

# Storm overflows

What they are, why they happen, how they affect bathing water and what we're doing about them.



from Southern Water

## How big is Southern Water's wastewater network?

We operate 367 wastewater treatment sites, more than 3,000 pumping stations and a network of almost 40,000km of sewers.

## We pay for our wastewater to be treated as part of our water/wastewater bill, why aren't you doing just that?

Every day we treat nearly 1,400 million litres of wastewater, to some of the highest regulatory standards in the world. 95% of all wastewater is returned to the environment safely, maintaining river levels and providing a stable ecological environment for aquatic life. 5% is released, usually during heavy or prolonged rainfall and is diluted storm water. We are working hard to reduce that figure.

## Why don't you start investing to improve your assets and stop paying your shareholders instead?

We are, we're investing £2bn between 2020 and 2025, with most going to improving our environmental performance and our assets. We haven't paid our shareholders any dividends since 2017. Instead, all profits are being invested back in the business.

## What is a combined sewer?

This is a system that contains both foul water from homes or businesses and rainwater runoff, treated together at a wastewater treatment site. Foul water from homes or businesses includes water from toilets, sinks and washing machines. Rainwater runoff comes from roofs, driveways and roads. There are over 100,000km of combined sewers still in existence in the UK.

## What are storm overflows?

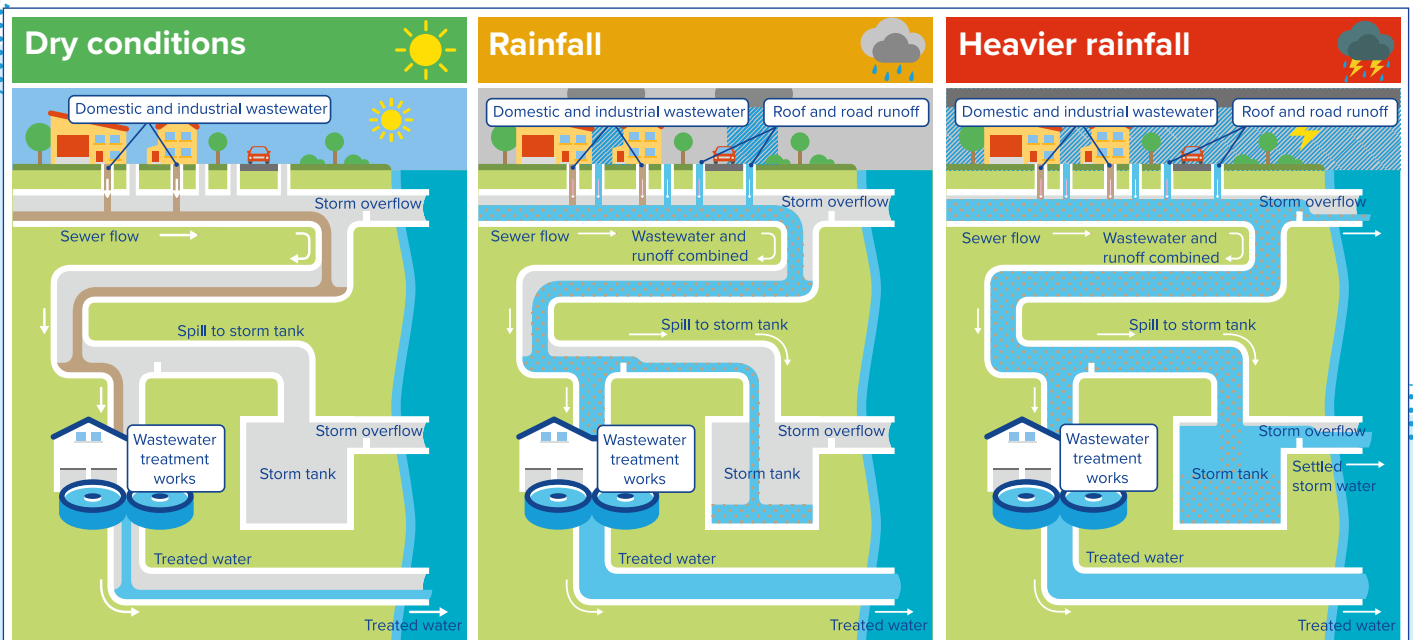
During heavy rain, local sewer networks can struggle to cope with the amount of water entering pipes and storage tanks. When they fill up, we use storm overflows to stop homes, businesses and roads from flooding. These overflows release excess water through outfalls into rivers and the sea. Storm overflows are part of the network's design and are regulated by the Environment Agency. They are used in areas

## Did you know?

The UK sewer network is largely derived from the Victorians, as are many networks across the world. This is therefore a global challenge.



