Pollution Incident Reduction Plan

Annual Review 2021

South West Water

southwestwater.co.uk

Contents

Executive summary

This is an update to the Pollution Incident Reduction Plan we published in September 2021 and provides a summary of the actions and initiatives we have taken to drive down the number of pollution incidents.

It has continued to be a challenging year, not least the Coronavirus pandemic and consequential impact on our business. As the country opened up, the South West saw record levels of tourists arriving and holidaying in Devon and Cornwall.

Our people and teams have continued to work tirelessly to provide the services our customers depend on in a time when there is an unprecedented pressure on our assets, the services we provide and the environment we continue to protect. We know we have a vital role to play in making our streams and rivers, and the ocean they flow into, clean and free from pollution.

Despite the increasing demand on our assets and services the number of pollution incidents continue to reduce compared with 2020. Overall, in 2021 we have reduced pollution incidents by 33% compared to 2020. This reduction has been across all our asset types apart from rising mains where we continue to investigate new ways to deliver the improvements we want to see.

We continue to increase investment in the region's infrastructure as part of our ongoing commitment to protecting and enhancing the natural environment.

However, we do acknowledge that our level of self-reporting is lower than we would like at 66% for 2021 compared to 74% for 2020 but we have plans in place to address in 2022.

To reinforce our commitment to improving the environment in the South West we are proud to have launched WaterFit. WaterFit outlines how we will play our part, working with partners, customers, visitors and local communities to protect and enhance the South West's rivers and seas.

2021 Performance overview

We have made significant progress reducing the number of pollutions in 2021 compared to 2020 and in accordance with the commitments made in the 2019 business plan and our own pollution incident reduction plan.

One of the key areas we set out to improve was pollutions from the sewerage network, in 2021 we reduced the number of events by 33%. This is only the start of the journey, and we continue to work on reducing this number further to protect the environment and its natural beauty within which we live and work.

As key business processes are revamped and additional capability added we are confident that the improvements seen in 2021 can be used as a springboard for the year ahead, early signs in 2022 indicate that there has been continued improvements.
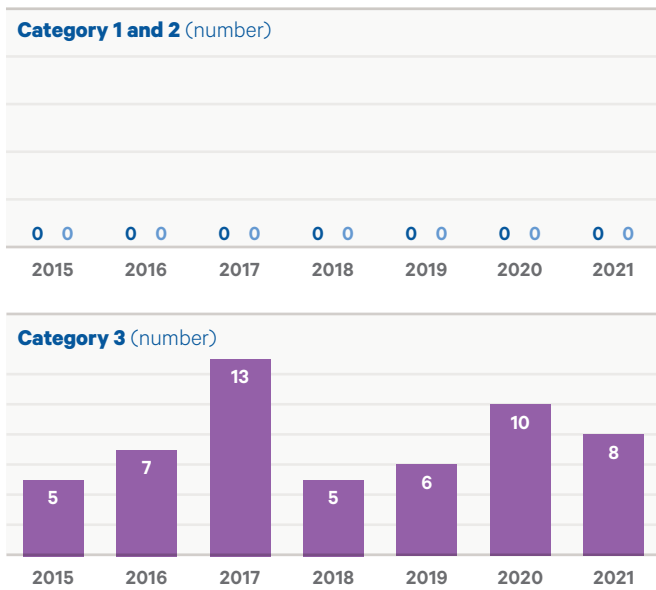
Total events

South West Water are committed to minimising the impact on the environment and for the third year running are able to report zero Category 1 (major) incidents.
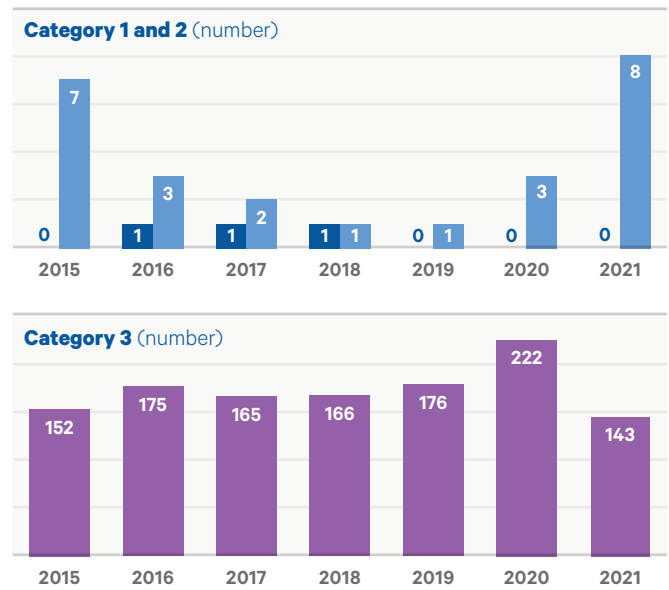
Category 3 events have been reduced by 33% and represent our best ever performance. We are redoubling our efforts in 2022 and later in the year will provide an updated plan with a summary of the interventions we are putting in place to further reduce the number of pollution incidents and further increase the speed of change.

