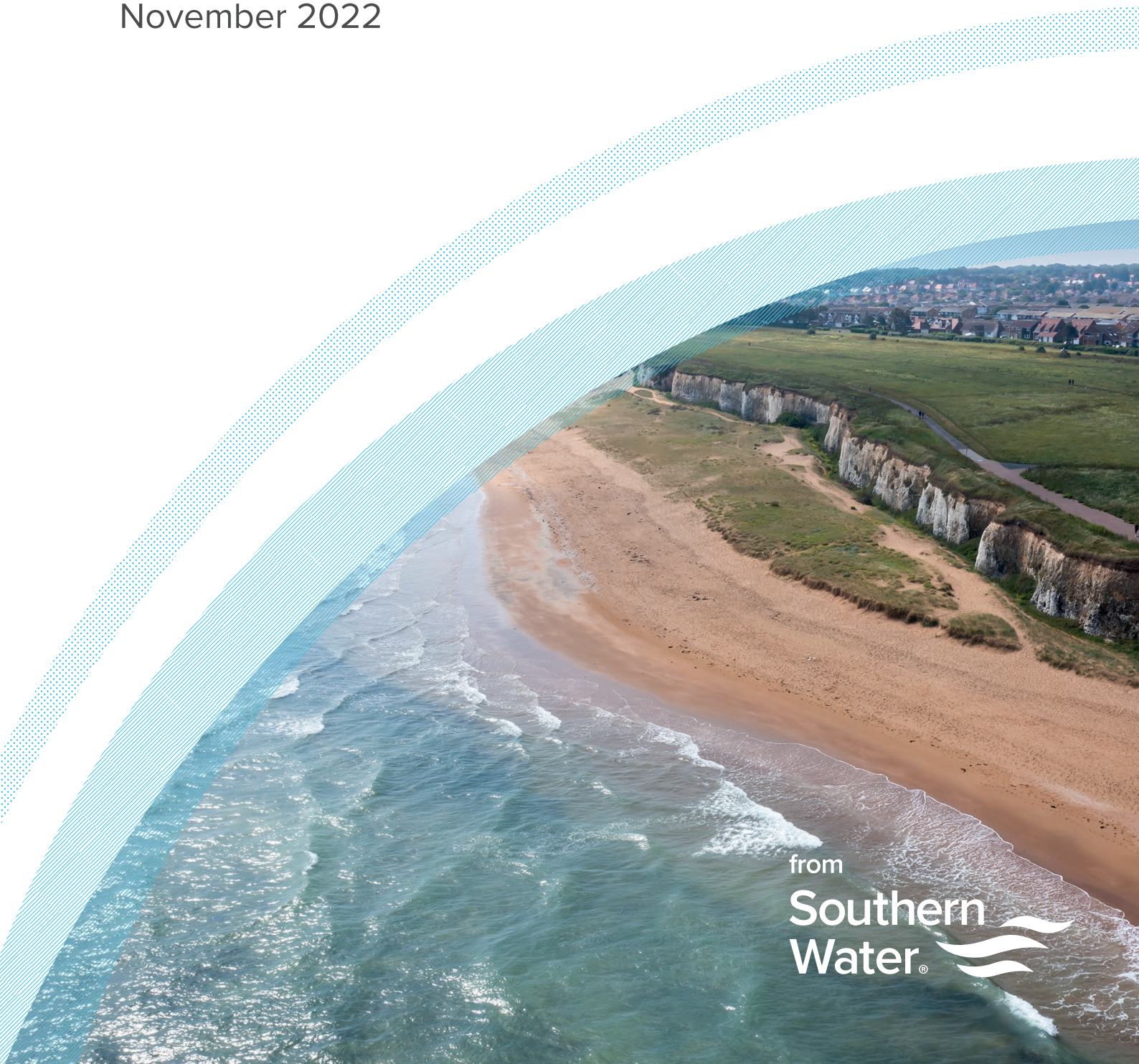




Bathing Water Season Update

from our Clean Rivers and Seas Task Force

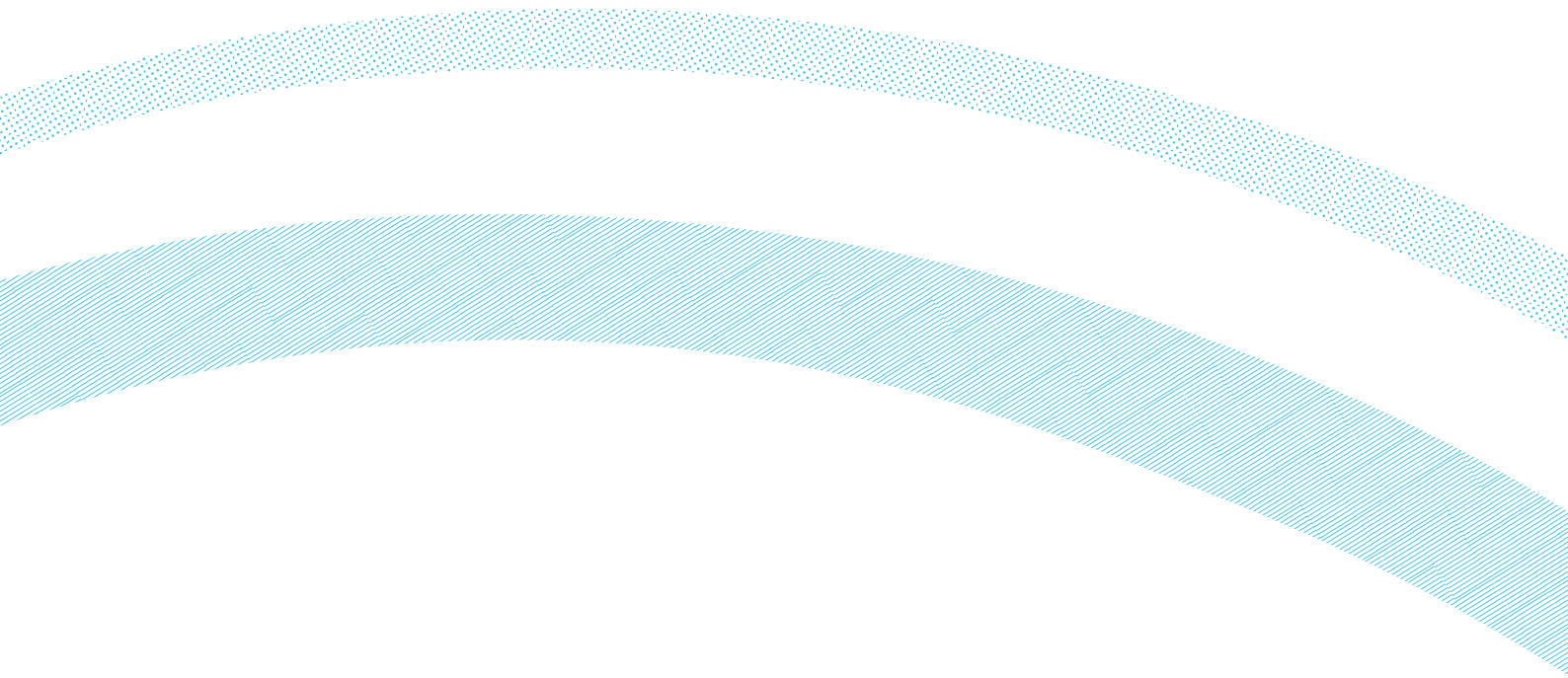
November 2022



from
**Southern
Water** 

Contents

3	Foreword
4	A guide to storm overflows
5	Our performance results – release data
8	An update on our Clean Rivers and Seas Task Force
9	Caring for our coastal bathing waters
11	Improvements to Beachbuoy
12	Our latest pilot project – water quality testing buoys
13	Bathing water results – May to September 2022
15	Next steps



Foreword

The use of storm overflows and their impact on water quality, particularly across coastal regions, has been in sharp focus over recent months.

Across the country, customers, community groups and wider stakeholders all want to see the use of storm overflows reduced. This is not just something that Southern Water agrees needs to change, but Government and regulators too.

Storm overflows were designed to act as pressure release valves to stop homes and business from flooding. Climate change causing sudden, heavy bursts of rain, and urban creep in the form of increased hardstanding surfaces such as roads, paved gardens and extensions, means that when it rains, water cannot be absorbed back into our environment via green spaces. Instead it flows into a sewer system that was simply not designed to cope with the sheer volume of run-off that it now receives.

If we are to significantly reduce the use of storm overflows then we need to get to the heart of the issue. We need to reduce the amount of water entering the system and this means working with a wide range of stakeholders including highways, local authorities, planning teams, agriculture, regulators and Government so that the entire eco-system works together to slow and even stop the flow of surface water.



