

A FRAMEWORK FOR CHANGE

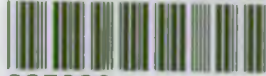
Improved and protected inland and coastal waters

JULY 2001



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www.environment-agency.gov.uk

ISBN 1-85-705622-1

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HO-07/01-1.5k-A

Printed on Revive Matt

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“Clean rivers are not only a vital source of water for drinking and industry, they also support a wide variety of wildlife and are enjoyed by millions for recreation. That is why river water quality is one of the Government’s 15 sustainable development headline indicators, measuring how much our quality of life is improving.”

MICHAEL MEACHER,
ENVIRONMENT MINISTER SEPTEMBER 2000

1. Why a Framework for Change?

The Environment Agency’s vision

In June 2000 the Agency consulted widely on its long-term objectives and goals. After taking into account the responses that we received, in January 2001 we published *An Environmental Vision: The Environment Agency’s Contribution to Sustainable Development (the Vision)*¹.

This sets out our long term, aspirational objectives for the environment, grouped under nine environmental themes. In preparing it, we were very conscious that it would be the process by which those objectives are met - the route by which the Agency plans, in partnership with others, to make progress towards the long term destination – that would be of particular interest. This was reinforced by the comments we received during the consultation on the Vision.

Frameworks for Change

To show the route we propose to take, we have prepared a series of *Frameworks for Change*, one for each of the *Vision’s* nine environmental themes. This document is one of these thematic *Frameworks* which are intended mainly for internal planning purposes though they are publicly available. They set out our proposals for the medium term to make progress towards the long-term objectives described in the *Vision*. These *Frameworks* – and the associated dialogue and business development that will flow from them – are not only intended to make progress towards the environmental outcomes in the *Vision*, but also to improve the Agency’s service delivery to Government², industry, and the public. They are also intended to improve our own internal efficiency and effectiveness. Overall, we regard them as being beneficial to both our stakeholders, and society in general. They are frameworks with a menu of possible actions,

¹ The Environmental Vision, and Frameworks for Change is available on the Agency’s website <http://www.environment-agency.gov.uk>

² References to Government include the UK Government and, where appropriate, the National Assembly for Wales.

rather than final plans, because we still have to agree the final proposals. We have to balance the competing priorities within them, take into account their specific implications for others, and match them to the resources we have available. This balancing and prioritisation has to be agreed with Government, and will be done through our corporate planning process, with our firmed-up work programmes appearing in our formal Corporate Plans. The Government's current revision of its statutory guidance in respect of our sustainable development remit will also help us clarify the routes and options available to us.

We will be discussing these proposals with our stakeholders. The main vehicle for this external dialogue and discussion will be a separate series of sector based *Frameworks* starting late in 2001. These will draw from the nine themes the issues and outcomes relevant to the sector concerned.

Working with partners

We recognise that we cannot on our own deliver the outcomes and goals we have set out. We already work in close partnership with a wide range of organisations and groups, and we are keen to explore how we can strengthen existing partnerships and develop new ones. This does not just involve seeking partners for Agency led projects, but also supporting the work of others. We will need to work with a wide range of bodies with an interest in land issues, including those we regulate. Below we list areas where we will want to work in partnership with others, but have not sought fully to specify who these others might be.

2. Improved and protected inland and coastal waters

Clean waters with thriving wildlife help guarantee the health and safety of the water supplied to homes, the water used to produce food, and the waters valued for recreation. The appearance, quality and value of waters can be damaged by how land is used. Rainfall washes over the land and into rivers and underground waters and can carry with it chemicals added to soils or plants and contamination from existing or previous industrial activities. Much of the water that disappears underground eventually enters rivers. Rivers, estuaries and the sea also receive the treated wastewater collected from homes and businesses.

In England and Wales about two thirds of the public water supply comes from rivers and reservoirs. The rest is taken directly from wells and boreholes which tap the rainfall stored in underground rocks. In the south and east the pressure on water resources is greatest in terms of the amounts used in homes, industry and agriculture.

The use of land can produce short and long-term risks to wildlife, recreation and the quality and quantity of water supplies. So can abstractions. Most of these risks increase at time of drought. It is particularly important to protect underground waters. Once polluted, these vital resources can be extremely difficult to put right.

