



**South West
Water**

Pollution Incident Reduction Plan

July 2022 Update



southwestwater.co.uk

Contents

Executive summary	3
An introduction to WaterFit	4
2022 Half year performance overview (January - June)	6
Update on 2021 plan	8
Accelerating investments and projects in 2022/23	10
Storm overflow reduction plan in 2022/23	12
Centre for Resilience in Environment, Water and Waste	13
Case studies	
1. Sewer misuse campaign – Charlestown	15
2. Predictive analytics – Hatherleigh Bridge	16

Executive summary

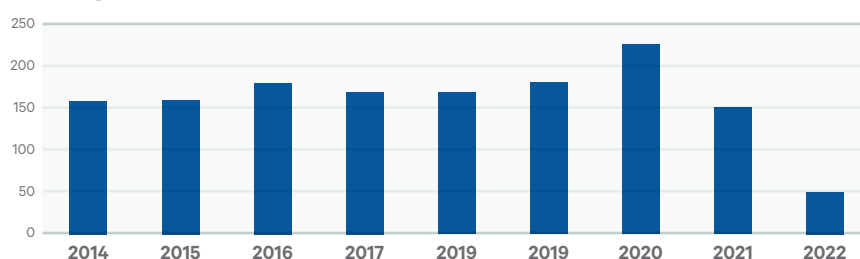
This is an update to our 2021 Annual Review and provides a mid-year assessment of our Pollution Incident Reduction Plan (PIRP) actions and outcomes for the first six months of the year to June 2022.

Current performance highlights the positive progress our PIRP activities are having on driving down pollutions. Wastewater Category 3 pollution incidents are on track to achieve a further third reduction in pollutions than achieved in the previous year.

Pollutions reducing by **1/3**

Zero
Category
1 & 2 events
in 2022

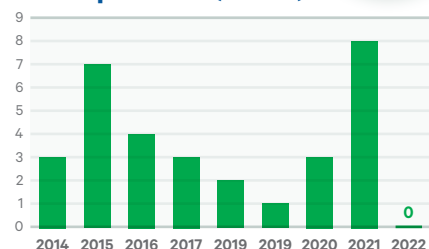
Cat 1-3 pollutions (number)



Encouragingly we also have no Category 1 or 2 pollutions compared to five at the same point in the previous year.

In addition, there has been a continued step change in the percentage of pollutions reported with self-reporting trending at c.90% for the year (compared to c.50% at the same point in the previous year).

Cat 1-2 pollutions (number)



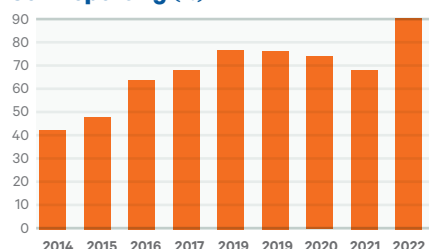
It is clear the PIRP is having a positive impact on performance although we know there is still much more to be done, particularly as we move into the summer holiday period when the demands on our assets and people increase.

It is essential we maintain the positive progress made during the first half of 2022 including the improvements seen in bathing water quality reported in the 2021 bathing water season.

To help achieve this ambition we are accelerating the deployment of 9,000 sewer depth monitors, 54 new inlet screens and an additional 18 rising main schemes (36 in total for the year) accelerated from future years.

Our plans go further in WaterFit, where our strong commitment to protecting and enhancing the environment is reinforced. Our recently launched initiative is targeted at delivering the step change in environmental performance driven by investment and new innovative ways of working across the business.

Self-reporting (%)



90%
self-reporting

An introduction to WaterFit



Protecting rivers and seas together

WaterFit outlines how we will protect our region’s rivers and seas, together. This is not about board pledges or public relations; this is about delivering a tangible step change in performance backed up by credible plans and increased investment, with the support of all our talented employees.

