



It's everyone's water

Sewage Summit Presentation

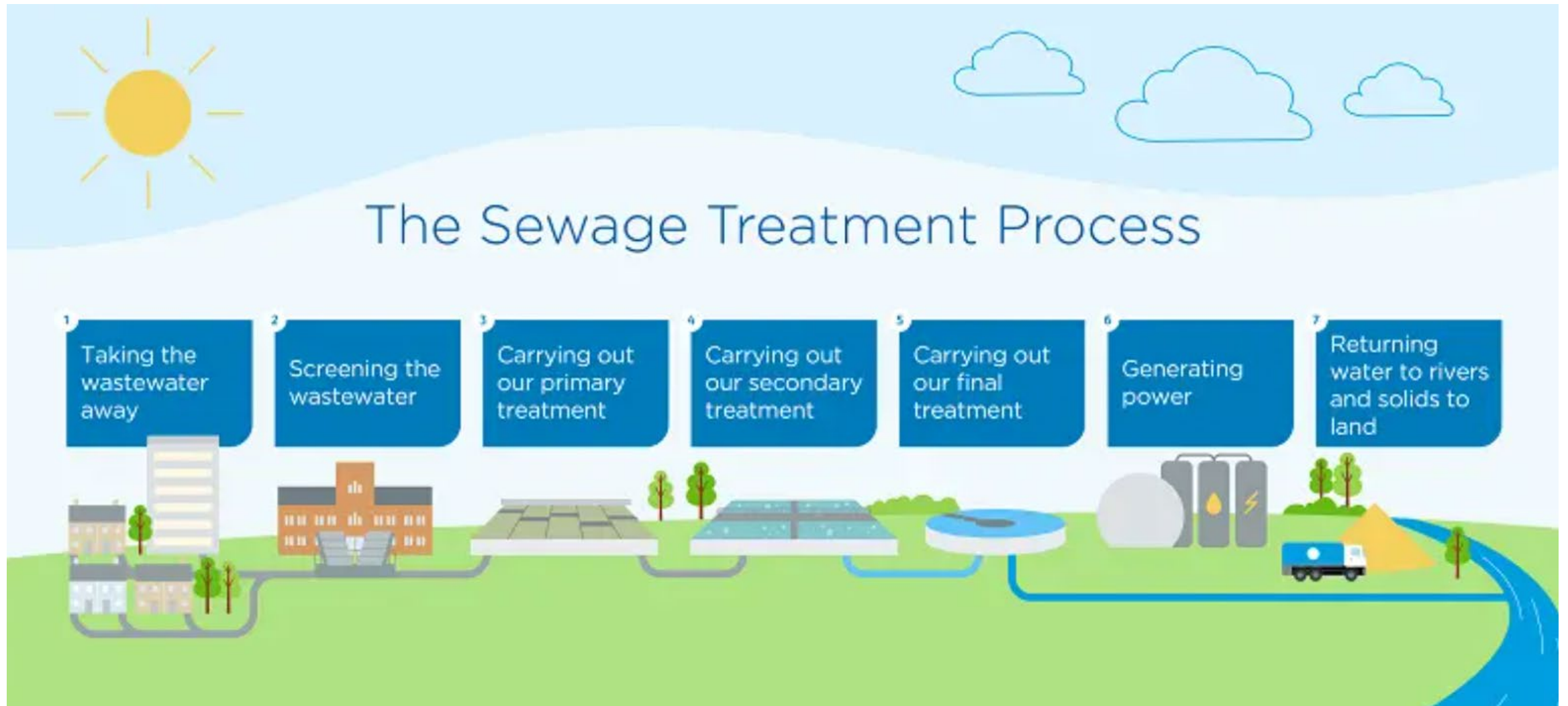
8th July

Tessa Fayers – Operations Director

How the sewage system works

The Sewage Treatment Process

How the Sewage Treatment operates

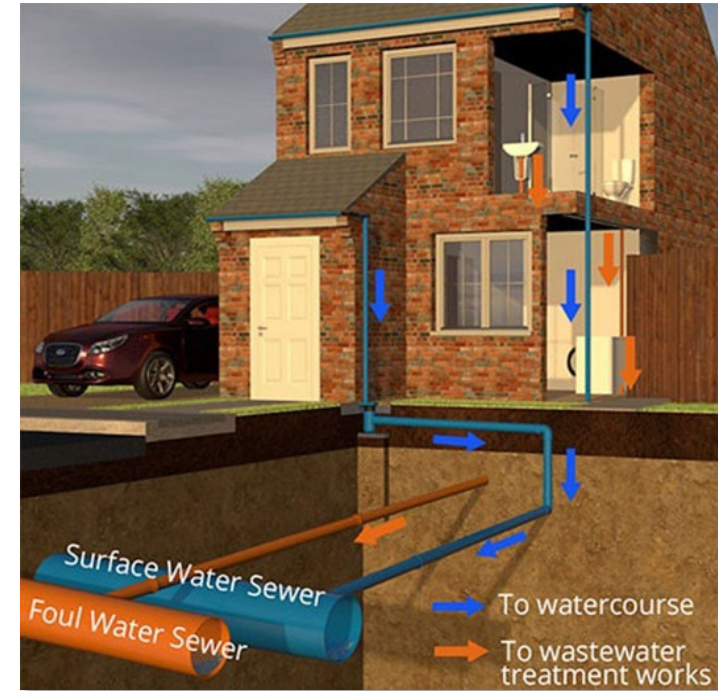


How and why do flows increase after rainfall?

Across our network



Infiltration



Misconnections

Why do flows increase after rainfall?

Across our network



Inundation



SP96010903X_ea675ba7-0a84-49ca-8430-4eb9aab094c8_20
200720_143028_266.jpg, 00:05:10, 45.40 m
Infiltration, gushing at 1 o'clock, Around connection

Physical damage

Life in the Cotswolds

Our “Cotswolds” area

Our Cotswolds area has 52 sewage treatment works, 267 pumping stations and 1,426KM of network

Created by: Laurence Ralph
Last Updated: 04/10/2022

53 Total Systems
3 Major Systems
50 Minor Systems

Operational Sites

Sewage Pumping Stations
267

Sewage Treatment Works
52

Balancing Ponds
10

Storage Tanks
4

FLIPs
5

SPS Type

Foul
259

Surface water
7

Combined
1



Planning area ● Thames Valley & Home Counties

Gravity Sewer (km)

Total Mapped	Total (incl unmapped)
900.97	1,426.52

Rising main (km)

Total
176.26

Small Dia (<300mm)	Pressure Main
163.63	176.26

Large Dia (>=300mm)
12.63

Demographics

Total PE	Properties (vcap)
174,707	82,211

Storm Overflows

Total
36

Network CSO (including uCSO)

5 SPS
3 STW
28

25 of our sewage works are directly located within the CDC district

These sites serve 63,385 people.



*SPS figures only:
rtd on 01/08/2020 and joined to closest SDAC STW and River Basin. The SPSs have
f pump sets) from a joined SAP export from the MDM team dated 22/07/2020.*

Winter 2023/24 – a view from the frontline

- The winter of 2023/24 was tough on not only our network but our staff who maintain it.
- Winter 23/24 was among the wettest on record.
- Rainfall measuring 445.8mm fell within the season, 29 per cent more than the long-term average.
- The Environment Agency data showed that groundwater levels in the area were similar or above those seen in 2014, which was the wettest winter on record at that point.
- *“Last winter was particularly bad due to the early rise in ground water levels and then the extended period of high ground water levels, this meant some longer periods of tankering than previous winters..”* - Field Operations Specialist Oxfordshire
- *“[In the] Autumn & winter period our daily routine enhances with infiltration across our network, ...the ground water table rose early last year and along with the named storms we experienced and our workload trebled”* - Field Operations Specialist Costwolds
- We liaise with other Risk Management Authorities, such as Lead Local Flood Authorities, The Environment Agency and Highways during this period. We continue to work with them to mitigate the impact from all types of flooding.

Winter 2023/24 continued

Blockages

Call outs can come in the form of sewer flooding, but we also experience blockages in our network.

Our stats for the Cotswolds are;

