



Storm Overflows

why they exist
and what impact
they have



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What are storm overflows and why do we have them?

Storm overflows are part of an older type of sewer system (pre-1960s) when most properties were built with drains that carry together in one pipe, both surface water (run-off from roof gutters, patios, driveways and some highways) and foul water from homes and industry. This is called a combined sewer system.

The combined sewage is then transported to a water recycling centre for treatment and safe return to the environment.

During a storm, heavy or prolonged rainfall can rapidly increase the flow in a combined sewer and cause it to become overwhelmed as the capacity of the pipe is exceeded. Storm overflows are designed to release excess storm water into rivers or the sea when this happens. They act as relief valves and are only used during heavy rainstorms to protect properties from flooding and to prevent sewage from backing up and overflowing into streets and homes.

Most towns and cities in the UK have combined sewer systems and consequently all have storm overflows to protect properties from flooding during heavy rainfall. There are about 15,000 storm overflows in England - 1,289 of them are in Wessex Water's area.

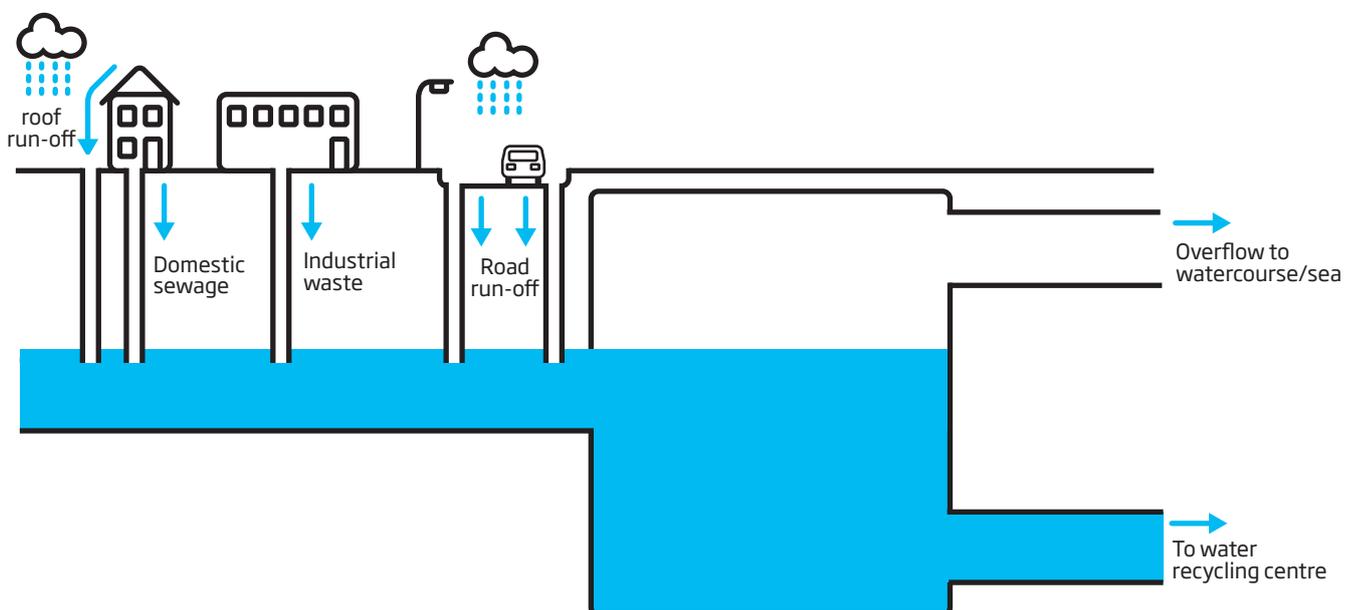
Separate sewer systems have been built in the UK since the 1960s. The more modern system has one pipe for foul water from homes and industry, and a separate pipe for surface water. The foul water is transported to water recycling centres for treatment and the surface water is discharged to a watercourse, the sea or into permeable ground.

The diagram below shows how a typical combined sewer system and storm overflow operates.

Pressures on the sewerage network

The sewerage network and the frequency of discharges from storm overflows is under increasing pressure:

- Despite separate sewer systems, property developers still have the right to connect surface water drainage pipes to the combined sewerage network. This passes the cost and problem further down the network, resulting in increases in overflow operation where overflows exist or a flooding risk where they don't. Sewerage legislation requires an urgent rethink to resolve many of the issues sewer overflows are causing.
- 'Urban Creep' and the growth of impermeable surfaces, leading to more surface water entering the system.
- Climate change giving rise to more extreme weather events and rainfall patterns
- In wet winters, the level of water in water-bearing rocks, can reach the ground and cause flooding. Even before it reaches this level, groundwater will be above the level of the sewers and can often flow into and flood drains, sewers and inspection chambers for weeks at a time and add to the volume of water discharged from storm overflows.
- Misuse of the sewerage network. The biggest scourge of them all is sewer blockages caused by wet wipes and fat being flushed down the loo or poured down the sink. These instances alone account for 75% of pollution incidents in our area. We clear around 13,000 blocked sewers each year. Reducing blockages improves the operation of the network and helps to reduce the frequency of spills from storm overflows.



