



WATER FRAMEWORK DIRECTIVE CONCERNS

Prepared by Afonydd Cymru & WWF Cymru

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CONTENTS

1. Introduction	1
2. Are Welsh rivers improving?	3
3. Are Welsh rivers really at 43% Good Ecological Status?	4
4. Process	5
5. Recommendations	6
6. Appendix	7

Further waterbody analysis

Process and requirements

Comparison with England: Are Welsh rivers in better condition?

Fish failures increase

Chemicals



1. INTRODUCTION

The Water Framework Directive (WFD) was heralded by the EU in 2000 as the key legislation across Europe which would provide a consistent, European-wide framework for managing and improving the quality of its water bodies, including rivers, lakes, and coastal areas. Adopted by Member States in 2003, including the UK, the WFD was a key tool to set out the priorities and deliver accountability against an action plan to achieve Good Ecological Status (GES) for inland waters, originally by 2015 but subsequently derogated to 2027. With two years to go before the next deadline, in this report Afonydd Cymru evaluates whether the Directive has been effective in meeting its goal.

Background to WFD

The WFD established a framework for protecting and enhancing water bodies across Europe. In Wales, its implementation is overseen by Natural Resources Wales (NRW), which monitors, classifies, and reports on the ecological and chemical status of rivers, lakes, and coastal waters. The directive aims to achieve “good” status for all water bodies by 2027 and ensure sustainable water management for future generations. The Directive includes a ‘one out, all out’ approach which means that if one element of the assessment fails the waterbody is deemed to fail.

Post-Brexit, the UK Government decided to retain the Directive in UK law ensuring that its standards continued to guide water management across the UK. It currently remains unclear, from both a UK and Welsh Government perspective as to the post-2027 legal position of the Directive, but it is very clear that the Good Ecological Status targets will not be met by 2027.

WFD Classifications

WFD gives waterbodies a classification of bad, poor, moderate, good or high based on multiple ecological, physical and chemical parameters. Classifications are made at the end of “cycles” and we are now in mid-

cycle 3 (2021-2027). In Wales, interim classifications have been made, with the most recent published for all river waterbodies (including riverine Special Areas of Conservation [SACs]), for the time period 2020-2023 and for Marine SACs in June 2025. A second version of the river SAC reporting was published due to 29 errors in the fish classification. This update did not affect the overall percentage of waterbodies achieving good or better status.

Reasons for not achieving good (RNAGs)

A separate document is maintained by NRW which details the reasons waterbodies are not achieving good status. Known as the “RNAGs” (Reasons for Not Achieving Good Status), the document is continually updated, but only the 2022 version is currently publicly available. Where there has been a change in classification, NRW conducts investigations to identify the cause before assigning an RNAG. We are expecting updated RNAGs to be published later this year, to reflect the updated interim classifications.

Analysis

Afonydd Cymru has undertaken an analysis of the freshwater riverine status of WFD, using the recent interim classification (March 2025) reporting by NRW as the basis for our work. Our analysis is provided in the Appendix of this report.

Caveat

Several factors can change over time that affect the comparability of results across WFD cycles e.g. changes in methodology for data collection and analysis.

2. ARE WELSH RIVERS IMPROVING?

NRW reports the Interim Classifications as showing “.....water quality remaining steady with 40% of water bodies at good or better overall status. This is the same as NRW’s most recent 2021 classification but an improvement of 3% from 2015 and 5% since 2019”.¹

For river waterbodies they report classifying 43% at good or better.

Our analysis shows:

- A greater number of waterbodies declined than improved from the last classification
- Improvement is not sustained between cycles
- Wales has less waterbodies at Good Ecological Status now, than in 2018

With an overall 8%, 3% and 0% increase in waterbody pass for the directive’s three cycles so far, we conclude that Welsh rivers are not improving at anywhere close to a meaningful rate. Despite considerable funding and resourcing, only minor improvements in river health in Wales have been delivered.

¹ [“Assessment of water quality in Wales 2024”](#) Natural Resources Wales, March 2025

3. ARE WELSH RIVERS REALLY AT 43% GOOD OVERALL STATUS?

Classification is dependent upon the data and evidence which supports it. Our analysis shows that:

- 100% of morphology data used in the assessment was greater than 12 years old
- Hydrological data used in the assessment was over 10 years old
- Over half of all data used was 'rolled forward' from the 2018 classification or from earlier
- 34% of all ecological elements in the assessment were not assessed at all

We do not consider that this data provides any representation of the health of rivers today. We remain disappointed that datasets across Wales from academia, industry and citizen science are not brought together to aid better understanding of the health of Welsh rivers. This was an outcome of the Cardiff University work on a Freshwater Data Gateway² and was a key recommendation to Welsh Government.

Classification is based upon a combined ecological and chemical assessment of inland waters. Our primary concern (despite the statistics above) is on the state of chemical monitoring in Wales. It is clear that:

- In the absence of chemical monitoring in Wales, a waterbody is assumed to be in High Status
- 90% of waterbodies in Wales are assumed to be in High Status
- Over half of the waterbodies in Wales have no chemical monitoring data at all
- Passive monitoring programmes in Wales, and individual studies on rivers, show a high prevalence of a broad range of chemicals.
- It is impossible to conclude the current overall position in Wales due to the lack of coordinated data and monitoring programme

² [Freshwater Gateway for Wales project final report, Cardiff University Water Research Institute, November 2024](#)

The risk-based approach was changed in England in 2019, which caused GES in England to drop from 40% to 14%. Given the difference in approach between England and Wales on assessment, we believe any comparison between the state of rivers in Wales to England is invalid.