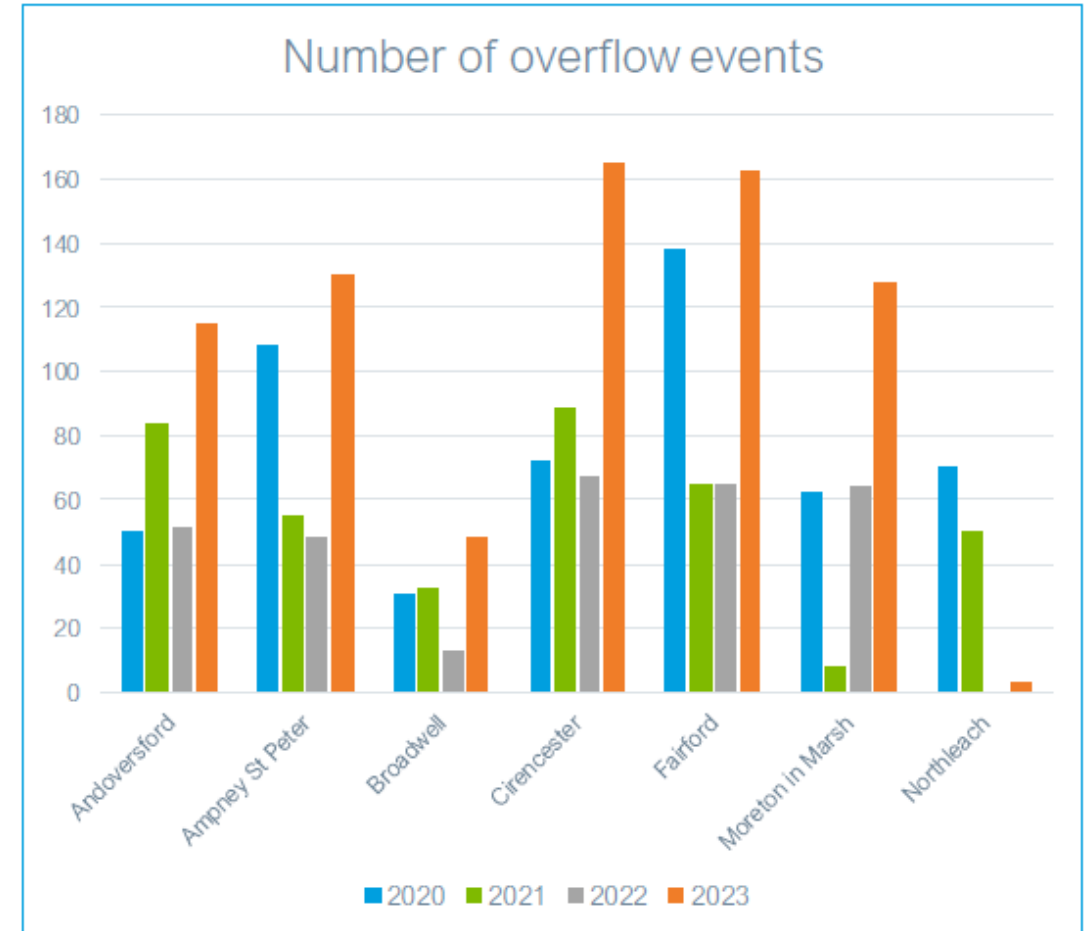
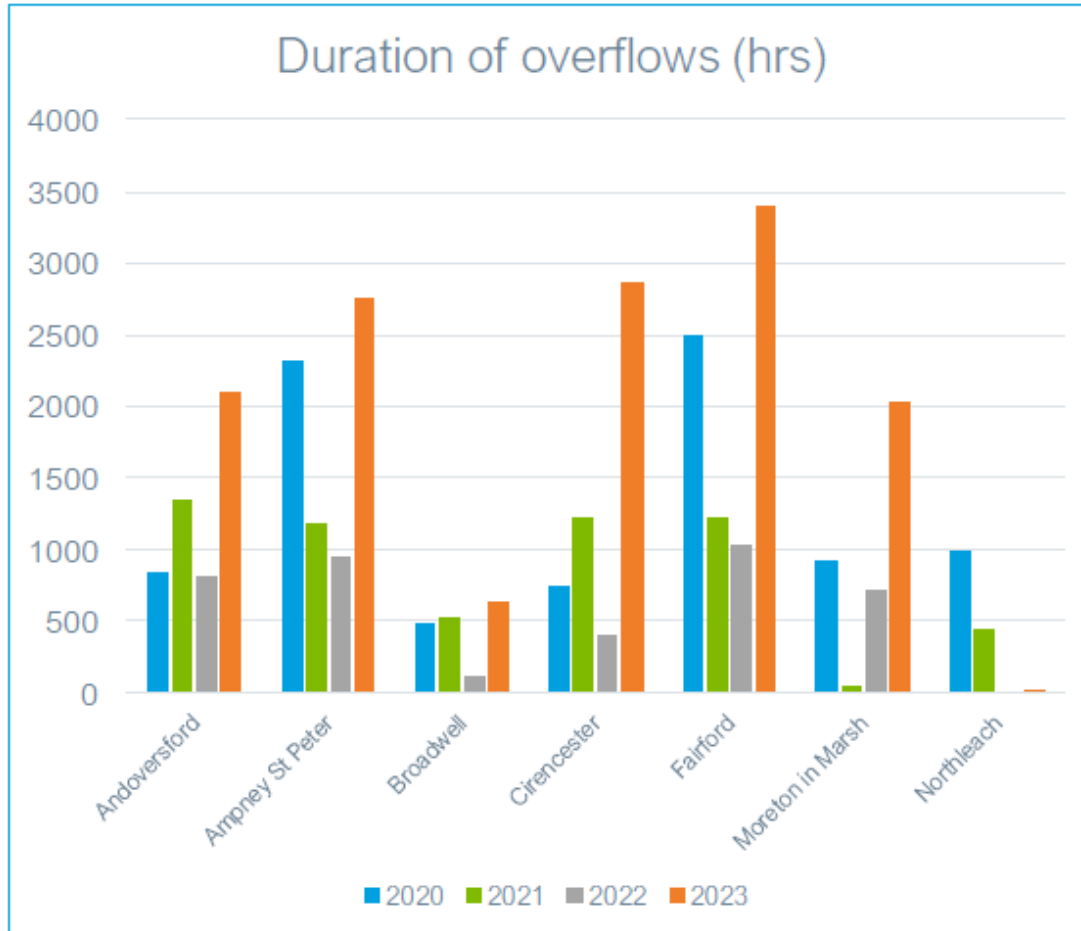
- 2022 - 548 blockages in the foul sewer
- 2023 - 554 blockages in the foul sewer
- 2024, up until 30 May, 230 blockages in the foul sewer.

