Written evidence from The Rivers Trust

Submitted by The Rivers Trust - The Rivers Trust is the umbrella organisation for 60 local member Trusts, we are the only group of environmental charities in the UK and Ireland, dedicated to protecting and improving river environments for the benefit of people and wildlife.
https://www.theriverstrust.org/

What are the best indicators for river water quality that could be used as targets being developed under the Environment Bill?

The suite of ecological, physico-chemical and chemical parameters long established under the Water Framework Directive provides for a comprehensive framework for monitoring the ecological and chemical health of our rivers and, the reporting of it against an agreed classification system. Importantly, at a sufficiently high enough spatial **and temporal** scale this monitoring schema can underpin the selection of water quality indicators and discriminate between differing sources of pollution (e.g. rural versus urban). It is only through this discrimination that the efficacy of sectoral measures can be evaluated over time.
Assuming that this question is seeking views on the selection of a few broad indicators for communication purposes then the 'water' indicators (extending beyond quality) would ideally reflect the major pressures upon our freshwater and coastal environments. Of these (list below), 4 directly address water quality, although it is key to remember the close interlinkage between water quality and quantity. Whilst important locally, both mine water pollution and NNIS impact relatively few waterbodies and could, therefore, be considered as sub-indicators.

- Physical Modification
- Pollution from rural areas
- Pollution from wastewater
- Pollution from our towns and cities
- Changes to flow and levels of water
- Pollution from abandoned mines
- Non-native invasive species

Water quality in the urban environment has received disproportionately limited attention and it is critical that it is the focus for one of the indicators. Not only does it directly impact much the greater mass of the UK population, but nature-based solutions in our towns and cities provide for multiple benefits for the environment and local communities.

Whilst we recognise that this call for evidence focuses upon water industry and urban diffuse pollution, the importance of rural diffuse pollution upon water quality needs to be recognised and not addressed in isolation, not least because several pollutants have both urban and rural sources and source apportionment may be required to effectively target measures.

In addition to the proposed list above, an indicator addressing Bathing Water is desirable, not just in coastal waters but for a likely emerging number of designated inland sites too. Based on microbiological parameters, this indicator directly relates to public health and integrates microbial pollution from wastewater, storm overflows, septic tanks and agricultural sources (all of which can be discriminated from one another through targeted monitoring).

- Bathing Water Quality
- Macro and micro plastics

How could drainage and sewage management plans, introduced by the Environment Bill, play a role in reduced sewer discharges?

If the plans are drawn up and implemented catchment wide and are genuinely include stakeholders in their development, then they can help to identify (schemes, including SuDS and nature-based schemes that intercept runoff and attenuate pollution long before the point at which it combines with and overwhelms the capacity of sewer systems during heavy rainfall. This is in turn will help to reduce the magnitude and frequency of storm overflows.
Flexible plans that allow for the pooling of resources and funds from multiple stakeholders (not just water industry) can result in a greater number of nature-based schemes being implemented that realise multiple benefits.

How adequate are the monitoring and reporting requirements around water company discharges? How can technology improve and assist with transparency and enforcement?

EA monitoring of treated sewage discharges from wastewater treatment works (WWTW) has been shown to be entirely inadequate. Spot samples of water quality in rivers downstream of discharges are taken during daytime working hours, yet the main pollutant load from sewage treatment works is discharged overnight or early in the morning, so most of the polluting load to the environment is missed by regulatory monitoring. Continuous monitoring technology is widely available which could automatically record water quality levels 24 hours a day and effectively regulate the diurnal load from WWTWs.
Operator self-monitoring (OSM) of WWTW effluent quality is open to widespread corruption as visits are never random, so poor performance of WWTWs can be mitigated by operators for the 1-2 times a month they need to pass, but will fail for the rest of the time. It is clear that in an industry which is driven by profit and regulated by an underfunded and understaffed EA, OSM is a completely inadequate provision for protecting the environment. We should return to the HMIP model where monitoring and regulation of pollution was undertaken by an entirely separate and adequately funded agency.

