading the capacity of sewage works, preventing the system overloading
- 2 installing 'smart' technology using senors and artificial intelligence to manage sewer capacity more efficiently
- reducing the volume of rainwater entering sewers (for example by replacing tarmac with planted areas, allowing rain to sink into the ground rather than flooding drains)
- treating spills before they enter the main waterbody (for example by passing them through reed beds, which collect and filter pollution).



## Our Plan prioritises two areas for the fastest action:

## Bathing areas

There has been a big improvement in the cleanliness of coastal water since the 1990s. Today 90% of bathing waters in England are rated as 'good' or 'excellent' compared with less than a third in the 1990s.

Building on the tight controls that already exist<sup>10</sup>, every single bathing water in England will be improved within the first decade of this Plan. The result will be a cut of almost two-thirds in spills near bathing areas by 2030 and by nearly 80% by 2050. In some cases, improvements in individual areas are very significant: for example, Barnstaple Bay sees spill reductions of

over 90% by 2030, while spills in North Cornwall reduce by 83% and South Devon by 85%.

Over the medium term, we think the regulations on bathing – which are now thirty years old - need reform to better protect swimmers. For example, particularly with the growth of open swimming, we need to recognise that the public do not only go swimming during the 'official' May - September period, while the application process can also be clumsy and slow and testing insufficiently broad.

As a first step, the industry has committed to support applications for bathing areas across the country, particularly to support the growing number of river bathing areas; as more are approved we would expect further improvements to be added to the National Storm Overflows Plan for England.

## High Priority Sites

Our Plan prioritises investment towards high priority sites like conservation areas and chalk streams<sup>11</sup>. There are 5,038 overflows affecting these areas, which will receive improvements faster than other locations.

Average annual spills for overflows from high priority sites will be almost halved by 2030 and cut by 80% in 2045.

Image: Brunton Park sustainable drainage system



## Our Plan meets or exceeds all Government targets



Our plan will deliver no ecological impact from a storm overflow in:

- a. 88% of high priority sites, such as chalk streams, by 2035. Nearly 20% more than required
- b. 100% of high priority sites by 2045
- c. 100% of all sites by 2050.



Significantly reduce pathogens at bathing areas by applying disinfection or reducing spills by 2035.