We also have blockages in the sewage pumping station pumps and at the inlet works on the STW, which we do not have data as we treat it as an everyday activity.

We hope that our bin it don't blockage is getting out there and we continue to see a reduction in Blockage numbers.

Reflections on this winter

Event Duration Monitoring – Spills



Investing in your area

Investment Overview

STWs	Scheme	Est completion
Ampney St Peter	An upgrade is being planned for Ampney St Peter. It will include a substantial increase in treatment capacity, though the design hasn't been finalised.	2027
Broadwell	An upgrade is planned. This will improve its ability to treat the volumes of incoming sewage, reducing the need for untreated discharges in wet weather.	2026
Bourton on the Water	An upgrade is planned. This work will provide a major increase in treatment capacity, from 47 to 143 litres per second. This will reduce the need for untreated discharges in wet weather.	2025
Cirencester	Being upgraded at a cost of more than £22 million. This project will provide a major increase in treatment capacity, from 269 to 484 litres per second. It will also include an increase in storm water volume and treatment capacity via land treatment. This will reduce the need for untreated discharges in wet weather.	2024
Fairford	An upgrade is planned. This project will provide a major increase in treatment capacity, from 37.8 to 56.8 litres per second, reducing the need for untreated discharges in wet weather.	2025 - 2030
Moreton in Marsh	Moreton in Marsh STW is being upgraded to increase the capacity of the storm tanks. This will reduce the need for untreated sewage discharges during storm conditions.	2025 - 2030
Northleach	An upgrade is planned. This will improve its ability to treat the volumes of incoming sewage, reducing the need for untreated discharges in wet weather.	2026

What's happening
now

Cirencester STW

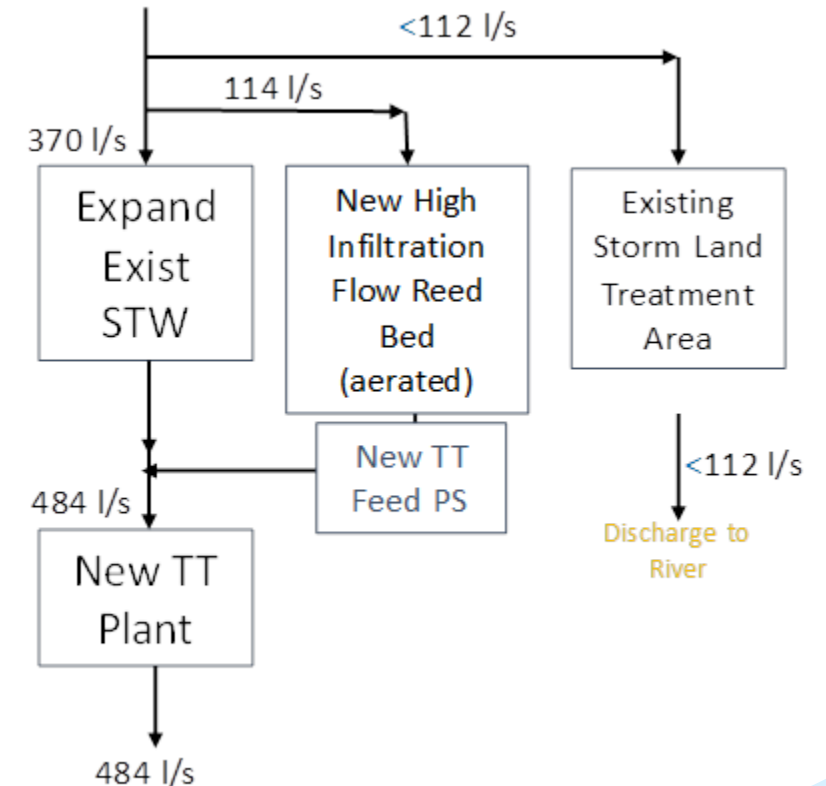
- Cirencester STW is located within the Cotswold Water Park & suffers from wildly fluctuating flows between summer months and winter months.
- We approached the EA with a proposal to increase the FTFT to 484l/s with 370 l/s
- 114l/s going through a High Infiltration Reed Bed (HIRB). Any flows exceeding the 484l/s would pass to the existing storm land treatment plot. The EA agreed to this significant increase in FTFT and to not install a traditional storm tank.
- This will significantly reduce the storm discharges from the Cirencester site, and the ongoing investigation works within the catchment will reduce these flows in the future.



