

Water Resources Modelling

Client: Severn-Trent Water Ltd

Project: Reservoir Control Curve Review

Background

In May 2012 Hydro-Logic was appointed by Severn-Trent Water (STW) to undertake a review of the control curves applying to five of its reservoirs.

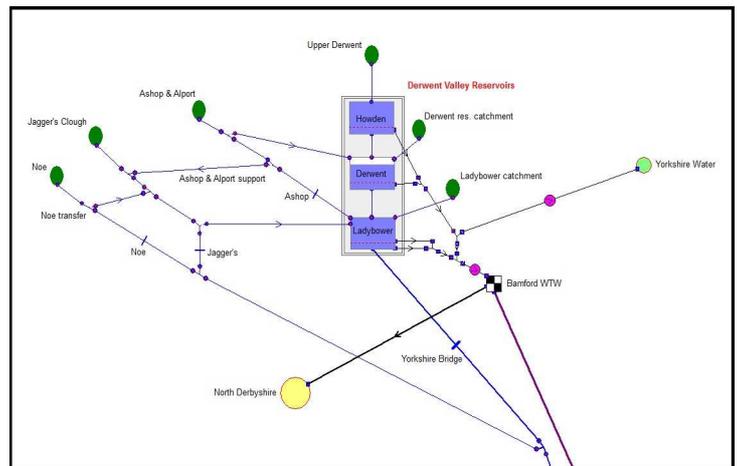
Reservoir control curves play a key role in the operation of reservoirs by defining their resource state. They govern the reservoir abstraction and release regimes on a daily basis. They are also crucial to the medium-term reservoir management strategy by triggering a range of demand management measures. Ultimately they are a key metric in informing water company Drought Plans and Water Resource Management Plans.



Tasks and Deliverables

The STW Aquator water resource model was used to generate simulated reservoir storage time series for a period of 91 years. The time series were used to create storage probability distributions for each calendar day.

A range of analysis techniques were applied to the probability distributions, examining crossing frequency and duration. Applying a range of numerical operations to the data such as scaling, offsetting and smoothing enabled control curves in the form of yearly profiles to be developed for each reservoir. The profiles could then be applied to the STW model and revised simulations produced.

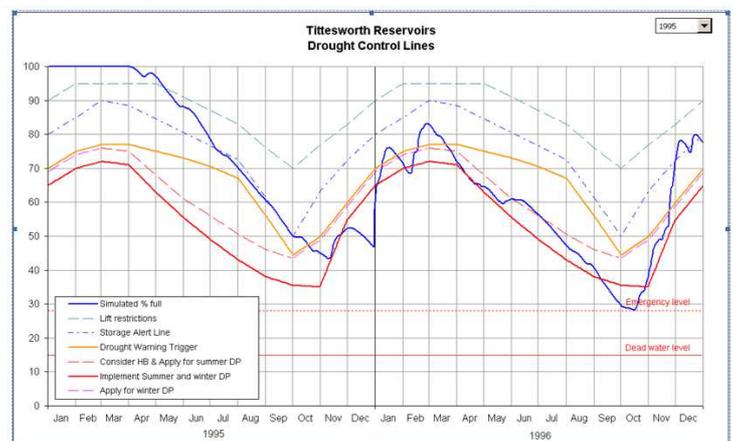


Benefits and Outcomes

The revised simulations resulting from the control curve review were shown to better conserve reservoir resources while also meeting stated company levels of service.

The modelling also provided the opportunity to confirm that the model produced simulated storage data that compared favourably with observed storage.

The revised simulations informed the development of STW's 2012 draft Drought Plan and PR14.



A selection of our clients and what they say about our work.



FRA for Major Quarry Company. *"Thank you for your input into the planning application and EIA. In the end, planning permission was granted for the proposal... Thank you once again - a great result"*

Water Company in response to our auditor's review. *"The audit in particular benefitted from the HLS auditor's understanding of the subject matter."*

On contribution to Floods & Dredging Paper. *"We would certainly never have been able to pull the report together without your hard work, it's been very valuable."*

Homeowner in Milton Keynes: *"...after a week of speaking to the under writers liaison they now confirm that I am not a flood risk and have reduced by direct debit premium from £166.35 per month to £47.64. I am very happy with this result :)."*

Flood report in Fareham: *"...the work you produced has really helped us to get the consensus we were seeking and will be invaluable as we move forward"*

Flood survey, Devon: *"We have now received a copy of your survey, and think it is very clear, and seems to cover everything. Thank you very much for the trouble you have taken."*

Water Company Manager on resource modelling. *"EA feedback has been excellent which is good"*

Training for Water Company staff: *"Just wanted to say thanks for our training on Friday, everyone found it really useful"*