Reducing the use of Storm Overflows

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from Southern Water

The Clean Rivers & Seas Task Force

The Clean Rivers and Seas Task Force was set up in 2021, **our aim is to reduce storm overflows** to ensure a healthy environment and water resilient future.

The task force is responsible for **delivering pathfinder projects** through an **accelerated programme** to reduce the use of storm overflows over the next two years. We're collaborating across industries as well as with local authorities and the public.

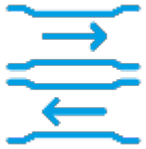
We've **built our Clean Rivers and Seas (regional) plan.** This is hosted on a public interactive map to show how the company will reduce storm overflow releases, in line with regulatory and government targets.

Find out more - [Storm Overflows (southernwater.co.uk)]

We have taken a holistic and sustainable approach

There are four main ways to reduce the use of storm overflows

Source control: removing or 'slowing the flow' of water entering the sewer system to prevent it from becoming overwhelmed and needing to use storm overflows. For example, using sustainable drainage systems (SuDS).

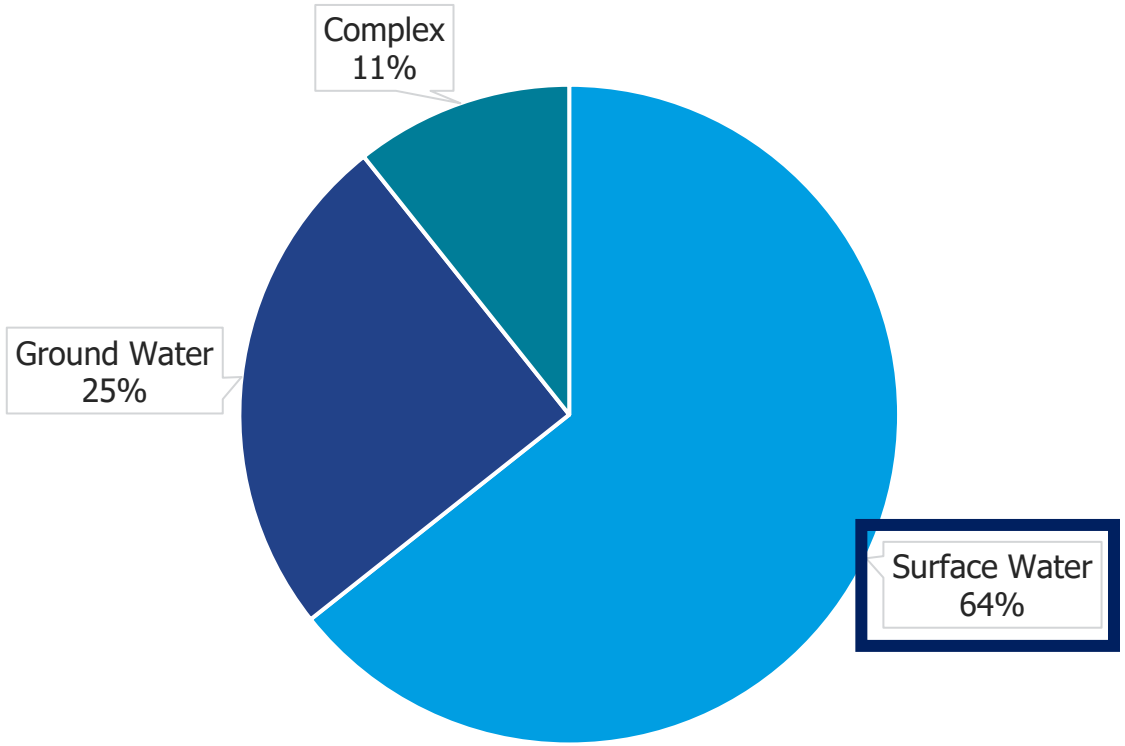


Infrastructure optimisation: using smart controls on our network, storage tanks and pumps, unlocking extra storage, and going beyond permits to make sure we use our infrastructure to its full potential.

Stormwater treatment: a new and innovative step in the process, we're using wetlands to clean and pre-treat stormwater before it is released to the environment.

Building bigger infrastructure: sometimes new or bigger infrastructure like storm tanks is necessary, but we see this as a last resort, after exhausting all source control, infrastructure improvement and nature-based options.

We used AI and enhanced analysis to understand the dominate cause for storm overflow activation, so we could target the right approach and solutions.



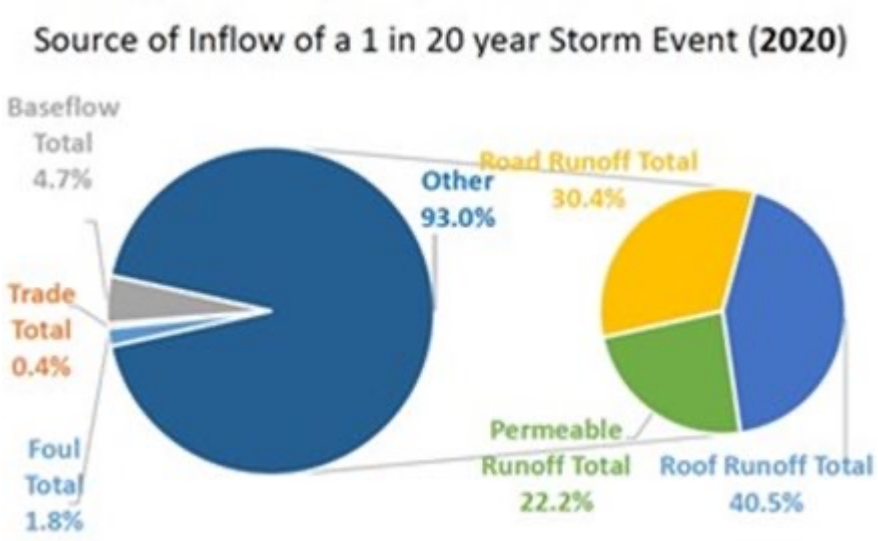
STORMHARVESTER®
SMARTER DRAINAGE SOLUTIONS