## How sewers are impacted by different types of weather



where the sewers were built to carry both foul water from homes and businesses, and rainwater from roofs, driveways and roads.

### How many storm overflows are there?

There are around 15,000 storm overflows in England and approximately 1,000 in our region. How often they operate and release to the environment varies widely, ranging from infrequent (less than 10 spills per annum) to frequent (greater than 100 spills per annum).

### Where do storm overflows release?

They release into rivers and the sea. To see the location of our coastal outfalls, please visit [Beachbuoy](#).

### How do I know when there has been any storm release activity?

We show all our coastal releases on [Beachbuoy](#), our near real-time storm overflow activity tool. Beachbuoy also informs the user if a release affects bathing waters, taking into consideration the location of the outfall, duration of the release and the tidal conditions at the time. It's worth noting that releases shown on Beachbuoy can occur several days after rainfall, due to the amount of time taken for the water to pass through our network and arrive at the final treatment works.

### Where can I find data on historical storm overflows?

We publish our [flow and spills](#) data annually. You can also view recent release data on [Beachbuoy](#). You'll also see where the outfall pipes are which impact each bathing water.

### What is the difference between a 'storm' and an 'emergency' overflow?

A storm overflow is permitted by the regulator and occurs when the system becomes overwhelmed with excess water. In rare incidences, an emergency overflow is triggered when there has been a technical fault or a blockage in the system. Both storm and emergency coastal overflows are shown on [Beachbuoy](#).

### Are you dumping raw sewage?

Most storm releases are heavily diluted wastewater – up to 95% is rainwater. Storm overflows are not manually operated, they work automatically to release excess water, for example after heavy rain has filled the sewers. These releases are permitted by law and we report all spills to the Environment Agency. Our industry is heavily regulated by the Environment Agency, which sets the permits on storm overflows.



▲ [Beachbuoy](#), our near real-time storm overflow activity tool

### What are the Govt. targets on reducing storm overflows?

Defra published their [Storm Overflows Discharge Reduction Plan](#) in August 2022, which sets targets for the water industry to eliminate storm overflows by 2050 (except for unusual heavy rainfall). We welcome this plan and are already leading the way with some of the targets outlined. For example, we are already hitting the average number of spills per outfall per year, that other water companies are aiming to achieve by 2025. We're therefore confident that we'll not only meet Govt. targets, but that we'll likely exceed them.

### What would happen if storm overflows were banned today?

During heavy or prolonged rainfall, the network would become overwhelmed in several areas – or catchments as we call them – with nowhere for the wastewater to go, but back up into people's homes and onto roads. This would cause major flooding and pollution for the community.

### What are you doing to reduce storm overflows?

We are taking several steps to significantly reduce storm overflows by 2030. As well as working on our own assets and reducing blockages in the network, we have a dedicated task force working in 'Pathfinder' areas to tackle the root causes of storm overflows. We recently published a [Pathfinder Update](#) which outlines our progress and future plans. For the task force's latest news, updates and community studies, please visit our [Storm Overflow](#) pages.

### How can we prevent storm overflows?

Preventing water from entering the combined sewer system during heavy rainfall, is the most sustainable and cost-effective way to reduce storm overflows going forwards.

There are currently three main ways to reduce storm overflows:

- 1. Source control (removing and slowing the flow of rainwater)** – for example using rainwater harvesting, permeable paving, green roofs, soakaways (including tree pits), rain gardens (swales) and planters.
- 2. Optimisation of existing infrastructure** – adjusting connected systems and interfaces, using different mechanical and electrical equipment (e.g. pumps), making improvements in pumping station and storm tank use and control, and using smart network control with increased digitalisation.
- 3. Building bigger infrastructure (building larger pipes, pumping stations, etc)** – this includes wetland treatment (for groundwater), sewer lining/sealing (groundwater), as well as building larger sewers, storm tanks and treatment works.

### Do bathing waters in the UK and across Southern Water's region, meet regulatory standards?

Before privatisation, only 28% of bathing waters in the UK met the minimum public health standards. Today, the situation has significantly improved, with 79 of the 84 bathing waters in our area recognised by the Environment Agency as either good or excellent. We're keen to continue playing our part in supporting water quality across our region.

### Do storm releases impact water quality?

Although storm releases are heavily diluted, they can impact water quality. The impact of a storm release can vary based on the location of the release, the amount released, how long it was released for, and the tides when discharged.

Each outfall/permit is designed to consider the dilution factor, sensitivity, and amenity of the watercourse. We alert local authorities when there is a release.

