

**Afon Cynffig / Kenfig River
Pollution Incident
Independent monitoring findings
2nd June 2026**



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 2 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 water quality conditions upstream of the discharge, at the outfall itself and within the affected downstream reach.

Additional comparative monitoring was also undertaken at a sampling location identified on site as being used by contractors undertaking monitoring on behalf of Dŵr Cymru Welsh Water.

Background

Dŵr Cymru Welsh Water has 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 collect multiple independent samples from key locations and assess the quality of water entering the river compared with conditions observed upstream and downstream.

Sampling locations

The same monitoring locations identified and used during previous site visits were used. A further sample location was added (Adler & Allan sample location) for comparison of results.



Figure 1: APFN sampling 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
Adler & Allan sample location	Opposite Marlas STW SPS outfall

Site Conditions and Observations

Weather conditions during the monitoring period were generally favourable with occasional light showers.

The upstream section of the river remained relatively clear. A modest increase in water level was noted and it was apparent that rainfall had occurred within the preceding 24 hours. Mild turbidity was present in the upstream control reach during the morning but appeared to improve throughout the day. Grey/black deposits believed to be sewage related were observed on the riverbed.

Visible turbidity remained present downstream of the outfall throughout the monitoring exercise.

A strong sewage odour was present along the affected reach and remained noticeable at the monitoring locations throughout the day. A visible grey plume was noted emanating into the river from the outfall associated with DCWW operations at SPS Marlas, this is understood to be the constant flow which was acknowledged by Steve Wilson, COO, DCWW during our meeting of the 29 May 2026.

A heron and other nesting birds were observed in the area.

APFN is grateful to the landowner, for facilitating access to the site using his off-road vehicle and for assisting with access arrangements.

It was noted that the access code for the locked compound had been changed since APFN's previous visit. This prevented access using the previously available code despite assurances provided during the meeting of 29 May 2026 that independent monitoring of the affected area would be supported.



Figure 2: APFN field apparatus

A mobile field laboratory was established beneath a pop-up gazebo adjacent to the river. This arrangement provided shelter from light rainfall and maintained a cool and shaded environment for field analysis.

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 coordinates and photographic evidence

Methodology

Three independent samples were collected from the downstream location and three independent samples were collected directly from the outfall.

Surface water samples were collected using an extendable sampling pole fitted with a collection beaker. The collection beaker was rinsed three times using water from the sample location before collection. Transfer beakers and test cuvettes were also rinsed prior to analysis.

Samples were transported immediately to the field laboratory for analysis.

Conductivity readings were recorded using automatic temperature compensation to a reference temperature of 25.0°C. Photometer reagent tests were undertaken using the relevant reagent method and reaction timing requirements. Results were recorded contemporaneously and supported by photographs of instrument readings where available.

Additional comparative sampling was undertaken at a location between the two aeration devices operating within the river channel.

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

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.