AI

Total storm overflow releases: 19,807 by reason for release

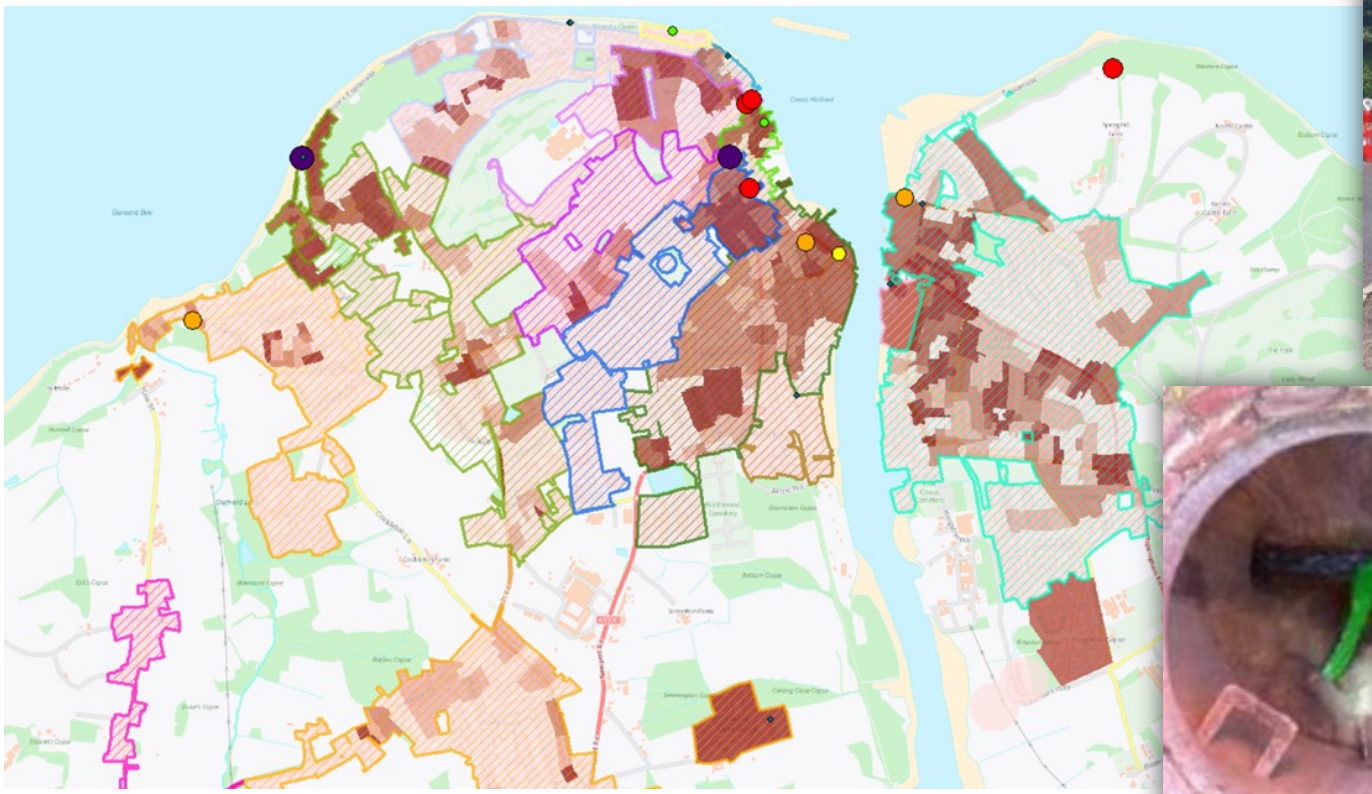
WATER for LIFE from Southern Water

The main sources of excess water in surface water catchments are roads and roofs



WATER for LIFE from Southern Water

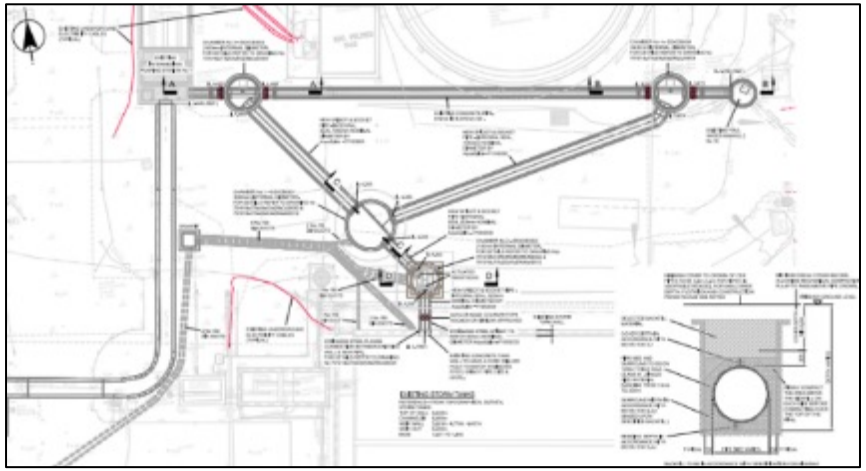
We must target interventions with detailed insight of the catchment and requires investigation of drainage assets much of which we don't own.



Step 1: Optimisation

Reconfiguring our permits and existing sites to help us reduce storm overflows

Pathfinder Process: Surface water
1. Optimising infrastructure
2. Misconnections
3. Household SuDS
4. Non-Household SuDS
5. Highway Schemes



CASE STUDY
Optimising infrastructure to **slow the flow in Whitstable**

Step 2: Misconnections

Redirecting surface water that has been misconnected into the foul/combined sewer

Pathfinder Process: Surface water
1. Optimising infrastructure
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4. Non-Household SuDS
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Gurnard, Isle of Wight

Large surface water misconnection

Step 3: Household SuDS

Rolling out 'slow the flow' measures at scale on properties in our catchments

Pathfinder Process: Surface water
1. Optimising infrastructure
2. Misconnections
3. Household SuDS
4. Non-Household SuDS
5. Highway Schemes

CASE STUDY

Using slow-drain water butts **slow the flow in Havenstreet**

Step 4: Non-Household SuDS

Targeting large roof areas with 'slow the flow' measures to deliver impact

Pathfinder Process: Surface water
1. Optimising infrastructure
2. Misconnections
3. Household SuDS
4. Non-Household SuDS
5. Highway Schemes

