

# River Itchen Inquiry

17 November 2022

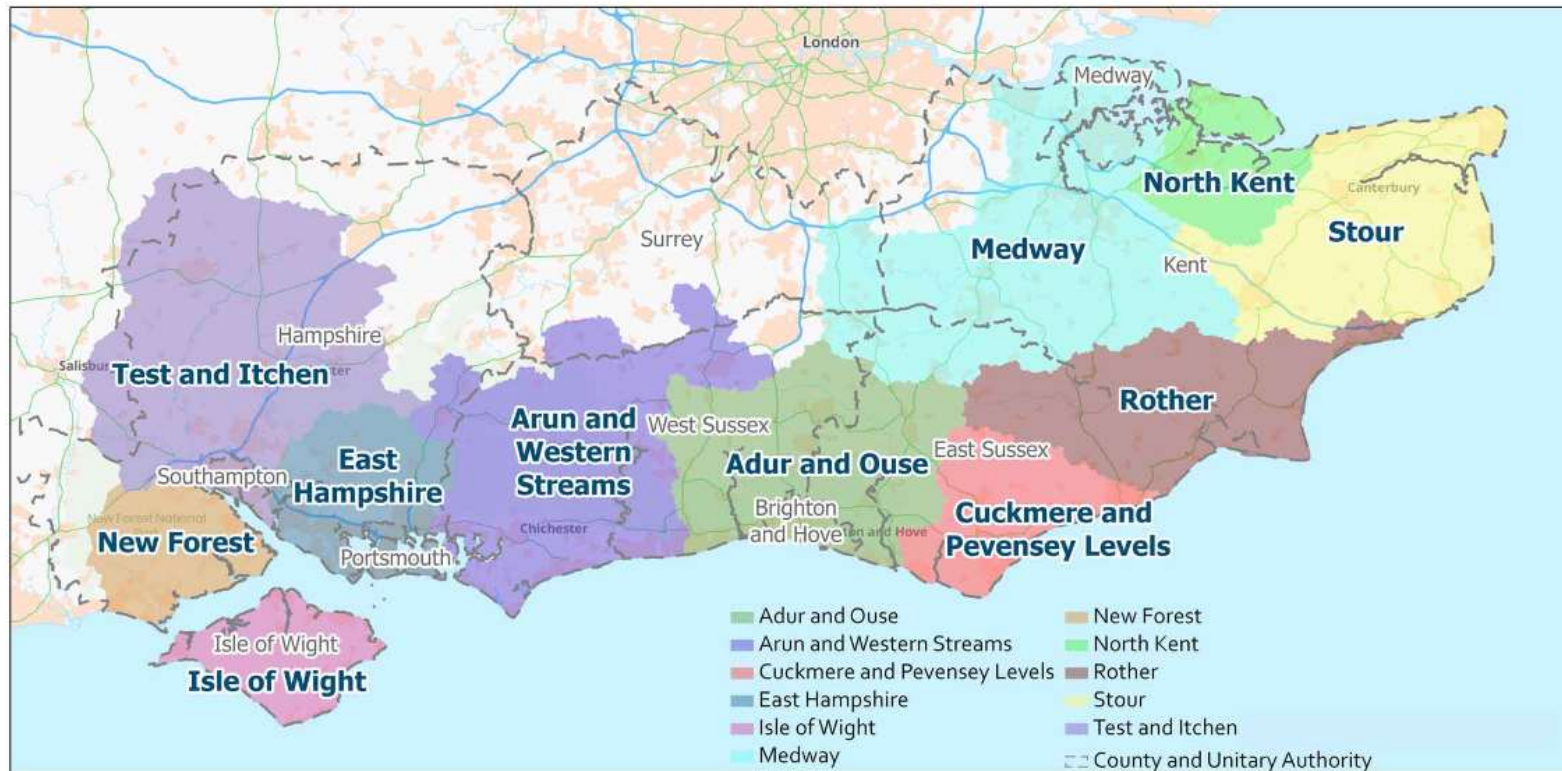
Andrew Adams – Catchment Planning Manager