We are disappointed to report an increase in Category 2 pollution incidents from previous years and wish to reaffirm our aim to reduce the most harmful events to zero.

Drinking water pollution incidents

Category 1 and 2 (number)

2015	2016	2017	2018	2019	2020	2021
0 0	0 0	0 0	0 0	0 0	0 0	0 0

Category 3 (number)

2015	2016	2017	2018	2019	2020	2021
5	7	13	5	6	10	8

Wastewater pollution incidents

Category 1 and 2 (number)

2015	2016	2017	2018	2019	2020	2021
0 7	1 3	1 2	1 1	0 1	0 3	0 8

Category 3 (number)

| 2015	2016	2017	2018	2019	2020	2021
152	175	165	166	176	222	143

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

The increase is partially the result of the source asset types. Three of the events were from the foul sewer in geographically isolated locations, where a lack of telemetry and footfall decreases the chance of early detection. A number of work packages and an increase in partnership and collaboration with other water companies are in train to target these issues and are summarised later in this document.

Self-reporting

We acknowledge that our self-reporting in 2021 dipped from previous year and fell below expectations. We are improving our alarm handling and both remote and field-based data gathering capabilities to improve our understanding of potential pollution reports. We believe that these measures will bring greater success in 2022, and pleasingly we are currently achieving 89% self-reporting including 100% for wastewater treatment works and pumping stations.

Self reporting – Category 1-3 (%)

Year	Value
2015	48
2016	64
2017	68
2018	77
2019	76
2020	74
2021	68
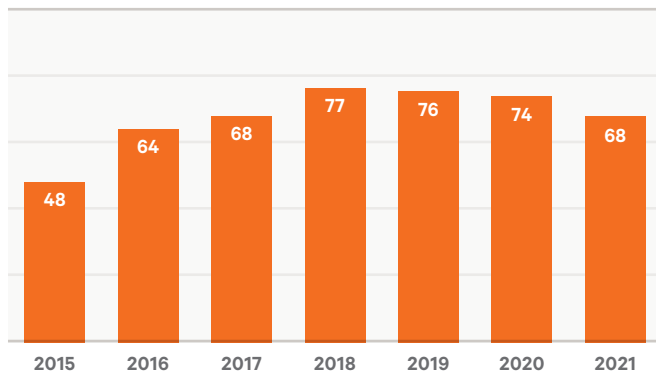
c.31% year on year **improvement***

Source asset type

The improvement in overall performance mostly notably from Combined Sewer Overflows (63%) and Pumping Stations (49%) can be attributed to key interventions introduced out over the last two years. Leading examples are the 'zero pump out' strategy which greatly improved resilience across the pump station asset base and the pollution 'hotspot' programme which reduced repeat events from previously frequently polluting assets.

Rising mains

The only asset type to show a deterioration in performance from 2020 was rising mains. South West Water operates a 621km network of rising mains. The 15 events in 2021 were at 10 different locations, four of which (26%) were from the Crantock rising main which passes under the Gannel Estuary taking sewage from the village of Crantock to Newquay wastewater treatment works, between January and April 2021. The Root Cause Analysis conducted following the first event in January identified the need for replacement and scoping work began shortly after. Work began in October 2021 to replace the Crantock rising main. The improvement project is due for completion in June 2022 at a cost of £2.7m. There have been no pollutions at this location since April 2021.

South West Water is reviewing the data from 2021 and will be developing a business plan to secure funding to reduce the risk of rising main failures during 2022.

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

Asset	2019	2020	2021
STW	25	43	41
SPS	65	71	35
Foul Sewer	68	61	47
CSO	8	35	11
Rising Main	7	10	15
Other	10	5	2
Totals	183	225	151

Review of the Pollution Incident Reduction Plan

1 Improving our pollution reporting and assessment

We have focussed significant resource improving our pollution reporting and assessment activity to better understand 'what' has occurred (although we do acknowledge that our self-reporting for 2021 falls short of what we aspire to achieve). Hence, we continue to collaborate and learn from other water companies by taking best practice and trialling / adopting it within South West Water.

