Lawrence Gosden

CEO, Southern Water.

from Southern Water

Eastbourne Bio Bead update

Anne-Marie, Ann Saunders, Southern Water and Josh Beech, Nurdle.

from Southern Water



Camber Programme October 2026 to April 2027

There are three key areas of the beach where bio beads will be excavated.

a) The mouth of the River Rother (Figure 1)
b) The middle of the beach zones A to D (our areas 3A, 3B, 3C in Figure 2)
c) Beach zones G to I (our areas 2A and 2B) where the Kit Kat café, Marina Café and Marina cottages are situated (Figure 3).

Methodology

- Excavation by diggers down to 40cm and screening bio beads in situ.
- Spring High tide recovery on the spring high tide lines on the beach by nurdle machines.

Timescales

- Site setup w/c 5th October 2026
- On site w/c 12th October 2026
- No operations w/c 21st December and w/c 28th December 2026
- Operations completed w/c 29th March 2027
- Demobilisation w/c 5th April 2027
- Surveys and Data Results Review April/May 2027
- March/April Nurdle Grant for long term maintenance starts and continues to 2030.

Health & Safety Revisions to Operations

- Double fencing with Heras fencing (Figure 5)
- On site banksman and site manager always (Figure 5)
- Separation of operatives and working plant/machinery and vehicles (Figure 5)

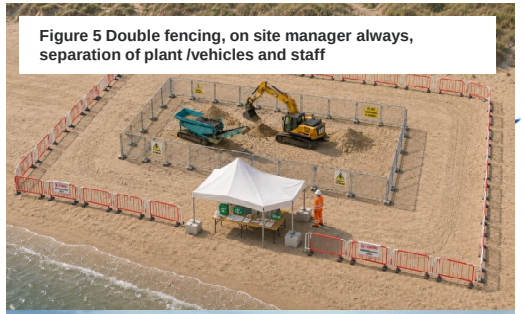


Figure 5 Double fencing, on site manager always, separation of plant /vehicles and staff



Figure 4 Excavating buried bio beads down to 40cm

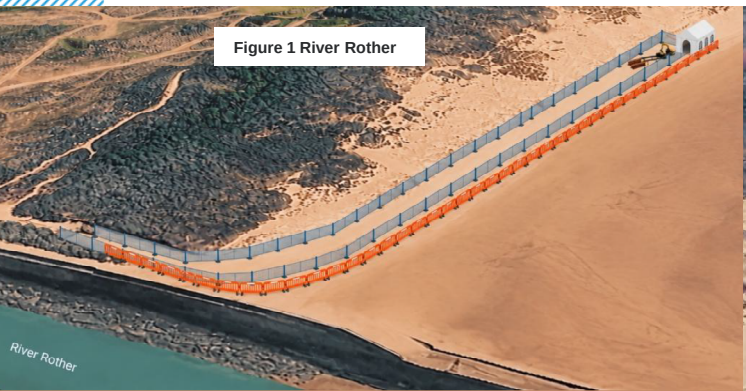


Figure 1 River Rother



Figure 2 Middle Area A to D (our areas 3A, 3B, 3C)

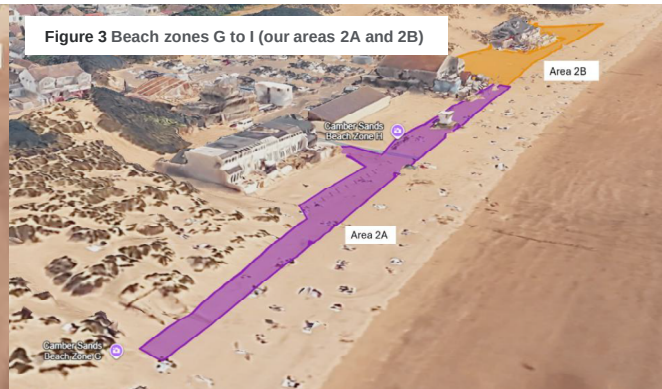
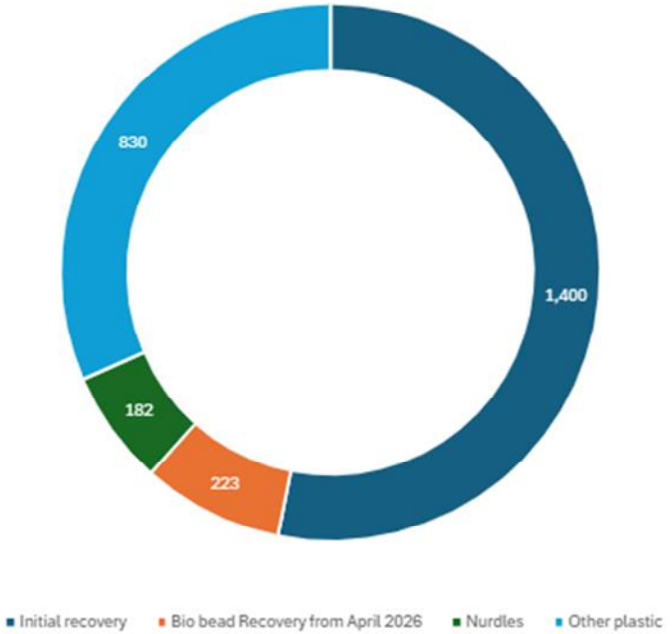


Figure 3 Beach zones G to I (our areas 2A and 2B)

