APFN Site Visit Report
8 June 2026
Afon Cynffig / Kenfig River Pollution Incident

Prepared by A Peace for Nature

Purpose of this report

This briefing summarises independent environmental monitoring and site observations undertaken by A Peace for Nature on 8 June 2026 on the Afon Cynffig / Kenfig River downstream of the Marlas STW SPS outfall, North Cornelly.

The monitoring was undertaken in response to the ongoing pollution incident affecting the river since early February 2026 and to assess current water quality conditions upstream of the discharge, at the outfall itself and within the affected downstream reach.

This visit took place following intermittent rainfall over the preceding two days. River levels were visibly elevated at all monitoring locations. At the upstream control ford, the water level was above welly height, whereas this location is normally above ankle depth. These conditions are important because increased river flows would normally be expected to dilute pollutant concentrations within the receiving watercourse.

Despite these higher flow conditions, visible pollution remained present at the outfall and elevated ammonia concentrations were recorded at the outfall and downstream monitoring locations.

Background

Dŵr Cymru Welsh Water has previously confirmed that temporary treatment works and in-river aeration equipment continue to operate in connection with the ongoing rising main failure and associated wastewater discharge affecting the Afon Cynffig.

A Peace for Nature remains extremely concerned that polluted water continues to enter the river and that the ecological consequences of this discharge remain significant.

The purpose of this monitoring exercise was to obtain a current field snapshot of conditions during higher river flow following rainfall. Unlike the 2 June 2026 monitoring exercise, which included multiple samples from selected locations, this visit involved one sample at each location. The purpose was to provide a current view across the established monitoring locations rather than a replicated sample set.

At the time of sampling, Dŵr Cymru Welsh Water's website indicated that a CSO associated with the area was active. This is relevant context because the river was already in a wet weather condition and receiving increased flow. In these circumstances, dilution of pollutant concentrations would be expected.

Sampling locations

The same established APFN monitoring locations identified and used during previous site visits were used.

Figure 1 APFN Sample locations

For this visit, the principal monitored locations were:

Upstream control	Upstream of the affected discharge reach ~300-400m
APFN outfall sample location	Marlas STW SPS outfall discharge
Downstream	~100 m downstream from the outfall
Downstream lower reach	~3.2 km

Site conditions and observations

Weather conditions during the preceding two days had included intermittent rainfall. River levels were visibly higher than observed during previous APFN monitoring visits.

At the upstream control ford, water depth was above welly height. This location is normally above ankle depth. Increased river flow was observed at all sampling locations and the river was visibly carrying higher volumes of water.

The river was turbid and brown in colour, consistent with increased flow following rainfall. However, the discharge from the outfall remained visibly distinguishable from the river. The discharge was grey in colour and could be seen entering the river from the outfall area.

A significant sewage odour remained present at and immediately downstream of the outfall. The strength of the odour was sufficient to affect those present physically and made it impractical to remain at the access point provided by Dŵr Cymru Welsh Water for any meaningful period.

No visible sewage fungus or white and black silty layers were observed during this visit. This differed from some previous visits, but the absence of visible deposits on 8 June 2026 should be considered in the context of recent rainfall, increased river flow and likely disturbance or mobilisation of riverbed material.

The key site observation is that visible grey discharge, persistent sewage odour and elevated ammonia concentrations remained present despite recent rainfall and higher river flows.

Access arrangements and independent monitoring concerns

APFN notes that Ed Bennett of Dŵr Cymru Welsh Water had previously agreed to enable access to APFN's established testing locations. However, during the 8 June 2026 monitoring visit, access arrangements again appeared to restrict APFN's ability to carry out independent monitoring at the established points.

One access point was provided approximately 40 to 50 metres downstream of the outfall and directly adjacent to two aeration devices. This location was unsuitable for sustained monitoring due to the overpowering sewage odour and the physical impact this had on those present. Samples were collected, but testing was carried out away from the immediate riverbank.

APFN understands that fencing is required to protect equipment and manage operational safety. However, fencing was also present in a way that restricted access to the riverbank, including an area of field where no equipment was located. The landowner has provided permission for APFN to access the river for independent monitoring. The fencing of empty areas of field, where no operational equipment was present, appears inconsistent with the stated purpose of protecting equipment.

APFN considers this deeply concerning. Independent monitoring requires access to established sampling locations so that results can be compared over time. Restricting access to those locations risks undermining transparency, public confidence and the ability to assess whether conditions are improving or deteriorating.

APFN again accessed the established monitoring locations with the full support and permission of the landowner.