David Murphy – Wastewater Strategy Manager



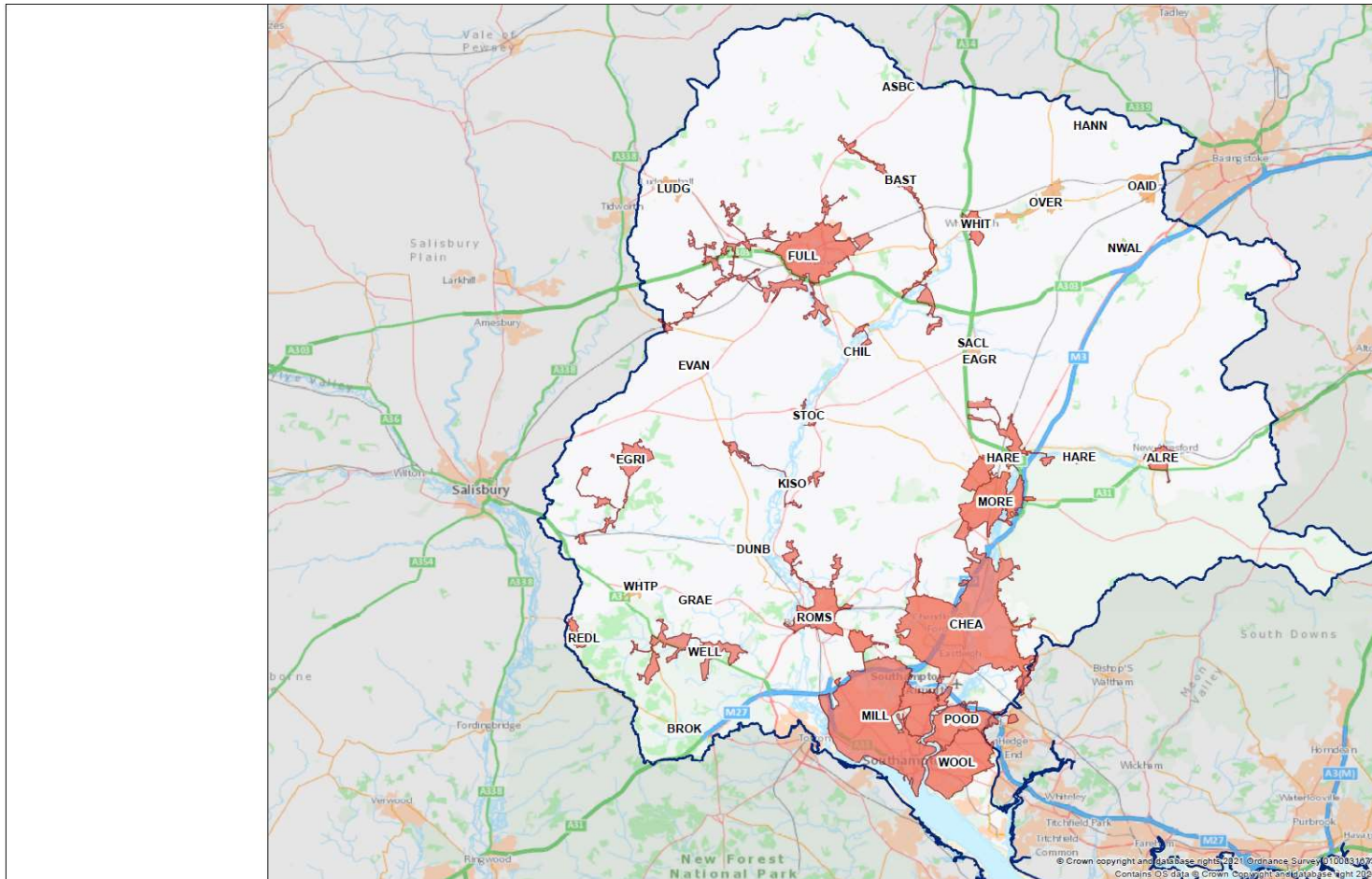
from  
**Southern  
Water** 

# Our Operating Region and River Basin Districts



Drainage and Wastewater Management Plan at <https://southernwater.co.uk/dwmp>

# Wastewater Systems in the Test and Itchen Catchment



31 wastewater systems

31 treatment works

301 wastewater Pumping stations

4571km sewers

11% geographical area

93% homes connected



## Wastewater Systems within the River Itchen inquiry area



### Portswood WTW system

- Population c. 80,000
- 585 km sewer
- 19 pumping stations
- 7 storm overflows

