

# Addressing the challenges of combined sewer overflows



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# What are CSOs?

- Combined Sewer Overflow
- Release untreated wastewater into the environment when the system is beyond its capacity

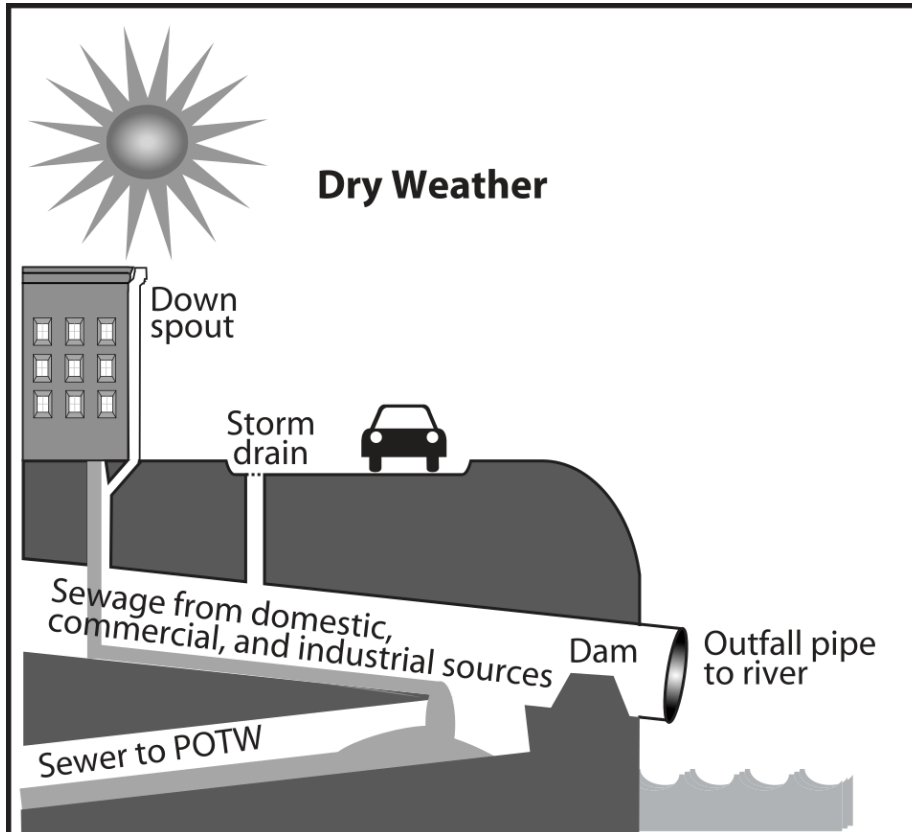


Diagram: U.S. Environmental Protection Agency (EPA)

# Public awareness



## Why is raw sewage pumped into rivers and the sea?

22 May



Water companies have apologised for the amount of sewage being spilled into rivers and seas, but have faced criticism for saying customer bills will have to rise to deal with the problem.

