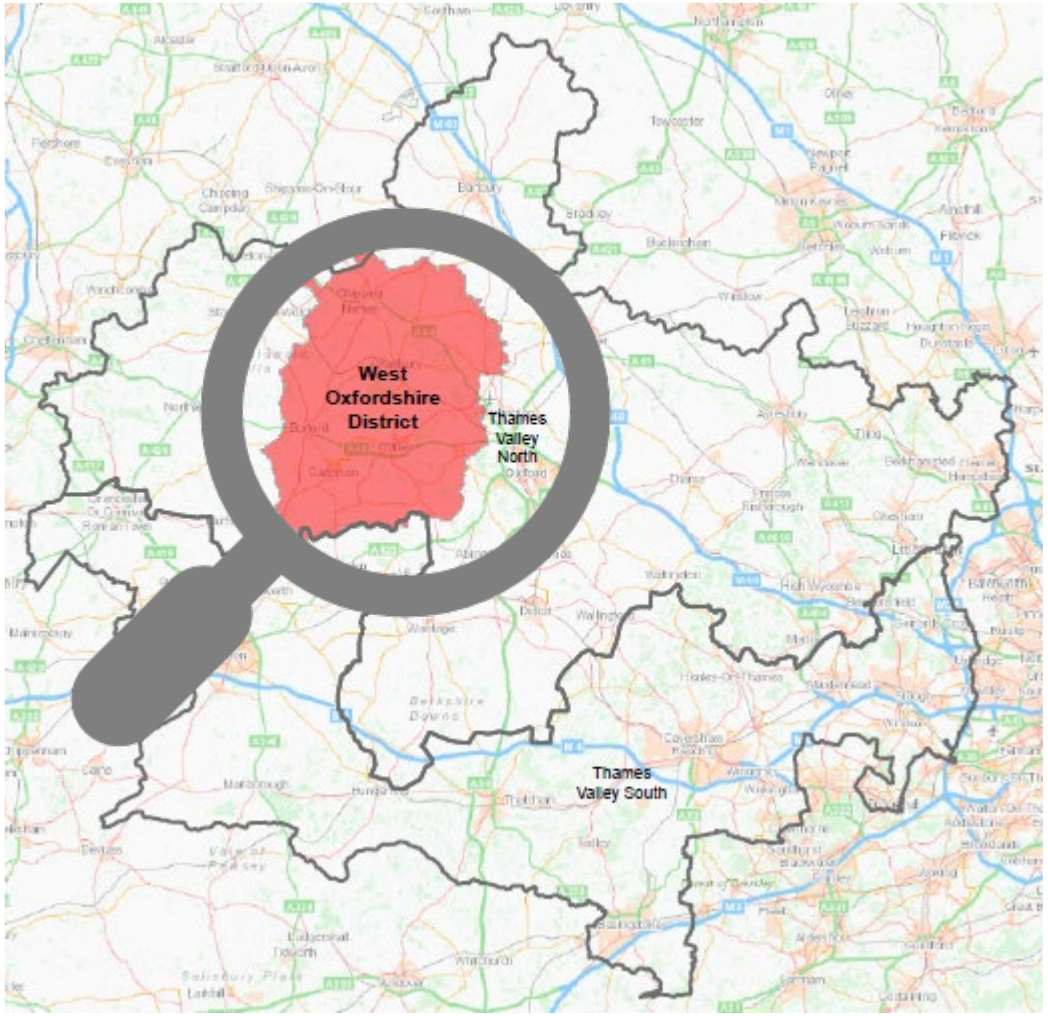
Waterways Day

November 18th 2022

Why do untreated discharges happen – and what is Thames Water doing about it?