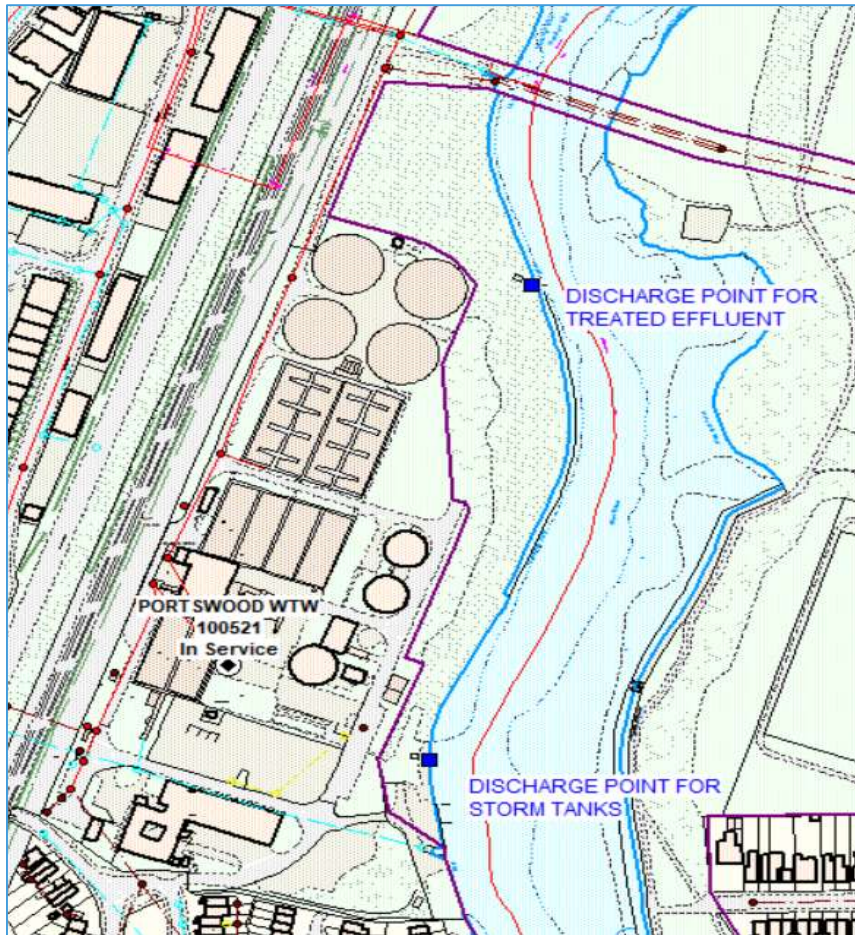
### Woolston WTW system

- Population c. 70,000
- 534 km sewer
- 10 pumping stations
- 1 storm overflow

### Millbrook system

- Population 140,000
- 3 storm overflows
- Treated flows discharge to R. Test

## Portswood Wastewater Treatment Works (WTW)



### Wastewater flows

- Population c. 80,000
- 27,200 m<sup>3</sup>/day
- 500 l/s – flow to full treatment
- Effluent discharged as permitted by EA

### Storms

- Flow > 500 l/s diverted to storm tanks
- Storm tanks volume 3549 m<sup>3</sup>
- Flow in excess of storm tank volume discharged to Itchen

