



**South West
Water**

Pollution Incident Reduction Plan

October 2022 Update



southwestwater.co.uk

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Executive summary

This is an update to our 2021 Annual Review published in July 2022 and provides a Quarter 3 review of our Pollution Incident Reduction Plan (PIRP) actions and outcomes for the first nine months of the year to September 2022.

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

We are also on track to reduce the number of Category 1 or 2 pollutions compared to the previous year. In addition, there has been a continued step change in the percentage of pollutions reported with self-reporting trending at c. 75% for the year compared to c. 68% in the previous year.

The PIRP is having a positive impact on performance although we know there is still much more to be done as approach the end of the year. We have made enhancements to our PIRP in preparation for Quarter 4 including:

- Process changes for the rapid investigation and enforcement into illegal connections to our infrastructure
- Deployment of region-wide predictive network burst detect technology
- Changes to the triage of external sewer flooding incidents.

These changes will support our drive to reduce pollutions and maintain the positive progress we have made in bathing water quality standards.

We have complementary plans in WaterFit, where our strong commitment to protecting and enhancing the environment is outlined. 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.



Find out more about our WaterFit plans here southwestwater.co.uk/waterfit

2022 Q3 performance overview

Our initial analysis indicates a sustained level of improved performance from 2021. The initiatives already in place, 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 remainder of 2022 to further drive down the number of pollution events.

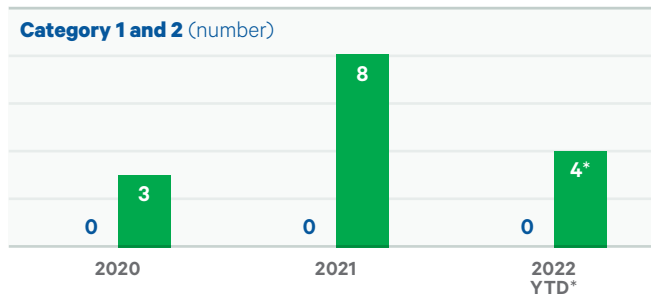
New initiatives developed throughout the year in response to changing circumstances have been successfully introduced and have provided additional downward pressure on total numbers.

Total events

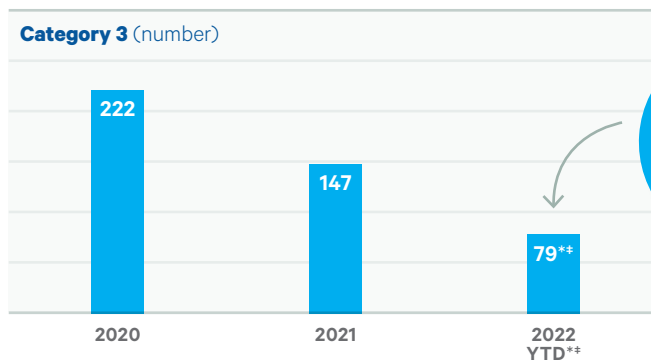
Year to date there have been four potential Category 2 events, a significant reduction from 2021 when there had been eight at the end of September. Category 1 and 2 incidents cause the greatest harm to the environment and we will continue to do all possible to prevent such events from occurring. Water quality and ecological evidence for three of these events does not show a significant impact on the water environment. Discussions around the amenity impact will determine the final categorisation.

Category 3 (minor) wastewater pollution incidents are on track to reduce compared to 2021. We are confident that the new measures introduced throughout 2022 will accelerate progress, further reducing incident numbers.