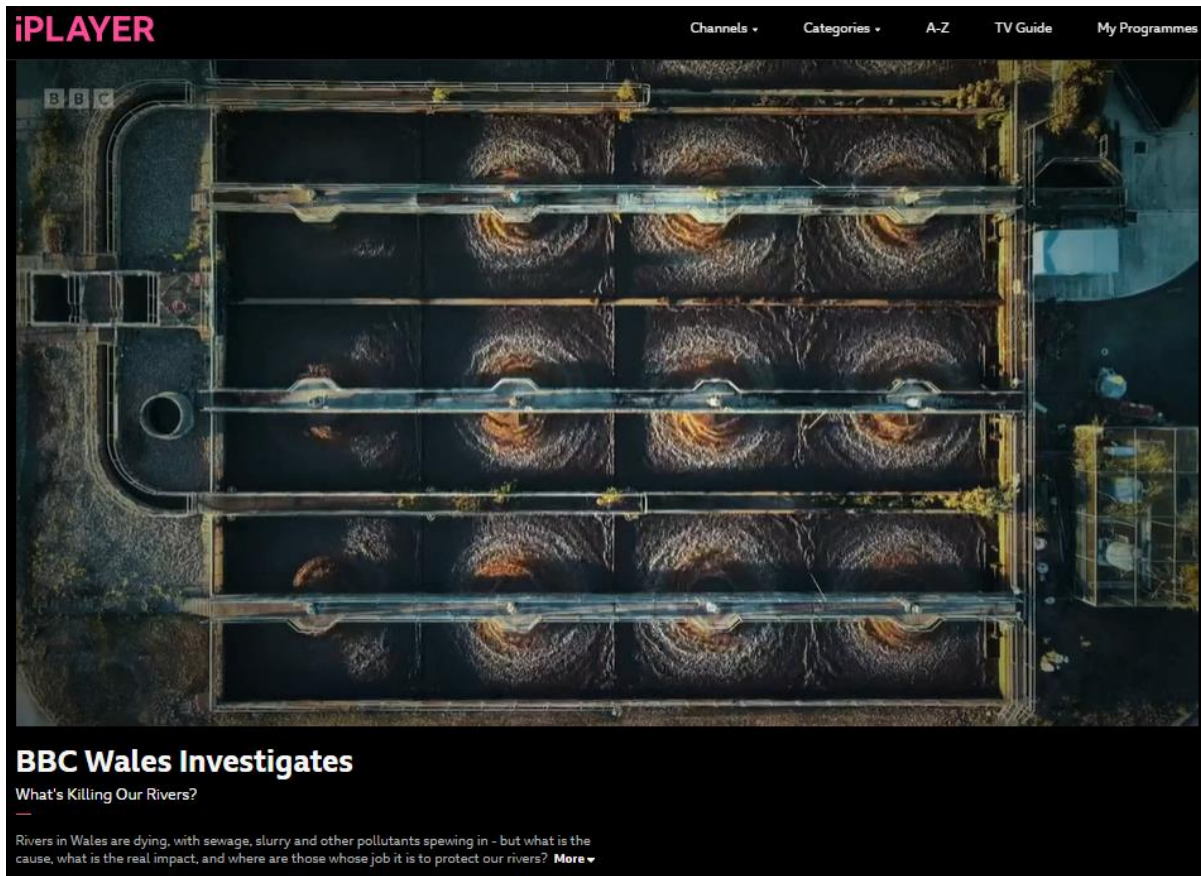
## Sewage will continue to be discharged into rivers for 20 years under Government plan, green activists warn

SAVE BRITAIN'S RIVERS

'When they're set in law, the targets must be much faster, in line with the commitment to halt the decline of nature by 2030,' the Wildlife Countryside Link said

'Increase in water bills' to pay for £10bn investment, says industry chief

The chair of Water UK has confirmed that while companies will provide the initial payment for investment, they will reap the money back through increases to bills.

