

Briefing Note – Water Quality around the Clyne River and where it discharges into Swansea Bay

Characteristics of the Clyne

The Clyne River flows through the Clyne Valley and Country Park in Swansea for much of its length of approximately 6.5 miles. It rises from a series of springs on the northern fringe of Fairwood Common and flows in a south easterly direction to meet the sea at Blackpill.

In its relatively short journey from source to sea, the Clyne is subject to a range of pressures: from multiple historic mine-water discharges, domestic misconnections, impacts from contaminated land, urban and highway runoff, and agricultural discharges higher up in the catchment. The shape and nature of the river channel is often compromised by canalisation or excessive deepening in some places.

According to NRW the “characteristic” hazy, murky appearance of the water in the river is likely to be due the impact of mine-water discharges. This year has been particularly challenging because the dry and hot weather has led to very low flows and warm water. NRW have investigated a number of pollution incidents on the Clyne, the majority of which have been resolved or have not reoccurred.

Railway Inn Sewage Pumping Station (SPS) and combined sewer overflow (CSO) Spills

The Railway Inn SPS is permitted to discharge storm sewage due to rainfall when the flow passed forward by the pumps reaches 240 litres per second or the hydraulic capacity of the sewer network downstream of the CSO is reached due to rainfall and the level of storm sewage in the sewer at the CSO is greater than the weir level of the overflow structure. The weir level is specified as an overflow setting of 240 l/s. Storm storage of 1050m³ is also available at this site in order to reduce the numbers of spills from the CSO.

Storm discharges relate to hydraulic loading in the sewer network rather than the backing up of water in the sewer due to riverine flooding at the end of CSO outfall pipes. For that reason, the number of floods/spates occurring within a year do not directly correlate with the number of spills from any particular CSO. They can of course indicate when there have been periods of heavy rainfall, but not all periods of heavy rainfall result in floods. Hydraulic overloading in the sewer can be as a result of localised heavy rainfall, especially where there is a sudden influx of surface water from highway drains and other hard surfaces that drain into the sewers.

According to NRW an annual spill number of 12 would not indicate that the Railway Inn SPS CSO is operating outside of its permit conditions. Nor does NRW's Water Framework Directive (WFD) sampling data collected just downstream of the CSO indicate that the CSO discharges are having a noticeable environmental impact on the Clyne.

DCWW investment in recent years has played a part in helping reduce the number of spills by 10% in 2021 despite their adding monitors to an additional 198 CSOs in the same year. This means DCWW now have monitors on over 99.5% of their CSOs. DCWW publish the data from their monitors and on their website, [here](#).

Are phosphate levels as high as is suggested at this and the various sites listed in recent correspondence (JJ/02130/22)?

NRW state that without more information relating to sample technique, analysis method used, limits of detection of the method and the environmental conditions when the sample was taken, it is difficult to comment on the levels of phosphates as reported in the letter, however, NRW undertake their own sampling of the Clyne River as part of their water quality monitoring programme. From a recent check on the results of this monitoring, NRW's data did not reveal any issues with respect to phosphate levels within the river. The concentration of phosphates recorded by the correspondent, however, would meet the WFD classification requirements for good or higher.

Are there any water quality concerns about children playing around the river?

NRW does not normally advise on issues of public health in relation to water quality. Rather, this is a matter for the local authority environmental health department. By way of a general comment on this subject, NRW recognise that streams and rivers in all locations can be subject to pollution from a range of sources that could lead to the presence of potentially harmful pathogens in the river water. This is particularly true in heavily populated areas or locations where livestock is kept. NRW know that there are domestic misconnections that impact on the tributaries of the Clyne and that urban and suburban runoff can be contaminated by, for example, dog faeces.

Work to improve water quality in the area

Over recent years NRW have been working on safeguarding and improving water quality in the Clyne. For such a small catchment, improving the water quality of the Clyne presents a significant challenge. There are issues associated with the impact of the closed landfill at Derwen Fawr as well as the numerous mine-water discharges. The densely populated hinterland to the river has been subject to many domestic misconnections and runoff impacts can be significant due to the relatively high levels of precipitation that falls on the urbanised and steeply sloping land to the north and east. In addition to these pressures the shape and nature of the river channel is often compromised by canalisation and excessive deepening in some places.

NRW recognise, however, that it is important to prioritise work within the catchment because it is used and enjoyed by many people and because problems within the Clyne have the potential to impact on the water quality within Swansea Bay. For this reason the Clyne is included in NRW's Swansea Bay Opportunity Catchment.

Work to reduce the impact of the closed landfill in Derwen Fawr was undertaken some years ago but NRW believe that some residual impact from the site may be ongoing. They are currently undertaking monitoring to quantify any impact.

NRW will continue to regulate discharges from the sewer network in this area. The sewer infrastructure in the area has been upgraded in order to meet the requirements of the Bathing Water Regulations and NRW have since issued permits that require that the number and duration of spills from each CSO to be monitored. The data from this Event Duration Monitoring will be used to prioritise further improvements where high spilling assets are identified.

Working in partnership with Swansea Council, and assisted by Dŵr Cymru Welsh Water (DCWW), NRW have surveyed most of the urban areas of the catchment for domestic misconnections. They have found that up to 10% of properties are misconnected. Most of the misconnections that they detected have now been rectified but some may persist, and new misconnections tend to occur over time. NRW will continue this work and are currently working on issues in the Derwen Fawr area. DCWW state they are working collaboratively with NRW, local councils as well as property owners to rectify domestic misconnections, adding that such incidents are classified as 'low incidents' and are not deemed to have any detrimental effect on the water quality in the Clyne River.

Swansea Bay Wastewater Treatment Works

The Swansea Bay Wastewater Treatment Works on Fabian Way treats wastewater for around 195,000 customers. The Treatment Works has an additional disinfectant treatment method where the effluent is exposed to Ultraviolet rays before it enters Swansea Bay. The fully treated, disinfected effluent has a discharge point of 3.5 km and should have no negative effect on water quality in Swansea Bay.

DCWW continually monitor the quality of the effluent entering water courses as well as the operation of their CSOs which mainly release surface water that enters the sewers due to rainfall. Recent spill alerts for Swansea Bay due to weather conditions are associated with nearby CSOs not the treatment works on Fabian Way.

Additional Info

44% of Welsh rivers meet "good ecological status" as measured in accordance with the Water Framework Directive, compared to 14% in England.

Customers can help by not placing items such as wet wipes, nappies and cotton buds down the toilet. DCWW encourage customers to follow this advice through their "Let's Stop the Block" campaign.

██████████, Water Branch, 18/10/22