Wastewater pollution incidents



Zero Category 1 events in 2022



c.50% reduction from 2020

Category 1

MAJOR, SERIOUS, PERSISTENT and/or EXTENSIVE impact or effect on the environment, people and/or property

Category 2

SIGNIFICANT impact or effect on the environment, people and/or property

Category 3

MINOR or MINIMAL impact or effect on the environment, people and/or property

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

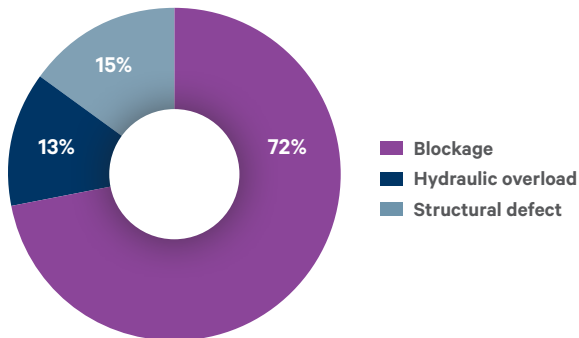
** Adjusted for 8 illegal connections and 5 agreed data corrections.

Source asset type

Analysis of the source asset data shows that there has been a continued reduction in the number of pollutions emanating from most major asset types. Further progress has been made reducing the number of pollutions from sewage pumping stations. In 2022 an additional 22% reduction has been achieved and the number of events is 76% lower than 2020 when the PIRP was revised. Similarly, the number of events from combined sewer overflows has dropped by 30% and is now 78% lower than in 2020. The only exception are foul sewers which are c.14% higher than the end of September position in 2021. Root Cause Analysis (RCA) has indicated that a third of events are caused by sewer misuse or in part by the actions of a third party.

These reductions from 2020 demonstrate the effectiveness of the pollution hotspot investment plan, zero pump out strategy and root cause analysis process measures put in place in the original PIRP.

Cause – Foul Sewer



Wastewater pollutions Cat 1-3 year to date comparisons (January to September)

Asset	2022 YTD**	2021	2020
STW	16	41	43
SPS	14	35	71
Foul Sewer	24	47	61
CSO	7	11	35
Rising Main	10	15	10
Other	8	2	5
Totals	79**	151	225

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

** Adjusted for 8 illegal connections and 5 agreed data corrections.

Illegal connections and third party events

AREA OF FOCUS

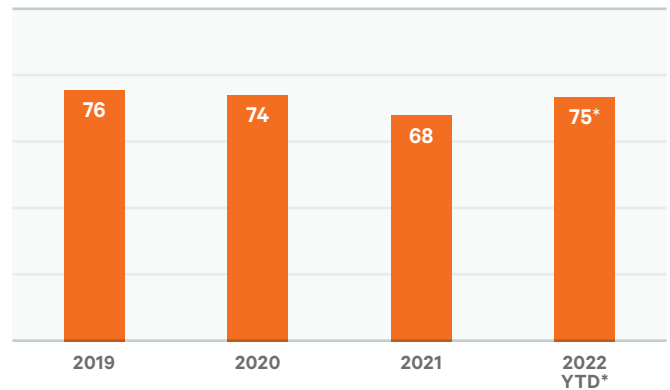
The only source asset type showing a significant rise is 'Other' which has seen a 300% increase from last year. Our RCA of the events has confirmed that the cause of this is how pollutions arising from illegal connections to our network are assessed by the Environment Agency (EA). Seven of the eight events in 2022 are from surface water outfalls all of which are due to confirmed or suspected illegal connections into the public surface water network.

To address this new challenge, we have made changes to our internal Sewer Misuse and Illegal Connection Team to undertake sewer surveys and customer engagement during and immediately after the pollution event – additional sewer CCTV survey equipment has been purchased to facilitate this.

Self-reporting

Self-reporting has seen improvement in 2022 to 75% from 68% in 2021. This demonstrates that the measures we have put in place to achieve the EA targets are having a positive effect. We are now working to accelerate the pace of change and remain confident of improving this position for the remainder of the year.

Self reporting – Category 1-3 (%)



Update on 2022 plan

An update on each of the PIRP activities included in our plan was shared with the Environment Agency at our Annual Review and is summarised below.

