

Storm Overflows Research Briefing

March 2022



The Welsh Parliament is the democratically elected body that represents the interests of Wales and its people. Commonly known as the Senedd, it makes laws for Wales, agrees Welsh taxes and holds the Welsh Government to account.

An electronic copy of this document can be found on the Senedd's website:
research.senedd.wales

Copies of this document can also be obtained in accessible formats including Braille, large print, audio or hard copy from:

Welsh Parliament
Tŷ Hywel
Cardiff Bay
CF99 1SN

Tel: **0300 200 6574**

Email: **Lorna.Scurlock@senedd.wales**

Twitter: **[@SeneddResearch](https://twitter.com/SeneddResearch)**

Senedd Research: **research.senedd.wales**

Subscription: **[Real time updates](#) | [Weekly and monthly updates](#)**

© **Senedd Commission Copyright 2022**

The text of this document may be reproduced free of charge in any format or medium providing that it is reproduced accurately and not used in a misleading or derogatory context. The material must be acknowledged as copyright of the Senedd Commission and the title of the document specified.

Storm Overflows

Research Briefing

March 2022

Author: Lorna Scurlock

This research briefing looks at storm overflows in Wales; how they're managed, how well they're understood, and how they're impacting water quality.

There is much scrutiny of the different legal duties in Wales compared to England. The **Environment Act 2021** introduced provisions requiring a reduction in discharges from storm overflows. It received a significant amount of media attention. However, the provisions apply to sewerage undertakers operating in England only, with no equivalent provisions in relation to Wales.



Contents

1. Background	1
Legislative context	1
Water resource management.....	1
Water quality management.....	1
Combined storm overflows.....	1
2. Environment Act.....	3
Reducing the impact of storm overflows	3
Investigating the impact of storm overflows.....	4
3. Storm overflows in Wales	5
Permitting storm overflows	5
Providing robust data	5
Real time spill data	6
Developing a roadmap for storm overflows.....	7
Managing risks to the sewerage network.....	7
4. Wider water quality issues.....	8

1. Background

Legislative context

Water resource management

The [Water Industry Act 1991](#) (as amended by the [Water Industry Act 1999](#) and the [Water Act 2003](#)) sets out the regulatory, competition and consumer representation frameworks for the water sector.

The Act provides for the regulation of water resource management, abstraction and impounding; and water quality standards and pollution control.

Senedd Research's [The Water Industry in Wales](#) provides a comprehensive overview of the sector, including the devolution settlement and water companies in Wales.

Water quality management

The [Water Framework Directive \(England and Wales\) Regulations 2017](#) are the primary mechanism for assessing and managing the water environment. They place a statutory duty on Welsh Ministers to prevent deterioration and improve all water bodies to good status by 2027.

Through a six-yearly cycle of [river-basin planning](#), Natural Resources Wales (NRW) prepares [River Basin Management Plans](#) (RBMPs) for each of the three river basin districts in Wales (Western Wales, Dee and Severn).

RBMPs address issues impacting water quality, set environmental objectives and implement a programme of measures to protect and improve the environment. The next cycle of plans will cover the period 2021-2027. They were [consulted on in 2019](#), however no final plans have yet been published.

Combined storm overflows

Combined sewers collect **both sewage and run-off** from drains and gutters. This wastewater is taken to a treatment works where it is cleaned and returned to the environment.

Each sewer system has a maximum amount of wastewater it can accept. During heavy rainfall, if there is more water than the system can cope with, it is released at points called [‘Storm Overflows’](#) often referred to as ‘Combined Sewer

Overflows' or 'Combined Storm Overflows' (CSOs).

Dŵr Cymru explains:

Without these release points, the sewerage system would back up causing sewage flooding to buildings, streets, highways – or worse still cause toilets to overflow inside properties.

This **Consumer Council for Water (CCW) video** gives a brief overview of CSOs and how they affect our rivers. There are concerns about the impact CSOs can have, in short **CSOs can cause:**

- harm to river health – preventing **good ecological status** by worsening river water quality;
- harm to public health – preventing safe recreational use; and
- social impact from public concern.

Hafren Dyfrdwy (a water company covering parts of mid and north east Wales) explains its view that the increasing frequency of sewerage system overloading, and subsequent CSO discharges/spill, is due to a number of factors:

- **climate change** – “extreme rainfall events are 30% more likely in the next decade (intensity and duration)”;
- **urban creep** – “big increase of impermeable areas in urban areas, in 2015 one in four front gardens had been paved over”; and
- **new and mis/illegal connections** – “surface water from home extensions, new builds, land and highways drainage”.

Dŵr Cymru adds:

- **blockages** caused by ‘unflushable’ items that customers dispose to sewers; and
- **collapses** and deterioration of the sewer system.

The **Storm Overflow Evidence Project report**, prepared for **Water UK** finds that to reduce harm from CSOs:

- either more collected rainwater and wastewater must be **retained in the system; or**
- the quantity of rainwater entering sewers must be reduced.

The use and impact of CSOs in Wales has recently been investigated by the Senedd's **Climate Change, Environment, and Infrastructure (CCEI) Committee**, which has undertaken a short piece of work on **water quality and sewage discharges**.