We have already been making strong progress. We’re proud that for the first time ever, in 2021 we achieved 100% bathing water quality right across the region, with 98% rated ‘good’ or ‘excellent’. Last year also saw the publication of our Green Recovery Plan which outlines the steps we are taking to make an even bigger societal contribution. Alongside this, we published our Net Zero Plan to reduce our operational carbon emissions and hit Net Zero by 2030.

Despite these positive steps, we acknowledge we need to do more. We are proud to call the South West home and recognise that water based recreation has become even more popular over recent years, and the pandemic has strengthened the bond we all have with our environment, so now is the time for a step change.

We are accelerating our plans for better river and coastal water quality across our region with WaterFit – going further and faster for the benefit of all.



What are we doing?

We've committed to reduce our impact on our region's rivers by one third by 2025 and going further still, we plan to target zero impact by 2030. On top of this, we will reduce spills from storm overflows to an average of 20 per year by 2025 and deliver zero serious pollutions by 2025.

But we know we cannot achieve this alone. Our action will be supported by our ongoing work with local partners to stop pollutants from regional farmland getting into rivers and seas.

We'll also continue working with our 10 million visitors and 2.3 million customers, so that they understand the important role they play in protecting our region, through considering what they flush and helping us prevent millions of unflushables such as wet wipes entering our systems and causing blockages which harm the environment.

We're targeting a step change in our environmental performance to deliver the change we all want to see. This won't happen overnight, it will take time, and we will be open and transparent about the progress we are making to ensure the South West remains a fantastic place to live, work and visit for generations to come.

We have developed WaterFit to bring together existing plans to deliver multiple benefits, as well as going faster and further with a new ambition, and our talented people and stakeholders working in partnership to improve rivers and seas in the Great South West.

WaterFit recognises that as a business, we are focused on maintaining compliance, driving environmental performance, and re-investing the benefits of efficient delivery to go further and faster.

As a beautiful coastal region, we know that quality of our seaside bathing waters are of particular importance to our customers and visitors. So as we look to focus on driving performance, we will extend our learnings and experiences to rivers – as we do our bit to make the South West the destination for water quality.

Our plans are to invest around **£330 million** in our wastewater assets to deliver our six commitments.

Our six WaterFit commitments are:

- 1 Nurturing healthy rivers and seas**
- 2 Putting nature on everyone's doorstep**
- 3 Creating and restoring habitats**
- 4 Inspiring our local champions**
- 5 Creating a sustainable future**
- 6 Putting people in control**



You can find out more about Our Plan for healthy rivers and seas [here](#).

2022 half year performance overview

Our initial analysis indicates a sustained level of improved performance from 2021. The initiatives put in place already, continue to reduce the number of pollution events. Additionally, using the data derived from the Root Cause Analysis (RCA) process a new set of initiatives have been scoped and will be implemented over the course of 2022/23 to further drive down the number of pollution events.

Total events

In the first six months of the year we have successfully prevented the occurrence of Category 1 or 2 events, a significant reduction from 2021 when there had been five incidents recorded by the end of May. However, we remain focused as we move into the summer period and continue to work tirelessly to achieve our target of zero.

Category 3 (minor) incidents are tracking to our lowest ever level – a third lower than 2021. We remain confident that the new measures being introduced in 2022 will apply additional downward pressure on incident numbers.