Richard Aylard, Sustainability Director

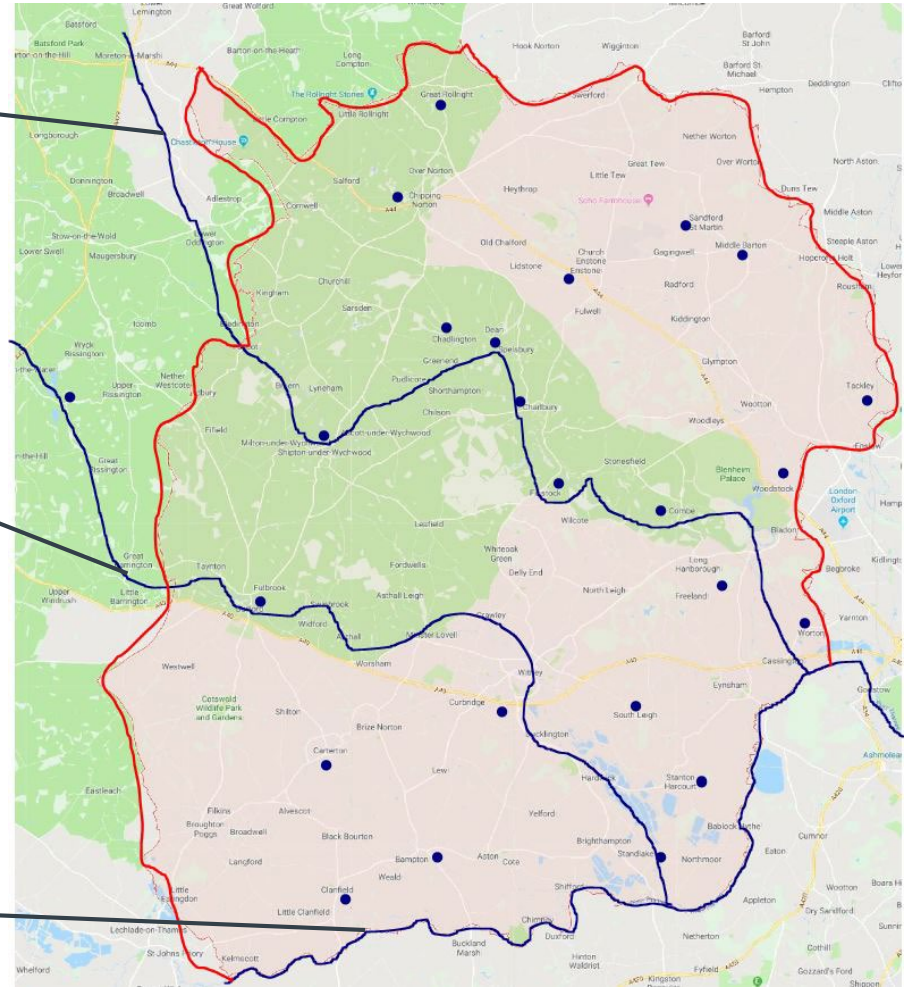
The West Oxfordshire Area



River Evenlode

River Windrush

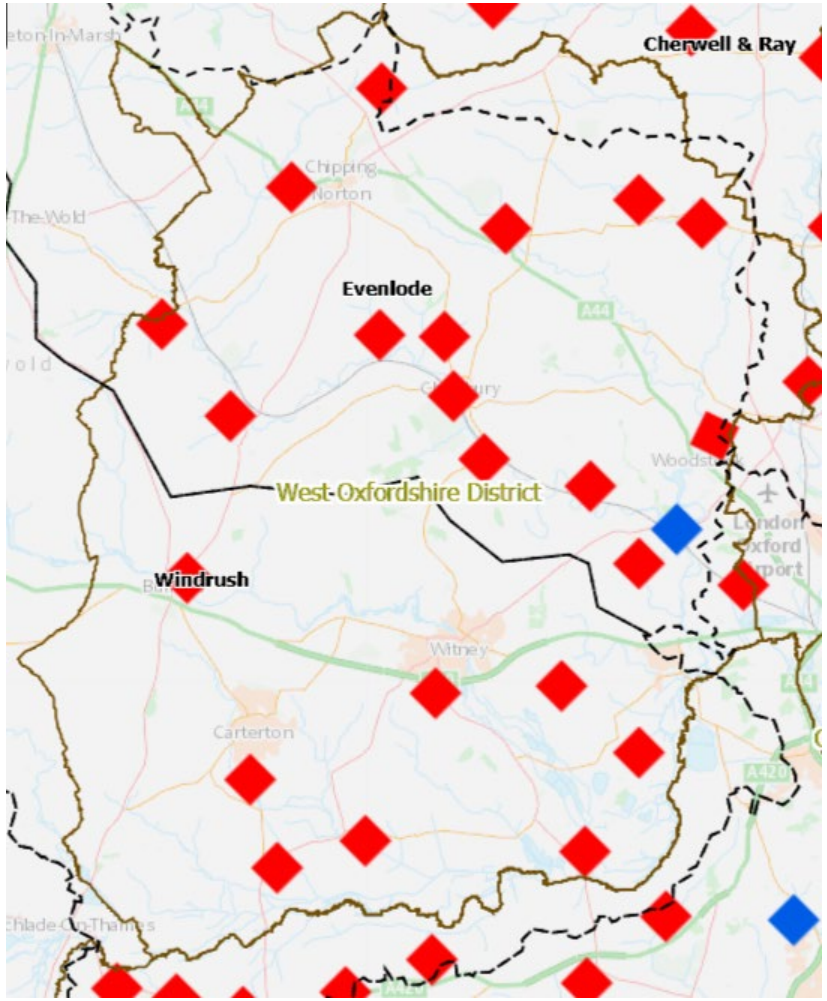
River Thames



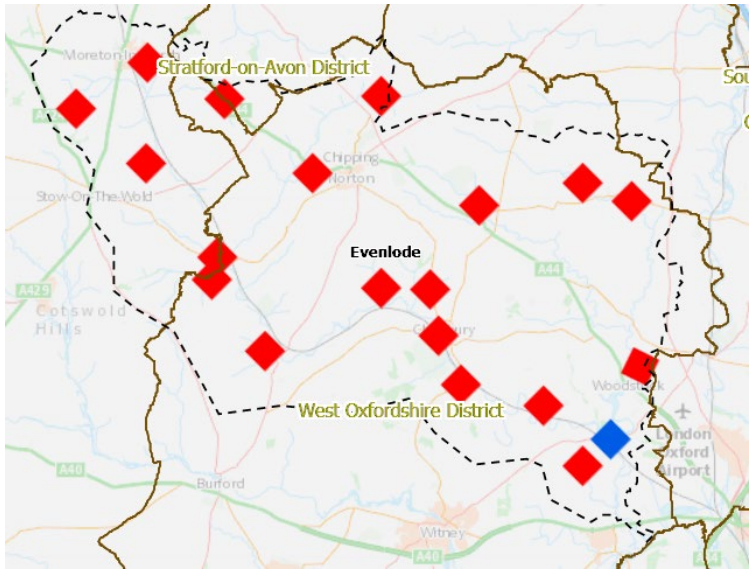
Blue dots are all TW STWs in the area.