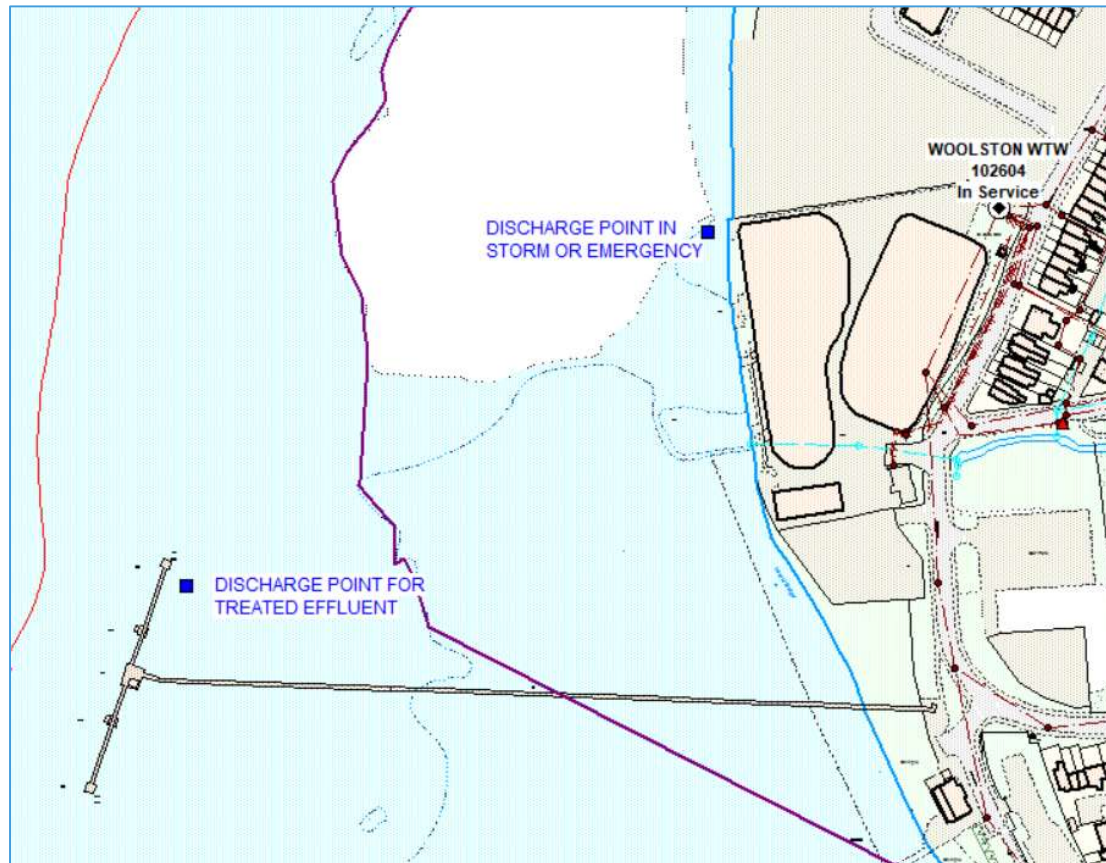


## Woolston WTW



**Newly constructed WTW to replace previous site in 2019**

# Woolston Wastewater Treatment Works



## Wastewater flows

- Population c. 70,000
- 15,000 m<sup>3</sup>/day
- 427 l/s – flow to full treatment
- Effluent discharge as permitted by EA

## Storms

- Flow > 427 l/s diverted to storm tanks
- Storm tank volume 1723 m<sup>3</sup>
- Flow in excess of storm tank volume discharged to Itchen