We are improving current systems and reporting by:

✓ Improving alarm handling, prioritisation, volume and reviewing the overall quality of alarms being managed by our teams to ensure that all alarms received add value. During 2021 we reduced the overall volume of alarms received by 20%, by removing 'nuisance' alarms whilst simultaneously increasing the volume of additional 'smart' alarms. Smart alarms combine asset performance data to give pre-emptive warnings at our sewage works and pumping stations. As part of the work to manage our hotspot sites we have upgraded the alarms received from these key sites.

As part of our proactive approach to alarm management we have implemented several control reports within our Service Support Centre. These reports provide our front-line teams with information regarding asset performance ahead of any potential failure. We have implemented new, daily, weekly and monthly reporting, feedback and control processes to ensure that risks are identified and acted upon.

✓ Improving our 24/7 365 response capability by increasing resources in our Service Support Centre. This has delivered an increased focus on the detection of pollutions through active alarm management and the introduction of proactive control measures. We have increased our overall resources by 25% and created a 'Pollution Desk' resourced by an experienced Duty Manager.

In January 2022 we implemented a new shift pattern that provided additional flexibility and resource capacity to support wet weather events and incident management. In 2022 we will roll out a new logging tool 'J5' within our Service Support Centre to support the new teams. This system is a dedicated tool for control rooms that is used to manage the control of handovers and logging of incidents.

Coupled with this, we have improved our operational procedures surrounding the management of wet weather events. The procedures allow us to rapidly stand up a full operational response both prior to and during an event. This has proved very successful in managing risk and reducing the impact during these periods.

We are improving the timeliness of our site analysis information by:

✓ Extending our ability to collect near real time environmental information. Training and equipping our staff with additional monitoring and sampling capability enables field staff to report back environment impact information to our Service Support Centre. This provides a more accurate assessment of incidents which we can use to inform the Environment Agency (EA), customers, wildlife trusts, fishing associations and other environmental stakeholders. It also helps with any escalation of resource to minimise impact to the environment. We are also able to use this information to confirm to the EA that 'no impact' has occurred. We supplement this with photographs and additional data analysis where required.

We are supplementing our decision making and self-reporting by:

✓ Completing the installation of a total of 386 monitors as follows:

- 210 monitors as part of our sewer level monitoring plan;

- 60 monitors at high-risk operational sites; and

- 116 monitors to be used for hydraulic studies.

✓ Undertaking a trial in the River Dart and River Tavy catchments with an external provider 'Meniscus'. The project uses an Artificial Intelligent (AI) engine to determine whether storm overflows are acting within their expected operating regime, or if they have fallen outside, indicating a potential issue that requires instigating. We have run this trial for three months across 60 locations. During this period the data shows that we have successfully intervened at four locations where a potential blockage could have led to pollution. We plan to continue this work in 2022 with Meniscus and engage with additional suppliers to assist our decisions regarding the full roll out of this approach across our catchments.

✓ Developing a risk model for combined storm overflow (CSO) performance that looks at daily performance (exclusive of weather). We have applied this across all CSOs in our region. In a similar way to the trials being conducted with Meniscus we have been able to predict the build-up of eight blockages that if left unattended could have led to a potential pollution.

✓ Undertaking a trial of our wastewater modelling tools provided by 'Innovyze'. We are in discussions regarding the use of their 'Live' catchment modelling tool 'ICM live'. It is our intention, subject to successful trials to have live catchment models operating within our Service Support Centre as part of our wet weather management. The models will provide early warning of potential flooding or pollutions and enable us to deploy targeted operational interventions. We will trial and conclude our assessment of this in the first half of 2022.

✓ Working in partnership with environmental interest groups including West Country Rivers Trust and South West Rivers Association to improve the timeliness and accuracy of pollution incident reporting.

✓ Procuring signs and installing them on and near our assets to enable members of the public to report issues direct to us should they arise. This will help us respond quicker to potential incidents and minimise the potential for harm. We are using 'what-3-words' to help more accurately describe the location of any potential impact. We have also looked in more detail at some of our hotspots and included further information on specific manholes where we have experienced hydraulic overload asking for members of the public to inform us if they spot and issue.

✓ Updating and revising our website by providing a link on our home page to make it easier for members of the public to report a potential pollution incident to us.