Field testing equipment used

Hanna Instruments HI83399 Multiparameter Photometer with COD capability
Hanna Instruments HI98193 Dissolved Oxygen Meter
Hanna Instruments HI98192 EC/TDS/NaCl/Resistivity Meter
Hanna Instruments HI98713 ISO Turbidimeter
Hanna Instruments pHep+ Portable pH Meter
Clean sample collection containers
Hanna Instruments consumable reagents for all tests undertaken
GPS-enabled mobile device for recording sampling locations and photographic evidence

Methodology

One sample was collected from each monitoring location to obtain a current field snapshot of river conditions on 8 June 2026.

Surface water samples were collected using clean field sampling equipment. The sampling beaker was rinsed three times using water from the sample location before collection. Cuvettes were also rinsed before testing.

Samples were tested using portable field equipment. Results were recorded contemporaneously and supported by photographic evidence of instrument readings where available.

The monitoring was undertaken as independent field screening by APFN. The results should be treated as indicative field evidence of water quality conditions at the time and location of sampling. They are not a substitute for statutory regulatory monitoring or laboratory analysis.

However, the results remain significant because they were obtained during higher flow conditions following rainfall, when dilution of pollutant concentrations would normally be expected.

Field results

Parameter	Upstream control	Outfall	Downstream ~100m	Downstream ~3.2km
Turbidity	55.4 FNU	43.5 FNU	78.2 FNU	47.1 FNU
Nitrate (NO_3^--N)	0.5 mg/L	3.2 mg/L	1.5 mg/L	4.2 mg/L
pH	8.06	8.5	8.17	7.81
Dissolved Oxygen	6.8 mg/L	3.64 mg/L	6.33 mg/L	6.09mg/L
Dissolved Oxygen Saturation	68.6%	37.8%	61.5%	59.3%
Temperature	15.3°C	16.9°C	14.8°C	14.2°C
Conductivity	262.1 µS/cm	363.1 µS/cm	275.6 µS/cm	282.6 µS/cm
Resistivity	3.81 kΩ	2.75 kΩ	3.63 kΩ	3.54 kΩ
TDS	131.1 ppm	181.7 ppm	137.9 ppm	141.3 ppm
Salinity	0.13 PSU	0.17 PSU	0.13 PSU	0.13 PSU
Phosphate (PO_4^{3-})	12.20 mg/L	7.5 mg/L	0.38 mg/L	0.22 mg/L
Ammonia Nitrogen (NH_3-N)	0.49 mg/L	14.6 mg/L	2.2 mg/L	2.09 mg/L
Reference Temperature (Tref)	25.0°C	25.0°C	25.0°C	25.0°C

Key findings

The monitoring data collected on 8 June 2026 indicates that the Afon Cynffig remains subject to wastewater-related stress associated with the continuing discharge from the Marlas STW SPS outfall.

The most significant findings are:

1. Ammonia Nitrogen at the outfall was recorded at 14.60 mg/L.
2. Ammonia Nitrogen remained elevated downstream, with 2.20 mg/L recorded approximately 100 metres downstream and 2.09 mg/L recorded in the lower affected reach.
3. Dissolved oxygen saturation at the outfall was recorded at 37.8%.
4. The outfall pH was recorded at 8.50, which is relevant because elevated pH can increase the toxic fraction of ammonia.
5. Conductivity was higher at the outfall than at the upstream control, with 363.1 µS/cm recorded at the outfall compared with 262.1 µS/cm at the upstream control.
6. Visible grey discharge and significant sewage odour remained present at and immediately downstream of the outfall.
7. These results were recorded during higher-flow conditions following rainfall, when dilution of pollutant concentrations would normally be expected.
8. Dŵr Cymru Welsh Water's website indicated that the CSO was active at the time of sampling.
9. Access to established APFN monitoring locations again appeared to be restricted despite landowner permission and previous assurances regarding independent monitoring access.

Environmental significance

The combined pattern of results remains concerning.

The outfall recorded the highest ammonia concentration, the lowest dissolved oxygen concentration and a higher conductivity reading than the upstream control. This pattern is consistent with continuing water quality impact associated with the discharge.

Ammonia Nitrogen was recorded at 14.60 mg/L at the outfall. While this is lower than the 27.0 mg/L average recorded by APFN at the outfall on 2 June 2026, the 8 June result was obtained during higher river flow following rainfall. That context is important. Under these conditions, dilution would normally be expected.

Downstream ammonia remained elevated at 2.20 mg/L approximately 100 metres downstream and 2.09 mg/L in the lower affected reach. These readings indicate that ammonia impact remained detectable beyond the immediate outfall area despite increased river flows.

