

Drought Plan 2019

Annex 7: Post-drought actions

July 1, 2019
Version 1



from
**Southern
Water** 



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Introduction

This annex explains how Southern Water will de-escalate its drought activities as the water resources situation improves, eventually recognising that conditions have returned to normal and the drought has ended.

Following the cessation of a drought we will undertake a review of how the company responded in order to identify any improvements to the Drought Plan that are necessary. This 'post drought review' would involve stakeholders including regulators and affected neighbouring water companies to ensure that the review covers a broad range of experiences and views.

Identifying the end of a drought

It is important to track the de-escalation of a drought and recognise when it has ended. This allows a safe and considered de-escalation of drought related activities whereby any temporary impacts upon customers and the environment are reduced and finally removed in a timely manner.

It is important to recognise that there is a difference between the ending of a drought event purely in relation to low rainfall and when it is acknowledged that water resources have recovered back to within the normal range of conditions. Drought events are characterised by a cumulative deficit of rainfall. When a drought 'breaks', it often does so with events which lead to a period of much higher than normal rainfall. However, it may take some time for aquifer and reservoir levels to return to normal conditions. Therefore until there has been sufficient excess rainfall to remove the soil moisture deficit, to restore river flows and begin recharge to groundwater, drought interventions may still be required.

The recovery and a return to normal water resource conditions can take some time, especially for groundwater. This is because summer rainfall rarely leads to significant groundwater recharge and so it is normally a surplus of winter rainfall that leads to a recovery to normal or above normal groundwater conditions.

'Normal' conditions are when hydrometric measurements (rainfall, river flow, and groundwater and reservoir levels) are within a defined range of values that is most frequently expected to occur at a specified point in the year. In the Drought Plan the 'normal' range extends to the impending drought trigger which is when hydrometric measurements fall to values that would be expected to occur every 5 years on average or less often.

The Environment Agency provides the following definition for the end of a drought: "*when the risk of impacts from drought is no greater than during a normal year and where normal conditions have continued for a period of time*".

It is important to note the implications of the agreement reached between Southern Water and the Environment Agency under Section 20 of the Water Resources Act 1991 (the s20 agreement) following the River Itchen, River Test and Candover abstraction licence Public Inquiry in March 2018. This affects Southern Water's Western area, and in particular drought management measures that might be needed in Hampshire. The agreement sets out the need to apply for a Drought Permit for the River Test in 'normal' conditions as defined in the Drought Plan. This is earlier than we would need to apply for Drought Permits and Orders elsewhere. Whilst we may not need to implement the River Test surface water Drought Permit until the 'drought' stage has been reached, the Drought Permit may need to stay in place for longer during the drought escalation process than other Drought Permits or Orders would necessarily need to. This is to ensure the risk of needing to use the Drought Permit has been minimised in order to avoid needing to apply for it again immediately afterwards.

As such the end of drought declaration in Western area maybe delayed beyond that in other supply areas which have experienced similar drought conditions.