2 Root cause analysis

ON TRACK

Understanding 'how' and 'why' a pollution incident has occurred is driven by a root cause analysis. We have discussed root cause analysis (RCA) approaches with several water companies and have also had a cross water company workshop on this topic. Whilst the fundamental principles of root cause analysis are the same, there is still learning that can be achieved through the sharing of good practice.
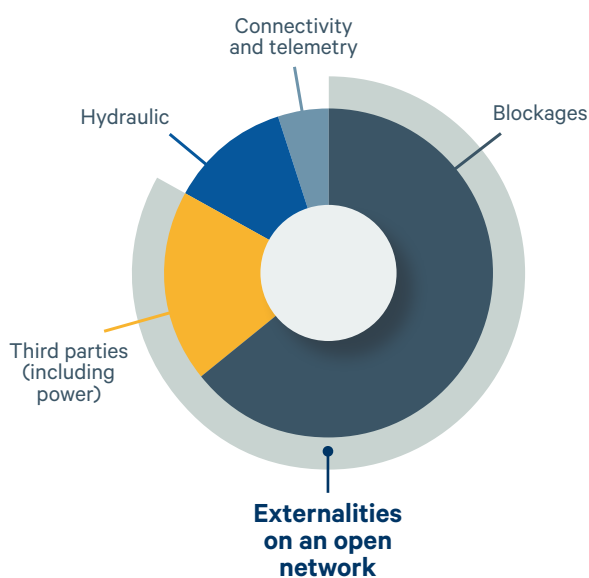
A root cause analysis is completed for all pollution incidents and near miss events, both event types present opportunities to learn and continually improve the RCA process. Our process is holistic and includes all aspects of the event, each RCA generates actions that is used to inform future maintenance, investment, process changes and training requirements to help prevent a repeat.

Our root cause analysis has been effective in understanding what interventions are required to prevent a specific incident happening again. It also provides learning for similar asset types which can be employed to further reduce pollutions occurring.

In 2021 more than 450 RCA investigations were completed following a pollution incident or near miss event generating over 700 actions. It is expected that upon completion each action will reduce the likelihood of a repeat.

During the year our in-house RCA system has undergone a redevelopment, adding additional capability. The upgraded system is able to capture a greater level of detail and enables a more granular level of analysis. With an associated suit of dashboards that can be tailored to individual users the outputs from the process will provide colleagues in operational, asset management and reporting functions to view a wide range of information and data to make informed decisions. This will allow us to target future resource and further drive down the number of pollutions.

Identifying the root cause

Connectivity and telemetry

Hydraulic

Blockages

Third parties (including power)

Externalities on an open network

3 Control systems and early warning

ON TRACK

So far we have described how we are changing our pollution reporting and assessment and how we can better understand the causes of these incidents. In this section we will describe what we have done to date to improve our control systems and early warning capabilities to stop a pollution incident occurring in the first place (or anticipating 'when' it might occur). We have done this by working in the following areas.

Improving our telemetry and monitoring coverage by:

✔ Extending our network of Event Duration Monitors (EDM) to better understand the performance of our assets. This includes further deployment of EDM monitors to record storm spills to the environment in addition to the 1,157 monitors already deployed. Before December 2023 we will have 100% coverage of storm overflows, extending our number of EDMs to c. 1,600.

Changing our control room philosophy by:

✔ Continuing to improve our 24/7 data monitoring and service centre to provide an immediate opportunity to respond to alarms and escalate our response to prevent a pollution from occurring. We continue to review the data and alarms to ensure we are continuously improving our alarm response capability. We are currently engaged in a trial using radar rainfall and weather forecasts coupled with historic and current storm overflow operational data to model predicted flows in sewers, pumping stations and storm overflows. The benefits include sewer blockage detection and a reduction in alarms, facilitating targeted operational interventions to prevent pollution events. This is all part of developing a better understanding of our network operations in real time and predicting where we need to take proactive action to prevent pollution.

Improving our incident management response and recovery by:

✔ Learning from other Cat 1 and Cat 2 responders through our work on the Local Resilience Forum and National Incident Management (NIM) Group.

✔ Participating in multi-agency response activities. For example, the planning, preparation, response and recovery aspects related to the G7 Summit in Cornwall.

✔ Using the outcomes from our root cause analysis to ensure we are able to address issues beyond the incident itself and detect trends to prevent similar incidents occurring.