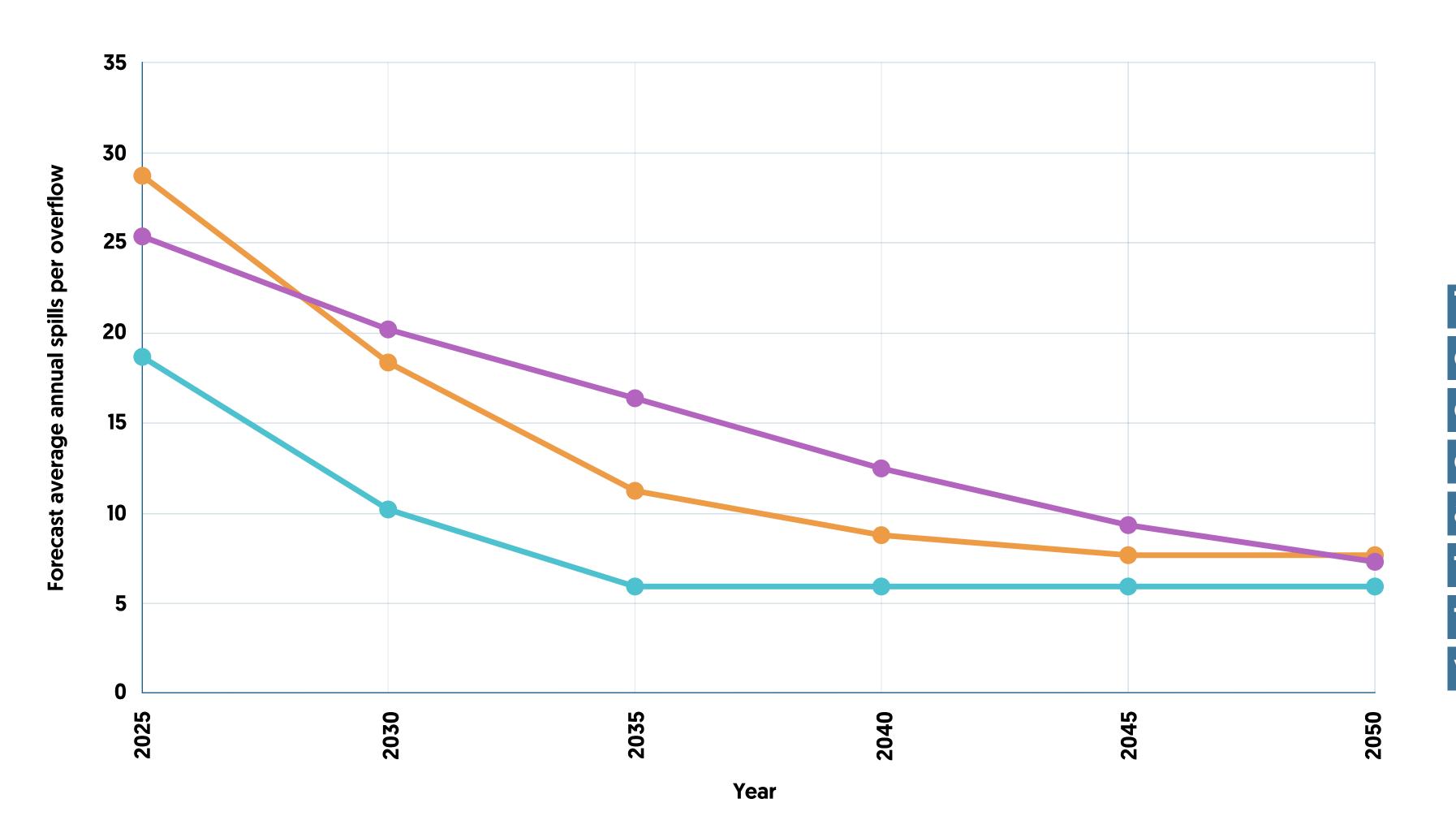
All overflows must discharge fewer than ten times a year on average.



All overflows must have mesh screens to prevent litter entering water bodies.