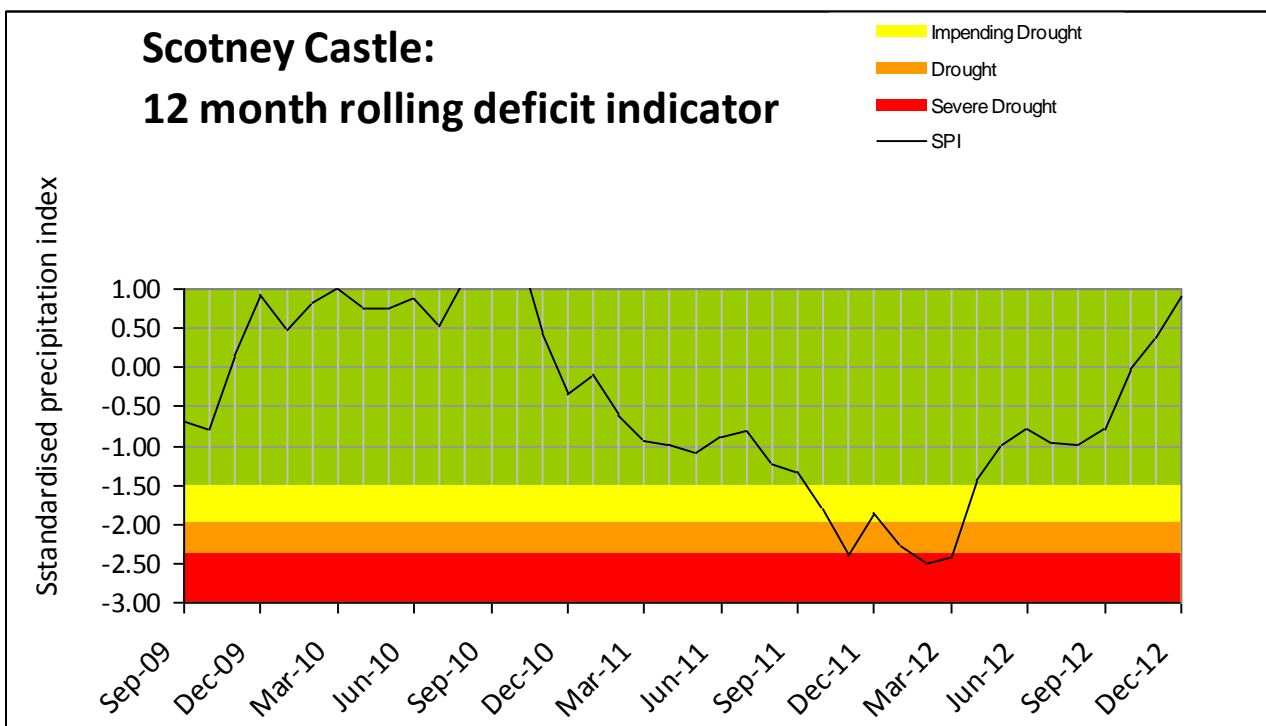
Monitoring and triggers

When monitoring the de-escalation of a drought event and assessing if a drought has ended, the company will use a combination of rainfall, water levels and river flows. These will be the same indicators that it uses to monitor the water resources situation and when the different stages of drought are triggered. Latest data on these hydrometric indicators are reported in the company’s ‘Drought Dashboard’ which will be updated and reviewed by the Drought Technical Group on a regular basis during the de-escalation of a drought. Further information on the Drought Dashboard is included in Annex 1.

The company will also review its forecast supply availability against forecast demands to identify if a threat to supplies remains. The end of the drought can only be confirmed once sufficient rainfall, river flow, groundwater level and reservoir level indicators have moved back above the trigger thresholds, and there is no significant risk forecast through the supply-demand balance evaluation.

Figure 1 is an example from the 2010-2012 drought showing how the rainfall deficit at Scotney Castle, as measured by the 12 month Standard Precipitation Index (SPI), returned to normal water resource status following the increased rainfall in the spring and summer of 2012.

Figure 1: 12 month SPI figures for Canterbury rainfall gauge from September 2009 to December 2012



As the water resources situation improves there may need to be a trade-off between shorter duration indicators (e.g. 12 month rainfall indices, rapidly responding groundwater levels), which will move out of drought first, and longer duration indicators (e.g. 24 or 30 month rainfall indices, water levels in large reservoirs and slow response groundwater levels), which may take more time to return to normal due to lag effects.

This is where the supply forecast is crucial, as it will be used to compare against anticipated demands to determine whether any indicators that are still below trigger thresholds for long duration indicators represent a significant risk, and hence whether drought interventions should be removed. For a high recharge, rapid end to the drought, such as occurred in 1976, this will not tend to be an issue, as all indicators will rapidly move back above the relevant thresholds.