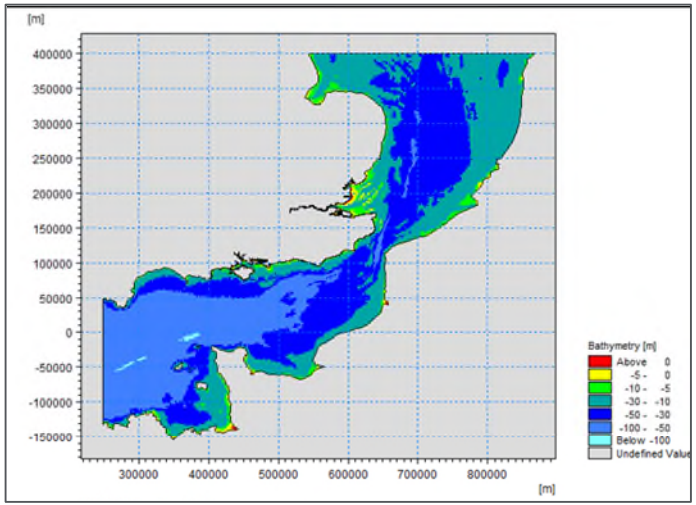
Plastic recovery to date

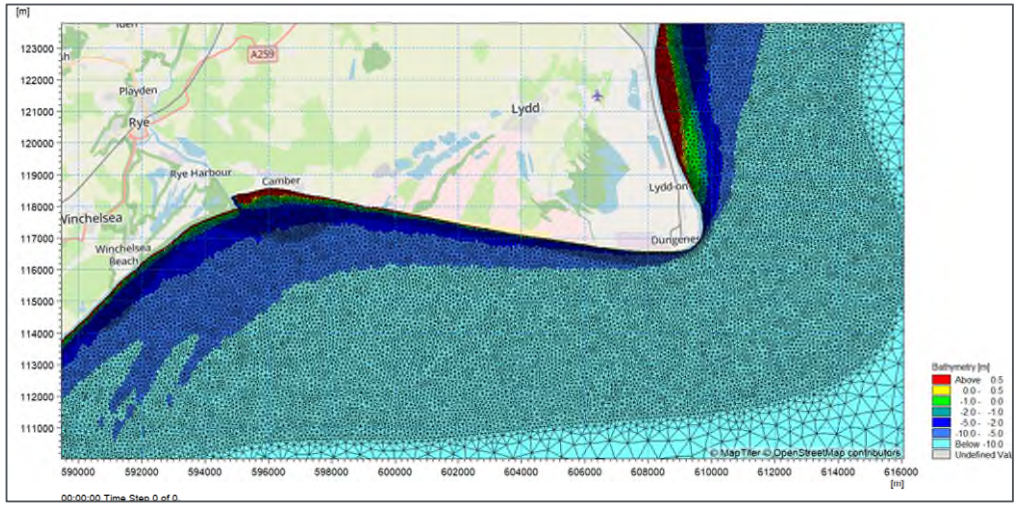
- To date we have recovered approximately 1,740kg of bio-beads (≈35% of the total released).
- We have collected an additional 1,012kg of plastic.
- In total, we've collected 2,735kg of plastic materials during the recovery.



Modelling System

- We used our calibrated, validated and externally audited hydrodynamic and water quality model.
- Spatial resolution varies throughout the domain. The element mesh close to the coast has sides of the order of 30 metres.
- The Southern Water coastal modelling system was audited by Prof. Roger Falconer of Cardiff University.



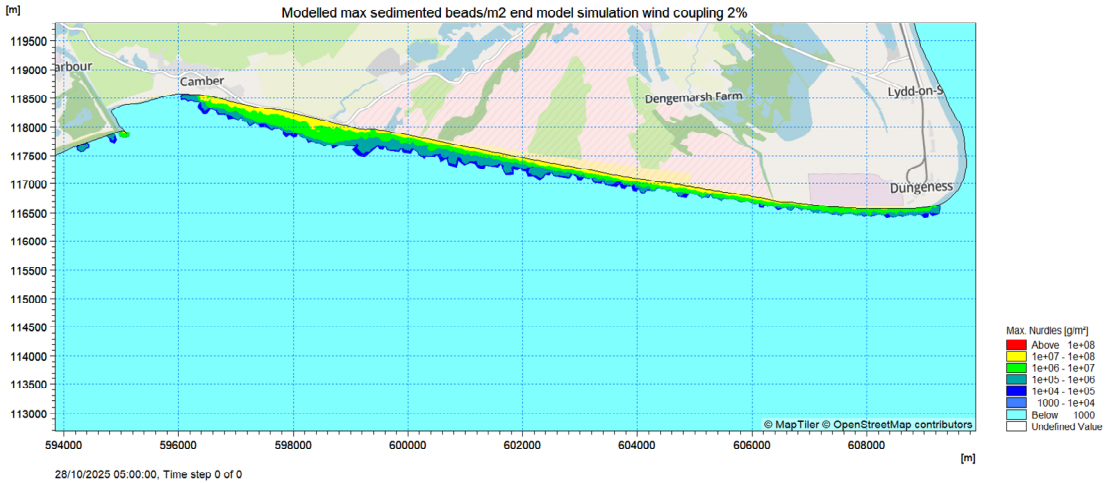


Modelling Approach

- The impact of tides and wind on the movement of the beads was modelled.
- Modelling of the beads was carried out using the timing and amounts specified after much investigation after the incident.
- Wind was applied with 3 weightings to test the response of the beads to wind forcing.
- Wind speed and direction was obtained from Lydd Airport.
- Erosion for four critical shear stress cases. If the bed shear stress exceeds the critical shear stress, the particle is resuspended into the water column.

