



Water resources for the future

A SUMMARY OF THE STRATEGY FOR MIDLANDS REGION

March 2001



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, flushing, washing and cleaning;
- in our gardens, to water plants;
- on farms, to water crops, to 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 us all 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 Midlands 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 Midlands 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 Midlands Region.

For water management purposes, the Midlands Region comprises the Severn and Trent river basins and all of their sub-catchments. Principal among these are the Rivers Vyrnwy, Tern, Teme, Warwickshire Avon, Sow, Tame, Dove, Derbyshire Derwent, Soar and Idle, as shown in Figure 1. The region has a total land area of 21,600 km², and includes

the upper reaches of the Severn basin in mid-Wales, which are also addressed in the Agency's strategy for Wales.

The region's landscape ranges from the mountains and uplands of mid-Wales and the Peak District to the agricultural plains of Shropshire, the Vale of Evesham and the lower parts of the Trent catchment. The major towns and cities in the region include Shrewsbury, Worcester, Gloucester, Birmingham, Wolverhampton, Coventry, Stoke-on-Trent, Leicester, Nottingham, and Derby.

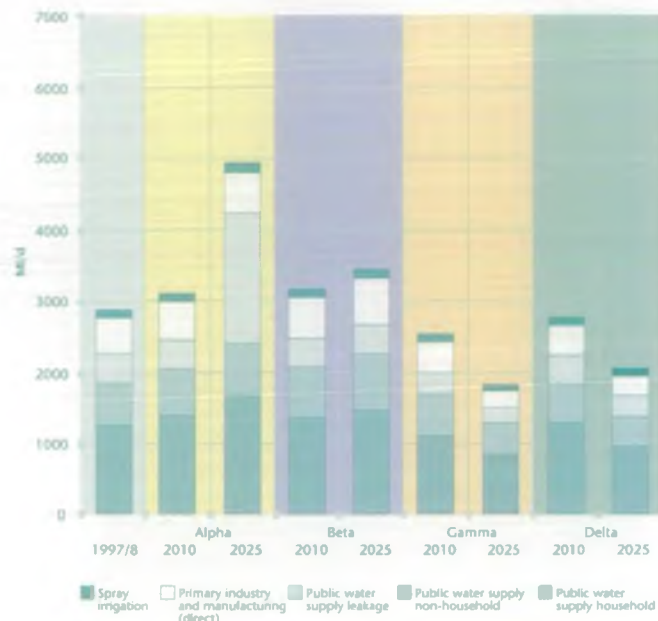
Planning our use of water

Our water resources in rivers, streams and aquifers are replenished by rainfall, but water is a finite resource that we

Figure 1 Regional boundaries in the Midlands



Figure 3 Sector demands by scenario in 2010 and 2025



increase by the same order as industry and commerce.

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. It would be particularly difficult to meet the higher forecasts whilst continuing to safeguard environmental interests adequately.

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 Midlands 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 considers 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 the Midlands, and we need to make improvements to the water environment in many places. To do this, we may have to reduce existing water abstractions by up to 200 Ml/d;
- to maintain a reliable public water supply, we recognise that there may be a requirement for resource development by up to 285 Ml/d above present levels. We will achieve this through improvements to existing schemes and the way in which they are managed. Some new schemes will also be needed; these will include establishing the River Trent as a source for public water supply;
- water companies should maintain the good progress made in recent years to reduce mains leakage;
- we make a number of recommendations to encourage the efficient use of water and minimise its waste in the home and in industrial and commercial premises;
- we expect household metering to become more widespread in the Midlands. This will provide a greater incentive for sensible use of water in the home, whilst ensuring that more vulnerable customers are protected appropriately;
- agriculture must continue to use available water to best effect. In most farming areas, little further summer water is available. Farmers should consider crop suitability and the possibility of 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 Midlands Region or in other documents available from our Solihull 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 and summary leaflet 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 Environment Agency's website at www.environment-agency.gov.uk.