The current monitoring and reporting of intermittent discharges from combined sewer overflows (CSOs) and other emergency sewer storm overflows is entirely inadequate as evidenced by the frequency and duration of spills recorded in EDM data. The consented discharges database contains no definition of what constitutes extreme rainfall which sewer storm overflow discharge frequency can be measured against, and at least 10% of 2019 Event Duration Monitoring (EDM) data records provided by water companies to the EA cannot be matched to a permit because records are incomplete or inaccurate. Thousands of 'last in line' pumping stations, which pump combined sewage and storm water in to WWTWs, are not separately consented and therefore spills from these assets are not regulated or monitored by EDM.
EDM spill duration data returns should be published to a consistent, nationally standardised data schema and should include national grid reference of the outlet and a valid permit number which can be matched to the consented discharge database. Live warnings of CSO spills upstream of high amenity locations should be published as a nationally consistent data service, with an application programme interface (API) to allow end user groups (swimmers, canoeists, rowers etc.) to publish these warnings to their end-user community. Last in line pumping stations should be consented and regulated as a network asset with separate EDM and reporting applied.
Emerging machine learning and remote sensing technology should be deployed to monitor CSO spills and impacts and together with data from storm overflow assessment framework (SOAF) impact assessments should be published and interpreted for the public.

What is the impact of plastic pollution and other materials on drainage and water quality in rivers and what should be done to mitigate it?

As evidenced by a wealth of research published in scientific literature, plastics of all sizes are now ubiquitous in rivers (and their bed sediments) and, as a consequence, in our oceans too. This gives rise to a multitude of detrimental impacts:

- Plastics ingested by aquatic life can cause starvation and affect reproduction and growth whilst potentially toxic contaminants released as plastic degrades can move up the food chain.
- The presences of microplastics in the aquatic environment has been demonstrated, in multiple studies, to cause sub-lethal effects in invertebrates and other organisms. These include adverse changes in feeding, respiration, behaviour and reproduction. Whilst the ecotoxicological impacts of microplastics on freshwater ecosystems are not yet fully understood, the growing body of evidence requires the adoption of the precautionary principle.
- Macroplastics block drains, outfalls and other hydraulic infrastructure. Without frequent manual clearance, localised flooding can result. Macroplastics e.g. wet wipes, can also contribute to significant sewer blockages where fats, oils and grease solidify the system.

Plastics, however, are just one of a whole range of pollutants generated in the urban environment, others include PAHs, heavy metals and hydrocarbons that give rise to a range of detrimental cumulative ecotoxicological effects.
It is important to note that where these pollutants are discharged to a wastewater treatment plant, they are, typically, captured in the resulting biosolid or sludge. The wastewater treatment

process is 75 - 99% efficient, for example, at removing microplastics. The sludge generated contains organic matter and nutrients and consequently is often then applied to agricultural land. However, the chemicals within it, and microplastics, can pose a risk to human health and the environment (EA, 2020;). This practice urgently needs to be reviewed with safe levels of all pollutants identified.

Where feasible, tackling plastic pollution 'at source' is the most cost-effective approach. With respect to plastics, reduced use with a move to high levels of return and recycling in a circular economy is critical. This will require the elimination of plastics we do not need, and substantial policy change to ensure the plastics that we do need are reusable, recyclable or compostable.

Public awareness and education programmes are required to drive behaviour change, particularly with respect to disposal of products into the sewer system by the public and littering. A nationally standardized protocol for monitoring macroplastic would is needed to assess the inputs and quantity of plastic entering the environment. An internationally recognized standard is the OSPAR classification system for litter. Citizen Science can be an effective way to collect this data and it should be reported directly to government and openly available to allow organizations to allow trends, sources and effective actions. Citizen Science can also play a role in monitoring and early warning of blocked drains and outfalls, (that exacerbate flood risk) by plastics and other debris. Technological improvements, backed up with new legislation, also have a role to play. Filters within washing machines, for example, have proven to be effective at capturing microfibres and should be an industry standard in new machines.