CASE STUDY
Sustainable Drainage Systems (SuDS) to **slow the flow in schools**

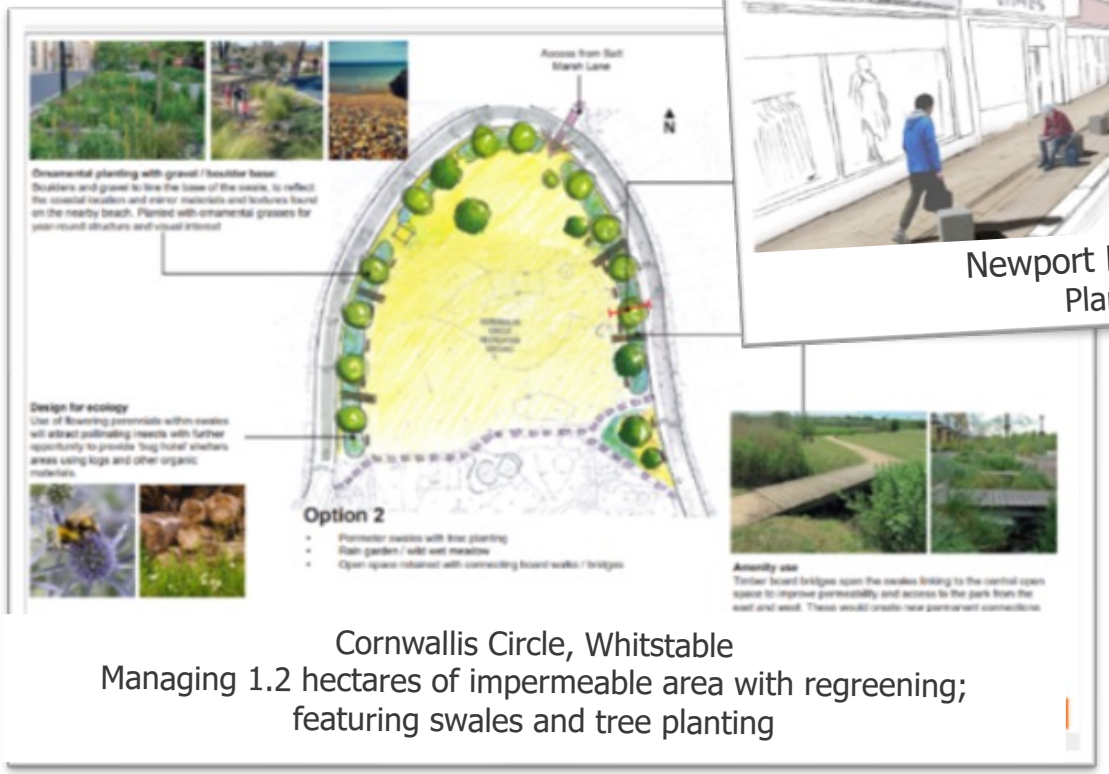
Step 5: Highway SuDS Schemes

With significant volumes of surface water coming from public highways, influencing the design of placemaking schemes will be an essential part of the solution

Pathfinder Process: Surface water
1. Optimising infrastructure
2. Misconnections
3. Household SuDS
4. Non-Household SuDS
5. Highway Schemes

Sustainable drainage systems (SuDS) are an eco-friendly and sustainable way to create better drainage of rainwater and groundwater in communities.

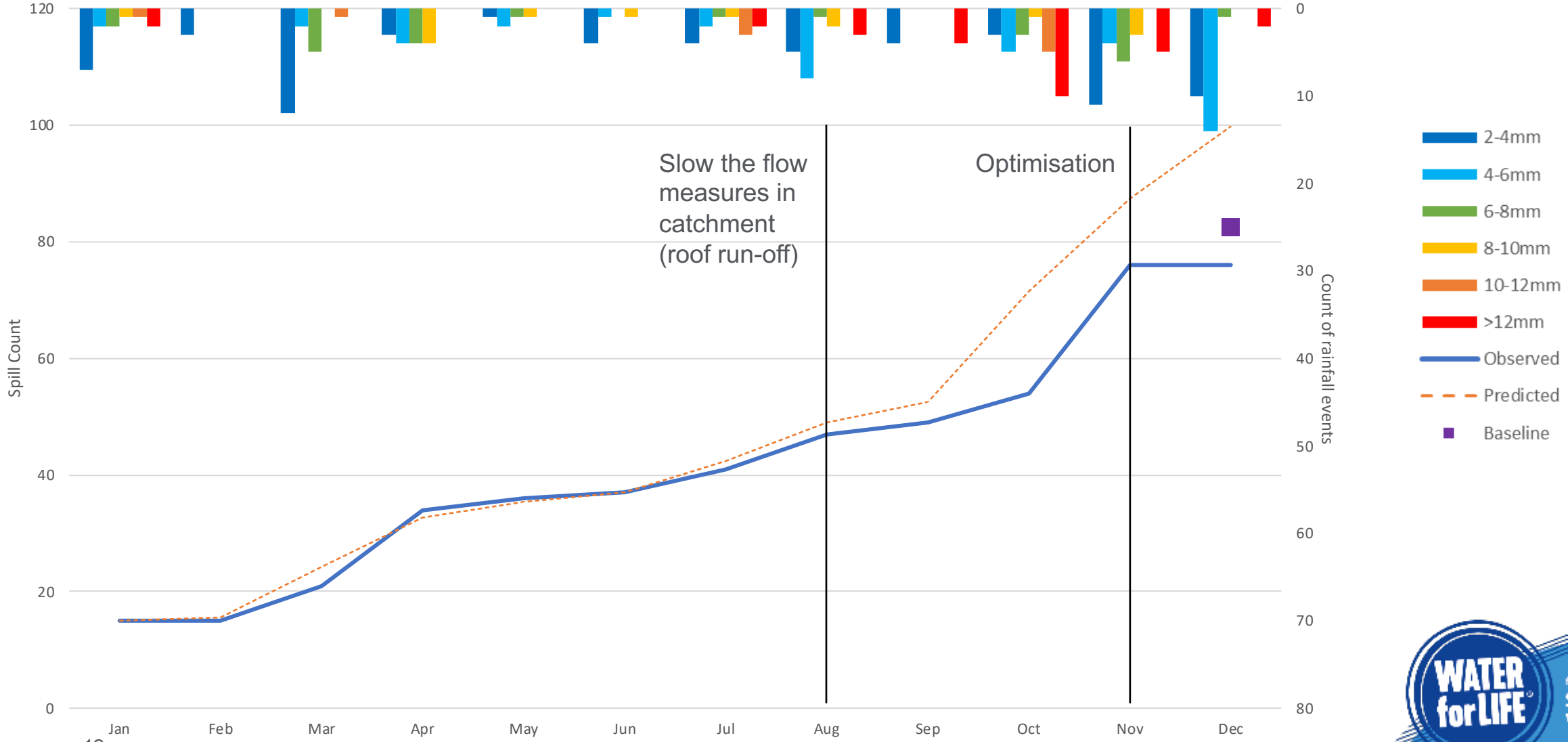
Newport High Street, Isle of Wight
Plans for highway SuDS