Environmental pressures on inland and coastal and underground waters vary from region to region. A comparison is shown in Table 1 (page 17).

3. The Environment Agency's role

The Environment Agency licences abstractions from and discharges to water and also has a range of powers and duties for water resources management, conservation, recreation, navigation, fisheries and the control of pollution. We are responsible for implementing Government policy on 15 European Directives on water. We help develop national policy for the environment and the use of natural resources.

The Agency regulates the abstractions of water through 48,000 licences. We plan the future use of water resources so as to balance the needs for water supplies to homes, industry and agriculture alongside those of fisheries, recreation and navigation, water quality and conservation. During droughts we co-ordinate action to ensure that essential needs are met and the environment protected.

As a navigation authority we manage a number of rivers and harbours for recreational and commercial boating. Through our work on recreation we promote the sustainable enjoyment of water by all sectors of the community.

We monitor the quality of discharges from more than 7,000 sewage treatment works and 5,000 trade discharges; and monitor the condition of freshwater, groundwater and tidal waters. We publish regular reports on the state of the water environment; Table 2 (page 18) is a summary. We investigate pollution incidents and bring prosecutions against those who have caused incidents or break the conditions in their permits.

We have responsibilities for the conservation and management of all freshwater fisheries. This includes the sustainable development of fisheries and the promotion of fishing.

On the global scale the second World Water Forum highlighted in 2000 the issues of urbanisation and the need for research into water recycling, the need to make polluters pay for the damage they cause, the empowerment of people to manage their water resources, the need to know more about underground resources, and the impact of food production as a contributor to water stress. These concerns, and others like the threats to the oceans from dumping wastes and over-fishing, and the global loss of species and habitats, come through in the European and national drivers that direct the Agency's actions. The principle that the polluters pay for the damage they cause is well established in the UK. The opportunities for public involvement are extensive and increasing.

The proposed Sixth Environment Action Programme of the European Community for 2001 to 2010 reminds us that there are 30,000 chemicals currently in use and states the need for a reliable way to assess and reduce their impact on human health. It notes that pesticides used in agriculture require special attention, especially to stop them contaminating underground water used for drinking water. It reports that coastal bathing waters and drinking water are cleaner than they used to be and asserts that our water resources must be used in a sustainable way.

Policy drivers

Among the key national and international drivers that will influence our actions over the period of this *Framework* are:

- **European drivers:** The proposed Sixth Environment Action Programme of the European Community 2001–2010; the Directives on Urban Waste Water Treatment, Bathing Waters, Groundwater, Nitrate Pollution by Agriculture, Shellfish Waters, Shellfish Hygiene, Freshwater Fish, Surface Water Abstracted for Drinking, Drinking Water, Dangerous Substances, Habitats, Water Framework, Waste Framework, Sewage Sludge and Integrated Pollution Prevention and Control. There are also other international agreements to protect marine waters, for example, the Oslo and Paris Commission.

- **National and regional drivers:** Government targets for sustainable development and water quality, the reviews by the Director General of Water Services on the prices charged by water companies and the associated environmental investment programmes; the national strategy of the Association of Inland Navigation Authorities; the UK Biodiversity Action Plans; the Government's response to the Salmon and Freshwater Fisheries Review; the water resource plans and drought plans of water companies; changes to abstraction licensing proposed in the draft Water Bill; other initiatives agreed with the Government for improving the abstraction licensing system, the Government's commitment to realising the potential of inland waterways described in *Waterways for Tomorrow*; strategies agreed with Government, for example on water resources, conservation, chemicals, the control of eutrophication and the protection of groundwater. National and regional initiatives for housing, infrastructure, land-use, navigation and recreation.

4. Working in partnership

The Environment Agency works closely with, and provides support to, the Department for Environment, Food & Rural Affairs (DEFRA) and the National Assembly for Wales (NAW). We also maintain links with the Department of Transport, Local Government and the Regions (DTLR) on planning issues.

We work with industry, especially the water industry and agriculture, and with other regulators like the Office of Water Services (OFWAT). Much of our work requires effective liaison with English Nature, the Countryside Council for Wales, British Waterways, Sport England, the Countryside Agency, local authorities, planning authorities, and local groups and interests.