Nature based solutions such as wetlands and reedbeds can play a key role in attenuating these pollutants, prior to their discharge to a watercourse and provide other benefits besides, including reduced flood risk, enhanced biodiversity and improved health and wellbeing of local communities that engage with them. The Broomfield Park wetland in Enfield, North London is one such recent example that captures surface runoff from an urban estate and has proven and high (> 75%) efficacy in attenuating both nutrients and heavy metals. Where space is at a premium in the urban environment, other innovative approaches are possible. The 'downstream defender' is a large centrifugal drum sunk into the pavement that traps sediment and associated particulate pollutants as they discharge from an urban drain, thereby preventing pollution of the nearby river by metals, hydrocarbons and other pollutants.

How can consumers be persuaded to change their behaviour to minimise pollution?

Engagement and awareness raising are a key mechanism for driving behavioural change. The Rivers Trust's network of 60 local member rivers trusts, together with the 106 Catchment Based Approach (CaBA) river catchment partnerships that encompass the whole of England, have direct links to their local communities and engage with them on a range of volunteering and citizen science activities. Additionally, many within these networks engage with schools, running courses that integrate with STEM subjects including on SuDS, aquatic pollution and the biological health of rivers.

A framework readily exists, therefore, by which to directly engage the general public and local businesses on several pollution related issues including the use of and disposal of chemicals in the home and garden, medicine take-back schemes, and the disposal of fats, oils and greases. Experience shows that raising awareness within communities of their river, builds local ownership of environmental issues, leading to sustained behavioural change.

Full transparency and effective regulation of polluting industries is crucial to securing consumer behaviour change. If the water industry and agriculture continue to blatently disregard environmental safeguards there is little or no motivation for householders to reduce their individual impact.

What is the required investment level needed to minimise storm overflows vs the scope for sustainable drainage and nature-based solutions?

Whilst RT recognises that in some locations a 'hard' civil engineering solution will be required, sustainable drainage and nature-based solutions act to attenuate urban runoff that is disproportionately generated on impervious land (roads, pavements, roofs etc). By capturing this flow, allowing some of it to infiltrate and the rest to be released more slowly, these features help to reduce the magnitude and impact of storm overflows. The use of the term 'versus' in this question is, therefore, not appropriate; SuDS/Nature based solutions should be a key part of the approach and hence investment required.

Any assessment of investment in nature based solutions should also take account of the wider financial benefits of reduced flood risk, carbon sequestration and biodiversity gain.

How effective are the planning policy and standards around sustainable drainage systems to reduce urban diffuse pollution in England?

Planning policy and standards for the installation and adoption of SuDS in England are not fit for purpose. A major block to increased use of SuDS is a lack of coherent and consistently interpreted and applied national policy (both within the National Planning Policy Framework (NPPF) and its supporting policy guidance and across policy responsibilities of other government departments) (2).

The issue of insufficient policy and regulatory support for SuDS was addressed in the Flood and Water Management Act 2010 (FWMA), particularly Schedule 3 of that Act. Section 3 introduced mandatory standards for SuDS, the introduction of SuDS Approval Bodies (SABs) in local authorities to approve and adopt SuDS, and (through schedule 42) amended Section 106 of water Industry Act 1991 to make the right to connect surface water to the public sewer conditional on the SAB approving the drainage of the site (prior to this, a developer has an automatic right to have the drainage from a site connected to the public sewer, making it very difficult for the water company to require SuDS).

Following intense lobbying from the major house builders, the Government did not implement Schedule 3, but instead made amendments to the NPPF such that decisions on planning applications relating to major developments should ensure that SuDS are put in place, unless demonstrated to be inappropriate. This clause makes it relatively easy for developers to argue for the use of conventional piped drainage with which they are more familiar.

The approval of drainage schemes (in line with non-statutory standards issued in 2015) currently falls to the Local Planning Authority in consultation with the Lead Local Flood Authority. There are no formal arrangements for the adoption of SuDS. The situation is much better in Wales, where Schedule 3 of the FWMA has now been implemented, supported by mandatory national standards for SuDS.