Observations Relating to Sampling Methodology

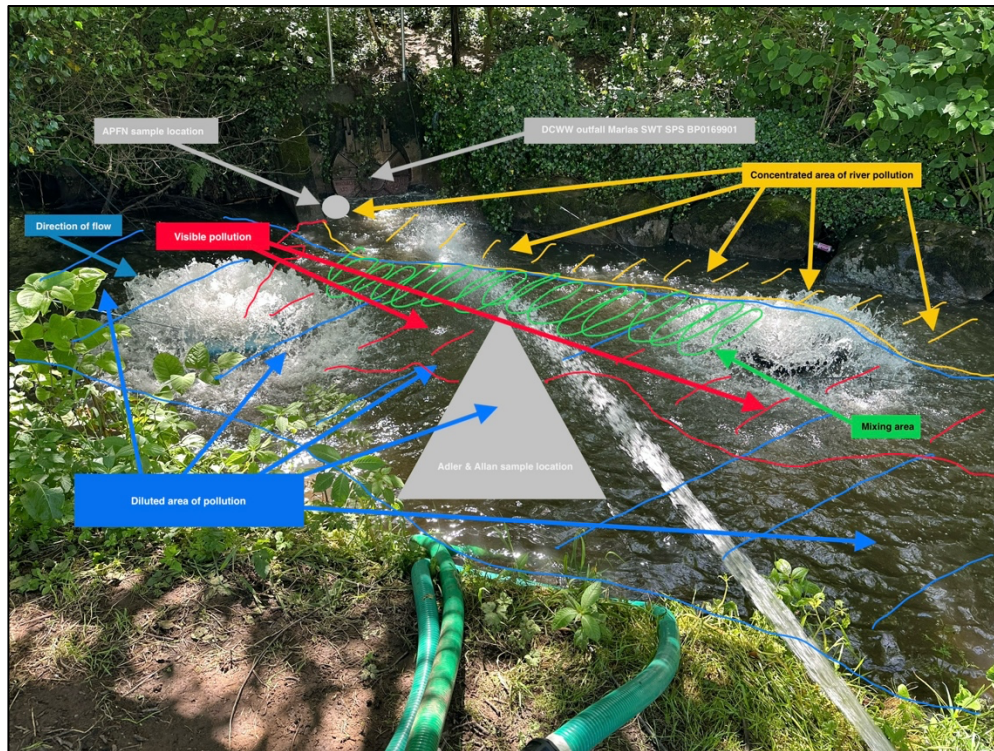


Figure 3: Relative positions of APFN and contractor sampling locations at the Marlas STW SPS outfall

Annotated site photograph showing the location of the Marlas STW SPS outfall, APFN direct outfall sampling point, contractor sampling location between the aeration devices and the observed areas of mixing and dilution within the receiving watercourse. Arrows are illustrative and intended to demonstrate the likely influence of mixing and aeration on water quality measurements obtained at different locations.

During the visit, discussions were held with a contractor undertaking monitoring on behalf of Adler & Allan for DCWW.

The contractor advised that samples were collected using a throw-bucket technique and confirmed that their sampling location was situated between the two aeration devices operating within the river (Figure 3).

The contractor advised that an ammonia concentration of approximately 3 to 4 mg/L had been recorded during their visit.

To provide a direct comparison, APFN collected a sample from the same general location between the aeration devices.

The results obtained at this location were materially different from those obtained directly at the outfall.

APFN considers that sampling location has a significant influence on the results obtained and that samples collected following mixing, aeration and dilution within the river may not necessarily be representative of conditions at the discharge source itself.

Field Results

Location: Downstream (approximately 100m downstream of the outfall)

Parameter	Result 1	Result 2	Result 3	Average
Turbidity	14.3 FNU	15.1 FNU	12.9 FNU	14.1 FNU
Nitrate (NO ₃ ⁻ -N)	2.1 mg/L	4.6 mg/L	2.5 mg/L	3.07 mg/L
pH	11.37	10.49	10.72	10.86
Dissolved Oxygen	8.25 mg/L	6.02 mg/L	6.09 mg/L	6.79 mg/L
Dissolved Oxygen Saturation	80.3%	62.7%	62.9%	68.6%
Temperature	15.3°C	16.0°C	16.3°C	15.9°C
Conductivity	433.8 µS/cm	478.3 µS/cm	494.6 µS/cm	468.9 µS/cm
Resistivity	1.27 kΩ	2.09 kΩ	2.02 kΩ	1.79 kΩ
TDS	216.9 ppm	238.9 ppm	247.3 ppm	234.4 ppm
Salinity	0.21 PSU	0.23 PSU	0.24 PSU	0.23 PSU
Phosphate (PO ₄ ³⁻)	0.58 mg/L	0.80 mg/L	1.10 mg/L	0.83 mg/L
Ammonia Nitrogen (NH ₃ -N)	4.8 mg/L	3.23 mg/L	3.25 mg/L	3.76 mg/L
Reference Temperature (Tref)	25.0°C	25.0°C	25.0°C	25.0°C

