River Test Drought Permit Application

River Test flow forecast update

2 August 2022

from Southern Water

River Test flow forecast

We have been using a hydrological model written in Python code to forecast the potential progression of the flow recession on the River Test and assess when the 'HOF' flow condition on the River Test may be breached. This takes the most recent observed flow data, and forecasts the potential flow recession based on a large range of rainfall scenarios.

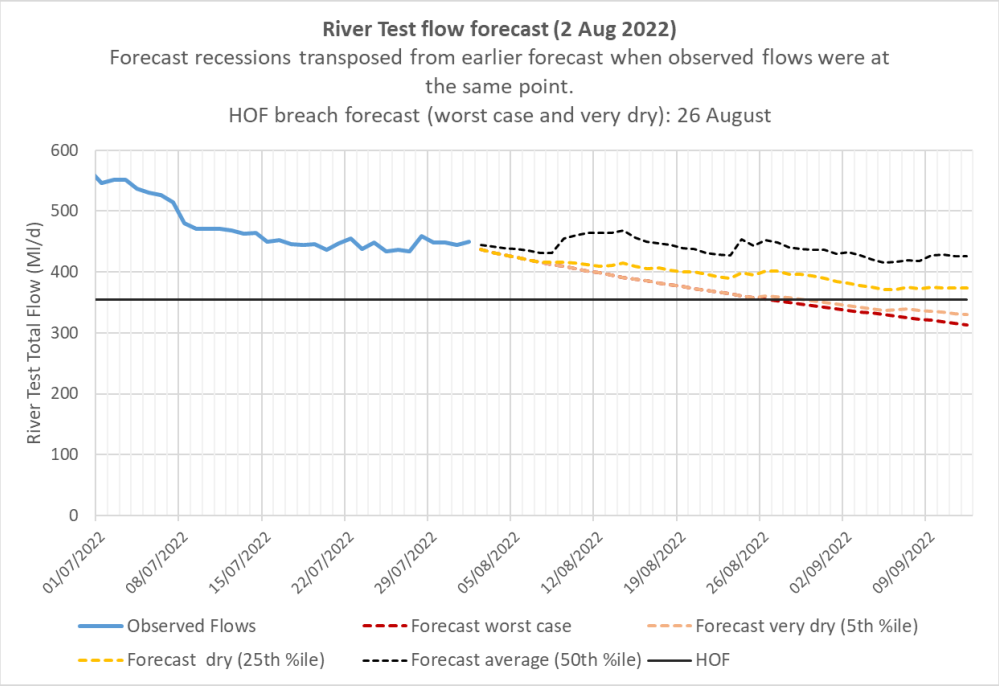
However, recently the script has not been importing the observed flow data properly, and the expert who would be able to troubleshoot the problem is on leave.

We have therefore produced a new forecast today (see Figure 1), which uses the flow recessions from a previous forecast (when the observed flows were at a similar point to where they are now), with the forecasts flows shifted to align with the most recent observed flow data, as provided by the EA by email today on 2 August.

Figure 1 shows that there was a sudden drop in flows between 7 to 9 July, and after that drop flows have since been fairly steady. The sudden drop occurred when there was a hot, dry weekend and a spike in demand caused the abstraction at Testwood to increase from about 55 Ml/d to about 75 Ml/d.

Based on the current flows, the recession suggests the HOF may be breached, and therefore the Permit may be needed on the 26th August, which accords very closely with the original forecasts in the application documents.

Figure 1 River Test flow forecast 2 August 2022



Whilst this is good news in terms of the timing of the potential need for the drought permit, it should be tempered with some caution. We have seen how river flows can suddenly drop in response to increases in abstraction, which has the effect of bringing forward the timeline for when the drought permit may be implemented.

Furthermore, the EA have advised that a check gauging undertaken today (2 August) has suggested that the flow gauge is reading too high, so there is a risk that the actual flows may be lower than indicated in the observed flow trace in Figure 1.

For context our previous forecasts from earlier in July are shown in Figure 2, when the permit was forecast to be required much earlier – on 18 August if assuming 55 Ml/d abstraction requirement at Testwood, and on 12 August assuming 70 Ml/d abstraction

We believe that following the steady flows throughout July that the forecast presented in Figure 1 presents a reasonable picture of the likely flow recession in August, however, we will need to monitor flows closely over the coming weeks, and pay particular attention to any drivers for increased abstraction potentially affecting the flows, for example a further spell of hot dry weather increasing demand.

Figure 2 Flow forecasts from 21 July, assuming 55 Ml/d abstraction (top) and 70 Ml/d abstraction (bottom) HOF breach dates: 18 August and 11 August respectively