# Consultation on Continuous Water Quality Monitoring and Event Duration Monitoring

**Blueprint for Water Response – May 2023**

*Wildlife and Countryside Link is a coalition of 71 organisations working for the protection of nature. Together we have the support of over eight million people in the UK and directly protect over 750,000 hectares of land and 800 miles of coastline.*

*Blueprint for Water, part of Wildlife and Countryside Link, is a unique coalition of environmental, water efficiency, fisheries and recreational organisations that come together to form a powerful joint voice across a range of water-based issues.*

This response is supported by the following Link members:

- Amphibian and Reptile Conservation
- Angling Trust
- British Canoeing
- Friends of the Earth England
- Institute of Fisheries Management
- The Rivers Trust
- The Wildlife Trusts
- RSPB

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## Consultation questions

1) **Are you responding as a charity, consumer or interest organisation, sewerage undertaker, academic, or other (please state)?**

Charity / Interest organisation

Blueprint for Water is a coalition of over 20 organisations working to restore the ecology of the UK's rivers, lakes, ponds and wetlands by seeking improvements to water policy at an England level. Blueprint is part of Wildlife and Countryside Link, the largest environment and wildlife coalition in England, bringing together 70 organisations to use their strong joint voice for the protection of nature.

## Part 1- Event Duration Monitoring

1) **Are you content to allow for equipment failure, so long as sewerage undertakers are required to take all reasonable steps to address any failures as soon as possible?**

We accept that equipment failures are inevitable, due to harsh environments and other outside factors. We have responded to the Ofwat consultation on a Storm Overflows Performance Commitment, through which we have suggested that the adjustment applied to ensure that companies do not benefit from having monitors out of operation needs to be stronger than that proposed (which assumes 50 spills) and should instead be based on the 90$^{th}$ percentile for that company, if greater. We suggest that this disincentive through the PC, combined with requirements to take, and report, all reasonable steps to bring monitors back into operation, should all be applied.

We agree that action taken should be published alongside the near-real-time data, and also request that the cause of the outage using the categories contained in Annex A should similarly be published. As much of the data displayed in any visualisation platform will be 'live', we suggest that, to assist with transparency, one of the parameters that should be reported as a standard feature in the 'live' tab (rather than expecting stakeholders to search back through multiple past event reports) is a rolling figure showing the number of hours for which that monitor has been out of operation in over the prior 12 month period (assuming the underlying data is provided sufficiently frequently, this should be updated daily).

2) **Are you content near-real-time event duration monitor reporting will apply everywhere it is technically feasible?**

We agree that the only exception to full coverage of near-real-time EDM should be at sites where it is genuinely impossible due to extreme barriers to access. However, we believe that the location of those sites should still be included on any data visualisation platform, and it should be made clear whether the site has EDM monitoring which cannot be near-real-time, or no EDM monitoring at all. This is important as those accessing watercourses in the vicinity of such overflows could otherwise be under the impression that there is no overflow nearby, or for example that there is an overflow but that it is not discharging, and so the health risks of entry to the water are minimal, when this may not in reality be the case; it is important that stakeholders are not given a false impression of discharges where it is not possible to install near-real-time EDM.

## Part 2- Continuous Water Quality Monitoring

1) **Should the objectives include any additional aims? Yes, No. If yes, what additional objectives should be included?**

Yes. We welcome the 4 objectives stated: to quantify the local water quality impacts; to increase stakeholder and public understanding of the impact on water quality; to inform sewerage undertaker improvement programmes; and to inform regulatory action.

We propose an amendment rather than an additional objective, recognising the integrated nature of water management and the importance of collaborative approaches to achieving positive outcome

for the water environment: "to inform sewerage undertaker *and partner* improvement programmes to meet the Storm Overflow Discharge Reduction Plan targets *and wider societal and environmental objectives."* This addition recognises that collaboration with key stakeholders, particularly local authorities and catchment deliverers, will have a large bearing on the pace of delivery and on the wider benefits of any delivery programme, such as reduced flood risk, and benefits to biodiversity, climate and public amenity through the employment of nature-based solutions. In suggesting this amendment, our aim is to ensure that the information collected and provided is available to, and utilised by, these key parties and others in the delivery of their duties / programmes of work.

