

# Water for life and livelihoods Managing water for people business, agriculture.

the environment – summary

We are the Environment Agency. We protect and improve the environment and make it a better place for people and wildlife.

We operate at the place where environmental change has its greatest impact on people's lives. We reduce the risks to people and properties from flooding; make sure there is enough water for people and wildlife; protect and improve air, land and water quality and apply the environmental standards within which industry

Acting to reduce climate change and helping people and wildlife adapt to its consequences are at the heart of all that we do.

We cannot do this alone Week.

ent is out of date and has been withdrawn We cannot do this alone. We work closely with a wide range of partners including government, keep local authorities, other agencies, civil society groups and the communities we serve.

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### Our four main aims

- make sure there is enough water for people, business, agriculture and the environment

   support sustainable growth in withdrawn

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"Water is the driving force in nature"

Leonardo da Vinci

### 1. Managing water for people, business, agriculture and the environment thdrawn (1510112016)

The Environment Agency makes a major contribution to protecting and improving England's waters.

Whether monitoring, issuing permits or providing information and advice, we play an important role in protecting and improving the water environment.

We take an integrated approach, working across our different areas of responsibility to make the best use of our resources and those of others.

A few decades ago, rivers, estuaries and coastal waters in some parts of the country were grossly polluted by sewage and industrial effluents. The initial focus was to reduce the pollution from these point sources through regulation and investment. Attention has move to the more difficult to deal with problems of pollution from This document is out 'diffuse' sources, such as run-off from a cultural land

Increasing numbers of people and water use in households has placed pressures on water resources, particularly in the south-east and central parts of the country. The has created challenges in achieving a sustainable balance between the needs of people, busi ses, agriculture and wildlife.

the Environment Agency will continue to play an important part in finding solutions to these challenges.

A fuller account of our approach, and the work we and others need to do are available in our main 'Water for life and livelihoods' document at:

https://brand.environment-agency.gov.uk/mb/DxRJdk

### 2. Water is vital

Water is essential for life. It allows the natural environment to flourish, and businesses, agriculture and the eccenary and prosper HUGHSIMI

The water environment provides many different benefits to society – from supplying drinking water and supporting fisheries to providing an essential resource for business and agriculture, transport routes and a source of recreation that promotes wellbeing.

Water is a precious resource. The amount of water available for each person in the south east of England is less than in some Mediterranean countries. Although the overall amount of fresh water taken for the environment has been reducing in England, mainly due to industry using less water, about 13% of ivers have flows that may not support a health cology and the balance of abstraction and recharge is under pressure in 42% of groundwaters.

It is critical that this precious resource is managed properly to ensure that the needs of society, the economy and wildlife can be met and maintained in the long-term. This documen

### Did you know?

Water covers nearly three quarters of the Earth, but only 25% is freshwater (mostly in ice-caps and ground (green). Less than 0.3% of all freshwater is in the ries and lakes that are so important to society.

### Water is... precious

"The amount of water available per person in south east **England** is less than in some Mediterranean countries."

### 3. The state of the water environment

The water environment varies widely between different parts of the country. Rainfall, river flows and geology all affect the quantity and quality of water available.

Ensuring that there is enough water in some areas while protecting others from too much water is a constant challenge.

### Flooding - the facts

One in six properties in England is at the risk of flooding. That is over five million households and businesses. Floods can disrupt important energy, water, communications and transport infrastructure, and public services such as schools and hospitals. Over half of all water and sewage pumping stations and treatment works are located in first risk areas and a third is at significant risk of flooding.

Flooding can cause serious damage and have devastating effects on lives and livelihoods.

### **Water success stories**

The demands of development, businesses and farming over many decades have brought changes to the natural environment. As rivers were straightened, widened, deepened and dammed many natural habitats suffered serious damage.

Sustained efforts to restore England's waters through regulation, campaigns to prevent pollution and investment by water companies and other industries have led to some impressive achievements.

The clean-up of major rivers and estuaries such as the Thames, Tyne, Wear and Mersey has allowed fish including Atlantic salmon and brown trout to return and breed where they were absent for more than a century. And the otters' return to every county in England is an incredible story of ecological recovery.