Location: Outfall

Parameter	Result 1 (aerated)	Result 2	Result 3	Average*
Turbidity	50.4 FNU	65.6 FNU	65.0 FNU	60.3 FNU
Nitrate (NO ₃ ⁻ -N)	3.1 mg/L	2.2 mg/L	4.2 mg/L	3.17 mg/L
pH	10.22	9.78	9.68	9.89
Dissolved Oxygen	8.9 mg/L	4.4 mg/L	2.8 mg/L	3.6 mg/L*
Dissolved Oxygen Saturation	89.2%	46.5%	30.1%	38.3%*
Temperature	15.3°C	17.8°C	17.7°C	17.75°C*
Conductivity	451.5 µS/cm	505.4 µS/cm	547.9 µS/cm	526.65 µS/cm*
Resistivity	2.23 kΩ	1.98 kΩ	1.82 kΩ	1.90 kΩ*
TDS	216.9 ppm	253.0 ppm	274.0 ppm	263.5 ppm*
Salinity	0.21 PSU	0.25 PSU	0.27 PSU	0.26 PSU*
Phosphate (PO ₄ ³⁻)	>30 mg/L	20.8 mg/L	9.0 mg/L	≥19.9 mg/L
Ammonia Nitrogen (NH ₃ -N)	23.2 mg/L	28.9 mg/L	28.8 mg/L	27.0 mg/L
Reference Temperature (Tref)	25.0°C	25.0°C	25.0°C	25.0°C

Note: Result 1 dissolved oxygen, dissolved oxygen saturation, temperature, conductivity, resistivity, TDS and salinity were recorded with probes placed directly in the aerated river flow downstream of the outfall and after two aeration devices. Results 2 and 3 were recorded with probes placed in sample beakers collected from the outfall. The average for these probe-based parameters should therefore be interpreted with caution, as Result 1 reflects aerated river conditions rather than the outfall sample held in a beaker. *Average calculated from Results 2 and 3 only because Result 1 was recorded directly in aerated river flow, whereas Results 2 and 3 were recorded from collected outfall samples in beakers.

Location: Between aeration devices (Figure 3) (comparative sample): Adler & Allan sample location

Parameter	A&A method (throw bucket location)	APFN method (average*)
Turbidity	12.1 FNU	60.3 FNU
Nitrate (NO ₃ ⁻ -N)	2.4 mg/L	3.17 mg/L
pH	10.79	9.89
Dissolved Oxygen	5.44 mg/L	3.6 mg/L
Dissolved Oxygen Saturation	56%	38.3%
Temperature	16.1°C	17.75°C
Conductivity	501.8 µS/cm	526.65 µS/cm
Resistivity	1.99 kΩ	1.90 kΩ
TDS	250.9 ppm	263.5 ppm
Salinity	0.24 PSU	0.26 PSU
Phosphate (PO ₄ ³⁻)	3.1 mg/L	≥19.9 mg/L
Ammonia Nitrogen (NH ₃ -N)	3.17 mg/L	27.0 mg/L
Reference Temperature (Tref)	25.0°C	25.0°C

Collected to broadly replicate the sampling location described by the Adler & Allan contractor to DCWW.

Location: Upstream Control

Parameter	Result
Turbidity	5.87 FNU
Nitrate (NO ₃ ⁻ -N)	1.7 mg/L
pH	10.51
Dissolved Oxygen	6.03 mg/L
Dissolved Oxygen Saturation	63.5%
Temperature	17.7°C
Conductivity	434.2 µS/cm
Resistivity	2.30 kΩ
TDS	217.1 ppm
Salinity	0.24PSU
Phosphate (PO ₄ ³⁻)	>2.50 mg/L
Ammonia Nitrogen (NH ₃ -N)	0.84 mg/L
Reference Temperature (Tref)	25.0°C

Key Findings

The monitoring data collected on 2 June 2026 indicates that the Afon Cynffig remains subject to significant wastewater-related stress associated with the continuing discharge from the Marlas STW SPS outfall.

The most significant findings were:

1. Average ammonia concentrations at the outfall were recorded at 27.0 mg/L NH₃-N, with individual samples ranging between 23.2 mg/L and 28.9 mg/L.
2. Average phosphate concentrations at the outfall were recorded at a minimum of 19.9 mg/L PO₄³⁻, with one sample exceeding the upper detection limit of the testing method (>30 mg/L).
3. Average turbidity at the outfall was 60.3 FNU, compared with 5.87 FNU at the upstream control location.
4. Average dissolved oxygen saturation within the outfall samples was 38.3% when measured directly from collected outfall samples.
5. Elevated pH conditions were recorded throughout the monitoring area, including an average pH of 9.89 at the outfall and 10.86 at the downstream monitoring location.
6. Visible turbidity and a strong sewage odour remained present throughout the affected reach.
7. Significant differences were identified between samples collected directly from the outfall and samples collected from the location used by contractors between the aeration devices.
8. The monitoring data indicates that polluted water continues to enter the receiving watercourse and that the environmental pressures identified by APFN remain ongoing.