We also recognise and know that there is more that Southern Water can do. And while many of the changes we can make will take time, we have continued to make positive progress. In this report you'll find updates on storm overflows, the impacts weather events have on our operations, improvements to our Beachbuoy service, an update on our Clean Rivers and Seas Task Force (previously our 'Storm Overflows Task Force'), and news of our pilot projects being tested to capture new data about water quality.

We have also shared in this report our release data for this year's bathing water season. While the drier weather will have been a contributing factor, during the 2022 bathing water season (May–September) our combined sewer overflow (CSO) releases nearly halved when compared to last year – from 891 in 2021 to 488 in 2022. While this is a very tangible demonstration that we are going in the right direction, we know we can't, and won't, stop there. Our Pathfinder projects are an active demonstration of some of the immediate actions we are taking.

Given the significant infrastructure that's involved, it's going to take investment, hard work and dedication in the years ahead to bring about the long-term change in the health of our rivers and coastal waters that everyone wants to see. Having spoken at the House of Lords enquiry last month I am clear about how we all need to work differently, and at Southern Water we are committed to playing our part. We will be announcing our ambitious plans in the coming months so we can move even faster on tackling this issue

Lawrence Gosden
Chief Executive Officer

A guide to storm overflows

Helping our customers and local community to understand how storm overflows work and why we use them is just one small part of partnership working, with lots of information on our website.

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 pressure relief valves built into the network – known as storm overflows – to stop homes and businesses from flooding. These overflows release excess water through outfalls into rivers and the sea. They're used in areas where the sewers were built to carry both wastewater from homes and businesses in addition to rainwater from hard surfaces like roads and roofs. Most storm releases are heavily diluted wastewater – up to 95% is rainwater – but we know that storm overflows are distressing to experience and see in our rivers and coastal areas which is why we are so focused on tackling that last 5% of wastewater that is released untreated.

Today, because of urban creep - increased hard-standing surfaces such as paved gardens and patios, extensions, roads and concreted areas – more water runs off into drains and sewers rather than soaks back into the environment naturally via green spaces. Climate change and specifically intense rainfall only amplifies the effects.

Storm overflows are part of the design of the sewer system and are regulated by the Environment Agency. 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). The frequency of use is based on a range of factors including the proportion of non-permeable area (hardstanding) which is connected to the sewer.

Unfortunately, because the system design dates back many years, if we were to block up all storm overflows today, the next time the system was to become overwhelmed, wastewater would have nowhere to go but back up into people's homes and onto roads, causing major flooding and pollution for the community.

We know that any untreated sewage going into our seas and rivers is unacceptable. That is why we're working hard to stop that happening by investing and acting now. This will take many years and billions of pounds to resolve, but we are determined to achieve this as quickly as possible for our customers while also ensuring we are using customers' money wisely.

Going forwards, slowing or preventing water from entering the combined sewer system during heavy rainfall is the most sustainable and cost-effective way to reduce their use. There are currently three main ways to reduce storm overflows:

- 1 Source control (removing and slowing 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** – this includes wetland treatment (for groundwater), sewer lining/sealing (groundwater), as well as building/improving larger sewers, storm tanks and treatment works.

Our priority is to assess which methods work best across each of our local communities and implement the results working with local partners, community groups and authorities. We are doing this across a range of projects piloting different approaches and new technologies.

Our performance results – release data

Southern Water has one of the highest levels of storm overflow monitoring across our network at 98%. By the end of 2023, 100% of our CSOs will have monitoring.

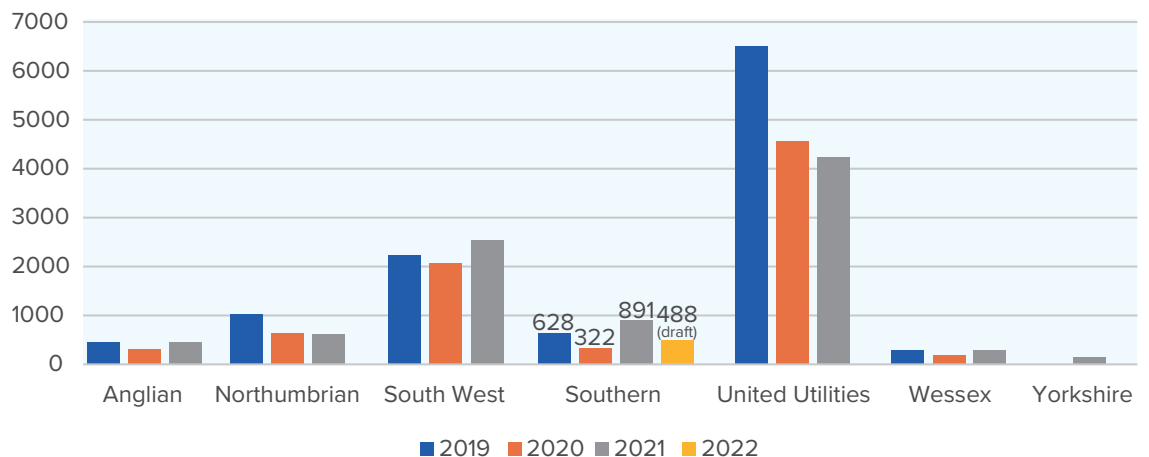
The annual bathing water EDM (event duration monitoring) return is submitted to the Environment Agency by all water companies with designated bathing waters according to their standards. It includes all releases from May to September from overflows that impact designated bathing waters.

