

# Water Resources Modelling

**Client:** Severn-Trent Water Ltd

**Project:** Aquator Water Resource Modelling - River Wye

## Background

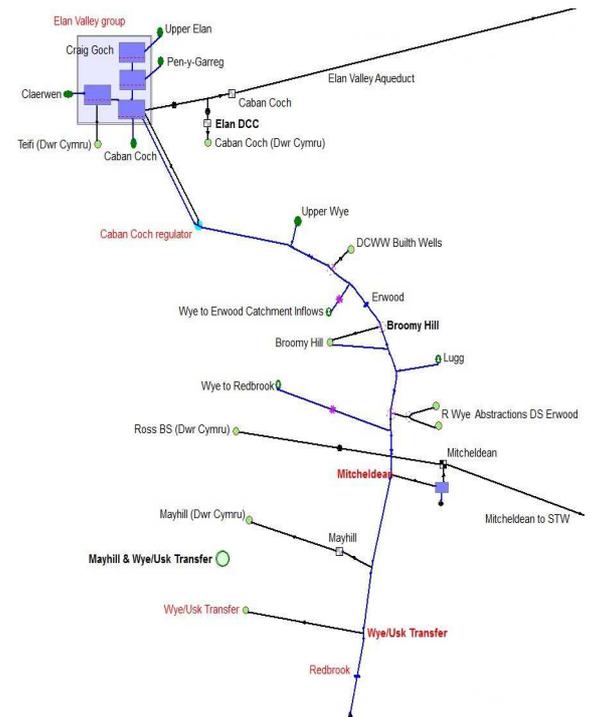
Hydro-Logic Services was appointed by Severn-Trent Water (STW) to undertake a series of projects in between 2012 and 2015 to examine the effects of changes in the River Wye licence regime on the STW Aquator model. The driver for this was the review of consents on the Wye by Natural Resources Wales under the Habitats Directive, and input from the Wye and Usk Foundation (WUF). This concluded with a number of licence and operational changes that impact STW with respect to their operations on the River Wye and the Elan Valley reservoir group.



## Tasks and Deliverables

To date, the following phases have been undertaken.

- A scoping study completed September 2012 partially applied the new licence rules to the model. This enabled STW to understand the likely impact of the licence changes on the deployable output (DO) of several STW water resource zones.
- Subsequent work completed May 2013 investigated the effects of the licence changes on the operation of the Elan Valley reservoir group. The project presented a series of analysis options to further investigate the impacts of the licence changes on the DO of the STW Strategic Grid zone.
- Follow on work in July 2013 fully implemented the new licence rules in the model, and investigated a revised operating regime for the Elan Valley Aqueduct, enabling the optimisation of Strategic Grid DO under a range of scenarios.
- A revised set of naturalised inflow time series developed by WUF for the Elan Valley reservoir group and the River Wye were applied for a further series of model runs.
- A revised scheme for regulation, compensation and spate boost releases developed by WUF for the Elan Valley reservoir group and the River Wye was applied for a further series of model runs.



Each phase required the development of custom VBA code in order to implement the new scenarios.

## Benefits and Outcomes

The STW model now provides the option to run in several modes that are fully compliant with the Habitats Directive as applied to the River Wye. STW are now able to anticipate the effects of the revised rules on their operations, and better promote operational changes which will minimise the impacts on DO across the resources network.

**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"*