Winter surface water

- Main towns/cities
- Major rivers
- Unsustainable or unacceptable abstraction regime
- No additional water available
- Additional water available

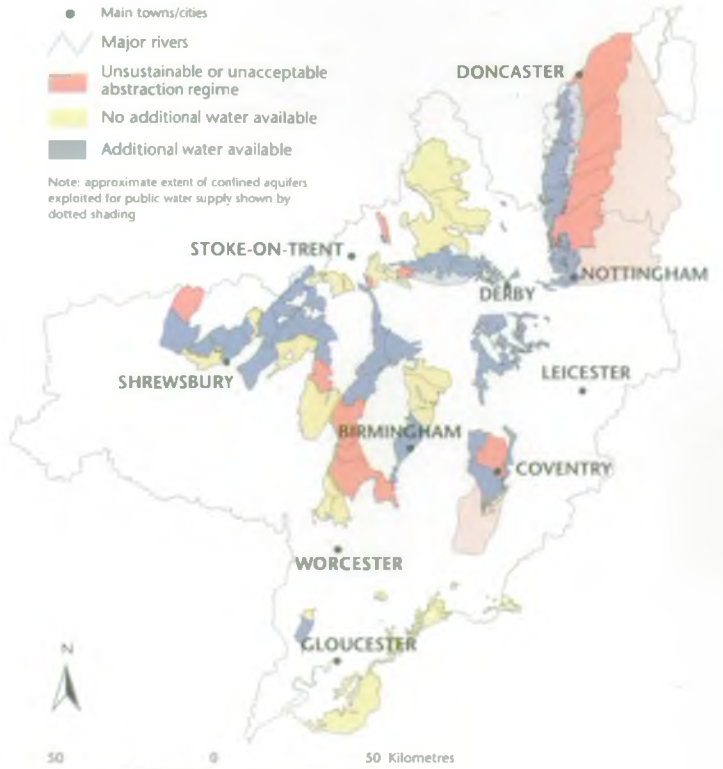


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Groundwater

- Main towns/cities
- Major rivers
- Unsustainable or unacceptable abstraction regime
- No additional water available
- Additional water available

Note: approximate extent of confined aquifers exploited for public water supply shown by dotted shading



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changes to abstraction licences in the longer term. The limestone aquifers in Derbyshire and the Cotswolds are generally licensed to the limit of sustainable abstraction from them. Groundwater abstraction is encouraged in the Birmingham area, where a decline in industrial abstraction has led to rising water levels that cause problems with the foundations of some buildings.

Future demand for water

The amount of water we use 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 use water for washing, bathing, flushing and cooking, to water our gardens, and to wash our cars. Today, on average we each use about 140 litres every day in the Midlands – enough to fill 14 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.

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.

Figure 3 shows our demand forecasts for Midlands Region to 2025. Generally, demand will grow under some scenarios and decline under others.

Government planners predict that both population and household numbers in the Midlands will increase by about 500,000 over the planning period to 2025. Despite this, under one scenario we forecast a significant decline in total household demand in the region. Another scenario, based on different social and economic assumptions, suggests that household demand in the Midlands could increase beyond current levels by as much as 38 per cent by 2025.

Similarly, forecasts for industrial and commercial water use (public supply and direct abstraction) range between a 40 per cent decrease and a 33 per cent increase on current levels, according to which scenario is applied. This demonstrates the scope for more efficient water use by industry and commerce. Spray irrigation demand across the region could decrease by up to 18 per cent by 2025, or

cannot take for granted. In an average year, Midlands Region receives enough rain to cover its entire area to a depth of over 750 mm. 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 2,000 litres each day (about 200 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. River levels are naturally much lower in the summer, and in a dry year, our use of water can lead to problems. Since every drop that people take for public supply, industry and agriculture comes from our natural environment, we need to plan and manage 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.

