

Written evidence submission from Natural England

Natural England is the Government's statutory adviser on the natural environment established under the Natural Environment and Rural Communities Act 2006 (the NERC Act). Natural England's purpose is to ensure that the natural environment is conserved, enhanced and managed for the benefit of present and future generations thereby contributing to sustainable development.

We are pleased to have an opportunity to submit comments to this important inquiry and would like to offer the following points in relation to the questions raised by the Committee.

Overview:

- Natural England has a responsibility in relation to achieving favourable condition for rivers designated under national and international legislation: Sites of Special Scientific Interest (SSSIs), European and Ramsar sites. Rivers are also a priority habitat under the Natural Environment and Rural Communities (NERC) Act (2006) and so make a particular contribution to wider biodiversity outcomes. Water quality is a reason for 68.2% of all river units in SSSIs that are unfavourable condition.
- Improvements in water quality are a fundamental component of action to restore freshwater and wetland ecosystems for specially protected wildlife sites, freshwater and wetland biodiversity in the wider environment (priority habitats and species) and in relation to water objectives more broadly. Natural England's "Narrative for conserving freshwater and wetland habitats in England" (Mainstone et al 2016) explains how action at these different levels has a shared goal of restoring more natural ecosystem function.
- Whilst there is generally a good understanding of the impacts and action needed for those pollutants that are major drivers of ecosystem change in river SSSIs (e.g. nutrients, sediments, dissolved oxygen and ammonia) there is a less complete understanding of the impact of others (including man-made chemicals such as pesticides, persistent organic pollutants, microplastics, endocrine disruptors) where further work to understand pressures and possible remedies is needed.
- Natural England is keen to see River Basin Management Plans support the recovery of SSSI rivers and other freshwater habitats by clearly setting out how pollution impacts can be addressed. Achieving targets for more naturally functioning freshwater ecosystems requires a long-term perspective for improvements at a rate that society can accept.

- Whilst the focus of the EAC inquiry is on rivers, a long-term, strategic and holistic approach is needed that recognises the state and needs of all aquatic habitats affected by pollution in its various forms and addresses problems at source in catchments as far as this is possible. In particular, greater attention needs to be paid to small waterbodies (river headwaters and streams, smaller lakes and ponds) and wetland systems, which have historically not formed part of strategic monitoring networks

Response to specific questions:

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

1.1 Targets under The Environment Bill will aim to help meet objectives for water and for biodiversity under the 25 Year Environment Plan (25YEP). Those currently being considered for water include actions relevant to various pressures on river water quality (including reducing nutrient pollution from agriculture; reducing pollution from wastewater; and reducing the impact from metal mines).

1.2 The work to develop targets is informed by work on the development of indicators for water and for biodiversity under the 25 YEP. Consideration of impacts on the water environment needs to take account of the full range of pressures and the best indicators look at the whole water environment and so, for example, would help to drive action to improve physical habitats as well as water pollution impacting on water quality.

1.3 Natural England is working with the Environment Agency and UK Centre for Ecology and Hydrology to develop such an indicator for the naturalness of water and wetland habitats. This indicator builds on proposals for monitoring and assessing freshwater habitats in relation to priority habitat objectives, as set out in Mainstone et al 2018. The approach being developed would be equally applicable to open freshwater (rivers, streams, lakes and ponds), wetland, estuaries and coastal waters. The approach aims to consider ways to measure the level of pressure on all of the ecosystem structures and functions that are involved in making natural ecosystems what they are and so may make an important contribution to target development in the future.

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

2.1 Drainage and sewage management plans have a key role in enabling a longer-term approach to sewage discharge improvements against which longer term investment priorities may be determined, as against the more short-term approach to improvements driven by the 5-year AMP investment cycles.

2.2 Such longer-term plans, especially when underpinned by provisions within the Environment Bill for a new legal duty on sewerage companies, will have a key role in enabling more integrated and ultimately more sustainable approaches to water quality solutions, with multiple outcomes including nature based solutions (OECD 2020) and integrated wetlands.