Dissolved oxygen saturation at the outfall was recorded at 37.8%. This remains a concerning oxygen condition for a river environment and is consistent with continuing organic pollution pressure.

The continued presence of visible grey discharge and strong sewage odour provides further field evidence that wastewater-related pollution remained active at the time of monitoring.

Rainfall, dilution and CSO activity

Rainfall during the preceding two days had clearly increased river levels and flow. At the upstream control ford, water depth was above welly height, whereas this location is normally above ankle depth.

In these conditions, APFN would normally expect dilution of pollutant concentrations. The continued recording of 14.60 mg/L Ammonia Nitrogen at the outfall and elevated downstream ammonia readings of 2.20 mg/L and 2.09 mg/L is therefore significant.

At the time of sampling, Dŵr Cymru Welsh Water's website indicated that the CSO was active. APFN considers this relevant context. The river was in higher flow following rainfall and the network was under wet-weather pressure. This strengthens the need for clear explanation from Dŵr Cymru Welsh Water and Natural Resources Wales regarding what was entering the river, from where and under what authorisation.

Aeration devices and airborne contamination concerns

During the monitoring visit, aeration devices remained operational within the affected reach.

APFN recognises that aeration may increase dissolved oxygen locally in the immediate area of operation. However, APFN remains concerned that the current use of aeration devices does not address the source of pollution entering the river and does not appear to be delivering meaningful improvement in the lower affected reach.

The access point provided to APFN by Dŵr Cymru Welsh Water was located approximately 40 to 50 metres downstream of the outfall and directly adjacent to two aeration devices. This location was not suitable for sustained monitoring. The sewage odour was overpowering and had a physical impact on those present. APFN was unable to remain at this location and testing was therefore carried out away from the river after samples had been collected.

APFN is also concerned that the aeration devices may be agitating contaminated river water and producing airborne droplets or aerosols. In practical terms, polluted water is being physically disturbed and projected into the air in an area where sewage odour is already significant. This raises obvious concerns for those required to work, monitor or pass through the immediate area. Recent reports of increased sewage smells in the neighbouring housing estate should be investigated in this context. APFN cannot confirm the source of those odours without further assessment. However, given the continuing sewage odour at the river, the operation of aeration devices and the physical agitation of contaminated water, it is plausible that odour from the river and aeration activity may be contributing to wider local smell impacts.

APFN therefore calls on Dŵr Cymru Welsh Water to urgently review the suitability, necessity and risk profile of the aeration devices currently deployed. That review should assess whether the devices are providing measurable ecological benefit beyond immediate localised oxygenation, whether they are improving conditions in the lower affected reach and whether they are contributing to airborne odour or aerosol concerns.

APFN's position is clear. The priority must be to stop or treat the pollution before it enters the river. In-river aeration may create an appearance of intervention, but it does not remove the pollutant load and does not appear to be preventing continuing impact downstream.

Conclusion

The independent monitoring undertaken by A Peace for Nature on 8 June 2026 indicates that the Afon Cynffig continues to experience significant wastewater-related environmental pressure associated with the Marlas STW SPS discharge.

Despite recent rainfall, higher river levels and expected dilution, APFN recorded Ammonia Nitrogen at 14.60 mg/L at the outfall. Elevated ammonia remained detectable downstream, with 2.20 mg/L recorded approximately 100 metres downstream and 2.09 mg/L recorded in the lower affected reach.

Visible grey discharge and significant sewage odour remained present at and immediately downstream of the outfall. The access point provided to APFN was directly adjacent to two aeration devices and was unsuitable for sustained monitoring due to the overpowering odour and physical impact on those present.

APFN remains concerned that aeration devices may increase dissolved oxygen locally while failing to improve conditions in the lower affected reach. APFN is also concerned that the devices may be contributing to airborne odour or aerosolised contamination risks by agitating polluted river water.

The priority must remain the cessation or treatment of pollution before it enters the river, transparent publication of monitoring data and full support for independent monitoring at established locations.

Recommendations

1. Dŵr Cymru Welsh Water should urgently stop or treat the discharge before it enters the Afon Cynffig.
2. Dŵr Cymru Welsh Water should urgently review the suitability, necessity and risk profile of the aeration devices currently deployed within the affected reach.
3. The review of aeration devices should assess whether they provide measurable ecological benefit beyond immediate localised oxygenation and whether they are improving conditions in the lower affected reach.
4. The review should consider whether aeration is contributing to airborne odour, droplets or aerosolised contamination from polluted river water.
5. Dŵr Cymru Welsh Water should investigate whether recent sewage odour reports from the neighbouring housing estate may be linked to the river, the discharge or the operation of aeration devices.
6. Dŵr Cymru Welsh Water should provide APFN with unrestricted access to established monitoring locations where landowner permission has been granted and where no operational safety conflict exists.
7. Fencing should not be used to restrict access to empty areas of field or riverbank where no equipment is present.
8. Environmental monitoring data associated with the incident should be published in full and in a timely manner.