The CCEI Committee received evidence from the **Minister for Climate Change, Julie James MS**, the **Chair of NRW, Sir David Henshaw**, and held an **oral evidence session** with stakeholders. A report of its findings will be published shortly.

2. Environment Act

The **Environment Act 2021** was granted Royal Assent on 9 November 2021. Most of the Act applies to England, however **around half** of the Act's provisions extend and apply to Wales.

Part 5 of the Act relates to water. It covers:

- water resources;
- water quality;
- regulation of water and sewerage companies; and
- valuation of land in internal drainage districts.

Reducing the impact of storm overflows

An amendment proposed during the **Lords stages**, introduced provisions to the then Bill that would have required a reduction of sewage discharges from storm overflows. It received a **significant amount of media coverage**.

This amendment was debated throughout 'ping-pong', and full details can be found in a House of Commons Library research briefing - **Environment Bill 2021-22: Lords amendments and "ping pong" stages**.

The final agreed **section 80 ('storm overflows')** amends **Part 4 of the Water Industry Act 1991** (sewerage services). It requires:

- sewerage undertakers to secure a progressive reduction in the adverse impact of discharges from their storm overflows;
- the Secretary of State to prepare a storm overflow discharge reduction plan and to report annually on progress towards implementation;

- sewerage undertakers to publish annual reports in relation to their storm overflows; and
- the Environment Agency (EA) to publish reports in relation to the operation of storm overflows of sewerage undertakers.

Section 80 specifically refers to “**sewerage undertakers whose area is wholly or mainly in England**”. For clarity, during a debate on 8 November 2021, Deidre Brock MP said:

Let me be absolutely clear: this is a devolved area, and the amendment clearly states that it concerns English water companies.

There are no equivalent provisions in relation to Wales.

Investigating the impact of storm overflows

A 2021 Water Quality Report (UK wide) from Surfers Against Sewage found:

In 2020 sewage was pumped into rivers and seas nationwide over 400,000 times, totalling over **3.1 million hours of pollution**.

A Water Quality in Rivers inquiry by the House of Commons Environment Audit Committee found:

Citizen science analysis of water company data suggests that the true number of sewer overflow discharges may be considerably higher than those reported by the water companies to the Environment Agency.

Reports about unpermitted sewer discharges into rivers led to the Environment Agency and Ofwat (water industry regulator) launching a ‘major investigation’ into more than 2,000 sewage treatment works.

There are two ongoing investigations. One which is England only (Environment Agency led) and one which also covers Wales. Ofwat’s investigation is looking at all water and wastewater companies in both England and Wales, trying to understand:

... if and how often water companies are breaking the conditions of their environmental permits at their wastewater treatment works.

In an open letter, Ofwat explains it will look at how **companies manage and report** the performance of their wastewater treatment works, whereas the EA will investigate whether companies (in England) are **complying with the permits** for their treatment works.

In response to the **CCEI Committee inquiry, Sir David Henshaw, Chair of NRW says** NRW is **not planning a similar investigation in Wales**. He explains NRW already has a 'compliance response' in place, highlighting that it has been information-sharing with water companies since 2014 to identify and rectify causes of non-compliance.

Referring to the investigations, he also says NRW is working with the EA and Ofwat "to determine what action is proposed in light of their findings", and "should this require a review ... we will take the required action".

3. Storm overflows in Wales

Dŵr Cymru says Wales' wetter than UK average climatic conditions is the reason it has one of the highest numbers of CSOs per 1,000km of sewer in the industry - around 2,500 in total.

Permitting storm overflows

Permit conditions for CSOs in Wales are set by NRW. These require CSOs to comply with design and water quality standards and cause no deterioration to the existing quality of the receiving water.

Afonydd Cymru explains the number of spills allowed from a CSO depends on the environmental sensitivity of the watercourse it's discharging into.

In Wales, there is a **presumption against permitting** new storm overflows, unless as part of a wider scheme delivering a net improvement in water quality.

To understand the impact of CSOs, **NRW told the CCEI Committee** that it has been working with water companies and Ofwat since 2012, installing event and duration monitors (EDM) at all sites to record CSO spills.

Providing robust data

Event Duration Monitoring is a '**robust and consistent**' way of monitoring how often and for how long storm overflows are used.

Dŵr Cymru states it's invested £10.5 million in improving the monitoring of CSOs since 2015, and has **spill monitors on almost 99% of CSOs to record the number and duration of spills**. **Hafren Dyfrdwy** says all 50 of its CSO sites are monitored electronically.

EDM data is shared annually with NRW and the EA and is publicly available from both Welsh water companies – **Dŵr Cymru** and **Hafren Dyfrdwy**.

The number of spills recorded per year and the number of permitted overflows in Wales with EDM installed is **available from NRW** and set out below.

	2016	2017	2018	2019	2020
No. of spills recorded by EDM	14,485	29,878	48,499	73,517	105,751
Number of storm overflows with EDM installed	545	983	1359	1665	2041

NRW states the increase in spills each year is the result of an increased number of EDMs being installed, and subsequent available data reported.