Treatment at Cirencester

Agreement with the EA to not use a storm tank

- Following on from the flow investigations on the site we started looking at other options on how to treat the high infiltration flows.
- As Cirencester STW had space available, we looked at natural solutions as this would both improve the treatment capacity of the site while also providing environmental and ecological benefits. Several options were considered looking at Environmental, Operational, Construction, Energy and Cost factors and an aerated reed bed was selected to treat the high infiltration flows.
- A Reed Bed is a natural biological process that can treat sewage effluent by reducing the biological & ammonia loading using the natural processes of the reeds.
- By aerating the Reeds it provides further treatment capabilities. This plus tertiary solids removal will mean that we will be able to treat the increased flows & maintain our effluent quality parameters.



High Infiltration Reed Bed (HIRB).

- Construction on the reed bed started in August 2023 and we have been continuing through the winter months in difficult conditions due to the particularly wet weather.
- The reed bed is now nearing completion with the reeds being planted over May and June, and the testing due in June & July.
- The project is known to be the largest HIRB of its kind in Europe.



Bourton-on-the-Water

1. Delivery of scheme (April 2025)
2. This work will provide a major increase in treatment capacity, from litres 90l/s per second to 143 l/s. This will reduce the need for untreated discharges in wet weather.
3. Our primary concerns for the project to focus on
 - Reducing Spills
 - Better Works efficiency
 - Dealing with growth



What are we doing?

The 3 required outputs from this project are:



Modifications to increase the treatment capacity at BoTW Sewage Treatment Works (STW) to meet the new consented flow to treatment, up to 143 l/s.



Increase the capacity (up to 143 l/s) of the main BoTW Sewage Pumping Station (SPS) to limit storm discharges.



Increase the pipeline capacities to allow for the increased flows to the STW.

Bourton-on-the-Water

BOTW is a Ground Water Impacted System and has a dedicated management plan (GISMP)

Created by: Laurence Ralph
Last Updated: 04/10/2022

1 (Blank) 1
Total Systems Major Systems Minor Systems

Operational Sites SPS Type

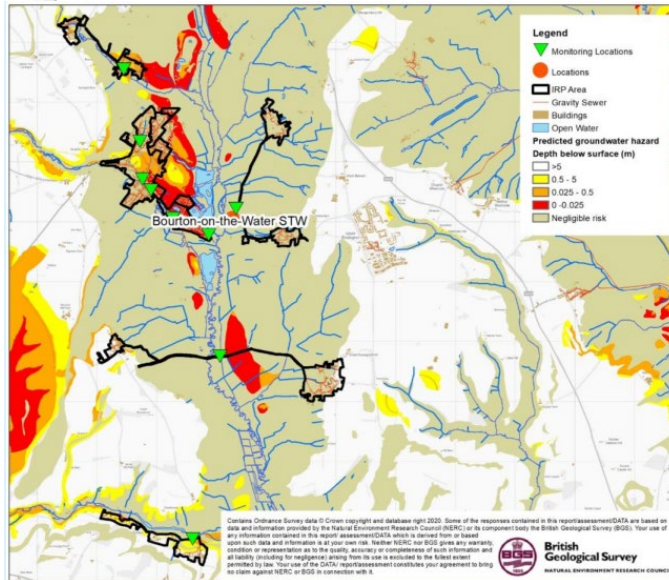
Sewage Pumping Stations 11 Foul 11
Sewage Treatment Works 1



BOTW Notes

Approximately 10% of the network is in the high-risk zone, with the remainder being in the medium to very low risk.