4. PROCESS

Our analysis shows:

- NRW and water companies have a clear and transparent process for identifying, investigating and managing investment in Asset Management Plan(AMP) cycles where source of impact is attributed to them. RNAGs are addressed in the next investment cycle with a clear delivery outcome
- There is no established process for other sectors and no accountability for outcomes to be delivered. This means that waterbodies have continued to fail over multiple cycles
- Fish as a cause of failure does not seem to be addressed. Failures due to this category do not seem to have a clear path for investigation. We are concerned that the Fish Classification tool is outdated, and that specific fish species are overlooked.

5. RECOMMENDATIONS

- An independent review of the WFD process should be undertaken to determine whether this is the most cost efficient and effective methodology for monitoring and driving change to deliver good ecological status in our waterbodies. If WFD continues:
- Governance for WFD outcomes needs to be strengthened in Wales, with a formal process for scrutiny for delivery of outcomes
- An independent review of monitoring and evidence for Wales should be undertaken to consider, in particular, ecological and chemical parameters and the development of a cost-effective, statistically representative monitoring programme. This would be consistent with the requirements specified under UKTAG Guidance.
- There are sectoral inconsistencies with how Programme of Measures and actions are applied. We believe that given the revised format of the River Summits and thinking on systems management in Wales, it would be timely to consider how accountability of the legal requirement to deliver outcomes is achieved by sector.
- WFD delivery does not seem to be scrutinised in Wales and we would expect a Committee to hold NRW to account for its delivery and to monitor improvements.
- There is a significant failure for fish. We are concerned that the classification method is outdated and that reasons for not achieving Good are not coordinated within NRW. Whilst there is work progressing on the Salmon and Sea Trout Action Plan, no such plans exist for other fish species currently failing and it is not clear whether the failure is more a lack of targeted monitoring or a true species concern.
- Significant failure remains associated with barriers to migration, but there is no long-term commitment to a programme of prioritised removal of barriers across Wales.

6. APPENDIX

Our further analysis of river waterbodies in the classification dataset reveals:

Fewer improvements in river waterbodies

- There were fewer improvements in waterbody status in this most recent period (2021-2024, n=70) compared to the previous period (2018-2021, n=85).
- A greater number of waterbodies declined in status in this most recent period (2021-2024, n=96) compared to the previous period (2018-2021, n=88).

Previous improvements are not always maintained

- Furthermore, of those waterbodies that had previously seen improvements, 44% (n=26) have declined again in the most recent reporting (2021-2024), and no further improvements were recorded in the other 66%.

Fewer rivers achieved good status

- Presenting only the overall figure of 40% indicates that there has been very little change in Wales's river waterbodies between 2018 and 2024, but many waterbodies fluctuate between improvement and decline (examples given in table below).
- The number of river waterbodies achieving good status has slightly reduced each classification/ interim classification (2018=317, 2021=315, 2024=308). This may not be too concerning, however, as the UK Technical Advisory Group (UKTAG) on WFD accept some risk of misclassification as a result of uncertainties.³

³ ["Recommendations on Surface Water Classification Schemes for the purposes of the Water Framework Directive"](#)
UK Technical Advisory Group on the Water Framework Directive, December 2007.