Our STWs in the West Oxfordshire District

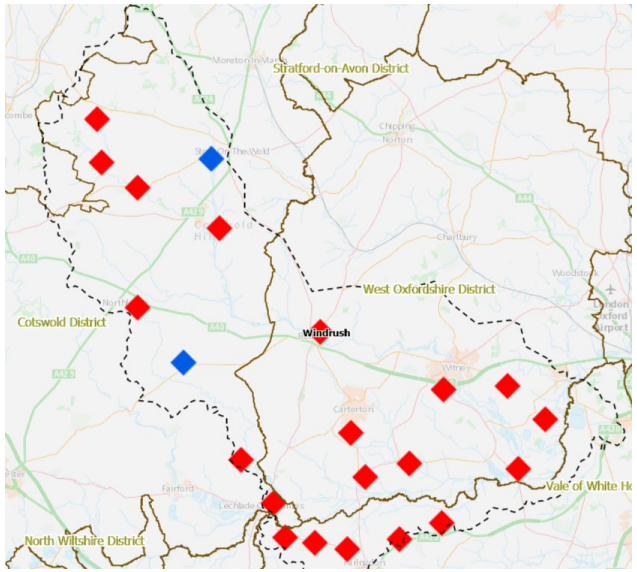
West Oxfordshire District



Evenlode catchment



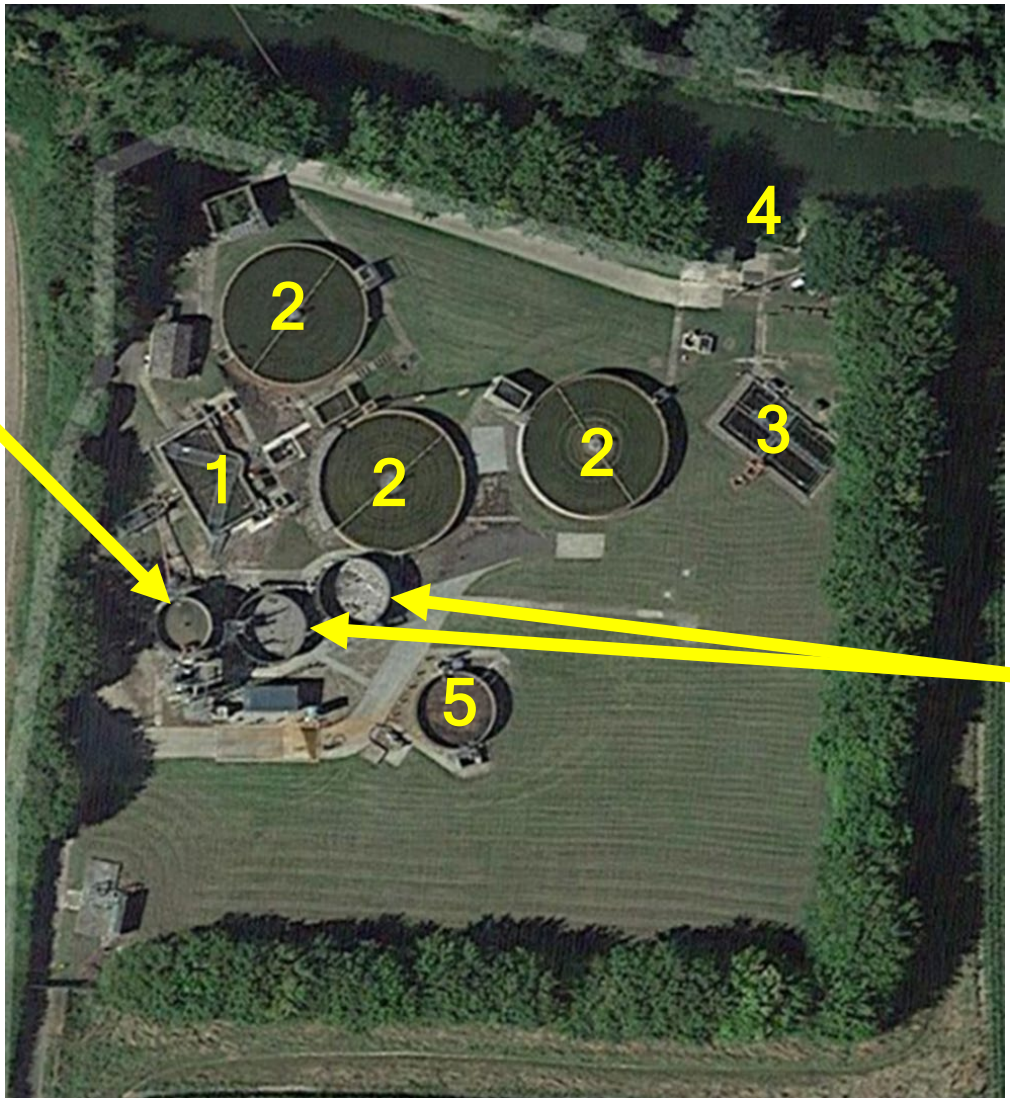
Windrush catchment



Symbol	Description
	Sewage Treatment Works
	Sewage Treatment Works not under the ownership of Thames Water
	Local Authority area
	CaBA Catchment area

How does a treatment works operate?

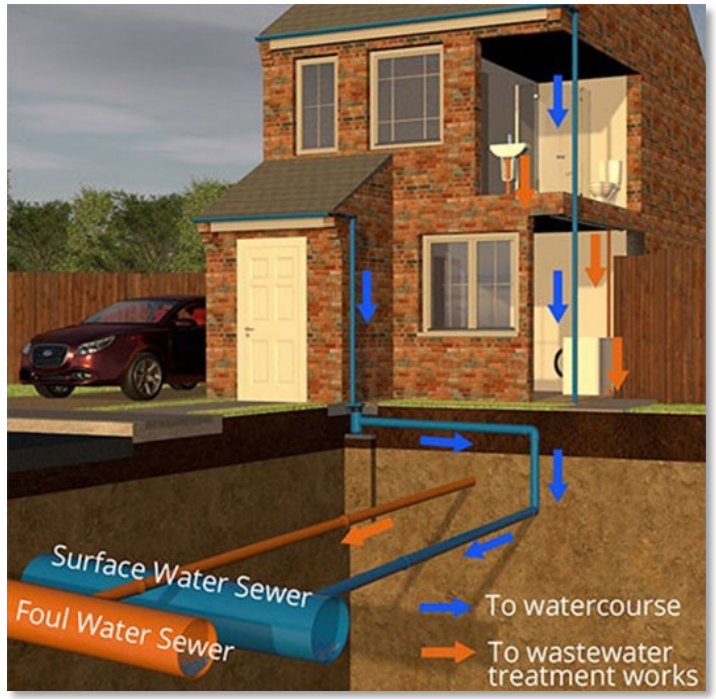
A typical Sewage Treatment Works



How and why do flows increase after

Across our network

Infiltration



Misconnections

Why do flows increase after rainfall?

Across our network

Inundation

Physical damage

Why do flows increase after

Across our network

Dual manholes

Why do flows increase after

Across our network

Unnauthorised connection

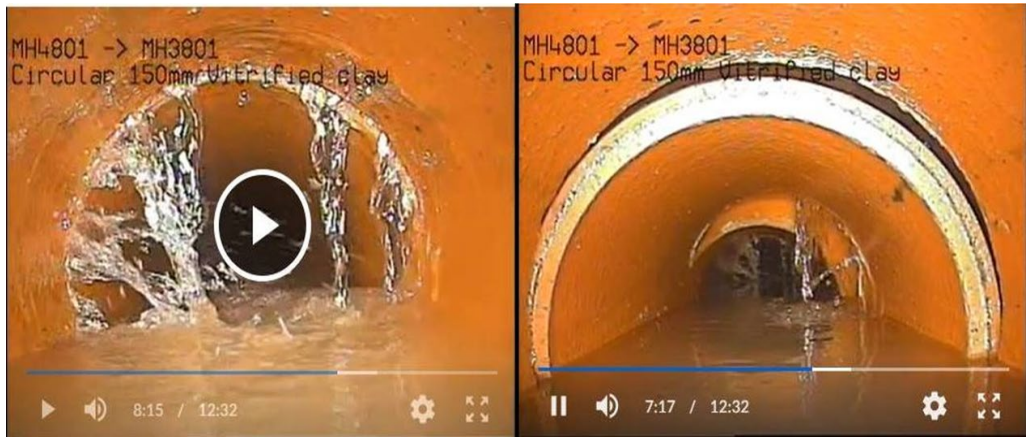
Groundwater Impacted System Management Plans

We have 56 systems identified in agreement with the Environment Agency (EA) as requiring a **Groundwater Impacted System Management Plan (GISMP)**. These are published externally here: *https://www.thameswater.co.uk/about-us/regulation/drainage-plans*

GISMPs:

Build on our understanding of groundwater Infiltration and develop short, medium and long term plans to tackle the issue. GISMPs are developed in consultation with the EA.