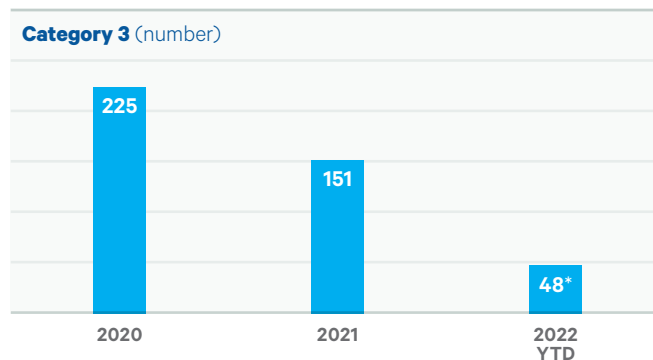
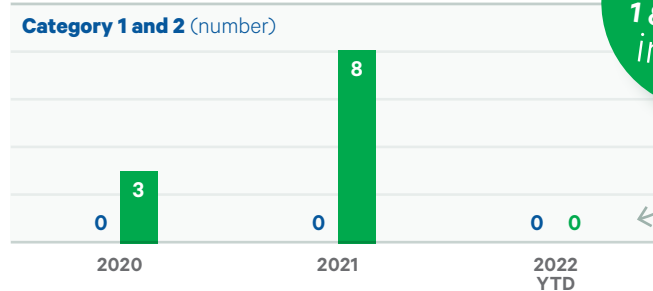
Category 1 and 2 AREA OF FOCUS

Our performance under this measure in 2021 did not meet our expectations. In response to this we reviewed the Root Cause Analysis data from each event and have enacted the following:

- Daily telemetry reports issued to teams to resolve to ensure 100% visibility of works performance
- Risk models updated for activity and data in 2021. In 2022 focus is on the proactive replacement of rising mains which typically take longer to deliver due to complexity and streetworks notices
- 18 rising main locations scoped and passed to supply chain for delivery with 3 completed in Q1. Further 18 sites being discussed with supply chain for acceleration into 2022/23
- Continued roll out of Meniscus, Combined Sewer Overflow (CSO) dashboard and sewer depth monitors
- Targeted management of rising main pressures, through installation of variable speed drives at pump stations.

Pollution Category	Impact
■ 1	→ MAJOR, SERIOUS, PERSISTENT and/or EXTENSIVE impact or effect on the environment, people and/or property
■ 2	→ SIGNIFICANT impact or effect on the environment, people and/or property
■ 3	→ MINOR or MINIMAL impact or effect on the environment, people and/or property

Wastewater pollution incidents

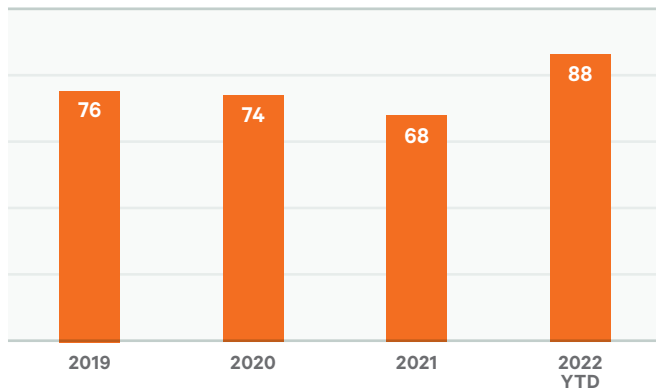


* Data still being verified and agreed with the Environment Agency.

Self-reporting

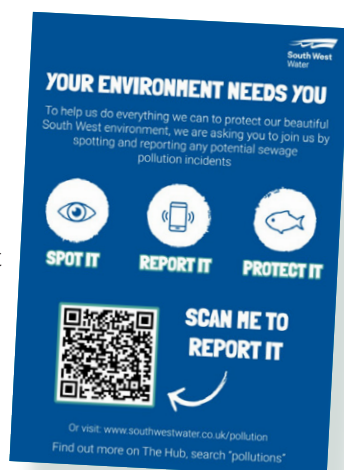
Self-reporting has seen a significant improvement in 2022 and currently stands at our highest ever level. We are confident of maintaining this position for the remainder of the year. Within this figure for all asset types, our self-reporting from Sewage Treatment Works (STW) and Sewage Pumping Stations (SPS) is 92% exceeding the 90% target set by the Environment Agency (EA).

Self reporting – Category 1-3 (%)



Spot it, Report It, Protect it!