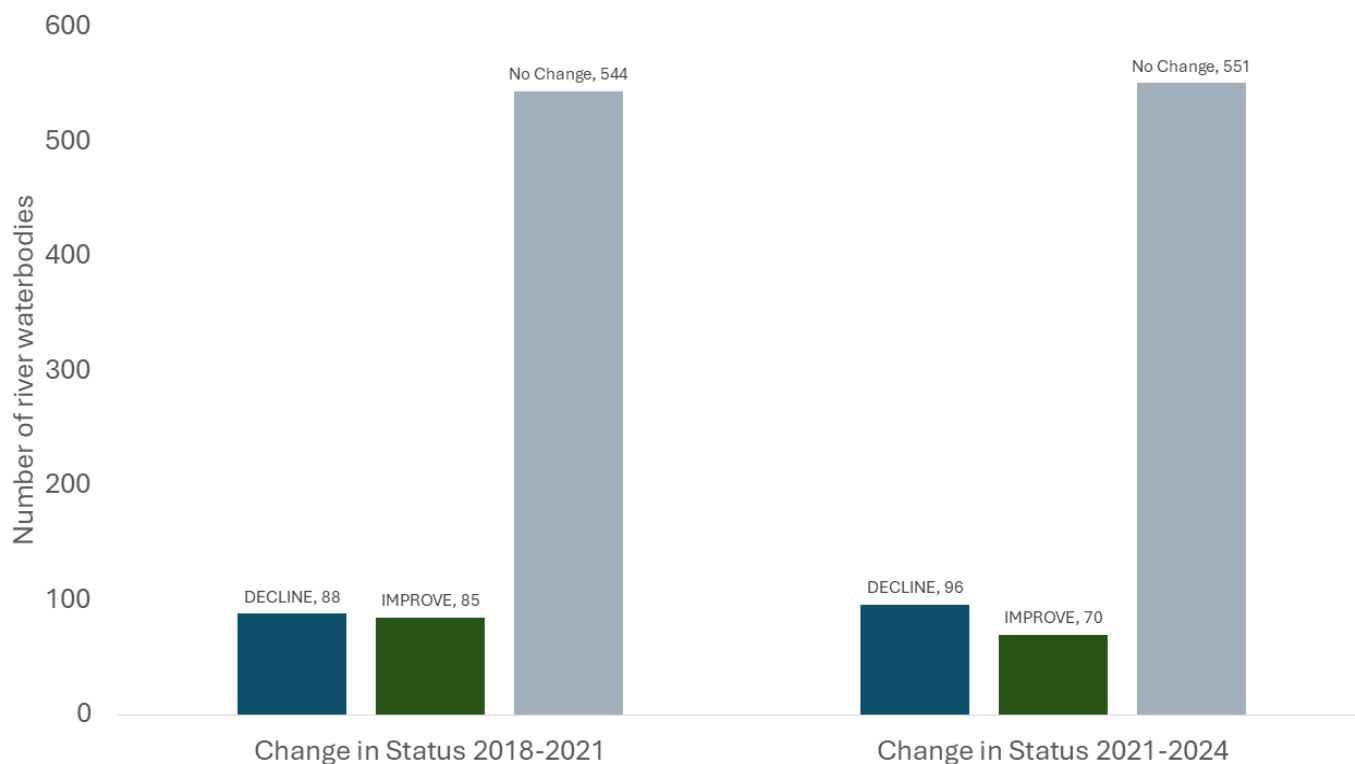


Fig 1: Improvement or decline in the overall status assigned to river waterbodies in Wales 2018-2021-2024.

Location	2018		2021		2024	
	Status	Driving element	Status	Driving element	Status	Driving element
Berthin brook, Usk catchment	Good	Fish P	Moderate ↓	Fish P	Poor ↓	Fish
Lower Mawddach, Gwynedd	Good	Macrophytes and Phytobenthos Combined	Moderate ↓	Inverts	Bad ↓	Inverts
Rhondda (source to conf Afon Rhondda Fach)	Moderate	Fish	Good ↑	Fish Hydro Morph P	Poor ↓	Fish
Dyfi - upstream Dugood	Good	Macrophytes and Phytobenthos Combined	Moderate ↓	Inverts	Good ↑	Mac_Phyto

Fig 2: Example waterbody results to demonstrate the fluctuations between improvement and decline.

- Between 2018 and 2024, 32% of river waterbodies remained “good”, and 45% remained “below good”, 11% (n=80) improved to become good, but 12% (n=88) declined to no longer be considered good.

Reasons for not achieving good status (2022, rivers only)

- 335 river waterbodies appear in the 2022 RNAGs document. There is one RNAG from 2015, and 1174 from 2021 (there can be multiple entries for a single water body if more than one WFD element is causing them to be classified below good).
- There are 22 different elements: Fish (30%); Phosphate (22%); Macrophytes and phytobenthos combined (11%) are the most common, with all other 19 categories less than 10% each.
- 34 RNAGs are due to “Suspect data”.
- Business Category” has been assigned to all RNAGs, and the most common categories are; Agriculture and rural land management (27%), Water Industry (19%), Mining and Quarrying (15%) and Urban and Transport (11%). All other 15 business categories account for less than 10% each. 119 RNAGs are classed “unknown (pending investigation)” for Business Category.
- “Sector” has been assigned to less than half (47%) of the river RNAGs.
- There are no obvious inconsistencies between the activity and business category assigned in the RNAGs.
- When improvements aren’t sustained (i.e. there was an improvement 2018-2021 which was reversed by 2024) there is no evidence for a pattern in the type of reasons (activity, source, sector, based on the available 2022 RNAGs).
- 69% of “Unknown (pending investigation)” activity (119 RNAGs across 77 water bodies) is assigned to agriculture and rural land management, and a further 25% is also “unknown (pending investigation) in the business category.
- When water bodies are failing due to water company activities, there is a well-defined process involving

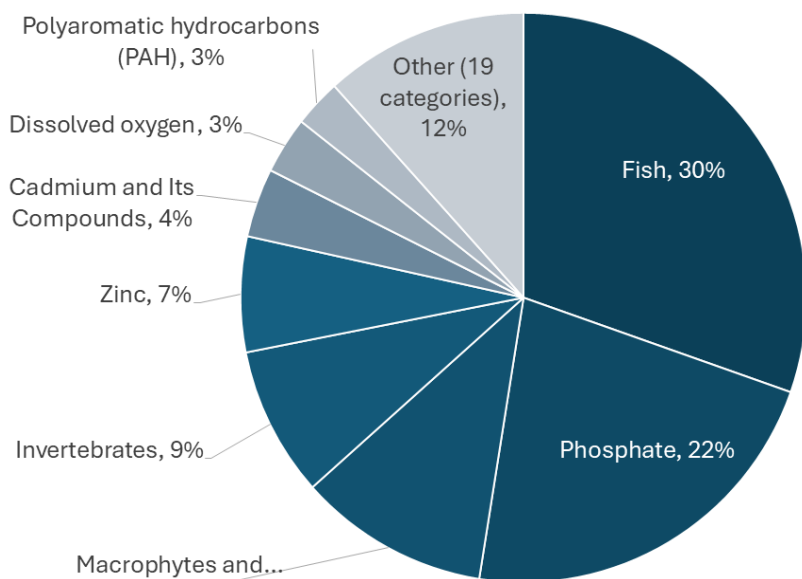


Fig 3: Reasons for not achieving Good Ecological Status 2022.

