



Guidance

River basin management plans, updated 2022: introduction

Updated 22 December 2022

Applies to England

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1. Introduction

This document provides an overview of the river basin management plans for the river basin districts in England.

A river basin is the area of land from which all surface water run-off flows through a sequence of streams, rivers and, possibly, lakes into the sea at a single river mouth or estuary. A river basin district includes the area of land and sea made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters (covering one nautical mile from the coast).

Each river basin district has a river basin management plan. Each plan consists of a collection of documents which describe how waters are managed, together with information about the river basin district in data tables and maps. Each document covers an aspect of the plan and links to where you can find data and information specific to the river basin district you are interested in.

The data for each river basin district, including summary statistics and detailed information for each river, lake, canal, coastal, estuarine and groundwater water body, can be accessed through [catchment data explorer \(https://environment.data.gov.uk/catchment-planning/v/c3-plan\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan). This information can also be viewed on the river basin management plans [map explorer \(https://experience.arcgis.com/experience/73ed24b6d30441648f24f043e75ebed2/page/Classification\)](https://experience.arcgis.com/experience/73ed24b6d30441648f24f043e75ebed2/page/Classification). These data explorers provide data and information summarised at different geographic scales which may be more relevant to you.

2. Background

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, referred to as the WFD Regulations in these plans, seek to establish an integrated approach to the protection and sustainable use of the water environment. They require the:

- preparation and publication of river basin management plans
- setting of environmental objectives for groundwater and surface waters (including estuaries and coastal waters)
- devising and implementing of programmes of measures to meet those objectives

This requires a holistic approach to managing waters, looking at the wider ecosystem and considering the movement of water through the hydrological cycle.

Under the WFD Regulations, a river basin management plan must be developed for each river basin district and reviewed and updated every 6 years. These plans were first published in December 2009. They were updated in February 2016 and December 2022.

Statutory guidance on the practical implementation of the planning process, the role of the Environment Agency and requirements for the plans are laid out in the [ministerial guidance on river basin planning \(https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1019774/River_basin_management_planning_ministerial_guidance.pdf\)](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1019774/River_basin_management_planning_ministerial_guidance.pdf).

The plans will be reviewed and updated again by December 2027.

3. Why the plans matter

The aim of the river basin management plans is to enhance nature and the natural water assets that are the foundation of everyone's wealth, health and wellbeing, and the things people value, including culture and wildlife. Rivers, lakes, canals, estuaries, coasts and groundwater, and the essential services they provide, are worth billions of pounds to the economy. All parts of society benefit from clean and plentiful water.

The plans describe the framework used to protect and improve the quality of waters in each river basin district. They are the strategic plans for water in England. The plans consider climate change to be a critical challenge that requires urgent action and investment, to limit future deterioration in the quality of the water environment.

A river basin management plan contains the following.

The local environmental objectives for water bodies and protected areas that government, the Environment Agency, and other public bodies use to:

- make planning decisions
- decide on the conditions to include in environmental permits
- target action, including informing funding decisions

An assessment of the current condition of each water body and, if it is not in good condition, the reasons why.

Summaries of the programmes of measures, including:

- the government's legal and administrative framework for protecting and improving waters in England
- current and planned programmes of improvement actions
- principles to be followed when choosing future actions
- summaries at a catchment scale, including the local catchment partnership's vision and priorities for future action

4. How river basin management plans are used

River basin management plans are used to make water management decisions by:

- the government
- the Environment Agency
- other public bodies
- water companies
- catchment partnerships
- businesses
- voluntary groups
- individuals

They inform the ongoing process of planning and implementing interventions that help protect and improve the quality of the water environment. All public bodies are under a duty to 'have regard to' the river basin management plans.

The river basin management plan data viewer (the catchment data explorer) presents the environmental objectives and information about the condition of, and pressures on, the waters in England. Information is available at the water body, catchment, river basin district and England level.

4.1 Catchment and local plans

Public bodies, partnership groups, voluntary groups and water companies develop and implement catchment and local delivery plans to help achieve multiple outcomes, including the environmental objectives of the river basin management plans. These include catchment restoration plans produced by catchment partnerships. [Catchment partnership pages \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/CatchmentPartnerships\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/CatchmentPartnerships) are included in the river basin management plans.

The Environment Agency and Natural England produce diffuse water pollution plans for some habitats sites. Habitats sites refers to 'European sites' and 'European marine sites' as defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017 (as amended).

The Environment Agency produces action plans to help achieve the objectives of other protected areas. These include:

- shellfish water pollution reduction plans
- bathing water action plans
- drinking water safeguard zone action plans

The 6 yearly cycle of river basin planning is instrumental in driving discussion between local Environment Agency staff and catchment partnerships on collaborative catchment management.

4.2 Strategic plans

The environmental objectives and information in river basin management plans inform the development of long-term statutory plans and other strategic plans. River basin management plans provides information about where additional improvement measures are needed and constraints on new activities or developments which must be complied with.

The plans and strategies informed by river basin management plans include:

- spatial development strategies
- water company
 - business plans (including the Water Industry National Environment Programme - WINEP)
 - water resources management plans
 - drought plans
 - drainage and waste water management plans
 - water resources regional plans
- local nature recovery strategies
- flood risk management plans
- marine plans
- the chalk stream restoration strategy

4.3 New policies and measures

National level summaries of the evidence in river basin management plans are used by government to review the effectiveness of current interventions and inform the development of new policies and measures.

Many new policies and measures are designed to deliver multiple outcomes, including helping to the achieve the environmental objectives in the river basin management plans. Recent examples include:

- the government's 25 Year Environment Plan
- Environment Act 2021 targets for water and biodiversity
- Farming Rules for Water
- the new Environmental Land Management Schemes
- Farming Transformation Fund: Slurry infrastructure grants
- the National Framework for Water Resources
- government's strategic priorities for Ofwat
- the Nature Recovery Network
- flood and coastal erosion risk management policy statement

4.4 Authorisations

The Environment Agency and other regulators determine authorisations (by setting conditions in environmental permits and licenses) to support the achievement of the environmental objectives in the river basin management plans. These include authorisations issued by the Environment Agency to discharge effluent to, or abstract water from, the water environment, diverting or impounding the flow of water, or undertaking certain other physical alterations. The Marine Management Organisations issue marine licences for activities in and around the estuaries and sea of English waters. These activities include construction, dredging, removal and deposit of substances and objects at sea.

4.5 Public funding

Government directs significant amounts of public funding to help address issues identified in the river basin management plans. Recent examples include:

- the Environmental Land Management Schemes which will pay farmers to adopt farming practices that are less damaging to the water environment
- providing grants for animal slurry storage facilities
- almost doubling the budget for Catchment Sensitive Farming advice to farmers and land managers
- providing additional funding to the Environment Agency for the regulation of agriculture and water companies
- financial support to run catchment partnership and deliver local improvement projects
- funding for the Environment Agency and Coal Authority to treat additional sources of pollution from abandoned metal mines

4.6 Private funding

As part of the collaborative catchment management process, the production of river basin management plans helps encourage discussions between local Environment Agency staff and partners to identify alternative funding sources to complement public investment. As partnerships mature, new investors are being drawn into the discussions. Seeking multiple natural capital outcomes, including health and wellbeing, attracts a wider range of partners and funding sources.

5. Benefits of the plans

Implementing the plans will enhance nature and the natural water assets of the river basin districts that are the foundation of everyone's wealth, health and wellbeing, and the things people value, including culture and wildlife. It will help the country mitigate and adapt to the changing climate – aiming for net zero and building resilience to more frequent floods and drought. It will help reverse the significant decline in water-dependent biodiversity by restoring and reconnecting essential habitats.

Healthy water-dependent habitats are essential for wildlife and provide resilience to climate change and other pressures by regulating flooding, erosion, sedimentation, local climates, and water quality. Marine habitats can help achieve net zero targets by acting as a carbon sink, regulating the global climate, and protecting the coastline from sea level rise and storm surges. Freshwater habitats support water supplies for drinking, agriculture, and other industries. Both marine and freshwaters support fisheries and renewable energy generation. Rivers, lakes, canals, estuaries, coasts, and wetlands also provide many opportunities for recreation and tourism and help promote physical and mental wellbeing.

Many of the programmes of measures summarised in the plans deliver multiple benefits for people and nature. They will also enhance non-water natural assets including air and land. A healthy water environment is also essential to support economic growth, including much needed housing development.

6. Government's 25 Year Environment Plan

Implementing the river basin management plans will help achieve many of the goals and targets in the government's [25 Year Environment Plan \(https://www.gov.uk/government/publications/25-year-environment-plan\)](https://www.gov.uk/government/publications/25-year-environment-plan), in particular:

- clean and plentiful water – achieve clean and plentiful water by improving at least three quarters of our waters to be close to their natural state as soon as is practicable – this target is based on the 5000 water body status objectives in the current river basin management plans
- thriving plants and wildlife – restore three quarters of terrestrial and freshwater protected wildlife sites by area to favourable condition and achieve a growing and resilient network of land, water and sea that is richer in plants and wildlife, including the nature recovery network
- reducing the risks of harm from environmental hazards – reduce the risk of harm to people, the environment and the economy from natural hazards including flooding, drought, and coastal erosion
- enhancing beauty, heritage, and engagement with the natural environment – conserve and enhance the beauty of our natural environment, and make sure it can be enjoyed, used by, and cared for by everyone
- mitigating and adapting to climate change – take all possible action to mitigate climate change, while adapting to reduce its impact

- managing exposure to chemicals – make sure that chemicals are safely used and managed, and that the levels of harmful chemicals entering the environment (including through agriculture) are significantly reduced
- enhancing biosecurity – enhance biosecurity to protect our wildlife and livestock and boost the resilience of plants and trees

The Environment Act 2021 requires the government to always have an Environmental Improvement Plan in place. This sets out the steps the government intends to take to significantly improve the natural environment, including measures needed to meet its long-term and interim targets.