## Average Spills per Overflow





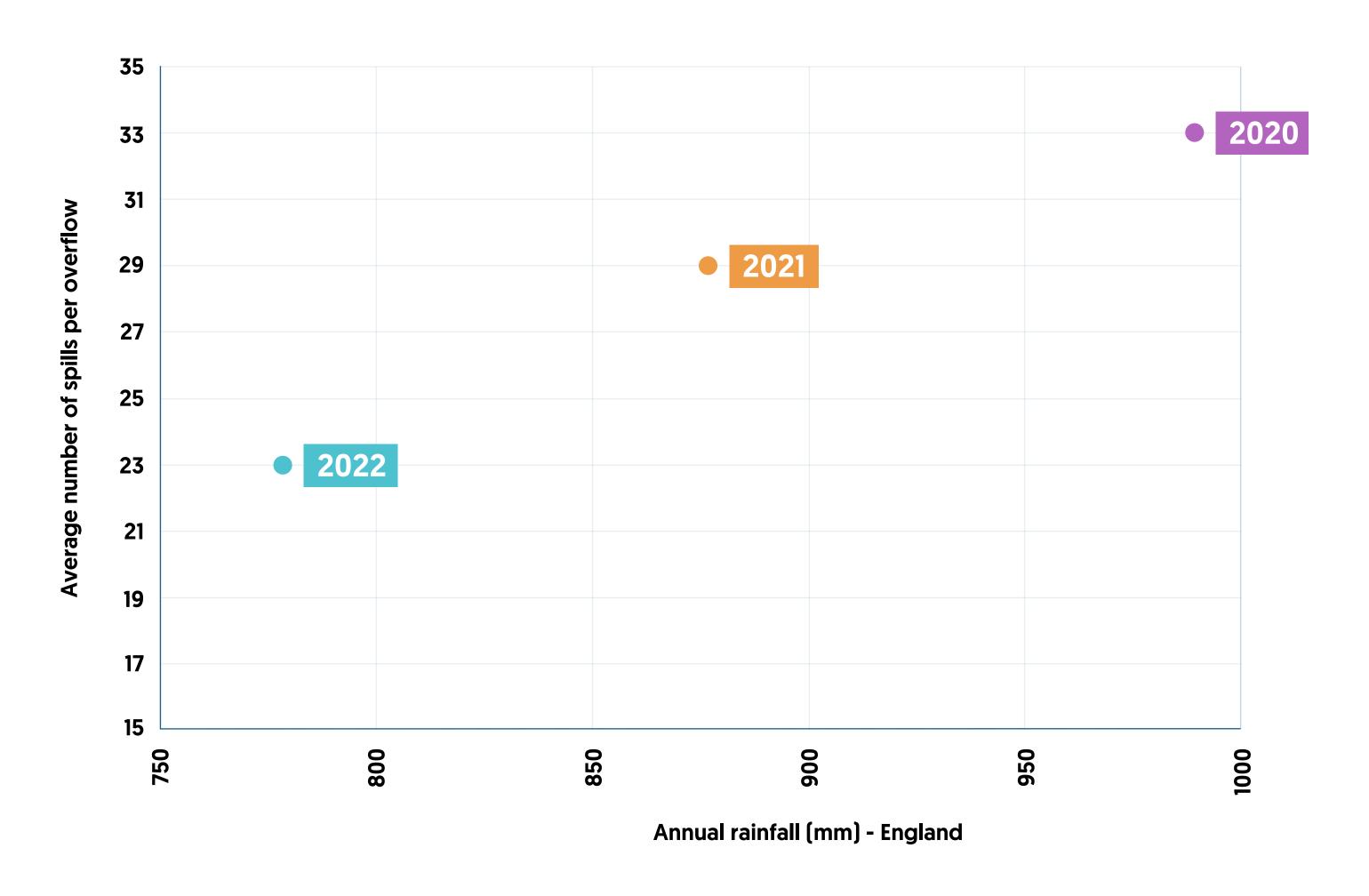
The average number of spills per storm overflow falls consistently - forecast at 25 per year in 2025, to 16 per year by 2035, to about seven per year in 2050.

The programme will progress as quickly as possible, though the scale means it will take time to completely transform the national sewer network.

In the meantime, the number of spills each year will vary considerably depending on rainfall. So while the overall trend will clearly be downwards, individual annual results will depend on how the weather has performed. All else being equal, there will be fewer spills in drier years and more spills in wetter years. There will also be different regional patterns reflecting local conditions.

For example, 2023 was a particularly wet year while 2022 saw drought conditions. In fact, between those two years there was a 23% increase in the number of days receiving more than 1mm of rain, and a 26% rise in overall rainfall levels<sup>12</sup>. It is therefore very likely that the number of spills in 2023 – once confirmed by the Environment Agency - will be up considerably from the previous year. This kind of variation – both up and down – will continue over the years around an overall declining trend, secured by infrastructure improvements made by this Plan.

## Higher rainfall leads to more spills



## Our Plan also includes:



Major upgrades to some of England's most iconic river basins with forecast spill reductions of:

77% ~~~~ for the Severn

A huge ambition for nature based solutions like wetlands and sustainable drainage. Of the nearly 9000 overflows being improved in the Plan, 25% of the interventions (affecting 37% of overflows) have some kind of "nature based" element, offering additional benefits for habitat, wildlife and local communities.

The remaining are either "traditional-engineered" (e.g. large, underground storage tanks to hold rainfall) or "smart sewers", which use sensors and advanced techniques to better manage the capacity of the sewer network.