These figures are all presented in the 12/24 counting method, a method specified by the Environment Agency to normalise the duration of spills. This method allows for a more reliable comparison of relative performance.

Our recent draft submission to the Environment Agency for the 2022 bathing water season shows a reduction of 45.2% on 2021, from 891 to 488. This is predominately due to the dry summer we experienced and resilience improvements to our pumping stations. While we know we have further to go, we have seen solid improvement. *Once the Environment Agency has validated the data for the industry it will be available late November/early December.*

Bathing water EDM returns (2019–21) Total reported releases (12/24 count)

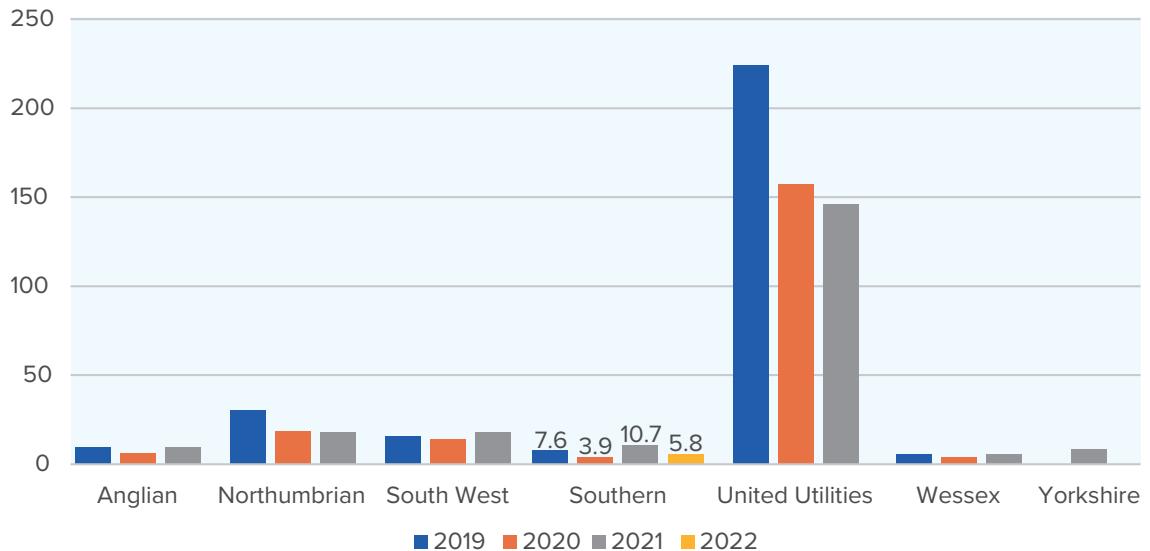
Source: Environment Agency data.



	2019	2020	2021
Anglian	450	307	453
Northumbrian	1,020	630	611
South West	2,231	2,062	2,543
Southern Water	628	322	891
United Utilities	6,508	4,559	4,227
Wessex	283	189	280
Yorkshire			156
Average	1,853	1,345	1,309

Our performance results – release data continued

Mean number of releases per bathing water Source: Environment Agency data.



	2019	2020	2021
Anglian	9.4	6.4	9.4
Northumbrian	30	18.5	17.9
South West	15.5	14.3	17.7
Southern Water	7.6	3.9	10.7
United Utilities	224.4	157.2	145.8
Wessex	5.9	3.9	5.8
Yorkshire			8.2
Average	49	34	31

This data enables us to compare how we are performing relative to the other water and waste companies, sometimes referred to as WASCs. The total number of releases is divided by the number of bathing waters each WASC has, making the comparison fairer to assess.