The 25 Year Environment Plan was designated as the first statutory Environmental Improvement Plan under the Act. The government must review its Environmental Improvement Plan every 5 years.

7. Finding relevant information in the plans

The plans consist of documents (covering all river basin districts) and online data systems presenting plan data and maps. You can view, print, or download plan data using these systems. There are also links to downloadable data in the documents.

The documents set out the context and purpose of the plans. They set out the legal framework and the principles for implementing the plans. They also provide detail on the planning process and link to more detailed information on specific topics.

The data systems allow you to access the data and maps for your river basin district. You can also view this data at a more detailed level, zooming in to the scale that is most meaningful for you. In addition, you can view all data for England.

7.1 The plan documents

The plan documents are written to be accessible to everyone. They do, however, describe complex processes and methodologies that require more technical language. The Environment Agency has adopted a layered approach to the structure of the plans. This is designed to allow all readers to understand the general approach and data. Those with more technical interests can follow links to more detailed technical information and data. We provide an online [glossary \(https://environment.data.gov.uk/catchment-planning/help/glossary\)](https://environment.data.gov.uk/catchment-planning/help/glossary) to help you with any terms you may not be familiar with.

The documents and links to relevant data and maps are available on each river basin district page which you can access from [River basin management plans: updated 2022 \(https://www.gov.uk/guidance/river-basin-management-plans-updated-2022\)](https://www.gov.uk/guidance/river-basin-management-plans-updated-2022). These documents are:

- River basin management plans updated 2022: introduction – this document which provides the context and purpose of the plans and explanation of the contents and structure
- River basin management plans updated 2022: implementing the plans – the principles that should be followed when implementing the plans
- River basin management plans updated 2022: current condition and environmental objectives – an overview of the classification and objectives setting process
- River basin management plans updated 2022: challenges for the water environment – a summary of the significant water management issues
- River basin management plans updated 2022: summary programmes of measures – describes the summary programmes of measures in the plans, linking to more detailed information and a summary programmes of measures download (spreadsheet)
- River basin management plans updated 2022: summary programmes of measures - mechanisms – details the mechanisms available to deliver the measures that underpin the achievement of the environmental objectives in the river basin management plans
- River basin planning process overview – this document provides background and technical information about the planning process
- River basin management plans updated 2022: progress report – this document provides an update on the progress in the river basin districts since the 2015 plans were published – it includes progress towards achieving the objectives and the implementation of planned measures, as well as changes in designations and standards

- Severn River Basin Management Plan summary and cross border catchments (England and Wales) – a summary of the whole Severn River Basin District highlighting how the Environment Agency and Natural Resources Wales work together with partners. This document (also available in Welsh) contains summary data for the river basin district and links to the data and documents hosted by the Environment Agency and Natural Resources Wales

Throughout the river basin management plans there are links to more detailed information, data and maps, and other plans, strategies, and programmes. This linked content includes a series of detailed documents, each focussing on a particular issue or pressure relating to the water environment, called the Challenges for the water environment series. You can access this series on the '[Challenges for the water environment](https://www.gov.uk/government/collections/river-basin-planning-challenges-for-the-water-environment)' (<https://www.gov.uk/government/collections/river-basin-planning-challenges-for-the-water-environment>) document collection.

7.2 The plan data

The data for the plans is available to view and download on the river basin management plan data viewers.

7.2.1 The catchment data explorer

The [catchment data explorer](https://environment.data.gov.uk/catchment-planning/v/c3-plan) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan>) has allowed people to view and download river basin planning data since 2015. It is also where you can access the data that forms the plans. The WFD Regulations require this data to be presented at river basin district level. The catchment data explorer provides data at this level as well as allowing users to view it at national, catchment and water body scale.

There are 2 options for viewing data on the catchment data explorer, you can view:

- the data that forms part of the river basin management plans
- the latest data available (updated approximately every 3 months)

There is a box at the bottom of each page allowing you to switch between the plan data and the latest data. It is always worth double checking which data is being displayed before using it.

The plan data view presents the data used in the plans and, as such, is a formal part of the river basin management plans. This will remain unchanged until the plans are updated again in 2027.

The latest data view allows you to view the latest river basin planning data. It is updated quarterly and will reflect any changes in river basin planning data on the Environment Agency's data systems. The latest data view is not a formal part of the plans, but it is useful for organisations and the public who need access to the latest available information.

The search function on the catchment data explorer is a useful way of locating content you are interested in. The search will only return results for the latest data on the explorer. You can still use this search to view plan data, but you will need to click on the link to switch to plan data once you have arrived at the target of your search.

You can find a [glossary](https://environment.data.gov.uk/catchment-planning/help/glossary) (<https://environment.data.gov.uk/catchment-planning/help/glossary>) of common words and terms used in river basin planning on the catchment data explorer. There is also a [guide on how to use the system](https://environment.data.gov.uk/catchment-planning/help/usage) (<https://environment.data.gov.uk/catchment-planning/help/usage>) available on the help page.

7.2.2 Catchment partnership pages

Catchment partnership pages can be found on the catchment data explorer. To view the pages, navigate to the management catchment you are interested in (one level below river basin district) by clicking on the map or using the links on the left. On the management catchment page, scroll down past the data section to see the link to the catchment partnership page. You can also use the search function to find the relevant management catchment. Alternatively, the [catchment partnership pages home page](https://www.gov.uk/government/collections/river-basin-planning-challenges-for-the-water-environment) (<https://www.gov.uk/government/collections/river-basin-planning-challenges-for-the-water-environment>) lists all the pages and links across to them.

These pages have content provided by catchment partnerships, alongside data from the Environment Agency.

7.3 River basin management plan maps

You can find all the maps for the plans on the river basin management plans [online map viewer](https://experience.arcgis.com/experience/73ed24b6d30441648f24f043e75ebed2) (<https://experience.arcgis.com/experience/73ed24b6d30441648f24f043e75ebed2>). Instructions for navigating and viewing the maps are on the screen when you visit the viewer.

Maps are grouped under headings relating to classification, objectives, protected areas, location, and progress since 2015. Under each heading you can select to view specific maps relating to water body types, protected area types and classification types. These maps are divided into subcategories, so they are easier to view and quicker to load. If required, you can select to view other layers on top of these maps. An example of a layer that can be added is the chalk water bodies layer, which you can select to overlay on classification and objectives maps.

There are several ways you can find the area you are interested in. You can select the river basin district by name or use the map to move and zoom to the area. There is also the main search function where you can look up places, postcodes, or grid references. The secondary search function allows you to look up management catchments or local authorities. If your browser allows, you can also click on the target button on the left to zoom to your location.

Once you have identified the map you wish to view and located the area of interest, you can print out your map. Depending on your system, you will be able to print hard copies of the maps or PDF versions of the view on your screen.

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Guidance

River basin management plans, updated 2022: current condition and environmental objectives

Updated 22 December 2022

Applies to England

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1. Current condition

The current health of the water environment is assessed in terms of its status. Surface waters are assessed for ecological status or potential and chemical status. Groundwaters are assessed for quantitative status and chemical status.

A range of quality elements are assessed in each water body. For a water body to achieve good status, every element assessed must be at good status or better. If one element is below its threshold for good status, then the water body's status is classed as less than good.

Ecological status can be classed as high, good, moderate, poor, or bad.

High – near natural conditions

- no restriction on the beneficial uses of the water body
- no impacts on amenity, wildlife, or fisheries

Good – slight change from natural conditions because of human activity

- no restriction on the beneficial uses of the water body
- no impact on amenity or fisheries
- protects all but the most sensitive wildlife

Moderate – moderate change from natural conditions because of human activity

- some restriction on the beneficial uses of the water body
- no impact on amenity
- some impact on wildlife and fisheries

Poor – major change from natural conditions because of human activity

- some restrictions on the beneficial uses of the water body
- some impact on amenity
- moderate impact on wildlife and fisheries

Bad – severe change from natural conditions because of human activity

- significant restriction on the beneficial uses of the water body
- major impact on amenity
- major impact on wildlife and fisheries with many species not present

Surface water chemical status can be classed as good or fail.

Since the current plans were published in 2016 the approach to chemical status classification has changed. A more advanced and sophisticated approach to classifying the chemical status of English water bodies is being used. This helps to more accurately reflect the accumulation of some of the more persistent substances which can be underestimated by monitoring water alone.

Groundwater quantitative and chemical status can be classed as good or poor.

More information on how the current condition of the water environment is assessed, including the changes in approach to assessing chemical status, can be found in section 3.2 of the [River basin planning process overview](https://www.gov.uk/guidance/river-basin-planning-process-overview) (<https://www.gov.uk/guidance/river-basin-planning-process-overview>) document.

The current classification results for your river basin district are available on the catchment data explorer: [Anglian](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/5/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/5/classifications>), [South East](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/7/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/7/classifications>), [Thames](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/6/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/6/classifications>), [South West](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/8/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/8/classifications>), [Severn](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/9/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/9/classifications>), [Northumbria](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/3/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/3/classifications>), [Humber](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/4/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/4/classifications>), [North West](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/12/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/12/classifications>).

