



Fact sheet

Chlorine Disinfection Strategy Project

As part of the South East Queensland Water Reform, from 1 July 2010, Allconnex Water became the retail and distribution business for the Gold Coast, Logan and Redland districts. The Gold Coast was previously represented by Gold Coast Water. Prior to water reform, Gold Coast Water initiated a risk management plan, known as the Hazard Analysis Critical Control Points (HACCP), a multi-barrier approach to proactively manage potable water quality. The HACCP sets internal water quality specifications more stringent than Australian Drinking Water Guidelines to ensure safe, reliable and high quality drinking water on the Gold Coast.

Severe drought conditions and water reform has changed the distribution flows and controls in water quality. Since 2002, some water quality monitoring sites have not met the desired internal specification standard for chlorine residuals. Consequently, the *Chlorine Disinfection Strategy Project* was initiated.

The project investigates the operation of the distribution systems and how they relate to water quality. It also helps us to mitigate potential risks of non-compliance with water quality standards by understanding the dynamics of the operational aspects of blending various water sources.

By identifying the drivers behind the reduction in residual chlorine performance in some areas of the network, the project aimed to develop a strategy to improve the management of chlorine residuals across the Gold Coast's water supply network. This was undertaken in collaboration with the new bulk water and transport entities.

To read the OzWater 2010 conference paper visit www.box.net/shared/lizzuhxnq6

Assessment of system performance

To assess the water quality performance within the system, 10,660 test results were obtained from 119 monitoring points between January 2000 and June 2008. Chlorine residual trends during that time were analysed against water consumption and climate.

Chlorine decay stability was also assessed from the three water sources within the Gold Coast water supply to understand the underlying mechanism of bulk chlorine decay. This revealed that the Gold Coast's water quality is impacted by many factors. These include:

- Treated water quality from the water treatment plants (WTPs).
- Chlorine disinfection levels
- System hydraulics, including demand.

Response to the challenge

While the interaction of all parameters affecting the chlorine residual is complex, it can still be predicted and quantified with the help of a hydraulic and water quality model.

Allconnex Water has formed its own strategy within the Gold Coast water supply system. This strategy uses chlorine decay modeling to simulate the system and identify the most acceptable solution to maximise the percentage of customers receiving water with a desirable chlorine concentration range.

As part of this strategy, the storage times at approximately 30 major water reservoirs within the Gold Coast's water supply system will be reduced to improve water quality. An informal agreement with other water supply chain entities has been reached with the possibility of increasing the chlorine dose at the water treatment plants.

Allconnex Water has undertaken detailed water quality modelling to improve the residual chlorine in the Gold Coast water supply to ensure high water quality at the consumers' tap. This forms part of Allconnex Water's commitment to deliver safe, reliable and high quality drinking water to the Gold Coast district.

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