2.3 Strategic investment driven by drainage and sewage management plans has the potential to provide greater certainty over achievement of water quality improvements over the longer term and so may give greater confidence in creation of environmental capacity that can be relied upon to enable future growth.

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

3.1 Investment in water quality monitoring, and modelling is essential. The Environment Agency's strategic monitoring review includes consideration of the need to understand the state of water quality in designated rivers. There is inadequate understanding of pressures on smaller bodies such as headwater streams and smaller lakes and more attention is needed on monitoring and modelling such ecosystems.

3.2 A new Defra group surveillance regime is currently being developed for ecosystem assessment (Natural Capital and Ecosystem Assessment – see announcement: <https://deframedia.blog.gov.uk/2020/07/20/environment-secretary-sets-out-his-vision-for-our-environmental-recovery/>) that will enable reporting against water and biodiversity objectives. The pilot work in 2020/21 is being designed to include representative monitoring of headwater streams and small lakes that will greatly improve our understanding of the status of the freshwater habitat resource and create impetus for concerted action in the gathering grounds of catchments.

3.3 There is a particular need for further improved understanding of the potential impacts of septic tanks and package treatment plants on water quality in rivers that are designated sites. Septic tanks can have a significant ecological impact locally and there is evidence that at least in some cases the effects of small discharges in combination may also be significant at a catchment scale. (May et al 2015, May and Woods 2015, 2016). The use of nature-based solutions such as wetlands, and enforcement of any pollution problems from existing sources, will be important in removing and reducing their impact.

4. 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?

4.1 Plastics are pervasive and persistent in nature. Studies have detected microplastics in river catchments globally (Koelmans, 2015), and in British rivers (Horton *et al.*, 2017) and lakes (<https://www.bangor.ac.uk/news/archive/mcroplastic-pollution-widespread-in-british-lakes-and-rivers-new-study-40043>). Some evidence indicates that plastics in the environment could pose a physical challenge to wildlife, for example through entanglements. There is also evidence that fish (McGoran *et al.* 2017) and predatory birds can ingest plastics through freshwater food webs (D'Souza *et al.* 2020). The potential for microplastics to act as media for hazardous substances to be transported and ingested by wildlife is uncertain, however the UN Stockholm Convention for Persistent Organic Pollutants (POP) committee has advised (see [press release](#)) that a hazardous chemical and POP candidate (called UV-328) has been found to be transported with, and may subsequently be released from plastic debris.

4.2 Plastic waste has been identified as a potential issue of emerging concern for protected sites. There are several areas, including on the Lee-on-Solent SSSI and Solent and Southampton Water SPA/Ramsar where a number of organisations including Natural England and EA are currently supporting an Interreg project "Preventing Plastic Pollution", where the focus is on reducing plastic in the marine environment by identifying hotspots of plastics in catchments from source to the sea (see <https://preventingplasticpollution.com/about-the-project/>). Any mitigation measures for plastic pollution will need to target the key sources of plastic in the environment in addition to microplastics in sewage.

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

5.1 Natural England has no specific comments to add on this section.

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

6.1 There are a number of instances involving individual Combined Storm Overflows (CSOs) or water company infrastructure that have caused significant damage to protected sites. The cumulative effects in combination of the large number of CSOs in catchments can also contribute to exceedance of water quality targets in designated sites.

6.2 It is difficult to accurately model and understand their contribution due to the shortage of data on the frequency, duration and concentration of the discharge from CSOs. More strategic planning of water companies' sewer networks and sustainable drainage systems which should come through the implementation of Drainage and Wastewater Management Plans should enable improvements and prevent further deterioration in water quality alongside greater encouragement of consideration of nature based solutions to reduce run-off from urban and rural sources.