Dissolved Oxygen and Aeration Concerns

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

The average dissolved oxygen saturation recorded from samples collected directly at the outfall was 38.3%. Individual readings ranged from 46.5% saturation to 30.1% saturation. Whilst aeration devices may improve oxygen concentrations locally within the water column, the monitoring undertaken by APFN continues to raise concerns regarding whether the current approach addresses the cause of the pollution rather than its symptoms. The purpose of the current aeration deployment should be clearly explained alongside supporting monitoring data demonstrating the environmental benefit being achieved. APFN remains concerned that visible aeration equipment may create an impression of environmental improvement whilst substantial pollutant loads continue to enter the river. The priority should remain the prevention or treatment of pollution before it reaches the receiving watercourse rather than reliance upon in-river mitigation after the discharge has occurred.

Bank-Mounted Pump and Sampling Interference Concerns

APFN again observed the operation of a bank-mounted pump discharging water into the river in close proximity to the outfall sampling area. The practical effect of this arrangement is the creation of additional turbulence, mixing and dilution within the immediate sampling zone. APFN remains unclear what environmental benefit this arrangement is intended to achieve in relation to the ongoing discharge. Based on observations made during multiple visits, the most obvious effect appears to be the disturbance of the water column and the increased difficulty of obtaining representative samples directly from the discharge plume. APFN considers that Dŵr Cymru Welsh Water should clearly explain the purpose of this arrangement, the environmental outcome it is intended to deliver and the evidence supporting its continued operation. Independent environmental monitoring is important during incidents of this scale. Any activity that may affect the ability to obtain representative samples safely should be capable of transparent explanation and justification.

Scale of the Continuing Discharge

During the meeting held on 29 May 2026, Dŵr Cymru Welsh Water confirmed that the continuous discharge associated with this incident was estimated at approximately 150 m³ per hour (~150,000 l/hr).

This equates to approximately 3,600 m³ per day (3,600,000 litres per day).

Based on the estimated commencement date of 10 February 2026 provided by Ed Bennett, Head of Wastewater Networks, and assuming a continuous discharge at the stated rate through to 4 June 2026 inclusive, an estimated 414,000 m³ (414,000,000 litres) of wastewater-related discharge may have entered the Afon Cynffig in dry weather flow conditions.

- 10 February to 28 February = 19 days (including 10 February)
- March = 31 days
- April = 30 days
- May = 31 days
- 1 June to 4 June = 4 days

Total = 115 days

The scale of the discharge remains significant and reinforces the importance of obtaining accurate and representative monitoring data from the discharge source itself. Even relatively modest pollutant concentrations become environmentally significant when discharged continuously at such volumes.

Environmental Significance

The combined pattern of results remains highly concerning.

The highest concentrations of ammonia, phosphate and turbidity were consistently recorded at the outfall itself. Ammonia Nitrogen averaged 27.0 mg/L at the outfall. Ammonia is one of the most important indicators of wastewater contamination and elevated concentrations can be harmful to fish, aquatic invertebrates and other aquatic organisms, particularly where elevated pH conditions are also present. Phosphate concentrations averaged at least 19.9 mg/L at the outfall and exceeded the upper detection range of the testing method in one sample. Such concentrations indicate substantial nutrient enrichment and are capable of contributing to ecological imbalance and pollution-tolerant biological communities. Turbidity averaged 60.3 FNU at the outfall compared with 5.87 FNU at the upstream control location, demonstrating the continued presence of suspended material associated with the discharge. The strong sewage odour and visible discolouration observed during the monitoring exercise provide further evidence of continuing wastewater impact within the receiving watercourse. Taken together, the results indicate that the river continues to receive a substantial pollutant load and remains under significant environmental pressure.

Sampling Location and Data Reliability Concerns

One of the most significant findings arising from the 2 June 2026 monitoring exercise was the difference between samples collected directly from the outfall and samples collected from the location identified by contractors operating on behalf of Adler & Allan.

Average outfall ammonia concentrations were recorded at 27.0 mg/L $\text{NH}_3\text{-N}$. The comparative sample collected between the two aeration devices recorded an ammonia concentration of 3.17 mg/L $\text{NH}_3\text{-N}$.