In delivering this *Framework*, we will seek to build on and expand these partnerships, particularly through Local Environment Agency Plans (LEAPs), Catchment Abstraction Plans (CAMs), Eutrophication Control Action Plans (ECAPs), Fisheries Action Plans (FAPs) and the river basin plans required for the Water Framework Directive.

5. The Environment Agency's objectives

In *An Environmental Vision*, our overall long-term objective with respect to inland and coastal waters is that:

Our rivers, lakes, underground waters and coastal waters will be far cleaner. They will sustain diverse and healthy ecosystems, water sports and recreation (including boating and fishing) and those uses needed by a thriving and healthy community.

This *Framework* has strong links with others in the series. Many of the mechanisms by which the water environment will be improved are addressed through the themes of *A 'greener' business world* and *Wiser, sustainable use of natural resources*. *An improved state of inland and coastal waters* will in turn help deliver our aspirations to improve the quality of life and enhance wildlife. Much of the *Framework* on *Reducing flood risk* is also relevant.

The *Vision* and long-term objectives will help achieve these outcomes:

- Abstractions and discharges will neither damage the environment nor threaten human health.
- Damaging pollution incidents will have been prevented at source.
- The causes of water pollution, eutrophication, and acidification will have been fully controlled.

- The quantities of chemicals entering the sea will have been greatly reduced.
- Surface waters will sustain a diverse variety of habitats and wildlife.
- Water will be acknowledged as a valuable resource.
- Surface waters will be regarded as a recreational and amenity asset.
- Inland and coastal waters will be cherished by local communities.

We will seek to achieve these outcomes in the most efficient and effective manner, taking into account the costs and benefits of the options available to do so.

6. Goals and actions

For each outcome we have identified below a number of goals we intend to achieve in the short to medium term in order to move towards the Vision. We have also outlined the activities that will help achieve these goals, together with the tests to assess progress in their delivery. In practice, activities may contribute to the achievement of more than one goal and outcome.

Tests for progress

The Government's set of sustainable development indicators³ help show, at a high level, whether we are on a sustainable track. The Agency has also developed its own set of environmental indicators⁴ that will be used to show progress towards the Vision. In addition to these, we have included some key tests for progress for each outcome.

Role of the Environment Agency

To clarify the role of the Agency in achieving each of these goals, we have allocated the activities to one of three categories:

Environment Agency's role is central
Environment Agency as a substantial partner
Environment Agency's involvement to build understanding

³ DETR (1999) *Quality of Life Counts. Indicators for a strategy for sustainable development for the UK: a baseline assessment.*

⁴ Environment Agency (July 2000) *Environmental Indicators.* A set of Environmental Indicators for Agency use (also available on the Agency's website <http://www.environment-agency.gov.uk>)

Impact of abstractions and discharges

Outcome 1 – Abstractions and discharges will not damage the environment, nor threaten human health.

Tests for progress:

- Water quality and compliance with River Quality Objectives and the mandatory and guideline standards from EC Directives.
- Further urban renewal following improvements to river quality.
- Numbers of Blue Flag beaches.
- Improved shellfish waters.
- Improved quality of underground waters.
- Completion to time of the 7,000 schemes in the 2000 – 2005 water industry investment programme.
- Numbers of Catchment Abstraction Management Strategies established and agreed.
- Numbers of abstractions identified as damaging the environment, and resolved.
- Compliance with relevant conservation objectives set for Special Protection Areas (SPAs) and Special Areas for Conservation (SACs) by English Nature and the Countryside Council for Wales under the Habitats and Birds Directives.
- Compliance with ecological targets developed for the EC Water Framework Directive.
- Compliance with future biological targets for rivers.
- Compliance with permit conditions for discharges to water.

GOAL	ACTIVITY
<p>Goal 1.1 Improved quality and more sustainable use of rivers, lakes, underground waters, estuaries and coastal waters.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Ensure full implementation of 2000 – 2005 Water Industry investment programme. • Set all the permits. • Maintain and refine the quality and quantity monitoring arrangements necessary to inform targeting and achievement of this goal. • Agree priorities for the 2005 – 2010 Water Industry investment programme with Government, OFWAT, water companies, the Countryside Council for Wales, English Nature, and others, taking account of the views of customers and other stakeholders. • Agree arrangements with OFWAT and the Government for any funding of action needed before AMP4 (2002–2005). • Ensure all IPPC authorisations take proper account of the potential of the processes to cause affect water quality and future plans for improved water quality. <p>Medium term:</p> <ul style="list-style-type: none"> • Help implement the EC Water Framework Directive in liaison with the Scottish Environment Protection Agency, the Government, English Nature, the Countryside Council for Wales, local authorities and planning authorities, and others. • Work with the farming industry and others to tackle diffuse pollution, especially where bathing waters, shellfish waters or River Quality Objectives are threatened. • Identify the environmental pressures on river basins, coastal waters and underground waters by 2004 (as required by the Water Framework Directive).