## Planned Investment to 2025 – in excess of £20m

### Portswood

- Increasing storm tank capacity from 3549m<sup>3</sup> to 5556m<sup>3</sup>

### Woolston

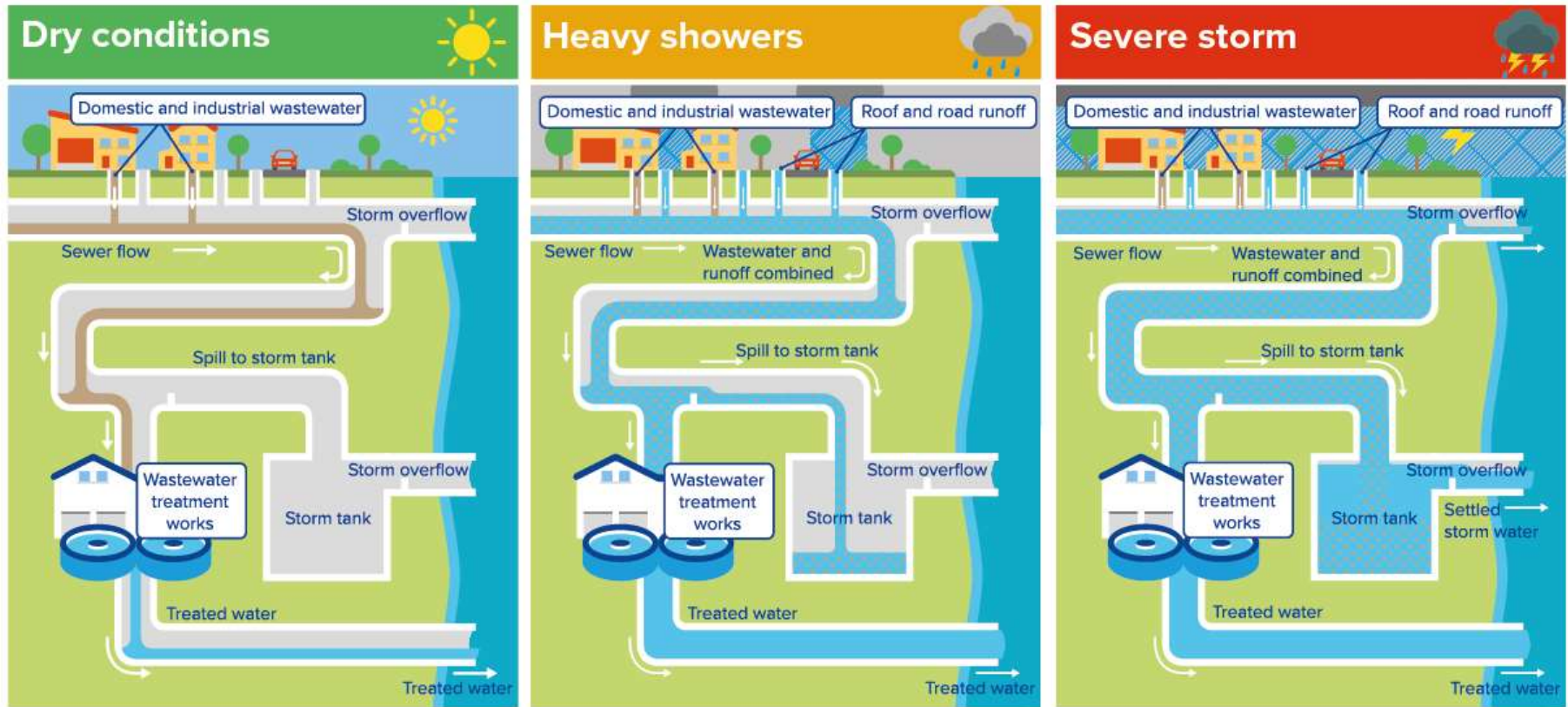
- Increasing FFT from 427 l/s to 520 l/s
- Increasing storm tank capacity from 1723m<sup>3</sup> to 6723m<sup>3</sup> (Required to meet revised shellfish directive, not known at time of original design/build)

### Regional

- Programme of pumping station refurbishment based on site criticality and performance