2. Environmental objectives

The environmental objectives in the plans are used by government, the Environment Agency, and other public bodies to:

- make planning decisions
- decide on the conditions to include in environmental permits
- target action, including inform funding decisions

Many of the objectives are locally specific, applying to individual water bodies or parts of the water environment.

The environmental objectives in the plans become legally binding once the updated plans are approved by Secretary of State for Environment, Food and Rural Affairs. All public bodies must have regard to these objectives when making decisions that could affect the quality of the water environment.

The environmental objectives covered by the plans are:

- preventing deterioration of the status of surface waters and groundwater
- achieving objectives and standards for protected areas
- aiming to achieve good status for all water bodies
- reversing any significant and sustained upward trends in pollutant concentrations in groundwater
- cessation of discharges, emissions and losses of priority hazardous substances into surface waters
- progressively reducing the pollution of groundwater and preventing or limiting the entry of pollutants

More information on the environmental objectives in river basin management plans can be found in section 2.2 of the [River basin planning process overview](https://www.gov.uk/guidance/river-basin-planning-process-overview) (<https://www.gov.uk/guidance/river-basin-planning-process-overview>) document.

3. Preventing deterioration

To protect and maintain the many uses and benefits the water environment provides it is essential to prevent it deteriorating. Businesses, including the water industry, have invested billions of pounds in infrastructure that rely on secure supplies of clean water. Preventing deterioration also protects wildlife and people's health and wellbeing.

The plans contain a summary of the programmes of measures to protect the water environment. Without these measures, the quality of the water environment would deteriorate with associated loss of benefits.

More information on the requirement to prevent deterioration can be found in section 2.2.1 of the [River basin planning process overview](https://www.gov.uk/guidance/river-basin-planning-process-overview) (<https://www.gov.uk/guidance/river-basin-planning-process-overview>) document.

Water bodies that deteriorated in ecological status compared to 2015 are identified in the classification data for your river basin district available on the catchment data explorer: [Anglian](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/5/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/5/classifications>), [South East](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/7/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/7/classifications>), [Thames](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/6/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/6/classifications>), [South West](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/8/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/8/classifications>), [Severn](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/9/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/9/classifications>), [Northumbria](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/3/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/3/classifications>), [Humber](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/4/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/4/classifications>), [North West](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/12/classifications) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/12/classifications>).

Further information on water bodies that deteriorated in ecological status compared to 2015 is provided in the [River basin planning progress report](https://www.gov.uk/government/publications/river-basin-management-plans-updated-2022-progress-report) (<https://www.gov.uk/government/publications/river-basin-management-plans-updated-2022-progress-report>).

4. Protected area compliance and objectives

There are many areas where the water environment is especially valued for its uses or sensitive to particular pressures such as nutrients. These areas include rare wildlife habitats, bathing waters and areas where drinking water is abstracted. These areas are known as protected areas and their uses or sensitivity are given particular legal protection. Protected areas are a priority for action to make sure they achieve their objectives and protect the benefits they provide.

The types of protected areas that can be designated are:

- areas identified for the abstraction of water for human consumption (drinking water protected areas)
- areas designated for the protection of economically significant aquatic species (shellfish water protected areas)
- bodies of water designated as recreational waters, including bathing waters (bathing water protected areas)
- nutrient-sensitive areas, including areas identified as nitrate vulnerable zones and sensitive areas for urban waste water treatment
- areas designated for the protection of habitats or species - these are water-dependent Special Areas of Conservation and Special Protection Areas (collectively referred to as 'habitats sites')

Ramsar sites are not protected areas under the Water Framework Directive (WFD) Regulations but are included in the river basin management plan as a matter of government policy.

You can use these links to find maps of the protected areas in each river basin district and information on compliance with their standards and objectives: [Anglian \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/5/protected-areas\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/5/protected-areas), [South East \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/7/protected-areas\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/7/protected-areas), [Thames \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/6/protected-areas\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/6/protected-areas), [South West \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/8/protected-areas\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/8/protected-areas), [Severn \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/9/protected-areas\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/9/protected-areas), [Northumbria \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/3/protected-areas\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/3/protected-areas), [Humber \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/4/protected-areas\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/4/protected-areas), [North West \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/12/protected-areas\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/12/protected-areas).

5. Water body status objectives

The water body status objectives set in the 2015 river basin management plans have been reviewed and, where necessary, updated, based on the latest evidence and understanding. The updated objectives are presented in the updated plan for each river basin district.

For surface waters, objectives are set for ecological and chemical status. For artificial or heavily modified surface water bodies, objectives are set for ecological potential and chemical status. Ecological potential is explained in more detail in section 2.2.3 of the [River basin planning process overview \(https://www.gov.uk/government/publications/river-basin-planning-process-overview\)](https://www.gov.uk/government/publications/river-basin-planning-process-overview) document.

For groundwater, objectives are set for quantitative and chemical status.

Status objectives consist of a target status (for example, good) and a target date (for example, by 2021).

The default objective for river basin planning was to aim to achieve good status or potential by 2015. In some cases, where specific conditions are met, water bodies have been set alternative objectives. These either involve taking an extended time period to reach the target status (for example, good by 2027) or achieving a target status less than good (for example, moderate by 2015).

Where the target date is 2027, confidence in achieving the target status by that date depends on both of the following:

- having confidence that the necessary actions will be implemented by 2027
- having confidence about which specific water bodies will benefit

Where confidence in either of those aspects is low, the target date is expressed as 'by 2027 (low)'.

In addition, there will be many additional opportunities for further action and improvements by 2027 which it is not yet possible to identify.

Some chemicals, known as ubiquitous persistent, bioaccumulative and toxic substances, can remain in the water environment for decades after actions to reduce or eliminate emissions are in place. The target date for achieving

good status for some of these chemicals, where the required actions are already in place, reflects this extended recovery time.

The requirement to prevent deterioration was also considered when reviewing and updating water body status objectives.

Irrespective of the current water body status objective, the long-term objective remains “aim to achieve good status”. Therefore, even if the current target status for a water body is less than good, proposals for new developments and strategic long-term planning processes, such as water resources planning by the water industry, should be designed to achieve good status (subject to regulation 19 of the WFD Regulations).

In certain circumstances, and if specific conditions are met, a failure to achieve good status or prevent deterioration is allowed. Details of situations where this exemption (made under regulation 19 of the WFD Regulations) has been applied, and a list of where it may be applied in the future, are available in the [regulation 19 spreadsheet \(https://consult.environment-agency.gov.uk/environment-and-business/river-basin-management/user_uploads/exemptions-under-regulation-19.xlsx\)](https://consult.environment-agency.gov.uk/environment-and-business/river-basin-management/user_uploads/exemptions-under-regulation-19.xlsx).

More information on the process for reviewing and updating water body status objectives, including the circumstances for setting alternative objectives, can be found in sections 4.1 and 4.2 of the [River basin planning process overview \(https://www.gov.uk/guidance/river-basin-planning-process-overview\)](https://www.gov.uk/guidance/river-basin-planning-process-overview) document.

You can use these links to find updated status objectives for every water body in your river basin district: [Anglian \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/5/objectives\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/5/objectives), [South East \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/7/objectives\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/7/objectives), [Thames \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/6/objectives\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/6/objectives), [South West \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/8/objectives\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/8/objectives), [Severn \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/9/objectives\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/9/objectives), [Northumbria \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/3/objectives\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/3/objectives), [Humber \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/4/objectives\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/4/objectives), [North West \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/12/objectives\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/RiverBasinDistrict/12/objectives).

6. Reversal of trends in pollution of groundwater

Actions to reverse any significant and sustained upward trends in pollutant concentrations in groundwater must be implemented as soon as a trend has been identified. It is not possible to propose an alternative that is less stringent or extend the deadline for this objective.

7. Progressive reduction of pollution of groundwater

Hazardous substances must be prevented from entry into groundwater and the entry into groundwater of all other pollutants must be limited to prevent pollution. Hazardous substances are substances or groups of substances that are toxic, persistent and liable to bioaccumulate, and other substances or groups of substances which give rise to an equivalent level of concern.

8. Other biodiversity objectives

There are additional biodiversity objectives which must be taken into account when considering action which could affect the water environment. These include objectives for:

- water dependent sites of special scientific interest – these protected sites support many, rare and endangered species, habitats and natural features
- marine conservation zones – these are marine protected areas that protect a range of nationally important, rare or threatened habitats and species along the coastal and offshore areas of the English seas
- protected species and species of most conservation concern (priority species) such as freshwater pearl mussel, salmon, and white-clawed crayfish
- important habitats such as lakes and chalk streams

Rivers, lakes, ponds, wetland, coastal habitats and the sea form natural corridors and stepping stones for wildlife that intersect and connect many landscapes. Action to protect and improve the water environment will help restore connectivity across the landscape, allowing species to migrate and adapt, and increasing the resilience of wetland and water dependent habitats and species to pressures from climate change.

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Guidance

River basin management plans, updated 2022: progress report

Updated 22 December 2022

Applies to England

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1. Introduction

This document summarises what has happened and what has been achieved since the 2015 river basin management plans were published.

