Pollution Incident Reduction Plan
Quarter 2, 2020 update

Wessex Water

July 2020

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Document version control

Major version number	Details	Lead contact	Date
1.0	As published on website	Matt Wheeldon	8 Aug 2020

1. Introduction

This is the first quarterly update to our Pollution Incident Reduction Plan – which was first published in March 2020.

Our plan is divided into 4 themes: People and Process, Assets and Maintenance, Customers and Stakeholders, Telemetry Data and Analysis.

In this update, we report on progress with delivering the plan, present case studies and examples of what we have delivered and report on the effectiveness of the plan on our way to our aspiration to cause no pollution incidents.

2. Quarterly progress report

2.1 Numerical quarterly activity analysis against the plan

Theme	Activity (in-period unless otherwise stated)	Unit	Q1 2020	Q2 2020
People and Process	Pollution incident training (cumulative since Sept 2019)	Nr	99	0*
Assets and Maintenance	Length of sewer surveyed	Km	1.3	5.5
	Sewerage Investigation Assessments completed	Nr	54	21
	Treatment Investigation Assessments completed	Nr	1	0
	Rising Main Assessments completed	Nr	0	1
	Length of sewer rehabilitated	Km	0.5	0*
Customers and Stakeholders	Summer shows: number of people engaged	Nr	0	0*
	Student fairs: number of people engaged	Nr	0	0*
	Attendees at Open Doors events	Nr	0	0*
	Social media reach	Nr	183,746	135,083
	FSEs investigated	Nr	135	0*
	Personalised letters following blockage incidents	Nr	227	150
	Water rangers engaged	Nr	0	0*
Telemetry Data and Analysis	Cumulative number of intermittent overflows monitored (and % of total)	Nr	970 (75%)	1000 (77%)

*Zero due to the impact of COVID-19

2.2 Qualitative quarterly progress report on initiatives

Theme	Activity or initiative	Q2 2020 Progress report
People and Process	Pollution incident register	New Pollution Incident Register up and running. Used to capture incident data.
	Additional equipment roll-out	Trial still ongoing, but only for ammonia monitors. 43 ammonia monitor kits ordered and the replacement reagents.
Assets and Maintenance	Artificial Intelligence sewer scanning initiative	We are in the final stages of preparing a small number of trials with the shortlisted companies to understand whether any give the business efficiencies required, and accuracy in a real-life test. We hope to be able to start trials over the summer.
Customers and Stakeholders	Update on events	All events cancelled or postponed until further notice due to COVID-19
	Anti-FOG initiatives	No visits will take place till lock down is raised. Site visits to recommence on 13/07/2020
	Hotspot competition/promotions	Social media comms trial completed on w/c 29/06 - awaiting final engagement figures to measure success and outcomes of messaging. Bathroom bin trial plans underway and due to be distributed by end of July.
	Joint waste messaging with local authorities	Remains on hold due to COVID-19

Initiatives continued:

Theme	Activity or initiative	Q2 2020 Progress report
Customers and Stakeholders	Sewer Misuse - Marketplace	See case study below
	Partnership working	Resource West group has restarted after Covid-19 delays. Meeting to review plans for multi-utility campaign in Bristol area has occurred. This will focus on the theme of sustainability and will include messaging about sewer misuse from a WW perspective. The aim is to launch this in October.
	Water rangers	No recruitment will take place until the lockdown is raised. We have contacted Bristol Avon Rivers Trust who have shown an interest and are putting in an article in their newsletter asking for volunteers. Somerset Wildlife Trust have sent a proposal to recruit volunteers.
	National engagement	We wrote to the Secretary of State George Eustice MP via John Penrose MP about storm overflow operation explaining that a major contributor to insufficient capacity is due to wet wipes etc. Sent same briefing note to national EA and Defra. Our CEO was interviewed by the Public Accounts Committee and he urged Govnt. to introduce mandatory labelling of items that could be flushed down the toilet.
	Regional initiatives and events	All events cancelled or postponed until further notice due to COVID-19.
	Local initiatives	Continuing to pursue and collect images and weight of bagged rag from the South area. This will give us baseline data for when we carry out customer engagement initiatives that can be used for measurement of success.