## Plan improvements by type of engineering

Traditional-engineered

71%

Nature based

25%

Smart sewers

4%





## Financial investment

The £10.2 billion of proposed investment in the first phase of the National Storm Overflows Plan for England (as well as additional investment beyond this into the 2030s and 2040s) will normally be paid upfront by companies. In most cases, this is then recouped over time through bills. This model protects against sudden and dramatic bill rises.

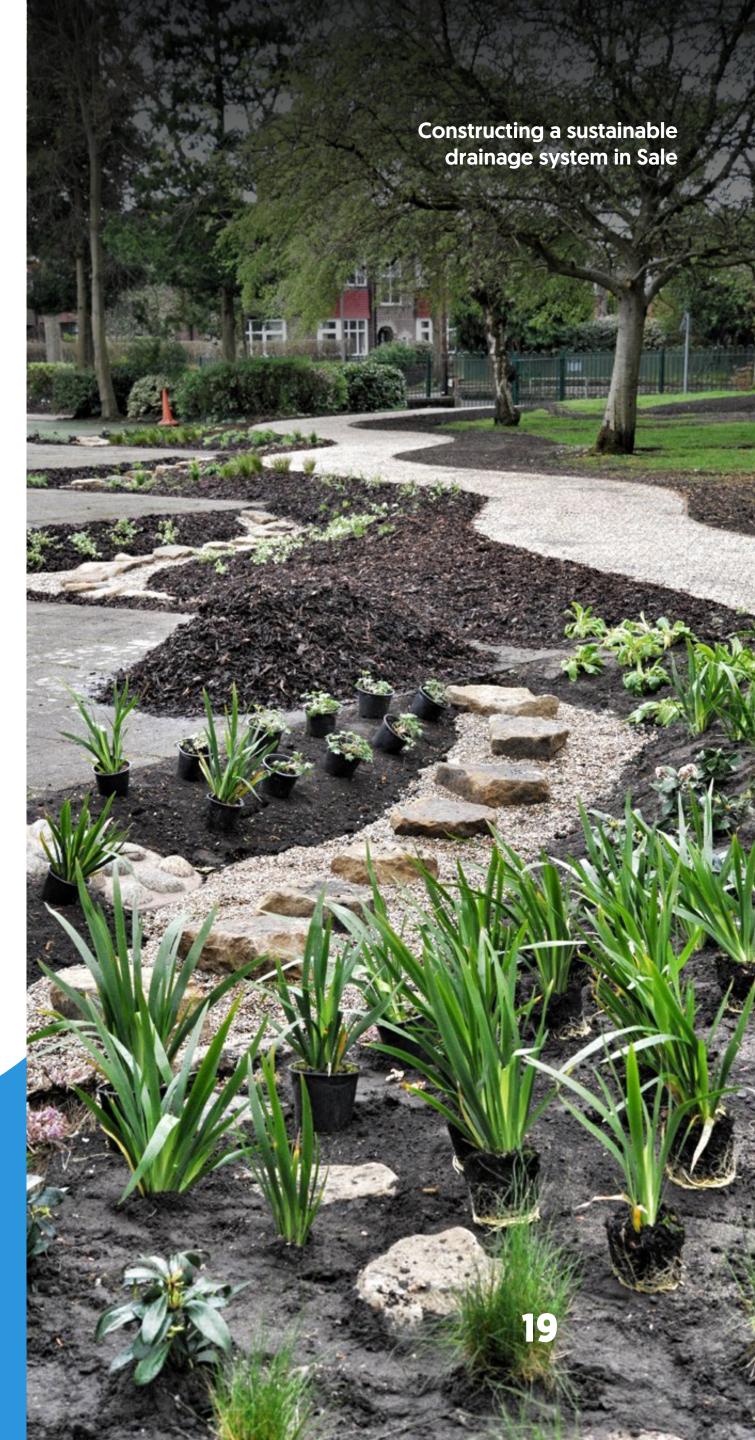
The exception to customers paying through bills is if a company has already been funded to deliver a particular improvement but failed to do so; should that be the case then Ofwat, the independent regulator, will require companies to cover the cost of fixing things themselves.