Impact of abstractions and discharges *continued*

	<ul style="list-style-type: none"> • Establish and implement improvement programmes with associated targets including action to improve Bathing Waters and the Government's target to eliminate by 2005 at least half of the 1997 shortfall in compliance with River Quality Objectives. • Use River Basin Plans to consult people about proposed improvements to waters.
<p>Goal 1.2 National and Regional Water Resources Strategies and Catchment Abstraction Management Strategies in place.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Implement or facilitate required actions in the National Water Resources Strategy and eight Regional Strategies. • Ensure that water resource strategies provide a secure framework for the management of water that protects the long term future of the water environment while encouraging sustainable development within which all parties can work together. <p>• Develop Catchment Abstraction Management Strategies (CAMS) as a mechanism for providing information about water resource availability in each catchment, with the water industry, local authorities and planning authorities, English Nature, the Countryside Council for Wales, British Waterways and local people.</p> <p>Medium term:</p> <ul style="list-style-type: none"> • Ensure CAMS provide for adequate freshwater flows from rivers into estuaries. • Co-ordinate production of CAMS with work on the EC Water Framework Directive. • Ensure CAMS are compatibility with policies on housing.
<p>Goal 1.3 No abstractions cause environmental damage.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Identify damaging abstractions and implement a Government-agreed programme for their curtailment, seeking voluntary solutions where possible. • Agree with Government and implement a framework with timetable for changing abstraction licences to a sustainable basis.

- Environment Agency's role is central
- Environment Agency as a substantial partner
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Pollution incidents

<p>Outcome 2 – Damaging pollution incidents will have been prevented at source.</p> <p>Tests for progress:</p> <ul style="list-style-type: none"> • Numbers and severity of pollution incidents. • Water quality. 	
GOAL	ACTIVITY
<p>Goal 2.1 Pollution incidents are a rare event.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Work to secure more prosecutions following pollution incidents. • Continue to raise the profile of prosecutions and success in pollution prevention. • Use pollution incident information as the basis for proactive pollution prevention campaigns. • Work with the Coal Authority and others to monitor and minimise the risks of pollution from old mine workings.

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Pollution, eutrophication and acidification

Outcome 3 – The causes of pollution, eutrophication and acidification will have been fully controlled.

Tests for progress:

- Water quality.
- Further urban renewal following improvements to river quality.
- Compliance with permit conditions for discharges to water.
- Pollution load.
- Numbers of confirmed cases of blue-green algae.

GOAL	ACTIVITY
<p>Goal 3.1 Risks of harm to people, damage to wildlife, impairment of water supplies, and interference with amenity have been reduced.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Implement the Agency's Eutrophication Strategy by working with industry and agriculture to reduce nutrient inputs to rivers and coastal waters and introducing local Eutrophication Control Action Plans (ECAPs) in partnership with local water users and local interests. • Implement the Agency's Chemicals Strategy: establish priority chemicals having an impact on water quality, identify sources (point and diffuse) and develop cost-effective reduction programmes for priority chemicals. • Establish water quality standards for priority chemicals in conjunction with stakeholders, the Government and the EU. • Support DEFRA chemicals stakeholders forum. • Work with Government, industry and consumers in the development of integrated product policy to control releases of chemicals to the water environment. • Work with Government to protect surface and underground waters by identifying and designating Sensitive Areas under the Urban Waste Water Treatment Directive and Nitrate Vulnerable Zones. • Implement Government requirements for any "eutrophication problem areas" that arise under Oslo and Paris Convention.
<p>Goal 3.2 Underground waters are protected from contamination.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Work with Government to identify and designate additional nitrate vulnerable zones. • Implement the measures for underground waters that will follow from the Water Framework Directive. • Liaise with local authorities and others on planning and development to protect underground waters. • Ensure all IPPC authorisations take proper account of the potential of the processes to cause deterioration to water quality and affect other plans requiring improvement and protection of underground waters.

