Site Visit Report
Afan Kenfig Pollution Incident, Marlas STW SPS Discharge
13th May 2026

Observer: AP
Organisation: A Peace for Nature
Date of visit: 13 May 2026
Time on site: Approximately 13:15 to 14:37

Weather conditions: Predominantly dry and fine weather with blue sky and slight wind. One brief light drizzle shower lasting approximately 3 to 5 minutes occurred during the visit.

Purpose of Visit

The purpose of the visit was to undertake observational assessment and field water quality testing upstream and downstream of the Dŵr Cymru Welsh Water discharge associated with Permit BP0169901 at Marlas STW SPS, North Cornelly, Bridgend.

The discharge point identified during the inspection corresponds with the permitted discharge location listed within NRW Environmental Permit BP0169901 for:
“Marlas STW SPS, Bryn Alwg, North Cornelly, Bridgend, CF33 4DJ.”

The permit identifies the receiving water as the Afon Kenfig and records the discharge point reference as: SS 81394 82391 (Natural Resources Wales, 2019).

Sampling Locations

Upstream control sample location:
51.52688° N, 3.70745° W
Pollution impact sample location adjacent to discharge:
51.52760° N, 3.71095° W
Downstream laboratory sampling and visual assessment location:
51.52836° N, 3.71158° W

Persons Present

The site visit was undertaken by AP accompanied by a local resident whose identity is intentionally withheld from this report.

During the visit, two representatives of Dŵr Cymru Welsh Water and two representatives of Natural Resources Wales were present at the discharge location on the opposite bank. One NRW representative was identified as the Senior Environment Officer for the area and the NRW Lead Officer identified in NRW's published Compliance Assessment Report CAR_NRW0050233 (Available here: https://publicregister.naturalresources.wales/Search/Results?SearchTerm=marlas).

Methodology

Field observations and water quality measurements were undertaken at three principal locations:

1. Upstream control point, above the visible discharge influence
2. Impact point, within the visible mixing zone associated with the discharge
3. Downstream assessment point approximately 60 metres downstream of the discharge location, where river entry was undertaken for visual inspection and laboratory sampling

Measurements were taken using portable field-testing equipment on site. Photographic and video evidence was also obtained during the visit.

Field Testing Equipment Used

The following field testing and sampling equipment was used during the site visit and water quality assessment:

• Hanna Instruments HI83399 Multiparameter Photometer with COD capability
• Hanna Instruments HI98193 Dissolved Oxygen Meter
• Hanna Instruments HI98713 ISO Turbidimeter
• Hanna Instruments pHep+ Portable pH Meter
• Sterile and clean sample collection containers
• Hanna Instruments consumable reagents for all tests undertaken
• GPS-enabled mobile device for recording sampling coordinates and photographic evidence

Site Conditions

The river was observed to be in gentle flow conditions during the inspection.
Water depth at the assessed locations was generally shallow.
No obvious visual signs of recent heavy rainfall conditions were observed at the site during the inspection.

1. Upstream Control Results

Sampling time: 14:36
Turbidity: 2.45 NTU
Ammonia: 0.14 mg/L
Nitrate: 3.4 mg/L
Temperature: 12.7°C
pH: 9.13
Phosphate: 0.49 mg/L
Dissolved Oxygen: 92%

Visual Observations

Observations at the upstream control point indicated relatively clear water conditions with visibly lower turbidity and no immediately obvious signs of gross pollution or visible plume contamination.

2. Impacted Area Results

Sampling time: 13:24
Nitrate: 3.9 mg/L
Phosphate: 1.84 mg/L
Ammonia: 5.2 mg/L
Dissolved Oxygen: 142%
Temperature: 12°C
pH: 8.75
Turbidity: 18.1 NTU

Visual Observations

A visible, grey-coloured plume was observed entering the watercourse from the discharge structure associated with the permitted point of discharge.

The affected area downstream of the structure showed obvious discolouration when compared with upstream conditions.

The downstream sample area demonstrated substantially elevated turbidity, phosphate and ammonia concentrations compared with upstream readings taken during the same site visit.

The increase in ammonia concentration from 0.14 mg/L upstream to 5.2 mg/L downstream represents a significant deterioration in water quality over a short river distance.

Similarly, phosphate concentrations increased from 0.49 mg/L upstream to 1.84 mg/L downstream.
Turbidity also increased substantially from 2.45 NTU upstream to 18.1 NTU downstream.

The discharge appeared visually active during the inspection.

Informal kick sampling undertaken within the visibly affected area did not identify any immediately observable aquatic macroinvertebrate life.

3. Downstream Area Results

At approximately 50 to 60 metres downstream of the discharge point, entry into the watercourse was undertaken to assess riverbed conditions and obtain a laboratory sample for independent analysis.

Visible grey pollution deposits were observed on the riverbed together with a layer of sewage sludge and sewage algae. A strong and overwhelming sewage odour was present at the location during the inspection.

Additional analysis was undertaken later on 13 May 2026 at approximately 16:00 hrs using a retained downstream water sample collected from the downstream laboratory sampling and visual assessment location.

The sample had been transported from site and stored prior to testing. These results should therefore be considered supplementary ex-situ sample analysis rather than direct in-river measurements.

