

# Water

This section of our report considers the quality of water supplied to customers, water resources and adequate customer supplies of water and our water efficiency as a business.

Supply and demand management strategies strongly influence the availability of water resources and we work with a number of stakeholders on these issues. Internal water efficiency is presented in this section of our report. Customer community partnering initiatives on water efficiency are discussed in the Community, Education and Skillsharing section of this report at [www.southernwater.co.uk/sustainability](http://www.southernwater.co.uk/sustainability).

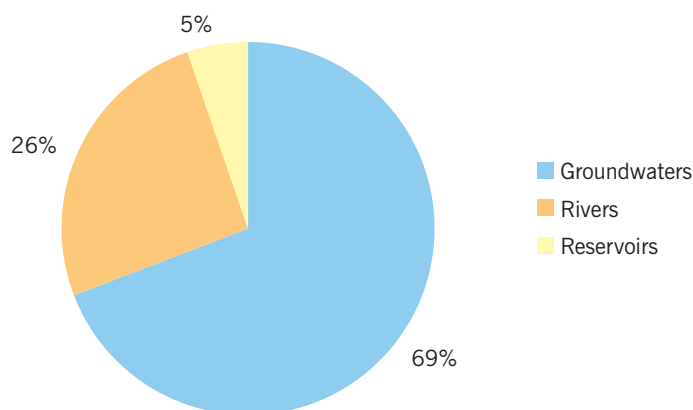


Project Manager Barry Knight inside the new microfiltration plant at Otterbourne Water Supply Works

The geology of our region allows us to derive some 70 per cent of our raw water from underground sources, known as aquifers. Water pumped from these sources is generally of a naturally high quality,

requiring minimal physical treatment. Water supplied from rivers and reservoirs contains much higher levels of impurities and requires more treatment to ensure the water is clean for supply to customers.

Distribution Input 2004-2005



The Drinking Water Inspectorate (DWI) regulates drinking water quality

WaterVoice is an organisation representing customers in England and Wales. (Known as the Consumer Council for Water from 1 October 2005)

The Office of Water Services (Ofwat) is the key regulator for the water industry (Known as the Water Services Regulation Authority from 1 April 2006)

Performance against Ofwat criteria is taken into account in its setting of price limits for each company

## Case Study

### Quality Improvements at Otterbourne

Our water supply works at Otterbourne is one of two key water supply works in Hampshire. It serves a population of around 180,000. The works comprises two sources of water, surface water and groundwater.

The surface water works abstracts water from the River Itchen and provides treatment appropriate to the quality of the surface water there. The groundwater is abstracted from the chalk aquifer via five boreholes and, historically, received only chlorination treatment.

On the basis of results from detailed studies in previous years, along with the assessment and trial of appropriate treatment options, we introduced a further treatment plant for the groundwater supply.

Work to deliver this treatment plant began in 2002 and was completed in early 2005. The treatment employs microfiltration processes prior to the chlorination treatment. This further secures quality of water supplied to customers in the region.

We work to ensure the continual supply of safe, clean drinking water to maintain our customers' confidence in its quality.

## Key Performance

- Our water supply operations continued to be certified to the International Business Standard EN ISO 9001:2000 quality standard
- Our scientific services continued to be certified to ISO quality standard 17025
- Our Overall Quality Index for 2004, as determined by the Drinking Water Inspectorate, was 99.86
- Our Operational Performance Index, as determined by the Drinking Water Inspectorate, was 99.84

## Water Quality

Our record of compliance with water quality standards, as noted in the Drinking Water Inspectorate (DWI) Chief Inspector's report, is among the highest in water service companies. We achieved this with sustained investment ensuring that our works consistently and reliably yield high quality water. We will continue to ensure that all assets are able reliably to produce water supplies of the required quality.

We have in place systems and procedures to:

- Assure consistency of approach
- Standardise best practice
- Adhere to water quality standards
- Safeguard public health
- Provide confidence to our customers

We specify our main potable (drinking) water sampling programme each year, based on current water quality and supply regulations. Both our water supply and our laboratory sampling and testing services are certified to International Standards Organisation standards.

Over the last year we produced a comprehensive briefing for public health contacts in our region. The briefing included discussion of Drinking Water Safety Plans (DWSPs) following recent revisions to the World Health Organisation guidelines for drinking water. The DWSPs will define risk management approaches for all stages of water supply from source to customer tap. Included in the plans are three stages; system assessment, operational monitoring and management.

