

## Policy Position Statement

# Managing drought in the UK

### Purpose

This Policy Position Statement discusses the causes of drought in the UK, how we can learn from and plan for drought, and sets out the position of the Chartered Institution of Water and Environmental Management on this issue.

### CIWEM calls for:

1. The continuation of comprehensive drought planning by all those with an interest in the water environment – water companies, government bodies, regulators, other abstractors and businesses that rely on water. These should be updated as circumstances dictate, even during a drought if planned actions turn out not to be the most sensible solution, or as a new option comes to light.
2. Clear information for the public and other water users explaining that droughts are natural and cannot be avoided, but that people can help to manage the effects of drought.
3. Ways that people and businesses can save water in a drought to be set out clearly in a way that people can understand.
4. Integrated communication between all those involved in and affected by drought, to minimise conflict and encourage effective management.
5. Restrictions on water use for non-essential purposes (appropriate to the level of drought severity) to be considered early in a drought, as a sensible way of reducing the demand for water to reduce the likelihood of more serious later impacts on the environment or further restrictions on water supply.
6. Temporary Bans on the use of water for non-essential purposes to be seen as an important drought management tool, and not as a failure. Water companies should not be penalised financially for appropriate use of these restrictions. However, water companies should take into account the significant cost of such restrictions on some users.
7. Drought planning and management to recognise the importance of water to farming and business.
8. Consideration of need for a 'Drought Monitoring System', to complement and enhance the European Drought Alert System (similar to that which exists in the US), to improve preparedness and response to droughts (cf. the England & Wales and Scottish national flood forecasting centres).

9. Effective and innovative mitigation options identified to reduce the impact of drought measures so that the effect on the environment is reduced as far as possible (e.g. aeration of rivers to mitigate the adverse impacts of abstraction licence relaxations).
10. Support for further scientific research on delivering improvements in seasonal forecasting, soil moisture monitoring systems and developing climate services, together with better mechanisms to ensure rapid uptake of this science into drought management and public information systems.
11. Further research into: long-term drought forecasting methods; the way that hydrological and ecological systems respond during drought, and recover after drought; the impact of climate change on future droughts; the economics of drought management and the economic measures that might be employed.

**CIWEM is the leading independent Chartered professional body for water and environmental professionals, promoting excellence within the sector.**

## UK drought

Many people think that the UK is wet. It is, in some parts and at some times; however the amount of rainfall per capita is low in some areas of the country. Our temperate climate brings frequent rain, but the weather is very variable, with very dry spells being possible at any time of year. For much of the country, low rainfall in winter rather than in summer is the key determinant of potential drought as winter rainfall is critical for recharging aquifers that are important for maintaining river baseflows in the following summer; and for recharging reservoirs. A series of dry months starts to cause environmental stress, with low river flows and groundwater levels. Public water supply is designed to cope with dry weather across a range of scenarios, but prolonged droughts (of two years or more duration) require careful management.

Droughts of 18 months to 2 years duration are a feature of the UK climate; but longer droughts can occur. 1975-76 is perhaps the most well-known drought of recent decades. In England and Wales, two consecutive dry winters (1974/5 and 1975/6) were followed by a very hot and dry summer in 1976. Many restrictions on water use were introduced, including rota cuts in South Wales and standpipes in parts of Devon. Many trees died from moisture stress and the hot summer led to many fires on moorland and heathland. The drought broke with a very wet autumn in 1976.

Droughts are not confined to the drier parts of England. In 1995 a dry winter in the Pennines gave rise to very low reservoir levels in parts of Yorkshire. Road tankers were used to bring water from Northumbria to Yorkshire. There were also widespread droughts in 1933-34 and throughout the 1880s.

The worst drought in Scotland in the last 30 years was in 1984 when five very dry months caused supply problems at a number of locations. The most recent drought was in 2003 when the dry summer was followed by an exceptionally dry autumn resulting in a number of reservoirs reaching very low levels. The worst affected area was Tayside where two consecutive drought orders were granted during 2004 to allow reservoir levels to recover.

In 2006, hosepipe bans affected 16 million people in southern England and three water companies were granted powers to restrict non-essential use of water. Environmental impacts included fish deaths, reduced breeding of wading birds, and outbreaks of poisonous blue-green algae in rivers and lakes.

The most recent drought in the UK occurred between 2010 and 2012 when below average rainfall for central and eastern parts of England between late 2010 and early 2012 and a dry 2011-12 winter resulted in record low soil moisture deficits, river flows and groundwater levels. Widespread temporary use bans were put in place together with restrictions on other water users (such as spray irrigation, nurseries, public gardens, etc.) but were removed after a particularly wet early summer. The drought was characterised by a pronounced east-west split with the west of England being largely unaffected.