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Chemicals entering the sea

<p>Outcome 4 – The quantities of chemicals entering the sea will have been greatly reduced.</p> <p>Tests for progress:</p> <ul style="list-style-type: none"> • Water quality. • Chemical loads entering the sea. 	
GOAL	ACTIVITY
Goal 4.1 Reduced quantities of chemical entering the sea.	<p>Medium term:</p> <ul style="list-style-type: none"> • Continue to implement the Dangerous Substances Directive. • Prepare to implement the Priority Substance requirements for the Water Framework Directive. • Make progress towards international agreements to “move towards the target of cessation of discharges, emissions and losses of hazardous substances by the year 2020”.

Wildlife and habitats

<p>Outcome 5 – Surface waters will sustain a diverse variety of habitats and wildlife.</p> <p>Tests for progress:</p> <ul style="list-style-type: none"> • Compliance with relevant conservation objectives set for Special Protection Areas (SPAs) and Special Areas for Conservation (SACs) by English Nature and the Countryside Council for Wales under the Habitats and Birds Directives. • Achievement of relevant UK Biodiversity Action Plan (UK BAP) species and habitats targets. • Status of UK BAP priority species and habitats. • Compliance with ecological objectives required by the EC Water Framework Directive. 	
GOAL	ACTIVITY
Goal 5.1 Special wildlife and habitats that could be put at risk through human activities in the catchments of rivers, lakes and reservoirs, underground waters and coastal waters are protected.	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Complete the review of existing consents and licences affecting high priority SPAs and SACs. • Ensure that all new permits take account of the potential impacts on SPAs and SACs. <p>Medium term:</p> <ul style="list-style-type: none"> • Complete the review of existing consents and licences affecting other SPAs and SACs.
Goal 5.2 Improved habitats and wildlife.	<p>Medium term:</p> <ul style="list-style-type: none"> • Use consents and licences to help deliver the targets for the United Kingdom’s Biodiversity Action Plan. • Target action for rivers through future Biological Quality Objectives. • Tackle diffuse pollution.

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Water as a valuable resource

Outcome 6 – Water will be acknowledged to be a valuable resource.

Tests for progress:

- Degree of acceptance by people of the need to reduce consumption.
- Water company water resource and drought management plans in place and regularly reviewed.
- Achievement of leakage reduction targets.
- Evidence of demand reduction.
- National and regional water resources strategies in place and regularly reviewed.

GOAL	ACTIVITY
Goal 6.1 All water companies have water resource plans and drought management plans that are agreed by the Agency.	Short to medium term: <ul style="list-style-type: none"> • Advise water companies on water needs forecasting developments. • Ensure water company resource and drought management plans contain appropriate leakage targets and demand management measures.
Goal 6.2 Water used efficiently.	Short to medium term: <ul style="list-style-type: none"> • Promote, with Government, industry, agriculture, local authorities, planning authorities and developers, the full range of demand management measures in planning guidance and building regulations.
Goal 6.3 More re-use of water.	Short to medium term: <ul style="list-style-type: none"> • Define, agree and implement with dischargers, abstractors and water users policies that encourage more use of wastewater, having full regard to water quality issues and maintaining adequate flows in rivers.

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Recreation and amenity

Outcome 7 – Surface waters will be regarded as a recreational and amenity asset.

Tests for progress:

- What people tell us about their local waters.
- Numbers of completed recreation, navigation and fisheries development projects.
- The tests listed for other outcomes for the reduction of pollution, the achievement of targets for water quality, and reducing the impacts of abstractions.

GOAL	ACTIVITY
<p>Goal 7.1 Improved and developed Agency's navigations.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Review and develop the programme of work to maintain, improve and promote navigation, as part of waterway development plans. • Implement the national strategy of the Association of Inland Navigation Authorities (now adopted as Agency strategy). • Work in partnership with British Waterways on areas of mutual benefit. • Clarify sources of alternative funds, and then use them to support investment in the Agency's navigations.
<p>Goal 7.2 The statutory Code of practice on conservation, access and recreation implemented.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Develop recreation work to the standards and guidance in the code.
<p>Goal 7.3 Regional strategies for recreation are in place that make use of the full potential of waters.</p>	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Deliver our recreation work through dedicated skilled staff and resources at a local level. • In partnership with others, implement, review, publicise, consult and update regional strategies. • Explore opportunities to open up land and water for recreation and report on new facilities thereby created.
<p>Goal 7.4 Develop new fisheries, particularly in urban areas.</p>	<p>Short to medium term</p> <ul style="list-style-type: none"> • Work in partnership with angling governing bodies, angling clubs and local authorities to identify potential fisheries developments. • Clarify funding sources for fisheries developments. • Incorporate fisheries developments into Fisheries Action Plans.

