
WATER

Indicator 1 - Water Consumption

The average demand for water from Three Valleys Water through the year 1998/99 was 680 MI/d which was 19 MI/d lower than the previous year. The reduction represents a combination of further inclement summer weather conditions, a mild winter and reductions in leakage from the mains. Average Day Peak Week demand at 773 MI/d was 22 MI/d lower than the previous year peak demand. Generally peak demand was suppressed due to relatively poor summer weather.

Despite low rainfall through the 1997/98 winter, heavy rainfall in April 1998 resulted in belated improvements in groundwater levels such that conditions throughout 1998/99 were better than 1997/98 and, although the low levels remained a mild concern, the overall situation was more comfortable and predictable. River conditions were also improved throughout the summer.

Rainfall was above average through the 1998/99 winter period and groundwater levels further improved in all areas. Accordingly normal water resources situation is expected for 1999/00.

The average household per capita consumption of water in Hertfordshire is currently 169 litres per head per day. Total leakage has been reduced from 148 to 135 million litres per day, a total reduction of 13 MI/d since last year, beating the Ofwat target by 1 MI/d.

Indicator 2: River Quality

The Environment Agency monitors the chemical and biological quality of our rivers using a system that classifies river quality as shown below:

A – Very Good	D – Fair
B – Good	E – Poor
C – Fairly Good	F – Bad

The chemical quality of the rivers in Hertfordshire is shown on a map in the colour summary report.

The table below shows the proportion of river in each class between 1994 and 1998. The years are shown as 1995-97, for example, because the quality is averaged over a three year period.

	1994-96 (km)	1995-97(km)	1996-98(km)
A	64.39	28.99	25.5
B	111.99	81.72	77.4
C	94.72	99.76	116.4
D	23.95	76.13	84.3
E	16.71	29.54	35.9
Total	311.76	315.44	339.5

- 340km of river in Hertfordshire are classified under this system;

- 31% of the rivers in Hertfordshire were of Very Good or Good quality (A and B) in 1996-8 compared to 35% in 1995-97, a decline of 4%;
- 11%, or 30km, of the rivers in Hertfordshire were of Poor quality (E) in 1996-98 compared to 9% in 1995-97, an increase of 2%.

An additional 25km of river have been included in this year's data compared to last year, when 315km of river had a GQA classification, because of additional river reaches being incorporated into the classification.

The decline in water quality is thought to be due to drought conditions in recent years, which have led to low flows and pooling of water. In turn, this has led to reductions in dissolved oxygen and reduced dilution of effluents. Underground water was not been replenished, further lowering river levels. Rainfall, groundwater recharge and river flows returned closer to the long term average in 1998 and 1999, which may be reflected in better water quality in future years.

Indicator 3: River Quality Objectives

The river reaches that are monitored for their water quality also have River Quality Objectives (RQOs). The RQO scheme is based upon the recognised uses of a river. At present, objectives are only based on the River Ecosystem (RE). These address the chemical quality requirements of different types of aquatic ecosystems as outlined below:

Class RE1:	Water of very good quality suitable for all fish species;
Class RE2:	Water of good quality suitable for all fish species;
Class RE3:	Water of fair quality suitable for all fish species;
Class RE4:	Water of fair quality suitable for coarse fish populations;
Class RE5:	Water of poor water quality which is likely to limit coarse fish populations.

Compliance with these objectives is recorded as pass, marginal or fail. This system will be extended to other uses in the future. Objectives based on biological monitoring are to be introduced in the year 2000.

Unfortunately, the compliance data is not available for 1996-98.

This table shows the length of river in Hertfordshire in each class and compliance with River Quality Objectives in 1995-97.

	RE1 (km)	RE2 (km)	RE3 (km)	RE4 (km)	RE5 (km)
Pass	19.58	53.49	79.35	7.23	9.33
Marginal	0	52.59	56.6	2.23	0
Fail	0	25.79	2.29	6.75	0
Total	19.58	131.87	138.24	16.21	9.33

- 315km of river in Hertfordshire had a River Quality Objective.
- 51% of the rivers passed their River Quality Objective in 1995-97, compared to 100% passing in 1994-96, a decline of 49%. This decline is thought to be due to drought conditions in recent years.

Water Resources in Hertfordshire 1998/99

The exceptionally wet April of 1998 brought mixed blessings, with several flood warnings being issued and some property flooding occurring. The catchments became fully saturated following the heavy rains and significant recharge occurred with some areas, notably the Lee Chalk, getting more recharge this month than the whole of the winter period combined. Groundwater levels rose as a result of the exceptional April rains, and in some areas were still rising in May in response to the late recharge. Despite this, groundwater levels throughout NE Area remained below average when the recharge had ceased.

The summer of 1998 as far as rainfall was concerned was something of a mixed bag. May had 50% of average, June 188%, July 32%, August 40% (it was the driest July to August period on record for the Thames Region as a whole), and September 150%. The wet September and October (175% of average rainfall) reduced the soil moisture deficits dramatically. By the end of October they had been eliminated from the Chilterns and were only 5mm for the Lee Chalk allowing significant recharge to occur throughout the area. November and December saw slightly below average rainfall, but nevertheless recharge continued, with groundwater levels throughout the Chilterns and Lee Chalk showing a response by the end of November. By the end of November many of the Chilterns observation boreholes showed that groundwater levels had recovered to at least average or above.

January 1999 was a wet month and groundwater levels continued to show a rapid rise throughout the area. Some areas of the Chilterns by the end of the month had groundwater levels approaching their long-term maxima. During February, despite it being a dry month, the groundwater levels continued to rise. March was dry, but again groundwater levels continued to rise in most areas, though data from some observation boreholes in the Chilterns indicated that levels had peaked and had begun to fall.

Statistics for the end of the recharge period for 1998/99 showed that the Chilterns West and East had achieved 120% and 141% of average respectively with the Lee Chalk attaining 142%. By the end of March 1999 groundwater levels in the Chilterns were well above average. In the Lee Chalk most areas had groundwater levels at average or above with some still showing an upward trend. Areas of the extreme northerly part of the Lee Chalk around Therfield remained below average, but still rising. River flows had similarly recovered to average or well above average.

April saw a dry period at the start of the month, then a run of typical April showers. Groundwater levels started to recede but river flows remained average or above. May saw below average rainfall with the urban and clay runoff rivers showing a decline. Heavy thunderstorms in June kept flows in the runoff rivers above average, groundwater levels continued to decline as they would normally during the summer months, with those in the Chilterns remaining above average and those in the Lee Chalk at or just below average.

July was hot, with below average rainfall. In comparison a wet first half of August produced above average flows in many rivers. The first half of September was hot and dry with the second half producing well above average rainfall. River levels rose, and flows increased, with most rivers having a September mean monthly flow slightly above average.

Below average rainfall for October and November across much of NE Area of Thames Region has meant that soil moisture deficits remain above average in the eastern part of the Area, and the onset of the winter recharge period has been delayed. The Chilterns catchments have now saturated and recharge has started, but for the Lee Chalk groundwater levels are still declining.

The Agency is continuing to monitor sources of all rivers in the NE Area of Thames region on a monthly basis. After the above average rainfall last winter (1998/99) the source locations moved back up the catchments and have remained at their normal locations throughout this summer.

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