This means that customers will never pay twice for the same improvement.

The impact on household bills will vary across the country depending on the number of improvements required and how these have been sequenced. The Government originally estimated that the average national impact on bills for the first phase of the Plan to 2030 would be £13 per household per year, with specific bill impacts varying by region. Bill impacts may increase further as additional investment is added beyond 2030 for future phases of the Plan, which is why water companies have also increased the amount of support available to those struggling to pay: two million households now receive some sort of financial support with their bills — nearly double the number in 2023. This includes reduced tariffs, payment breaks and debt forgiveness.

In addition, targeted support is also available for low-income customers who use a lot of water for essential family or health reasons through the WaterSure scheme<sup>13</sup>.







In addition to the National Storm Overflows Plan for England and its associated investment proposals, the Government has developed ten policy ideas that could very significantly accelerate improvements – often for free. It is vital that each commitment is now delivered as soon as possible. Some could be delivered very quickly. We also need to see action on the 18,000 highways outfalls that are currently largely unmonitored and uncontrolled – a greater number of assets than water company storm overflows.

Commitment	Origin of commitment	Why does it matter?
1. Reviewing the Bathing Water Regulations 2013  Date made: August 2022  Commitment to consult in 2023	Storm Overflows Discharge Reduction Plan (page 25):  "it has become clear that the Bathing Water Regulations 2013 should be reviewed. We will consult on policy options in 2023 and aim to complete the review in 2024."	The clunky and complex 'designation' process to create bathing areas needs modernising. We need to develop a new set of rules to ensure that rivers are safe for people to use recreationally, and help get more areas approved to encourage regulators to approve the case for new investment. We also need to expand testing from the existing May - September period and include new risks.
2. Ending the automatic right to connect to overloaded sewers  Date made: January 2023  Commitment to consult in 2023	Defra concluded a review in January 2023. The then Secretary of State, Thérèse Coffey, said in the foreword (page 5):  "Its key recommendation is that we make sustainable drainage systems (SuDS) mandatory and progress with the necessary implementation phase. The Government will now consider how [this] will be implemented, subject to final decisions on scope, threshold and process. A public consultation later this year will help to shape the new approach, with implementation expected during 2024."	Implementation of this commitment would make sustainable drainage the 'norm' - requiring developers to consider options like ponds or planted areas to reduce water flooding off new concrete into drains and overloading sewers. This would significantly reduce the additional spills expected from ever-greater urban creep and building.

Commitment	Origin of commitment	Why does it matter?
3. To assess giving water companies the right to repair defective drains on private property  Date made: August 2022	"(i) Giving water companies the right to repair defective drains on private property. The total length of privately owned drains is greater than that owned by water companies. Many of these private drains are old or poorly maintained and many are on land owned and managed by HM Government. As a result, groundwater seeps through cracks, increasing the volume in the combined sewer network and increasing the risk of spills. Water companies need new powers to repair these defective pipes which are out of their control but a key cause of spills – particularly in areas with high groundwater."	Water companies are, and will be, prioritising the maintenance and upkeep of their own drainage systems to ensure overflow targets are met. However, many of the drains in England are actually privately owned and often poorly maintained. This results in cracks and gaps in sewer pipes, into which rainfall and groundwater floods, overloading the system and causing spills. Water companies often lack the power to repair or line these sewers which in some areas are responsible for a disproportionate number of spills.
4. Ban the manufacture and sale of plastic wet wipes  Date made: April 2023	Defra's Plan for Water (page 5):  "We will tackle every source of pollution from run-off from roads and fields, to banning harmful chemicals and unnecessary use of plastic, including a new ban on plastic-containing wet wipes."	Flushed wipes cause blockages which constrict sewer capacity and can trigger spills and flood homes. Those wipes which contain plastic break down less easily and are more likely to cause blockages. The industry spends significant sums every year clearing fatbergs and blockages, primarily caused by wipes. They also create microplastics which are harmful to the environment. If plastic-containing wet wipes were to be banned, we would see a significant improvement in sewer blockages across the country.