Annex 2 includes a number of examples of historic and alternative (stochastically generated) drought events showing how different droughts de-escalated and ended relative to key hydrometric indicators. For example Figure 1 in Annex 2 shows the relationship between rainfall experienced at Scotney Castle, water levels in Bewl Water reservoir and groundwater levels at Oad Street and how, as these improved, the drought of 1901-03 came to an end. This drought is a good example of how interventions would be removed in a phased approach as the water resources situation gradually improves, and that often the last hydrometric indicator to return to 'normal' is that of the groundwater level.

Annex 2 also contains examples from the Western area of how historic and alternative (stochastically generated) droughts de-escalated, in hydrometric terms in relation to our drought stages, and how drought interventions would have been removed in these drought events with the s20 agreement in place.

De-escalation of drought activities

The de-escalation of drought activities will not necessarily take place according to the same trigger levels as an escalation in activity when a drought develops. During the return to normal conditions, it is prudent to wait until there is a reasonable degree of certainty that sufficient recovery of both groundwater and surface water resources has occurred. This is to ensure that should there be a short-term return to drought conditions there will not be a need to re-escalate communication and other activities, with the attendant time delay involved and the potential confusion for customers that this could cause.

For instance, where customer water use restrictions have been in place over a summer, the company may wait until February or March of the following year to establish whether replenishment of surface water storage and groundwater recharge over winter has been sufficient to restore the supply situation so that restrictions can be lifted.

The necessity of continuing this policy after drought conditions have eased can often be difficult to understand, especially if high rainfall leads to flooding. Before the company de-escalates its drought activities, it will need to be reasonably certain that water resource conditions have returned to normal. This may lead to customer perception that the lifting of restrictions on the use of water is delayed longer than necessary. The company has to be sure that in the short-term it would not need to reverse its decision to lift restrictions.

The regular communication established between the company and statutory consultees such as the Environment Agency will be maintained throughout the de-escalation process in order to ensure that all parties understand and contribute to an agreed and co-ordinated programme of de-escalation. The end of a drought would only be declared by the company after confirming with the Environment Agency that the water resource situation has returned to normal

An important element of the de-escalation discussions will be the scope and frequency of post-drought monitoring. As described in Annex 5 (Environmental Monitoring Plan), the scope of post-Drought Permit / Order monitoring will be agreed as part of the Drought Permit / Order and may typically extend up to 3 months beyond the cessation of the Drought Permit or Order. Initially the

scope of monitoring might be the same as during the period of the Permit / Order but it could then progressively reduce in scale and frequency. It makes sense, however, to keep this under review with the Environment Agency while the permit is in operation to ensure that it takes account of the findings arising from the monitoring programme.

Customer communications

It is important that the company keeps customers aware throughout the process of lifting restrictions and declaring the end of a drought. Since Southern Water's water resources are dominated by groundwater, there is often a lag between rainfall events and a rise in groundwater levels. Clear communication with customers is therefore important to help understanding of this relationship. A good example of this was the high amount of customer contact experienced during the ending of the 2012 drought when, despite higher than average rainfall, customer restrictions were maintained as groundwater levels had not recovered.

The specific communication actions that the company will take to inform customers that resource conditions have returned back to normal are described in detail in Annex 6: Management and Drought Communications.

Appendix A of this section shows an example press release from the 2012 drought announcing that customer's restrictions were to be lifted.

Post-drought review

Once the end of a drought has been declared the company will review its performance during the drought event. This will include an assessment of the effectiveness of the Drought Plan, and to determine what actions might be needed from lessons learnt.

To facilitate a common transparent understanding, both within the business and with regulators, the company will publish a post drought review report three months after the end of a drought has been declared.