Cornwallis Circle, Whitstable
Managing 1.2 hectares of impermeable area with regreening; featuring swales and tree planting

The results

Our results to date show a measurable spills reduction

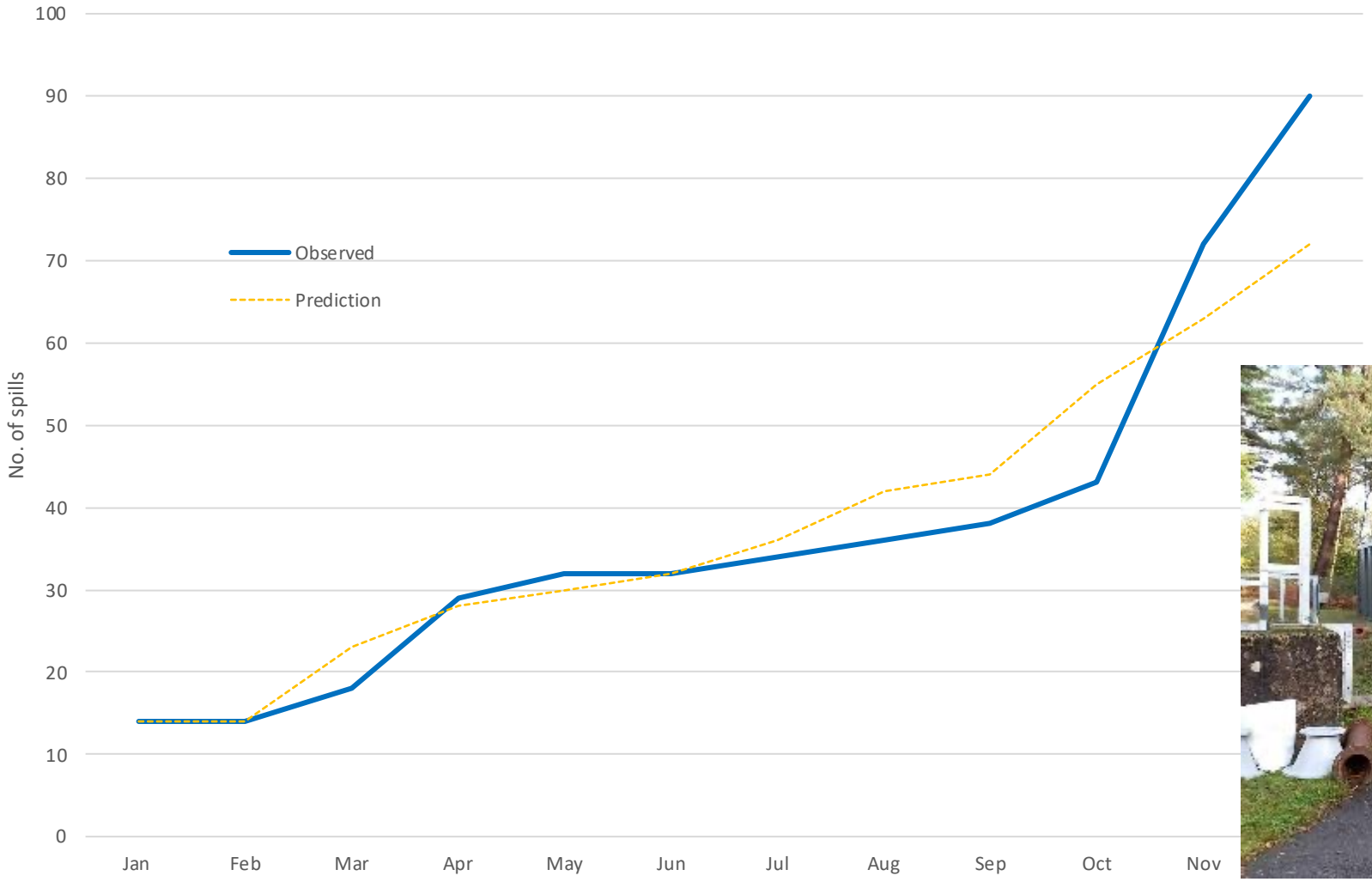


WATER for LIFE from Southern Water

The results

The comparison with an end of pipe solution

Storm tank storage doubled at Lyndhurst with 4 x 75m^3 nurse tanks



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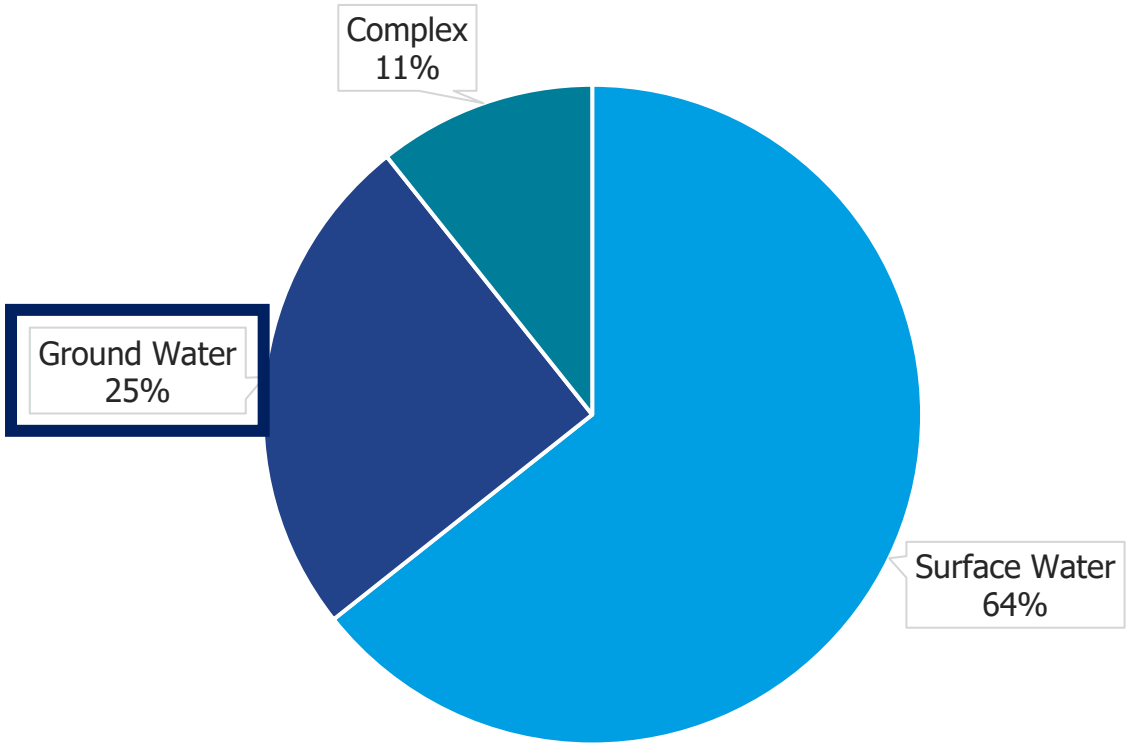