Spot it, Report It, Protect it! Is a new internal staff campaign introduced in the early part of the year to maximise the potential of our work force. With over 2,500 employees out enjoying what the environment has to offer in all corners of the region we took the opportunity to tap into this resource. The campaign has helped educate our employees about the risks of potential sewage pollution, what the signs of a potential pollution are and encourages the reporting via a direct link to our 24/7 Service Support Centre. On receipt all reports are assessed and when required an emergency response is initiated.



* Data still being verified and agreed with the Environment Agency.

Source asset type

WWS Pollutions Cat 1-3 year to date comparisons (January to June)

Asset	2020	2021	2022 YTD
STW	43	41	10
SPS	71	35	13
Foul Sewer	61	47	9
CSO	35	11	6
Rising Main	10	15	6
Other	5	2	4
Totals	225	151	48*

Rising mains AREA OF FOCUS

Review of 2021 performance highlighted an increase in the number of pollution incidents from rising mains, the only asset type to show such a deterioration. In response, a review of all rising mains was undertaken and a risk rating applied. 36 locations were identified as requiring intervention to reduce the level of risk.

A three year programme of work was originally planned with an initial £4.2million to be invested at 10 sites in FY 2022/23, a second tranche of investment is planned for 2022/23 made up of an additional 8 projects. The remaining 17 locations will be addressed in 2023 and 2024. Our move towards pre-emptive work packages has been driven by our conversations with the Environment Agency. This program of work to provide additional investment in our infrastructure is a direct response to their input.

In addition to the proactive replacement of rising main, we are engaging with Ovarro to introduce an early warning system for detecting rising main bursts.

Update on 2021 plan

24/7 responsiveness

- Pollution alarms/triggers prioritisation were given highest priority for response 24/7 – internal and external resources increased to provide more cover out of hours enabling more reliable and consistent response reducing burden on standby
- Empowering operational teams using our fast-track fund established to address any pollution risk identified on site
- Alarm prioritisation changes drove quicker response to addressing pollution risk but put initial strain on alarm and response teams. There were some barriers internally and with the supply chain to embed culture change of new way and approach to working out of hours
- Fast-track fund has been extremely effective for our teams to enable them to access funding quickly to resolve issues.

Hotspots

- Capital investment in 210 high risk sites and assets most prone to pollution risk in the prior three years
- 50% increase in investments to reduce pollutions
- Hotspot investment has reduced pollution risk across all hotspot sites where investment occurred – the largest reductions are in Area 1 which was piloted first. Mobilisation of our supply chain alongside the 24/7 working proved challenging and constrained the pace of delivery in Q1.

Proactive

- Deployment of telemetry and data analytics – piloted Meniscus, Innovyze, CSO dashboard and Detelectronics (sewer depth monitors) to move from reactive to proactive. Automatically generated proactive alerts (via email) sent to operational teams for investigation prior to pollution occurring
- Pilots evidenced benefit of approach but response to new proactive alarms and false positives resulted in additional considerable burden on workforce
- High confidence from teams in predictive alarms.

Hotspot and repeat pollution investment plan maps

Area 1



Area 2



Area 3



Area 4



Area 5



Area 6



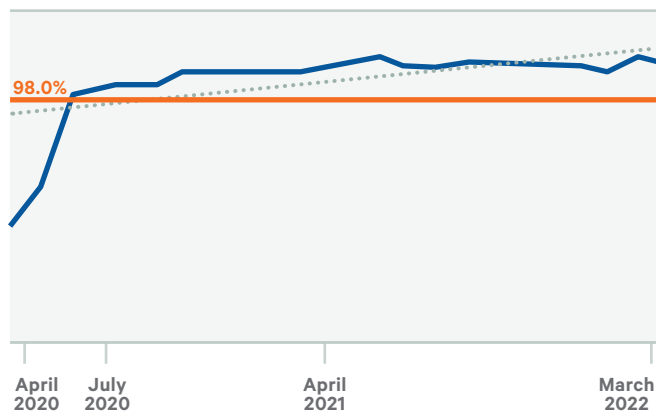
Zero pump out strategy

A continuation of our zero pump out strategy targeting 100% pump availability. This strategy introduced in 2021 helped to significantly cut the number of pollutions from sewage pumping stations and has become a cornerstone of our SPS operational strategy. We are confident it will continue to deliver year-on-year pollution reduction following the 50% reduction achieved in 2021.

