



Water resources for the future

A SUMMARY OF THE STRATEGY FOR ANGLIAN REGION

March 2001



ENVIRONMENT AGENCY



Water resources for the future

Water is vital for life

All living things need water to survive. People rely on water not only for drinking and for personal hygiene but also for many other purposes:

- around our homes, for cooking, washing and cleaning;
- in our gardens, to water plants;
- on farms, to water crops and clean equipment, and for animals to drink;
- in offices, schools, universities and hospitals, for cooking and cleaning;
- in commerce and industry, to help with manufacturing.

All the water we use is taken from streams, rivers or water-bearing rocks below the ground (aquifers). Water in the environment – in streams, rivers and wetlands – serves many other purposes that we must take into account. It allows plants to grow and keeps fish, insects and mammals healthy. It also gives people pleasure in many ways. We like the appearance of rivers and streams in the landscape, and many of us enjoy fishing, boating, canoeing or just walking by rivers. Our use of water needs to safeguard these benefits.

A water resources strategy for Anglian Region

The Government has given the Environment Agency the task of planning our use of water. As part of this process, we have developed a new water resources strategy for our Anglian Region. At the same time we are publishing seven other strategies for the rest of England and Wales, as well as a national strategy providing an overview. This leaflet summarises the strategy for Anglian Region.

The region extends from the Humber estuary to the Thames, as shown in Figure 1. It comprises all catchments draining from the main chalk outcrop of East Anglia and eastwards from the Lincolnshire limestone. Major catchments include the Rivers Ancholme, Witham, Welland, Nene, Great Ouse, Wensum, Waveney, Stour, Blackwater

and Chelmer. The region is low-lying and intensively farmed, with a landscape ranging from gentle chalk and limestone ridges to the extensive lowlands of the Fens and the East Anglian coastal estuaries and marshes. The total land area of the region is 27 000 km². Our valuable natural environment and high population growth rate mean that the careful management of water resources is essential.

Figure 1 Anglian Region



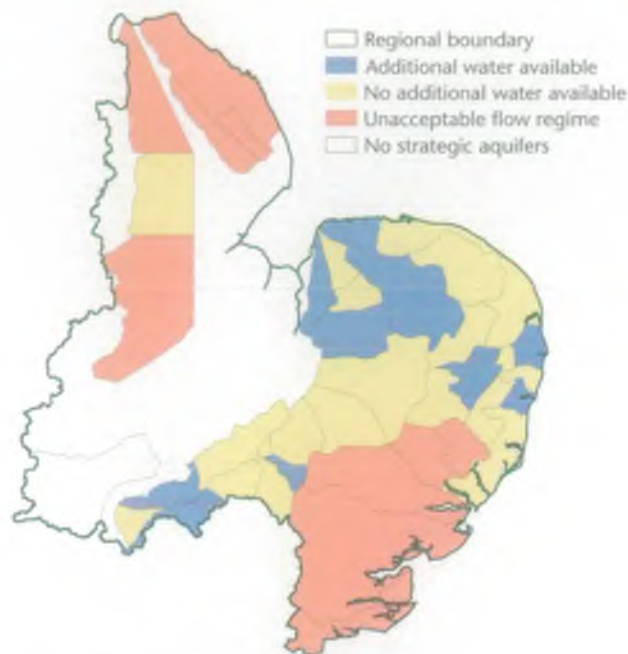
County boundaries

	Lincolnshire
	Norfolk
	Cambridgeshire
	Bedfordshire
	Suffolk
	Essex
	Buckinghamshire
	Northamptonshire
	Hertfordshire
	Leicestershire
	Nottinghamshire
	Oxfordshire
	Greater London

Main towns Agency regional boundary

	City of Peterborough
	East Riding of Yorkshire
	Milton Keynes
	North East Lincolnshire
	North Lincolnshire
	Rutland
	Southend-on-Sea
	Thurrock

Groundwater resource



This map shows strategic resource availability based on simple water balance calculations for groundwater units. Even if a unit has resources available, each abstraction proposal would be subject to an assessment of local impacts and there are some units where current policy is that no new significant licence application are accepted.

danger of being damaged here, and we must stop taking so much water if we want to restore the environment in such places. There are also areas where we think that there is no damage now, but that no more water should be taken. In the rest of Anglian Region, water may be available. Almost anyone who wants to abstract water needs a licence from the Environment Agency. Before we give a licence, we must be sure that it will not cause damage, and detailed studies are often necessary.

The maps in Figure 2 illustrate the availability of water across Anglian Region. They show that surface water throughout our region is already fully committed to existing abstractions and the environment during the summer, and that no significant additional quantities of water are available then. There may however be a few localised stretches of river where limited amounts of summer surface water are available. Winter surface water is still available over most of our region, apart from some small chalk catchments and coastal streams. Large parts of the region's groundwater resources are broadly in balance, although there are limited areas where some additional groundwater is available. Any new abstractions will be subject to rigorous local assessment.