This represents a reduction of approximately 88%.

Similarly, average outfall phosphate concentrations were recorded at a minimum of 19.9 mg/L PO_4^{3-} . The comparative sample recorded a phosphate concentration of 3.1 mg/L PO_4^{3-} .

This represents a reduction of approximately 84%.

The comparative sample was collected from a location where the discharge had already undergone substantial mixing, dilution and aeration within the receiving watercourse.

By contrast, APFN's outfall samples were collected directly from the discharge source. APFN considers that monitoring undertaken for operational, environmental and regulatory decision-making should prioritise representative sampling of the discharge itself rather than relying solely upon samples collected following dilution within the river. If substantial sums of customer and bill payer money are being invested in treatment systems, aeration equipment, contractors and environmental mitigation, it is essential

that the effectiveness of those measures is assessed using robust and representative monitoring techniques.

Monitoring data that does not accurately reflect the quality of water entering the river risks underestimating the environmental impact of the discharge and may lead to incorrect conclusions regarding treatment performance.

Engagement and Regulatory Concerns

APFN has engaged extensively with Dŵr Cymru Welsh Water, elected representatives and other stakeholders throughout this incident. At the time of publication, APFN has received no response from Natural Resources Wales regarding its request for a meeting to discuss the incident, the monitoring findings and the ongoing environmental concerns associated with the discharge. APFN remains willing to meet with NRW and continues to believe that direct engagement would be beneficial given the significance of the incident. APFN understands that Hydro Industries are now actively involved in discussions relating to the incident. Dŵr Cymru Welsh Water has confirmed that Hydro Industries are currently acting in an advisory capacity.

Current Position of Dŵr Cymru Welsh Water

In correspondence dated 3 June 2026, Steve Wilson, Chief Operations Officer of Dŵr Cymru Welsh Water, confirmed that the temporary overland pipeline was undergoing final pressure testing and that commissioning was being targeted for Sunday 7 June 2026. Dŵr Cymru Welsh Water further stated that once operational, the pipeline would prevent further discharges to the river and allow environmental recovery work to begin.

APFN welcomes confirmation of a target commissioning date. However, until the discharge ceases and the system is fully operational, the river remains subject to ongoing pollutant loading.

APFN Position

APFN recognises that efforts are being made to mitigate the effects of this incident and welcomes engagement with Dŵr Cymru Welsh Water and other stakeholders. However, the independent monitoring undertaken on 2 June 2026 indicates that significant pollutant loads continue to enter the river. The priority must remain the prevention or treatment of pollution before it reaches the receiving watercourse. Monitoring data should be transparent, representative and capable of independent scrutiny. APFN supports any operational intervention that demonstrably reduces pollutant loading and accelerates recovery of the river.

Conclusion

The independent monitoring undertaken by A Peace for Nature on 2 June 2026 indicates that the Afon Cynffig continues to experience significant wastewater-related environmental pressure associated with the Marlas STW SPS discharge.

Elevated ammonia, phosphate, turbidity and pH values remain present at the outfall, together with continuing evidence of wastewater impact within the receiving watercourse.

The monitoring also demonstrates that sampling location has a substantial influence on the results obtained. Samples collected following dilution and aeration within the river produced materially different results to those collected directly from the outfall.

Given the scale of the continuing discharge and the ongoing investment of operational and financial resources into mitigation measures, APFN considers that robust, representative and transparent monitoring is essential.

The priority must remain the reduction of pollutant loading entering the river and the protection and recovery of the aquatic environment.

Recommendations

1. Dŵr Cymru Welsh Water should continue to prioritise measures that prevent or treat pollution before it enters the river.
2. Environmental monitoring data associated with the incident should be published in full and in a timely manner.
3. Sampling locations and methodologies should be clearly identified alongside published monitoring results.
4. Monitoring of the discharge should include direct outfall sampling to ensure representative assessment of water quality entering the river.
5. Dŵr Cymru Welsh Water should explain the purpose and environmental benefit of the bank-mounted pump arrangement observed at the outfall.
6. Natural Resources Wales should engage directly with APFN regarding the monitoring findings and ongoing concerns associated with the incident.
7. 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 (NH₃-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 (PO₄³⁻) (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 (NO₃⁻-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.