Commitment	Origin of commitment	Why does it matter?
5. Using fines to improve the environment ("Water Restoration Fund")  Date made: November 2022	Defra's Plan for Water (page 32):  "We will channel the money from water company environmental fines and penalties into projects across England which improve the water environment through the newly created central Water Restoration Fund".	Money from fines has not been invested back into initiatives like creating wetlands and re-vegetating riverbanks, which would improve water quality.
6. Forcing highways authorities to take their responsibilities seriously  Date made: August 2022	Storm Overflows Discharge Reduction Plan (page 2):  "[iv] Assessing the role of highway drainage as a rainwater drainage system. Planning Practice Guidance sets out a hierarchy of drainage options to discharge surface runoff, with discharge of surface water to highway drainage preferrable to discharge to combined sewers. In practice however, highway authorities often refuse to allow connection to their systems and there is no legal obligation for them to do so. This forces developers to connect to the combined sewer."	Implementing this commitment would finally start to tackle the significant impact on water quality from highways. This would reduce spills and overloading of sewers by allowing rainfall to travel through road drains where that is the better solution.

Commitment	Origin of commitment	Why does it matter?
7. To assess giving water companies the right to improve drainage systems on private property to reduce impermeable areas connected to the combined sewer network  Date made: August 2022	"(ii) Giving water companies the right to alter drainage systems on private property to reduce impermeable areas connected to the combined sewer network. There are local soakaway solutions, such as rain gardens or water butts, that can be used to reduce rainwater entering the sewage system from individual properties or groups of properties, for example from roofs and patios. Currently, water companies have limited powers to carry out drainage separation work on private property."	Drainage separation work is a critical tool for tackling spills. Capturing rain before it's combined with sewage means it can be treated as a resource, and returned to the environment close to where it originally landed in line with the two principles of good rainwater management as laid out in the Storm Overflows Discharge Reduction Plan. Currently private property owners, including the Government estate, do not always have the capacit to offer these solutions. Water companies, with the experience gained from implementing these solutions into their own property could scale their response to also cover private property, in collaboration with property owners, thus ensuring targets are met faster and sooner.
8. To assess giving water companies the right to discharge clean rainwater back into water courses  Date made: August 2022	"(iii) Giving water companies the right to discharge rainwater to water courses. Water companies need to discharge new and existing single rainwater drainage systems to the nearest water course.  Currently they have no rights to do this, and so riparian owners can either prevent or demand extremely high fees for discharges. This makes separation of rainwater from combined sewage systems a costly or impossible option ."	Water companies need the ability to send clean rainwater directly into rivers. Currently, they are often required to instead divert the rain into sewers that may then become overloaded. Lack of powers in this area also makes it much harder to fully separate sewage and rainwater systems – a prerequisite for completely ending spills in a given area.

Commitment	Origin of commitment	Why does it matter?
9. Consult on making water companies statutory consultees on planning applications  Date made: December 2022	Defra's Plan for Water (page 40):  "We will consult on whether to make water companies statutory consultees on certain planning applications."	Water and sewage companies should be consulted on planning applications for new developments in order to ensure that the water mains, water treatment works and sewerage infrastructure all have sufficient capacity to meet the demands of the proposed development, rather than adding pressure that the system cannot cope with and trying to solve a crisis later on.
10. Ending operator self-monitoring  Date made: November 2021	Repeating a commitment first made by the Water Minister in November 2021, in January 2024 the Times reconfirmed the Secretary of State's position:  "Steve Barclay, the environment secretary, has now told the chief executives of England's main wastewater firms that the era of self-monitoring is over."	Politicians and the public are sceptical about the system of self-monitoring where companies, subject to controls, monitor their own compliance.  Only a regulator can sit in final judgement over compliance with the permits they themselves have issued. We need an increasingly active Environment Agency taking on more responsibility in this area, providing the reassurance demanded by the public over the data.