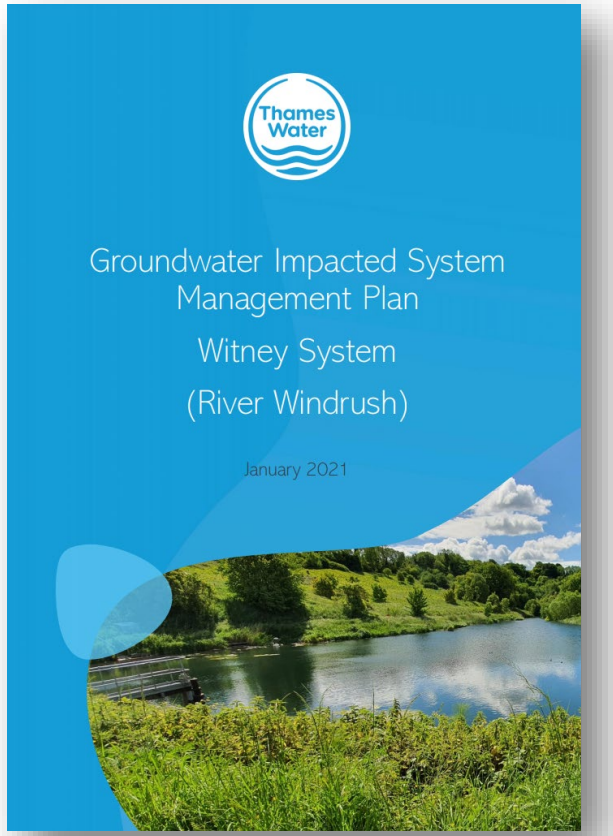
The plans outline our:
1.) Approach to surveys
2.) Plans for long term monitoring
3.) Groundwater potential mapping
4.) Prioritised remediation
5.) Building a case for a strategic infiltration approach for our PR24 submission to Ofwat.



List of GISMPs

- All Groundwater Impacted System Management Plan documents have been agreed with the EA and uploaded onto our website.
- GISMP's are updated annually from October 2022.

Alton	Charlton on Otmoor	Hambleden	Reading
Ampney St Peter	Chesham	Hampstead Norreys	Sherbourne St John
Ashampstead	Chinnor	Little Marlow	Silchester
Ashford Hill	Cirencester	Maidenhead	Standlake
Basingstoke	Clanfield	Maple Lodge	Sulhamstead
Benson	Compton	Markyate	Uffington
Bentley	Cranleigh	Marlborough	Washwater
Berkhamsted	Crondall	Marsh Gibbon	Watlington
Bibury	Didcot	Milton Under Wychwood	Winterbourne
Bicester	East Ilsey	Moreton in Marsh	Witney
Bourton-on-the-Water	East Shefford	Naunton	Woolhampton
Briff Lane (Bucklebury)	Fairford	Oxford	
Burghfield	Froxfield	Princes Risborough	
	Fyfield	Ramsbury	



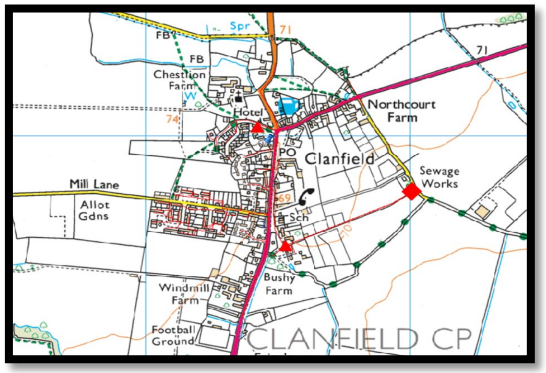
https://www.thameswater.co.uk/about-us/regulation/drainage-plans

Actions to reduce extra flow in our

Clanfield Catchment

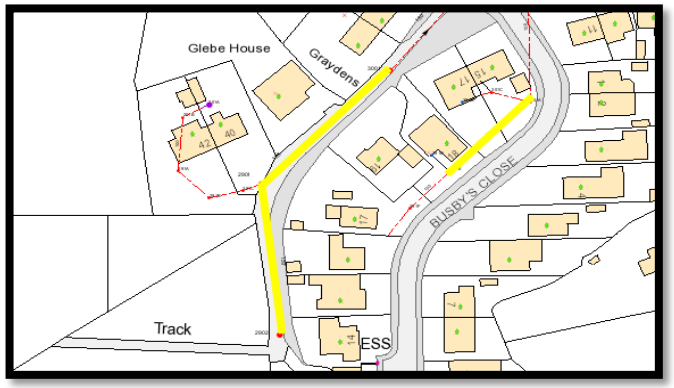
Investigations identified infiltration in the following areas:

- Bourton Road
- Main Street
- Pound Lane
- Busby Close



Since **identification** these have:

- All been put forward by the team for funding,
- Had funding approved; and
- Lining work has been **delivered** on site to reduce Infiltration into our Network.