*World Health Organisation (WHO) is the United Nations specialised agency for health*

*We produce a business plan to Ofwat every five years. This proposes what capital work we need to undertake over a five-year period, the running costs for the company and customer revenue. Our business plan for 2005-2010 was agreed over the last year*

*We need a variety of assets to meet our service duties. Assets are the infrastructure and plant needed to run our business operations. They deteriorate with age and use and can require maintenance, repair, refurbishment or replacement*

*We maintain 94 water treatment works*

*Our distribution mains extend to 13,476km*

*We supply a resident population of 2,283,290*

*Our allowance for drinking water quality improvements over 2005-2010 is £14 million*

2004 Target	2004 Progress	2005 Target
<b>Water Quality</b>		
Zero treatment works failing coliform standard with enforcement action.	Target met. 	Zero treatment works failing coliform standard resulting in enforcement action.
Zero service reservoirs failing coliform standard with enforcement action.	Target met. 	Zero service reservoirs failing coliform standard resulting in enforcement action.
99.7% of customer taps samples with no coliforms.	99.8% Target met. 	Maintain target.
Physico-chemical compliance customer taps 99.8% compliant.	99.9% Target met. 	Maintain target.

KEY: Target met  In progress  Target not met 

The maintenance of public water supplies depends on a delicate balance between supply and demand of water. Periods of unusually hot or dry weather can substantially increase the demand for water and reduce the volumes available for supply.

## Key Performance

- We continued to meet with WaterVoice Southern quarterly over 2004-2005 to discuss customer feedback and issues
- We met customer supply needs in difficult circumstances over 2004-2005, without restrictions

Our water resource region covers an area of some 4,450 square kilometres

We put into distribution 586 megalitres of water per day over 2004-2005

The average person in the South East uses 160 litres of water a day, the equivalent of two baths

The South East of England is one of the driest regions of the country. It is also a region with high forecast population growth

*"Hotter and drier summers are likely to result in a seasonal reduction in available water resources and an increased risk of drought"*

*The Independent on Sunday, 6th February 2005*

We take an active role in working with other water companies in the South East of England, Ofwat and the Environment Agency (EA) to produce an integrated water resources strategy for development of major strategic sources

The EA regulates our use of water from rivers and underground sources by means of abstraction licences

The EA, through its Catchment Abstraction Management Strategies, has identified where abstraction licences allow more water than is sustainable or naturally replenished, to be abstracted

## Water Resources

Between November 2004 and January 2005 only half the normal amount of rain fell in the South. Less than half the average rainfall for January and February then followed, making river flows and groundwater lower than usual for the time of year. The winter of 2004 was the second driest on record for our region. Underground resources rely solely on winter rainfall to refill them. As indicated earlier, around 70% of water supply for our region comes from underground water sources. We monitor groundwater levels closely year-round, alongside other water resource information. We compare this data to long-term averages in order to plan our water supply activities over the changing seasons and ensure continuity of supply.

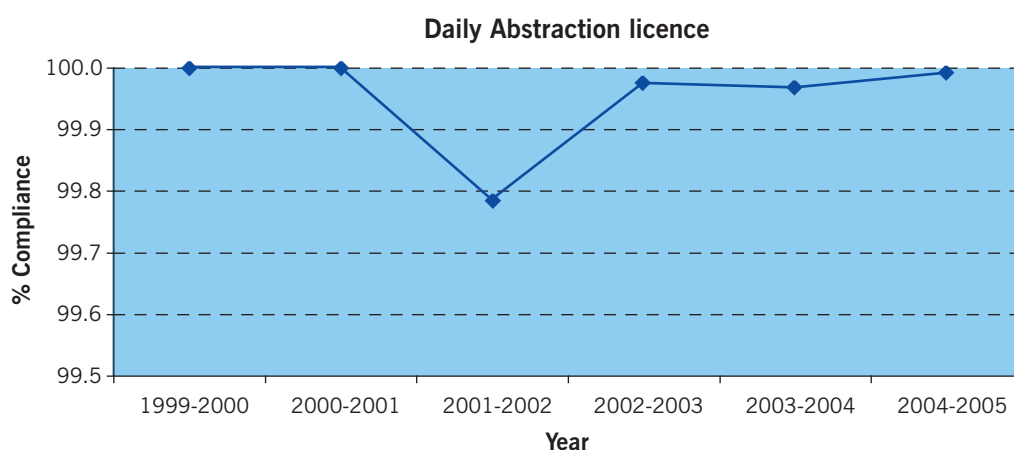
We work with the Environment Agency (EA) and other water supply companies in the South East to plan water resources for our region. We produce detailed plans every five years, each with a 25-year planning horizon. Planning requires a balance of water supply and customer demand management strategies. Part of our collaborative planning activities contributed supply/demand forecasts to the South East England Regional Assembly South East Plan, based on expected population growth for our region.

We continued to work with a number of partners on sustainability studies that form a part of the EA's national environment programme. These studies review the effects of water abstraction on the nature conservation value of nationally important sites.

We recently completed a study on the effects on the River Itchen in Hampshire, a site that was designated as a candidate Special Area of Conservation for its European nature conservation importance. This year we have continued to work with our stakeholders to develop a sustainable management strategy for the river.