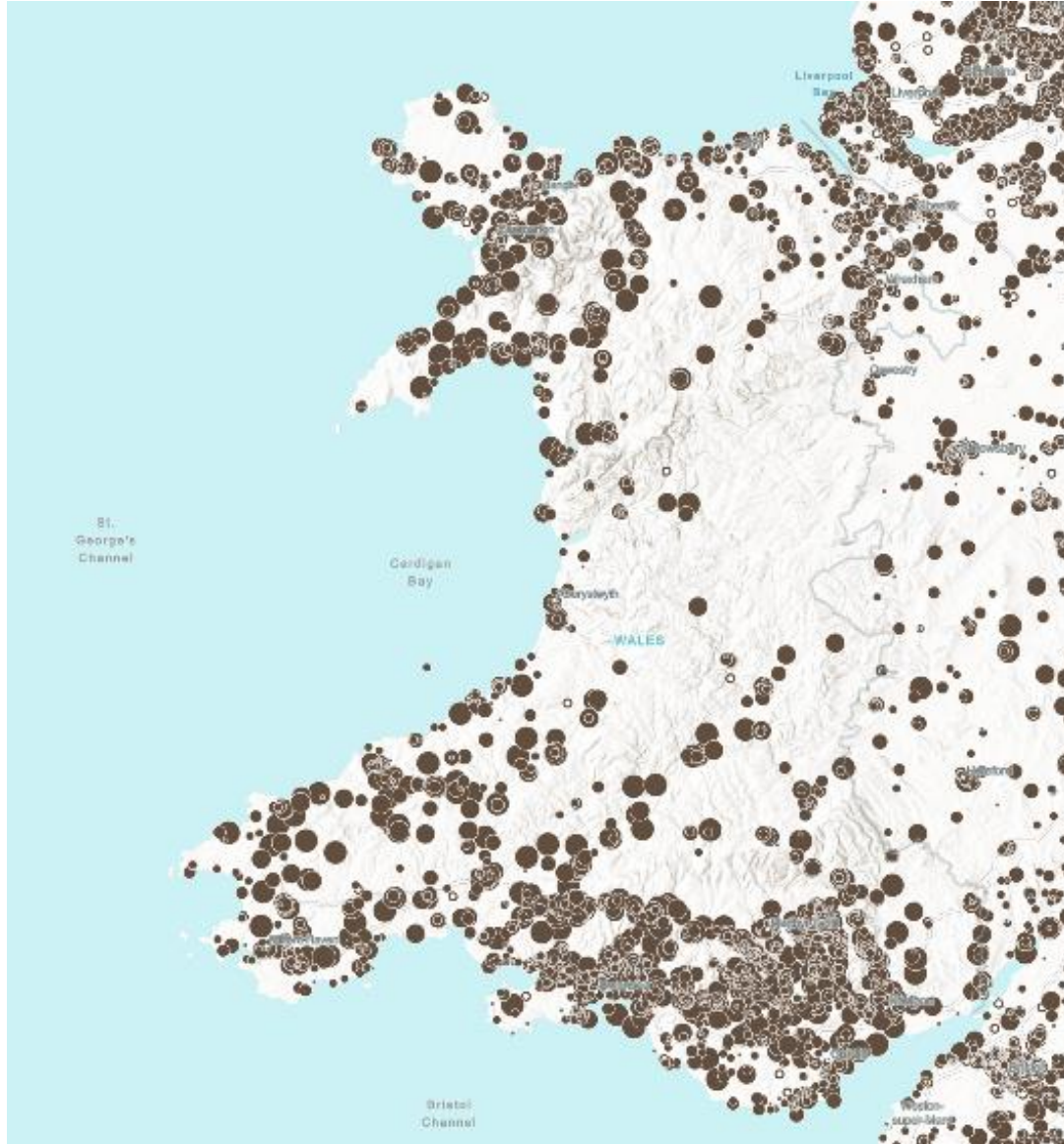


## Sewage island: how Britain came to spew its raw waste into the sea

Untreated waste regularly flows into waters across England and Wales. Is it time to radically rethink sewerage - or do away with sewers altogether?