It includes:

- an overview of the changes in the state of the water environment
- a summary of progress towards achieving the environmental objectives in the 2015 plans
- a summary of the measures implemented since 2015
- identifies some of the main changes in the evidence used in river basin planning

2. Changes in the state of the water environment since 2015

2.1 Surface water ecological status or potential

The most recent assessment of water body status was made in 2019. The proportion of surface waters at good ecological status or potential in England in 2019 (16%) was similar to that in 2015 (17%). Please note that comparisons are made using the same (cycle 2) water body network, however since there have been only minor changes in the (cycle 3) water body network for the updated plans (see Section 6.3) the overall percentages are unlikely to be affected.

Ecological status: number of water bodies

Year	Bad	Poor	Moderate	Good	High
2015	135	820	2,943	774	7
2019	137	793	2,988	756	4

Ecological status: percentage of total water bodies

Year	Bad	Poor	Moderate	Good	High
2015	3%	17%	63%	17%	less than 1%
2019	3%	17%	63%	16%	less than 1%

The ecological status of a water body is derived from the status of individual tests or quality elements. At a national level there has been no significant change in the status of these quality elements. For example, in 2019 the majority of sampled rivers are still at good or high status for invertebrates, ammonia and dissolved oxygen, but under half are at good or high status for fish, macrophytes or phosphate.

Proportion of sampled rivers at good or high status for selected elements

Year	Invertebrates	Fish	Macrophytes	Ammonia	Dissolved oxygen	Phosphate	
2015		73%	42%	35%	92%	83%	45%
2019		76%	41%	35%	92%	82%	45%

Although the overall results have shown little change, there is some movement between status classes for individual water bodies. In England, 151 water bodies improved from moderate or worse ecological status in

2015, to good or better ecological status in 2019. In contrast, 171 water bodies dropped from good or better ecological status in 2015, to moderate or worse ecological status in 2019.

2.2 Surface water chemical status

There has been little underlying change in status for most substances assessed as part of chemical status for surface waters. However, the overall picture presented for chemical status has changed considerably due to new substances and changes to techniques and methods. These are summarised in the 'changes in evidence' section in this document and in section 3.2.3 of the [River basin planning process overview](https://www.gov.uk/guidance/river-basin-planning-process-overview) (<https://www.gov.uk/guidance/river-basin-planning-process-overview>) document.

2.3 Groundwater status

Groundwater classification results are based on the quantity, quality and retention of water in aquifers. Each of the 271 groundwater bodies in England is classified for quantitative and chemical status.

There has been a net increase in the number of groundwater bodies meeting good quantitative status, with 73% at good in 2019 compared to 69% in 2015.

There has been a net decrease in the number of groundwater bodies meeting good chemical status, with 45% at good in 2019 compared to 53% in 2015.

2.4 Reasons for changes in water body status

The reasons for changes in status are specific to each water body. They fall into 3 main categories:

1. an uplift in status resulting from improvement or additional protection actions having been put in place
2. a reduction in status resulting from an increase in the pressures on the environment
3. a change in how status is assessed, for example changes in monitoring programmes, including the location of monitoring points or the elements monitored

There may also be a small number of instances where the status is recorded as having changed due statistical chance rather than a real, sustained change in the environment.

Changes in the status of individual water bodies since 2015 are displayed in the [river basin management plan progress maps](https://experience.arcgis.com/experience/73ed24b6d30441648f24f043e75ebed2/page/Progress/) (<https://experience.arcgis.com/experience/73ed24b6d30441648f24f043e75ebed2/page/Progress/>) on the plan mapping system.

For more information on preventing deterioration please see Section 3.1

3. Compliance with the environmental objectives in the 2015 plan

3.1 Preventing deterioration

In England, 111 surface waters (2.4% of surface water bodies) deteriorated by at least 1 ecological status class (at greater than or equal to 75% confidence) between 2015 and 2019.

In some water bodies, these deteriorations in ecological status reflect real changes in the environment. Action needs to be taken to reverse these deteriorations as soon as is practicable, and the ecological status objective for the water body set in 2015 was not altered as a result of this real deterioration in status.

In other water bodies, the change in ecological status is the result of a change in the evidence used to derive the classification result and does not reflect an actual deterioration in the environment. For example, changes in the water body sampling or monitoring sites, changes in the environmental standards used to determine status classes, the addition of an element not previously classified in 2015, or revised assessments based on better information, as is the case for the mitigation measures assessments for modified water bodies. In these situations, the ecological status objective set in 2015 has been updated to reflect the new and improved understanding of the status of the water body.

3.2 Water body status objectives

3.2.1 Surface water ecological status

Summary of ecological status objectives for surface waters in England, set in the 2015 river basin management plans

Date	Moderate or worse	Good or better
By 2015	967	813
By 2021	32	166
By 2027 or beyond	174	2,527

Twenty of the 166 surface water bodies set an objective of achieving good ecological status by 2021 had met this objective by 2019. One hundred and twelve water bodies set an objective of achieving good ecological status by 2027 had met this objective by 2019.

The reasons why some water bodies failed to meet their status objective by 2021 include:

- more recovery time needed after measures were implemented
- additional measures are required, over and above those identified in the 2015 plans
- expected measures were not implemented by 2021
- changes to evidence and understanding have led to a new or revised less stringent objective being proposed

3.2.2. Groundwater status

Sixteen groundwater bodies in England were set an objective of achieving good quantitative status by 2021 and 9 of them achieved this.

Nine groundwater bodies in England were set an objective of achieving good chemical status by 2021 and 3 of them achieved this.

3.3 Kilometres enhanced and protected

Achieving ecological status objectives and outcomes for protected areas, species and habitats, is the ultimate aim of river basin planning. However, the lag time between actions being taken and responses in the environment being detected through classification results means that the results have not always reflected the work being undertaken to enhance the water environment.

Kilometres enhanced is a simple and useful indicator of the extent of progress in enhancing and protecting the water environment. It was established by the Environment Agency in 2016 as a new approach to reporting work undertaken to enhance the water environment. It was expanded in 2018 to include work to prevent or reverse deterioration. It captures work done to support the objectives for water body status and protected areas and species.

Kilometres enhanced captures contributions from a range of people and organisations who play their part in resolving complex environmental problems and preventing or reversing worsening conditions.

It covers actions in all categories of water body. Enhancements in lakes, coastal and estuarine waters and groundwater are reported as linear kilometres to allow them to be incorporated into the overall 'kilometres enhanced and kilometres protected' measure.

In total between January 2016 and March 2022, 10,945km were enhanced and between April 2018 and March 2022, 1,353km have been protected.

Severn river basin district figures only include waters in England.

River basin district	Km enhanced	Km protected
Anglian	1,711	215
Humber	2,253	308
North West	1,286	71
Northumbria	551	12
Severn	1,413	6
South East	584	3
South West	1,917	667
Thames	1,230	70

4. Measures implemented since 2015

The 2015 river basin management plans contained summary programmes of measures. Whilst it has not been possible to track progress with all of those measures, many of them have been recorded as part of kilometres enhanced reporting, as summarised in this table.

A total of 7,588 actions contributed to kilometres enhanced across England between January 2016 and March 2022.

River basin district	Number of actions
Anglian	1,129
Humber	1,287
North West	891
Northumbria	231
Severn	1,134
South East	454
South West	1,611
Thames	851

Severn River Basin District figures only include waters in England.

Actions include those delivered through Environment Agency programmes, and exercise of its powers, such as the environment programme and flood and coastal risk management programme, and by catchment based approach partnerships. Examples of partners include the Forestry Commission, Natural England, water companies, the Coal Authority, businesses, communities, and many environmental charitable trusts.

Actions were also undertaken through countryside stewardship to reduce pollution from agricultural working practices. Implementation of the Reduction and Prevention of Agricultural Diffuse Pollution (England) Regulations 2018 started in this period. In 2020, 50 new agricultural inspection officers were employed by the Environment Agency and carried out 1,500 farm inspections in that year. These officers helped in raising the number of agricultural inspections from just over 300 in 2019 to 2020 to over 1,800 in 2020 to 2021. A Remote Sensing Team was also created in the Environment Agency to assist in agricultural regulation.

Across England, the majority of the existing investment came from the Water Industry National Environment Programme and the Environment Agency's environment programme, where enhancements directly improve parts of the water environment which are not meeting required standards and make a greater contribution to achieving good status. Examples of these include upgrades to waste water treatment works, improvements to the sewerage network, river and floodplain restoration projects, tree planting and fencing along rivers, as well as projects to slow and store run-off. The water industry national environment programme also includes measures to prevent deterioration occurring, for example from urban growth, thereby protecting the environment and the benefits already gained.

Schemes were implemented to treat water discharging from abandoned coal and metal mines, and limit mobilisation of metals from contaminated mine wastes.

Highways England mitigated 15 high risk outfalls on the strategic road network and 83 biodiversity schemes were delivered through the Environment Designated Fund.

The Water Environment Grant was launched in 2018, using rural development programme funds to deliver significant investment in the water environment. Projects are delivering a range of improvements, including weir removal, habitat restoration, wetland creation and diffuse pollution interventions.

Since January 2016, the Environment Agency's Restoring Sustainable Abstraction Programme has changed 324 abstraction licences, resulting in 49 billion litres of water a year being returned to the environment. The programme also removed the risk of licence holders abstracting 900 billion litres of water through the removal of headroom or unused quantities from abstraction licences.

The Environment Agency has also reviewed nearly 2,000 time limited abstraction licences and where appropriate, changed them to make them more sustainable. In addition, 724 abstraction licences have been revoked that had not been used for over 4 years; all contributing to reducing the impact abstraction has on the environment.