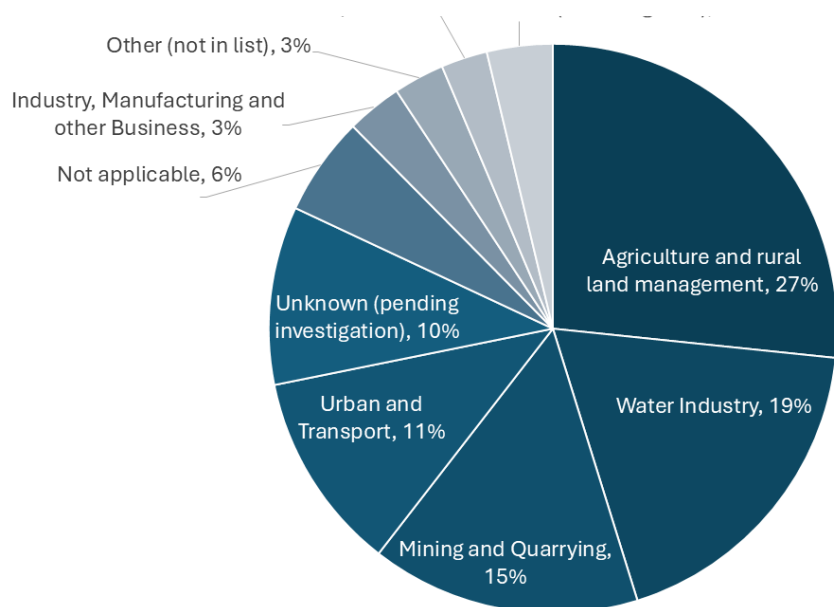


Fig 4: Business category associated with the reasons for not achieving Good Ecological Status 2022.

a structured regulatory framework (NEP and AMP) through which improvements are planned, funded, implemented, and monitored. This was subject to a recent legal case in England⁴ but we see no evidence of failure at waterbody level in Wales, with respect to this sector.

- In contrast, we see no evidence of process at water body level when failure is due to agricultural activities, despite this being the highest cause of failures in Wales.

PROCESS AND REQUIREMENTS

Age of data used to make the 2024 interim classification

- 53% of all element classifications across all river waterbodies were rolled forward (i.e. 2024 classification relied on 2021 data or older).
- 99.8% (561/562) Morphology classifications were rolled forward from 2013 and 100% Hydrological regime classifications were rolled forward from 2015. No other elements were rolled forward from 2013 or 2015.
- 51% (42/82) of elements had some data rolled forward from 2018 and 93% (76/82) of elements had some data rolled forward from 2021.
- Only two elements (Mercury and Carendazim) had no data rolled forward, but these had very few measurements each (8 and 1 respectively).

Elements not assessed

- 34% of the 10,755 possible ecology assessments (15 quality elements across 717 river waterbodies) were not assessed. The UK TAG advised that “only data on the condition of the quality elements most sensitive to the pressures placing a water body at risk are used in classifying that water body.”⁵

⁴ [Secretary of State for Environment, Food and Rural Affairs -v- Pickering Fishery Association](#)

⁵ [“Recommendations on Surface Water Classification Schemes for the purposes of the Water Framework Directive”](#)
UK Technical Advisory Group on the Water Framework Directive, December 2007.

- For some elements not being assessed was rare e.g. only 2% of waterbodies were not assessed for ammonia. The low frequency assessment of “Acid Water Indicator Community” (88% not assessed) is not of concern because this only applies to acid sensitive rivers or rivers that naturally have a pH lower than 7.
- Although there are confidence ratings provided for individual element classifications, NRW does not provide a summary of the completeness of the assessment made to derive the Ecological, Chemical or Overall waterbody status. Assessments based on a low number of quality elements may be less reliable and should be flagged as “low evidence” or “partial assessments”.
- 46 (out of 717) river waterbodies did not have any biological elements assessed, 33 of these were given an overall status of “good”.