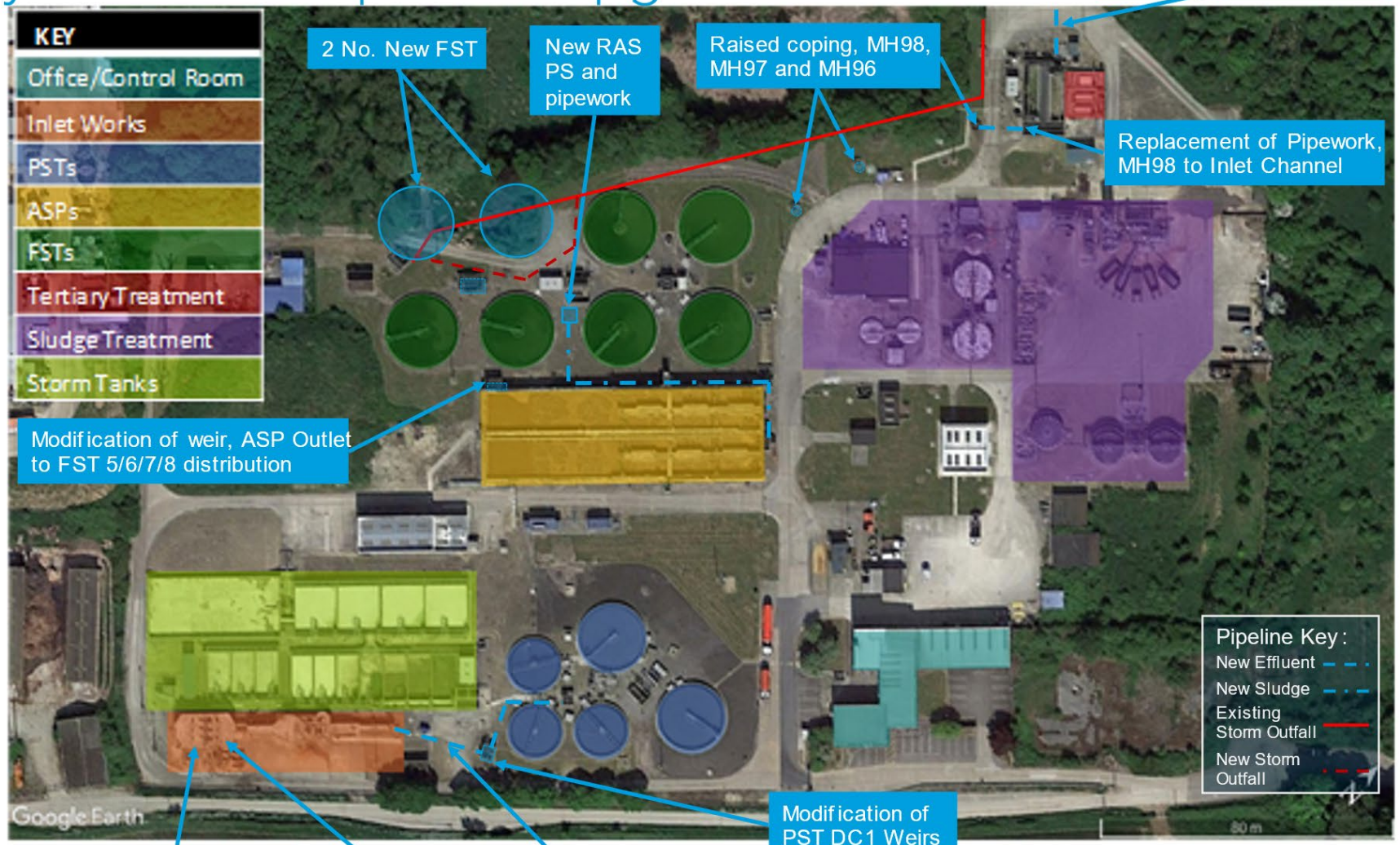
Busby Close

Pound Lane

Witney STW upgrade

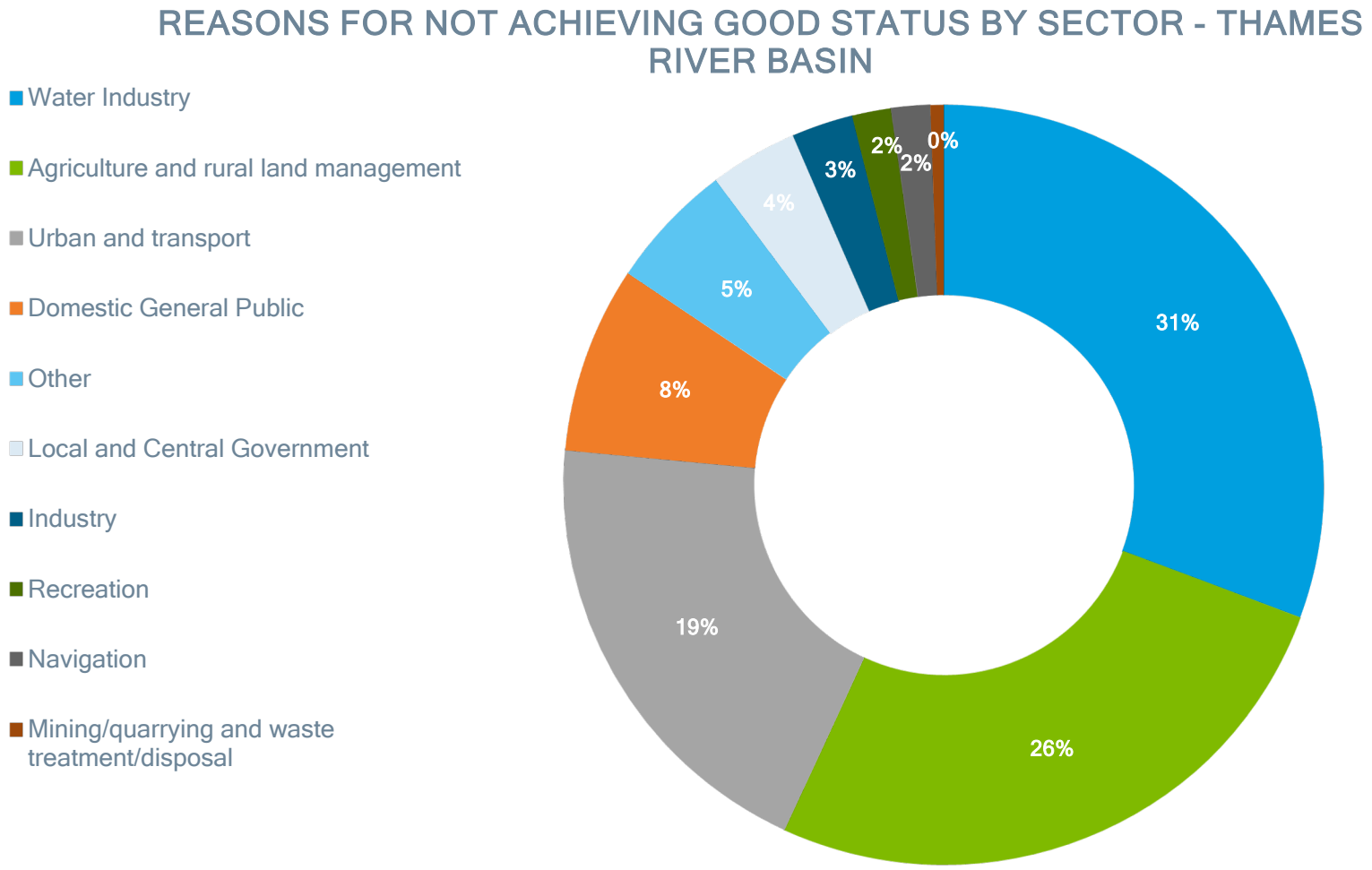
- There is a need to increase Flow to Full Treatment (FtFT) at Witney by March 2025
- An £8.55m project to increase the FtFT from the current 240l/s to 399l/s. This works out as roughly 66% increase*.
- Includes allowance for 7% population growth up to 2026
- The planned project includes:
  - Replacement of pass forward flow meter.
  - Modification of emergency overflow weir.
  - Construction of 2 new final settlement tanks
  - Upgrades to existing pipework and chambers to accommodate the increase in flows.

