

**Treating water to appropriate standards for different uses at the WEF Nexus**

**Dr. Andrew Dansie\***

Real-time water quality monitoring data is being increasingly used for real-time responses to water management and has applications for potable, agricultural and environmental water uses. Application of such automated technologies offers opportunity to create efficiencies in water management as part of the water treatment cycle. In Australia researchers from UNSW-GWI were part of the innovative Western Sydney Recycled Water Initiative (replacement flows) to deliver highly treated wastewater to the Hawkesbury-Nepean River. The river catchment surrounds Sydney, a city of over 5 million people, with natural vegetation in the catchment significantly cleared for housing, agriculture and industry. With an expanding Sydney population and impacts of climate change, the problems facing the Hawkesbury-Nepean are escalating. The replacement flows initiative allowed drinking-quality reservoir water upstream to be reserved for urban use rather than released as environmental flows. The automated water monitoring that informed real-time water management responses allowed for efficient and suitable allocation of water for different end-users. Competing water uses at the WEF nexus can be more efficiently managed by allocating water of varying qualities that is suitable for human, agricultural, industrial or environmental use. Real-time automated monitoring can assist this management as well as proactively account for monsoon and flood storage needs within catchment-wide management of WEF water resources. The lessons learned in the Hawkesbury-Nepean River Catchment are highly suited to Asia similarly highly-populated and climate change-impacted river basins.