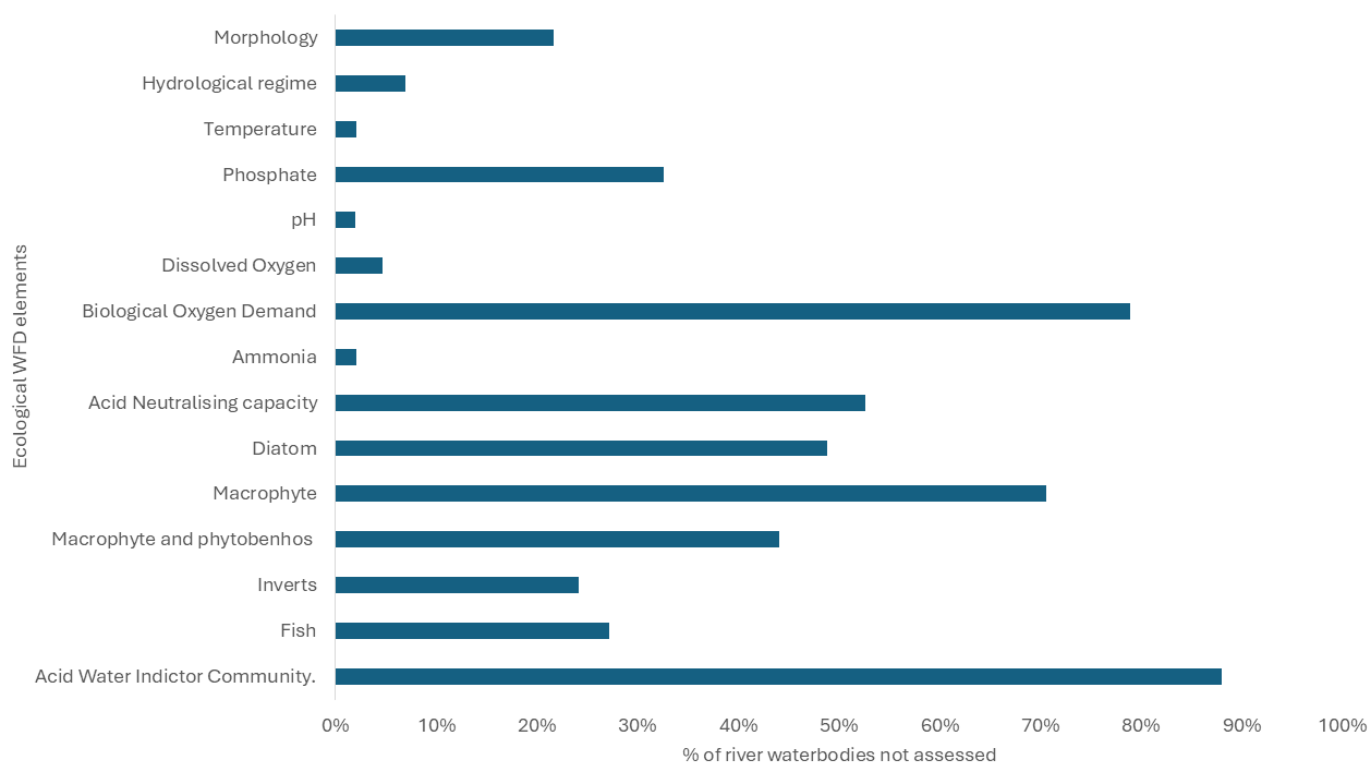


Fig 5: Ecological elements not assessed.

No clear timeframe to complete investigations into failing waterbodies

Waterbodies are entered onto the “Reasons for not achieving good” document only once an investigation has been completed and the cause of the problem (activity, source and sector) has been identified. Therefore, not all failing water bodies appear in this document: currently 67 water bodies identified as not achieving good in 2021 do not appear in the publicly available RNAGs document. The WFD does not mandate that these be identified within a specific timeframe.

COMPARISON WITH ENGLAND: ARE WELSH RIVERS IN BETTER CONDITION?

In Wales, 40% of water bodies are classified as having good overall status, while in England and Northern Ireland 0% achieved good overall status. However, there are key differences in the approach to chemical monitoring and interpretation of WFD data between Wales and England making this direct comparison misleading.

Different approaches to chemical classification

In Wales, where there is no evidence from monitoring or risk assessments to the contrary, the status of a waterbody is classed as being at high ecological status and good chemical status. This means that in the absence of monitored data, waterbodies are assumed to be in good status. This approach does follow the recommendations of the UK Technical advisory Group on WFD, but differs from the approach taken in England. In England, the Environment Agency take a more stringent approach where the absence of monitored data does not automatically lead to an assumption of good status. This results in fewer waterbodies being classified as having good status, as the classification relies heavily on the availability and quality of monitored data.

In the most recent interim classification results from Wales 90% (642/717) of river waterbodies were classified as high chemical status, despite 53% of river waterbodies having had no chemical elements assessed.

The remainder 10% are classified as of moderate chemical status.

In 2016, England reported that 97% of waterbodies met good chemical status, though more stringent testing of bioaccumulative chemicals led to this being reduced to 0% in 2019. Defra estimated that without their additional testing of a few uPBT (ubiquitous, persistent, bioaccumulative, toxic) substances (e.g. Mercury, PFOS and PBDE) over 90% of England's waterbodies would be at good chemical status.⁶

In Wales, the vast majority of rivers have not been assessed for these chemicals at all; in the interim assessment released this year Mercury was measured in just 8 waterbodies (1=high, 7=moderate), PFOS in 9 (8=high, 1=moderate) and PBDE in 9 waterbodies (labelled BDPE, all classed as moderate). PFOS are found worldwide⁷ and the Environment Agency found it in 99% of freshwater sites sampled in England.⁸ If NRW was monitoring these ubiquitous and persistent chemicals at more sites, or did not assume good in the absence of monitoring, the overall WFD results for Wales would likely look similar to England and Northern Ireland.

Afonydd Cymru reported on these differences in 2024⁹ and the Rivers Trusts reiterated these concerns in 2024.

Timeline for reporting

Wales and England also differ on the frequency of reporting classifications. Wales has adopted a three-year update cycle for classifications, whereas England typically updates classifications every six years. This has consequential impacts for cross-border rivers in Wales.

⁶ "[Coverage on water targets and River Basin Management Plans](#)" Defra Press Office, 24 December 2022

⁷ Ackerman Grunfeld, D. et al. (2024). Underestimated burden of per- and polyfluoroalkyl substances in global surface waters and groundwaters. Nat. Geosci., Vol 17, 340–346.

⁸ "Poly- and perfluoroalkyl substances (PFAS): sources, pathways and environmental data: summary" Environment Agency, 26 August 2021.

⁹ "[Report to Wales Water Forum on the Water Framework Directive](#)" Afonydd Cymru, April 2024

FISH FAILURES INCREASE

The number of waterbodies with fish assessments classified as below good have increased. In the most recent data (2024), 522 river waterbodies (73%) received a fish classification; of those 39% were below good, an increase from 33% in 2021 and 29% in 2018. There has been an increase in the number of waterbodies classified as moderate, poor and bad for fish.