✔ Evolving our incident management command structure with the introduction of a 24/7 GOLD wastewater service strategic manager has enable us to better coordinate, respond and communicate during and after incidents.

4 Asset specific plans

ON TRACK

We have invested significant resource to ensure our wastewater treatment works operate to the standards set by the EA under the Environmental Permitting Regulations. In addition, we are currently assessing the impacts of the Industrial Emissions Directive on specific sites that will fall under these regulations. We have done this by working in the following areas.

Reviewing and improving our activity at wastewater treatment works by:

✓ Reviewing and revising our structures in July 2021 so there is one Director with responsibility for wastewater treatment, networks and pumping stations to provide a more integrated approach to operational response and planning.

✓ Reviewing and revising our maintenance programmes with a focus on pumps and inlet works, ensuring the activity is better targeted towards the relevant risks.

✓ Reviewing and enhancing our training and development programmes for our operational staff to ensure they are equipped to excel in their roles.

✓ Implementing Lean RCM at a wider range of sites across the region.

Reviewing and implementing a revised strategy for our pumping stations by:

✓ Adopting a zero pump out strategy to ensure we have the maximum amount of pumping capacity available at our Sewage Pumping Stations (SPS) to enable us to always comply with the permitted pass forward flow requirements. This includes ensuring we have the right kit available in the event of failure. We track the status of every pump at each of our SPS and aim to maintain a permanent install base of over 99% across these assets. The remaining 1% of pumps are covered by installation of hire pumps or alternative units within 12 hours of a pump failure. This has helped reduce the number of pollution incidents from sewage pumping stations by 60% from 71 in 2020 to 28 in 2021 across our operational asset base of over 1,200 Sewage Pumping Stations (SPS).

✓ Married to this we target reliability in our SPS operation through a planned programme of sump cleaning. Aligned with a regular maintenance programme of servicing for the pumps and control system by our internal team of engineers.

Reviewing assets where repeat pollutions have historically occurred by:

✓ Undertaking a root cause analysis as previously described and developing a Hotspot Programme for 210 sites which will contribute to the reduction in pollution incidents from specific sites. We have completed the majority of our planned programme of hotspot interventions and continue to inform the Environment Agency of our progress. We will also be assessing the impact of these interventions to ensure they deliver the reductions in pollution incidents.

Reviewing our wastewater sewerage network activities by:

✓ Undertaking misconnections interventions at key locations

✓ Exploring new technology to assess the integrity of our sewerage network e.g. using CCTV coupled with Artificial Intelligence (see case study); and assessing the benefits of rising main monitoring capabilities using Sahara technology (see case study).

5

Influencing customer behaviour

ON TRACK

Customer behaviour can influence the performance of our assets and working with our customers on the impact of their behaviour is essential in addressing pollution risks over the longer term.

Where we are able to determine the source or cause of a specific blockages we are engaging with those customers to explain how their behaviour can impact the environment. By analysing our data we have also employed revised maintenance schedules and target operational interventions to reduce the number of blockages.

We are currently analysing the impact of our campaign to understand how we may want to change and adapt our approach in preceding years to ensure we maximise the environmental outcomes from this project.

We are also in early discussions with the EA on how we can use digital technology to engage with members of the public in Exmouth and Bude. This will enable us to communicate in a more interactive way with our customers and continue to develop our messaging on the three Ps.

Promotional material for the 'Love your Loo' campaign

6 Leadership focus – improving our environmental culture

ON TRACK

We continue to hold our Daily Pollution Board, chaired by our CEO to maintain focus on our pollution incident reduction targets. This has led to a more robust reporting process being established.

We have established a Storm Overflow Steering Group to focus on our commitments to better understand the performance and impact of our storm overflows on the environment. In addition, our funding through the Green Recovery Fund will enable us to better understand the impact on a wider catchment basis through our work in the River Dart and River Tavy catchments.

We continue to work with the EA to ensure we are delivering against our commitments in our Pollution Incident Reduction Plan and meet with them on a quarterly basis.

Since the publishing of the Environment Act we have also committed to targeting zero 'Reason for not achieving good status (RNAGS) of our own impact on water quality by 2030 and additionally intend to target the following:

✓ Accelerate investments to target a 50% reduction in the number of storm discharges from our wastewater treatment works by 2025.

✓ Commit to sharing river health data in real time in the same way we do for bathing waters ahead of the Environment Act 2021 requirements.

✓ Undertaking an audit of our customer communications with the aim of improving frequency, reach and transparency of our environment activities and impacts through all customer touch points, including our social media channels.