In 2022 this strategy has been enhanced to strengthen our commitment to embracing proactive strategies. New additions are:

- Accelerated plans to increase standardisation of pumps across our asset base which will further improve availability of spares
- Replacing SPS MOTs of all 1,208 pump stations with cyclical service visits throughout year
- Resolution of defects are undertaken by a dedicated capital maintenance team supplemented by supply chain partners.

SPS asset availability (%)



84%
increase
in jetting
and vactoring
activity

Root Cause Analysis (RCA)

The formal RCA process established in 2020 for all pollution incidents was further enhanced throughout 2021. All pollution incidents are investigated, and the RCA completed within 48 hours. The outcome of the investigation is then reviewed by the leadership team. Operational teams are required to complete 'work mobile' template providing real time information to manage the incident and information for the EA.

Each detailed investigation looks not just at the specific asset in question but seeks to identify learning for related assets, expanding individual solutions across the catchment. For example, the work on Sewage Pumping Stations (SPS) had identified that they weren't previously subject to robust routine servicing. There is now a dedicated, ring-fenced team SPS.

The RCA investigation process worked well addressing the main challenge of timeliness of resolution. If the solution required is complex it identifies the operational mitigation to be put in place whilst the permanent solution is delivered. The main theme identified by the process were blockages.

Asset	2020	2021	2022 YTD
RCA's completed	606	786	334
RCA actions delivered	254	1,434	235

51%
of issues
identified were
due to blockages

6
times
as many RCA
actions completed
in 2021

Accelerating investments and projects in 2022/23 – moving from reactive to proactive

- **Significant deployment of additional telemetry** including 1,000s of sewer depth monitors, EDMs and flow meters

- **Enhancing 24/7 monitoring**, review and response to additional data and information being received from our telemetry at our control centre – this will be overseen by new additional senior supervisory resource 24/7

- **Embedding AI regionwide** (Innovyze, Meniscus and Ovarro) to process data from telemetry and weather forecasts to predict pollution risk and initiate response to teams

- **Additional proactive rising main replacement programme** at 36 locations including 18 in the year to 31 March 2023. Three schemes complete in Q1 at Imperial Road (Exmouth), Pennance Mill and Bishops Tawton

- **Further hotspot interventions** – asset models have been updated and discussed with operational teams resulting in the identification of a further 51 sites for proactive investment – this will provide additional benefits over and above the FYE of back ended 2021 investments

This will be supported by a continuation of our fast track resolution fund, empowering our teams to address pollutions risk.

Accelerating investments and projects in 2022/23

continued

The net impact of our performance to date this year and our re-invigorated approach to improving our pollutions performance means that our performance trajectory is expected to follow the following profile to our original commitment of 33 Cat 1 – 3 pollutions by 31 December 2024.

		2020	2021	2022	2023	2024
Total number of cat 1-3 pollutions (normalised)	→	130.9	86.6	39.6	24.7	18.9
24/7 responsiveness	→	-20	-10	-3	0	
Hotspot programme	→	-35	-27	-3	0	
Proactive mains replacement	→	0	0	-6	-3	
Zero pump out strategy	→	-15	-10	-5	-2	
Move to proactive (telemetry, SDM and AI)	→	-4	-35	-9	-5	

Storm overflow reduction plan in 2022/23

We recognise the increase in focus on the environment and in-particular the growth in use of our region's rivers for recreational activities. In response to the greater focus and change of use we are focusing further activities on reducing overflows from our assets to the environment.

In line with our WaterFit commitments, supported by our Green Recovery Plan we are targeting a reduction in overflows from our assets and have committed to extending our existing network of storm overflow monitors (EDMs). By the end of December 2022 we are accelerating our commitment for all storm overflows to be monitored, giving us important data on the number and duration of spills across the entire network.