# What are storm overflows?



## Storm Overflows

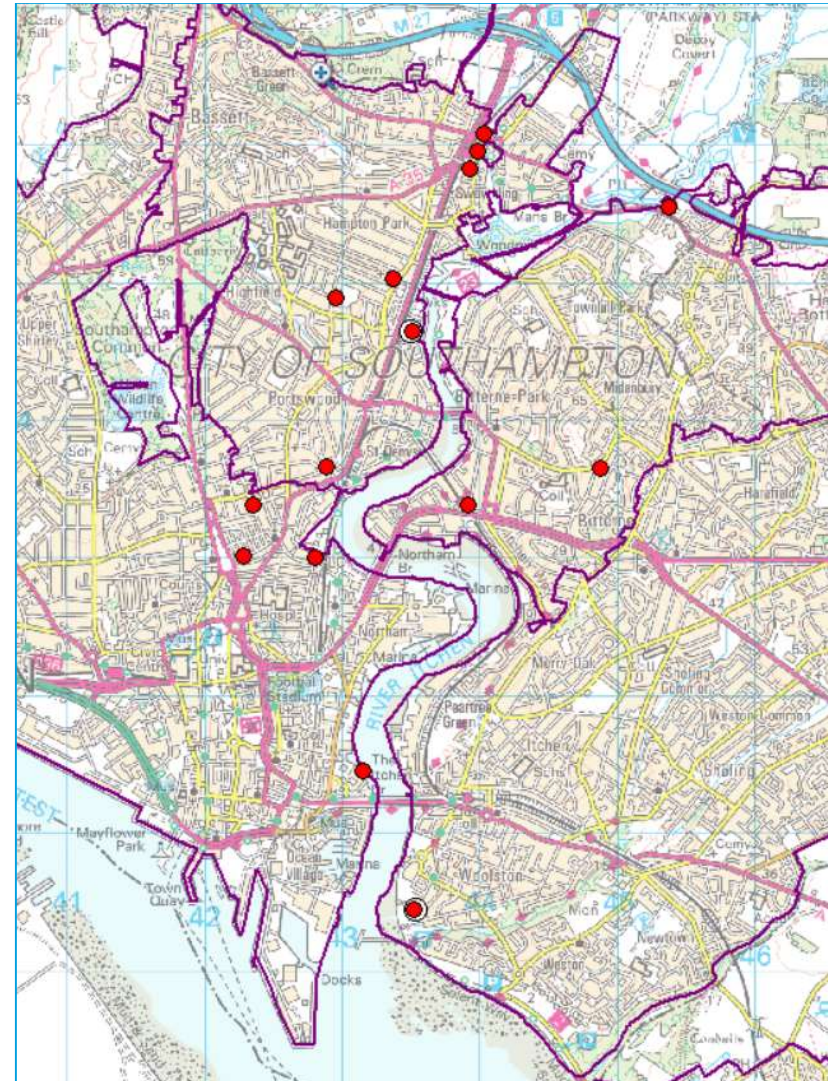
In total there are 15 storm overflows in the wastewater systems discharging to the River Itchen:

- 9 from the Portswood network
- 0 from the Woolston network
- 4 from Millbrook network

Plus storm overflows from:

- Portswood WTW and
- Woolston WTW

Of these currently 3 spill more frequently than the new DEFRA requirements



## Surface Water Outfalls

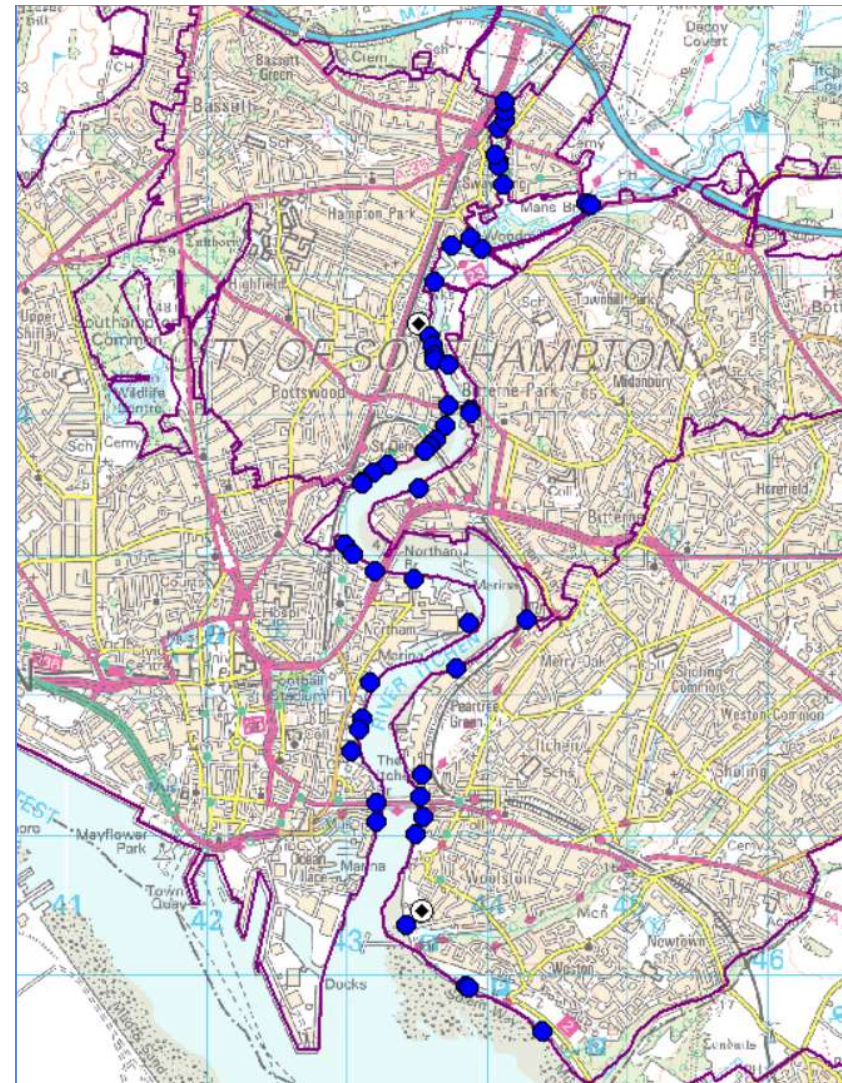
50 outfalls from public surface water sewers discharge to the River Itchen.