Storm overflows Taskforce

In August 2020 the Government set up a Storm Overflows Taskforce in response to sustained pressure from groups, individuals and the media about the operation of storm overflows. The revelation through the release of data from the monitoring programme, showing the frequency of spills from overflows, has coincided with a national surge in river use by swimmers and paddle-boarders who have drawn attention to water quality issues in some areas.

The Taskforce is made up of Defra, the Environment Agency, Ofwat, the Consumer Council for Water, Blueprint for Water and Water UK. It was established to:

“Develop proposals to significantly reduce the frequency and impact of sewage discharges from storm overflows with a range of ambitions from reducing spills to phasing out overflows.”

The work of the Taskforce is likely to result in legislation and include the long term goal to eliminate ‘harm’ from storm overflows. Measuring harm and the causes is multi-faceted.

Supporting the work

Wessex Water is supporting the work of the Taskforce by taking an active part in its discussions and by seconding an experienced member of staff to the team at Defra. We support the ambition to reduce impacts from storm overflows.

In an ideal world we wouldn’t have a combined sewer system, but many sewers were laid hundreds of years ago with areas, including town centres, built on top of the network of pipes. To upgrade the entire system is simply not feasible without massive and long-term roadworks disruption. In our region it would cost around £10 billion and increase customer sewerage bills by at least 100%.



Environmental impact of storm overflows

As storm overflows normally only operate during periods of intense rainfall, any foul water released from them will be very dilute because of the large volumes of rainwater within the system. Rarely is a pollution caused by storm overflows operating correctly as there is no significant environmental impact in terms of ammonia, suspended solids and biochemical oxygen demand.

Impact on waterbodies

Publicly available information on the Government's Catchment Data Explorer, shows that storm overflows across the country have a very small environmental impact, contributing to less than 4% of environmental river water quality problems.

Only eight (2%) of the 444 waterbodies (ie streams, rivers, lakes, and the sea) in the Wessex Water region do not meet environmental standards due in part to the operation of storm overflows. There are many other causes of water quality problems in the catchments in our region.

These include run-off from roads and the urban environment; run off from agricultural land which may contain high levels of nutrients and chemicals from fertilisers and pesticides; impact of wild animals; misuse of the sewerage system through issues such as internal plumbing problems when foul water drainage (e.g. from toilets, dishwashers) is connected in error to surface water sewers that discharge straight to the environment and not the foul water sewer.

The Environment Agency regulates intermittent discharges from storm overflows through environmental permits. The main polluting load of the contents of a sewer should flow to the treatment centre, allowing very dilute sewage to overflow when the sewer capacity is exceeded.



Flows are further diluted by the receiving watercourses that will also be swollen by the same heavy rain. Many storm overflows are fitted with screens or scum boards that prevent debris entering the watercourse. However, there are occasions where prolonged discharges can have an environmental impact, for example, the growth of sewage related fungus. Reducing biological loads is usually achieved through a biological process (such as that used at water recycling centres) and requires space and often energy and chemicals to facilitate the growth of the bacteria required to break down the passing organic material.

Since most overflows are in urban areas, there is generally insufficient space for biological treatment. In situations where there is an environmental impact, these have usually been addressed through reducing spill frequency rather than additional treatment.

Our approach

We are not complacent, and are acutely aware of our customers' increasing concern about the effect storm overflows can have on our rivers and the sea. We are committed to doing more to prevent any harm being caused by storm overflows.

The monitoring devices fitted to our storm overflows and the pioneering use of AI technology will allow us to understand our network better and help us to prevent incidents happening in the first place. If a pollution incident or a not-permitted event does occur, we will be able to respond more quickly.

We support changes to environmental legislation and call on Government to work with the industry, regulators, NGOs and others to agree a plan to progressively eliminate the harm that some overflows can cause, starting with the most sensitive catchments.

It is important that we focus on eliminating harm, rather than a complete re-plumbing of the country's entire sewer system.

This is an achievable goal that will protect rivers, minimise our carbon impact, and keep water bills affordable.

For more information about Storm overflows please contact:
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