✓ Expand the remit of the Board Environmental, Social, and Governance (ESG) Independent Committee to have clear line of sight to our environmental compliance activities, supported by a new Compliance Group to re-view and deep dive into environment compliance and reporting in a systematic manner.

7 Innovation and collaboration – closing the performance gap

BEING ACCELERATED

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

In November 2021, South West Water and the University of Exeter marked major progress towards a new collaborative research centre. A 25-year partnership agreement was signed confirming more than £20 million of funding from South West Water.

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

Central to CREWW's focus will be how to manage natural resources in ways which are sustainable and resilient in the face of climate change and population growth. The impacts of floods, droughts and changes to water distribution are already being felt by both people and wildlife. CREWW research uses environmental intelligence to develop nature, circular economy and behaviour-based solutions that deliver multiple benefits to the environment, communities, and the economy.

OFWAT Water Breakthrough Challenge – our current bids

South West Water are core partners in four of the nine Ofwat Innovation Fund – Water Breakthrough Challenge round one proposals that were successfully awarded funding in September.

Details of these can be found below. We continue to develop these project plans with other water sector stakeholders across the UK, for the furtherance of research and innovation, creating enduring positive impact for our customers, society and the environment.

Project title	Project duration (years)	Lead partner	Budget requested from Ofwat (£m)	Project overview
Artificial Intelligence of Things and Autonomous Waste Catchments	2.5	Severn Trent Water	2	Use of dense sensor networks/IoT/AI in predictive asset management and maintenance in wastewater catchments to predict and prevent sewer spills, supporting our journey towards zero CSO spills and increase insight and intelligence on wastewater network performance.
Catchment Systems Thinking Cooperative	3	United Utilities	5.1	Innovative big data modelling and monitoring of catchments to enable optimal use of natural solutions in integrated catchment management, water and wastewater treatment.
Transforming the Energy Balance – Low-Temperature Anaerobic Treatment for Municipal Wastewater	4	Thames Water	6.5	Low-Temperature Anaerobic Treatment for Municipal Wastewater. Development and trial of cold anaerobic wastewater treatment system that will drive significant increase in energy and carbon savings, as well as recovery and capture of biogas.
Safe, Smart Systems	3	Anglian Water	8	Embedding resilience in our water supply networks through the use and optimisation of automation, application of cutting-edge data science, Machine Learning and Artificial Intelligence. This project will propel our ability to pre-empt and predict asset maintenance and management to reduce supply interruptions and leakage.
Total			**21.6**	

Using Artificial intelligence and CCTV images to monitor wastewater network integrity

The UK has a vast network of over 525,000km of sewers that are expensive to maintain. Currently, the sewer network (or pipe) condition is assessed by CCTV surveys, where trained technicians work to identify each pipe's faults and features. However, these manual surveys can sometime be unreliable, due to a number of factors.

South West Water has developed an AI tool capable of accurately detecting faults in sewers with >90% accuracy. We estimate that this will improve the efficiency of surveying by 20-40% and better support the effective maintenance of the wastewater network, leading to more positive outcomes for South West Water customers and the environment.

Building on a two-year Knowledge Transfer Project (KTP) we have developed a hugely promising AI-base software solution. The software has the ability to detect the presence of over a third (18/52) of the UK standard classified faults with an impressive accuracy helping to detect faults more efficiently and increase the reliability of sewer network condition assessments.

South West Water now has a prototype AI tool, ready for initial trials across the company, having attracted significant further investment through UKRI's Future Leaders Fellowship fund (£580,000). This funding will support us to further develop the tool and assist in identification of faults, and (when fully developed to UK standards) improve the operational efficiency of internal CCTV surveying processes. The value of these improvements will be realised within the life of the project and estimate operational savings will exceeding monthly investment by its third year.

Working so closely with the technology's development throughout the KTP has helped us to develop and enhance our CCTV survey management and archiving practices. Furthermore, the company's current practice in this area has undergone a detailed data quality review, identifying areas for improvement which we aim to reduce or eliminate with the implementation of this technology.

We continue to make significant strides in this field of innovation and are becoming increasingly regarded as the leading UK water company for the development of AI automation of sewer surveying.
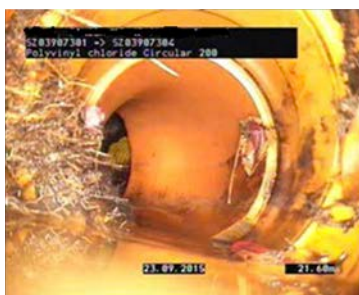
Intruding roots

**Settled deposits**

Collapsed pipe

Using interactive robot language technology – Hello Lamp Post

The EA are using interactive robot language technology to engage members of the public in topical conversations at a number of locations with the South West to improve their understanding of environmental issues.