This review will include an assessment of:

- the hydrological and water resource background to the drought
- the impact on the delivery of customer promises and customer survey responses
- the performance of the drought intervention measures deployed
- the triggers and monitoring methods used
- the Environmental Assessment Reports (EARs) for Drought Permits and Orders. This will likely be needed to reflect new evidence collected of the impact of a Drought Permit or Order on the environment and the effectiveness of any mitigation measures implemented. The monitoring data collected might allow an improved assessment of the potential impact of the Drought Permit or Order. It may also inform an updated environmental monitoring and mitigation programme for the particular Drought Permit or Order that would be reflected in an updated Environmental Monitoring Plan (Annex 5). This would be discussed and agreed with the Environment Agency.
- the estimated reduction in demand from any demand side measures implemented
- the extra water delivered from any supply intervention implemented
- whether any deployable outputs should be re-assessed as a result of the drought

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- any updates that are required for the Water Resources Management Plan (WRMP) and Drought Plan
- the effectiveness of the communication activities, based on feedback from representatives of customer groups, individual customers and other institutional stakeholders, such as the Environment Agency.

Table 1 below provides an indicative timescale for completing the post-drought review report.

Table 1: Indicative timescale for completion of the post drought review report

Month after normal conditions have returned	Post drought review activities
1 Month	<ul style="list-style-type: none"> ■ Appoint author of post drought review. ■ Hold internal workshop and interviews to collect summary of experiences of drought interventions.
2 Month	<ul style="list-style-type: none"> ■ Meet with the Environment Agency, any affected neighbouring water companies and other stakeholders, as appropriate, to discuss lessons learnt
3 Month	<ul style="list-style-type: none"> ■ Publish post drought review report internally and to the Environment Agency
3-18 Months	<ul style="list-style-type: none"> ■ Continue collecting environmental monitoring data ■ Update Environmental Assessment Reports as appropriate ■ Consider updating the WRMP and Drought Plan if necessary

Appendix A: Example 2012 press release for lifting of water restrictions

June 13, 2012

No. 241

WATER RESTRICTIONS LIFTED

Southern Water is lifting water restrictions in its Sussex and Kent water supply areas.

The temporary use ban that was brought in on April 5 following two exceptionally dry years will end on Thursday 14 June. Anglian Water and Thames Water will lift their restrictions at the same time.

The introduction of restrictions, for the first time in five years, was quickly followed by downpours for the rest of April, which was the wettest on record. This wet weather continued throughout most of May and into June and has helped boost water sources and importantly, keep down demand for water.

However, the exceptionally wet weather has resulted in severe flooding in parts of the region and Southern Water continues to assist with the aftermath of this.

The company's four reservoirs are all more than 80 per cent full, some 35 per cent higher than they were at the start of March, and there has been some recharge of underground water supplies. Some sources are still below average for this time of year but the majority are no longer in drought status.

Water Quality and Strategy Manager Meyrick Gough, said: "While our focus remains firmly on helping to deal with the aftermath of the torrential rain and flooding in the south over the last few days it is also right for us to lift the water restrictions.

"Our supplies have been topped up by the wet weather and are now in a much stronger position going into the summer than they were when we introduced the restrictions in early April. However, with the underground sources, which supply the vast majority of our customers, still below average for this time of year, we are asking our customers to continue with their efforts to use water wisely and not waste water.



“We have seen a great response from customers and demand has dropped considerably as a result of the wet weather and customers doing their bit and we are very grateful for their continued support.”

Southern Water has reduced leakage across its region to its lowest ever level and continues its programme to replace 256km of water mains to help reduce the risk of bursts.

The company has now installed more than 200,000 water meters across Kent, Sussex and Hampshire which are equipped with leak alarms that will help to save 5 million litres of water per day. This is part of the company’s metering programme, which will result in 93 per cent of customers being metered by 2015.

Southern Water did not introduce any restrictions in Hampshire but continues to urge its customers in the county to use water wisely.

For a map of Southern Water’s supply area, click here:

<http://www.southernwater.co.uk/restrictionsmap>

Press Contact

Southern Water Press Office on 01903 272230

Reservoir Levels (Wednesday 13 June)

Bewl Water – 81%

Darwell – 80%

Weirwood – 100%

Powdermill – 98%