2) **Are UPM FIS the appropriate standards against which to benchmark the programme for storm overflow impacts? If not, why?**

We have not had the capacity to review the standards in detail but consider that standards specific to wastewater assets are appropriate standards against which to benchmark a programme which aims to monitor the impacts of wastewater discharges.

3) **Are UPM FIS the appropriate standards against which to benchmark the programme for sewage treatment work final effluent discharge impacts? If not, why?**

Please see our response to Q2.

4) **Should Defra explore in future (when technically feasible) if and how nitrates can be monitored in freshwater sites? If yes, why?**

Yes. Whilst phosphates are the more prominent driver of ecological harm in flowing freshwater habitats in particular, nitrates are not without impact (and as phosphate loads are reduced over time, the influence of nitrates in ecological terms may become more significant). Studies have already shown that in lakes, nitrates may play more of a role in eutrophication than was previously considered the case. The pressure narrative on Nitrates published in 2019 by the Environment Agency to support the challenges and choices consultation as part of the development of updated River Basin Management Plans noted that impacts of potential concern include the eutrophication of lowland surface waters, the acidification and eutrophication of upland waters and nutrient enrichment of sensitive groundwater-dependent terrestrial wetlands. Further, these impacts are likely to be exacerbated by climate change including via nitrate losses from land (and storm overflows) in more frequent storm events, and the enhanced effects of eutrophication during hotter summers. As such, the monitoring of nitrates in freshwater is likely to be important in future for a fuller understanding of how to restore freshwaters to good condition.

5) **Would you support, where technically feasible, the inclusion of nitrate monitoring at wastewater treatment works for freshwater sites in catchments caught by nutrient neutrality rules – for example, Tees, the Broads, or Stodmarsh. If so, why?**

Yes. It would be a useful check on nutrient neutrality delivery; since the nutrient mitigation to be delivered (to ensure that development with the scope to harm protected sites is nutrient-neutral) is based upon calculated values rather than scheme monitoring, the measuring of loads at wastewater treatment works would provide confirmation that schemes were sufficiently protective, or enable calculators to be updated if it emerges that they are not.

**6) Is the 24hr lag sufficient for all watercourses? Yes or No. If no, should the lag be longer or shorter and why?**

We assume that in most watercourses, a 24hr lag should be sufficient, given that the downstream monitor should never be more than 500m downstream of the point of cross-sectional mixing, and in the majority of cases will be located *at* the point of cross-sectional mixing. However this location will vary from watercourse to watercourse; the EU guidance referenced in the provisional guidance accompanying the consultation notes that 'For linear water bodies such as rivers (or narrow estuaries) complete mixing of a point source discharge over the cross section may, in some circumstances, take kilometres to achieve and in some cases where there is strong stratification it may not occur at all'. In this case, a) 24hours may not be sufficient and b) the recommended location of the downstream monitor may in fact be such a distance from the overflow that there are many additional overflows between it and the outflow to which it relates. We suggest that once the point of cross-sectional mixing has been calculated for a given overflow, the location and lag period should be agreed on a case-by-case basis with the Environment Agency for any monitors over a certain distance away from the overflow, for example 2km.

In some cases, where the distance to the cross-sectional mixing point is extremely short, and the monitor is located at that point, 24hrs may be well in excess of the period over which any water quality impact is detected. If a company wishes to make the case that, in order to reduce wear and tear and limit the risk of equipment failures, the lag period after which monitoring reverts from every 15 minutes to hourly should instead be set at 12 hours, the Environment Agency should be asked for its agreement after at least 6 months of data or 20 spills, whichever is the greater, demonstrates that no water quality impacts are seen after 6 hours beyond a spill ending. This will provide a sufficient buffer whilst also reducing unnecessary operation of monitors at the higher frequency of 15minute intervals.

**7) Is using the maximum point of harm arising from ammonia the right approach, rather than dissolved oxygen? Yes, no, if not, why?**

Of the 'Reasons for Not achieving Good Status' attributed to 'Sewage discharge (intermittent)' in the spreadsheet of RNAGS for England currently available from Catchment Data Explorer, where a Tier 1 pressure is noted, Ammonia is more prevalent (91 instances) than Dissolved Oxygen (19 instances). Based on this data, using the point of harm for Ammonia would seem to be a sensible basis for siting the downstream monitor since it is a more prevalent contributor towards waterbodies failing to achieve good status. However, there are, for the current data, 335 instances where no Tier 1 pressure is noted. We suggest that prior to confirming ammonia as the basis, the EA is asked whether there is more recent data indicating that Ammonia remains a more prevalent contributor than DO, or whether it suspects that the instances where no Tier 1 pressure is noted are more likely related to DO, or some other parameter that should inform the siting of monitors.