What is a 'dry spill'?

Storm overflows are designed to work during periods of rain so that homes and business are not flooded. These releases are typically heavily diluted with rainwater and in most cases are consented releases permitted by the Environment Agency.

Storm overflows can also operate on days of no rain and these are sometimes referred to as 'dry spills'. Dry spills are not automatically unconsented and can occur for a variety of reasons:

- 1 Groundwater infiltration** – pressurised ground water can squeeze its way into pipes (both public and private) and overwhelm the network and require overflows to prevent flooding of the catchments.
- 2 Drainage time** – the size and complexity of the area drained by the sewer and the network itself means some areas take days to drain down after rainfall.
- 3 A failure or an emergency situation** – a failure of a pump or a power failure could result in a release event.

Like all water companies, Southern Water has a range of permits issued by the Environment Agency which outline what is classified as a consented and unconsented release.

These permits take into account where a release can be made, the dilution factor, tides, sensitivity as well as the specifics of the receiving watercourse.

Typically, permits state how much stormwater we have to retain in a storm tank together with how much flow we must pump through the treatment process before we can release it.

We are fully transparent, and every release is reported to the Environment Agency making it clear whether they are consented or not consented.

Any unconsented release is unacceptable and our large programme focuses on reducing these and prioritises the most impacting. More details can be seen in our **Pollution Incident Reduction Plan**.



An update on our Clean Rivers and Seas Task Force

To take action and help us reduce the use of storm overflows in our area, we set up our Clean Rivers and Seas Task Force in 2021.

This dedicated team is central to Southern Water's commitment and drive to significantly reduce the use of storm overflows using the approaches described on page 4.

Over the next two years, the Task Force will be delivering six Pathfinder projects. These have been identified because they are in areas that present specific challenges either due to a high volume of storm overflow spills or because they require an innovative approach to tackle local wastewater treatment issues.

Each project is piloting nature-based solutions alongside innovative engineering techniques and technologies.

From slow-drain water butts to sustainable urban drainage systems like rain gardens, swales and green roofs we've already started working in partnership on the Isle of Wight, the Pan-Parishes* in north Hampshire and in Deal, Kent. Further work in these catchments will continue into 2023 alongside planned Pathfinder projects in Margate and Swalecliffe in Kent and Fairlight in East Sussex



Our **website** has more detailed information about the individual Pathfinders and the progress we are making. We have published individual reports for each project which details our progress. We'll be updating these regularly as our plans and progress develop.

**the Pan Parishes include the villages of Amport, Monxton, Thruxton, East Cholderton, Kimpton and Fyfield.*

Caring for our coastal bathing waters

We care about our coastal beaches and the impact we can have on them, however there are many things that can affect water quality.

Releases from our storm overflows have reduced by nearly half during this year's bathing season. However, it's not just releases that can affect water quality, there can also be an impact from how the beaches are used, seabirds, decaying seaweed and algal blooms, as well as the surface water run-off from roads and agriculture.

Here are some examples of prominent storm overflows across our region and how we are tackling them.

Case study 1:	Actions:	Investment:	Release data:*
Swalecliffe, Kent In Swalecliffe there is significant excess water in the network. This means that it often sees the permitted use of storm overflows.	<p>We want to reduce the number of short duration releases. At the wastewater treatment works we are replacing inlet screens, building a new short sea outfall and optimising the storm tanks to capture and treat more stormwater. We are working hard to better understand the root cause within the catchment so that we can more effectively manage the flows through tree pits, swales and rain gardens. All these nature-based solutions are designed to provide sustainable drainage to avoid the need for storm overflows. We are also trialling a water quality monitoring buoy off the coast at Tankerton (see 'Our latest pilot project – water quality testing buoys' in this report) and we are working with Canterbury City Council trialling a new handheld device to carry out sampling across six locations of the coastline across the winter.</p>	£22 million over five years	2021: 68 releases 2022: 37 releases

* Releases are presented in the 12/24 count method and therefore will appear different to data on Beachbuoy.