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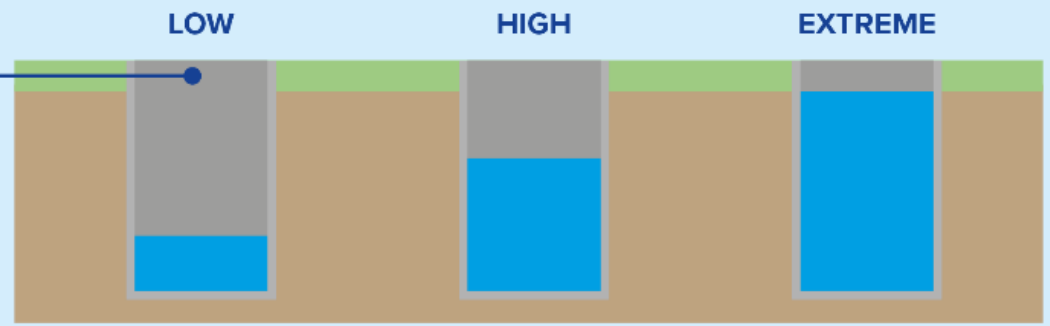
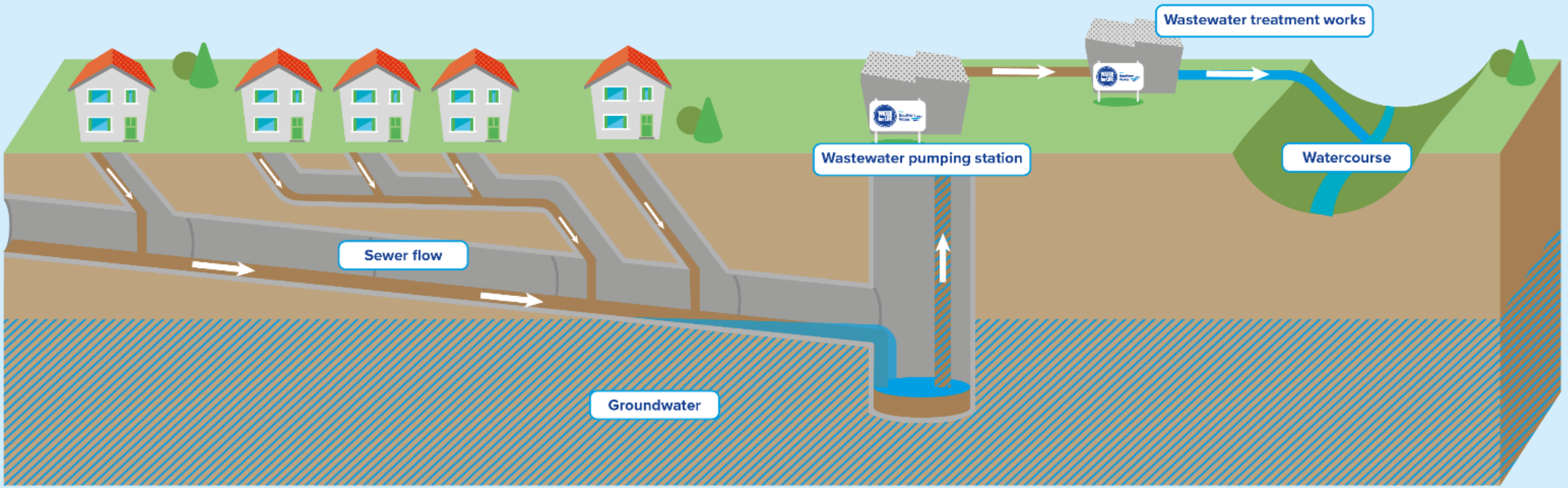
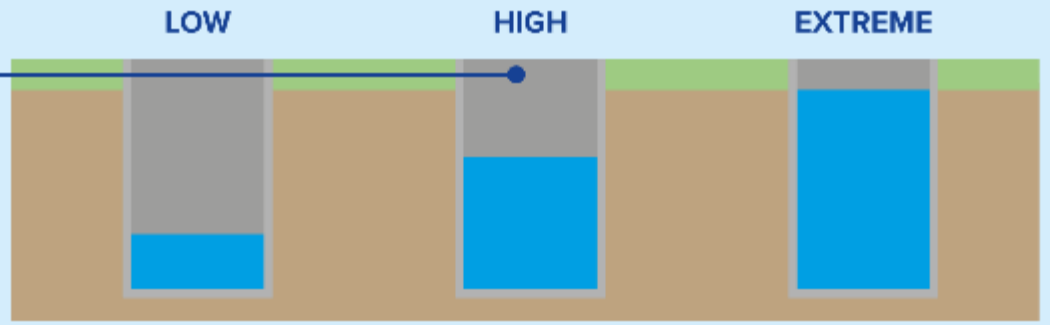
WATER for LIFE from Southern Water