In most of the fully committed catchments, existing abstractions do not cause widespread environmental problems. However, in the areas coloured red, the combination of licensed surface and groundwater abstractions exceeds the assessed limit. Action to resolve

any associated problems may involve changes to both surface and groundwater licences in the longer term.

Future demand for water

The amount of water we need is known as demand. The demand for water will change over the next 25 years, under the differing influences of a variety of factors.

In the home, we each choose how much water we use. We need water for washing, bathing and cooking, to water our gardens, and to wash our cars. Today, on average we each use about 150 litres every day – enough to fill about 15 buckets. Future household water use depends on the choices that we make as individuals and collectively as a society. For example, showering usually uses less water than a bath, but using a power shower for five minutes can use more water than taking a bath. Depending on attitudes, individual household water use could increase or decrease over the next 25 years. In some places, more homes are planned. While individually any new homes built could be more water-efficient, they will add to the total demand for water.

Similar arguments about the effect on demand of differing water use practices apply to industry, commerce and agriculture. Their needs for water are also affected by market considerations such as the price commanded by different product or crop types.

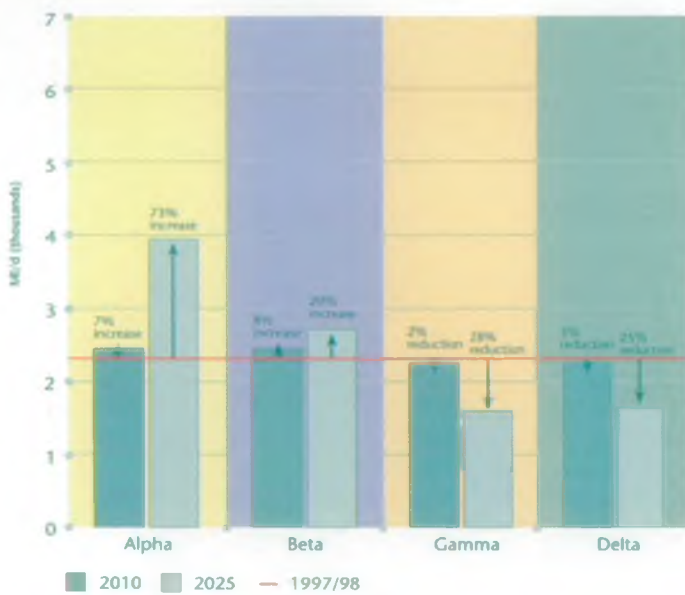
To consider many of these different effects, we have taken a scenario approach to predict future demands. The Government's Foresight framework looks at the different ways that our political and social values could change over time; we have used it to consider a range of possible social and economic changes, and calculated the resulting future demands.

Current and likely future demands in Anglian Region are dominated by public water supply. The rate of growth predicted by government planners for our region is among the fastest in England and Wales, and could lead to 600,000 additional households and an 800,000 increase in population by 2025.

Figure 3 illustrates our demand forecasts for Anglian Region to 2025. The forecasts show that total demand for water could fall or rise over the next 25 years, depending to a great extent on the choices we make.

It is unlikely that the future will follow any one of the scenarios we have used. By showing what could occur under each, we have identified boundary limits to guide our resource planning. Clearly, in the relatively dry climate of Anglian Region, it would be particularly challenging to meet the higher forecasts whilst continuing to safeguard environmental interest adequately.

Figure 3 Total demand by scenario in 2010 and 2025



Climate change

Climate change is of great significance to water resources. Changes to rainfall patterns and amounts could affect how much water is available for people and for the environment. Climate change could also influence people's demand for water. For example, if it becomes hotter, we may wish to water our gardens more.

Present analysis suggests that over the next 25 years, summers could become drier and winters wetter, with more rain in total. Temperatures are likely to increase. Since many questions remain about the effects of climate change, it makes sense to use our existing water resources carefully, and to look for flexible solutions to future demands that can cope with different climatic conditions. This is an area that we will keep under review.

Our strategy for Anglian Region

Our strategy is designed to improve the environment, while allowing enough water for human uses. We have considered its contribution to sustainable development, including social progress that addresses the needs of all, protection of the environment, making wise use of natural resources, and maintenance of high and stable levels of economic growth and employment. Our strategy is flexible and phased, so that we can avoid unnecessary investment while retaining the security of our water supply and improving the water environment.

Our strategy shows that:

- water is a scarce resource in Anglian Region. In many places, further improvements to the water environment are necessary. We believe that this may amount to recovery of current licensed abstractions amounting to some 210 MI/d. We estimate that some 40 MI/d of this will be required by 2010 and the remainder as a precautionary estimate by 2025.
- continued availability of reliable public water supply is essential. We recommend the enhancement of public water supply by up to 300 MI/d above present levels. To achieve this we will improve existing schemes and develop new resources;
- efficient use of water is also vital, and we recommend that water efficiency should be promoted actively, and that over the next 25 years we should expect household water metering to become widespread, whilst continuing to protect vulnerable groups. Further attention to leakage control will also be necessary. Together these measures will meet demands and allow for environmental improvements;
- recommended resource developments include: the raising of Abberton reservoir supported by Ely Ouse transfers, greater use of Rutland Water, enhancements to the Agency's Trent-Witham-Ancholme transfer scheme, some further local use of groundwater and effluent reuse. Detailed assessment of the impacts will be needed, to ensure the environment is protected. Alternative schemes could become necessary.
- agriculture and industry must use available water to best effect. In most agricultural areas, little further summer water is available. Farmers should consider water needs in their choice of crops and we recommend increased winter storage.