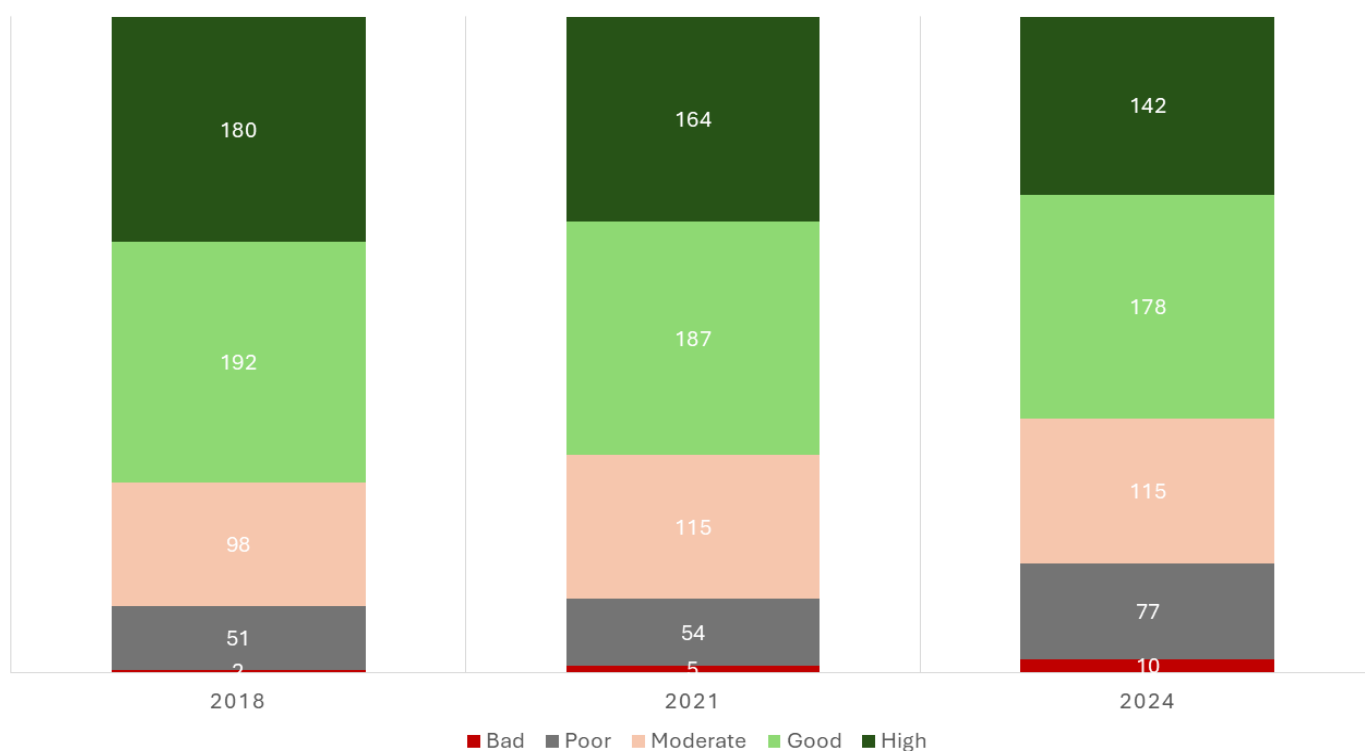


Fig 6: Fish status 2018, 2021 and 2024.

Fish status and consistency with overall status

On the whole, the fish status of waterbodies is consistent with the overall status, i.e. a fish failure (moderate, poor or bad) does not result in a good or high overall classification. Only one waterbody classed as moderate for fish was classified as good overall (Leri-upper), which appears inconsistent with the “one out,

all out” principle. There are 108 waterbodies classified as high (n=42) or good (n=66) status for fish but moderate overall status; these might be a concerning future failures for fish. The updated RNAGs may provide an indication if this is likely.

Fish classification methods

Trout and salmon are most frequently identified as the fish species for which waterbodies are classified as below good (number of times species cited as reason for failure: salmon = 160/202, trout= 147/202).

But how does NRW know that a decline in a migratory species such as salmon is down to a deterioration in freshwater? It could be attributable to lower sea survival. The electrofishing method employed by NRW to conduct fish surveys is optimised for these species, and the other species are only caught as by-catch to these methods so it is likely that they do not accurately measure the population status of smaller species.

A particular concern is bullhead, a protected species and a designated feature of six SAC rivers. Wales has a duty to ensure the maintenance of favourable conservation status within those SACs. Monitoring reports of Bullhead in Welsh SAC rivers in 2008 recommended that it was necessary to alter survey methods to specifically target bullhead populations¹⁰: we are not aware that this has been implemented. Sampling strategies that are not able to detect trends over time, are likely to inaccurately estimate failures.

The ‘Fish Classification System 2’ (FCS2) is the method for classifying fish under WFD and provides an ecological status class for fish at the site (High, Good, Moderate, Poor, Bad). It is a statistical model used to predict the expected abundance and presence of fish species using environmental variables (altitude, slope, river width etc.) and reference site data. The Ecological Quality Ratio (EQR) for a site takes account

¹⁰ Yeomans, W. E., Murray, D.S., Stevenson, C., McGillivray, C., McColl, D., Dodd J.A. & Thomas, R. (2008). Monitoring of Bullhead in Welsh SAC rivers - Rivers Usk and Wye. CC Contract Science Report No 818

Bullhead (*Cottus gobio*)

Age of fish data

Only 58% of fish data was collected in the current period (2021-2023), with the oldest being from June 2018.