Case study 2:	Actions:	Investment:	Release data:*
Margate, Kent Margate Pumping Station can quickly jump from a 'Dry Weather Flow' of 250 litres per second, to over 8,000 litres per second in a matter of minutes.	<p>We have made significant improvements to the pumping station control and ancillary systems, and we now have 24x7 on site teams. We are seeking to understand the source of all the water in the area with a view of removing enough to reduce the stress on pumping stations and storm overflows. It is going to take investment and partnership working by local authorities, councils and the local community to fully address the challenges we face. As part of this we are implementing a scheme across 18 schools in the area to deliver sustainable drainage. This is being jointly funded by Southern Water and the Department of Education as part of a wider £1.6 million programme.</p>	£12 million over five years	2021: 4 releases 2022: 0 releases

* Releases are presented in the 12/24 count method and therefore will appear different to data on Beachbuoy.



Case study 3:	Actions:	Investment:	Release data:*
Hastings, East Sussex Hastings is a good example of the challenges faced when wastewater is fed into the surface water system as a consequence of misconnections by homeowners. This can often mean that waste and surface water drain onto a beach untreated.	<p>Working with the Local Authority and domestic property owners, we have found over 50 misconnected properties. Over a million litres of wastewater usage* has now been redirected correctly into the wastewater treatment network.</p> <p>* Numbers are based on calculating average waste made per year, per facility, per person in an average size household of 2.4 people.</p>	Almost £700,000 over four years invested in proactively investigating misconnections in coastal areas across the Southern Water region.	2021: 14 releases 2022: 2 releases



* Releases are presented in the 12/24 count method and therefore will appear different to data on Beachbuoy.

Case study 4:	Actions:	Investment:	Release data:*
Gurnard, Isle of Wight Sandown on the Isle of Wight saw the largest number of storm overflow releases in 2020. Gurnard and Cowes are two areas within this catchment area where we are focusing our efforts to significantly reduce the use of overflows.	<p>Sandown treatment works cleans and recycles over 90% of the island's wastewater which then supplies eight urban areas. This means that we can pilot a range of different approaches. We have started with our own sites and are optimising the control of pumping and storage to balance stormwater flow. We are offering free planters and stormwater capture devices to properties with large roofs and car parks. For our household customers we have run a pilot in Havenstreet to demonstrate the positive impact slow release water butts can have. We are also working closely with Isle of Wight Council and the Environment Agency to identify opportunities where we can improve roadside drainage using tree pits, rain gardens and swales.</p>	Over £5 million over the next two years	Gurnard: 2021: 145 releases 2022: 91 releases

* Releases are presented in the 12/24 count method and therefore will appear different to data on Beachbuoy.



Improvements to Beachbuoy

In recent years we have led the industry with our open and transparent approaches to reporting.

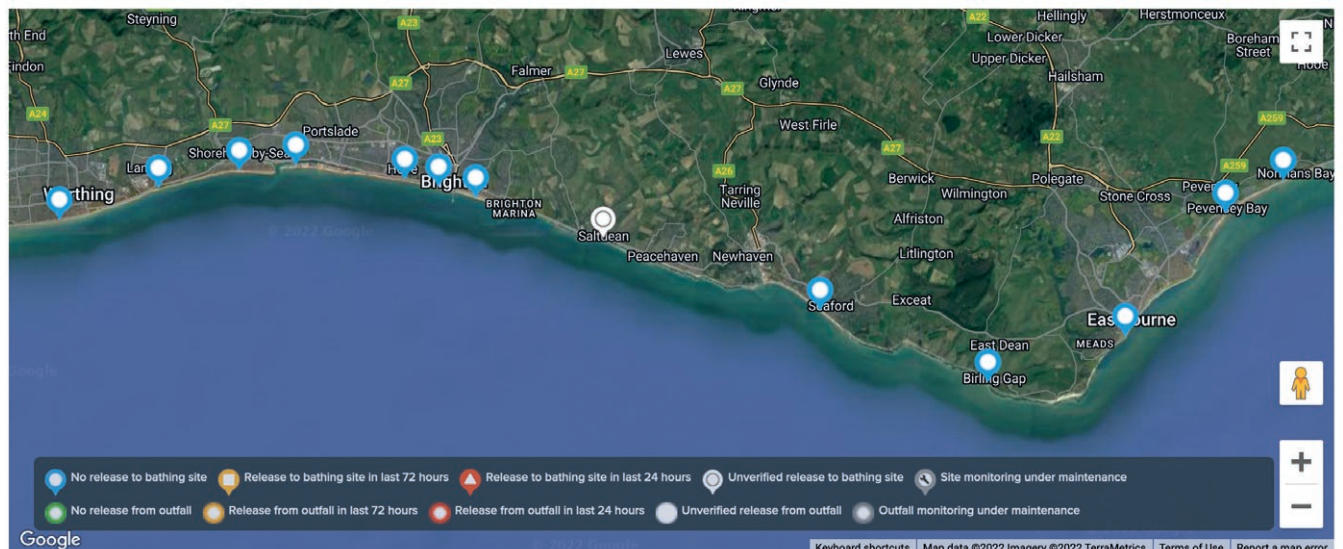
Our Beachbuoy tool provides near real-time information about storm release activity near coastal bathing waters through an interactive map, pop ups and release table. This 24/7 reporting provides information about any release and its frequency.