Witney STW – Proposed Upgrade Works



Impacts on River Water Quality

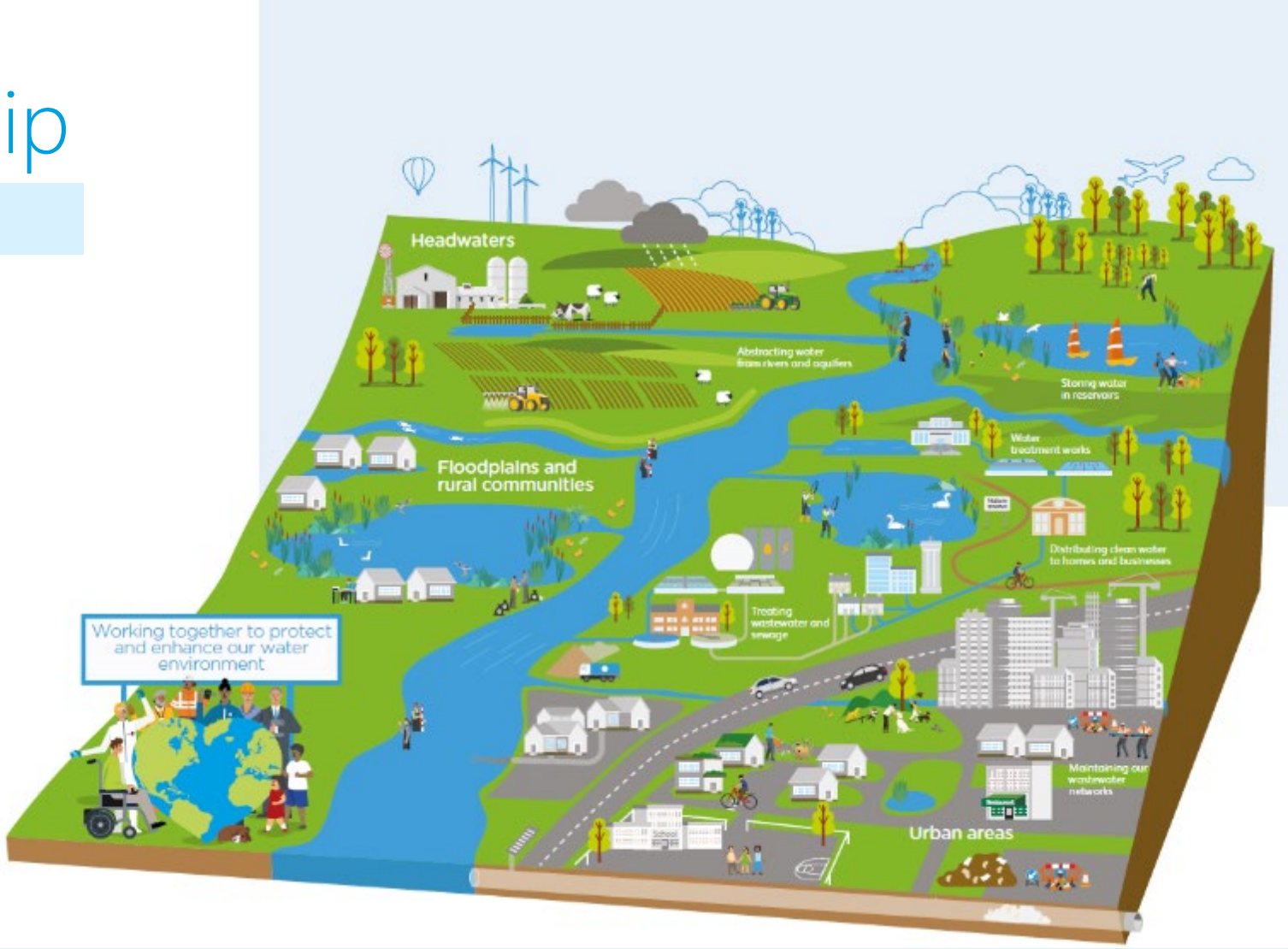
Reasons for Not Achieving Good status (RNAG) – River Thames catchments



Working in Partnership

Smarter Water Catchments

- Working collectively to identify and resolve challenges - taking a broader systems approach
- Demonstrate a multiplier effect of benefits to the environment & surrounding communities
- Utilising the experiences and expertise of all partners
- Deliver solutions which maximise opportunities on a bigger scale
- Establish a model for co-financing & co-delivering schemes



Working in partnership

Local Initiatives

- Oxford Rivers Project - a joint initiative between Thames Water, Thames21, The Rivers Trust and Oxford City Council which aims to make the city's popular recreational river sites safe to swim or play in, as well as enabling wildlife to thrive.
  - Project representatives and citizen scientists collected water samples from 18 river locations across Oxfordshire every week in 2021 and sent them to Thames Water's labs for testing for bacterial indicators.
  - The results contributed to a successful application for designated bathing water status at Port Meadow.
- Windrush Recovery Project – a collaboration between Thames Water, Windrush against sewage pollution (WASP) and Cotswold Rivers Trust to work with local communities and collectively improve the condition of the River Windrush.

Left: Port Meadow

Below: Meeting with Windrush Recovery Project

Activities across Oxfordshire

- Flow monitor installation
- Sewer Lining (5.4km) with data modelling
- Wild Swimming status
- Sewage Treatment Works upgrades
- Sewer Replacement
- Sewage Pumping Station upgrades
- Closer collaboration with other Responsible Flood Agencies
- Developer incentives for Water Neutral Homes
- Witney Open Day
- Regular meetings with Council Leadership

Our Commitments

- Turnaround plan
- Thames Water commits to a 50% reduction in the total annual duration of spills across London and the Thames Valley by 2030, and within that an 80% reduction in sensitive catchments.
- Achieves key milestone in delivery of its commitment to provide live sewage discharge notifications, at all of its 468 sites by the end of 2022 – the first water company to make such a commitment.
- £5 million funding for working with catchment partnerships and driving collaboration.
- Thames Water is making good progress on delivering its £1.25 billion programme of maintaining and improving its operational sites between 2020-2025 – an average of £250 million a year.

"Transparency is really important to us. That is why last year we committed to providing live notifications, within one hour of discharges starting and stopping, at all of our 468 permitted locations by the end of this year. I am pleased to announce that our open data pilot has been successful, as part of our mission to open up, and we will now move to the next phase of delivery."

"Thames Water was the first water company to make such a commitment for inland waters and has successfully piloted an open data platform in an industry-leading trial of real-time alerts of sewage discharges from six of its sites around Oxford in 2022." – Sarah Bentley (2022).