Our hypothesis was that sealing manholes and sewers in the high-risk zones will yield the greatest proportional benefit.



Gravity Sewer (km)

Total Mapped	Total (incl unmapped)
41.36	58.48

Rising main (km)

Total
11.52

Small Dia (<300mm)

11.52

Pressure Main

11.52

Demographics

Total PE	Properties (vcap)
5,900	2,939

Storm Overflows

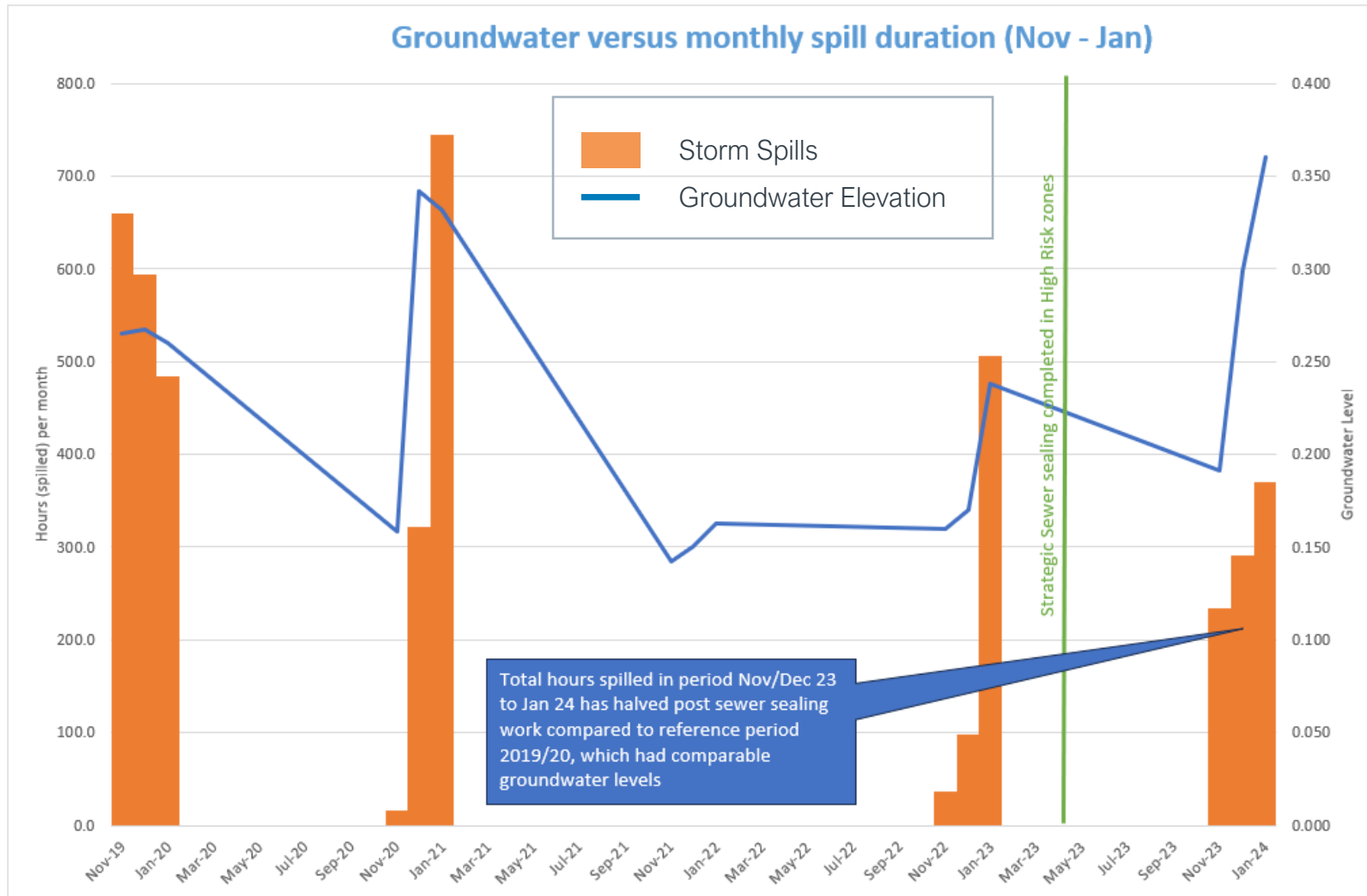
Total
2

Network CSO (including uCSO)

2

Bourton on the Water – GISMP Benefits

Our activity has delivered at 50% reduction in spill duration in an extreme year



To date we have sealed ~10% of the system (high risk sewers) and achieved a **50% reduction in spill duration** in an extreme year.