# Extent of the problem

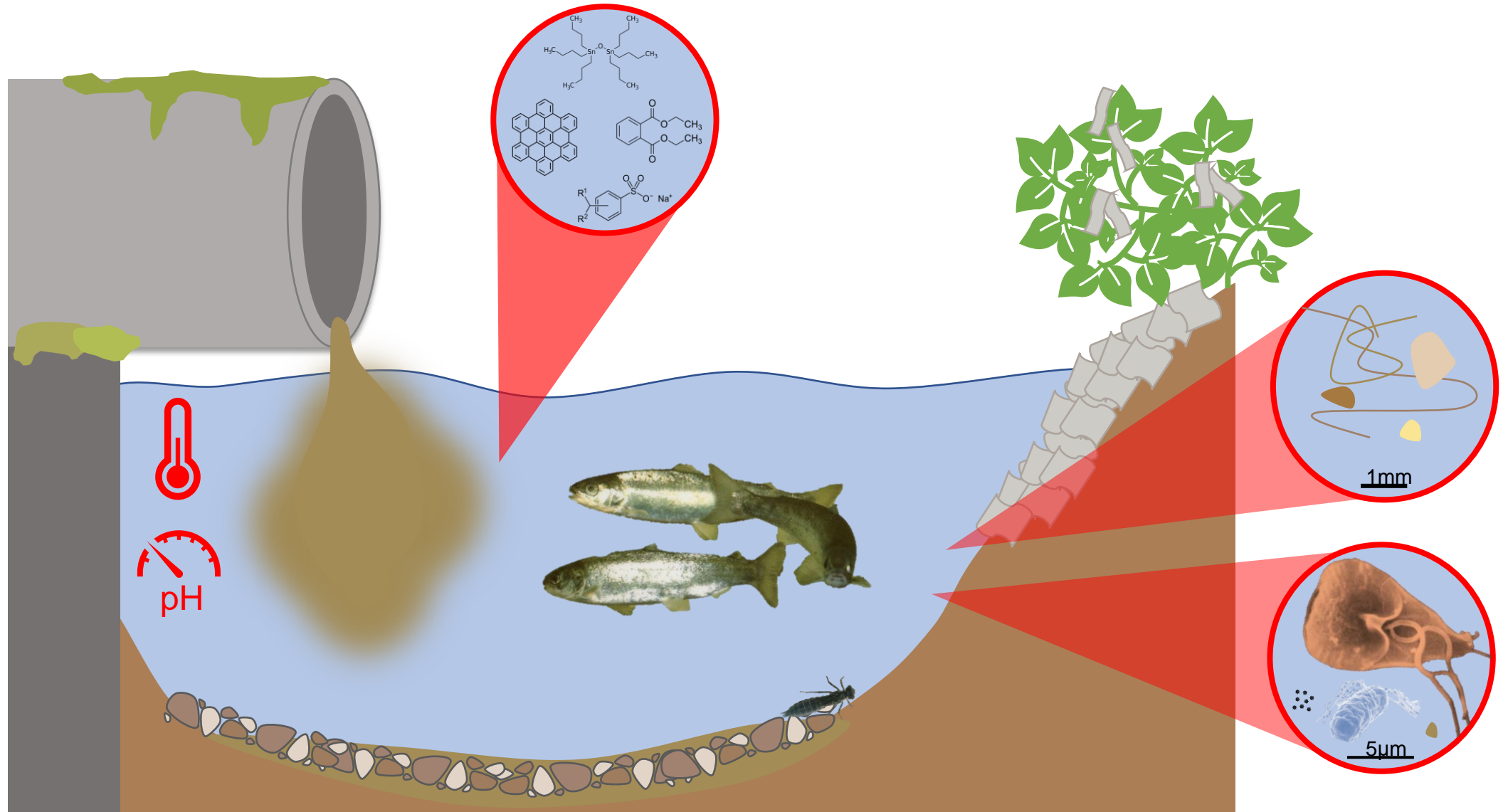


Spilled 16 times for a total of 6 hours  
Spilled 106 times for a total of 2013 hours