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Local communities

<p>Outcome 8 – Inland and coastal waters will be cherished by local communities.</p> <p>Tests for progress:</p> <ul style="list-style-type: none"> • What people tell us about their local waters. • Numbers of urban redevelopment schemes making a positive feature of waterways. • The tests listed for other outcomes for the reduction of pollution, the achievement of targets for water quality, and reducing the impacts of abstractions. 	
GOAL	ACTIVITY
Goal 8.1 Transparent, fit for purpose monitoring programmes and information dissemination.	<p>Short to medium term:</p> <ul style="list-style-type: none"> • Annually review and update monitoring programmes. • Use technological developments to obtain information and make it available to the public. • Use biological information to help show where improvements need to be made. • Include a high proportion of discharges to water in the Pollution Inventory. • Undertake surveys to establish how people value inland and coastal waters.
Goal 8.2 Waterways will feature as a focus of urban redevelopment.	<ul style="list-style-type: none"> • Work with others to assess and develop opportunities.

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7. Research and development

To support our plans we will work with others on programmes to:

- Produce risk-based water quality standards.
- Derive an increased range of biological indicators to help pick up impacts from intermittent pollution or unforeseen risks, or to help demonstrate their absence.
- Improve our knowledge of:
 - land use and the risk of contamination of Bathing Waters, Shellfish Waters, rivers and underground waters.
 - the impact of underground waters on the flow and quality of rivers.
 - the impacts of rivers on estuaries and water quality at beaches and shellfisheries.
 - the causes and control of eutrophication.
 - the potential risks posed by chemicals, bacteria and viruses on wildlife and the use of water.
 - the supply and demand for water-based recreation.
 - the impacts on waterways of recreation.
 - the value of recreation to the community.
- Decide action on sites where an impact appears to have a number of causes.
- Agree action in the face of uncertainty in the science.
- Transform data into information and improve our ability to detect impacts and trend.

- Assess options for the treatment of wastewater.
- Develop further opportunities to recycle used water.
- Investigate further the treatment of sea water for use as a water resource.
- Further assess the impact of climate change on water quantity, water quality and the behaviour of species.
- Improve our understanding of the impact of changes in land use such as forestry and cultivation, on the water available in catchments.
- Provide information so that we can influence how water is used.

8. Implications for the Environment Agency

We are well placed to achieve a significant portion of our goals through our powers for licensing abstractions and discharges and implementing directives. In some cases, new or modified duties or powers may be necessary, for example, as required by the Water Framework Directive. We will continue to regulate in a firm but fair manner in order to maintain basic standards in environmental performance and to bring about improvements. We will ensure that administrative and bureaucratic aspects are minimised. We will target our resources on those sites and operators presenting the greatest environmental risks. Other goals depend more critically on influencing others. We plan to undertake organisational change, for example, to help us work more effectively with industry and the users of waterways.

Successful delivery of our outcomes will require:

Expertise and Awareness

- Better developed skills in the communication of issues to the community.
- Greater expertise in assessing the risks associated with pollutants and in developing cost-effective proportionate responses.
- Better techniques for assessing the recharge rates for underground waters.
- Improved awareness of tools for the assessment of costs and benefits.
- Techniques to take account of uncertainty when making decisions.
- Effective promotion of the waterways we manage.

Policies and strategies

- Consultation on and promotion of our strategies on, for example: water resources; eutrophication; chemicals; and water quality standards.

Monitoring and reporting

- Better indicators of the state of inland and coastal waters.
- Better indicators of the impact of flow regimes on the health of rivers.
- Better reporting on the relative environmental impact of sectors.
- Better comparisons between EU Member States.
- Improved indicators on the impact of land use on rivers and underground waters.

