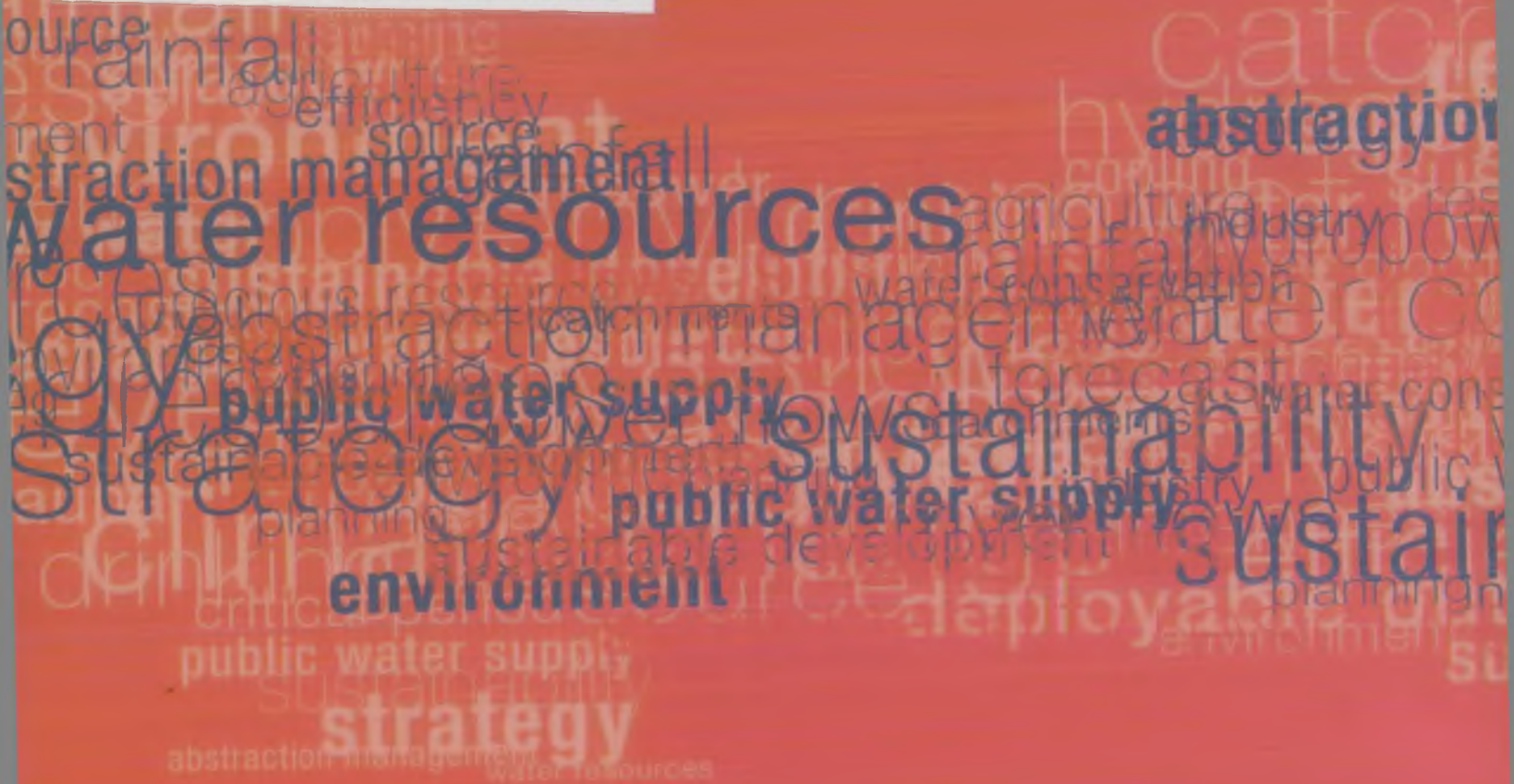


EA WATER RESOURCES



Water resources for the future

A SUMMARY OF THE STRATEGY FOR NORTH EAST 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, reservoirs 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 the North East Region

Government has given the Environment Agency the task of planning how to meet the requirement for water use. As part of this process, we have developed a new water resources strategy for the North East 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 the North East Region.

The North East Region, shown in Figure 1, covers the area east of the Cheviot Hills and the Pennines, from the Scottish border south to the Peak District. Among its major cities are Newcastle upon Tyne, Leeds, Kingston upon Hull and Sheffield. The total land area of the region is 22,774km².