We regularly listen to feedback from our Beachbuoy User Group which includes councils, campaign groups and bathing water users. Following feedback, we released an upgrade in September 2022 that enables Beachbuoy to now account for tidal conditions. This means that the tool also considers the impact a release has

on a local bathing water based on the location of the outfall, the duration of the release and tidal conditions at the time.

If an outfall is a long way out to sea – some are located 3–5 km away from the shoreline for example – and the release is short with tidal conditions meaning there could be no impact on a bathing water, the tool will no longer trigger a warning to users.

We are continuing to provide all the data on our website in the same way that we always did, so our levels of transparent reporting have not changed. However, while previously the Beachbuoy alert cautiously took the worst-case scenario when it was flagged on the app, this could inadvertently cause unnecessary worrying for the public and the tourism industry alike.



7 Day Overview

Select a site to check out a 7 day historical overview

Our latest pilot project – water quality testing buoys

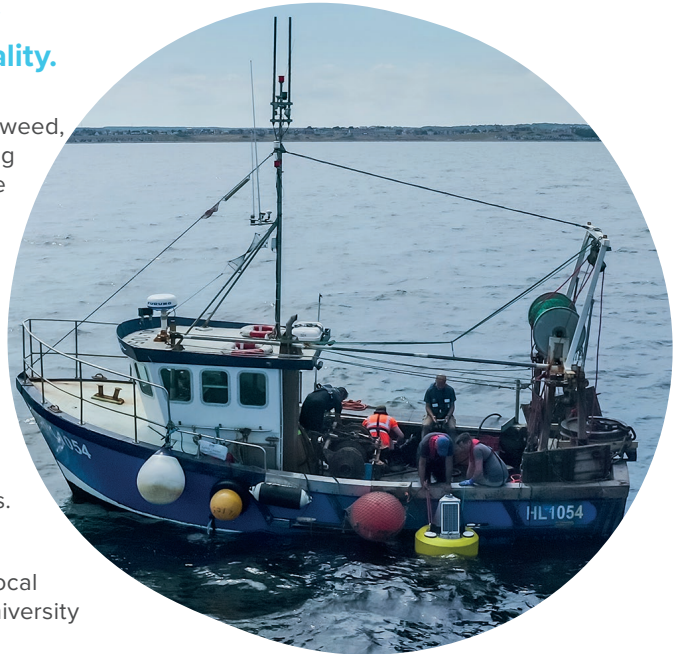
Storm overflows are not the only contributory factors to water quality.

Sea birds and dog excrement, decaying seaweed, algae blooms, surface water run-off including flows from roads and agriculture can all have an impact.

We are currently undertaking a 'first of its kind' pilot project to capture new data about water quality. Two water quality testing buoys have been launched in the sea: one offshore at Tankerton Beach in Kent, and the other off Hayling Island in Hampshire. The projects are testing a new type of instrument which automatically measures the water quality every 15 minutes.

The 12-month pilots are being delivered in partnership with the Environment Agency, local authorities, Proteus Instruments, and the University of Portsmouth.

As the technology is yet unproven in this environment, we must ensure they work effectively before further schemes can be delivered. Data captured by the water quality buoys will be shared publicly on both our website and those of the participating local councils once the instruments are calibrated.



We believe the pilot will provide clear data on water conditions at specific moments in time. It is one of the technologies and techniques Southern Water is exploring to improve how we monitor water in some of our most popular bathing spots. If successful, lessons from these pilots may be used to inform future schemes.

Bathing water results – May to September 2022

Water quality at designated bathing water sites in England is assessed by the Environment Agency throughout the bathing water season and reported annually in November.

From May to September samples are taken weekly (sometimes less frequently) to measure the water quality and it is these samples that underpin the classification that a bathing water is given.

While Southern Water has a key role to play in protecting coastal beaches, releases from our storm overflows are not the only factor that impacts water quality. How the beaches are used, seabirds, decaying seaweed and algae blooms, as well as surface water runoff including flows from roads and agriculture can all make a difference to water quality.