All operate every time it rains

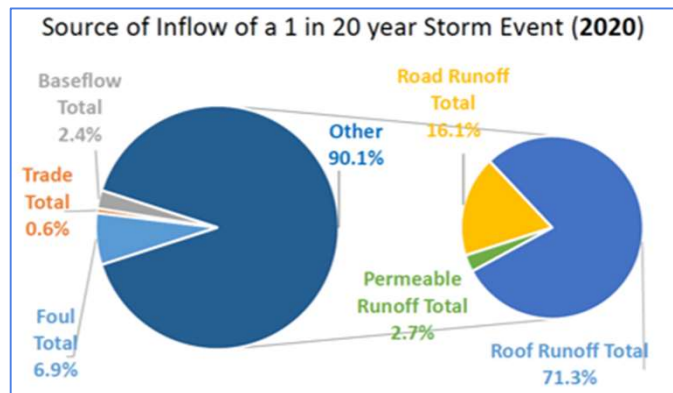
Discharge rainwater from roofs and roads to the river

Not monitored

Likely to be other outfalls from highway drains

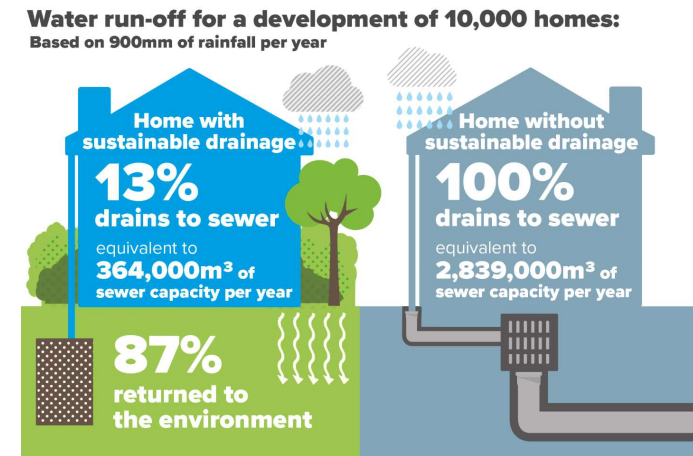


A storm release can be up to 95% rain water. The main sources are roof and road run off. We need to remove and/or attenuate this water.



# There are broadly 3 main types of intervention to reduce flooding and storm overflow use:

- 1. Source control** (removing and slowing the flow of rain water)  
Rainwater harvesting, Permeable paving, Green roofs, Soakaways (includes tree pits), Rain garden (swales), Planters
- 2. Optimisation of existing infrastructure**  
Optimisation, tweaking of connected systems and interface, Different mechanical and electrical equipment (e.g. pumps), Improvements in pumping station and storm tank use and control, Smart network control with increased digitalisation
- 3. Build bigger infrastructure** (building larger pipes, pumping stations, etc.)  
Wetlands treatment (Groundwater), Sewer lining/sealing (Groundwater), Larger sewers, Large storm tanks, Large treatment works



# Sustainable solutions also have wider benefits.

## Sustainable drainage

The risk of flooding and storm overflows can be reduced by slowing surface water runoff reaching the sewer. There are a number of ways we can do this...