As part of the drive to ensure sustainable water supplies, the Environment Agency is working with a range of abstractors to bring long standing abstractions that were previously exempt from regulation into a permitting regime. These are called New Authorisations. The Environment Agency received 1,622 New Authorisations applications by 30 June 2020. By 30 June 2021, the Environment Agency had issued 780 new abstraction licences with the remaining applications on track to be determined by the end of December 2022.

Activities delivered under countryside stewardship also made a significant contribution, for example, by farmers changing rural land management practices to reduce the amount of nitrogen and phosphate entering water bodies. Individual regulatory projects focussed on farm compliance in protected areas have successfully demonstrated the benefits of this approach, which will be taken forward in future years.

The new Natural Environment Investment Readiness Fund started in 2021. This funds projects that are developing products or services that provide opportunities for public and private sector investors to invest capital in a way that generates a financial return whilst enhancing the natural environment and improving resilience.

Some of the greatest lengths of enhancements came from the removal of barriers in rivers, including the installation of eel and fish passes. These interventions can help improve fish populations for many kilometres by allowing fish and eel to migrate upstream.

The Fisheries Improvement Programme, which started in 2015 to 2016, reinvests fishing licence income in projects that create, or restore, fisheries habitats and provide benefits for local anglers. The programme, which is administered by the Environment Agency, has involved thousands of partners including angling clubs, non-governmental organisations, landowners and local authorities. It has provided £6M of funding, which has been matched by £13M of external funding, to deliver about 900 projects across England. Many of these projects addressed issues that were affecting the status of water bodies.

Actions contributing to kilometres protected include activity such as farm visits, correcting drainage misconnections (including water company programmes), and changes made to cover crops that help to reduce sediment input and diffuse pollution from nutrients.

Local collaborative achievements of the Catchment Based Approach Partnerships can be seen in the 'Partnership success highlights 2016 to 2021' section of the [Catchment Partnership Pages](https://environment.data.gov.uk/catchment-planning/v/c3-plan/CatchmentPartnerships) (<https://environment.data.gov.uk/catchment-planning/v/c3-plan/CatchmentPartnerships>).

As part of the new Nature for Climate Fund:

- The England Woodland Creation Offer was launched in 2021 as the flagship funding mechanism for woodland creation schemes delivering the England Tree Action Plan. It provides additional incentives to landowners for woodland creation delivering wider benefits, including riparian shade, natural flood management and water quality improvements. The Nature for Climate Fund also funds other tree planting initiatives, including the Local Authority Treescapes Fund, Urban Tree Challenge Fund, Community Forests and Woodlands for Water.
- The Nature for Climate Peatland Grant Scheme provides funding to restore peatlands in the uplands and lowlands of England, supporting the delivery of the England Peat Action Plan (May 2021). Restoration Grants fund landscape scale restoration work on degraded peatlands and Discovery Grants support applicants to gather the information they will need to apply for a Restoration Grant in future rounds.

The first round of the new Green Recovery Challenge Fund was launched in 2020. The aim of the £40 million fund was to support projects that were ready to deliver and focus on nature restoration, nature-based solutions and connecting people with nature. They would deliver against the goals of the government's 25 Year Environment Plan, whilst helping to sustain and build capacity in the sector.

5. Changes in evidence since 2015

5.1 Climate change

The United Kingdom is starting to experience more frequent extreme weather, rising sea levels and sustained increases in temperature. Evidence suggests that freshwater species are being impacted by climate change. Hot dry summers are a particular problem for salmonids, where long-term declines are likely to be related to climate change. In certain key salmonid rivers, poor recruitment has been observed during some recent hot, dry summers. This may result in water bodies failing to meet ecological objectives.

There is evidence of shifts in macroinvertebrate community structure related to climate change, however more evidence is required to demonstrate causality and mechanisms. High temperatures can cause algal blooms and weed choking during summer months. Warmer winters can also increase risks from some invasive species such as floating pennywort.

Global temperature increases have the potential to impact the viability and distribution of species. For terrestrial species there is evidence of northerly migrations to overcome temperature increases. Truly aquatic species may be unable to move between catchments, resulting in more species being threatened with either local or national extinction.

You can find more information in [The climate emergency challenges for the water environment](http://www.gov.uk/government/publications/the-climate-emergency-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/the-climate-emergency-challenges-for-the-water-environment>) document.

5.2 Assessing chemical status

Since the 2015 plans were published there have been a number of changes in the assessment of chemical status of surface water bodies. These include new substances, new standards, and improved analytical techniques and methods. Biota sampling is now used to assess more persistent, toxic and potentially bioaccumulative chemicals and give a more accurate reflection of these chemicals in the environment. Whilst these changes have led to a significant change in the headline figures for chemical status, there is little underlying change in chemical status for other chemicals. These changes are predominantly due to 3 groups of substances: Polybrominated diphenyl ethers, mercury and perfluorooctane-sulfonate. More details are provided in section 3.2.3 of the [River basin planning process overview](https://www.gov.uk/guidance/river-basin-planning-process-overview) (<https://www.gov.uk/guidance/river-basin-planning-process-overview>) document.

5.3 Catchment economic appraisals

Catchment economic appraisals are undertaken to assess the benefits, cost and any negative impacts of implementing measures to improve the water environment. The results of the economic appraisals help ensure

that wider benefits and the value of the water environment are taken into account in decision making. The results are used to indicate where achieving good status would be disproportionately expensive.

The catchment economic appraisals undertaken in preparing the 2015 river basin management plans were subject to a proportionate review as part of the development of the water industry national environment programme for the 2019 water industry price review. One hundred and seventy out of 335 catchment economic appraisals were reviewed. The results have been reflected in the objectives in the updates to the plans.

Water industry funded measures form the majority of expected investment in realising the environmental objectives. Therefore, the review and update of economic appraisals, completed to support the water industry price review in 2019, has optimised water body status objectives sufficiently for the 2021 update to the plans.

Since 2015 a number of projects have been undertaken exploring more integrated approaches to appraising measures to deliver natural capital benefits such as the Department for Environment, Food and Rural Affairs (Defra) 25 Year Environment Plan. These projects include exploration of improved approaches to economic appraisals.

5.4 Waste water treatment and phosphorus

The amount of phosphorus that can be removed from sewage during treatment at waste water treatment works is limited by the available technology. This 'technically achievable limit' determines whether it is possible to reduce the phosphorus levels low enough to meet the standard for good ecological status in the water body receiving the discharge from the treatment works. When the 2015 river basin management plans were published, the technically achievable limit for phosphorus was 0.5mg/l total phosphorus. In some locations this meant phosphorus levels remained too high to meet good status and so less stringent objectives were set for those water bodies.

Trials undertaken by the water industry since 2015 have shown that more phosphorus can be removed from sewage during treatment as a result of improvements in technology. Therefore, the technically achievable limit has been lowered to 0.25mg/l. This limit was used in planning for the 2019 water industry price review and as a planning assumption in reviewing water body status objectives for the updated river basin management plans. As a result, some less stringent objectives for phosphorus set in the 2015 plans are being revised to good status objectives in the updated plans. The improvements in technology are contributing to a progressive reduction in phosphorus loads discharged to rivers from waste water treatment works. The national loading was reduced by 66% by 2020 compared to a 1995 baseline and an 83% reduction is predicted by 2027 based on the measures agreed for the 2019 water industry price review. The technically achievable limit will be reviewed again after 2025.

5.5 Changes to water quality standards

There have been some minor changes to some water quality standards used to determine status class for relevant elements. These changes will be published in an update to the existing Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.

A new nitrogen standard has been developed for lakes and was used to classify total nitrogen in lake water bodies for the first time in 2019. This is further explained in Section 3.2.2 of the River basin planning process overview document [\[LINK\]](#).

6. Changes to protected areas and water bodies since 2015

6.1 Drinking water protected areas

Water bodies are identified as drinking water protected areas where they meet the criteria set out in the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (WFD Regulations).

The Environment Agency has reviewed the register of surface water drinking water protected areas for the updated plans to ensure the correct water bodies are identified.

There are a total of 450 surface water bodies in England currently identified on the register as drinking water protected areas.

There are 37 water bodies in England newly identified as surface water drinking water protected areas containing an abstraction that meets the criteria of the WFD Regulations.

There are 73 water bodies in England that have been removed as drinking water protected areas as they no longer meet the criteria set out in the WFD Regulations.

View a detailed [list of the changes to the water body network and designations \(https://consult.environment-agency.gov.uk/environment-and-business/river-basin-management/user_uploads/changes-to-water-body-network-and-designations-2022.xlsx\)](https://consult.environment-agency.gov.uk/environment-and-business/river-basin-management/user_uploads/changes-to-water-body-network-and-designations-2022.xlsx).

6.2 Urban Waste Water Treatment Regulations sensitive area designations

The objective of the Urban Waste Water Treatment Regulations 1994 is to protect the environment from the adverse effects of waste water discharges. Sensitive areas for nutrients are designated for water bodies affected by eutrophication or where surface water abstraction is affected by elevated nitrate concentrations. Reductions or emission standards for nutrients in sewage effluent must be met within areas sensitive to nutrient pollution. A review of these designations is done every 4 years.