We expect the benefit to be greater in non-severe winters.

Plans for the future

Ampney St Peter STW

Existing Site Known Issues

- Site is not resilient in terms of electrical power.
- Site has spilled on dry days due to power failures
- Access around site is split & difficult
- Site suffers from grit causing wear on pass forward pumps
- Site has a single Primary Settlement Tank
- Growth in the area is expected & site is undersized for these flows.
- Known issues getting flows to Nitrifying Sand Filters for Tertiary Treatment.



Moreton in Marsh

- Through the Water Industry National Environment Programme (WINEP), we plan to install storm tanks at the sewage treatment works.
- This would essentially move the location of one overflow from the network, but would provide much greater resilience to the system, preventing more storm discharges from happening.
- Scheme forecast to deliver between 2025 – 2030.



What is happening
elsewhere?

Storm overflow action plan

In March 2024 we published our storm overflow action plan. An assessment and action plan for every storm overflow from every water and sewerage company in England was required by Defra.

It includes assessments and interventions for reducing the use of 620 storm overflows. This includes discharging, on average, no more than 10 times per overflow, per year.

It also includes details of when we expect to meet the Government's new targets for storm discharges. To meet these, we're planning to invest £13.4 billion over the next 25 years. More details are available on our investing in river health page.

We've also updated our investment plans to reflect targets for many CSO's in our network.

Our draft plans for the next investment period (2025-2030) included £885 million for reducing storm overflows.



River Health Action Plan

We have republished our river health action plan on the 12th May 2024. The document is intended to provide a snapshot of our current performance and what we are doing to improve it.

In April 2022 we set out our first river health action plan, describing how we planned to improve the health of rivers in the Thames catchment. To keep this up to date we've continued to re-publish annually, to let you know about our progress and plans going forward.

Those familiar with our previous reports will be aware that we breakdown the content of the report into three sections.

We're aiming to:

- Discharge higher-quality treated effluent that meets all required standards
- Reduce potentially polluting discharges to our rivers
- Work with partners to improve river water quality

Our report provides an overview of progress with delivering our commitments under the Water Industry National Environment Programme (WINEP), an overview of performance against targets in our Pollution Incident Reduction Plan (PIRP), examples of how we're working to reduce the number of storm overflows, and how we are working with partners including the 27 river Catchment Partnerships.



Storm Discharges

Our interactive, live map

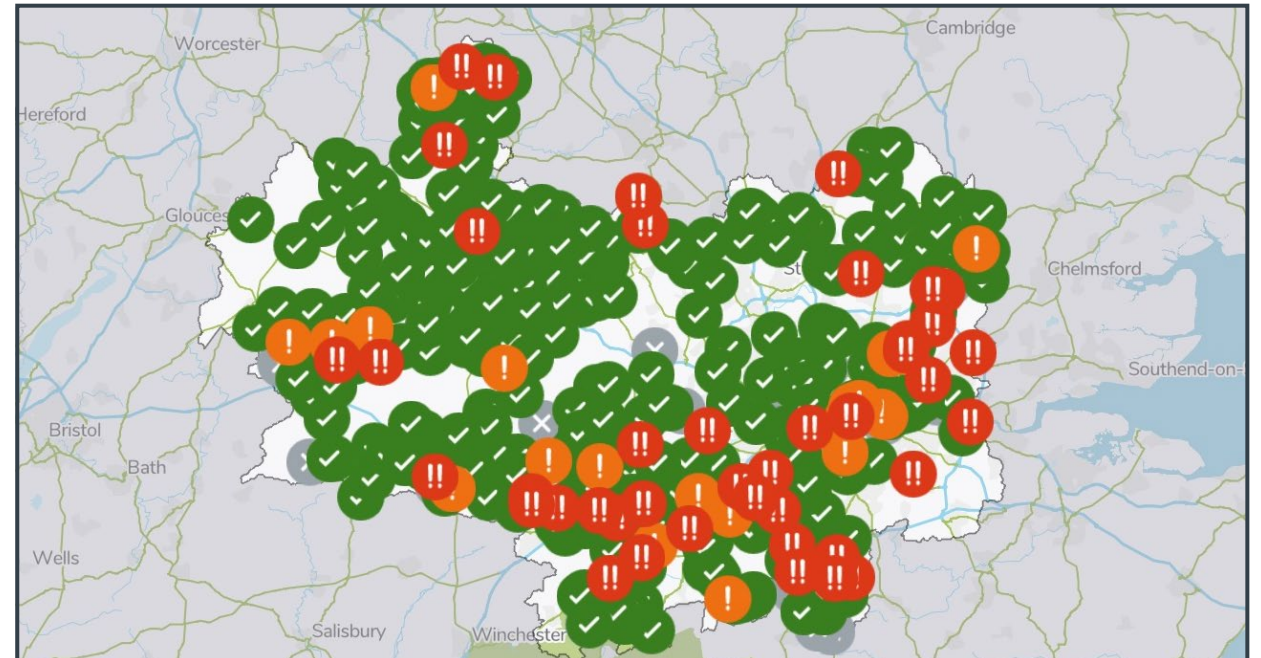
We want to be very clear on our stance. Putting untreated sewage into rivers is unacceptable to us, our customers and the environment. That's why we're working hard to stop these discharges, with the help of the Government, Ofwat and the Environment Agency.