There have been improvements in coastal waters too. The vast majority of sites used for bathing and the production of hellfish now meet the required water quality statuards.

An important barometer of the health of rivers and wetlands, the otter was on the brink of extinction in the late 1970s. A national survey in 1977 showed otters were present at only 6% of sites surveyed. Subsequent surveys showed a progressive return of otters across the country and they have now been recorded in every English county.



Adult Otter swimming in River Stour

For more information on the nature and state of the water environment, read Chapter 1 of Part I of our main 'Water for life and livelihoods' document at: https://brand.environment-agency.gov.uk/mb/DxRJdk

### 4. Big challenges ahead

## A growing population and a changing climate will place increasing pressures on the water environment and water infrastructure.

The Water Framework Directive provides the main framework for water management throughout Europe. Working through River Basin Management Plans, the Directive requires that waters (including rivers, lakes, groundwaters, estuaries and coastal waters) are protected and improved to achieve good status. Good status for each type of water body is defined by a set of biological, chemical and physical standards.

After a major programme of investigations at thousands of sites across England, there is now a good understanding of the reasons why waters idil to achieve good status. These include physical nodification of waters, unsustainable abstraction of water, and pollution from nutrients (phosphorus) and nitrate), organic waste, sediments and chamicals. This evidence is being used to target action and investment to protect and improve waters.

### A growing population

There are alread around 53 million people living in England and reis is set to increase by around 10 million by 2035 and 15 million by 2050. This will place even greater pressure on water resources.

### A changing climate

A changing climate is likely to bring increasing variability in rainfall an amore extreme weather conditions.

Higher temperatures could increase demand on recources, as more water is needed for irrigation, and in households and gardens. Changes in rainfall patterns and evaporation could affect natural river flows. Droughts could be more frequent in the future, with a greater need for long-term planning and investment by water companies to secure water supplies and limit environmental damage.

Water quality could be affected where lower flows in rivers result in less water to dilute pollutants, and heavier rainfall could increase runoff from land.

More intense rainfall could increase the risk of flooding of properties and critical infrastructure such as water treatment works, pumping stations and power generating stations. Rising sea levels and coastal erosion also pose a risk to property and a threat to habitats and wildlife.

Water is... powerful
"1 in 6 properties in England
are at risk of flooding."

### An ageing infrastructure

Water infrastructure includes water storage, treatment and distribution networks, sewerage systems, and a range of structures to manage water levels and flows. Some of this infrastructure is ageing and needs to be upgraded or replaced.

We develop and manage important infrastructure to reduce the risk of flooding, including sluices, weirs, floodgates, barriers, sea walls and flood storage areas.

Plans for the future need to make sure that water, sewerage and flood risk management infrastructure can withstand the increasing pressures of a growing population and the impacts of a changing climate.

New and innovative approaches are needed to face the challenges ahead.

### Alkborough tidal defence scheme

More than 90,000 hectares of land and 300,000 properties rely on the system of flood risk management structures around the Humber Estuary.

The £10 million Alkborough tidal flood risk management scheme is a fundamental part of the Environment Agency's long-term strategy for managing flood risk on the Humber Estuary. By creating storage areas for flood water during extreme tidal events the scheme increases the level of flood protection to an area stretching from the Humber Bridge to Goole on the tidal River Quee and as far as Keadby Bridge on the tidal River Kent.

The scheme has been designed to reduce the impact of rising sea levels, protect the internationally important nature conservation interests of the Humber by creating new wetland habitat, as well as providing a focus for education and recreational opportunities for local communities.