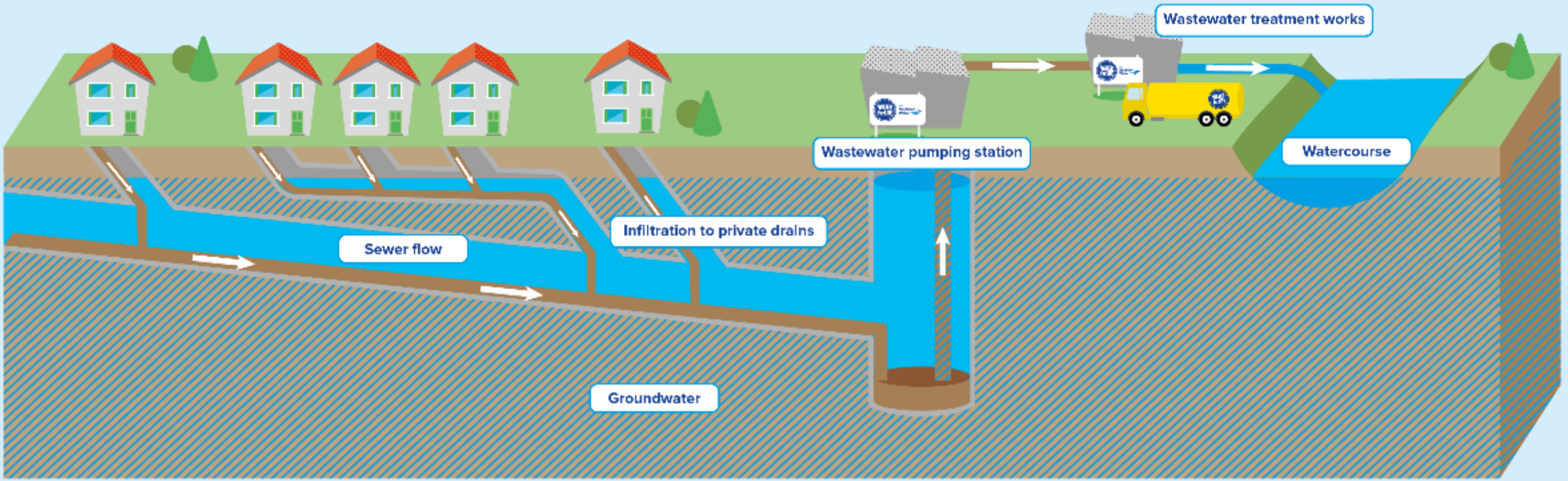
In low groundwater conditions
pumping stations convey the foul flow and a small amount of infiltration to the wastewater treatment works.



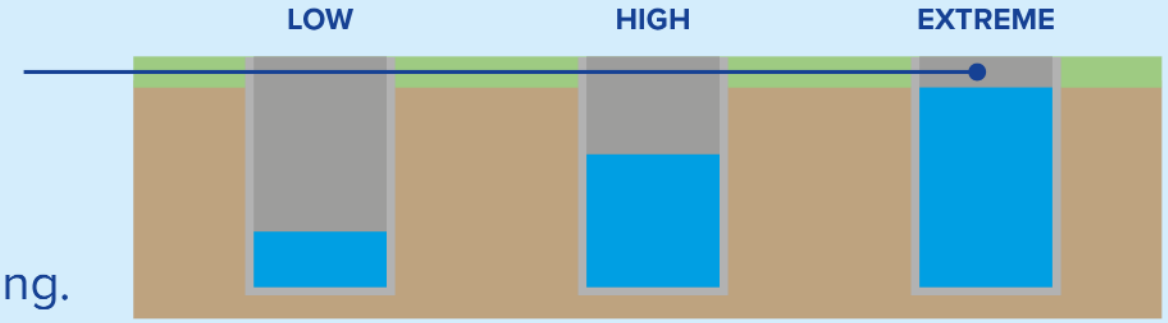


In high groundwater conditions
the flow is largely infiltration. At these levels the pumps are working continuously and tankers are required to keep the sewerage system functioning.

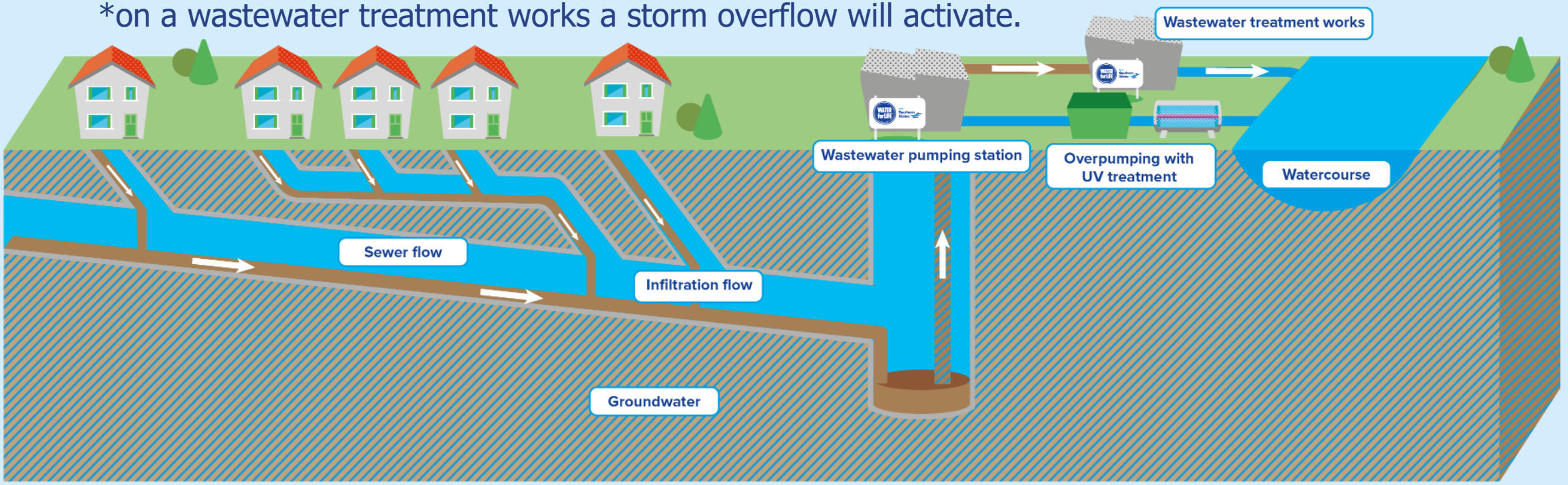




In extreme groundwater conditions
infiltration gets into the network through all pipes and inundates the pumping stations. Overpumping arrangements with UV treatment are used to prevent property flooding.



*on a wastewater treatment works a storm overflow will activate.