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

7.1 There are many sources of urban diffuse pollution that need to be addressed and tackling each can be difficult. For example, urban diffuse pollution is a significant pressure on certain protected sites, and strategies to improve the problem are not well developed. The River Bure (part of The Broads SAC) is an example where modelling suggests that 28% of Phosphorus comes from urban diffuse sources and this sector needs to meet its overall share of the reduction required.

7.2 Enforcement of domestic small sewage discharges is difficult as is encouragement of voluntary actions. Liaison with local highways authorities is required in dealing with road runoff but it remains difficult to address the issue due to costs and scale of the issues. Such considerations should be brought in at the planning stage of new urban and rural developments.

8. Should local authorities and highways agencies be given a duty to prevent pollution to watercourses without prior treatment?

8.1 Water pollution from roads can be a significant issue for protected sites but it is difficult to address the issue due to the scale of the problem and costs involved in solutions. Extensive investigation work has been carried out on some protected sites (such as the River Clun SAC catchment) where the issues are clearly identified but solutions have been difficult to implement.

8.2 A duty for Local Authorities and highways authorities to prevent pollution to watercourses would be helpful in developing measures to reduce this input and to enable this sector to meet its fair share in meeting water quality objectives. Such a duty could provide the necessary certainty in strategic solutions to create environmental capacity that will enable further development growth in catchments where environmental quality objectives are not met.

9. 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?

9.1 There has rightly been an increasing recognition over the past AMP periods of the contribution that innovative approaches need to make to enable environmental water quality objectives to be met. There has been increased recognition of the requirements of environmental issues such as climate change and biodiversity loss; moving from 'end

of pipe' solutions towards more holistic approaches such as catchment approaches; and support for more nature-based solutions to provide longer term and more flexible outcomes (see for example Ofwat strategy 'Time to Act' - <https://www.ofwat.gov.uk/wp-content/uploads/2019/10/Time-to-act-together-Ofwats-strategy-1.pdf> and Ofwat 'PR24 and beyond' - <https://www.ofwat.gov.uk/publication/pr24-and-beyond-future-challenges-and-opportunities-for-the-water-sector/>).

9.2 Recent AMP rounds have included pilot projects and investigations to assess the feasibility and benefits of nature-based solutions for meeting WINEP (Water Industry National Environment Programme) objectives linked to water quality improvements. Further to this, approaches such as the EnTrade/Wessex Water project in catchments of the Somerset Levels and Moors SPA / SSSI are actively taking forward a major P-trading market to meet additional WINEP obligations on phosphorus reductions at WwTWs, using a Catchment Nutrient Balancing approach. Constructed wetlands are a key intervention option within this trade.

9.3 This approach to innovative solutions is reflected in proposals for the WINEP for PR24 where the emphasis is to:

- Make the WINEP less prescriptive and more outcome focused
- Enable more innovative approaches such as nature-based solutions (Ofwat has set up an 'innovations lab' for water companies to input and share ideas/best practice)
- Increase the involvement and accountability of water companies in the design and development of the WINEP

9.4 This approach has the backing of regulators as well as water companies but it will be important for systems for assessment of performance, and decisions about priorities for funding, to adapt to enable this. It will be important to include long-term financing and mechanisms for measuring water company performance against these different solutions and to ensure that the WINEP cost benefit mechanisms can account for multi-based outcomes and allow for more innovative solutions (with the risks that these entail), for example to encourage long-term investment in fundamental overhauls of WwTWs as opposed to applying retrofits (e.g. slow-sand filtration plants vs tertiary chemical dosing at old plants).

10. Is adequate investment being made in adapting water treatment systems to future climate change?

10.1 See commentary above relating to CSOs and need for drainage and wastewater management plans to enable the necessary strategic planning. If not addressed, the contribution from CSOs is likely to worsen with climate change, with increasing high rainfall events.

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

11.1 Natural England has no specific comments to add on this section.

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