View the [designation changes \(https://www.gov.uk/government/publications/urban-waste-water-treatment-updated-sensitive-areas-maps-2019\)](https://www.gov.uk/government/publications/urban-waste-water-treatment-updated-sensitive-areas-maps-2019) that came into effect on 13 May 2019, including new and amended designations and waters no longer identified as sensitive areas.

6.3 Nitrate vulnerable zones

Nitrate Vulnerable Zones (NVZs) are areas designated as being at risk from agricultural nitrate pollution. They include about 55% of land in England.

Defra reviews NVZs every 4 years to account for changes in nitrate concentrations.

The [last NVZ review \(https://www.gov.uk/government/collections/nitrate-vulnerable-zones#nvz-designations-and-appeals-2021-to-2024\)](https://www.gov.uk/government/collections/nitrate-vulnerable-zones#nvz-designations-and-appeals-2021-to-2024) was in December 2020. It did not find substantial changes in the patterns of nitrate pollution in England, so the areas designated as NVZs remain the same for 2021 to 2024.

6.4 Water bodies

There have been some minor changes in the water body network to correct errors:

- where a water body is named incorrectly or associated with the wrong operational catchment
- an improvement in the definition of the coastal edge of water bodies

These changes do not substantially alter the number or characteristics of the reported water bodies and have already been made.

A small number of more significant changes to water bodies have been made for the updated plans. These changes include splitting some water bodies and merging others.

View the [changes to the water body network \(https://consult.environment-agency.gov.uk/environment-and-business/river-basin-management/user_uploads/changes-to-water-body-network-and-designations-2022.xlsx\)](https://consult.environment-agency.gov.uk/environment-and-business/river-basin-management/user_uploads/changes-to-water-body-network-and-designations-2022.xlsx). These changes to water bodies, and their associated classification and objectives, are included in the data sets for the updated plans.

6.5 Artificial and heavily modified water bodies

There have been a small number of changes to the artificial and heavily modified water body designations. These are in response to a changing environment, information provided by partners or where errors have been identified in the current designations. View the [changes of the heavily modified water body designations review \(https://consult.environment-agency.gov.uk/environment-and-business/river-basin-management/user_uploads/changes-to-water-body-network-and-designations-2022.xlsx\)](https://consult.environment-agency.gov.uk/environment-and-business/river-basin-management/user_uploads/changes-to-water-body-network-and-designations-2022.xlsx).

7. Changes to legislative, policy and economic landscapes since 2015

The United Kingdom left the European Union (EU) on 29 March 2019. The requirements of the EU Water Framework Directive, which were transposed into domestic law, were retained as domestic law at the end of the transition period. This updated plan has been produced under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 and Ministerial Guidance on river basin planning 2021.

Since leaving the EU there have been policy and legislative changes that will impact on the environment, notably the Government's 25 Year Environment Plan (published in 2018); the Environment Act 2021 and the Agriculture Act 2020. Many of these new policies were developed since 2015 and some are still in development, and while these new measures have been designed with environmental improvement as a key objective, it is not yet possible to quantify the exact impact they will have during implementation of the updated plans. These new policies are reflected in the updated programmes of measures in the plans.

The COVID-19 pandemic affected implementation of the current plans during 2020 and 2021, including delaying the delivery of some measures due to practical constraints related to lockdowns and safe ways of working.

Tackling the COVID-19 pandemic has also had a significant impact on the United Kingdom's economy. The longer term effects of the economy on delivery of river basin management plans will become clearer during the next cycle.

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Guidance

River basin management plans, updated 2022: challenges for the water environment

Updated 22 December 2022

Applies to England

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1. Introduction

In 2019, the Environment Agency consulted on the most important challenges to the current and potential future uses and benefits of the water environment. A summary of the responses received can be found in the [Challenge and Choices consultation response document \(https://www.gov.uk/government/consultations/river-basin-planning-challenges-and-choices\)](https://www.gov.uk/government/consultations/river-basin-planning-challenges-and-choices). The challenges are the main issues that limit the uses and potential benefits of managing the water environment in a sustainable way. They have been identified based on the results of public consultation and assessments of the pressures caused by people now, in the past, and predicted in the future.

Many rivers, streams, lakes, estuaries and coasts are degraded and damaged by development, industry, agriculture, and modifications to provide flood protection. Climate change and a growing population are adding to these pressures and without concerted action now will lead to irreversible impacts for future generations.

These challenges that affect waters across England are briefly described in this document. Each challenge text links to more detailed information including, documents detailing the pressures and other associated information related to that challenge.

Managing Water in Our Environment



2. Climate emergency

Climate change is caused by human-induced greenhouse gas emissions which are causing global heating. Global average temperatures have increased over the 20th century and are now over 1°C warmer than the pre-industrial average. This is resulting in sea level rise and extreme weather related events, such as storms, floods, heat waves, droughts and wildfires. This threatens lives and livelihoods, wildlife and the provision of key goods and services that the water environment provides such as drinking water, recreation, navigation, and fisheries.

Reducing the impact of climate change and putting in place measures to adapt to it are critical. Action must be taken now. Everybody needs to work collaboratively to build resilience to future warming scenarios through long-term and evidence-based planning.

Climate change intensifies the impact of other pressures acting on the water environment:

- raised temperatures, extreme weather, and lower summer river flows and drought, impact the viability and diversity of terrestrial and freshwater habitats and species
 - thresholds or tipping points may be crossed, with irreversible consequences for species decline
 - the spread of invasive non-native species and plant and animal diseases will increase
- hotter, drier summers are increasing pressure on competing demands for water resources, that is between public water supply, agriculture, industry, development, recreation and the environment

- lower summer river flows will mean less water is available for dilution and dispersion of pollutants such as nutrients, contaminated sediments and heavy metals
- the longer nutrients stay in a water body, the greater the risks from eutrophication and algal blooms
- increased rainfall intensity and frequency of flooding can lead to increased runoff of pollutants from land and more storm overflows from combined sewerage systems
- thermal pollution of rivers, for example from cooling water systems, in combination with warming from climate change, can result in the remobilisation and increased bioavailability of contaminants
- physical modifications to rivers and coasts over many years have altered the natural functioning of catchments – this has restricted the ability of rivers, estuaries and coasts to naturally adapt to the impacts of climate change
 - this increases flood risks, reduces groundwater recharge, and the risk of saline intrusion
 - physical modifications may increase in some areas as more flood defences are built to cope with changes in rainfall patterns, flows and erosion

Climate change represents a risk that measures to improve or protect the water environment will not perform as intended over their lifetime due to both the changing pressures described above and the potential for direct physical impacts on people or assets involved in delivery.

For further information on this challenge, see the [Climate emergency: challenges for the water environment](http://www.gov.uk/government/publications/the-climate-emergency-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/the-climate-emergency-challenges-for-the-water-environment>) document.

3. Biodiversity crisis

The combination of climate change, how land, water and seas are used and managed and how nature is valued have led to a major crisis for nature – a biodiversity crisis.

The United Kingdom has lost 90% of its wetland habitats in the last 100 years, and over 10% of the freshwater and wetland species are threatened with extinction. These rare and valuable habitats are degraded, for example only 17% of chalk streams currently meet good ecological status. Urgent action is needed to deal with the loss of species and habitats.

Some of the most important habitats and species are specially protected, including through designation as sites of special scientific interest and habitats sites (Special Areas of Conservation and Special Protection Areas). Many of these sites are reliant on having enough, and suitable quality water to sustain their special habitats and species. However, many have become isolated by, and in some cases their ecology damaged or threatened by, land and water use, and other issues such as invasive non-native species. These pressures can act either directly on the sites or within their wider catchments.

Action must be taken to reduce the pressures the country's habitats and species face and increase their quantity, quality and connectedness.

Urgent action is needed to reduce the pressures these habitats and species are facing and to increase their quantity, quality and connectedness so biodiversity can thrive. This will in turn improve resilience to climate impacts.

For further information on this challenge, see the [Biodiversity: challenges for the water environment](http://www.gov.uk/government/publications/biodiversity-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/biodiversity-challenges-for-the-water-environment>) and [European site protected areas: challenges for the water environment](http://www.gov.uk/government/publications/european-site-protected-areas-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/european-site-protected-areas-challenges-for-the-water-environment>) documents.

4. Physical modifications

For thousands of years people have physically modified rivers, estuaries, lakes and the coastline to support farming, industry, transport, including shipping, and by building places to live. Some of those physical changes are still essential. They help to protect us from flooding and support the abstraction of raw water for drinking water supply and the production of the food we eat. Other changes have helped create the iconic landscapes and architecture many people value. But as rivers have been diverted, covered and straightened, and our coastlines and lake shores modified, the environment has also been damaged.

The legacy of structures and other changes means many waters and their adjacent landscapes do not provide healthy habitats for wildlife. Additionally, many are unable to adapt to future changes, such as flooding, erosion and drought. This places greater pressure on our water management efforts.

For further information on this challenge see the following documents:

- [Physical modifications: challenges for the water environment \(http://www.gov.uk/government/publications/physical-modifications-challenges-for-the-water-environment\)](http://www.gov.uk/government/publications/physical-modifications-challenges-for-the-water-environment)
- [European site protected areas: challenges for the water environment \(http://www.gov.uk/government/publications/european-site-protected-areas-challenges-for-the-water-environment\)](http://www.gov.uk/government/publications/european-site-protected-areas-challenges-for-the-water-environment)
- [Fine sediment: challenges for the water environment \(http://www.gov.uk/government/publications/fine-sediment-challenges-for-the-water-environment\)](http://www.gov.uk/government/publications/fine-sediment-challenges-for-the-water-environment)

5. Pollution from agriculture and rural areas

Rivers, streams and groundwaters are an essential part of rural life and the rural economy. However, the way farmers manage land, livestock, and use fertilisers and pesticides is a major reason why rivers and groundwaters are polluted.

