

## **Water management at Dinorwig pumped-storage power station.**

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**SYNOPSIS.** Optimum operation of the Dinorwig pumped-storage scheme requires a constant volume of water within its closed reservoir system. Heavy rainfall and the subsequent floods can cause additional or 'excess water' to spill into the closed reservoir system. Whilst the reservoirs are designed to cope safely with the rainfall and subsequent floods in the case of extremely rare events, optimum operation of the pumped-storage scheme can be vulnerable on an annual (or even more frequent) basis to rainfall and the subsequent floods.

This paper describes how 'excess water' is currently managed and then describes a computer model of the system, which was constructed on behalf of the power station operators. The model links hydrology, hydraulics and power station operation. The aim of the model was to increase understanding of the link between upstream catchment conditions, current operational conditions/rules, 'excess water', and downstream catchment conditions, on a day-to-day basis. (rather than extreme event basis). The model was then used to simulate the system with modified upstream conditions and modified operational conditions/rules.

Overall the work has increased understanding of water management at Dinorwig and assessed commercial and environmental implications of different water management strategies.