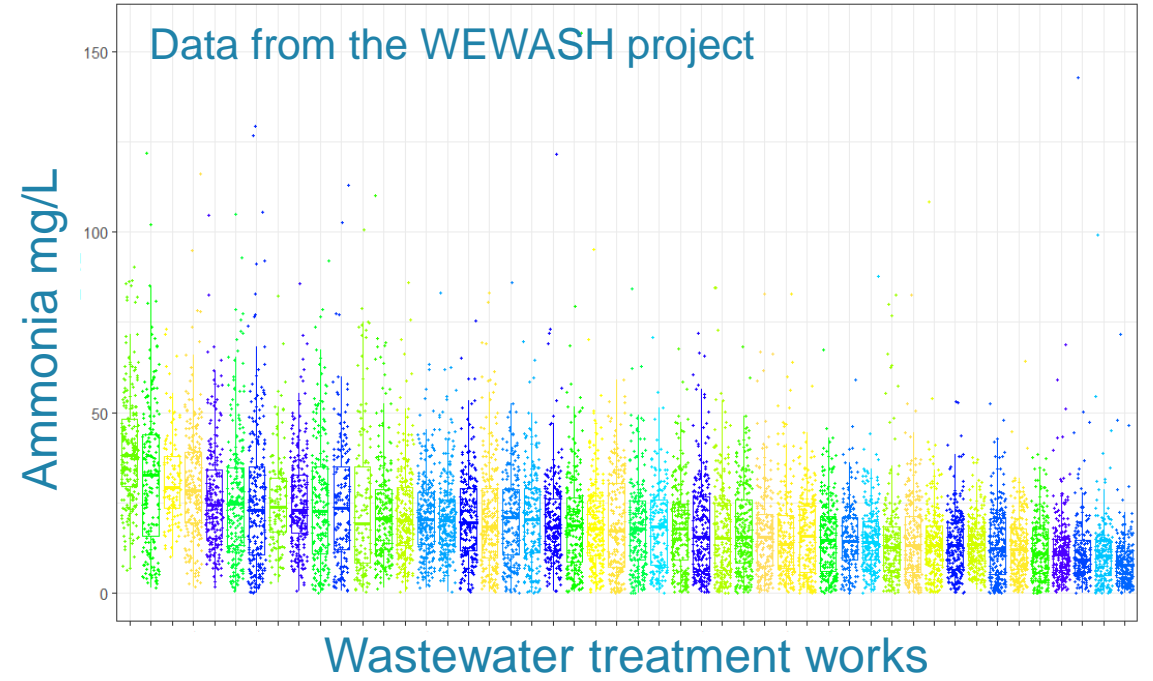
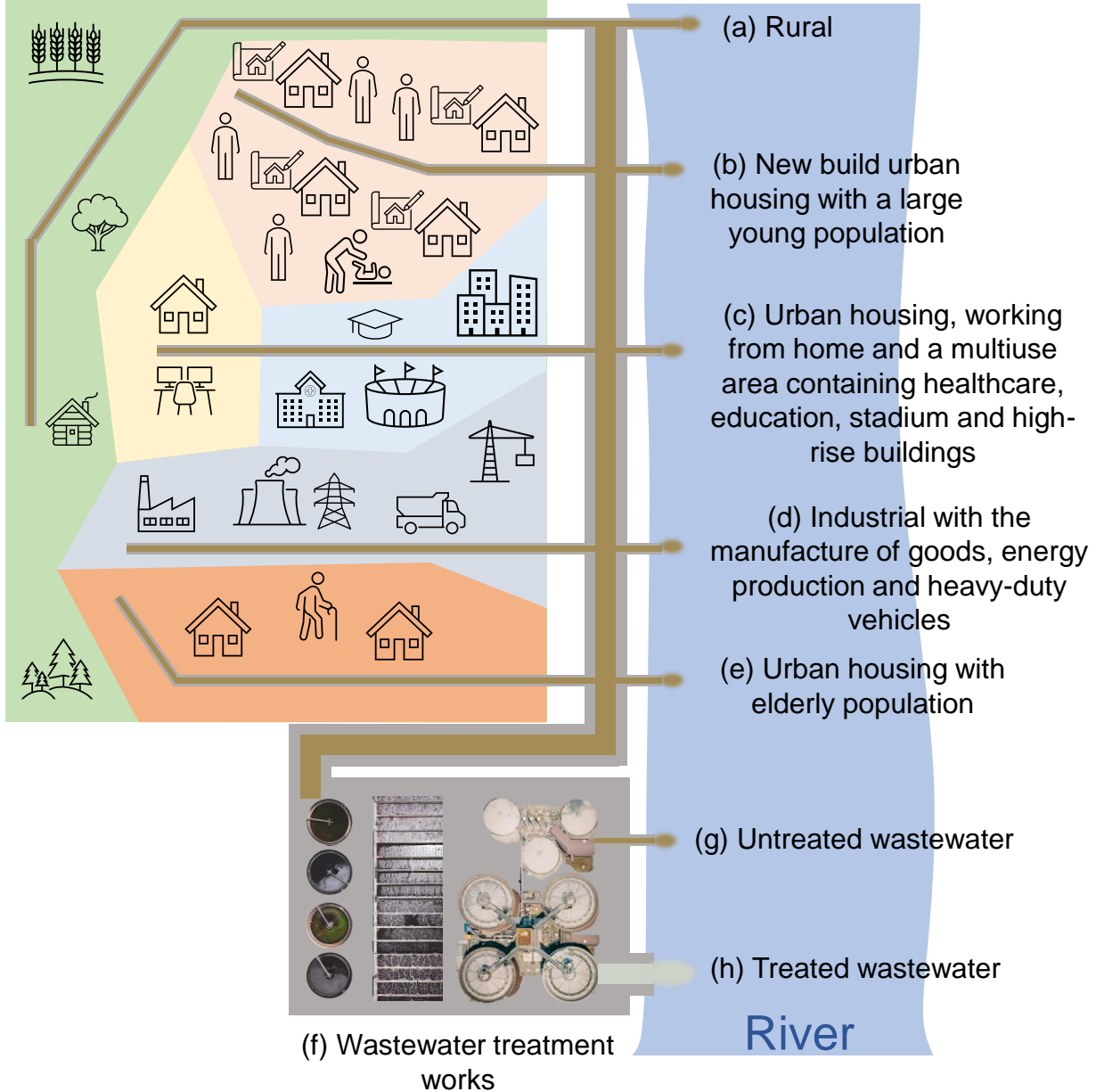
Map: *The Rivers Trust Sewage Map*