Aerial shot of Alkborough flats

For more information on the future challenges in managing the water environment, read Chapters 2 and 3 of Part I of our main 'Water for life and livelihoods'

https://brand.environment-agency.gov.uk/mb/DxRJdk

### 5. Our work in managing water

As operator, regulator and adviser, we play a crucial role in protecting and improving the water environment.
Sampling and analysis
State of the environment
Pressures and impacts
Ecological, chemical and physical status
Data and information

Monitoria Monitoring@he **Planning Resources Outcomes** Compliance and **Interventions Enforcement** ctions and audits Projects and programmes mpliance assistance

The water management cycle

Our work in managing the water environment involves targeting our resources and those of others to achieve the greatest benefits for people and wildlife. We take an integrated approach, bringing together different water management functions through a cycle of activities which involves:

- Monitoring the environment to understand the state it is in and why.
- Planning the necessary action and investment needed to achieve agreed outcomes.
- Taking action to achieve our contribution and making sure that others take action to achieve their contribution to these outcomes.
- Checking compliance with standards and permit conditions and, if necessary, carrying out enforcement activities to make sure that legal requirements are met.

### Our role as operator

Through our flood and coastal risk management work we reduce the risks to people, property, businesses and infrastructure, and benefit the environment. We have an important strategic overview role and work with lead local flood authorities to manage all sources of flooding.

Working with others, we:

- Manage flood defences and structures on over 23,000 miles of rivers. We manage around 1000 miles of sea defences.
- Carry out 145,000 inspections of existing flood defences every year.
- Invest around £260 million in building new flood risk management assets every year.
- Prepare for any respond to major pollution and flooding incidents.

### We also:

- Allocate water resources to sectors, making sure there is enough water for people, businesses, agriculture and the environment.
- Plan decades ahead so that society can respond to the changing pressures on water.
- Protect and improve important water-dependent wildlife sites and species.
- Maintain, improve and develop fisheries
- Promote angling and navigation of the rivers and waterways for which we are responsible.

### Our role as regulator

Our work as a regulator involves protecting and improving the environment and reducing risks to people and wildlife. We work within a framework of policy and legislation set by government, this defines our powers and duties and the environmental standards that need to be achieved.

Muck of the national legislation for water comes from European Directives. These prescribe a range of standards and requirements to improve waters for different uses, to protect wildlife, and to reduce pollution from sewage and industrial discharges, and from farming. We monitor the water environment to assess the extent to which these standards are being achieved and carry out investigations to understand the reasons why if they are not being achieved. We then ensure, where practicable, that measures are introduced to meet the standards.

We set conditions within permits for operators to ensure that the environmental standards will be met. These include permits for discharges, abstractions, impoundments, flood risk management assets, and fisheries management. We then check to ensure that operators are complying with the requirements and, if necessary, take enforcement action where there is failure to comply.

### In our regulatory work we:

- Issue consents for 73,000 discharges to control pollution.
- Work with different sectors to prevent pollution from diffuse sources.
- Allocate water abstractions through more than 20,000 abstraction licences to ensure than water resources are used sustainably.
- Reduce the risk of flooding through over 6,000 flood risk management consents.
- Issue 1.25 million rod licences to anglers and 270 net licences for salmon and sea trout.
- Take over 170,000 samples in rivers, lakes and coastal waters every year.
- Carry out 1.85 million analyses each year in our National Laboratory Service.

### Our role as adviser

### In our work we:

- Provide information and advice to national and local government to support policy and decision-makings.
- Carry out the monitoring that is necessary to government to report to the European solumission on progress and compliance with European legislation.
- Work with government departments to develop national strategies and guidance, for example, the National Flood and Coastal crosion Risk Management Strategy was jointly produced by Defra and the Environment Agency
- Provide advice to planning authorities to ensure that new development is appropriate.
- Manitor the environment to assess how much water there is, how clean it is and to understand the state of water ecosystems.

- Take over 160,000 samples every year at around 18,000 chemical and 7,000 ecological monitoring sites in rivers, lakes, groundwaters, estuaries, and coastal waters.
- Carry out around 1.85 million individual laboratory analyses each year.
- Collect around half a million flow, water level and rainfall measurements each day from our hydrometry and telemetry networks.
- Make information freely available through our website and other media to inform people about the state of local environments.
- Work with others, including civil society organisations and volunteers to encourage them to get involved in protecting and improving the water environment through monitoring activities, and to improve the information available.
- We use the best available scientific evidence to assess new and emerging risks, for example the release of advice on what can be done to address these risks.
- Provide technical leadership in developing standards and guidelines, for example, through the UK Technical Advisory Group on the Water Framework Directive, and through other expert groups and networks at European and international level.