Initiatives continued:

Theme	Activity or initiative	Q2 2020 Progress report
Telemetry Data and Analysis	Sewer depth monitor machine learning	The 3 companies currently in the trial were given a month to settle into our data and iron out any kinks in their software. This period has proved valuable for most of the companies especially as it rained a lot during this period. At the end of May, the 3-month trial began, and we are now measuring the suppliers on their performance to see how their systems compare to our existing alarm management. The analysis means that only issues are reported rather than just overflow operation in wet weather. Over the period 21st June to 17th July over 2,800 alarms were generated by our current "alarm on level" system. In contrast, the software being used by the trial companies only generated alarms on a few occasions where the software predicted the sewer depth was outside its expected operating parameters for the conditions. The trials have now had a good range of weather in which to establish normal expected operating parameters and we have already been notified of several partial blockages which have generated an operational response and prevented possible pollution incidents or premature storm overflow operation.
	Rising main burst detection	We have been working with Ovarro to apply Machine Learning algorithms to flow and pressure data to speed up the detection of abnormalities in the data. Wareham burst April 2020 case study in included below - this was using simple flow in flow out calcs. Despite the communication of the data being slower than we wanted, it enabled us to find out about the burst before it was reported to us by a member of the public. We are addressing the timing of the data communication. Work continuing on completing the delayed AMP6 Yr5 schemes. AMP7 Scheme designs underway.
	Rising main burst prevention	Further success in finding and maintaining historically unplotted Air Valves.
	Pumping station enhanced diagnostics	Proof of concept has been developed, reports to be available in corporate reporting tool (Qlikview). Hierarchy of data/concepts in progress (flow, pressure, power, run-stop signals etc.). Trial exception reporting tool has been developed and used, some successes with av. no. pump starts/day, av. pump time/day, flow/power data for pump performance. Draft Qlikview report is with the Performance & Reporting Team to develop into a published dashboard. Estimated completion end of August.
	Pre-spill telemetry alarms	Ongoing. See Crewkerne Case Study below

2.3 Case studies

2.3.1 Marketplace Challenge

We recently ran one of our Marketplace Challenges virtually, inviting creatives from universities across the country to create and submit a marketing campaign raising awareness and educating customers about sewer misuse.

We asked the students to create campaigns targeted towards specific personas which were based on the three customer segments shown to be least engaged with us and these messages, through previous research completed.

We had eight entrants in our final on 10th July, including a team based in India, all of whom presented their campaigns to our three judges – Matt Wheeldon, Director of Assets & Compliance, Sue Lindsay, Director of Customer Policy & Engagement and Ian Drury, Head of Communications.

Our entrants put forward some fantastic and innovative ideas, which were scored against criteria such as suitability for target market and ability to measure success. We believe that ideas submitted will equip us with some new techniques to engage these customer segments. It is the first time we have run a challenge like this virtually and we felt it was a great success which allowed us to tap into talent across the country and not just from students in our region.

Our customer engagement and marketing teams will now be working together to draw on ideas from our winning entries and create an engaging and successful customer campaign.

2.3.2 Stoborough-Wareham Rising Main Burst

Date of Pollution: 19/04/2020
Water Impact Category: Category 2

At 22:00 on the 19th April 2020 the rising main from Stoborough Kings Arms SPS burst. This was discovered on the 21st April using our burst detection software, which detected that a greater volume of flow was entering the rising main compared to the volume leaving the rising main. Immediately following the alert, we attended the site and located the burst; allowing for both Stoborough Kings SPS and Stoborough Ridge SPS to be isolated and tankered preventing any further discharge to the environment.
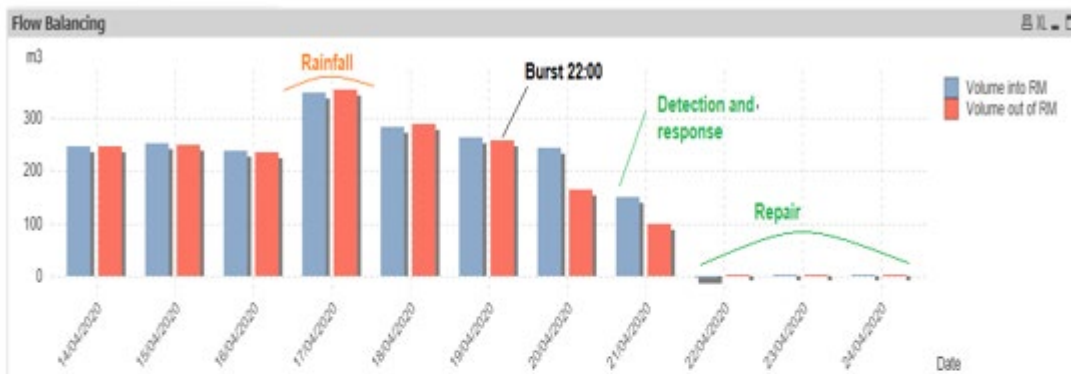
Had the burst not been detected via the burst detection software, it is likely that the spill duration of the pollution would have been much greater due to the burst's remote location.