Supplementary Downstream Sample Results

Ammonia: 9.15 mg/L
Nitrate: 4.8 mg/L
Turbidity: 155 FNU
pH: 9.04
Temperature: 17.1°C
Phosphate: 2.5 mg/L (analysis could not be reliably completed due to sample preparation or interference issues encountered during testing)

The retained downstream sample continued to produce a strong sewage odour during handling and testing.

The retained sample continued to demonstrate visible grey discolouration and suspended material consistent with observations made on site.

Scientific and Regulatory Context

The observed downstream ammonia concentrations are notable in the context of aquatic ecosystem health and Water Framework Directive (WFD) ecological assessment principles.

Under WFD physico-chemical assessment frameworks, ammonia is recognised as an important indicator of ecological pressure due to its potential toxicity to fish and aquatic invertebrates (Environment Agency, 2015).

The downstream ammonia concentrations recorded during this inspection were substantially elevated when compared with upstream control readings obtained under the same site and weather conditions.

The elevated downstream pH values recorded during the inspection are also environmentally relevant, as increasing pH can increase the proportion of ammonia present in its more toxic un-ionised form (NH_3) (UK Technical Advisory Group on the Water Framework Directive, 2007).

The combination of:

- elevated ammonia concentrations
- elevated nutrient concentrations
- elevated pH values
- visible sewage sludge deposits
- sewage algae
- increased turbidity
- strong sewage odour

is consistent with conditions capable of placing significant stress upon aquatic ecosystems.

The phosphate concentrations recorded during the inspection are also substantially elevated in the context of river nutrient enrichment and may contribute to eutrophication pressures, excessive biological growth and wider ecological deterioration within the watercourse.

Although dissolved oxygen readings were elevated during daylight conditions at the time of inspection, elevated dissolved oxygen concentrations do not negate the potential ecological risks associated with ammonia toxicity, nutrient enrichment or sewage-related organic pollution.

The observed conditions are also consistent with the potential for wider secondary ecological impacts including habitat smothering, biological stress and altered river chemistry downstream of the discharge location.

While laboratory confirmation and formal regulatory assessment remain important, the observations and field measurements obtained during this inspection indicate conditions consistent with a potentially serious and ongoing ecological pollution impact affecting the Afon Kenfig.

Permit Context

Environmental Permit BP0169901 (Natural Resources Wales, 2019) authorises:

“Discharge of storm sewage via POINT OF DISCHARGE” and “Discharge of sewage in an emergency via POINT OF DISCHARGE.”

The permit further states that storm sewage discharges:
“shall only occur when and only for as long as” specified rainfall or hydraulic conditions are met.

The permit also requires: “Off-line storm storage must be fully utilised before a discharge occurs.”

Site Discussions

During discussion at the site, a representative of Dŵr Cymru Welsh Water stated, in the presence of NRW officers, that the situation was expected to continue for “6 weeks”.
No correction or challenge to that statement was heard at the time by the observer.

Summary

The site visit identified a clear deterioration in water quality downstream of the discharge location when compared with upstream control readings obtained during the same period and under the same weather conditions.

The combination of:

- visible plume discharge
- elevated ammonia concentrations
- elevated phosphate concentrations

- increased turbidity
- sewage odour
- visible sewage sludge and sewage algae
- comparative upstream control sampling
- supplementary downstream sample analysis

is consistent with a significant polluting influence affecting the watercourse at the time of inspection.

The supplementary downstream sample analysis broadly reinforced the field observations and in-river measurements obtained during the site visit.

In particular:
• ammonia concentrations remained extremely elevated
• nitrate concentrations remained elevated
• turbidity remained substantially elevated
• pH remained high
• the sample retained a strong sewage odour after transport from site

The observations made during the visit indicate that the discharge was materially affecting water quality and riverbed conditions downstream of the permitted outfall.

Further laboratory analysis and regulatory investigation are recommended.

References

Environment Agency (2015) *WFD Cycle 2 River Ammonia Classification*. Defra Data Services Platform. Available at: https://environment.data.gov.uk/dataset/802e5cff-26b9-4038-9254-eb07cfb581f1 (Accessed: 14 May 2026).

Natural Resources Wales (no date) Public register: environmental permitting, water resources and marine licensing information. Available at: https://naturalresources.wales/permits-and-permissions/public-register-environmental-permitting/ (Accessed: 14 May 2026).

Natural Resources Wales (2019) Environmental Permit BP0169901: Marlas STW SPS, Bryn Alwg, North Cornelly, Bridgend, CF33 4DJ. Available via NRW Public Register (Accessed: 14 May 2026).

UK Technical Advisory Group on the Water Framework Directive (2007) Ammonia (un-ionised). Available at: https://www.wfduk.org/sites/default/files/Media/ammonia.pdf (Accessed: 14 May 2026).

UK Technical Advisory Group on the Water Framework Directive (2013) Phosphorus Standards for Rivers: Updated Recommendations on Phosphorus Standards for Rivers. Available at: https://www.wfduk.org/sites/default/files/Media/UKTAG%20Phosphorus%20Standards%20for%20Rivers_Final%20130906_0.pdf (Accessed: 14 May 2026).