Hotspots

Operational and infrastructure investments at 51 sites were planned at the start of the year to improve the resilience of those sites and preventing pollutions events occurring. The program of work is largely on track for delivery by the end of the year. Focus is on delivering the final batch of sites in Q4 2022/23.

Rising mains

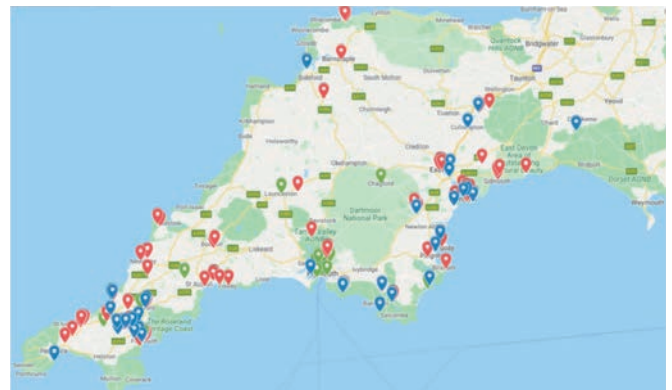
The original 18 rising mains included in the PIRP will be delivered on time, with 7 already complete. Of the additional 18 accelerated schemes we anticipate that 7 will be delivered before the end of the year with the remainder being delivered in the first half of 2023. Pollution events from rising mains have decreased by 20% YTD from 2021 demonstrating the impact of the asset investment that has been made.

Service and Support Centre (SSC) enhancements

In the last quarter we appointed an additional Wastewater Central Duty Manager to provide greater resilience in our SSC operation. Of greater significance is the appointment of a Central WWS Operations Manager. This role splits the management of the Central Duty Managers from the alarm team allowing for greater focus in key areas, including performance, improvement of processes and procedures, training and development and enhancing the processes with the Operational Field Teams.

Deployment of additional sewer depth monitors

After a successful trial in 2021/22 to help achieve our PIRP and WaterFit commitments we have taken the decision to significantly expand the current number of monitors. Sewer level monitoring with associated analytics is designed to detect unusual flow patterns and provide early warnings to the Operations Teams. This will allow the investigation of potential events that if left could result in a discharge from the sewer network. The use of real time monitoring and data analytics will aid the shift from a reactive to a predictive mode of operation. We will have 9,000 monitors installed in manholes across the 20,000km of sewer network in the region. The first 1,000 sewer depth monitors are being installed and are providing data and alarms for operational use by the end of 2022. With the additional 8,000 monitors delivered over the next two years.



Refinements to our plan

Lessons learned during the year and the outputs from our RCA process have resulted in some enhancements to our PIRP in a number of key areas including illegal connections to our network, sewer misuse and the detection of bursts on rising mains.

Illegal connections to our network

A number of the Cat 1-3 pollutions in the latest EA dataset are the result of illegal connections to our surface water network. The current process means that once an initial 30 day period has elapsed these events are assigned to South West Water (SWW) if we have not been able to evidence the source of the misconnection.

There are real challenges in providing the required level of proof within 30 days and it is unachievable in many cases because liability has to be acknowledged by the third party (individual or business). To address this new issue we have implemented the following;

- Opened discussions with the EA to explore process changes to make the process as efficient as possible.
- Made changes to our internal Sewer Misuse and Illegal Connection Team to enable them to undertake sewer surveys and engage with customers during and immediately after the pollution event.
- Purchased additional sewer CCTV survey equipment to facilitate this.
- Engaged an external provider, ECAS to undertake enforcement action against individuals and businesses which make an illegal connection and / or knowingly misuse the public sewer causing harm to customers, property and the environment.
- As well as the reactive response to illegal connections ECAS are proactively targeting fast food outlets and other known sewer misuse hotspots, across the region to prevent this kind of pollution.

External sewer floodings

Two external sewer flooding events in August have been initially assessed as Category 2 pollutions. This is due to the amenity impact of the sewer flooding on businesses in the proximity of the surcharging manholes. These events were triaged as external sewer flooding events and thereby given a 4-hour response time (existing SLA). As a result we have amended our processes and SLAs. We now treat any external sewer flooding near a water course as a potential pollution and a subsequent 2-hour SLA is assigned.