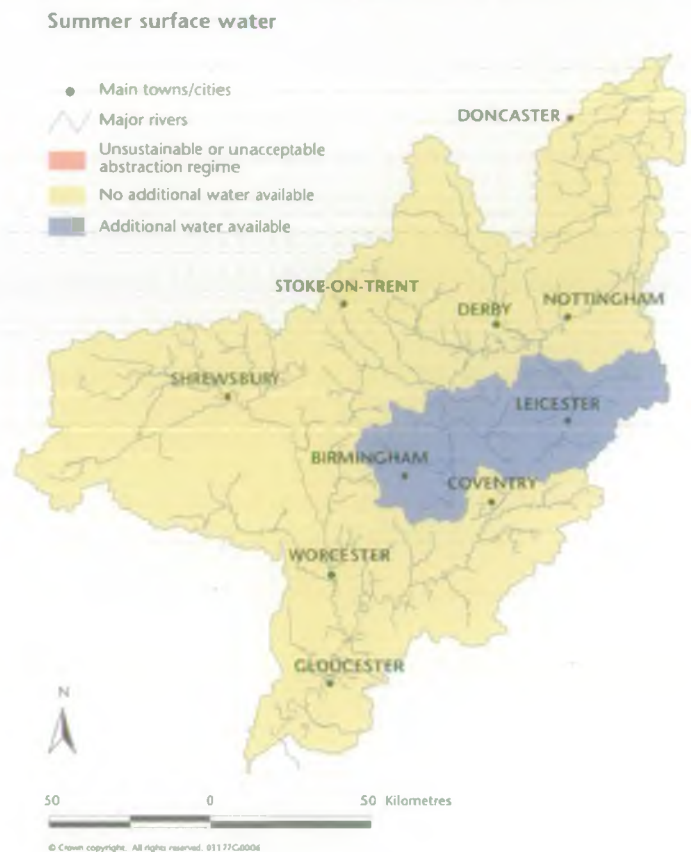
The availability of water

Over 2,300 million litres of water per day (Ml/d) are abstracted for public supply purposes in the Midlands Region. Household use accounts for about half of this, and non-household about a quarter. In addition, industries abstract some 500 Ml/d for their own direct use. Much of the water used for public supply and industry in the Midlands is treated and returned to the freshwater environment, and is therefore available for re-abstraction downstream. However, the used water is often returned some way from where it was originally abstracted.

Direct abstraction by farmers for spray irrigation amounts to an average daily abstraction of a further 110 Ml/d. Although this is a relatively small quantity, it is mainly abstracted in the summer months when river flows are typically at their lowest. Furthermore, very little of this irrigation water is returned, so its potential impact on the water environment is heightened.

Around three-quarters of water abstracted comes from surface water sources (rivers and reservoirs) while a quarter is taken from aquifers. Major reservoirs such as Clywedog, Tittesworth, Blithfield, Carsington and the Derwent Valley Reservoirs are important in the region. Increasingly, local farm storage reservoirs that can be refilled during the winter months are providing secure summer irrigation water supplies for agriculture. Aquifers extend beneath about a fifth of the region and include the widespread Permo-Triassic Sherwood Sandstone, the Lower Magnesian limestone in Nottinghamshire and Derbyshire, the Permo-Carboniferous strata around Coventry, and the Jurassic limestone of the Cotswolds. They are important water sources for abstractors, and for supporting river flows and wetland water levels in dry periods.

Figure 2 Indicative availability of water resources



In some places we think that too much water is taken already. In these places, the environment may already be damaged or is in danger of being 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 beyond that currently authorised. In the rest of Midlands Region, water may be available. Anyone who wants to take water usually needs a licence from the Environment Agency in most circumstances. Before we give a licence, we must be sure that it will not cause damage. Detailed studies are often necessary.

The maps in Figure 2 illustrate the availability of water across Midlands Region. They show that water is not reliably available to support additional abstractions from the majority of rivers in our region during the summer months. Exceptions include parts of the Leicestershire Soar, Tame, and main River Trent. However, there is scope for winter abstraction from most of our rivers and local reservoir support may be needed to ensure total reliability. Parts of the Tern catchment in Shropshire, and a few other localised areas, are already heavily committed to licensed abstraction all year round.

For much of the Sherwood Sandstone aquifer in the region, especially in Nottinghamshire and parts of the West Midlands, there is an imbalance between licensed groundwater abstraction and recharge (replenishment from rainfall). Action to resolve the associated problems and move towards a sustainable level of abstraction will involve

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LOWER TRENT

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Fax: 0115 981 7743



— Area Administrative Boundaries

- - - Regional Boundary

● Area Office

▲ Regional Headquarters

www.environment-agency.gov.uk

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NATIONAL LIBRARY &
INFORMATION SERVICE

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Aztec West, Almondsbury,
Bristol BS32 4UD



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