

## Analysis of manual and centralised supervisory control operations to improve level of service: a case study of pyramid hill no 1 channel, Victoria, Australia

The current challenge facing irrigation in Australia is to find ways to improve the operational performance of existing systems rather than constructing new ones. Unsteady flow simulation models are often used as key tools to study and test improved operational scenarios for existing systems. While these models are generally not recommended for real-time control, research has shown that they are able to simulate canal response for different test scenarios for operations planning. This paper presents the results of two alternative modes of operation for the Pyramid Hill No.1 Channel in northern Victoria, Australia. The channel is currently under manual operation. Centralised control is the most immediate option considered by the irrigation authority to enable remote supervision and control of the canal to improve the channel operation and level of service standards. This type of control is termed Supervisory Control and Data Acquisition (SCADA). The two alternative operational scenarios were simulated and analysed using the unsteady flow-simulation model DUFLOW. Specific performance indicators were defined to compare the two modes of operations based on the simulation results. The results show that SCADA operation has considerable potential to closely match the discharges at the downstream regulator with those ordered by farmers while maintaining the water surface elevations within allowable fluctuation tolerance throughout the length of the canal.