Weir Wood Reservoir in February 2005





Construction of the Bewl-Darwell transfer pipeline

*Our region's existing water resources are used to their full capacity. Major new water resource developments are required to maintain future levels of service*

*Since 1950 global water use has more than tripled*

## Meeting Demand

Our region is one of the driest areas in Britain. Major new development and growth is planned throughout the region and the implementation of Government housing policy is forecast to increase the current rate of house building by some 50 per cent.

All water companies produce drought management plans. Critical drought conditions may be triggered under a wide range of circumstances, for example:

- In 1972-1973 groundwater sources in the east of our region were affected by consecutive periods of less than average winter rainfall
- In 1976 groundwater levels and river flows were low across most of our region due to a dry winter, followed by above average demands in the hot summer causing a resource availability drought
- In 1989-1992, the South East suffered a succession of dry winters and elevated customer demands

- In 1995, groundwater levels depleted through the long hot and dry summer with unprecedented peak demands at the end of July. This was a demand-led drought

Major resource developments are required to maintain future water supplies to customers. Continuing pressure to reduce abstractions within environmentally designated catchments across the South East adds to the complexities of planning the future supply/demand balance for our company. We plan to improve our security of supply index and maintain it into the future through implementing the following programme over 2005-2010:

- Enhancing certain water supply works to provide increased capacities year-round or seasonally
- Enhancing the pipeline linking the northern parts of West Sussex to the coast to allow more effective water transfer at times of peak demand

- Metering on change of occupier throughout supply areas in Sussex
- Reducing leakage by one million litres per day in northern parts of West Sussex and along the coast
- Conducting two strategic resource investigations, and additional supporting investigations, to refine the medium to long-term strategy from company and regional perspectives
- Completing a series of major studies to investigate the possible adverse effects of abstractions

Over 2004-2005 we completed a new pipeline that can transfer an extra 25 million litres of water a day from Bewl Water Reservoir on the Kent/Sussex boundary to Darwell Reservoir in East Sussex. We undertook this project to help safeguard water supplies to the coastal towns of Hastings and Bexhill.

Together with South East Water, we laid more than 2,000 pipes along the 17km route between Bewl and Darwell as part of this £25 million joint project.

The pipeline runs underwater for three kilometres, across the bed of Bewl Water, and then continues across farmland via Ticehurst, Etchingam and Robertsbridge, running under roads, railways and rivers.

2004-2005 Target	2004-2005 Progress	2005-2006 Target
Implement optimal refill operations at key reservoir refill sites within the Bewl-Darwell system.	Target met.	Implement company policy on abstraction alarms and auto shut-downs on all our groundwater sources.
Implement groundwater monitoring at priority sites across the region.	Target met.	
		Increase water available for use to 697.6 Ml/day.

KEY: Target met In progress Target not met Not applicable

We partner with our customer community to deliver water efficiency initiatives. We also work to reduce consumption of water within our operations and further alleviate demand on water resources in our region. This section reports on our work to reduce our consumption of regional resources.

## Key Performance

- We lead the industry in our record of reducing leakage from the water distribution system
- We found 207.8 megalitres (million litres) of water savings through our internal water efficiency initiatives over 2004 -2005
- We saved 6.8 megalitres of water each day over 2004-2005 through our customer community water efficiency programme

We produce an annual magazine for our customers, called *Splash*. This includes our services, facts and figures about our business, our work in the community and water-saving ideas

We put into distribution 586 megalitres of water per day over 2004-2005

## Our Water Efficiency

We continued to monitor and compare our operational water consumption between different sites. From comparisons of this data we identified appropriate sites for audit and examined water consumption more closely. We found issues such as leakage and the use of potable water consumption for operations that could instead use final treated effluent. We produced a rolling programme of initiatives required to address issues identified. This assisted us to plan expenditure and prioritise work against the returns to be found through saving additional water resources.

We investigated potable water consumption at one key site and identified significant savings. A large leak was found at one location and repaired. We plan to maintain our water efficiency at this site over the coming year.

Leakage



Our maintenance of low leakage levels from our distribution network remained strong. We will work to maintain this high level of performance and to further reduce leakage in areas with low water resources over 2005-2010. We looked at the records of burst mains, interruptions of supply to customers and the incidents of low pressure to determine improvements. We balanced these against the cost considerations of locating and repairing leaks when focussing our 2005-2010 business plan.

2004-2005 Target	2004-2005 Progress	2005-2006 Target
Undertake quarterly reporting to compare water use between sites serving populations above 25,000.	Annual reporting complete and 207.8 megalitres of savings delivered over 2004-2005.	Identify 200,000m <sup>3</sup> /year water savings from sites.
Carry out audits of sites with high water consumption compared to the populations they serve, and on sites with deteriorating trends in consumption.	Target met.	
		Install 7,136 meters in households in areas of deficit water supply.
		Increase to 30.3% the ratio of metered households.
		Maintain total leakage at 92MI/day.

KEY: Target met In progress Target not met Not applicable