### **Creating the greenest games**

Transforming a derelict and contaminated landscape into Britain's largest urban park, the Olympic Park is an excellent example of outstanding partnership working that has secured major environmental improvements.

Located in the Lower Lee Valley in Stratford, East London, the 25 square km site and surrounding waterways had suffered decades of neglect.

Since 2004, an Olympic Project Team, with representatives from functions across the Environment Agency, worked with key partners such as the Olympic Delivery Authority (ODA), the London Organising Committee of the Olympic Games (LOCOG) and others on issues such as improving water quality, restoring habitats and reducing flood risk.

The benefits for the environment have been significant and include:

- 30,000 tonnes of silt removed from waterways.
- 280 hectares of previously developed and contaminated land cleaned.

  Additional developed and contaminated land cleaned.

- 45 hectares of wildlife habitat created.
- 10,000 cubic metres of contaminated groundwater treated.

But, the work doesn't stop there. Building on the successes of the 2012 Games, we want to ensure that the benefits of this work are protected and maintained and that we make our contribution to further improvements in this valuable legacy for the tuture.



Olympic park

For more information on our contribution to managing the water environment, read Part II (Chapters 4–7) of our main 'Water for life and livelihoods' document at: https://brand.environment-agency.gov.uk/mb/DxRJdk

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### 6. An integrated approach

We take an integrated approach in managing the water environment. This involves bringing together our different functions and working with others at river basin, catchment and local level.

### **Planning** is key

Planning for managing water means taking a long-term view. This involves anticipating the effects of changes such as the demands of a growing population and the consequences of a changing climate. This is particularly important in the future planning of investment in water resources, sewerage and sewage treatment, and flood risk management where it may take many years to fund and build the necessary infrastructure.

Long-term planning provides the direction for shorter-term planning cycles. The Water Framework Directive requires that river basin management plans are developed and implemented through a 6-year cycle. We work with our partners and communities at different levels – locally, in water catchments and through river basin management plans – to make sure the necessary measures are taken to protect and improve waters with the aim of moving them to good status.

### Working together in water catchments

Increasingly, we are working across our functions (including water resources, water quality, flood risk management, fisheries and biodiversity) to identify actions and solutions that will bring about multiple begofits. We work with many different organizations and local communities in taking forward a more catchment-based approach. This helps to make sure that local knowledge is used to drive change by:

- Identifying and understanding issues within a particular catchment.
- Involving local organisations and community groups in making decisions.
- Sharing evidence.
- Identifying priorities for action.
- Taking action in cost effective ways that protect and improve local resources.

### Millhouses Park brings multiple benefits

The rejuvenation of a run-down urban park in Sheffield is a prime example of how communities can work together to drive improvements in the water environment that have far-reaching benefits for local communities and for wildlife.

The River Sheaf in the Don catchment flowed through a series of derelict concrete pools. The area had been degraded by ongoing pollution incidents.

Three key partners came together to tackle the problem. Sheffield City Council wanted to regenerate the area and provide a safe park that local people could enjoy. This ambition was shared by the Friends of Millhouses Park, members of the local community, who volunteered their time to the project. The Environment Agency wanted to improve the environment for wildlife by creating a new fish pass and to reduce the risks of flooding.

The result has been the creation of a Green Flag Award winning recreation area with facilities and features that people can enjoy, improved water quality and flood storage, and a better natural habitat for local wildlife.



Foremore information on our integrated approach to This document is out of date and managing the water environment, read Chapter 5 in Part II of our main 'Water for life and livelihoods' document at:

https://brand.environment-agency.gov.uk/mb/DxRJdk

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### 7. The benefits of our work

Our work in managing water provides many benefits for people, the economy and the environment.