8) **Is the rule of "not more than 500m downstream from the point of cross-sectional mixing" appropriate? Why?**

The purpose of siting a monitor at the point of cross-sectional mixing is so that the monitor is recording data that is representative of the impact of the discharge on the local environment, rather than simply the composition of the discharge itself. This is important because a discharge in a small headwater stream may be far more impactful than a similar discharge in a larger river reach. We need to be able to distinguish between such situations in order to prioritise action to reduce SOs where it will deliver the greatest ecological benefits. As such, we agree that the 500m limit is acceptable provided that it does not extend into a different WFD waterbody. Waterbody limits often indicate a significant change in character, for example one waterbody may end and the next start where a tributary joins a main channel. It would be disingenuous to measure the impact of a discharge downstream of such a change in characteristics as the flow regime would likely be significantly different.

9) **Would the 500m rule be better expressed as a ratio based on the width of the watercourse? Why?**

We suggest that the proximity of the monitor to the outflow is likely to be more critical in smaller streams where the downstream characteristics may change rapidly from the point of discharge as tributes join and so on. As such, we suggest that flow (river discharge, Q) would be a more important measure than distance relative to stream width, as in some waterbodies the characteristics at a distance of 20x the width of the river downstream would be vastly different whilst in others they may vary very little. This does however pose the question of how a company should instead monitor water quality if the 500m, WFD waterbody and a flow-related rule could not be met.

As such, we suggest that the 500m rule, a flow parameter check, and the WFD waterbody rule we have proposed, are applied, and that for any downstream monitor that cannot meet these rules, a monitor must still be placed at the first possible point downstream, and an indication of the fact that it is located in a sub-optimal site be included on the data visualisation platform. This would demonstrate to stakeholder that there is water quality data related to that SO, but that the location of the monitor means that the data may not be as reliable as it is for other overflows.

If the data demonstrates high water quality impacts (for example, shows readings in the upper quartile for any parameters) the company should investigate ways of either improving the reliability of the monitoring, or taking action to resolve spills on a no-regrets basis, since it is likely if anything that the monitor is under-reporting impact (provided that there are no other discharges to the watercourse that could be contributing to the readings).

10) **Should there be any other site-specific considerations? If so, which?**

In addition to considerations of siting of monitors, we agree that site considerations should inform the prioritisation of locations within the roll-out process. We agree that High Priority sites as defined in the Storm Overflows Discharge Reduction Plan should be installed first. Noting that monitoring of outflows discharging to saline (estuarine and coastal) sites is technically challenging, we also suggest

that top spillers discharging into the lower 5km of watercourses which feed into coastal or marine sites designated for their nature conservation interests, are also prioritised. This would provide data for outflows which could ultimately be impacting MCZs or coastal SPAs for example, which would otherwise not be prioritised for early monitoring.

We know in practice that recreational users enjoy waterways that are not formally designated, and that SOs can affect ecology beyond protected sites. An assessment of such ecological harm and recreational pressures should also inform prioritisation of locations within the roll-out process. The Environment Agency's unsatisfactory overflows, and data on recreational hotspots, would prove a useful starting point for this assessment.

11) **Would this rule be better if expressed as below? If yes why, or why not?**
**"Where there are two or more assets *with overlapping mixing zones* within 250m of one another in a single length of watercourse, these can be considered a cluster and monitored by one pair of monitors."**

Noting the potential difficulties of siting monitoring kiosks in urban environments, where many such SO clusters are likely to be located, we suggest that closely located monitoring points could be dealt with as set out in our response to Q13, which would not necessitate multiple sets of monitors in areas where clusters of SOs occur.

12) **Do you agree with the proposed cap of 10 on clustering? If not, why not and what should the cap be?**

We agree that a cap of 10 is acceptable provided that the investigatory duty discussed in Q13 is applied.