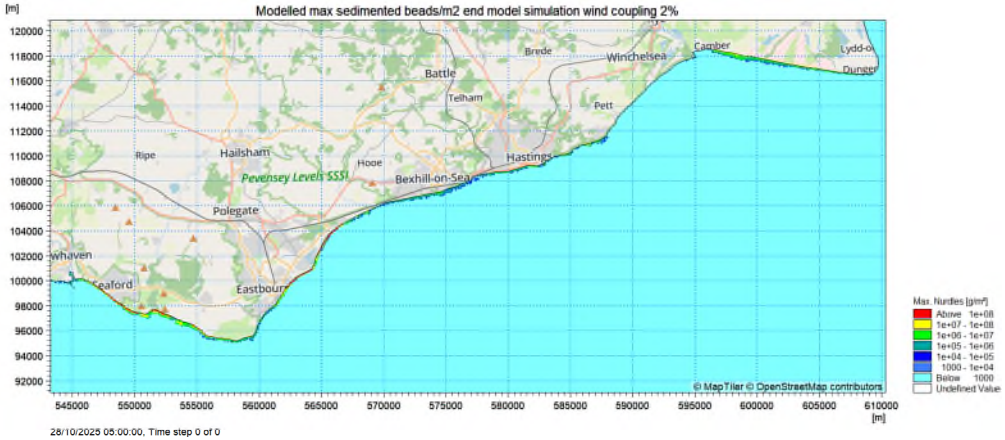
Modelling Results - 1

- The modelling confirmed that the highest proportion of the beads would be stranded at Camber Sands.
- The modelling confirmed that the beads would arrive at Camber Sands on the day that the beads were first noticed there.



Modelling Results - 2

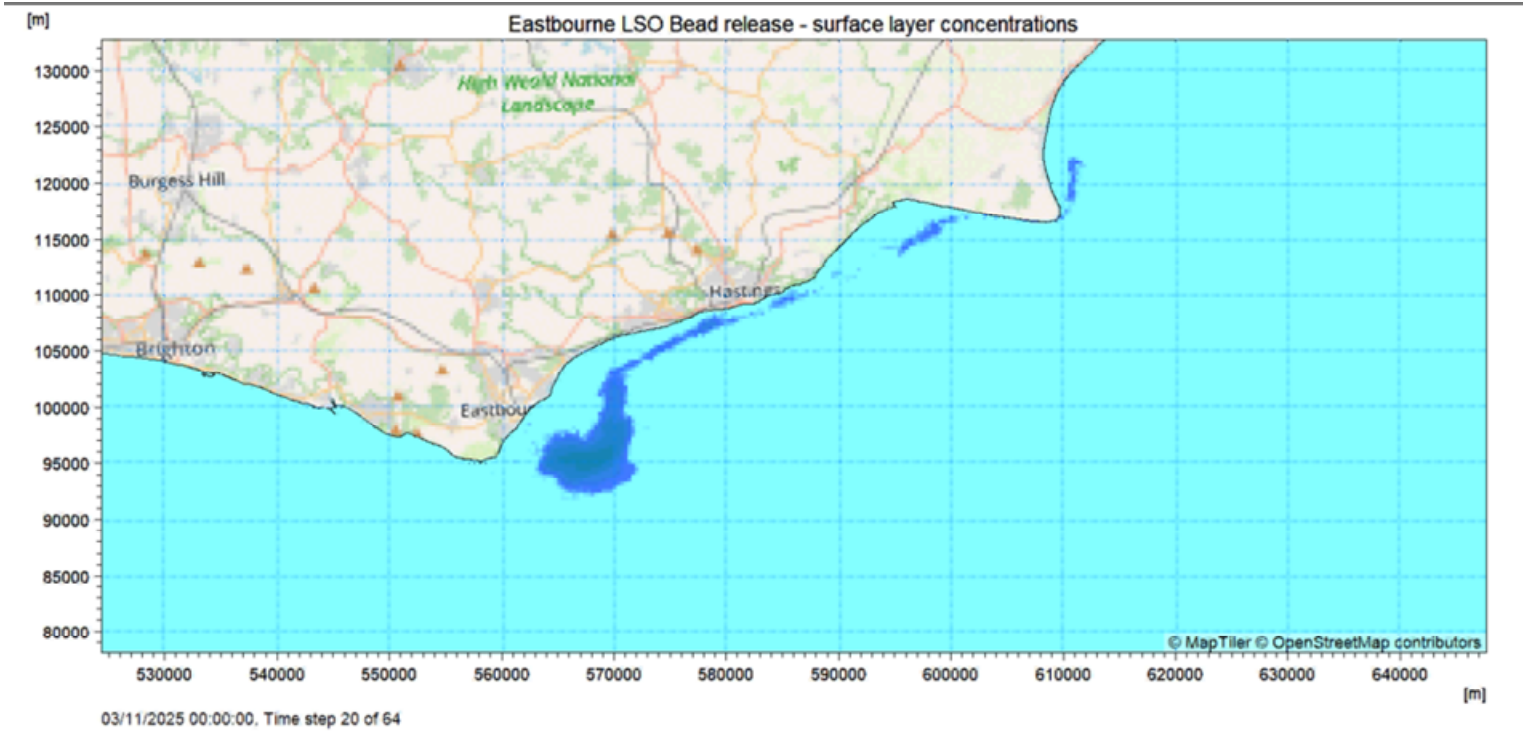
- The modelling also confirmed short-term stranding of bead at other locations would occur.
- The modelling predicted that these beads would be lifted by subsequent tides and continue to be advected and disperses along the south coast.