### Can you close a beach if there has been a release?

This decision is for the local authority. They manage the beach and are responsible for public health. We can advise when there has been a release as we have installed alarms and sensors to alert us; these have been installed on 98% of our storm overflow sites but will be on 100% by 2025. A release rarely results in a beach closure due to the locations of our outfalls, the length of time they're used, and the amount discharged.

### Is Southern Water responsible for bathing water quality?

We are a key custodian of water quality, but there are several factors that all impact water quality, these include storm releases, agricultural run-off, animal waste and marine activity. We recognise that we must play our part in protecting rivers and seas and be catalysts for change.

### Why don't you stop new developments connecting to your network?

We have no statutory rights to prevent new connections on our network. We can only make recommendations to local authority planning teams.

### Are combined sewers still being built?

Modern systems have one pipe for foul and one for surface water. The surface water pipe releases rainwater back to the environment. Separate sewer systems have been built in the UK since the 1960s – before this, the sewers were combined. We have no legal powers to prevent new connections being made to existing combined sewers.

## What we do to prepare when we know a storm is coming

**When we know that heavy rain is forecast, we immediately begin a series of checks and actions across our wastewater sites, including:**



**Site-specific checks** – This includes a review of site action plans and permit conditions, which means checking screens are working, our storage tanks are empty, etc.



**Logistics** – We order in additional tankers so we're prepared for flooding incidents or pollution risks.



**Manpower** – We make sure that our high-risk sites are manned 24/7, and we also place additional people on call across the teams (for tasks such as maintenance).



**Power supplies** – Additional standby generators are checked on site, particularly when lightning or high winds are forecast.



**Intensive care** – Sites that are considered to be high risk are added to an intensive care list, which means they have additional checks and specific plans in place, if things go wrong.

# How we're tackling storm overflows

We have set up a Clean Rivers and Sea Task Force to take action and help us to reduce the use of storm overflows in our area.

- The task force is a dedicated team that is central to Southern Water's drive towards significantly reducing the use of storm overflows by 2030, and manage catchment flow.
- The establishment of the task force indicates Southern Water's commitment to ambitious targets and is a highly important workstream within the business.
- The task force is responsible for delivering pathfinder projects over the next two years, and will seek to establish strong partnerships to ensure their success.
- In parallel, we will build and deliver a regional plan to reduce storm releases between now and 2030.



## The Harbours and the South Downs

We plan to target four areas where we know that groundwater is getting into our network. Exact locations will be chosen after we've completed local surveys.

We'll be sealing around five kilometres of private and public sewers and constructing up to four wetlands.

This work will reduce releases entering Chichester Harbour and other water sites and is part of our wider WINEP environmental programme for the next investment period 2025–30.

**Main driver:** High number of storm releases into the Harbours, enhanced knowledge of wetlands.

**Root cause:** groundwater getting into the network.

## The Solent, the Isle of Wight

This includes large parts of the Sandown area, which includes around 90% of the wastewater treatment for the island. We'll be specifically targeting 22 storm overflows with projects in Gurnard, Cowes, Fishbourne, Wotton, Yarmouth and Freshwater.

**Main driver:** Impact to shellfish waters, frequent spills, customer interest

**Root cause:** large volumes of rainwater (surface water)

- 15 pumping station improvements
- 10 surface water misconnections redirected
- 6,000 household downpipes fitted with slow the flow measures
- 600 non-household downpipes fitted with slow the flow measures or redirected
- 30 roadside sustainable drainage schemes installed
- 1 wetland constructed

These measures will reduce rainwater run-off over a non-permeable area of around 35 hectares. In turn, this will reduce the amount of water that enters the combined sewer system, leading to a minimum 20% reduction in storm releases by April 2025 (based on 2020 baseline).

## North Kent and the East

We'll expand our projects in Kent: Deal, Margate and Whitstable and introduce a new project at Fairlight East Sussex.

**Main driver:** Impact to shellfish waters, frequent spills, customer interest

**Root cause:** large volumes of rainwater (surface water)

The team will target five overflows with the following:

- 1 Treatment works optimised
- 2 pumping station optimised
- 8 surface water misconnections redirected
- 2,000 household downpipes fitted with slow the flow measures
- 200 non-household downpipes fitted with slow the flow measures or redirected
- 10 roadside sustainable drainage schemes installed

These measures will help to reduce rainwater run-off from a non-permeable area of 15 hectares. In turn, this will reduce the volume of water entering the sewer system, leading to a minimum 20% reduction in spills by April 2025 (based on 2020 baseline).