The region has many internationally and nationally important wildlife habitats, which are home to a wide variety of plants and animals. Water of suitable quality and quantity is vital for the survival of these habitats, which include:

- the inter-tidal mudflats, saltmarshes and rocky shore of the Lindisfarne coastal area;
- the pristine river environment of the River Coquet;
- the important river complex of the Lower Derwent Valley in Yorkshire;
- the raised bog habitats of the Thorne and Hatfield Moors;
- the reedbeds, saltmarshes and mudflats of the Humber Estuary.

The region is often perceived to have plenty of rain, but much of this rainwater must remain in the environment to protect and enhance these valuable aquatic habitats. This, coupled with the relatively high use of water in the region, means that it is essential that we manage water carefully.

Planning our use of water

In an average year, North East Region receives enough rain to cover the entire land area to a depth of about 825 mm. More rain falls in the hills of the west of the region, and less in the York and Doncaster area. After evaporation and take-up by plants, this leaves about 2,940 litres a day for every person who lives in the region, or enough to fill about 290 buckets. However, we can't use all this water, because we want to leave enough in our rivers, streams and aquifers 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.



- in the major aquifers, spare groundwater resources are generally available. However, the section of the Sherwood Sandstone aquifer that extends from Selby to Nottingham is over-allocated and may be over-abstracted. Furthermore, parts of the Corallian Limestone and Chalk aquifers in the south east of the region are fully committed.

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. Different factors influence demand.

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.

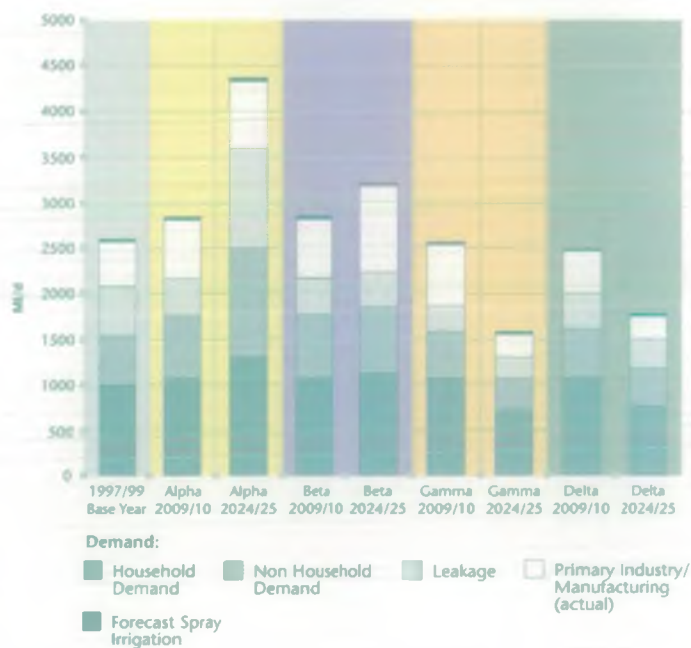
Similar arguments about the effect on demand of differing water use practices apply to industry, commerce and agriculture. Their needs for water are also affected by market considerations, such as the price commanded by different product or crop types.

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 considered a range of possible social and economic changes. We have then calculated future demands for water as a result of these.

Current and likely future demands in our region are dominated by public water supply considerations. The rate of growth predicted by government planners for the region could lead to 300,000 additional households and a population increase of 100,000 by 2025.

Figure 3 illustrates our demand forecasts for North East Region to 2025. The forecasts show that total demand for water could rise or fall significantly over the next 25 years, depending on the scenario followed. In practice it is unlikely that the future will closely follow any one of the scenarios we have used. However, by showing what could occur under each, we have identified boundary limits to guide our resource planning.

Figure 3 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 the 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

Our strategy aims to improve the environment, while allowing enough water for human uses. We have considered its contribution to sustainable development. This includes:

- social progress that considers the needs of all;
- protection of the environment;
- making wise use of natural resources;
- maintaining high and stable levels of economic growth and employment.

Our strategy is flexible and phased. We can, therefore, avoid unnecessary investment while keeping the security of our water supply and improving the water environment.

Our strategy concludes that:

- the water resource position in the North East is generally healthy. However, in the Sherwood Sandstone aquifer in South Yorkshire, environmental improvements are necessary and some modest re-balancing of over allocated resources may be required;
- continued improvement of existing water supply systems is recommended;
- minor resource development, most notably enhancing groundwater storage in the Sherwood Sandstone through aquifer artificial recharge and recovery and a River Aire abstraction supported by bankside storage, are proposed;
- water efficiency should be promoted actively;



Generally the overall water resources position in the North East is healthy: High Force in Teesdale

- over the next 25 years we expect household water metering to become widespread, in line with the Government's broader social and environmental policies including the protection of vulnerable households;
- continued progress in leakage control will be necessary;
- agriculture, commerce and industry must focus on using available water to best effect;
- provided water resources are managed carefully, we believe that a Kielder supported transfer southwards will not be necessary over the next 25 years.

