

Letter from Peter Hammond

January 8th 2024

Rt Hon Stephen Crabb MP
Chair, Welsh Affairs Committee

Dear Mr Crabb,

Thank you for your letter of December 14th 2023 in relation to my appearance at the Welsh Affairs Committee last year following BBC coverage by Jonah Fisher, on October 19th 2023, of my WASP¹ report on 11 Dŵr Cymru sewage treatment works (STWs). I am very happy to respond to your questions. I have included both a short and long answer to question 1.

Q1. There was discussion during the session on whether Dŵr Cymru and Natural Resources Wales had co-operated with you both before and after the publication of your analysis. a. How have Dŵr Cymru and Natural Resources Wales engaged with your work and responded to your recommendations?

Short answer to Q1

Dŵr Cymru's co-operation has been variable. For example, it has not always replied to EIR requests within statutory response times, sometimes requiring internal reviews and taking several months to complete. On occasions, it has required persistent pressure to obtain the precise data requested and in a usable format. In response to my analysis of some of its STWs in 3 previous WASP reports, Dŵr Cymru was critical but never provided contrary evidence or a detailed rebuttal. In response to the latest report discussed with the Welsh Affairs Committee, especially of Cardigan STW, Dŵr Cymru did not dispute the analysis but I don't recall any comment on the recommendations. Finally, it is important to stress that Dŵr Cymru has been far more co-operative than Severn Trent Water which has withheld data from independent analysts like me for years. Thus, Welsh STWs operated by its subsidiary, Hafren Dyfrdwy, has received little scrutiny other than by NRW and the EA.

From autumn 2019, my dealings with Natural Resources Wales (NRW) largely involved negotiating EIR requests for data. From late 2022, Gail Davies-Walsh, CEO of Afonydd Cymru, encouraged more contact and eventually co-ordinated an online meeting in June 2023 with Mark Squire, Principal Advisor Regulation, and Tom Lewis, Senior Advisor – Regulatory, both of NRW. I presented the analysis from the recent report including Cardigan STW and we discussed both the results and NRW's ongoing revision of its regulation of water company activities. Tom Lewis has been aware of WASP's analysis of water company activities for some time and I believe it has influenced his own approach which I am very impressed by. He is due to return to his usual duties in North Wales but has trained NRW staff in the methodology he has set in place. It may be that the EA has had a similar approach in England but in contrast to NRW the EA has considerably reduced its communication with me over the past 2 years.

Q2. The question of whether the environmental impact of spills (as opposed to simply the number of sewage spills) is considered sufficiently was raised by both Dŵr Cymru and the regulators (Ofwat and Natural Resources Wales) during the session. a. What is the potential impact of the spills on

¹ WASP (Windrush Against Sewage Pollution) is a registered charity to which I have contributed since 2017

the Special Areas of Conservation, Sites of Special Scientific Interest and fish spawning grounds that are highlighted in your analysis?

The number of annual sewage spills is a poor metric for gauging both storm overflow activity and impact. The number of spills can be manipulated easily by water companies using tankers to avoid spills at one asset by transferring excess to another which itself be spilling. Consider also, the carbon footprint of such tanker usage. Until volumetric measurement of untreated sewage spills is universally adopted it is impossible to say how much ends up in rivers and seas and the full impact on aquatic flora and fauna.

It is well established that nutrients in both untreated and poorly treated sewage encourage algal growth which deplete oxygen levels and increase silt and smothering of river weed, as do microplastics in untreated sewage. These then damage fish spawning grounds, hinder egg development and the latter act as vectors of anti-microbial resistance. Fecundity and sperm count are both adversely affected and intersex fish have become more commonplace. Microplastics, under the action of UV light and wave motion, break down into more mobile nanoplastics which can cross the placenta and are small enough to interfere with methylation, a process by which genes are switched on and off during early development. Surfactants present in domestic cleaning products are washed/flushed into the sewerage system and damage mucous membranes essential to oxygen uptake in fish. Finally, there are the pharmaceutical residues and forever chemicals present in sewage which accumulate in aquatic and marine animals: from invertebrates to mammals in freshwater and from mussels to cetaceans in the sea. All of these pollutants damage living creatures both directly and indirectly via their extended food web.

Q3. In the absence of a funded monitoring body, what could be done to improve self-monitoring by water companies?

After reviewing 13 years of Operator Self-Monitoring (OSM) of treated sewage across 10 water companies in England and Wales, I believe the system is not fit for purpose. In summary:

- a) less than half of all treated sewage in the UK is monitored against statutory requirements;
- b) treated sewage is sampled typically between 7 am and 3 pm and rarely outside that range;
- c) OSM compliance visits may not be kept secret from or may be predicted by STW operating staff;
- d) there is evidence of abuse of grading as “compliant” monitoring attempts that fail when there is “no flow” of treated sewage to be sampled or other “exceptional circumstances” occur.