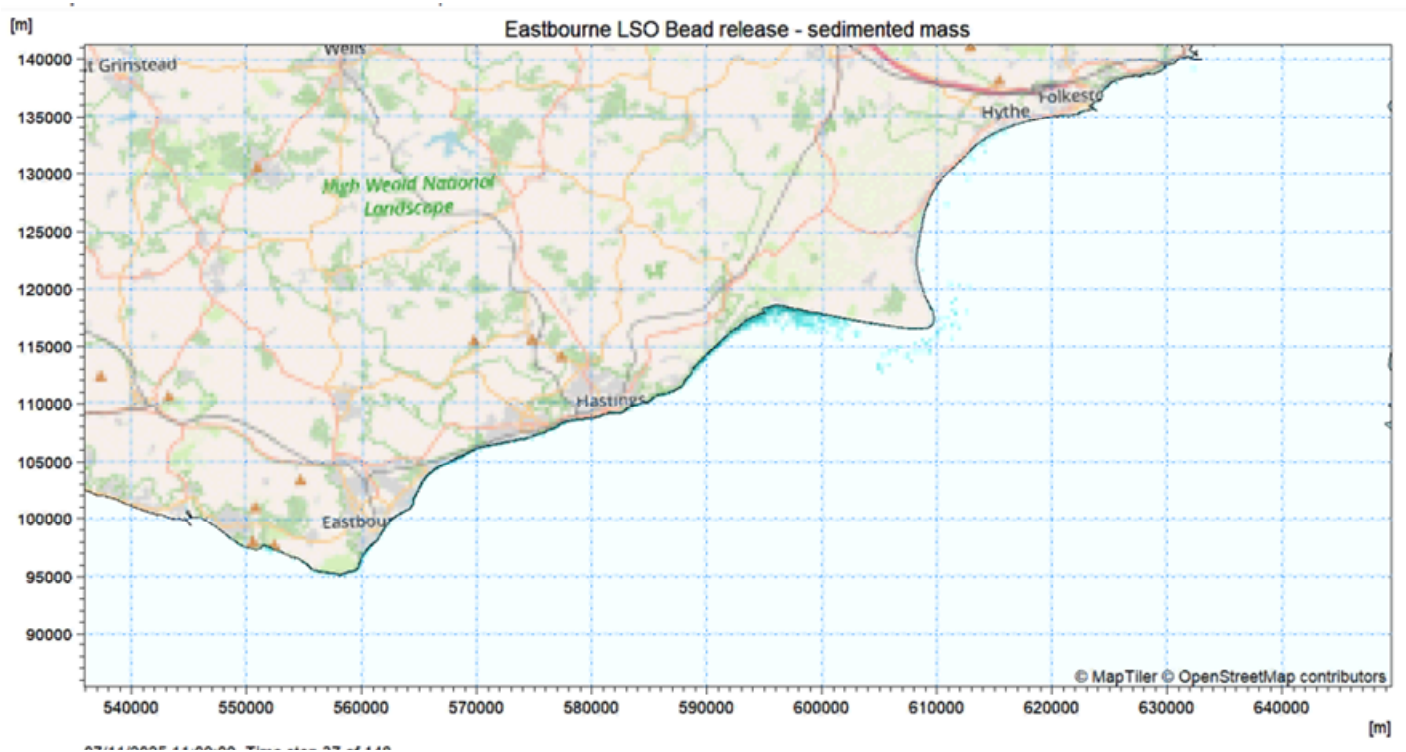
Modelling Beads and Wastewater Plumes

- There are intrinsic differences between modelling beads and modelling bacteria from wastewater discharges.
- Beads:
  - Do not decay at least in the short-term
  - Beads stay at the surface and thus are disproportionately impacted by the wind.
  - Beads strand on the shelving coastlines and may take days or weeks to resuspend.
- Wastewater discharges:
  - Decay over a relatively short time span – 90% have decayed over 10 to 50 hours depending on light conditions and the type of bacteria.
  - Although wastewater is buoyant it disperses down through the water column over time.
  - Although bacteria may strand on shelving coastline because it is affected by sunlight, it does not persist.

Screen shot from the beads modelling showing the surface layer beads rounding Dungeness



Screen shot from the beads modelling showing a small number of beads stranding east of Dungeness



Example County Asset Plan

Stephen Pattenden.

Isle of White – Wastewater - AMP8 (2025-2030) – AMP9 (2030-2035)

WATER for LIFE from Southern Water

Example County Asset Plan

- Developed to describe current performance and outline current and future plans at the county scale
- Brings together tactical and strategic investments within our current execution plan