Permeable paving and soakaways



Green roofs



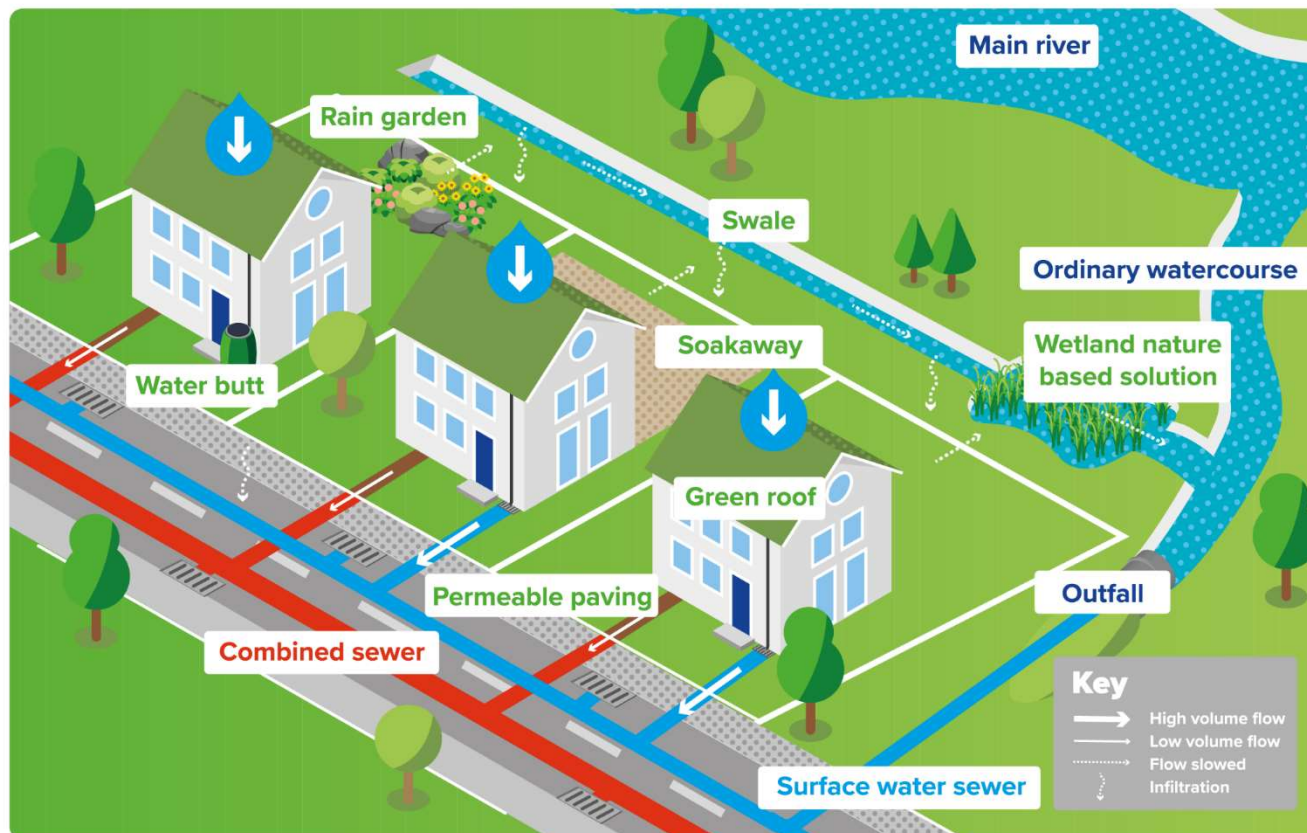
Swales and wetlands



Rain gardens



Water Butts



## Summary

- We own and operate 3 separate, complex wastewater systems serving 290,000 customers in Southampton
- We are regulated to operate these systems to tight permits from the Environment Agency
- Our systems are performing as designed, although operational issues can occur (e.g. blockages)
- We continue to invest in our system to maintain performance and resilience
- We are working with Government and regulators to reduce the number of spills from Storm Overflows