13) **Is it reasonable to require sewerage undertakers to attribute the source of a breach of standards to a particular asset? Why?**

It is both reasonable and important to do so, so that funds allocated for reducing SO spills are targeted to where they will deliver the greatest ecological and societal benefits. However, there could be a case for doing this through other means than multiple downstream monitors. For example, comparison of water quality data and EDM data may reveal that it is consistently the same overflow or handful of overflows within a cluster which are operating when poor water quality is detected. Similarly, the agile manual collection of water samples during times of overflow operation, informed by EDM data, could be a more cost-effective way of determining which overflows within a cluster are contributing to water quality issues. This approach may be more viable in areas which are close to bases of operation (likely urban areas) than for remote rural areas, as staff reaction times may not be sufficiently rapid, but in any case, it is likely to be urban areas where clusters of overflows most commonly occur. If such an approach is adopted, an industry-wide protocol for this should be agreed so that there is consistency across companies and robustness of data. Further, the

justification for this should be cost effectiveness for customers rather than cost savings for companies.

**14) Should there be any additional exemptions? How would they benefit the programme?**

The guidance discusses monitor recycling, noting that a monitor cannot be moved on to provide coverage at a new site 'until the monitors have provided at least ten years' worth of data once the improvement has been completed'. Improved means that the overflow meets the SODRP targets. From this it is unclear whether overflows already meeting these targets need to have monitors installed, or whether they need to have met them for ten years before the need to install a monitor would not apply, and we would welcome clarification on this. We are concerned that, as changes are made to assets and water management practices in seeking to improve SO operation, stormwater could inadvertently be diverted to overflows which have not previously operated. We also note that as more extreme weather is experienced under a changing climate, we may see overflows operating that have not operated before, and operating more frequently than before. As such we suggest that the guidance clarifies whether there are outlets that are exempt from water quality monitoring from the outset. We suggest that it is made clear, if such monitors are not required to have water quality monitoring from the outset, that EDM data is used to determine whether changes in the operation of an overflow are such that is then requires water quality monitoring to be introduced.

**15) What data should be included and what is the best way to display this data to ensure it usefully informs the public/meet your needs?**

We welcome and agree with the requirements set out in the provisional guidance on data availability and visualisation. Within this, we strongly recommend that the platform is map-based, as the most intuitive way of understanding spatially distributed data. We support the proposal that there is a single centralised system since this will provide consistency in information, for example, ensuring that data across all companies is provided for the same parameters, and in a consistent manner (e.g., units of temperature, distance, etc.)

We note the ease of understanding by stakeholders of systems such as Thames Water's EDM map which shows 'at a glance' whether overflows are discharging, have recently discharged, have not recently discharged, or that monitors are out of action. A system for water quality which is as easily understandable could also be based on a traffic light system; for example, an overall layer, plus the option to show the 4 water quality parameters individually, which indicated the water quality at each monitor on a red – amber – green scale. We agree that this could be linked to the EPM-FIS standards. The overall map could show whether all the standards are currently met, with specific layers then showing the detail for each parameter. Upon zooming in, the map should show the location of the downstream monitor, and a line linking it to the upstream overflow location(s) for which it is providing data. This is important as just showing a point of downstream impact will not help water users to determine where it may be inadvisable to enter the water.

We agree that EDM data should be overlain, that live readings as well as long-term averages should be shown, perhaps in pop-up data boxes, and that the underlying data for an individual monitor should be available via APIs. We also suggest that this information should be available grouped by

company and nationally so that stakeholders have easy access to relevant datasets, rather than having to download hundreds or even thousands of individual records.

Finally, we have discussed above that information on monitor downtime (including reasons, and actions taken) and sub-optimal and 'non-compliant' location should be included in any data visualisation platform.

16) **What other contextual information is required to ensure that everyone will be able to understand the data?**

The system should also provide a FAQ section setting out the importance of the four parameters identified under the Environment Act and any additional water quality parameters added by the Secretary of State.

As action is identified and taken to reduce discharges from SOs which do not currently meet standards, this information should also be added to the map. This could be in the form of an additional data layer that showed a colour-scale or categories to indicate progress, e.g., a progression through; investigations, scoping, detailed design, delivery programmed, delivery underway, delivery complete, SO confirmed compliant. This is important to demonstrate the scale and pace of delivery which stakeholders expect to see.