South West Water has been offered the opportunity to work with the EA in Bude and Exmouth. We will provide an interactive educational tool to help tourists and local residents better understand how their actions can prevent pollution incidents and hence improve the environment they are visiting.

We are taking the opportunity at these two locations to reinforce our 3Ps campaign i.e. only pee, poo and paper should be put in the toilet.

Whilst we are at the early stages of this new existing opportunity we do believe this could be expanded to other locations in the south west where we have the potential to both help reduce the number of pollutions caused by sewer misuse but also leakage and water efficiency messages.
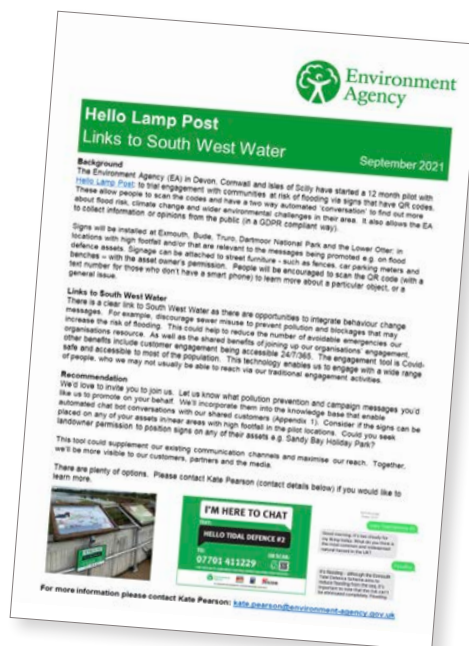
A summary of our plans for 2022

We acknowledge that our performance for 2021 has not met the high standards and targets that we have set ourselves to achieve as set out in our Pollution Incident Reduction Plan in Autumn 2020.

However, we are encouraged that we have significantly reduced the number of pollution incidents in 2021 by 33% compared to 2020. This achievement has mostly been delivered through the hard work, dedications and changes we have made to our business processes, technology and governance over the last 18 months.

In 2022 we will continue to focus on the following areas to ensure we continue to reduce the number of pollution incidents and protect the environment in which we work and live.

These areas of focus will include:

→ Telemetry and data

To move from a primarily reactive basis, we plan to significantly increase our deployment of sensors and telemetry in our catchments. Investment in our people and systems will be enable this data to be reviewed and triaged 24/7. Extra governance and reporting is also being undertaken to ensure all telemetry and sensors are operable and interventions made to rectify issues.

We are working with Innovyze to develop live, real time catchment models collating all data in the catchment (flow meters, EDMs, weather, sewer depth monitors) that will allow prediction of potential issues and potential interventions. These live models build on the static models being developed by Asset Management for use in the long term DWMPs.

→ Self-reporting

The collection and review of additional data will increase the visibility of our operation (via Innovyze) to increase the likelihood of anticipating a pollution and communicate to the EA that we have a firm grip on an incident.

We have also now partnered with West Country Rivers Trust and asked their 250 volunteers to share their citizen science reports to us as well as the EA. This will enable a faster response to potential issues and protection of environment and allow us to report to the EA and be included in the self-reporting calculation.

→ Category 2 events

The majority of our Cat 2 events have been network issues and the presence of sewage fungus (indicating a longer duration of event / discharge). Our proposals noted above on data, telemetry and self-reporting inspection programme will reduce our risk of these type of events.

In addition, Director site visits are being undertaken on all Category 2 events.

→ Rising main bursts

As described in our summary for 2022 we have reduced pollution incidents from all of our asset types apart from rising mains. Rising mains bursts are impactful on the environment especially when they occur near watercourses in sensitive locations e.g. bathing beaches. We plan to learn from work undertaken by Wessex Water on their 'Storm Harvester' product used to predict rising main failures. Our additional sensors and telemetry being installed helps support this initiative.

We are also undertaking a review of the proximity of all manholes to water courses where time of event to consequence constrains our ability to manage the impact and ultimate assessment of these type of events.