To make our strategy successful, we will need to work with many other groups and individuals. Together, we can ensure that there is enough water, both for people to use and to improve the environment.

How to find out more

You can find more information in the full water resources strategy for the North East Region, available from our Leeds Regional office. Details of our strategies for other regions of England and for Wales are available 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 our website at www.environment-agency.gov.uk.

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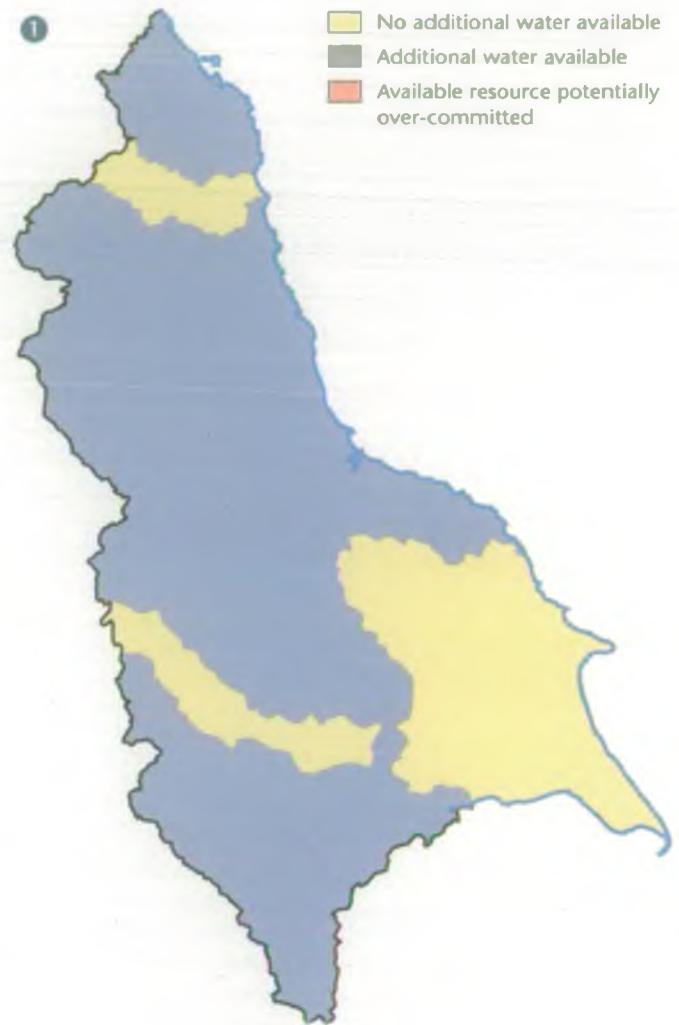


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Figure 1 Topography of the North East Region



Figure 2 Current indicative availability: 1. summer surface water



The availability of water

Water is taken from many rivers, streams, reservoirs and aquifers in the North East Region. Most of this water is used for public water supply. On average this uses nearly 2,100 million litres of water per day (ML/d). Nearly half of this is used in our homes and gardens, and about a quarter in industry and commerce. In addition, industries take about 540 ML/d directly from the environment instead of from the public supply, and farmers can use as much as 170 ML on a particular day to irrigate crops.

When river flows are low, water stored in reservoirs becomes invaluable. The region has over 200 reservoirs, of which Kielder Water is the largest. Furthermore, water stored in underground aquifers provides water to rivers and wetlands as well as for our needs.

In some places we think that too much water is taken already. In these places, the environment may already be damaged. If we want to restore the environment in these places, we must stop taking so much water. In other places, we think that there is no damage now, but that no more

water should be taken. In the rest of the North East Region, water may be available. Almost anyone who needs to take water requires a licence from the Environment Agency. Before we give a licence, we must be sure that it will not harm the environment, and detailed studies may be necessary.

The maps in Figure 2 illustrate the availability of water in the North East Region. In particular, they show that:

- surface water resources are generally healthy. However, there is no further water available during the summer months in the Rivers Coquet, Wharfe, Derwent and Hull;
- all catchments have some surface water available during the winter for further abstraction. However, abstractions from the River Hull are almost at their winter limit;
- present spare resources in Kielder Water can support future abstractions at all times of the year on the Rivers Tyne, Wear and Tees;
- water is available in South and West Yorkshire rivers. With continuing water quality improvements these could provide local potable supplies;

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