How beaches are classified

Bathing waters are classified by the Environment Agency as Excellent, Good, Sufficient and Poor. We have 84 bathing waters across the Southern Water region*. For the 2022 bathing water season, the beaches have been classified as follows:

Further information about the Environment Agency classification scheme, together with the range of tests and samples taken, is available here: [Bathing Water Quality \(data.gov.uk\)](https://data.gov.uk/dataset/bathing-water-quality)

	2021	2022
Excellent	60	57
Good	20	22
Sufficient	3	3
Poor	0	2

* East Cowes is a new bathing water for 2022 giving an overall increase of one since 2021.

Changes to beach classifications in our region

It is important to note that while some beaches have seen a drop in classification, a number have improved. In all cases where we have seen a decrease, we are working with both the Environment Agency and the Local Authority to better understand the potential cause. In many cases, when we cross check our own release data from our storm overflows we can see that there have been no releases that can be linked to a poor-quality sample taken by the Environment

Agency. While further analysis is required, this suggests that the use of storm overflows is not the contributory factor.

In summary we have seen seven bathing waters go from Excellent to Good, two move from Good to Sufficient and two move to Poor. We have also seen one bathing water increase from Sufficient to Good and three improve from Good to Excellent. East Cowes is a new bathing water for 2022 and has been classified as Excellent.

Beaches where we have seen a change in classification are as follows:

Bathing Water	2021	2022	Change
Bognor Regis (Aldwick)	Good	Poor	↓
Bognor Regis East	Excellent	Good	↓
Brighton Central	Excellent	Good	↓
Broadstairs, Viking Bay	Sufficient	Good	↑
East Cowes	–	Excellent	N/A
Eastbourne	Good	Sufficient	↓
Folkestone	Excellent	Good	↓
Hillhead	Good	Excellent	↑
Lancing, Beach Green	Good	Excellent	↑
Leysdown	Excellent	Good	↓
Ryde	Excellent	Good	↓
Southsea East	Good	Sufficient	↓
St Mary's Bay (Kent)	Sufficient	Poor	↓
Walpole Bay, Margate	Excellent	Good	↓
West Bay, Westgate	Excellent	Good	↓
West Beach, Whitstable	Good	Excellent	↑

Beaches that were classified as Poor

Like many, we are disappointed to see that two of our coastal beaches have been designated as Poor. These are Aldwick in Bognor Regis and St Mary's Bay in Kent. We are taking proactive steps with the Environment Agency and the Local Authority to understand the cause.

When we look at the release data for these two areas, we can see that in both cases, releases have reduced during this period. Aldwick had 22 spills in 2021 compared to 14 in 2022, while St Mary's Bay in Kent reduced from 1 spill in 2021 to 0 in 2022.

Aldwick, Bognor Regis

Analysis has shown that the samples with high levels of bacteria are unlikely to be the result of releases from the operation of Southern Water's combined sewer overflows. Samples from the surface sewer outfalls have seen high levels of bacteria across all locations.

It is possible that developers have incorrectly connected foul drainage directly into surface water sewers. Further samples are undergoing additional analysis, and our misconnections team has already started work using a range of different methods to identify and then either correct- or work with householders to correct – these misconnections if they prove to be the source of the problem.

St Mary's Bay, Kent

Extensive investigations have been carried out at St Mary's Bay, Kent, to identify the potential sources of pollution. These investigations are being undertaken by external consultants, the Environment Agency and Southern Water. Firstly, we need to understand exactly what is happening before we can then put in place an improvement plan.

So far, no single source of pollution has been identified. Results from our coastal monitoring show that combined sewer overflows are not the likely source. Similarly, all identified misconnections have been rectified, foul sewer blockages have been resolved as reported, and a stretch of damaged sewer has been relined. Our investigations are now looking at further sampling to understand whether the high levels of bacteria could be caused by contamination from seabirds or upstream agricultural activities.

Next steps

We know that reducing the use of storm overflows is going to take time and require significant investment.

We are committed to maintaining our industry leading transparency around our performance, as well as maintaining regular updates of the actions we are taking and the progress we are making.

We continue to listen to and work with a wide range of stakeholders across our region. Their feedback, support and action will help enable the partnership approaches that are essential to maintaining and improving our coastal bathing waters, creating environments that our customers can enjoy and a place where our natural habitats thrive.





Find further information at southernwater.co.uk

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The logo graphic for Southern Water, featuring three stylized, wavy lines that represent water.