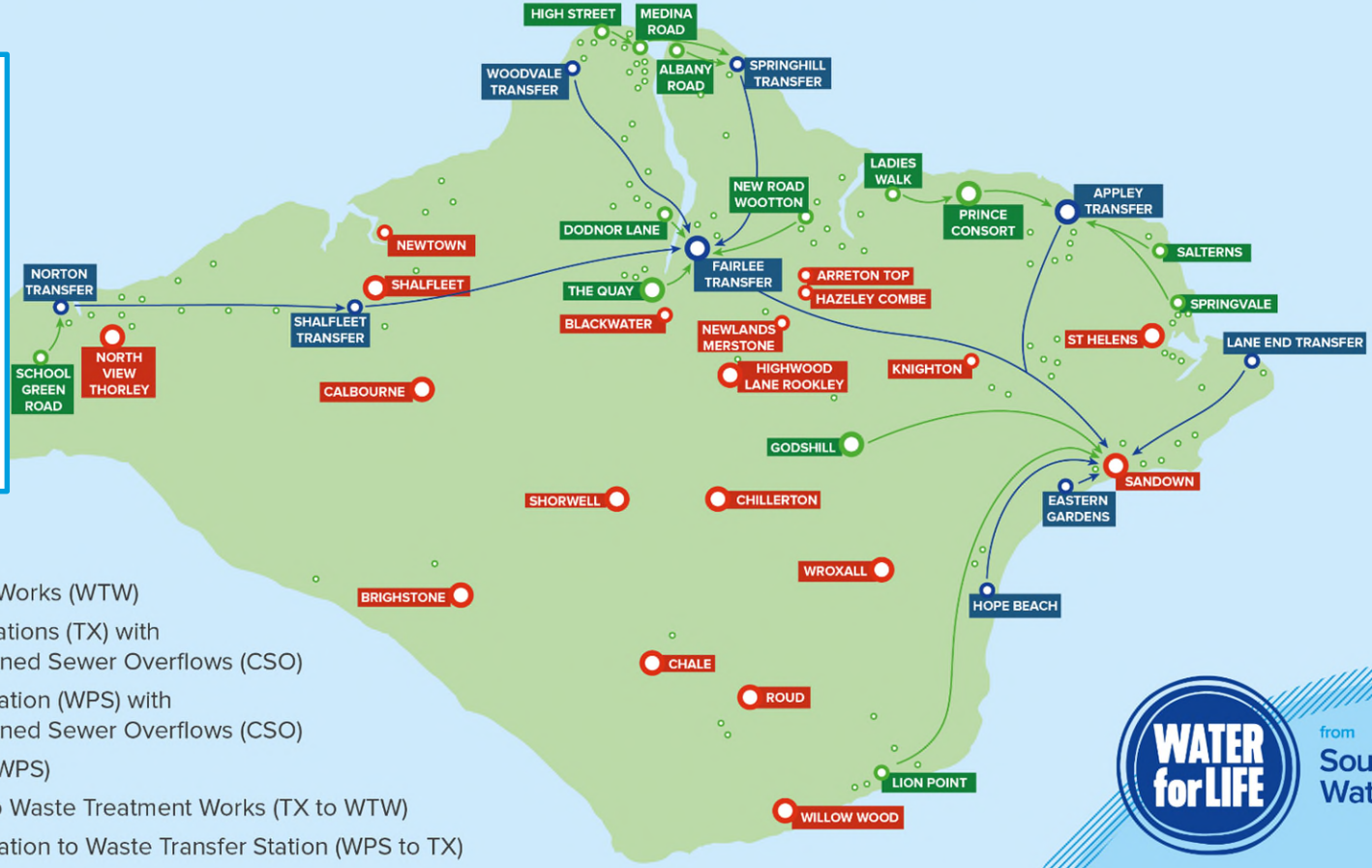
- Your feedback on this will guide an expansion of this approach to the remaining Southern Water service areas.

The Isle of Wight wastewater network

We have more than 245 sites and over 1,000km of wastewater network, where we transfer and treat wastewater 24/7, 365 of the year.

This includes:

- 19 Wastewater Treatment Works
- 220 Wastewater Pumping Stations
- 9 Waste Transfer Stations



Key

- Waste Treatment Works (WTW)
- Waste Transfer Stations (TX) with associated Combined Sewer Overflows (CSO)
- Large Pumping Station (WPS) with associated Combined Sewer Overflows (CSO)
- Pumping station (WPS)
- Transfer Station to Waste Treatment Works (TX to WTW)
- Large Pumping Station to Waste Transfer Station (WPS to TX)