Unless the pollution had been noticed by the landowner, it is unlikely that a member of the public would have noticed it for some time due to its distance from any public footpaths. As we managed to reduce the spill duration of the pollution it meant that we significantly decreased the impact to the environment, therefore protecting Wareham meadows SSSI from a significant pollution incident.

We have learnt lessons about the frequency of the data downloads and speed of analysis and are working on further improvements.

2.3.3   *Crewkerne North Old WRC Pre-spill Telemetry*

Date of Incident: 13/05/2020
Water Impact Category: N/A – No Pollution

We were alerted to an issue at Crewkerne North Old WRC, by a pre-spill alarm from an ultrasonic depth monitor. Within an hour of the alarm we had attended the site and found that the CSO was backing up due to a blockage in the hydrobrake and at the point of overflowing into the environment.

The blockage was quickly removed, and the main line of the works was cleaned. As a result of a quick response to the pre-spill alarm a discharge to the environment was prevented and a pollution was avoided.

ID: 16999, Crewkerne North Old WRC EDM
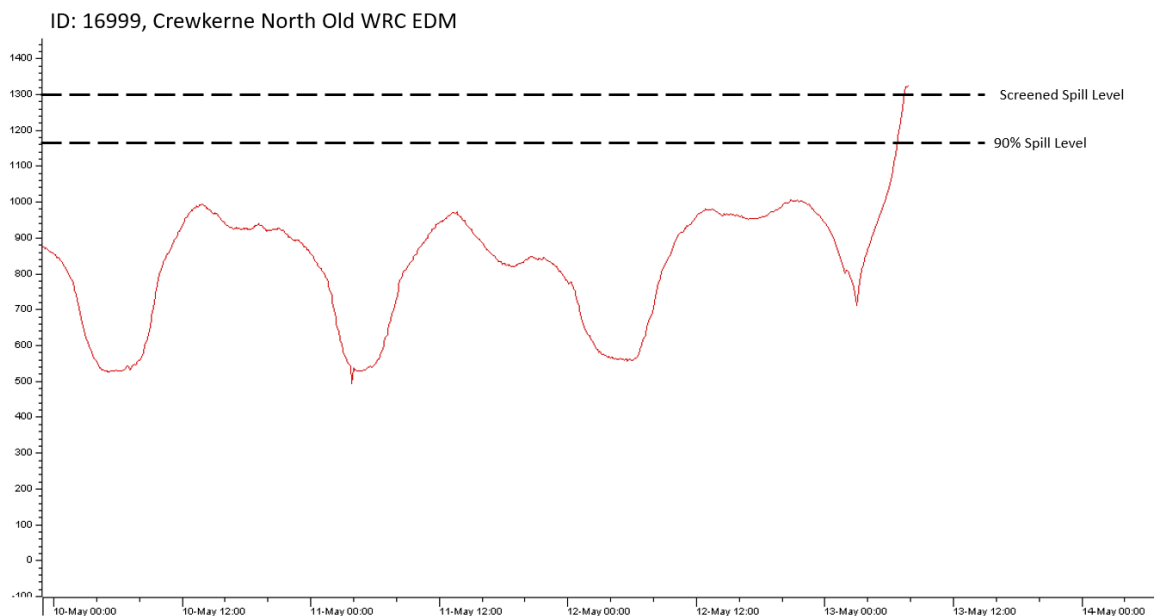
Lessons learnt: the existing telemetry system alarms at pre-spill and spill. Whilst this is sufficient information if it is dry and the rate of rise between pre-spill and spill provides adequate time to respond (such as the case study above). However, had it been raining, this problem would have been masked. The Bath Proof of Concept for intelligent alarms will address this issue and will generate alarms when levels are recorded outside the normal expected parameters for the prevailing conditions.