9. Sampling locations and methodologies should be clearly identified alongside published monitoring results.
10. Monitoring of the discharge should include direct outfall sampling to ensure representative assessment of water quality entering the river.
11. Independent monitoring should continue throughout the duration of the discharge and subsequent recovery period.

Interpretation of Monitoring Parameters

The monitoring parameters selected during this investigation were chosen to assess both general river health and the potential influence of sewage-related pollution within the affected river system.

Dissolved Oxygen (DO)

Dissolved oxygen measures the amount of oxygen available within the water column for aquatic life. Healthy rivers typically maintain sufficiently high dissolved oxygen concentrations to support fish, invertebrates and aerobic microbial communities.

Reduced dissolved oxygen concentrations can indicate elevated organic pollution loading, excessive microbial decomposition activity or sewage contamination. Very low dissolved oxygen conditions can place severe stress on aquatic ecosystems and may contribute to fish kills and ecological degradation (Welsh Government, 2009). The significantly reduced dissolved oxygen saturation values recorded within parts of the affected reach are consistent with elevated biological oxygen demand associated with organic pollution.

Ammonia Nitrogen (NH_3-N)

Ammonia is one of the most important indicators of sewage contamination and organic waste pollution within freshwater systems. Elevated ammonia concentrations are commonly associated with untreated or partially treated sewage discharges, agricultural waste or decomposing organic matter. Ammonia can become highly toxic to fish and aquatic organisms, particularly at elevated pH and temperature conditions (UKTAG, 2007). The elevated ammonia concentrations recorded within the outfall reach and downstream monitoring locations strongly indicate substantial organic and wastewater-related contamination within the affected section of river.

Phosphate (PO_4^{3-}) (HR)

Phosphate is a nutrient commonly associated with sewage effluent, detergents, agricultural runoff and organic pollution. Excessive phosphate concentrations can contribute to eutrophication, excessive algal growth and ecological imbalance within river systems. Elevated phosphate concentrations may also promote the development of sewage fungus and other pollution-tolerant microbial communities (UKTAG, 2013; Exton et al., 2024). The substantially elevated phosphate concentrations identified during monitoring are significantly above expected background concentrations for a healthy river system (Environment Agency, 2019).

Nitrate (NO_3^--N)

Nitrate is another nutrient parameter commonly used to assess water quality and nutrient enrichment. While nitrate can occur naturally at low concentrations, elevated levels are frequently associated with wastewater discharges, agricultural runoff and nutrient pollution. Excessive nitrate loading may contribute to ecological imbalance and excessive biological productivity within freshwater systems (Environment Agency, 2019).

Conductivity

Conductivity measures the ability of water to conduct electrical current and is influenced by the concentration of dissolved ions and salts present within the water. Elevated conductivity readings can indicate increased dissolved pollutant loading, including wastewater contamination, sewage effluent or other anthropogenic inputs. The marked increase in conductivity recorded adjacent to the outfall compared with the upstream control location indicates a significant increase in dissolved ionic loading within the affected reach.

Turbidity

Turbidity measures the cloudiness or clarity of water and reflects the concentration of suspended particles present within the river. Elevated turbidity may result from suspended sediments, organic matter, sewage solids, microbial growth or disturbed riverbed deposits. High turbidity can reduce light penetration, affect aquatic habitats and indicate deteriorating water quality conditions.

pH

pH measures the acidity or alkalinity of water. Healthy freshwater systems generally remain within a relatively stable pH range. Elevated or unstable pH conditions can influence chemical toxicity, aquatic ecosystem health and ammonia toxicity. The elevated pH values recorded during monitoring may increase the toxicity potential of ammonia present within the affected reach (UKTAG, 2007).

Temperature

Water temperature directly influences dissolved oxygen availability, biological activity and chemical processes within freshwater ecosystems. Higher temperatures generally reduce the ability of water to retain dissolved oxygen while simultaneously increasing biological oxygen demand and microbial activity (Welsh Government, 2009).

Reference Temperature (Tref)

The conductivity monitoring equipment used during this investigation applies automatic temperature compensation to a standardised reference temperature of 25.0°C (Tref).
This process allows conductivity readings collected under varying environmental temperatures to be directly compared using a consistent calibration reference standard.