## Planning for drought

It is neither possible nor economically sensible to avoid the occurrence and impact of drought entirely, but we can work to make sure that the effect on the environment, on people and on the economy is minimised. Drought planning is undertaken to a varying extent by a range of organisations within England and Wales, including the Environment Agency, the water industry and other parts of the water sector, including those with responsibility for navigation, power generation and agriculture, all of whom have an interest in managing the impacts of droughts. Water companies' drought planning should make sure that essential public water supply can be maintained through prolonged droughts by considering a wide range of possible drought conditions.

Drought Plans should show the actions that water companies plan to take as a drought progresses, and help to strike the right balance between water supply and impact on the environment. CIWEM believes that people should not expect an unlimited supply of water at all times, and that restrictions on water use such as Temporary Bans are part of a sensible range of measures that water companies should take. Water companies should not be criticised for the introduction of temporary water use bans where these are necessary, and there should be no financial penalty for appropriate use of restrictions. Temporary Bans include restrictions on hosepipes and sprinklers to wash cars and for garden watering, for filling pools and outdoor cleaning.

CIWEM believes that water suppliers in Scotland and Northern Ireland should also prepare similar drought plans to make sure that they are ready for future droughts.

CIWEM believes that people throughout the UK are insufficiently aware both of the possible impact of drought and measures that they can take to help to reduce its effect. Understandably, water suppliers are reluctant to alarm their customers but it is important to understand that there can be a risk of restrictions to water supply. CIWEM believes that recent experience in south east England demonstrates that people do accept that drought is a natural event even in the UK. CIWEM recommends more work from water suppliers, regulators and Government to help to make people aware of the risk of drought. The concept of security of supply needs to be understood as meaning security of supply for essential uses, not for all uses at all times.

Taking additional water from the environment is a valuable drought management option, but may also cause additional stress to the water environment at a time when plants and animals are already suffering from low flows. CIWEM believes that the additional impact should be mitigated wherever possible, and that drought plans should identify clearly the environmental impact of any drought measures. This may require additional environmental monitoring before, during and after droughts so that the impact can be evaluated fully.

## Future drought

We know that there will be droughts in the future; and the likelihood is that they will become more testing, as climate change, environmental management obligations and demand from population growth put increasing pressure on available supplies in dry and drought spells in particular. Climate change is expected to bring hotter, drier summers and wetter winters; though not necessarily in tandem, or in all years. This means that summer droughts seem very likely to be more frequent. This could be particularly important for upland reservoirs in the north and west, many of which can reach very low levels in a hot, dry summer. The impact of climate change on long droughts is less clear. If dry summers are separated by wet winters, long lasting droughts may become less frequent as short sharp droughts become more frequent. But whilst on average winters may become wetter, some winters may be drier, and there is no guarantee that two, three or more season drought sequences will not occur. If they do, the combined effect will be more intense than experienced previously. Three season and longer still droughts are rare in the UK, but countries such as Australia have recent experience of longer droughts; the most recent being seven years. The driest long-term period on record in the UK ran through the 1880's and 1890's.

CIWEM recommends that scientific studies of the likelihood and impact of climate change on the frequency and duration of future droughts, and of the response of social and environmental communities be continued, and that the results be widely disseminated. Water companies should build the findings of such work into their long-term water resources plans and adequate funding to deliver these plans should be provided by Ofwat, but should also make sure that their drought plans can cope with a wide range of future conditions. Similarly, other parts of the water sector with a responsibility or need to plan for droughts should take account of such studies and research.

Drought management would be significantly easier to manage with reliable long-range weather forecasts. At the moment, water resources managers have to take decisions under the assumption that the weather continues to be dry. Many of the steps taken turn out, with hindsight, to be unnecessary. Improved longer-term weather forecasts would help to improve decision-making during a drought although drought management will still need to plan for the worst case scenario. CIWEM supports further work on long-term drought forecasts. We note that although climate change science is improving, the state of our understanding of future climate is not good and the uncertainty band remains wide. Therefore, CIWEM would support additional research into future climate change impacts.

## October 2012

*Note: CIWEM Policy Position Statements (PPS) represents the Institution's views on issues at a particular point in time. It is accepted that situations change as research provides new evidence. It should be*

*understood, therefore, that CIWEM PPS's are under constant review and that previously held views may alter and lead to revised PPS's. PPSs are produced as a consensus report and do not represent the view of individual members of CIWEM.*