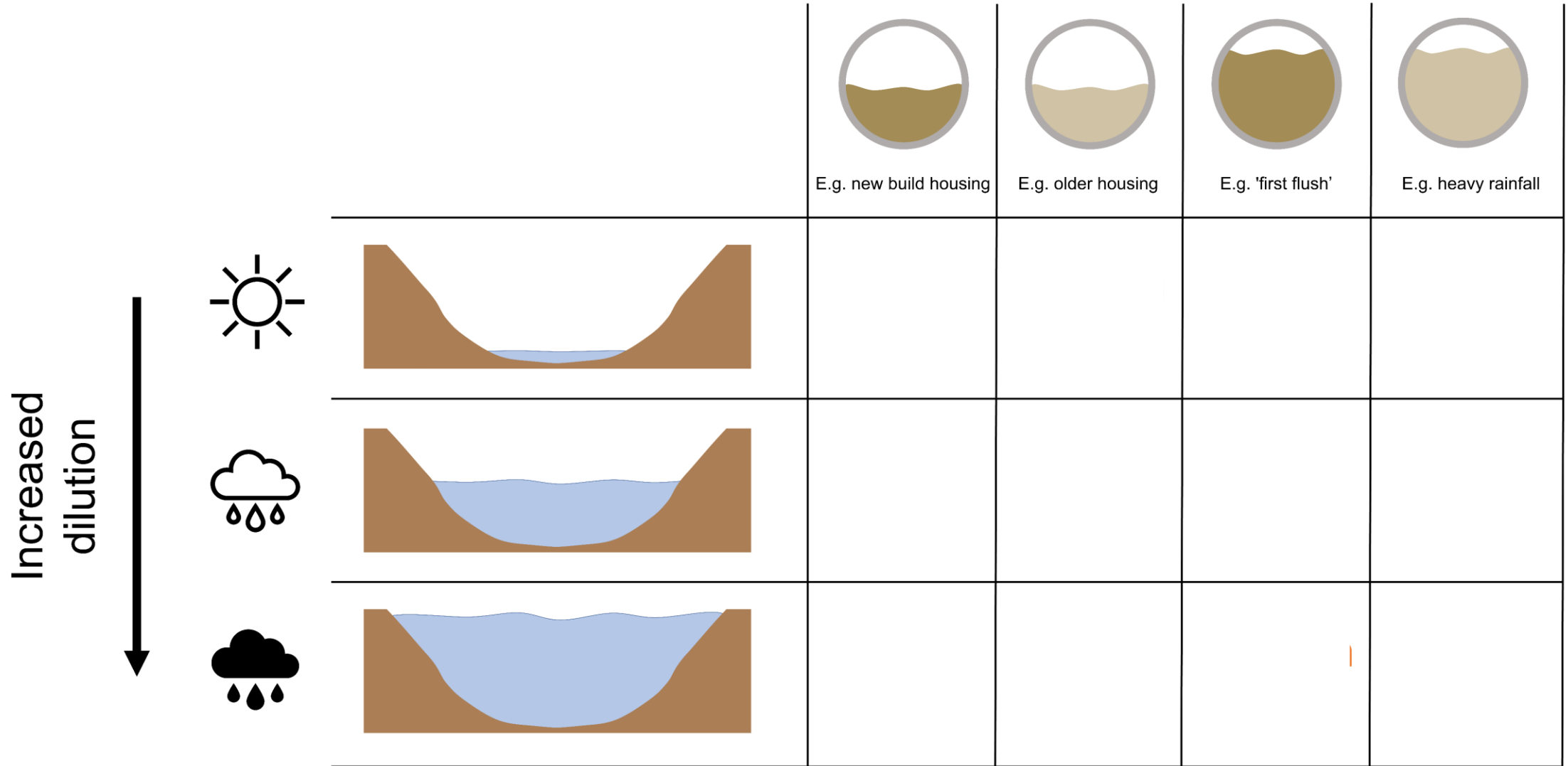
# What do CSO spills contain?



