Case Study

Combe Martin, Devon

SDS residential smart rainwater harvesting system counters CSO spills

SDS Systems
SDS WaterBank® Intellistorm® Rainwater Management System and SDS SYMBiotIC™.

SDS Customer
South West Water.

Client
Multiple homeowners.

Project
Pilot project to establish whether residential smart rainwater storage tanks can ease headroom issues in a combined sewer network.

Purpose
To improve the quality of bathing water in the bay at Combe Martin.

Brief to SDS
To help hold back surface water from entering the drainage network during periods of heavy rainfall.

Timing
Installations were completed in March 2021.

Project Background Information
Combe Martin is a small resort, located in a sheltered valley, at the western edge of Exmoor National Park on the north Devon coast. Two water courses enter the 110-metre-wide sandy bay, the Furze Park Stream and the River Umber which drains directly from the northern slopes of Exmoor. Rainwater from the steep slopes in the area, which is mostly agricultural, often floods the river, overcoming the sewerage network.

Multiple improvements and repairs made to the serving CSOs over the past 25 years have so far failed to rectify the discharge of polluted water into the bay.

Due to insufficient water quality standards, as monitored by the Environment Agency under the Bathing Water Directive, bathing at Combe Martin has been classed as poor from 2017 to 2020; in 2020 alone, 62 pollution risk warnings were issued.

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Project Objectives

To help the bay ultimately achieve 'good' bathing water quality status.

Project Requirements

To reduce the frequency with which CSOs discharge untreated stormwater into the bay.

Surface Water System Requirements

To equip multiple private homes with smart rainwater storage tanks and to provide data enabling the assessment of their contribution to meeting the primary objective.

Stakeholder Engagement

Working with South West Water, SDS recruited residents from 34 houses in a carefully selected catchment.

In addition to a number of water quality awareness training campaigns organised by the Environment Agency, a local community action group, the 'Combe Martin Water Watch', has been established to continue this work. Furthermore, the Environment Agency, Catchment Sensitive Farming and South West Water are working with farmers in an effort to reduce polluted runoff from the surrounding agricultural land.

SDS Product Features

With the assistance of South West Water's engineering consultants, Stantec, each house was equipped with a domestic version of the SDS Intellistorm® rainwater recycling and attenuation system. This comprised of a slim, space-saving 275 litre capacity rainwater storage tank, connected to the main downpipe from the roof and fitted with a small, solar-powered and weather-protected, computer-controlled box positioned at its side.

Together, the tanks have a combined storage capacity of over 9,500 litres which, if not being reused, are automatically released only when there is no pressure on the network. Data received, via SDS SYMBiotIC™, over the first six months of the project indicate that a single 'smart' water tank stores as much water as 7 traditional water butts and is on course to attenuate more than 3,500 litres per year.

Residents consequently save money on their water bills by recycling the collected rainwater for uses such as watering the garden and washing the car.

Results show the benefits our SYMBiotIC™ rainwater management systems can deliver, realising total stormwater attenuation volumes 19 times greater than the volume of the tanks installed.

This level of performance could not be realised in distributed, plot-scale systems without dynamic management. Data from this trial shows that without smart intervention, many systems where the water is not used by homeowners would have filled once and then remained full.

Smart water tank at Rectory Road property.

Smart water tank at Castle Street property.

Dave Pateman, Wastewater Asset Manager, South West Water, said: *"There are many complex factors affecting the bathing water at Combe Martin and some of it is down to how well the sewerage network copes with sudden high volumes of surface water runoff. South West Water is taking a multi-faceted and partnership approach to tackling these problems, including working with SDS and village homeowners to pilot smart water tanks."*