Challenges understanding the drivers of fish failures

According to the 2022 RNAG data, the most frequently cited cause of fish-related failures is the presence of barriers to migration, accounting for 30% of identified issues. The second largest category, comprising 12% (44 RNAGs), is classified as “unknown (pending investigation),” highlighting data gaps in understanding the specific causes. This issue is compounded by the fact that when fish are the failing element, the associated activity, source, or sector is often not identified: 22% of such RNAGs list “unknown (pending investigation)” in the business category. This contrasts starkly with RNAGs where phosphate is the failing element, where

fewer than 2% remain unidentified. Overall, fish populations are affected by a complex mix of pressures, some of which extend beyond the immediate boundaries of Welsh river waterbodies, particularly in the case of migratory species.

Action planning to protect failing fish species

In Wales, seven fish species have been identified as contributing to waterbody failures under the WFD. However, only three (salmon, sea trout, and eel) currently have formal action plans in place to support their protection and restoration. Of the four others, bullhead is a designated SAC species but has no action plan to support recovery.

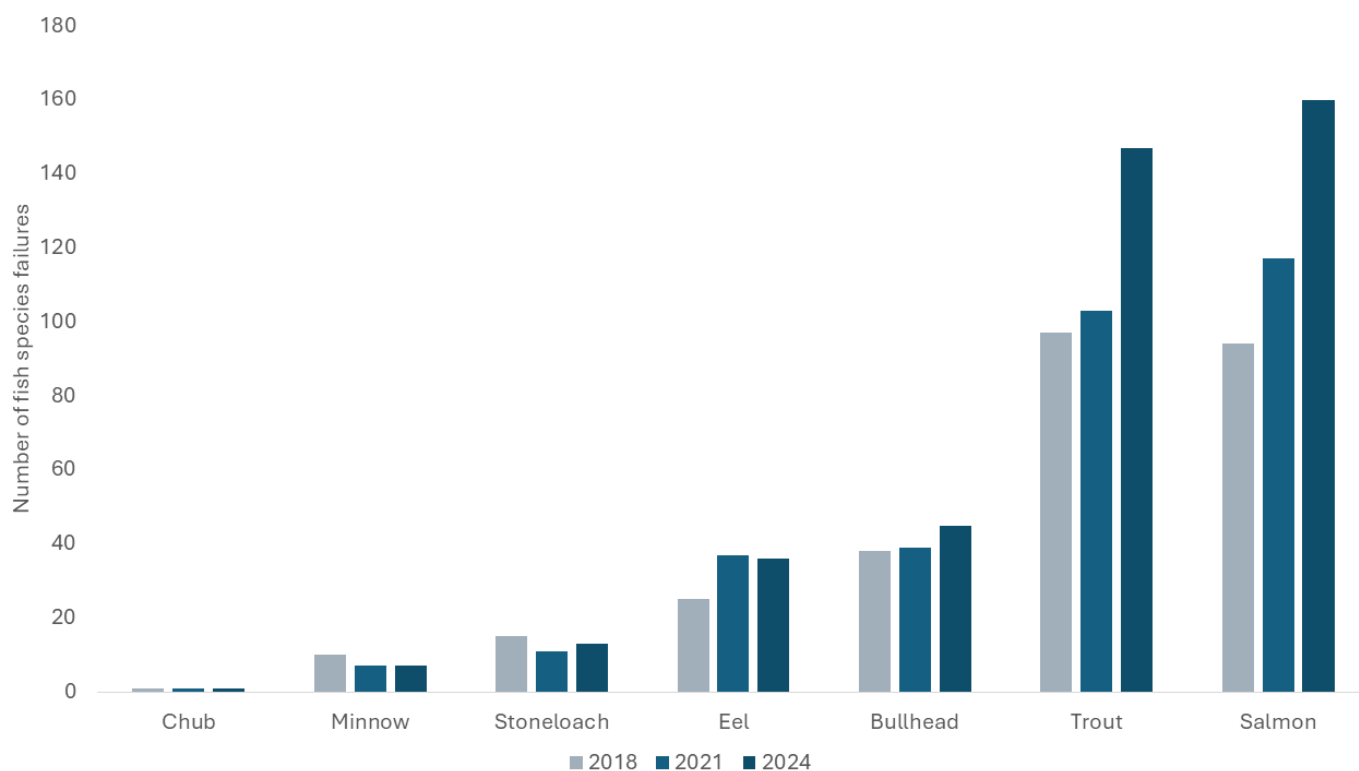


Fig 7: Fish species identified as the reason for waterbodies failing 2018, 2021 and 2024.

CHEMICALS

Current status and recent additions

In the most recent classification 90% of river waterbodies in Wales were classified as having “high” chemical status. NRW reports chemicals across four categories: specific pollutants; priority hazardous substances; priority substances and other pollutants. The number of chemicals assessed has increased from 63 in 2021 to 69 in 2024. The additions were Carbendazim, Chlorothalonil, Chromium (VI), Methiocarb, Un-ionised ammonia and Mercury.

Risk based approach

NRW takes a risk-based approach to monitoring which prioritises sites and substances based on their potential environmental risks rather than uniform monitoring. As outlined above, for chemical status, if a parameter is not monitored and there is no evidence of risk, it is assumed to meet good status. While this approach falls within the WFD framework¹¹, we are concerned that it has resulted in an overestimation of waterbodies in good overall status. The approach certainly means that favourable WFD comparisons with England cannot be made and are misleading.