## What's to come

We will provide an update after June 2024 once
Ofwat, the regulator responsible for scrutinising and
agreeing investment, confirms its first decisions
(known as a 'draft determination').

We will provide a further update after **December 2024**, when Ofwat is expected to confirm its final decisions about investment for 2025-30 (its 'final determination').

Image: Work on a smart sewer



## What if I want to find out more?

The National Storm Overflows Plan for England is based on proposals from each of the water and sewage companies of England. They are best placed to answer questions about individual projects or overflows, or why schemes have been prioritised in the way they have. Customers can access each company's plan via their website. Click the links below to read more:





















#### 1. Water companies propose largest ever investment

https://www.water.org.uk/news-views-publications/news/water-companies-propose-largest-ever-investment - Water UK [02 October 2023]

#### 2. £10.2 billion of new investment

As part of the £96 billion of funding announced across England and Wales as part of business plans submitted to Ofwat in October 2023, around £10.7 billion was earmarked for overflows. We use £10.2 billion for overflows here because this Plan only covers England and does not include the additional investment taking place in Wales. Certain additional (usually non-capital) investment may also be made on top of £10.2 billion but won't have been captured by this central data.

#### 3. Storm overflows evidence project

https://www.gov.uk/government/publications/stormoverflows-evidence-project - Defra's Storm Overflow Taskforce (04 November 2021)

#### 4. Storm Overflow Discharge Reduction Plan

https://assets.publishing.service.gov.uk/media/6537e1c55e47a50014989910/Expanded\_Storm\_
Overflows\_Discharge\_Reduction\_Plan.pdf - Department for Environment Food & Rural Affairs (25 September 2023)

#### 5. Recent Land Cover Change

https://www.theoep.org.uk/sites/default/files/reports-files/Recent%20Land%20Cover%20Change.pdf - UK
Centre for Ecology and Hydrology (January 2024)

#### **6. See Storm Overflow Evidence Project**

https://assets.publishing.service.gov.uk/ media/6182bad4e90e07197867ecd4/storm-overflowsevidence-project.pdf - Stantec (November 2021)

#### 7. Thames Tideway Tunnel

https://www.thameswater.co.uk/about-us/investing-inour-region/thames-tideway-tunnel - Thames Water

#### 8. Storm overflows monitoring hits 100% target

https://www.gov.uk/government/news/stormoverflows-monitoring-hits-100-target - Department for Environment, Food & Rural Affairs, Environment Agency, and The Rt Hon Steve Barclay MP

#### 9. The National Storm Overflows Plan for England will

#### remove nearly four million spills from our rivers and coasts

This figure compares the 'do nothing' position based on spills between 2025 and end 2050 to the forecast number following implementation of projects and improvements.

#### 10. Existing overflow tight controls

All of these overflows must spill no more than three times during a bathing season at the coast (and likely less than that in rivers, subject to an ongoing review by the Environment Agency), with some having tighter limits still.

#### 11. High priority sites

High priority sites include Sites of Special Scientific Interest (SSSIs), chalk streams, Special Areas of Conservation (SAC), Urban Wastewater Treatment Regulations sensitive areas, waters currently failing ecological standards due to storm overflows, Shellfish Water Protected Areas, Special Protected Areas (SPAs), Marine Conservation Zones (MCZs), and Ramsar sites.

#### 12. Climate Research | UK and Regional series

https://www.metoffice.gov.uk/research/climate/mapsand-data/uk-and-regional-series - Met Office

### 13. WaterSure scheme | Help with paying water bills

https://www.citizensadvice.org.uk/consumer/water/water-supply/problems-with-paying-your-water-bill/watersure-scheme-help-with-paying-water-bills/-Citizens Advice [20 February 2020] - Around 1.1 million customers were receiving support at the start of 2023 compared with around 2 million customers as of February 2024.





1355 Water UK

water.org.uk