Farming and rural land use is ever changing. The farming industry faces big challenges as it adapts to future political reality, the impact of world events on costs and to climate change. Farmers need to farm more sustainably to ensure soils, air, and water quality improve and are protected whilst still producing food for us all.

For further information on this challenge, see the following documents:

- [Agriculture and rural land management: challenges for the water environment \(http://www.gov.uk/government/publications/agriculture-and-rural-land-management-challenges-for-the-water-environment\)](http://www.gov.uk/government/publications/agriculture-and-rural-land-management-challenges-for-the-water-environment)
- [Pollution from water industry waste water: challenges for the water environment \(http://www.gov.uk/government/publications/pollution-from-water-industry-wastewater-challenges-for-the-water-environment\)](http://www.gov.uk/government/publications/pollution-from-water-industry-wastewater-challenges-for-the-water-environment)
- [Nitrates: challenges for the water environment \(http://www.gov.uk/government/publications/nitrates-challenges-for-the-water-environment\)](http://www.gov.uk/government/publications/nitrates-challenges-for-the-water-environment)
- [Faecal contamination: challenges for the water environment \(http://www.gov.uk/government/publications/faecal-contamination-challenges-for-the-water-environment\)](http://www.gov.uk/government/publications/faecal-contamination-challenges-for-the-water-environment)
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- [European site protected areas: challenges for the water environment \(http://www.gov.uk/government/publications/european-site-protected-areas-challenges-for-the-water-environment\)](http://www.gov.uk/government/publications/european-site-protected-areas-challenges-for-the-water-environment)
- [Drinking water protected areas \(DrWPAs\): challenges for the water environment \(http://www.gov.uk/government/publications/drinking-water-protected-areas-drwpas-challenges-for-the-water-environment\)](http://www.gov.uk/government/publications/drinking-water-protected-areas-drwpas-challenges-for-the-water-environment)
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6. Pollution from water industry waste water

The water industry plays a vital role in making sure that waste water from homes and businesses is effectively treated and returned to the environment. Waste water pollution has in the past damaged rivers, streams and coastal waters very badly, but the situation has improved a lot in the last 30 years. This is because the water industry has invested its customer's money in better collection and treatment systems and improved how they work with local people.

Despite these improvements, water industry activities are still identified as one of the main reasons why the water environment is not in a good enough condition. Some of this is because of pressures linked to population growth, climate change and urban creep. Work is continuing to address these problems but more is needed. The water industry needs to further improve their treatment systems and reduce incidents of untreated sewage being discharged to rivers and coastal waters. Of particular concern are storm overflows from combined sewerage systems that damage wildlife and the recreation value of the water environment.

For further information on this challenge, see the following documents:

- [Pollution from water industry waste water: challenges for the water environment](http://www.gov.uk/government/publications/pollution-from-water-industry-wastewater-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/pollution-from-water-industry-wastewater-challenges-for-the-water-environment>)
- [Nitrates: challenges for the water environment](http://www.gov.uk/government/publications/nitrates-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/nitrates-challenges-for-the-water-environment>)
- [Faecal contamination: challenges for the water environment](http://www.gov.uk/government/publications/faecal-contamination-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/faecal-contamination-challenges-for-the-water-environment>)
- [Phosphorus: challenges for the water environment](http://www.gov.uk/government/publications/phosphorus-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/phosphorus-challenges-for-the-water-environment>)
- [European site protected areas: challenges for the water environment](http://www.gov.uk/government/publications/european-site-protected-areas-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/european-site-protected-areas-challenges-for-the-water-environment>)
- [Drinking water protected areas \(DrWPAs\): challenges for the water environment](http://www.gov.uk/government/publications/drinking-water-protected-areas-drwpas-challenges-for-the-water-environment%201) (<http://www.gov.uk/government/publications/drinking-water-protected-areas-drwpas-challenges-for-the-water-environment%201>)
- [Fine sediment: challenges for the water environment](http://www.gov.uk/government/publications/fine-sediment-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/fine-sediment-challenges-for-the-water-environment>)

7. Invasive non-native species

An invasive non-native species is an animal or plant introduced, either deliberately or accidentally, into a place where it does not belong. They can hitch-hike a ride on goods or other animals or even travel in the ballast of ships. The damage that invasive non-native species cause can have major and permanent results. Not all non-native species are damaging; for instance non-native food crops can have huge benefits. A species only becomes 'invasive' if it has negative effects on the environment. Global trade, tourism and transport increase the problem world-wide, and the problem is increasing every year.

It is estimated that the United Kingdom has over 2000 established non-native species and the cost to society that they pose can be enormous. For example, Japanese knotweed grows in thick dense clusters that increase riverbank erosion and may reduce the capacity of river channels, possibly leading to increased flooding. But the effects are not just economic. Invasive non-native species can also damage animal and human health and the way people live. They can erode and undermine riverbanks, introduce new diseases, and can make native wildlife extinct.

For further information on this challenge, see the following documents:

- [Invasive non-native species: challenges for the water environment](http://www.gov.uk/government/publications/invasive-non-native-species-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/invasive-non-native-species-challenges-for-the-water-environment>)
- [Phosphorus: challenges for the water environment](http://www.gov.uk/government/publications/phosphorus-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/phosphorus-challenges-for-the-water-environment>)
- [Nitrates: challenges for the water environment](http://www.gov.uk/government/publications/nitrates-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/nitrates-challenges-for-the-water-environment>)
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8. Pollution from towns, cities and transport

More than half the people in the world now live in cities. In England that number is far greater, with 83% of people now living in urban areas. The environment faces some of its greatest challenges from urbanisation and transport. Pollution from towns and cities is damaging most of the waters in England's urban areas.

Pollution comes from waste, drainage, roads, transport, industries and housing. Historic pollution from factories and heavy industry has also left a legacy contaminating land, soils and water.

For further information on this challenge, see the following documents:

- [Towns, cities and transport: challenges for the water environment](http://www.gov.uk/government/publications/towns-cities-and-transport-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/towns-cities-and-transport-challenges-for-the-water-environment>)

- [Pollution from water industry waste water: challenges for the water environment](http://www.gov.uk/government/publications/pollution-from-water-industry-wastewater-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/pollution-from-water-industry-wastewater-challenges-for-the-water-environment>)
- [Nitrates: challenges for the water environment](http://www.gov.uk/government/publications/nitrates-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/nitrates-challenges-for-the-water-environment>)
- [Faecal contamination: challenges for the water environment](http://www.gov.uk/government/publications/faecal-contamination-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/faecal-contamination-challenges-for-the-water-environment>)
- [Phosphorus: challenges for the water environment](http://www.gov.uk/government/publications/phosphorus-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/phosphorus-challenges-for-the-water-environment>)
- [Drinking water protected areas \(DrWPAs\): challenges for the water environment](http://www.gov.uk/government/publications/drinking-water-protected-areas-drwpas-challenges-for-the-water-environment%201) (<http://www.gov.uk/government/publications/drinking-water-protected-areas-drwpas-challenges-for-the-water-environment%201>)
- [Fine sediment: challenges for the water environment](http://www.gov.uk/government/publications/fine-sediment-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/fine-sediment-challenges-for-the-water-environment>)

9. Changes to water levels and flows

Without water none of us can survive. But how water gets to people's taps and the effect that has on the environment is something most of us do not think about. Water taken from rivers and aquifers benefits all parts of the economy, from farmers to energy producers.

There are areas where too much water is taken from rivers and aquifers and as the climate changes and the population grows, demand for water will also grow. In some places more water is taken from rivers and groundwater than is put back or replenished when it rains. This damages rivers, springs, aquifers, lakes and wetlands, because it reduces where wildlife can live. It becomes more difficult for fish to reach the places they lay their eggs (their spawning grounds) and to where they travel to feed and mate.

If action is not taken, the problem will increase and many areas of England will face water shortages by 2050.

For further information on this challenge see the [Water levels and flows: challenges for the water environment](http://www.gov.uk/government/publications/water-levels-and-flows-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/water-levels-and-flows-challenges-for-the-water-environment>) document and the [European site protected areas: challenges for the water environment](http://www.gov.uk/government/publications/european-site-protected-areas-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/european-site-protected-areas-challenges-for-the-water-environment>) document.

10. Chemicals in the water environment

Manufactured chemicals that find their way into water, air and soil can be harmful to people and the environment. Some build up in animals and may represent risks to top predators and people, if not properly controlled.

Chemicals, including those that are ubiquitous, persistent, bioaccumulative and toxic (uPBTs), can impact on the aquatic ecosystem in the following ways:

- aquatic life (fish, plants and invertebrates) from direct exposure to chemicals in England's waters
- human health and higher wildlife predators from chemicals that may accumulate through the aquatic food chain
- surface and groundwater sources where chemical contamination may compromise their on-going use to supply water for domestic or food production purposes

Chemicals in the environment are derived from a variety of sources. Some chemicals are ubiquitous and are best managed at a national scale whereas others are particular to an activity and their management should be focused at a local scale. Many chemicals are banned from production or use (or both) but are persistent in the environment for long periods and continue to be monitored to demonstrate that existing controls are adequate, and concentrations are decreasing. Managing chemicals will ensure that the impact on aquatic life and human uses of water and the flora and fauna that live in it are minimised.