WATER for LIFE from Southern Water

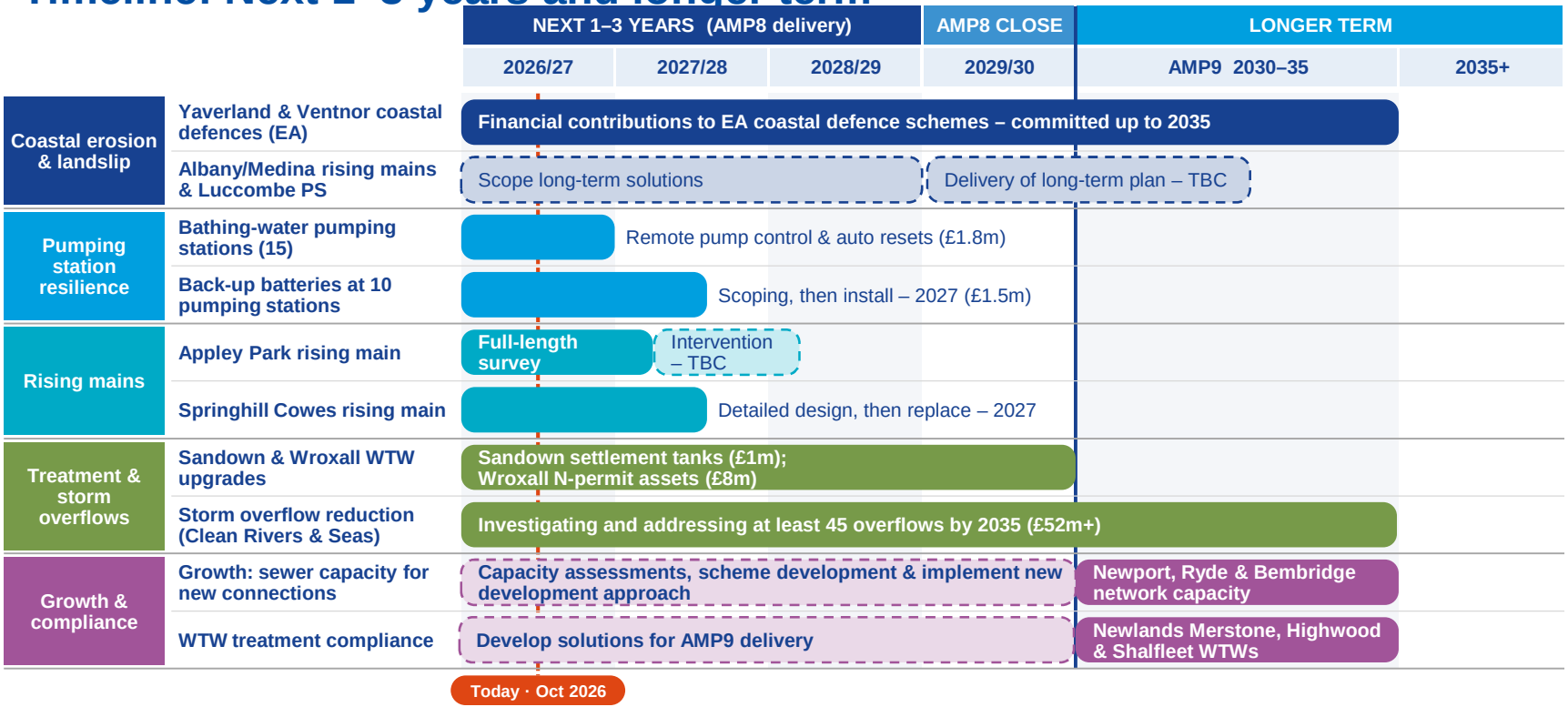
Wastewater

Key issues and mitigations

Issue	Mitigation
Coastal Erosion and Landslip Risk to our assets and continued service	• We're contributing to the Environment Agency (EA) scheme to install coastal defences at Yaverland and Ventnor. • Elsewhere in our region we have installed temporary mitigation in case landslip was to occur (e.g. Luccombe Pumping Station), but further scoping is required to determine a long-term solution.
Lack of resilience of the Island's Wastewater Pumping Stations	• We are installing targeted pollution interventions to 15 pumping stations at our bathing waters, which include two-way remote pump control and auto pump resets. • We are installing rechargeable back up battery supplies at a further 10 sites to improve resilience to mains power interruptions – (2027).
Population Growth with housing developments and new connections over the next 10 years	• In areas we anticipate new residential connections, capacity assessments are carried out to understand potential hydraulic restrictions and investment needs in the sewer network, to prevent future spilling and flooding. • We are currently setting out our approach to be much stronger on where we can and cannot support development regionally.
Repeat burst rising mains impacting the environment	• We're surveying the entire length of Appley Park rising main to get a full understanding of asset health and required interventions. • We are also replacing Springhill Cowes rising main once the detailed design and construction plan is completed – (2027).

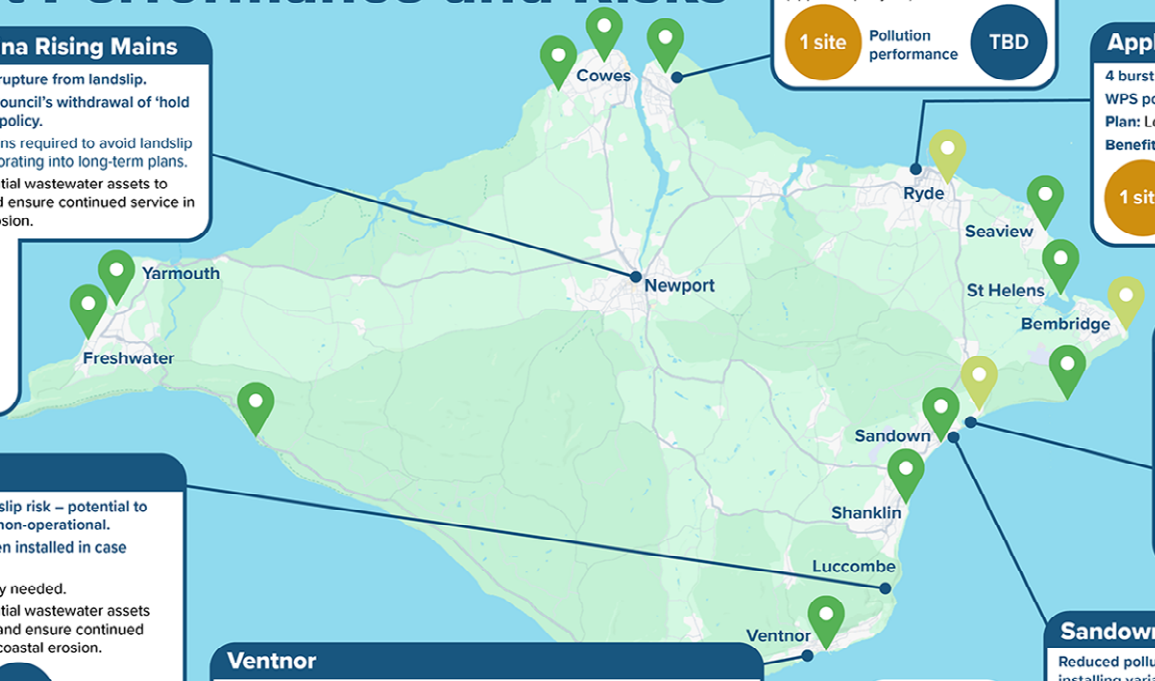
Wastewater

Timeline: Next 1–3 years and longer term



Isle of Wight: Wastewater Current Performance and Risks

WATER for LIFE from Southern Water



Springhill Cowes WPS

2 burst incidents in 2026

Plan: Replace the rising main.