Sir David Henshaw of NRW says this information shared by the water companies is used to “identify causes [of non-compliance], rectify those where possible, and set out plans to bring those sites back into compliance at the earliest opportunity”.

Real time spill data

Section 81 of the Environment Act 2021 requires sewerage undertakers to report on discharges from storm overflows “within an hour of the discharge beginning”. However, again this is for a “sewerage undertaker whose area is wholly or mainly in England” i.e. it does not apply to ‘Welsh water companies’.

Dŵr Cymru voluntarily provides a ‘Real Time CSO Alert Service’ all year round at 30 bathing sites, providing real-time information on when a CSO starts operating and when it stops.

One place this real-time data is available for England, Scotland and Wales is through the **Safer Seas & Rivers Service** app, which “alerts water users when sewer overflows discharge untreated human sewage into the sea and when water quality is temporarily reduced due to heavy rainfall and pollution incidents”.

Developing a roadmap for storm overflows

NRW, alongside the Welsh Government, Ofwat and both water companies, **formed an overflow taskforce** in June 2021. Membership has recently been extended to include CCW and Afonydd Cymru.

Known as the Wales Better River Water Quality taskforce, the taskforce is aiming to develop **recommendations** tackling the impacts of storm discharges on Welsh rivers, then to instigate an **action plan** to drive the required work forward. **Ofwat explain:**

The taskforce has examined regulatory and planning challenges faced by the sector and looked at where improvements may be required including improvements over and above existing work programmes and regulatory actions.

A **similar project** has been set up for England.

Hafren Dyfrdwy says a 'storm overflow roadmap' will be developed and form part of a wider ambition to achieve longer term sustainable improvements to river water quality. **Dŵr Cymru** say the roadmap is aimed at ensuring CSOs are "understood, improved, and fit for the 21st century and the challenges we face".

Managing risks to the sewerage network

Water companies are responsible (**Part 4 of the Water Industry Act 1991**) for ensuring effective drainage of wastewater and sewerage. This is important in **managing the risk of surface water flooding**, and associated risks of overloading of the sewerage network leading to storm discharges

The **Minister for Climate Change, Julie James MS** says the first non-statutory **Drainage and Wastewater Management Plans (DWMPs)** will be published by water companies in 2022, which:

...will set out a long and short term plan to reduce the discharges from CSOs and any environmental harm from them. This will include improved treatment of sewage, improved storage capacity and natural, environmentally friendly ways of reducing the volume of water entering the sewage system.

Through developing its DWMP, **Dŵr Cymru** says it's looking at working in "partnership with stakeholders to reduce the risk of flooding and our impact on the environment between now and 2050".

The **Minister states** the plans will be made statutory “during this Senedd term” using powers conferred by **Section 79** of the Environment Act 2021, and she will be “consulting on regulations setting out the form and content of these plans”.

The Minister also **highlights** that **nature based solutions** should be used to divert water away from sewerage systems through catchment management approaches. She draws attention to action already taken on **sustainable drainage systems (SuDS)**, and the further **commitment to legislate to strengthen these requirements** this Senedd term.

These approaches work to relieve pressure on the sewerage system by diverting and slowing the water entering them. **Dŵr Cymru** highlights investment in retrofit SuDS schemes **Greener Grangetown**, and in **Rainscape** where it has:

...invested £115 million ... between 2012 and 2020, laying around 14 miles of new pipework and kerb drainage, building a new tunnel just under one mile long underground to create rainwater sewers and planting almost 10,000 plants and trees in swales, planters and basins. The project delivered a **95% reduction in the volume spilt from CSOs**, reduced the risk of flooding and keeps another 1.5 million cubic metres surface water per year from entering the network.

Hafren Dyfrdwy suggests nature based solutions should be the “first choice to address environmental challenges”.

4. Wider water quality issues

Dŵr Cymru highlights that CSOs are a confirmed or probable reason for not achieving good status in 4.6% of water bodies.

In response to an **enquiry by the CCEI Committee** about CSOs, the **Minister says** she is “extremely concerned” about the impact of pollution” on water quality, and is “committed to tackling the causes”. However she highlights that CSOs are not the main cause of poor water quality in Wales, saying:

... the main causes is runoff from animal waste and chemicals used in agriculture, pollution from disused mines, runoff from built up areas, and sewage pipes being wrongly connected to drainage networks.

The Minister gives further information on the five key factors preventing the 942 water bodies in Wales from reaching good status, as identified by the RBMPs:

- physical modifications cause failure in 241 water bodies (113 failures from farming and 16 from forestry);

- diffuse pollution from rural areas causes failures in 129 water bodies - of these 113 are from farming and 16 are from forestry;
- urban pollution causes failures in 101 water bodies;
- sewage and waste water causes failure in 74 water bodies; and
- abandoned metal mines cause failure in 60 water bodies.

Hafren Dyfrdwy highlights its view that whilst “water companies have action to take”:

... unless the issue of agricultural pollution is also addressed, health of rivers in Wales are unlikely to improve materially