### We help secure a safe supply of water

By regulating water abstractions and discharges, and preventing pollution, we contribute to making sure there is enough safe water now and for the future. This has significant economic benefits. In its investigation of the Environment Agency's work on water resource management the National Audit Office concluded that water is so important that its value to the economy is 'incalculable'.

### We help to protect and improve waters

Working with many different organisations one wide range of projects and programmes we have belped reduce the risks of flooding, improve water quality, retain and restore valuable water resources and reate new habitats.

Through our regulatory work and by helping to target investment by water companies, industries and farms in pollution prevention and control we have contributed to major improvements in the quality of inland and coastal waters over the last two decades. Driven by national priorities and legislation, such as the Urban Waste Water Treatment at a Bathing Water Directives, water companies have invested over £20 billion in environmental improvements since the privatisation of the industry in 1989. By working with the water companies and the water services regulator, OFWAT, we have helped to target this investment to benefit people and the environment.

Some examples of important achievements in protecting and improving waters are:

- In 1997 the chemical quality of 55% of monitored rivers was good or excellent. This had improved to 80% 6, 2009. For biological quality the improvement was from 63% to 73% over the same period.
- Between 1995 and 2010 the inputs from sewage treatment works of ammonia and phosphorus, pollutants that can be harmful to water ecology, more than halved.
- In 1990, 79% of designated bathing waters met the required water quality standards. By 2011 this had increased to 98% (but fell back to 93% in 2012, mainly because of prolonged wet weather during the bathing season).
- Working with our partners in hundreds of projects across the country, we helped create more than 3,400 hectares of important water-dependent habitats between 2005 and 2012.

### We help to protect people, homes, businesses and infrastructure

Through flood and coastal risk management schemes, and flood forecasting and warning, we help to protect people and properties. This work also helps to reduce the risks to businesses, infrastructure and public services. For example, over the period 2003/4 and 2011/12 investments in flood risk management reduced the likelihood of flooding to over 380,000 households.

### We help prevent the damaging effects of pollution

atant in ag sure that a in implementing sure that are costs to busing exessary results for not one example, by taking this because of the previous regulated total. Pollution incidents can have devastating effects on wildlife and can endanger human health. Working with

### We work with businesses to help them use water more efficiently

Using water more efficiently reduces the demands on water resources and saves money for households and businesses. For example, we are leading a partnership with the seven water companies in the South East Region to facilitate greater sharing of water resources. This could reduce the need for new infrastructure and could generate estimated savings of over £500 million by 2035 for valer companies and their customers.

We reduce the burden of regulation

### on businesses

Regulation is important in securing a safe supply of water and making sure that environmental standards are met. Our aim in implementing resultions is to minimise administrative costs to businesses while still achieving the necessary results for prople and the environment. For example, by taking a risk-based approach, we have removed around 23,000 low impact and low risk water abstraction activities from licence control, more than half

### 8. Our focus for the future

environment over the last twenty years, but significant challenges remain.

### Facing the challenges ahead

There is still some way to go to restoring healthy waters. Further action and investment is also needed to make sure that systems and infrastructure are capable of supporting a growing population and are resilient to a changing climate.

Against the Water Framework Directive's target that all waters should achieve good status by 2027 currently only 25% meet all the required standards. We will we can within our remit and with the funding available to ensure that waters that are already of good status remain in that condition and that those that need to be improved are on a pathway towards good status. We will continue to work with partner organisations (n) with communities across the country to achieve this

For some water bodies, reaching good status is unlikely to be achieved within this amescale because the within the aim for the their best possible status. improvements would be disproportionately costly and technically very proult, or might create other risks such as flooding. The aim for these waters will be to achieve

To be successful in facing these challenges we will continue to focus on improving the ways in which we work with our estomers and supporting the development and performance of our employees. This involves creating a **Gor**k environment in which:

- We take a 'yes if' approach in all we do.
- We do more for people and the environment with every pound.
- We focus on outcomes not processes.
- We seek and embrace opportunities to work with others.
- We develop our people and benefit from diversity.

### Our 4 main aims

To focus our efforts moving forward, we have four main aims.