Burst detection on rising mains

Our proactive rising main replacement program implemented this year is focused on replacement of mains with a high-risk of failure. In parallel, trials of a new 'burst detect' system provided by Ovarro were complete.

Ovarro

Working with our partner Ovarro we have been complete a comprehensive trail of their BurstDetect software.



BurstDetect is a method of preventing pollution from sewerage rising mains using the combination of existing monitoring and cloud analytics. BurstDetect requires no additional hardware and utilises existing asset data and real time telemetry. It then uses machine learning algorithms specifically focussed on the detection of suspected rising main bursts and creation of targeted time sensitive alerts. This will allow rapid detection and actionable alerts to the business growing our capability to proactively investigate potential pollution events.

The project is currently in a final test phase and a rollout plan is being developed incorporating the focussed training and awareness required for the Alarm Team and Central Duty Managers prior to go live.

How does it work?

- Existing monitoring
- Multi-tenant Software-as-a-Service in Azure cloud
- Machine learning algorithms
- Alerts sent by email (other routes to follow)

Case studies

Case study 1 Meniscus

Five Meniscus alerts were received from Sherford STW CSO between 04:00 Sunday 9/10/2022 and 20:00 Monday 10/10/2022.

- Site check requested by Central Duty Manager

- Debris interference confirmed by Operations Team, cleared issue

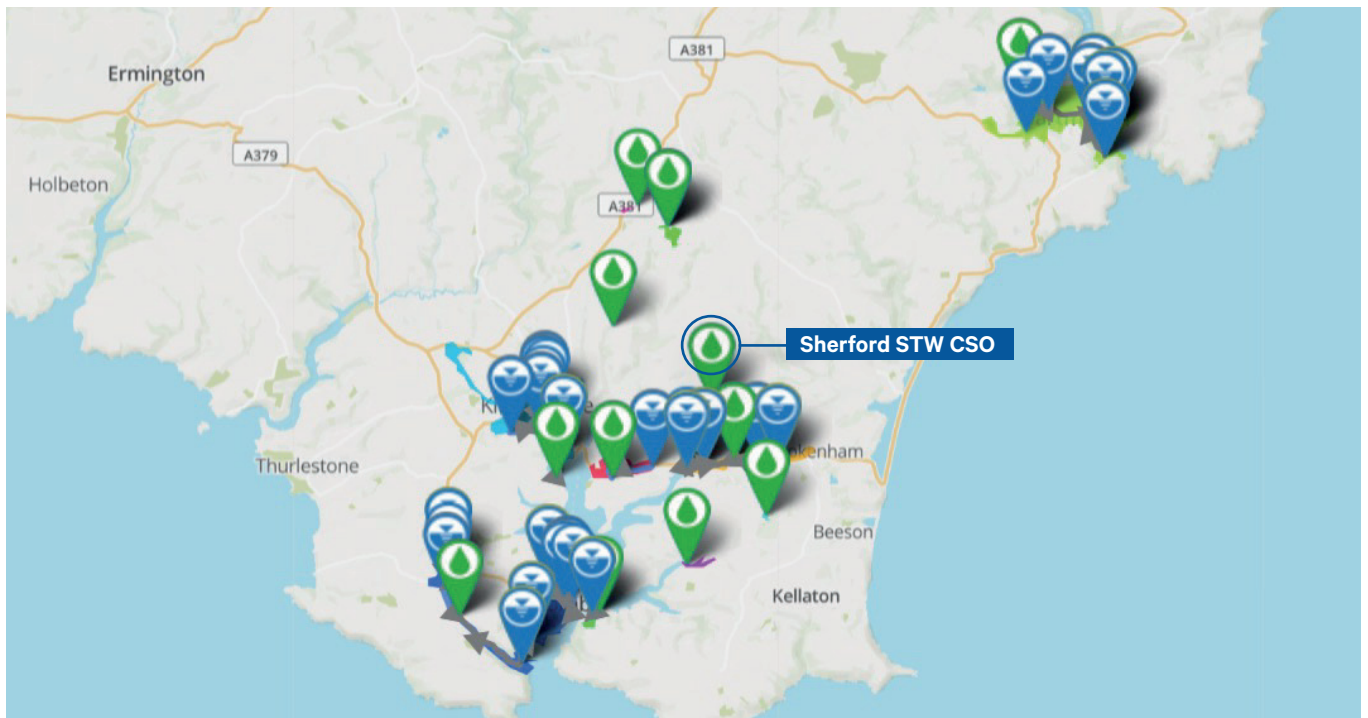
- Further alert triage and Operational Team feedback resulted in repeat issue diagnosed