In short, water companies cannot be trusted to provide complete and accurate data. Furthermore, environmental regulators have not scrutinised the monitoring and compliance checking of sewage treatment with vigour or rigour. Monitoring should be undertaken by an independent body, paid for by the water industry, until automatic sampling devices are deployed on all treated sewage outfalls.

Despite WASP’s presentation of the shortcomings of the current system for monitoring treated sewage and regulation of compliance with permits, in face-to-face meetings, David Black, CEO of Ofwat, and Alan Lovell, Chair of the Environment Agency, believe that only the water industry can and should carry out this monitoring.

I hope my answers are useful. If I can help further please get in touch.

Kind regards,

Peter Hammond

Long answer to Q1 – examples of interactions with Dŵr Cymru

- A. I had already undertaken analysis (in **2020**) of untreated sewage spills from Welsh sewage treatment works (STWs) by both Hafren Dyfrdwy and Dŵr Cymru as my contribution to Joe Crowley's BBC Panorama programme "*The River Pollution Scandal*" which was broadcast in April 2021. Soon after that programme aired, I was contacted by Gail Davies-Walsh, CEO of Afonydd Cymru, as well as Wales Environment Link (WEL) and the Wye and Usk Foundation.
- B. Afonydd Cymru informed me that both NRW and Dŵr Cymru disagreed with analysis presented in the 2021 BBC Panorama programme but neither contacted me directly. To try to resolve the issue, WEL set up a call for me to present my findings to all parties on August 19th 2021.

Dŵr Cymru's involvement was postponed because I had insisted I would only take part if relevant data were provided prior to the meeting. The data were not provided in advance. According to Dŵr Cymru, their lack of response was due to some of my emails being labelled as SPAM by their mail server. However, earlier emails had been received and responded to. I presented instead on Aug 19th 2021 to a group **without Dŵr Cymru** but including members of Afonydd Cymru, RSPB Cymru, Salmon and Trout Conservation and Wildlife Trusts Wales.

During and after the presentation on 10 Welsh STWs (Aberbaiden, Brecon, Eglwysbach, Five Fords, Glasbury, Llanfoist, Machynlleth, Monmouth, Usk, Weshpool), all parties expressed concern about the many instances of unpermitted, i.e. illegal, discharges of untreated sewage.

- C. During the **summer of 2021**, I assisted several journalists investigating untreated sewage discharges by Dŵr Cymru. Like me, they were having difficulty in getting responses to EIRs, with data not being provided in the requested format or with inconsistencies. In some cases, I had to request an internal review by Dŵr Cymru to resolve issues. For example, Dŵr Cymru persistently provided untreated sewage spill start-stop times for blocks of spills rather than for individual spills making it impossible to check for individual spill compliance. Permit conditions clearly stipulate individual spill start-stop times to be recorded although the regulators, NRW and the EA, routinely asked only for blocks to be counted, in an idiosyncratic manner, and reported to them annually. Thus, NRW and the EA have not been able to detect illegal spills routinely.
- D. In **February 2022**, I published a WASP report which included Aberbaiden, Brecon, Llanfoist and Machynlleth STWs. The report was covered by Ben Webster in the Times and before publication, he received a right to reply from Dŵr Cymru with no detailed explanation or examples of inaccuracies they referred to as follows:

"We have reviewed WASP's assessment of the data we have provided and there are a number of inaccuracies, not least given that the methodology used in the report is different to the standard methodology we use to measure discharges, as agreed with our environmental regulators." **Dŵr Cymru**

- E. In **April 2022**, via EIR request, I asked Dŵr Cymru for the detailed start-stop times of all spills from each of their storm overflows. Legal compliance of sewage spills cannot be determined without this detailed data and such data had already been provided by Thames Water. Dwr Cymru’s reply:

To explain, while we have provided individual start stop data of individual sites in the past, carrying out this for all >2300 CSO is not currently possible. Our current automated spill counter is not set up to calculate and report start stop times, however as promised we are currently developing a new spill counter which will be able to produce this data for all of our assets. This tool is currently under development and current estimation for completion and use is 31st of July. Dŵr Cymru

It took me 10 minutes to develop the “tool” they were describing. After a request for an internal review, the data was eventually provided, 4 months after the initial EIR request, on August 8th.

- F. In **July 2022**, via EIR request, I asked Dŵr Cymru to provide data on 15-min monitoring of the quality of treated sewage wherever it was in place. The collection of such data is not a statutory requirement but most water companies deploy such devices. Moreover, I wanted to check the reliability of the typically monthly statutory “spot” testing under Operator Self Monitoring which was introduced in 2009/2010. Dŵr Cymru requested clarification and also a compromise in the amount of data – a single parameter, Ammoniacal Nitrogen, was agreed.