In areas of acute ground water we will optimise, seal private and public sewers to limit the ground water ingress and…

Pan-Parish near Andover, Hampshire

Tubo-gel technology being used to seal private pipes

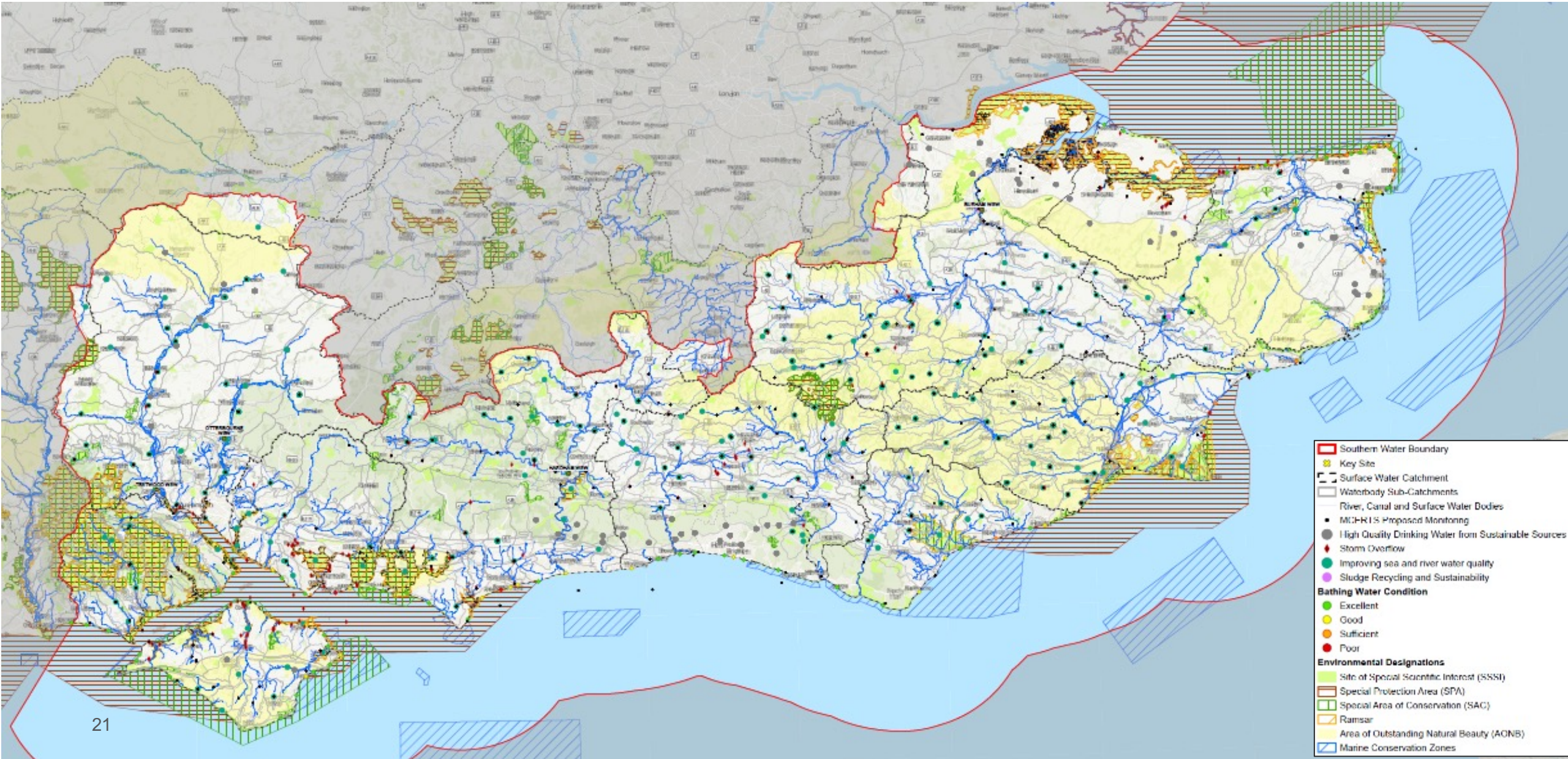
WATER for LIFE from Southern Water

… build wetland treatment for excess water from each overflow

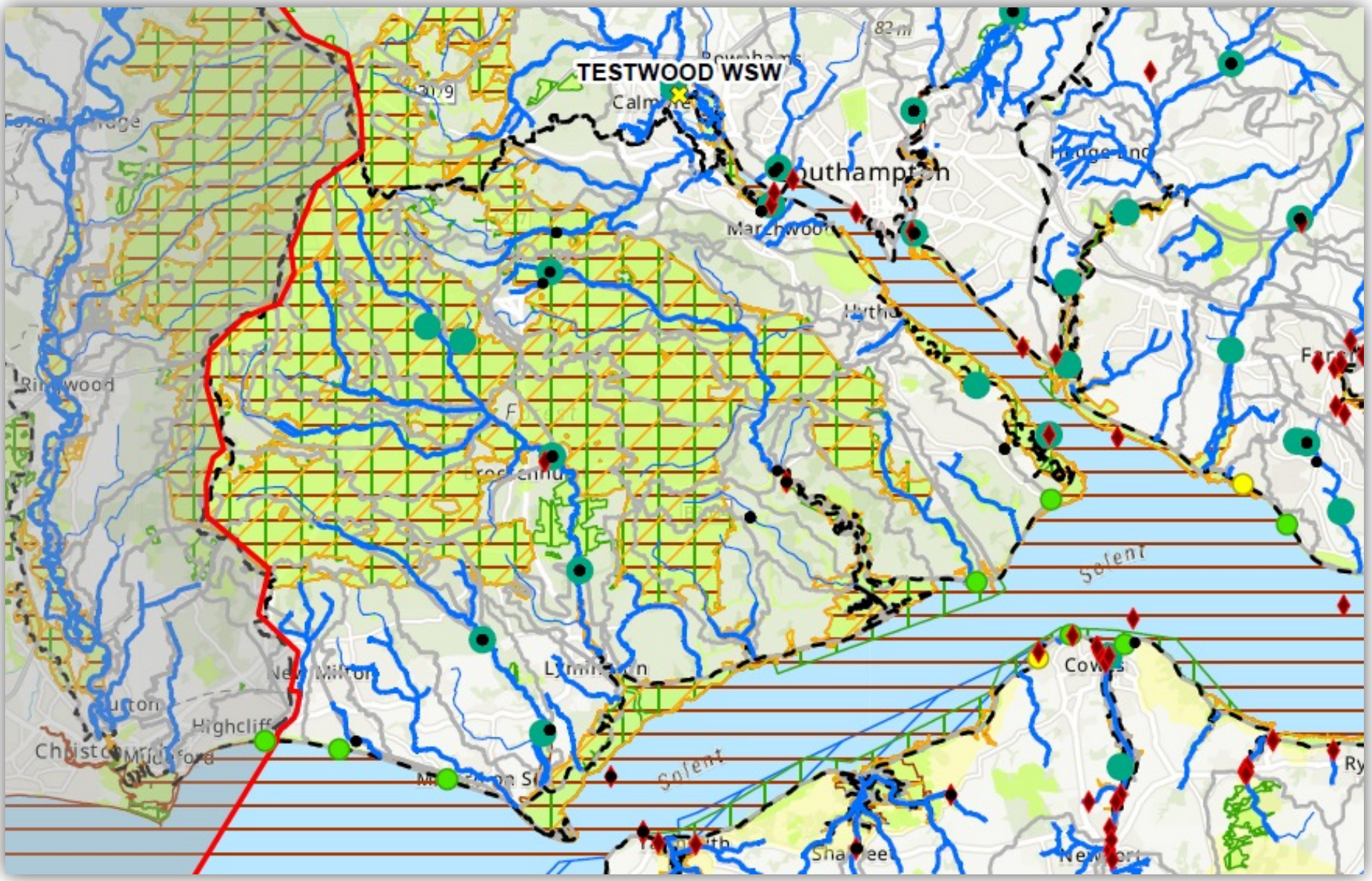
Lavant near Chichester, West Sussex

Our plans

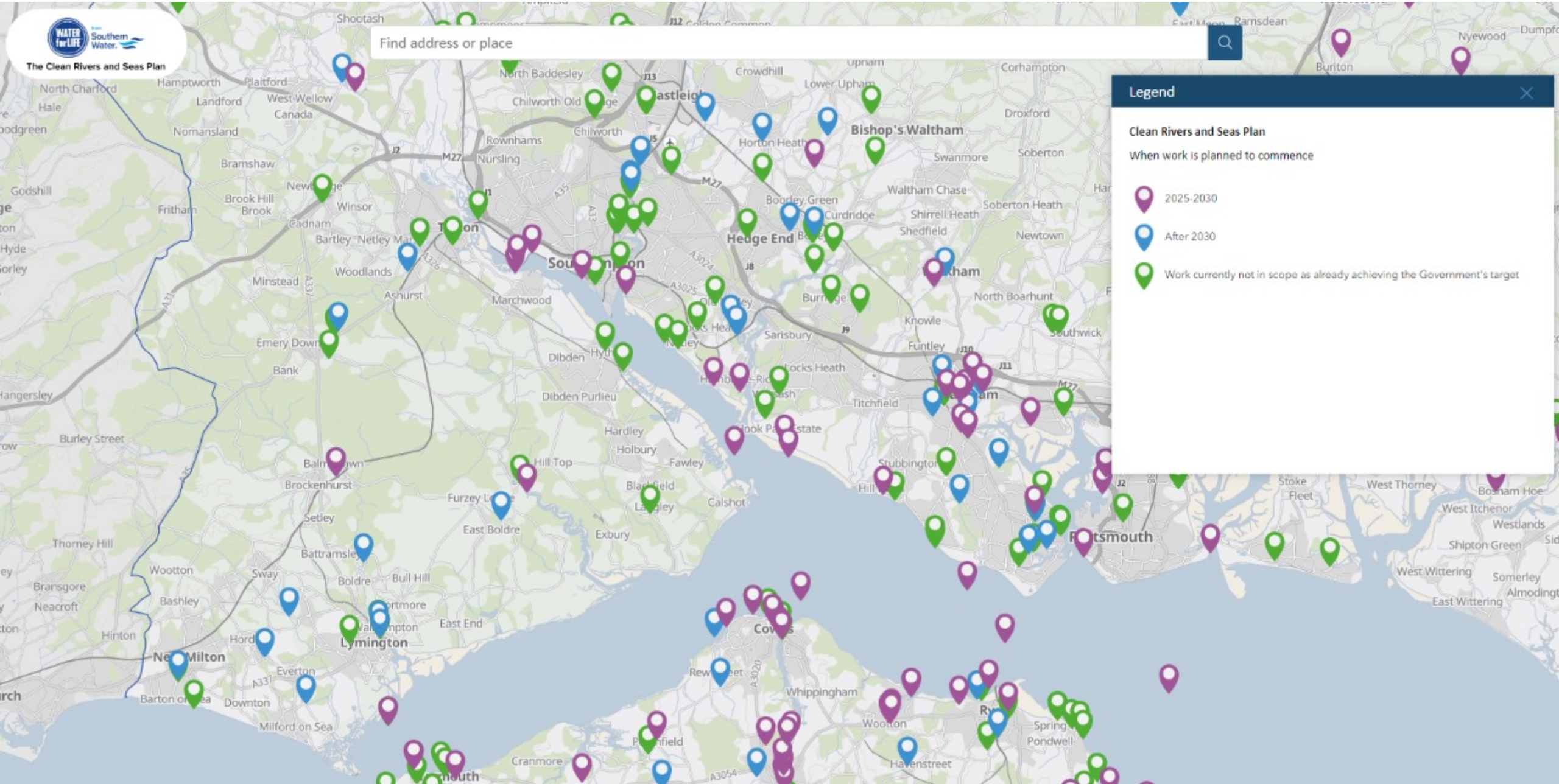
Our AMP8 (2025-2030) environmental plan is very large.



Our AMP8 (2025-2030) plan includes multiple environmental improvements in the new Forest.



Storm overflow improvements have a multi-AMP programme



Our planned investments in the New Forest

Site	Driver	Details	Cost estimate (£m)
Lyndhurst WTW	Nutrients	Total Nitrogen Permit (10mg\ltr - TAL)	10.2
	Storm Overflows	Groundwater – public and private network sealing and wetland treatment (2035)	1.5
Brockenhurst WTW	Nutrients	Total Nitrogen Permit (10mg\ltr - TAL) (2035)	7.7
	Nutrients	Treatment for Phosphorus removal (chemical)	2.0
	Storm Overflows	Groundwater – public and private network sealing and wetland treatment	2.3
Beaulieu WTW	Storm Overflows	Surface Water management of non-permeable area with SuDS	1.5
Ashlett Creek WTW	Nutrients	Total Nitrogen Permit (10mg\ltr - TAL)	22.0
	Storm Overflows	Combination of groundwater and surface water management interventions	0.7
Pennington WTW	Growth	Increase capacity of site for forecast growth in the catchment	19.0
	Storm Overflows	Groundwater – public and private network sealing and wetland treatment	9.9
Slow Hill Copse WTW	Nutrients	Total Nitrogen Permit (10mg\ltr - TAL)	19.8
	Storm Overflows	Surface Water management of non-permeable area with SuDS	13.5
		Total Estimated Cost (£m)	**110.0**

TAL – Technological Achievable Limit, SuDS – Sustainable Drainage Systems

Thank you

Dr Nick Mills