- Operational Team recommended recirculation is installed

- Passed to local team to review recommendation



The Meniscus alerts and subsequent investigation resulted in a hard engineering solution to resolve the repeated debris build up due to low flow.



Case study 2 Illegal connection investigation

Plympton

In March 2022 a concerned member of public (MoP) reported via the SWW online reporting page they had seen dirty water and sanitary products in a watercourse.

The same day our operators investigated and confirmed sewage related debris was discharging to the watercourse from a surface water outfall.

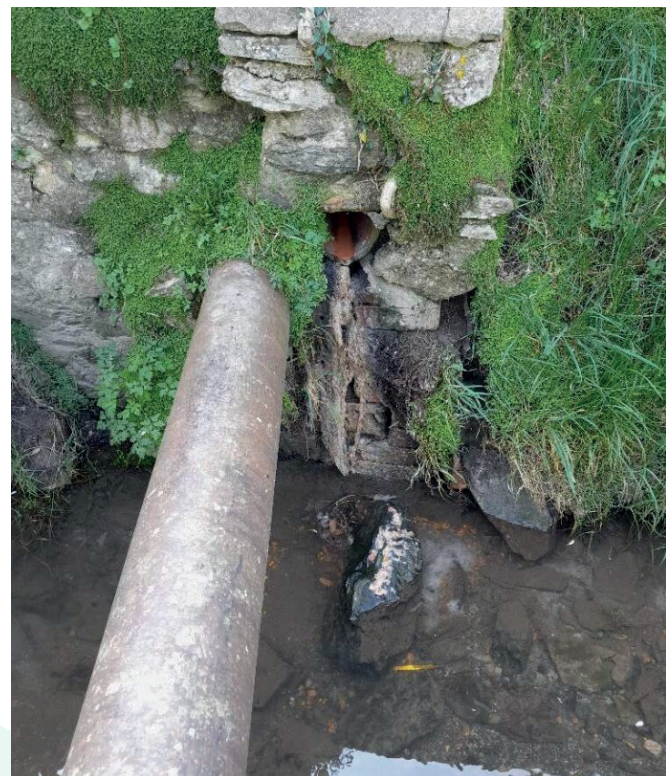
Their initial investigations confirmed the sewage and debris was not originating from the foul sewer network confirming the most likely cause as a domestic illegal connection. Initial feedback confirming a suspected illegal connection was provided to the EA.

Further investigations in the sewerage catchment over the following days located a number of potential sources. Subsequent dye tracing confirmed that three properties were illegally connected to the surface water network and were the cause of the MoP report.

The case was passed onto the Illegal Connection Team who initiated corrective action with the with property owners.

Investigations conducted by the Illegal Connection Team established that the foul drainage had been misconnected to the surface water network by contractors. The owners acknowledged responsibility and engaged with the contractors to undertake remedial work.

Remedial works were completed at all three properties in August and final confirmation provided to the EA.



Left Illegal connection at manhole chamber (surface water MH has the circular cover)

Above Surface water outfall showing evidence of illegal connection