Knowledge

- Improved understanding of the following issues, and how they affect inland and coastal waters, their wildlife, fisheries and the uses they support:
 - changes to river flows.
 - effluent discharges.
 - the relationships between groundwater use and rivers and wetlands.
 - the relationship between water quality in rivers and in estuaries and coastal waters.

- Society's use of chemicals.
- Bacteria and viruses.
- The management of agricultural land.
- Urban drainage.
- The value of waterways to local communities.
- The impact of climate change.
- The impact of changes in land use.

Influencing and education

- Lead society to a full understanding of its impacts on the water environment and how harmful impacts can be overcome.
- Influence European legislation and its application in England and Wales.
- Raise public awareness about the value of water and the need to use it wisely.
- Promote the understanding, appreciation and enjoyment of the water environment.

New and revised regulations

- Work with Government to develop new regulations on the remediation of contaminated land.
- Work with Government on new regulations and guidance for the implementation of EC Directives, including the Water Framework and Dangerous Substances Directives.

The planning system

- Influence decisions on development, including regional plans and housing.
- Work with planning authorities on the achievement of the sustainable use of water.

TABLE 1: Regional variation in pressures on and the state of inland and coastal waters

Issue	Anglian	Midland	North East	North West	Southern	South West	Thames	Wales
Public water supply demands and availability	M	H	L	M	M	M	H	L
Lack of scope to develop new water resources	H	H	M	M	H	H	H	M
Impacts of abstractions on wildlife	H	H	M	M	H	H	M	M
Navigation	H	H	M	M	M	M	H	L
Use and demand for recreation	H	M	M	H	M	M	M	M
Tackling poor quality underground waters	H	M	L	L	H	L	H	L
River quality (chemical)	H	M	M	H	M	L	M	L
River quality (biological)	M	M	H	H	M	L	M	L
River quality (nutrients)	H	M	M	L	M	M	H	L
Quality of bathing waters	M	L	M	H	M	H	L	M
Achievement of river quality targets	H	M	H	M	M	L	M	L
Nutrient loads to sea	L	M	M	H	L	M	H	M
Metal loads to sea	M	M	H	H	L	M	L	M
Pesticide loads discharged to the sea	L	H	M	H	L	M	M	M
Pollution incidents	M	H	M	M	L	H	L	M

KEY

This has been based on selecting the two Regions with the greatest breaches of standards, poorest quality or highest loads and ranking these as H - highly impacted; the two Regions with the best quality or lowest loads are ranked as L - least impacted. The other Regions are ranked M - moderate (where the impacts are about equal, more than two Regions may be designated H or L).

Sources: Environment Agency (2000) *Environment 2000 and Beyond*.
Environment Agency (2000) *Environmental indicators*.

TABLE 2: Summary of trends in inland and coastal waters

Viewpoint	State and trends
Land and water resources	<p>Water resources: The natural water stock is 77,000 Mm³/year on average. This amounts to 4,000 litres per person per day on average, which is low by European standards due to the population density. Most of us take water supplies for granted except at times of drought. The amount used for drinking water and by agriculture is stable at present but the total abstracted from rivers and underground waters has reduced by 16 per cent since 1971 because of less use by industry.</p> <p>Stored water is essential to supplies. The total usable reservoir volume is 1,560 million cubic metres and aquifers store much more. The impact of climate change on the frequency and severity of droughts is uncertain and may affect the reliable supply from resources. Increasing quantities of water are re-used indirectly.</p>
Key biological populations	<p>Habitats: Some 42 per cent of river habitats are extensively modified. Less than 15 per cent of lowland rivers still retain a semi-natural state. There are clear regional differences; modification is greatest in the east and least in Wales. Flood defence works in the past have affected river habitats. Hard defences along the coast have led to the loss of estuarine habitats.</p> <p>Aquatic plants: Relatively rich although 20 to 33 per cent of flora species have become extinct locally in past 150 years and 50 per cent have declined. An increase in exotic species.</p> <p>Macroinvertebrates: Some 76 families found in 1995. Biological water quality improved in the 1990s, although almost 20 per cent of rivers in some regions were still poor or bad biologically.</p> <p>SSSIs: In 1999 nearly 200 Sites of Special Scientific Interest were noted as needing investigation or re-mediation because of risks from over-abstraction and low water levels. Over 100 wetlands and other sites at risk from water company discharges or abstraction are the subject of remedial schemes incorporated in the Ofwat water price determinations for 2000 – 2004.</p> <p>Fish populations: Most rivers have good fish populations including many that were devoid of life 40 years ago, although salmon stocks have declined in some of the traditionally good salmon rivers. The loss of brown trout continues.</p> <p>Mammals: Otters have returned to many catchments since 1970s but water voles have declined.</p>
Compliance with standards and targets	<p>River water quality: 18 per cent of river length failed in 1997 to meet the River Quality Objectives (RQOs). The Government has set a target to achieve at least 91% compliance for 2005. In 1999, almost 87% of rivers met their RQOs. Almost 92% of rivers are of good or fair quality. There has been a net improvement in chemical quality of rivers of 31% in the period 1990-1999.</p> <p>Some 15 per cent of river sites and 34 per cent of coastal sites exceeded pesticide standards in 1998. Some waters that are abstracted for drinking water exceed standards for nitrate, and concentrations are still rising in some ground waters.</p> <p>Run-off from land is a threat to some rivers and bathing waters. Pollution by soil washed off farms is a particular risk to some spawning beds of salmon. Growth in transport poses an increasing risk of pollution through run-off from roads. About 5 per cent of waters face a risk of pollution from abandoned mines.</p>