Delivering this ambition, we will upgrade assets and increase storage at wastewater treatment works, pumping stations and network overflows across the region, as well as identifying ways to reduce surface water flows and groundwater infiltration into the wastewater network. The programme of work being introduced to achieve this includes:

- Deployment of all remaining EDMs to December 2022 – this deployment will be accelerated ahead of legislative prescribed dates
- Establishing a new 'SpillSure' system and team used to triage all EDM and flow meter data – this enables 24/7 review. Operability will be proactively managed to ensure 90% operability is achieved
- To aid desktop review of storm overflow operation CCTV will be installed at all storm overflows to confirm validity of spill data and response
- Extending our permitting team to undertake more site inspections to validate investment requirements, including any SOAFs completed – this will be at site rather than asset level
- Establishment of a dedicated capital maintenance team to undertake planned maintenance of all EDMs alongside any reactive investigation and response
- A programme of 54 inlet screen enhancement / replacement on a prioritised basis has been developed and will be delivered as a discreet programme of work
- A programme of site enhancements across 59 sites to increase their resilience and reduce frequency of spills
- A programme of 58 storm storage schemes to reduce spill numbers and duration.

68% reduction in CSO pollutions

137 SOAFs to be completed

100% of EDMs to be installed

54 new inlet screens

Real time reporting

Spills website

Storm overflow fast-track resolution fund

Inland river water bathing pilot

59 wastewater treatment upgrades

58 storm storage enhancements

Centre for Resilience in Environment, Water and Waste (CREWW)

Designed to solve some of the most pressing global environmental challenges of our time, CREWW will be based on the University of Exeter's Streatham Campus and will conduct world-leading research into the provision of safe and resilient water services in the UK and overseas.

The principal focus for CREWW continues to be the identification and development of projects and key capital investment that will enable research and development into challenges SWW faces and to engage the research excellence at the University of Exeter.

Currently there are five projects being delivered through the CREWW partnership with a total budget of £3.1 million, of which £700k is capital investment and £2.4 million is revenue investment. The projects are:

- A. Upstream Thinking Programme** – flagship Nature Based Solutions project.
- B. Nature for Climate Change project** – scientific support from The University of Exeter for the South West Peatland Partnership's Nature for Climate Peatland Grant Scheme Project. The outcomes will help guide restoration practices and quantify the benefits of restoration efforts.

- C. Data Science MSc** – Two SWW employees are undertaking the MSc Data Science provided by University of Exeter to upskill and strengthen South West Water's capability in Data Science and AI.
- D. Microplastics in Biosolids PhD** – This PhD will be to determine whether the net impact of biosolid application to land is positive or negative in terms of soil function.
- E. Leakage PhD** – This PhD will use machine learning/ pattern recognition to enable prediction and optimisation techniques to improve the accuracy of leak detection.



CREWW programme launch event “Design Sprint”

The event was a good success with over 70 attendees working collaboratively to co-design solutions to some of the pressing operational challenges that SWW, and indeed the wider water sector, faces – now and into the future.

Numerous projects were conceived across a broad range of themes covering wastewater and pollutions challenges, Net Zero customer vulnerability as well as microplastics and network related asset and data challenges.

Seven of these projects are now in a position to be further developed. The most mature, currently is the CREWW Microplastics Lab, aiming to establish a state-of-the-art facility that will enable the development of analytical techniques and methodologies for analysis and characterisation of microplastics in sludges, as well as other inputs/outputs from South West Water operations, such as drinking water and CSOs.