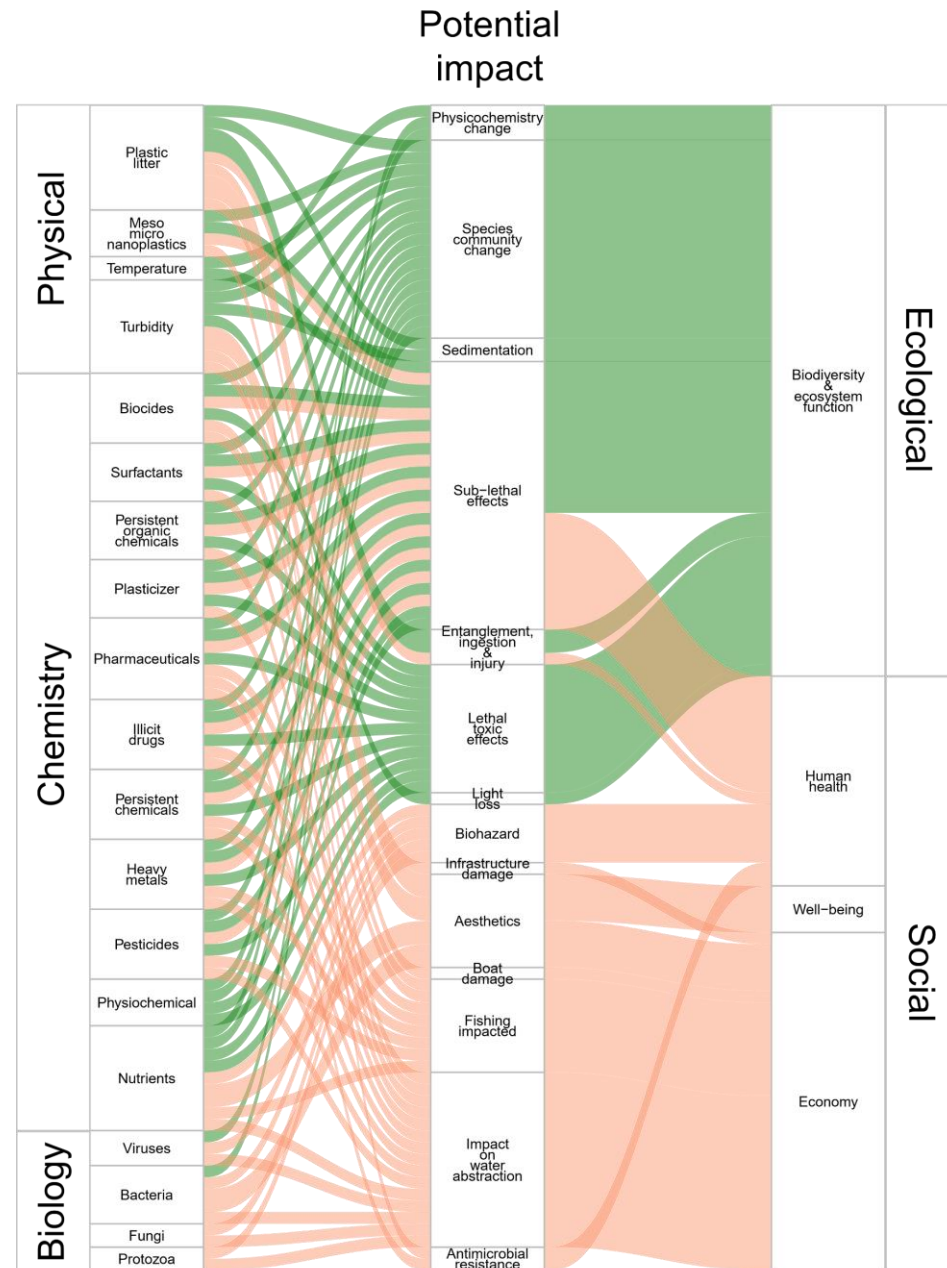
# Variation in wastewater composition



# Pollutant load



# Potential impacts of CSO spills





# Near source interventions



Image: Greywater landscape design

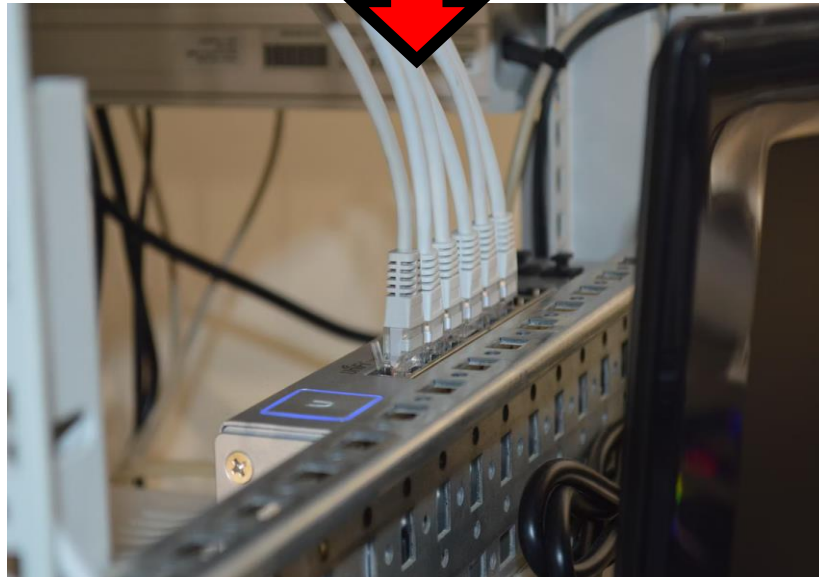
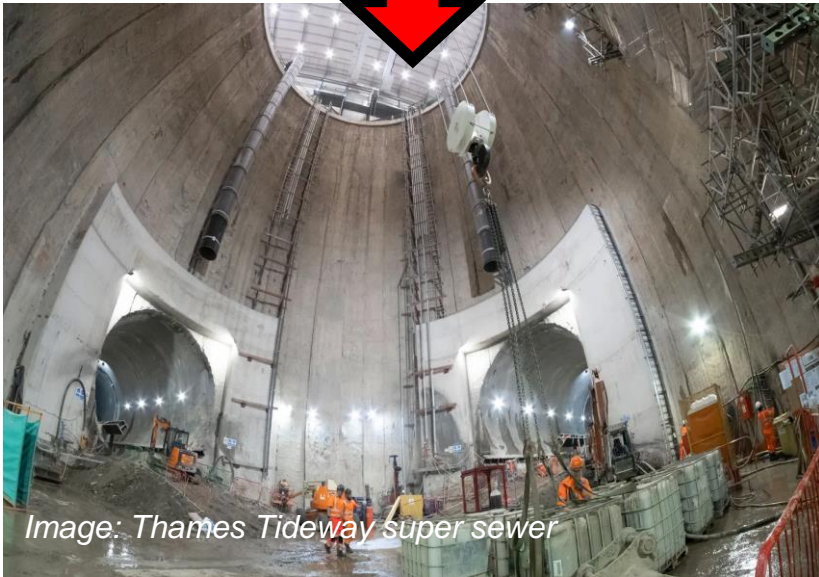