TABLE 2: Summary of trends in inland and coastal waters *continued*

	<p>Coastal waters: About 5 per cent of bathing waters failed the main mandatory standards in 2000 compared with 24 per cent in 1988 (about half failed the stricter guideline standards in 2000). About a quarter of shellfish waters need improving to meet targets. Loads of metals discharged to the sea have reduced substantially since the 1980s.</p> <p>Overall, trends in water quality are encouraging. There were large reductions in pollution from industry and sewage treatment works in the 1990s. Phosphorus inputs from detergents and sewage works have reduced by 40 per cent. Pollution from land use and via the atmosphere especially nitrogen is becoming relatively more important as the discharges from the treatment works and industrial sectors have been cleaned up.</p> <p>Water pollution incidents: are declining but in 1999 there were still nearly 14,500 substantiated incidents, most of which were due to industry (including the water industry). Some 92 incidents had major impacts on wildlife, water supplies or amenity.</p> <p>Oil pollution: Ships illegally release between 15 and 60 thousands of tonnes of oil per year into the North sea. The number of major spills has declined but the Sea Empress accident in 1996 killed 7,000 birds and harmed marine life and the local economy.</p>
<p>Human and environmental health</p>	<p>Nutrient enrichment: Many standing fresh waters and some rivers and estuaries are affected by eutrophication, including sites of high wildlife conservation value. Algal blooms affect many waters including sites used for recreation. The greatest problems are in the south and east. Five estuaries, 62 rivers and 13 lakes and reservoirs are designated as "eutrophic sensitive areas" under the EC Directive on Urban Waste Water Treatment.</p> <p>Some 600,000 hectares have been designated as 'nitrate vulnerable zones' where rivers and aquifers exceed or have the potential to exceed nitrate standards.</p> <p>Acidification: Areas where acidity of waters is naturally low are most affected – Wales, Pennines, Cumbria, and the south west. In Wales over five per cent of Sites of Special Scientific Interest are affected. The main causes have been tackled but recovery is slow.</p> <p>Animal health: Evidence of hormone-disruption in some fish emerged in 1990s but the impact on populations is still unknown. The effect of tributyl tin on molluscs, causing females to become infertile, was established in 1980s.</p> <p>Some eels exceed standards for HCH, dieldrin and PCBs. Pollutants tend to accumulate in estuaries – metal contamination is associated with historically polluted estuaries.</p>
<p>Aesthetic quality</p>	<p>Some 34 per cent of rivers were of poor or bad aesthetic quality in a survey of Midlands rivers in 1995. Some rivers have suffered discoloration from minewaters or industrial discharges and some suffer from fly-tipped rubbish. But 85 per cent of unsatisfactory Combined Sewer Overflows will be dealt with under the water industry's investment programme for 2000–2005.</p>

Sources: Environment Agency (1998) *The state of the environment of England and Wales: fresh waters.*

Environment Agency (1999) *The state of the environment of England and Wales: coasts.*

Environment Agency (2000) *Environment 2000 and beyond.*

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