We will publish an annual bulletin reporting on progress against this strategy, and review it fully in a few years' time.

How to find out more

You can find more information in the full water resources strategy for Anglian Region, available from our Anglian Region address. Details of our strategies for other regions of England and for Wales can be obtained from regional Environment Agency offices. You can obtain our water resources strategy for the whole of England and Wales from Water Resources, Environment Agency, Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, BS32 4UD. Further information on all our water resources activities can be found on the Agency's website at www.environment-agency.gov.uk.

Planning our use of water

Anglian is the driest region of England and Wales. In an average year, the region receives enough rain to cover its whole area to a depth of nearly 595mm. Some of this rainfall is taken up by trees, crops and other growing plants, and some evaporates. The remainder, known as effective rainfall, amounts to about 1,900 litres each day (about 190 buckets), for every person who lives in the region. Effective rainfall is unevenly spread through the year, with much of it occurring during the winter months. We can't use all this water, because we want to leave enough in our rivers and streams to protect nature and allow us to enjoy our landscape. In a dry year, our use of water can lead to problems. Since every drop of water that humans take comes from our natural environment, we need to plan our use of water to make sure that we have enough for our needs while protecting plants and animals from damage.

Our strategy reflects these issues. It looks 25 years ahead, and considers the many changes that may occur over this time. Our vision is:

Enough water for all human uses with an improved water environment.

The availability of water

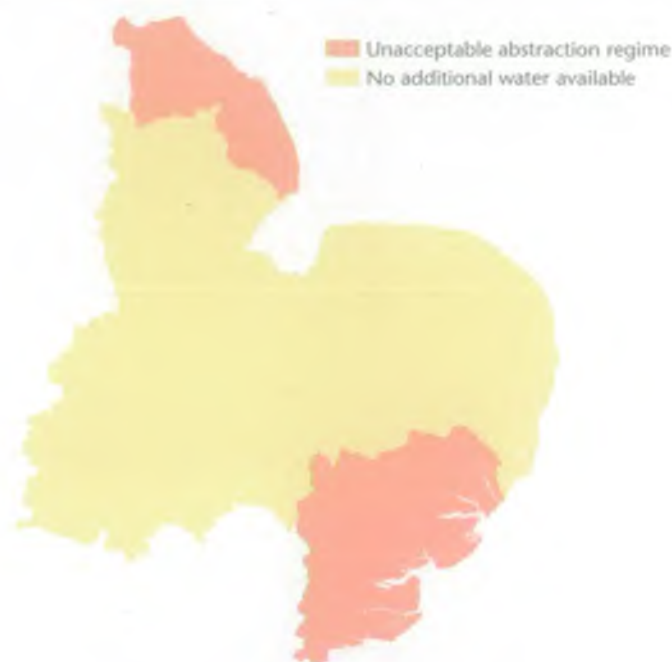
Most of the water abstracted in the region is used for public water supply, which accounts for 77 per cent of the annual licensed amount. Agriculture, and in particular spray irrigation, is the second major use. Although it accounts for 10 per cent of total annual licensed abstraction, its impact is heightened because the water is used by plants, and so little or none of it is returned to rivers. In addition, demand is concentrated in the summer months when river flows are at their lowest. Peak day irrigation demands in our region can exceed public supply demand. The total licensed for direct abstraction by industry, the region's other main water user, is similar to that for agriculture.

The proportions and total amounts licensed for abstraction have remained fairly constant in the last five years. Actual abstraction quantities for public supply and general industry have also remained fairly stable. Agricultural abstraction amounts are more variable, as they are weather-dependent, with higher abstraction occurring in drought years.

Just over half the region has useable underlying aquifers. Groundwater is an important resource for direct abstraction for local use by farmers and industry, as well as for public water supply. As well as the large public water supply reservoirs such as Rutland Water, there are many smaller farm reservoirs throughout the region, which store water

Figure 2 Resource availability

Summer surface water



This map shows, at a coarse resolution, where there are resource sustainability issues. It is derived from the underlying groundwater situation which has particular influence on summer river flows.

Winter surface water



This map shows, at a coarse resolution, where there may be reliability problems in particularly dry years. Licence applications may still be considered in these areas, but will be subject to assessment of local impacts and licences if granted may be less reliable. There tends to be more resource available at the lower ends of the catchments.

from high-flowing winter rivers for irrigation use in the summer.

In some places we think that too much water is taken already. The environment may already be damaged or is in

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- Area Administrative Boundaries
- Regional Boundary
- Area Office
- ▲ Regional Headquarters



www.environment-agency.gov.uk

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