Witney Sewage Treatment Works

A grand day out

- Thames Water opened its doors at Witney sewage works on 9th September to give customers an insight into how waste services are run and share its current plans to expand the site and commitments to improve river health in the region.

- Visitor tours were shown around the site, with each tour lasting one hour, followed by plenty of time for Q and A's.

- WASP - Windrush Against Sewage Pollution representatives were invited and shared their perspective on river health issues.


Thames
Water

Clanfield

- We have completed 281m of sewer lining and sealing of 1 manhole as identified from our previous winter surveys.
- Despite Bourton-on-the-water pilot not being complete, we are however keen to make inroads at Clanfield and have funding approved to implement our GISMP approach for high risk sewers and manholes this AMP
- We have recently surveyed Clanfield to look for unmapped S105a (transferred sewers) – this is to understand their location and levels so that we can determine whether they are high risk in terms of our GISMP approach
- Our engineering teams will be building any ‘new’ high risk sewers into our brief and will be scoping up the pre-survey for the lining with our lining contractors. This is likely to be carried out around Christmas.
- Lining works are likely to be commenced out in Year 4 of our capital programme (Apr 2023 – Apr 2024).

Bampton/Aston

- Aston is part of Bampton STW system.
- Bampton is due a WINEP upgrade to increase Flow to Full Treatment (throughput) and that is currently scheduled for completion in Jan 2025.

Church Hanborough

- Has a Flow compliance scheme which is due for completion in 2025 – current scope includes an increase to observed FtFt, ensuring storm capacity meets permit, grit removal, addressing foaming problems in the activated sludge plant and final settlement tanks.
- Project will also incorporate WINEP requirements for additional flow monitoring

Standlake

- GISMP system – see update above
- We have been undertaking surveys to locate unmapped S105a sewers- – this is to understand their location and levels so that we can determine whether they are high risk in terms of our GISMP approach.

Witney GISMP

High Level Approach Statement

For Witney our approach to tackling infiltration will be undertaken as follows:
1. We will take a twin track approach of developing a solution at the sewage treatment works. At present our programme for implementation of the upgrade of Witney STWs is completion by 2025.
.
2. In parallel to the progression of the STWs solution to deal with the infiltration received we will investigate the network with a view to identifying sources of ingress of infiltration that are cost effective to address.
To investigate the network, we have/will;
• Have undertaken a desktop analysis to determine infiltration high to low risk zones (October 2020)
• Installed additional monitoring to back up the analysis (a) and to aide focusing of locations for identification of infiltration (2020 to 2023).

Each year we will assess the completeness of monitoring and if required add to or modify the current locations.
• Undertake sample CCTV in the high to low risk zones to assess the general asset health of the sewers and manholes (ongoing).
• Review results of Winter 2019/20 and 2020/21 with historic data to build up evidence to support interventions in the network (Summer 2021).
3. Where interventions can be undertaken as part of normal sewer maintenance activities these will be communicated and progressed. If significant investment is identified as being required, then this will need to be considered in terms of relative need compared to other systems
being investigated for infiltration reduction and need. Significant investment needs may need to be included in our next investment planning cycle at PR24.

Witney Hydrological Review 21-22

The hydrological review has been undertaken based on the Hydrological Year which runs October 1st to September 30th

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Catchment Rainfall

Representative Radar rainfall has been used to generate monthly data at catchment level for comparison with average data generated by local Met Office Weather Station Records. Figure 2 presents the comparison of this data for the last three hydrological years to support longer term trends within the local system.

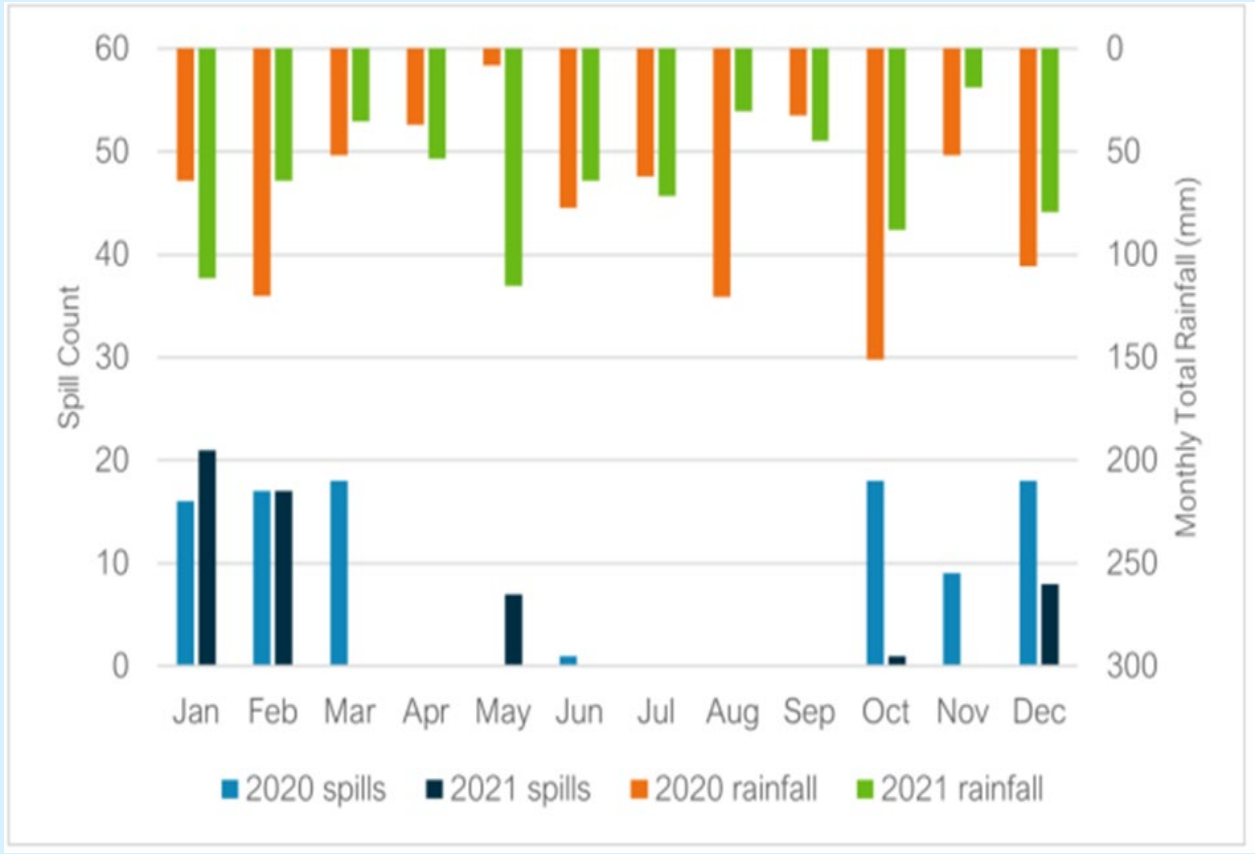
Useful Charts

The table below details the last 2 years performance of overflows within the catchment.