The data were provided eventually on **September 20th 2022**. Compared to similar data provided by 6 of 10 water companies approached, Dŵr Cymru’s was of the poorest quality. Clearly, the monitoring devices are not being calibrated and maintained on a regular basis. This does not bode well for the upstream-downstream deployment in rivers of the same kind of devices as part of initiatives arising from the new Environment Act. **N.B.** Severn Trent Water refused to provide the data which would include STWs operated in Wales by their subsidiary Hafren Dyfrdwy/Severn Dee.

My analysis of spot testing results for treated sewage, downloaded from the Defra archive, showed that all water companies have for more than 13 years adopted a narrow time interval outside of which sewage treatment is not monitored. Dŵr Cymru said

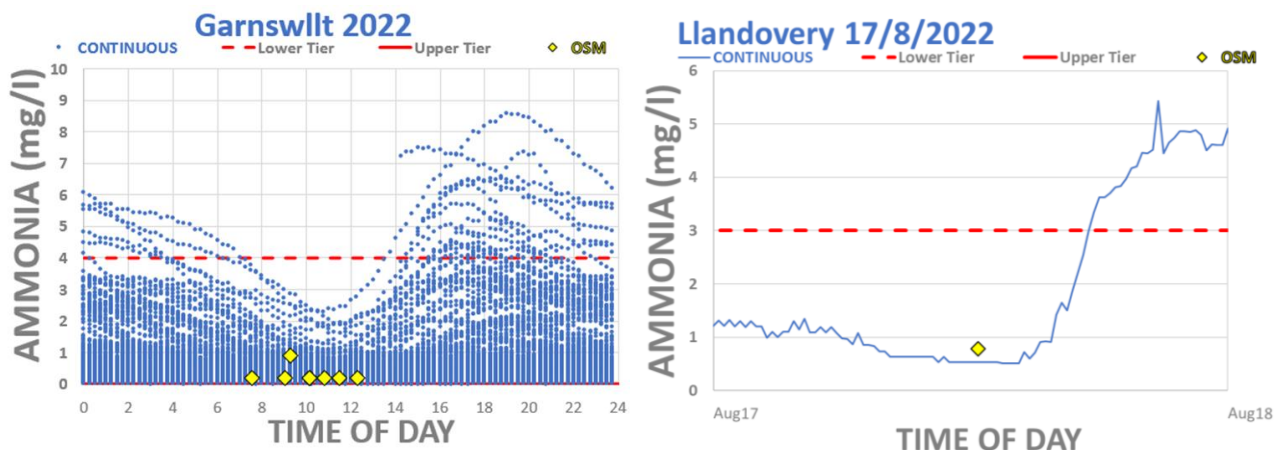
“We strongly refute any suggestion that we are deliberately manipulating the data we report to the regulator by sampling at particular times of day. There are clear Operator Self Monitoring (OSM) requirements within the regulations and we comply fully with the requirements regarding the timings of when samples are taken. Dŵr Cymru

In fact, as the figure on the left below confirms, Dŵr Cymru’s OSM spot testing rarely monitors the quality of treated sewage outside the 8 am to 4 pm time interval.



But the average flow of treated sewage (Figure right above) has two peaks, so less than 50% of treated sewage is ever monitored. This emphasises the need for continuous monitoring of treatment quality.

G. The following 2 examples demonstrate how the time of day when treated sewage is monitored can strongly influence compliance with permit conditions. Both charts represent “continuous” 15-min interval monitoring (blue dots) of ammonia levels and the results of monthly spot testing of ammonia (yellow diamonds). The dashed red horizontal represents the permitted level that cannot be exceeded more than twice in a twelve month period to achieve compliance.



Dŵr Cymru’s comment on this analysis was as follows:

“There are no permit requirements for the 15 minute monitoring data as this technology is relatively new and is subject to quality and reliability issues as highlighted by Professor Hammond. Nonetheless, we still undertake checks on site to ensure that our treatment works operate within their permit limits.” Dŵr Cymru

Dŵr Cymru may undertake monthly spot sampling of treated sewage that satisfies both statutory frequency and permitted levels under OSM but clearly it does not necessarily reflect what is discharged to rivers.

H. In late **July 2023**, I took part in a Teams meeting with Gail Davies-Walsh of Afonydd Cymru, as well as staff from NRW and Dŵr Cymru. The focus was my analysis of Cardigan STW and the explanation of why the data was so full of gaps and erratic behaviour. In fact, I had been so shocked by the data that I had asked Dŵr Cymru to confirm their accuracy.

Two hours before the meeting started, Dŵr Cymru sent an email confirming the data correctness, cataloguing Cardigan STW’s issues with saline intrusion and acknowledging the enforcement notices served on the company by NRW. During the meeting it was admitted that my analysis of Cardigan WWTW was correct and that Cardigan STW had been breaching its permit conditions over many years, with issues first identified in 2013. More detail about these issues is included in the River Teifi section of the report.