1. Protect and improve waters so they are clean and healthy.

### We will:

- Find better ways of working with nature in managing water resources, reducing the risks of flooding and coastal erosion, preventing pollution and adapting to a changing climate.
- Develop and implement updated River Basin Management Plans.
- Develop the catchment- based approach with partners across all major catchments and coastal waters.
- Identify practical and affordable solutions to remove physical barriers to achieving good status.
- Work with others to address known sources of pollution.
- Restore sustainable abstractions.
- Better integrate the water company asset management planning cycle with River Basin Management Plans.
- Work with others to develop a more strategic approach to surface water management and sewerage planning. Help promote the penefits of sustainable drainage systems.
- Help to reduce the impact of damaging, non-native, invasive species.
- Maintain and respect favourable conservation status at protected sites and protect and improve priority habitats and species as our contribution to the objectives of the England Biodiversity Strategy.
- Work with others to bring about local environmental reprovements, including Nature Improvement Areas and Local Nature Partnerships.
- Identify opportunities to work with volunteers and community groups.

2. Reduce the risk of flooding and coastal erosion.

### We will:

- Develop our strategic overview role and demonstrate leadership in implementing the national flood and coastal erosion risk management strategy.
- Support local authorities with local flood resilience and resistance measures and play our part in multi-agency planning for and responding to major incidents.
- Improve evidence, information, and mapping and modelling tools to better understand the risks of flooding and coastalterssion.
- Promote awareness and advice on the need to avoid inappropriate development in areas at flood risk and the need to manage land to avoid increasing risks.
- Ples our part in building, maintaining and improving food risk and coastal erosion management infrastructure and systems.
- Assess the long-term investment needs of flood and coastal risk management.
- Continue to implement the partnership funding approach to increase and broaden the funding for flood risk management schemes.
- Make the public more aware of the risks of flooding and encourage householders, businesses and communities to take action to manage the risks.
- Improve our flood forecasting, monitoring and warning capability to support better incident management response and to help others act promptly to reduce risk.

3. Make sure there is enough water for people, business, agriculture and the environment.

### We will:

- Develop a strategic, long-term view of the future water needs of key sectors including public supply, energy and agriculture. Assess options for managing the balance of supply and demand to make sure that water supplies remain resilient.
- Promote a better understanding of the value of water to society, the economy and the environment. Work with key sectors to raise awareness of the need to reduce demand and use water more efficiently.
- Support Defra in developing a more flexible water abstraction system to deal with unsustainable abstractions, a changing climate and a growing population, that takes account of water quality as well as water quantity.
- Ensure that water companies' resource management plans address security of supply and strike a balance between developing new resources and reducing demand.
- Promote greater interconnections in the water supply system.
- Take a strategic overview of the quality and capacity of water and wastewater infrastructure and promote more efficient and integrated approaches to managing the whole water cycle.
- Ensure that drought management plans take account of the impacts of a changing climate and more extreme weather.
- Work with other sectors to develop new water resources such as on from storage.
- Support innovation in water efficiency and water re-use, and water that water is only treated to the standard necessary for a particular use.

4. Support sustainable growth.

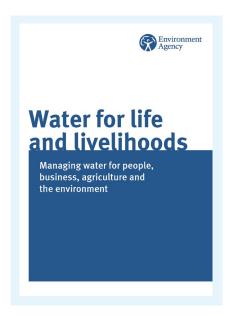
### We will:

- Minimise the administrative burden of regulation on businesses.
- Facilitate innovation in business.
- Make it easier for businesses to access water, and remove barriers to trading of abstraction (cences.
- Support local economies by helping to protect properties and businesses from the risks of flooding, and creating opportunities for regeneration and recreation.
- Develop a better unde standing of the benefits that the water environment provides to society and the economy and how our work contributes to them.

For more information on our aims and focus for managing the water invironment in the future, read Chapter 7 of Par 1) of our main 'Water for life and livelihoods' document at:

ops://brand.environment-agency.gov.uk/mb/DxRJdk

Take a look at our main 'Water for life and livelihoods' document for more information on how our words translate into action.



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