2.4 Pollution incident tracker

The graph below shows pollution incidents for 2020 up to the end of June:
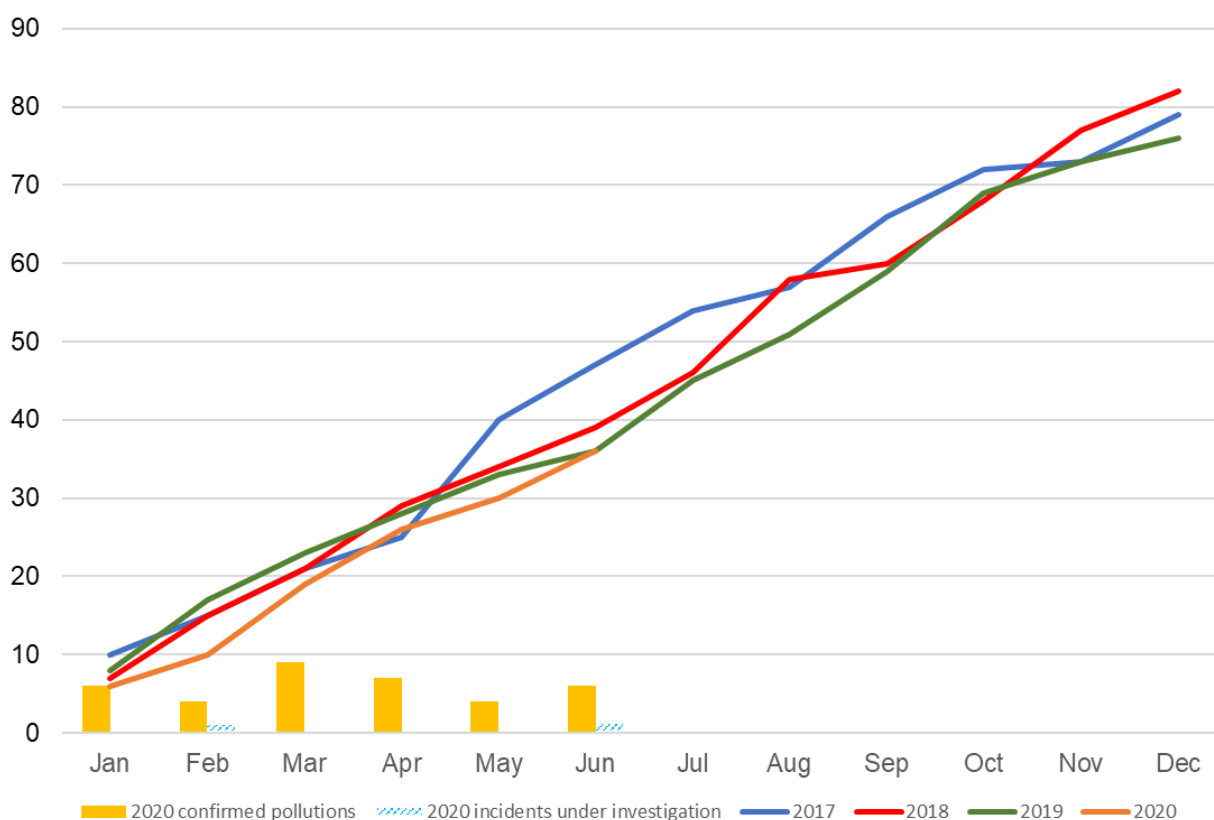
Table 1: Cumulative number of Category 1-3 incidents from wastewater assets

2.5 Q2 review of PIRP effectiveness

A huge number of initiatives, additional investment and greater management focus have, so far, not made a material impact on overall pollution numbers.

The root causes of the 2020 incidents to date are shown below:

Root cause	Number (Jan - June 2020)
Blockage	14
Burst rising main	8
Poor effluent quality (within permit)	4
Pump failure	3
Hydraulic overload	3
Other	2
Structural failure	1
Power supply failure	1

2.5.1   Tackling sewer misuse

Blockages remain the dominant cause of pollution incidents so far this year with the majority of these still being caused by wipes being incorrectly flushed. We continue to lobby for the mandatory labelling of all products that consumers might mistake as being flushable to be clearly labelled 'Do Not Flush' or 'Fine to Flush' if they pass the Water Industry Specification (4-02-06).

Fine to Flush logo   Do Not Flush logo

Some leading brands have now obtained the 'Fine to Flush' accreditation which is a great step forward, but with the continued growth of the 'flushables' market and societal views on what is acceptable behaviour, the battle to change customer habits will be an ongoing struggle.

We will be using ideas from our Marketplace challenge to measure the effectiveness of campaigns to change behaviours.

2.5.2   Rising main bursts

Although we have seen fewer bursts from rising mains this year, the consequences of them have been worse than last year and resulted in 8 pollution incidents.

We continue to invest in monitoring of rising mains and machine learning tools to analyse data to both provide both swift response to bursts but also develop greater predictive capabilities.

There are promising results coming from this work – indeed, several bursts have been detected earlier than would have been before we began this investment. As we continue to invest, we believe we will begin to see improvements.

2.5.3   In-sewer monitoring

The Bath Proof of Concept trial is delivering some excellent results – providing early notification of issues that are outside of the normal operating parameters we should expect, before they become incidents. We are confident that this trial will be a game-changer in the way in which we understand what is going on in the sewer network in near real-time.