Benefit: Reduction of bursts/pollutions (approx 2 per year).

1 site — Pollution performance — TBD

Albany and Medina Rising Mains

Risk of pollution in case of rupture from landslip.

Risk elevated due to IOW Council's withdrawal of 'hold the line' coastal protection policy.

Plan: Diversion of rising mains required to avoid landslip risk area. Risks need incorporating into long-term plans.

Benefit: Protection of essential wastewater assets to protect the environment and ensure continued service in event of landslip/coastal erosion.

1 site — Pollution risk

£0.3m* — *Estimated cost is subject to change pending full scoping

Appley Park WPS

4 burst incidents in the last five years.

WPS pollution risk reduced through pump configuration changes.

Plan: Long-term solution under review to improve rising main resilience.

Benefit: Reduction of bursts/pollutions (approx 1 per year).

1 site — Pollution performance — TBD

Yaverland Beach

Coastal Defence Scheme – Financial contribution to the EA scheme to install coastal defences in Yaverland Beach.

Plan: Commitment made to continue contributions up to 2035.

Benefit: Protection of essential wastewater assets to protect the environment and ensure continued service in event of landslip/coastal erosion.

1 site — Pollution risk — 1 site — Bathing water quality — £1m

Luccombe WPS

Site is close to coastal landslip risk – potential to make the pumping station non-operational.

Tankering chamber has been installed in case landslip does occur.

Plan: Long-term contingency needed.

Benefit: Protection of essential wastewater assets to protect the environment and ensure continued service in event of landslip/coastal erosion.

1 site — Pollution risk — £1m* — *Estimated cost is subject to change pending full scoping

Ventnor

Coastal Defence Scheme – Financial contribution to the EA scheme to install coastal defences from Ventnor to Bonchurch.

Plan: Commitment made to continue contributions up to 2035.

Benefit: Protection of essential wastewater assets to protect the environment and ensure continued service in event of landslip/coastal erosion.

1 sites — Pollution performance — 1 site — Bathing water quality — £1.5m

Bathing water designations:

- Excellent
- Good

Sandown WTW

Reduced pollution risk by refurbishing the primary settlement tanks and installing variable speed drives at inlet pumps to reduce surging flows.

Plan: Reduction of 20 pollution incidents.

Benefit: Reduction of pollution incidents (approx 20 per year).

1 site — Pollution performance — £1m

Isle of Wight: Wastewater 2030 Performance and Risk



Network capacity

By 2030, our Clean Rivers and Seas Task Force plans to deliver projects targeting 38 storm overflows.

Activities such as sewer sealing, surface water separation and sustainable drainage solutions will improve hydraulic overload of the network.

Benefit: By 2035, water companies will have improved all overflows discharging into or near every designated bathing water, and improved 75% of overflows discharging to high-priority sites.

- 30 sites — Storm overflows
- TBD — Flooding
- £52.6m

Pumping Station Power Resilience

Scoping for 10 sites appropriate for installation of rechargeable batteries for power failure resilience.

Targeted improvements will reduce pollution risk in event of mains power failure.

Benefit: Reduction of pollution incidents.

- 10 sites — Pollution performance
- £1.5m* — *Estimated cost is subject to change pending full scoping

Bathing Water Pumping Station Resilience

Targeted pollution interventions to 15 pumping stations in 2026, to improve resilience and reduce pollution risk on pumping stations that could impact bathing water

Some interventions include two-way remote pump control and auto pump resets.

Benefit: Reduction of Pollution incidents and protection of bathing waters.

- 15 sites — Bathing water quality
- £1.8m

Wroxall WTW

Installation of new assets to meet new reduced Nitrogen Permit.

Storm overflow reduction scheme is targeting a reduction of over 76%.

Benefit: Reduce storm overflows from 42 to less than 10.

- £8m — Treatment compliance
- £4m — Storm overflows
- £12m

Isle of Wight: Wastewater AMP9 Forecast

from Southern Water

Newport Network Capacity

New connections anticipated in Newport requiring investment for increased sewer capacity.

Benefit: Improved sewer capacity reducing risk of spills/pollutions due to population increase.

1 site Growth TBD

Ryde Network Capacity

New connections anticipated in Ryde requiring investment for increased sewer capacity. Solutions are currently in development to accommodate growth without detriment to spilling and flooding.

Benefit: Improved sewer capacity reducing risk of spills/pollutions due to population increase.

1 site Growth TBD

Bembridge Network Capacity

New connections anticipated in Bembridge requiring investment for increased sewer capacity

Benefit: Improved sewer capacity reducing risk of spills/pollutions due to population increase.

1 site Growth TBD

Network capacity

By 2035, our Clean Rivers and Seas Task Force plans to deliver projects to reduce the use of a further 16 storm overflows across the Isle of Wight.

Activities such as sewer sealing, surface water separation and sustainable drainage solutions will reduce hydraulic overload of the network.

Benefit: By 2035, water companies will have improved all overflows discharging into or near every designated bathing water, and improved 75% of overflows discharging to high-priority sites.

16 sites Storm overflows TBD Flooding TBD

Treatment compliance

Newlands Merstone WTW increase flow capacity.

Highwood WTW biological treatment unit replacement.

Shalfleet WTW treatment capacity increase needed to prevent pollutions.

Benefit: Improved treatment capacity will protect receiving waterbodies.