Image: Susdrain





# Network interventions





# Near CSO interventions



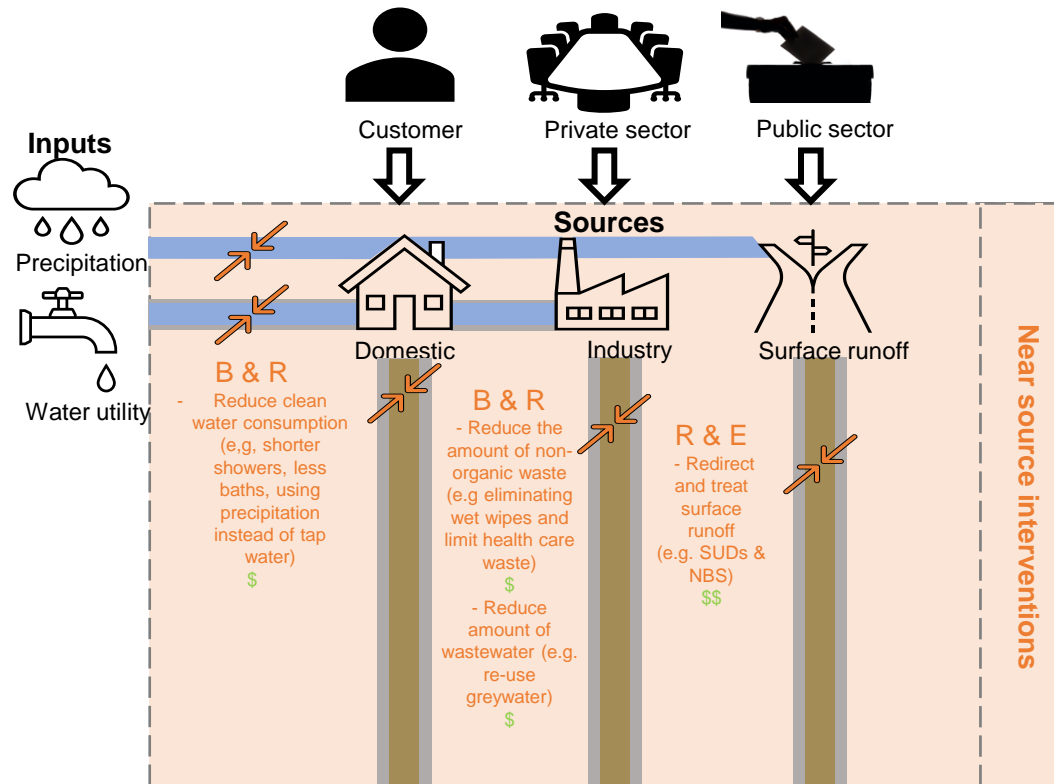
*Image: Romag contracting*



*Image: Fabio Masi*



# Implementing solutions



- Economic costs, carbon neutrality, ecosystem benefit and community well-being
- Systemic thinking to shift from local CSO issues to integrated catchment solutions
- Upstream thinking
- Reducing contributions to wastewater from surface drainage and excess water consumption
- Improved regulation, behavioural changes in water consumption and disposal of waste

# Conclusions

- Wastewater composition is complex and can vary spatiotemporally
- There is variation of receiving bodies that also vary spatiotemporally
- Lacking data on quantity and quality of spills
- Potential risks are therefore hard to estimate
- Evidence based prioritization of CSOs is incredibly difficult
- Need to tackle the quantity and quality of spills
- Upstream thinking required for cost effective measures
- Step change in how we deal with wastewater is required, similar to what has been seen with solid waste and the climate crisis

# Thank you & questions!



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