To increase transparency we made a commitment to provide storm discharge data for all 468 consented overflows – we have done this in **three** ways:

- An **interactive map** showing storm discharge activity as indicated by our EDM monitors. We went live 3rd Jan 2023, the first water company to do this.
- A **third party API**, so you can integrate our data into your own systems.
- **Annual storm overflow activity reports** showing you data from previous years.
- The map includes information on our **improvement plans**.

We know this is the start of the journey to tackling overflows, in the meantime we welcome suggestions on how to improve the tool in the future.

<https://www.thameswater.co.uk/about-us/performance/river-health>



"My congratulations on being the first company to provide this data in real time"

"It is good to see Thames Water standing out and opening its doors a little wider"

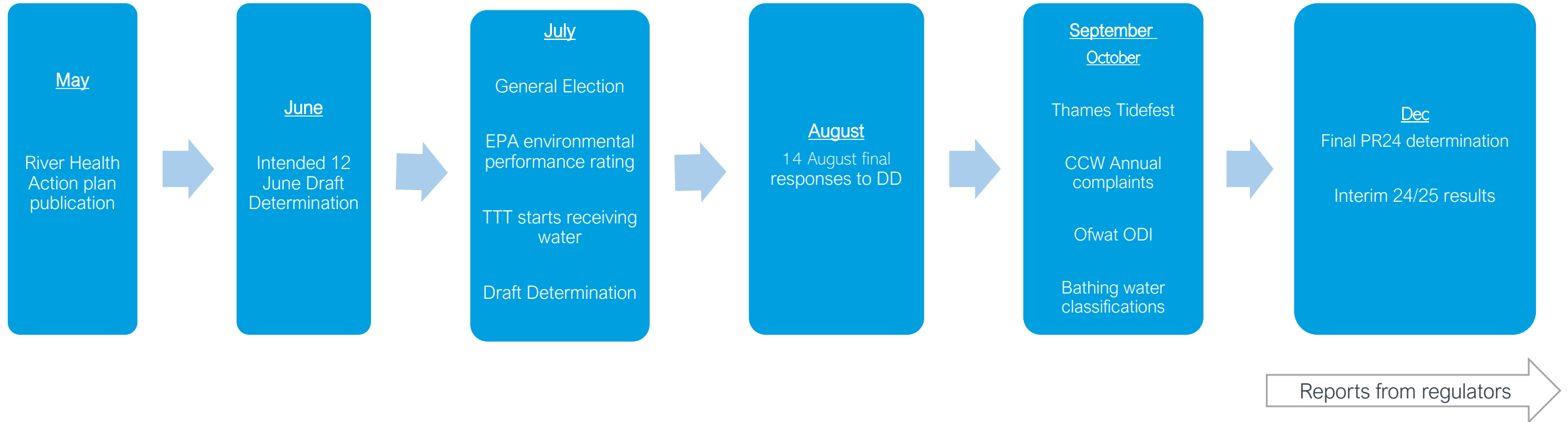
"Really supportive and pleased to see the move to openness of data. Recognition of the risk for Thames Water in making this data open and support for this bold & brave step"

"This is major step forward and we thank Thames for their openness. Let's see how we get the map green."

"Great to see that Thames Water have launched this real-time map to show when & for how long storm overflows are discharging into watercourses so that they can be more easily held to account"

Key Dates timeline

Key moments until the end of 2024





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Thank you for listening