3 sites Treatment compliance 3 sites Pollution performance TBD

Bathing water locations

Cowes
Newport
Yarmouth
Freshwater
Ryde
Seaview
St Helens
Bembridge
Sandown
Shanklin
Ventnor

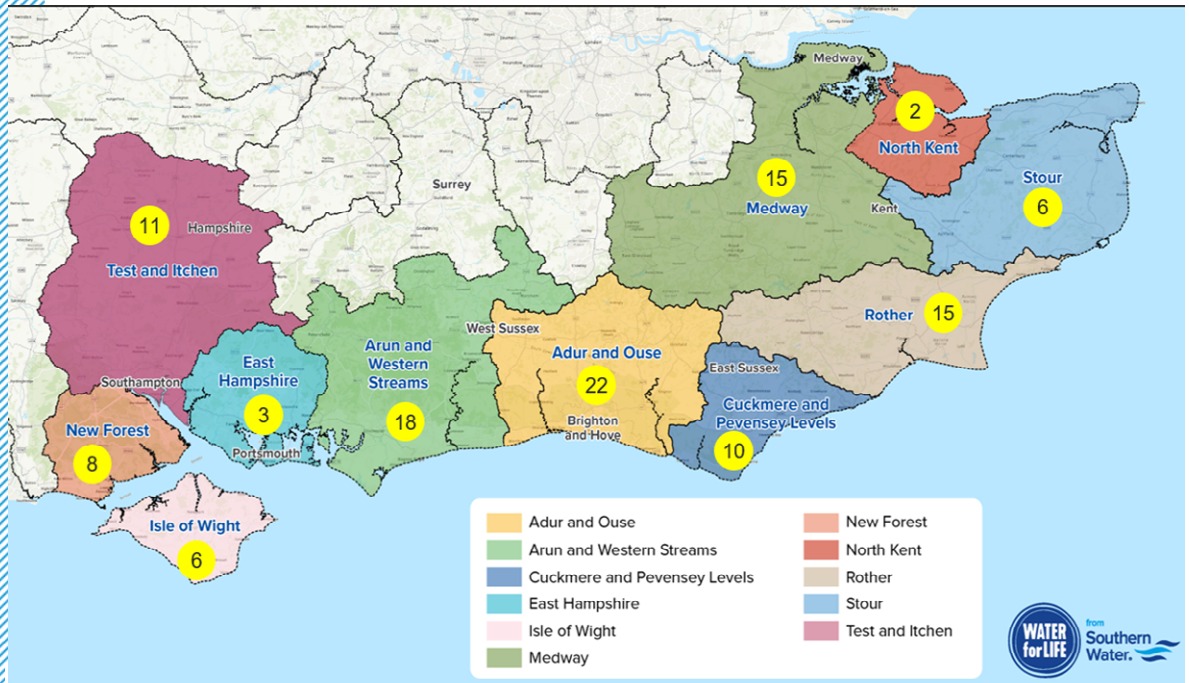
Drainage and Wastewater Management Plan (DWMP)

Hannah Fosbraey

Options development and engagement

WATER for LIFE from Southern Water

Engaging Others in Options Development



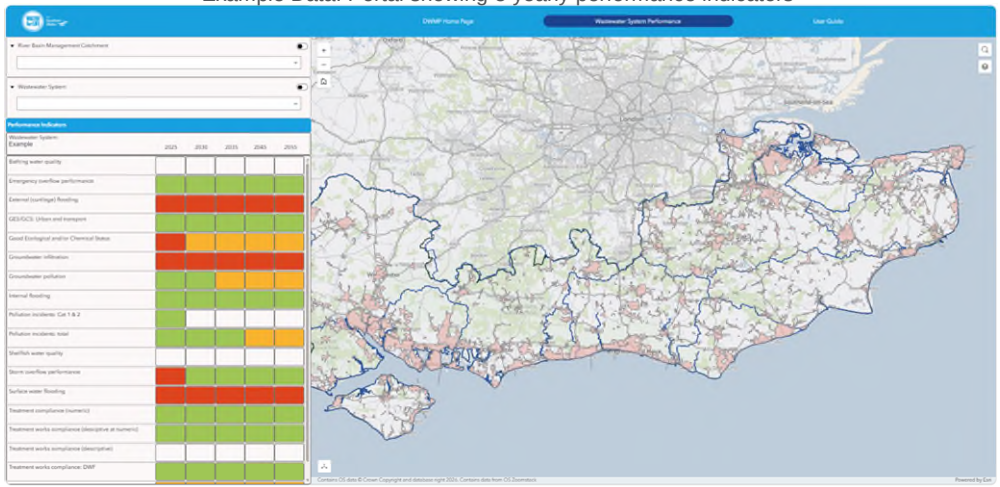
Distribution of the 116 systems prioritised for external stakeholder engagement

- The optioneering phase of the DWMP will run from September ‘26 to April ‘27, and require internal and external stakeholder input
- Systems have been prioritised for options development through the Risk Based Planning process, which uses current and future Performance Indicators to identify risk and investment need
- For 116 of these systems, external stakeholder engagement will help shape the plans and options put forward to our engineering team

Engaging Others in Options Development

- To facilitate stakeholder engagement, an online portal has been developed which gives visibility of each system and associated performance indicators
- A data pack will also provide further insight for each system, giving root causes and commentary on performance issues and potential solutions
- Stakeholders will be invited to contribute feedback, views and concerns through completion of emailed data packs, and/or remote workshops
- External stakeholder engagement will commence in October following completion of root cause data for all Performance Indicators

Example Data: Portal showing 5 yearly performance indicators



Example Data: Sample Performance Indicator Root Cause data

Flooding events 2020-2025

Category	Internal Flooding	External Flooding
Blockages	7	74
Hydraulic	5	67
Flow Compliance	0	0
Operational	1	13
Unknown / Other	1	4