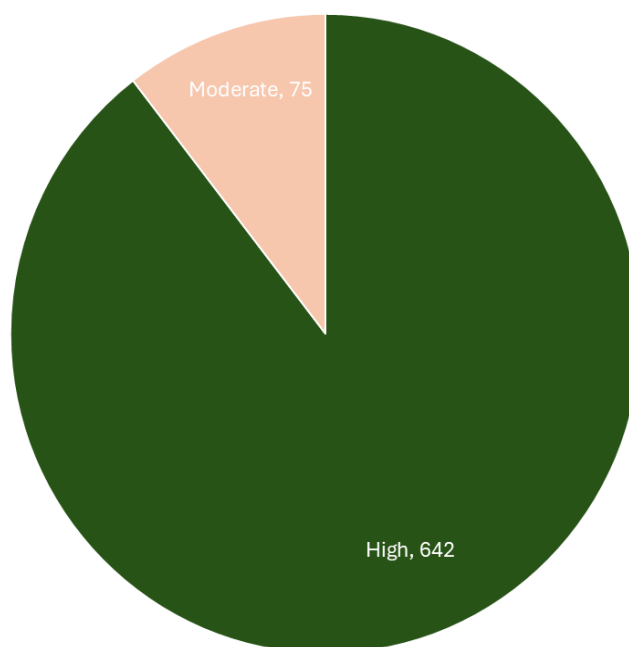


Fig 8: Chemical status of river waterbodies, 2024.

¹¹ UKTAG on the Water Framework Directive, Recommendations on Surface Water Classification Schemes for the purposes of the Water Framework Directive, December 2007

Risk assessment methodology for Cycle 3 (to 2027) is mainly based on data from 2014-2018 on the assumption that the concentration of assessed chemicals will not increase as these chemicals are now well regulated and no relevant increase in inputs from human activity is expected¹². While this is a reasonable assumption, there are exceptions e.g. there is evidence of recirculation from sediments with climate change¹³.

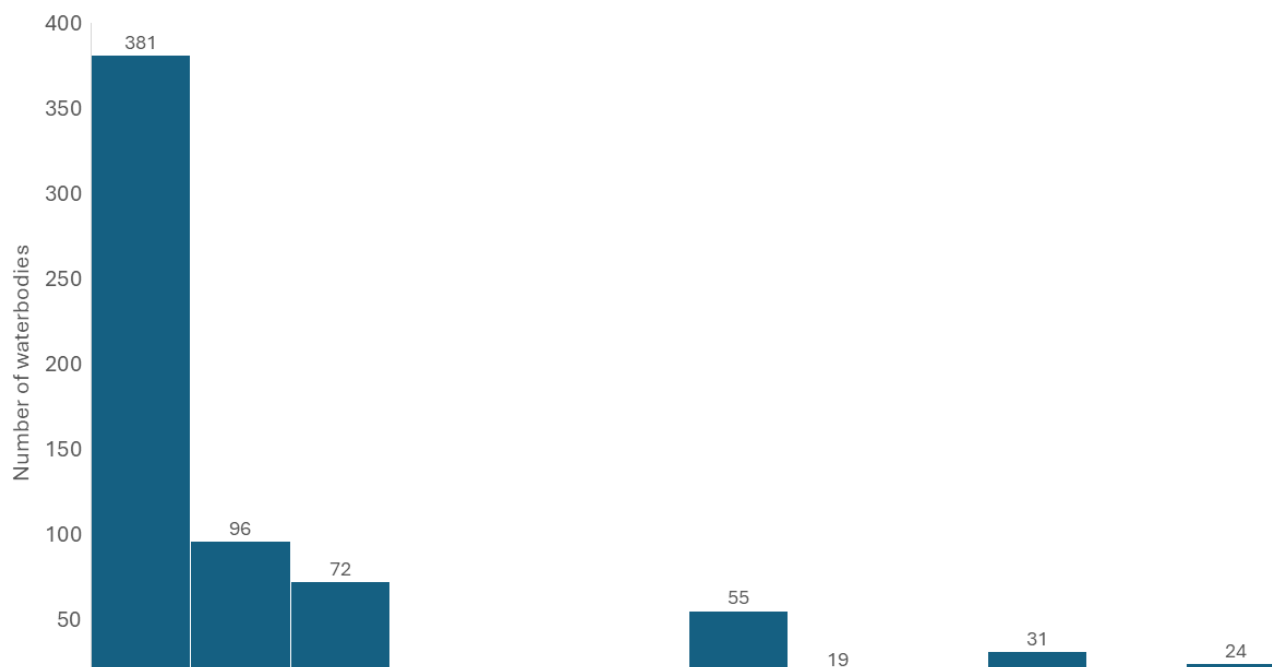


Fig 9: The number of chemicals used to classify riverwaterbody status 2024.

¹² Andrade, T (2022) Risk assessment for Metals and Chemicals – Cycle 3 (2021-2027). NRW report.

¹³ E.g. emerging evidence of increased PCBs in otters in Wales - O'Rourke, E (2025) PhD thesis, Cardiff University and article submitted to Environmental Pollution

Impact of Monitoring Coverage on Chemical Status Classifications

No chemical monitoring data (including rolled data) was reported for 55% of waterbodies in 2021 and 53% of waterbodies in 2024. All of these waterbodies (n=393 in 2024) were classified as high chemical status. A river waterbody achieving a “high” chemical status is therefore associated with less monitoring, with classifications of “high” chemical status on average being based on data for just 6 chemicals, and waterbodies classed as “moderate” were on average assessed using data from 22 chemicals. Out of the 324 waterbodies whose chemical statuses were based on data (a minimum of one chemical measured) rather than assumption, 85% were classified as “high” for chemical status. Once ten chemicals are measured, this reduced to 79%.

75% of waterbodies were not assessed at all for the category “other pollutants” these include aldrin, dieldrin, endrin, isodrin, carbon tetrachloride, DDT, tetrachloroethylene and trichloroethylene.

Afonydd Cymru, WWF Cymru

July 2025