Overflow	2020		2021	
	Spills	Duration (hours)	Spills	Duration (hours)
Witney STW	97	1563.23	54	934.91

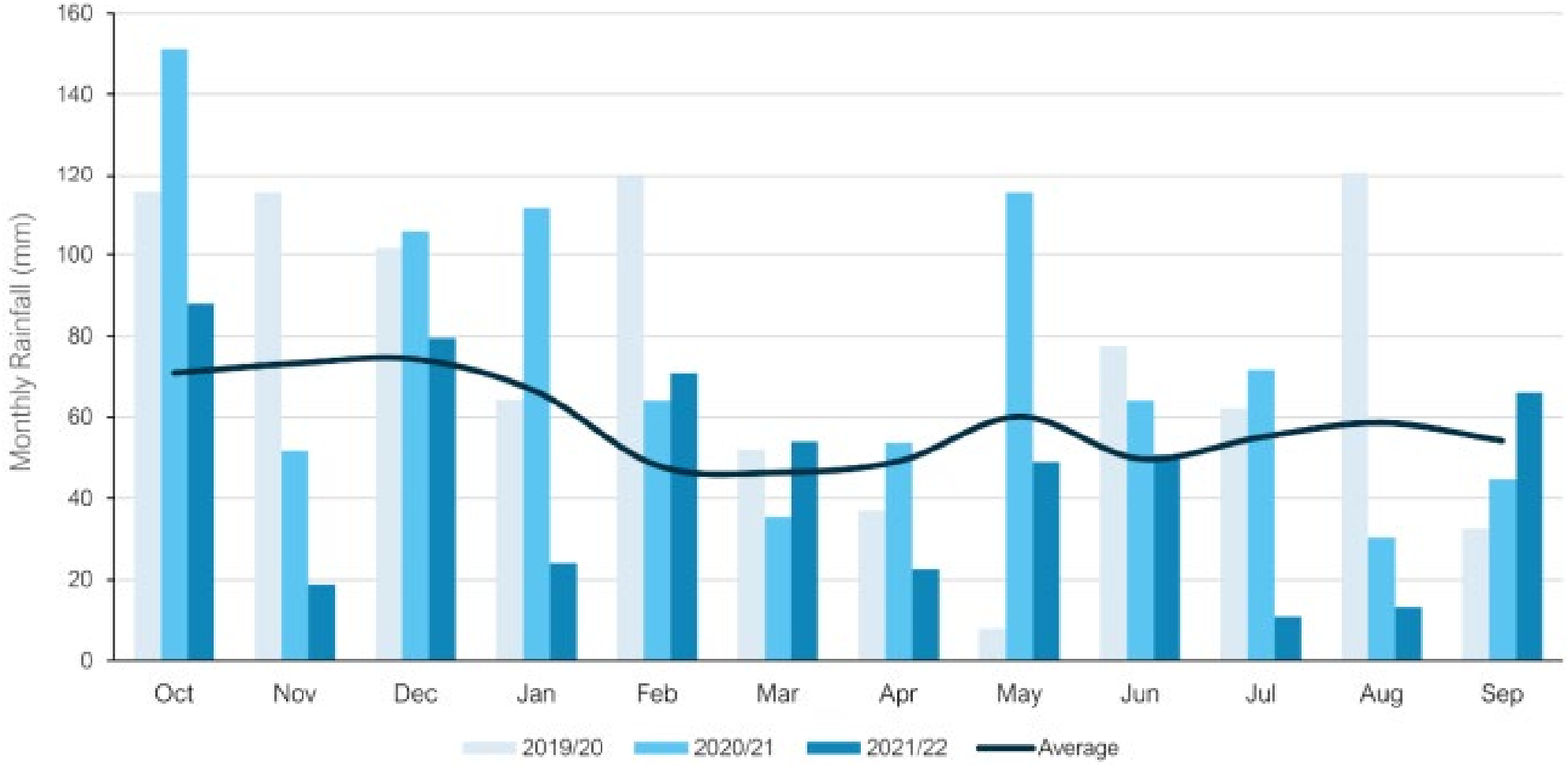
The total rainfall for the 2021/22 hydrological year is 21% below the annual average total. Total rainfall values are presented in below.

Average (mm)	2019/20 (mm)	2020/21 (mm)	2021/22 (mm)
706	906	899	560



Monthly Rainfall Performance

Figure 2 – Monthly Rainfall Performance



Evenlode

SWC Programme

- Thames have partnered the Evenlode Catchment Partnership (ECP) hosted by Wild Oxfordshire.
- The ECP Partnership Vision includes "…improved water quality, enhanced flood management, enriched biodiversity, with greater community engagement with rivers, at local and landscape scales".
- The ECP aspiration is "Good Ecological Status across whole catchment." along with the themes of;
- Water Quality and Advocacy
- Landscape, Habitat and Biodiversity
- Natural Flood Management (NFM)
- Education, Access & Recreation
- Each theme has a **theme lead** and **associated group** and **organisation.**
- The project has a guaranteed £3m budget over 5 years (2020-25).
- Establishment of a Steering Group: Wild Oxfordshire, Earthwatch, Natural England, Environment Agency (EA), Cotswolds AONB, WASP, citizen scientists.

Summary of Smarter Water Catchments

- By engaging with local communities, landowners and stakeholders and sharing experiences, solutions, expertise and culture we will improve connectivity throughout the catchment.

- By expanding our monitoring and data collection for water quality and biodiversity, and by using evidence to drive change, we will deliver restoration projects, enhance ecosystem services and reset attitudes.

- We need to work closely together to tackle these new challenges. It’s not easy but it works and, we’ve concluded, it is the only way forward.

Catchment Partnership Achievements so far

- Landscape, Habitat & Biodiversity: Seedcorn funding to farmers (up to £5K*)* to support landscape improvements. Working very much in conjunction with future ELMs funding, especially Sustainable Farming Initiative (SFI).
- Water Quality & Advocacy, established a strategy for data collection across catchment: supports needs of ECP and TW in discussions with EA, OFWAT and within TW with colleagues working on surface water and drainage issues.
- Natural Flood Management (NFM). Establishment of NFM schemes to prevent, or limit, pollution.
- Education, Access & Recreation. Schools and teachers' programmes to explain what we are doing and why.
- **Most Important of All. Develop habit of communication and collaboration, even when subject is difficult.**