Improving serviceability though Portfolio Risk Assessment

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SYNOPSIS  Severn Trent Water (STW) strives to achieve a high degree of confidence in the serviceability of its reservoirs. Ahead of any statutory drivers, a key component to achieving this strategic objective is Portfolio Risk Assessment (PRA) of both statutory reservoirs and those that are likely to become statutory following legislation in 2010, together with elevated sludge lagoons.

The PRA included recommendations for a programme of capital works schemes that further improved reservoir safety. It identified where further portfolio wide studies could improve the understanding of reservoir risk and help to bring other deficiencies to the fore. The PRA also recommended that the assessment process be a live one and periodically revisited. Following process review STW has now undertaken a second portfolio risk assessment. To further improve resilience this has included more detailed quantitative assessments on selected reservoirs which has provided greater confidence in serviceability.

Capital works were reviewed, ranked and initiated between the assessment periods. While the reservoir risk ranking was informative, the prioritisation of the works was more heavily led by works programming to effect construction cost efficiencies.

To further improve resilience, a portfolio-wide study to assess drawdown was undertaken and applied a set of engineering and risk criteria across all of STW’s reservoirs. This study has helped bring certain deficiencies to light and provided vital information for Emergency Action Plans.

The second PRA benefitted from the presence, at an early stage, of the contractor responsible for implementation and has confirmed many of the expected movements in the risk ranking resulting from works and studies undertaken in the intervening period.

Two reservoirs have been subject to detailed fault tree analysis and the understanding gained from this process is compared to that of the PRA.
exercise undertaken as a screening assessment. The fault tree analysis has also shown promise in identifying and prioritising mitigations, further emphasising the importance of planned interventions such as monitoring and surveillance.