As new chemicals are manufactured and used, and the assessment of chemicals improves to better manage any risks, the range of chemicals and the way they are assessed has evolved since the first river basin management plan was published in 2009. See the [River basin planning process overview](https://www.gov.uk/guidance/river-basin-planning-process-overview) (<https://www.gov.uk/guidance/river-basin-planning-process-overview>) document on the approach to chemicals classification.

The Environment Agency has updated the [Emissions Inventory](https://environment.data.gov.uk/portalstg/home/item.html?id=8cdf5a8ebdf2469195be45d27e1eb757) (<https://environment.data.gov.uk/portalstg/home/item.html?id=8cdf5a8ebdf2469195be45d27e1eb757>) that provides an understanding of the sources of priority substances at river basin district scale. The inventory will be periodically updated.

Better understanding of the sources of priority substances and the ways in which pollution occurs will help to target measures to phase-out emissions or reduce pollution of the most relevant chemicals and avoids wasted effort on chemicals of little or no relevance.

For further information on the pressures associated with chemicals see the following documents:

- [Chemicals: challenges for the water environment](http://www.gov.uk/government/publications/chemicals-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/chemicals-challenges-for-the-water-environment>)
- [Cypermethrin: challenges for the water environment](http://www.gov.uk/government/publications/cypermethrin-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/cypermethrin-challenges-for-the-water-environment>)
- [Perfluorooctane sulfonate \(PFOS\): challenges for the water environment](http://www.gov.uk/government/publications/perfluorooctane-sulfonate-pfos-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/perfluorooctane-sulfonate-pfos-challenges-for-the-water-environment>)
- [Polybrominated diphenyl ethers \(PBDEs\): challenges for the water environment](http://www.gov.uk/government/publications/polybrominated-diphenyl-ethers-pbdes-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/polybrominated-diphenyl-ethers-pbdes-challenges-for-the-water-environment>)
- [Polycyclic aromatic hydrocarbons \(PAHs\): challenges for the water environment](http://www.gov.uk/government/publications/polycyclic-aromatic-hydrocarbons-pahs-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/polycyclic-aromatic-hydrocarbons-pahs-challenges-for-the-water-environment>)
- [Mercury: challenges for the water environment](http://www.gov.uk/government/publications/mercury-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/mercury-challenges-for-the-water-environment>)
- [Drinking water protected areas \(DrWPAs\): challenges for the water environment](http://www.gov.uk/government/publications/drinking-water-protected-areas-drwpas-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/drinking-water-protected-areas-drwpas-challenges-for-the-water-environment>)

11. Pollution from abandoned mines

People have been mining for coal, metal, and other minerals in England since the Bronze Age. Mining also helped start Britain's industrial revolution, reaching its peak in the 19th and early 20th centuries. There are thousands of former mines across the landscape today. Almost all the metal mines closed over 100 years ago but they still pollute rivers and harm fish, river insects and habitats. Today, abandoned mines pollute more than 3% of rivers, harming wildlife, threatening drinking water supplies from groundwater, and impacting the economy.

Pollution from coal mines smothers river beds and harms the local habitat. In some areas, groundwater used for drinking water supply is threatened due to the pollution from coalfields.

Legally, nobody can be held responsible for permitting ongoing pollution from mines abandoned before 2000, therefore government has to intervene. Programmes of measures for abandoned coal and metal mines are trying to deal with this legacy of water pollution.

For further information on this challenge, see the [Mine waters: challenges for the water environment](http://www.gov.uk/government/publications/mine-waters-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/mine-waters-challenges-for-the-water-environment>) document.

12. Plastics pollution

Many people are more aware than ever that plastic has an impact on the seas and wildlife but it is not just the plastic pollution we all can see on beaches. Because of the way plastics are produced, used and disposed of, these plastics can also pollute lakes, rivers and streams, soil and the air.

Micro-plastics are a growing concern but one which needs more research. Micro-plastics come from tyres and synthetic textiles. Each time you use a washing machine thousands of particles of micro-plastics are released. These tiny particles are entering the environment in large quantities. It is not yet understood what the potential consequences will be of this on people's health, the food chain and wildlife could be.

For further information on this challenge of see the [Plastics: challenges for the water environment](http://www.gov.uk/government/publications/plastics-challenges-for-the-water-environment) (<http://www.gov.uk/government/publications/plastics-challenges-for-the-water-environment>) document.

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Who should be involved

When carrying out activities that can affect a river basin district, public bodies have a legal duty to have due regard to the relevant river basin management plan. However, to achieve the environmental objectives in the plan, the whole of society needs to play its part.

Every individual, from any background, should have equitable opportunities. By working together, embracing differing perspectives, experiences, and insights, we can all help eradicate discrimination and intolerance maximising the benefits of diversity. Only by including everyone in developing and delivering actions in the river basin management plans will a better environment for nature and for all communities be achieved.

Working in partnership has never been more important. By strengthening catchment to coast partnerships to support integrated planning and action, better outcomes can be achieved for all freshwater and marine waters.

Summary programme of measures

The plans contain a summary of the programmes of measures to protect and improve the water environment. In some cases, the detailed and specific on-the-ground actions (exactly what will happen, where and when) have already been identified and agreed. In other cases, the on-the-ground actions will be identified and agreed during the lifetime of the plans. Where flexibility exists, when implementing the programmes of measures and when choosing specific actions, these principles should be followed.

Principles

Recognise the journey of water from source to sea, catchment to coast. Understand how upstream decisions can impact on downstream systems.

Take a collaborative place-based approach, in catchments and at the coast. Align initiatives on water, and pool resources to achieve more than partners can achieve alone.

Work to improve the diversity of partners engaged in water management, increasing inclusivity, and striving for a more equitable allocation of water outcomes across all communities.

Make evidence led decisions. Work with partners to build the evidence base and use it to make evidence led decisions that are explicit about the intended benefits of actions and transparent about the assumptions used. Understanding the natural capital and ecosystem benefits of proposed actions can improve decisions and encourage collaborative working.

Take account of future and changing risks to delivery. In particular, the effects of climate change and population growth to make sure actions perform as intended over their lifetime. Consider a range of possible futures (for example 2°C and 4°C temperature rise by 2100) and use flexible approaches that enable solutions to be modified in the light of changing circumstances or new information.

Contribute to net zero. Minimise greenhouse gas emissions and maximise carbon capture aiming for net zero.

Build catchments resilient to warmer water temperatures, more frequent floods and drought, and rising sea levels. Choose measures that help natural assets cope with or recover from shock.

Work with natural processes. Where possible choose nature-based solutions to protect and improve natural water assets and deliver multiple benefits.

Deliver restoration and recovery of freshwater, estuarine, and coastal habitats and species. This will provide resilience to climate impacts and may help sequester carbon, whilst providing many other benefits for people and wildlife.

Adopting the principles

Adopting these principles will help the water environment better prepare for climate impacts and deliver multiple benefits for people and nature. All partners will need to work together to embed these principles across all water management initiatives as the river basin management plans are implemented.

Public bodies should ensure the environmental objectives of the plans are reflected in their processes and plans, for example the town and country planning system and statutory local development plans.

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Guidance

River basin management plans, updated 2022: summary programmes of measures

The mechanisms, programmes and strategic initiatives for protecting and improving the water environment in each river basin district.

From: [Environment Agency \(/government/organisations/environment-agency\)](#)

Published 21 October 2022

Last updated 22 December 2022 —

Applies to England

The summary programmes of measures contains the main mechanisms, programmes, and strategic initiatives to protect and improve the water environment in each river basin district. They include:

- ‘basic’ measures, for example, action required by legislation
- ‘supplementary’ measures which can be regulatory or voluntary initiatives such as codes of practice

The summary programmes of measures also:

- describe the main types of on-the-ground action to be implemented
- signposts to where more detail of specific, local actions can be found

Where this detail is yet to be developed, it indicates when and how the implementation of the measures will happen, and how organisations and people can help.

The summary programmes of measures in the river basin management plans consists of the following components:

- [Summary programmes of measures \(https://www.gov.uk/guidance/river-basin-management-plans-updated-2022-summary-programmes-of-measures\)](https://www.gov.uk/guidance/river-basin-management-plans-updated-2022-summary-programmes-of-measures)
- [Summary programmes of measures data \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/England/measures\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/England/measures)
- [Summary programmes of measures - mechanisms \(https://www.gov.uk/guidance/river-basin-management-plans-updated-2022-summary-programmes-of-measures-mechanisms\)](https://www.gov.uk/guidance/river-basin-management-plans-updated-2022-summary-programmes-of-measures-mechanisms)
- [Catchment partnership pages \(https://environment.data.gov.uk/catchment-planning/v/c3-plan/CatchmentPartnerships\)](https://environment.data.gov.uk/catchment-planning/v/c3-plan/CatchmentPartnerships)
- [River basin planning: local measures case studies \(https://www.gov.uk/government/publications/river-basin-planning-programmes-](https://www.gov.uk/government/publications/river-basin-planning-programmes-)

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[South West river basin district river basin management plan: updated 2022 \(/guidance/south-west-river-basin-district-river-basin-management-plan-updated-2022\)](#)

[Humber river basin district river management plan: updated 2022 \(/guidance/humber-river-basin-district-river-management-plan-updated-2022\)](#)

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