→ Hotspot phase II

Our initial Hotspot Programme has been successful in reducing pollution risks. Improving the resilience of our assets and infrastructure, reducing the propensity to pollute (including rising mains) is a key outcome of our hotspot programme. The majority of the first phase of hotspot sites will be completed by 31 March 2022. Recognising some of the challenges experienced with Phase I we are adapting our delivery approach for Phase II.

Approximately 50 sites have been identified by the operational teams across the region for delivery in Phase II. Contractor programme managers will report back progress on delivery and this will be communicated to our regulators, stakeholders and communities.

→ EA, customers and other stakeholders perception

Reflecting on the increasing scrutiny from regulators and interest from other stakeholders we are re-engaging with our workforce about how we must respond and the standards we must aspire to. Our 'site pride' initiative is aimed at improving the aesthetics of our sites (front of house, legacy kit, welfare, hazards etc.) alongside asset / infrastructure improvements.

We are also enhancing the communications and the frequency of these communications with our regulators, customers and other stakeholders on our performance and progress of commitment made with our Pollution Incident Reduction Plan.

South West Water has a vital role to play; but so too does everyone who lives and works in the region.

We'll continue working with farmers, landowners and partners right across the region to further develop more sustainable nature-based solutions.

We will continue to work with our regulators on legislative change, campaigning for a ban on wet wipes, and championing the removal of the automatic right to connect to our network, by new building and housing developers.

We will build on the success of coastal investment and for the first time ever, 100% of our regions' Bathing Waters achieved stringent bathing water standards, up from c. 28% in 1991 and we intend to keep it this way.

We are installing monitors all along the Rivers Dart and Tavy to understand how we achieve the region's first Bathing Waters.

(Source: EDM report)

Case studies

Case study 1
Menagwins infiltration

The Menagwins sewerage catchment near St Austell in south Cornwall has been identified as an area with winter groundwater infiltration. As a result, sewer rehabilitation has been completed in five locations within the catchment to reduce levels of infiltration. Specifically, this has involved:

- Sealing sewers in Pentewan Road which included the grouting of some 'dead legs' and open connections.
- Rehabilitating the 375mm and 400mm diameter sewers in Sawles Road
- Completing repairs and lining to address several pipe fractures in Ruddlemoor
- Carrying out rehabilitation on the Pentewan sewer network
- Repairing defects that were identified within the Nansladron sewerage network.

As a result of these works, we anticipate that over 70 litres per second (l/s) infiltration has been removed from the Menagwins catchment.

Case study 2
Jubilee St, Aveton Gifford

This site has been included in our Hotspot Programme following a number of pollution incidents. The RCA and a review of the existing network capacity identified a series of interventions to improve the hydraulic performance of the sewerage system. This work will reduce the risk of pollution incidents and external flooding in Jubilee Street removing properties from the Company's flooding register.

The scheme involved laying a new relief sewer as well as upsizing the existing network in the area to reduce risk of flooding by:

- Closing off the existing Jubilee Street Combined Sewer Overflow (removing the screen and raising weir to create two separate chambers with individual covers)
- Upsizing the parts of the sewer from 150mm to 225mm diameter
- Laying a new 300mm and 375mm sewer
- Upsizing the syphon reception chamber to cope with new flows.

Mousehole Harbour

A precast concrete trunk sewer situated upstream of Mousehole SPS and within the harbour was reported to leak causing pollution incidents within the harbour and immediate location.

To resolve this, a solution involved excavation along the foreshore to replace the sewer including:

- Replacing 72m of sewer to remove the risk of leaks from five locations identified by a dye test

- Upsizing 48m of sewer from 150mm to 300mm between MHs 9101 & 9210 on the South Quay

- Modifications to the Mousehole South Slip Combined Sewer Overflow (CSO) and additional ventilation on parts of the network.

South Sands Salcombe

This investment has reduced the risk of pollution incidents and flooding by removing saline infiltration from the network thereby reducing the saline load arriving at the sewage treatment works. This has had an immediate impact by improving the treatment process and restoring capacity within the sewerage network.

Specifically, the works involved:

- Replacing and relining sewers situated within the foreshore of Salcombe Harbour

- Installing three new manhole chambers

- Grouting up of abandoned sewers.

Newton Ferrers

Saline infiltration reduction was required to reduce network pollution incidents and to reduce salinity loads that could impact the sewage treatment process at the local STW.

Phase 1 replaced three manholes within the foreshore of Newton Ferrers/Noss Mayo. These were successfully completed using prefabricated plastic 'drop in' manhole chambers to reduce cost and the constraint of working within the foreshore in the short tidal window.