The situation in England is not as bad as it was immediately following the non-implementation of Schedule 3. However, the Government's review of surface water and drainage (the Jenkins review) (3), published in May 2020, highlights the widely and strongly held view among flood risk management practitioners and many of the organisations that the present approach put in place instead if implementing Schedule 3 of the FWMA is not working.

The water industry has gone some way to address the issue of adoption of SuDS through the new Sewerage Sector Guidance (4), which in 2020 provided new rules for the adoption of SuDS. These rules, which can be found in the Design and Construction Guidance (DCG) implemented under the Sewerage Sector Guidance, allow English water and sewerage companies to adopt a wider range of sewer types, including SuDS. This is being supported by a recent Government announcement that Section 42 of the FWMA to make the right to connect surface water to the public sewer conditional on approval of the drainage of the site will be implemented.

Whilst improving the situation, this does not address the issue of effectiveness of planning policy and standards. The NPPF and its supporting Planning Policy Guidance needs to be strengthened in line with the recommendations of the Jenkins' review, with less opportunity for developers to argue that SuDS are not appropriate.

This strengthening of planning policy, and the increased ability of water companies to require and adopt SuDS, needs to be underpinned by statutory national standards for SuDS, as in Wales. Defra commissioned research in late 2020 to examine the case for updating the English Non-statutory technical standards for SuDS. This update must include the water quality functions of SuDS.

If the new Sewerage Sector Guidance, along with the implementation of Section 42 of the FWMA, succeeds in increasing the use of SuDS by getting SuDS approved and adopted by water companies, then there is probably no need to implement the Schedule 3 requirement to create SABs in England. However, this should be kept under review.

How effective is Ofwat's remit and regulation of water companies? Does it facilitate sufficient investment in improvements to water quality, including sustainable drainage systems and nature-based solutions such as constructed wetlands?

For our member trusts attempting to implement Nature Based Solutions (NBS), to improve water quality, wildlife habitats and carbon uptake, the pressure on the pricing of Domestic Water Bills regulated by OFWAT is experienced as a major constraint. This is despite the fact that consumers are willing to pay more (AWG research), and this willingness may have even increased after Covid as the recreational value of rivers has been appreciated more.

Despite the move to a TOTEX approach, OfWat cost assessments still have an inherent bias towards traditional capital solutions (end-of-pipe), they only recognise required capital expenditure in the same AMP and do not account for ongoing operation and maintenance costs of NBS (which are seen as operational expenditure) over multiple AMPs, all of which inhibits water companies from investing in long-term NBS.

The current AMP and Price Review planning delivery cycles are too onerous and not enabling nature based solution implementation. The results of the WFD status indicate how ineffective current regulation is at supporting investments in improving water quality. EG - It has been eight years since Norfolk Rivers Trust built the MUN wetland and nearly three years since they commissioned the INGOL, and they have not been able to build one since. It took less than one year to create a global vaccine for COVID, but we still fill our rivers with a cocktail of chemicals on a daily basis.

How could the designation of inland bathing waters by water companies affect the costs of achieving the associated water quality standards?

The designation of inland bathing waters is provided by Defra, not water companies and could drive action to clean up pollution from all sources, including water company assets, private sewerage, agriculture, road runoff and minewater.
Costs should not be evaluated in isolation but together with the multiple benefits arising, these include

- reductions in microbial (including antibiotic resistant bacteria), chemical and microplastic pollution
- Improved amenity value of rivers for recreation, with benefits to local economies and the health and wellbeing of local communities
- Reduced risk of waterborne disease
- Increased aesthetic value with potential for increased value in land adjoining rivers
- Wider benefits of upstream nature-based solutions to reducing pollution from sewer storm overflows, septic tanks, agriculture, road runoff, etc. including flood risk benefits, carbon sequestration and biodiversity gain

References

(1) Susdrain (https://www.susdrain.org/delivering-suds/)
(2) CIRIA guidance 'Delivering better water management through the planning system (C787) http://bit.ly/CIRIAC787
(3) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/911812/surface-water-drainage-review.pdf
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