Net Zero project discussions between South West Water subject matter experts and University of Exeter academics

Case studies

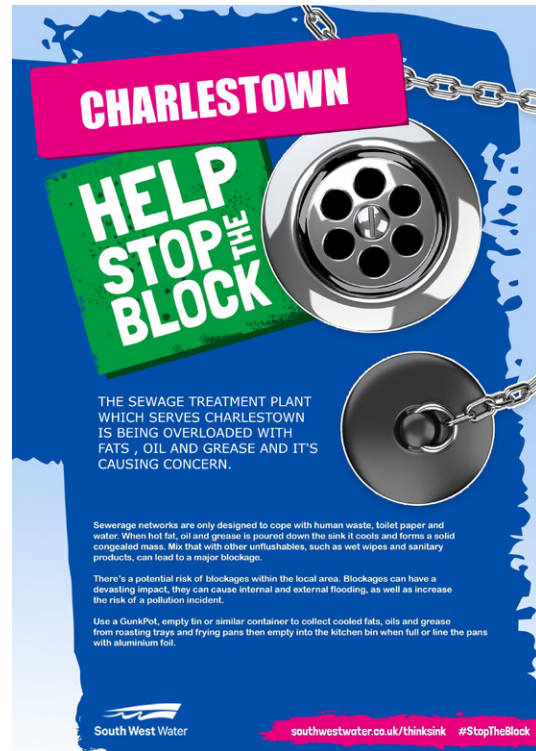
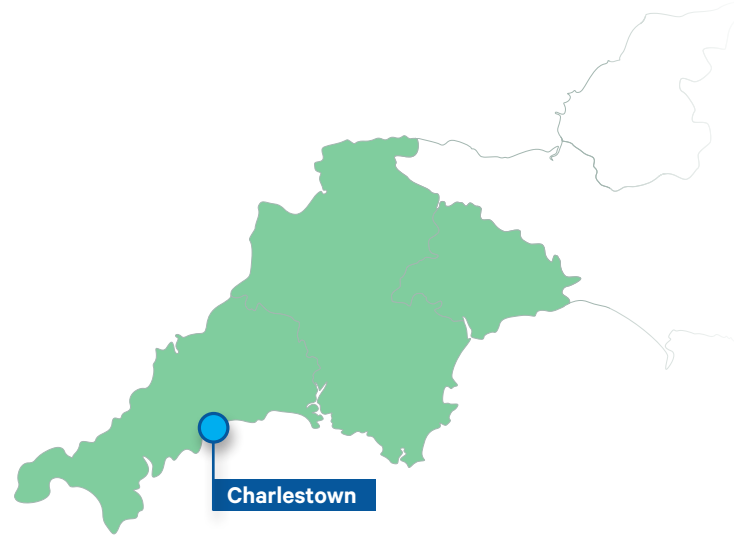
Case study 1

Sewer misuse campaign – Charlestown

For many years South West Water have run customer behavioural campaigns to prevent sewer misuse and prevent blockages causing pollutions. Over 10% of pollutions in 2022 have been caused by sewer misuse by third parties.

Analysis of operational activities within the Charlestown sewerage catchment identified the sewage treatment works had been receiving unprecedented volumes of Fats, Oils and Greases (FOG) from the sewerage network. A build-up of FOG in the sewerage network, at sewage pumping a stations and at the sewage treatment works can cause serious operational issues and can ultimately lead to the formation of blockages or equipment failure. Our RCA process has singled out blockages as the most significant contributor to escapes of sewage from our assets.

Between 10 January and 7 February the Sewer Network Protection team completed a targeted education and awareness campaign in the Charlestown catchment to increase customers knowledge of the issue including the potential impacts as well as offering advice. Across the four weeks the campaign conducted via multiple mediums reached an estimated 2,000 residents and business owners in the community.



Case study 2

Predictive analytics – Hatherleigh Bridge

During routine monitoring of the CSO Dashboard, rising levels in the CSO were detected by the Duty Manager in the Service Support Centre. An operator was immediately despatched to the site. The onsite investigation found an accumulation of rag and non-sewer debris was obstructing the chamber outlet restricting flow. This was causing the flow to back up in the CSO and increase in level. The attending operator successfully removed the obstruction and completed a wash down of the CSO. A check with the duty manager confirmed that the level had returned to the expected level.

