



Savings flow after collaboration

Six councils in South Australia came together to create a common design for their wastewater management systems and realised significant benefits, writes **Hartley Henderson**.

AUTOMATION of wastewater systems for a group of local councils in regional South Australia is set to deliver a range of substantial benefits.

Following identification of the need to improve maintenance standards and ensure regulatory compliance of community wastewater management systems by a group of six local councils in the South East of the State, it was agreed to conduct a pilot study to assess the benefit of an across-Council's joint service arrangement.

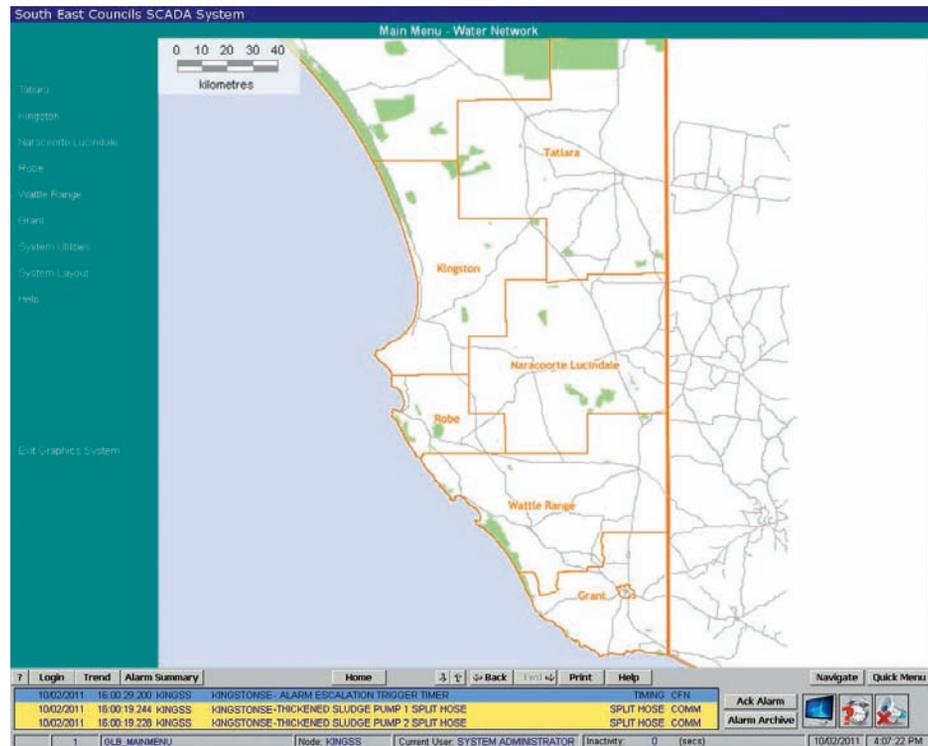
Industry consultant, Michael Stephenson of Rashlee, has played a key role in coordinating a joint study involving the Councils of Wattle Range, Robe, Tatiara, Naracoorte-Lucindale, Grant and Kingston.

Simplified maintenance

Stephenson assisted in identifying commonalities between the wastewater pump stations of the councils and looking for potential efficiencies, with the aim of establishing a common control and monitoring system.

"Different switch gear and ways of doing things existed between the various council wastewater systems and there was an obvious need to improve compliance and upgrade emergency communications systems," he said.

Adelaide-based company, APC



MANAGED:

The SCADA system provides a central point where all the data of the respective pump stations can be collected, stored, monitored and displayed.

Integration, was commissioned to create a common design and resulting standard for all community wastewater management systems across the respective council regions.

Common hardware would result

in bulk purchasing discounts, reduced spares, simplified maintenance and reduced training for staff.

APC Integration business development executive, Michael LeVene, explains that a unique aspect of this

project was designing a system that could be used by six different councils with shared resources while controlling how much of the data can be shared between councils.

"This was a tricky political situa- ➤

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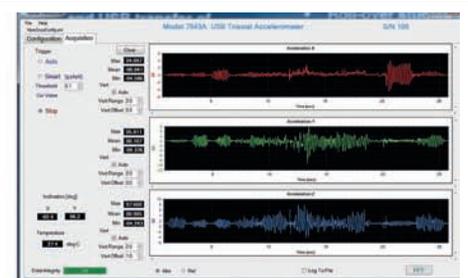
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INTEGRATED: The Siemens WinCC SCADA offered a seamless solution.

A unique aspect of this project was designing a system that could be used by six different councils with shared resources while controlling how much of the data can be shared between councils.

tion, and the solution was to avoid storing data at any of the council depots and instead use a 'cloud' based design," he said.

Unique situation

APC Integration managing director, Anthony Dally, explains that the purpose of the SCADA system is to provide a central point where all the data of the respective pump stations can be collected, stored, monitored and displayed.

"A SCADA system is typically run locally within the organisation. It is a unique situation to run this system in an external data centre in a virtual environment combined with a virtual network, and it was critical that we chose a solution to ensure a robust reliable system for the councils," he said.

"A SCADA software package was sought that was well established, reliable, used in the water industry, well supported in SA, compatible with the pump station controllers, and which could run on a virtual

machine in a data centre."

It was found that the Siemens WinCC SCADA would offer a seamless solution, and as a single brand system, would provide the best integration and support.

Virtual server

Siemens product manager HMI & SCADA, Mark Karalapillai, says the Siemens SCADA is able to run on a virtual server and can provide a range of information and functionality including monitoring of pump station status, remote control of some pump station functions, collection, display, trending and recording of the data available from each pump station site.

"This SCADA can enable remote fault finding of problems at a pump station site, send alerts to appropriate service personnel, manage access to the system of relevant personnel from the various councils, and allow remote control and diagnostics of the pump station controller," he said.

"Pump station hardware, also provided by Siemens, includes Simatic S7-1200 PLC, HMI with touch and alarm screen, and G120P VFD drives that offer energy saving due to innovative functionality and optimum integration into the process.

"Instrumentation from Siemens including Ultrasonic Level Sensors with Advanced Echo Processing, Mag Flow Sensors, and Pressure Sensors with high measuring accuracy, were all integrated through Simatic S7-1200 PLC."

Communications framework

A suitable cost effective communication system was sought that could be expanded to connect upwards >



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The SCADA system will enable the wastewater systems to be more effectively controlled and monitored in real time from a central point.

of 100 pump stations spread over an area of 23,000+ square kilometres, while allowing direct messaging between the pump station and remote access to the SCADA system via the internet.

The Telstra 3G network was selected on the basis that it could provide network coverage at all pump stations, it is an existing proven network with low cost to connect to new pump stations, and it allows remote internet monitoring. It also offers a high security private network with fixed IP addresses, and high speed data transfer.

Telstra's local government specialist, James Hook, points out that each of the pump stations will have a connection on the Next G network that will have a fixed IP address so that the SCADA server can contact each of the pump stations at a known address.

"The server is also connected to the internet, providing web page access to the pump station status screens. Hosted within the Telstra data centre, the server provides a high uptime and de-centralised solution for the system," Hook said.

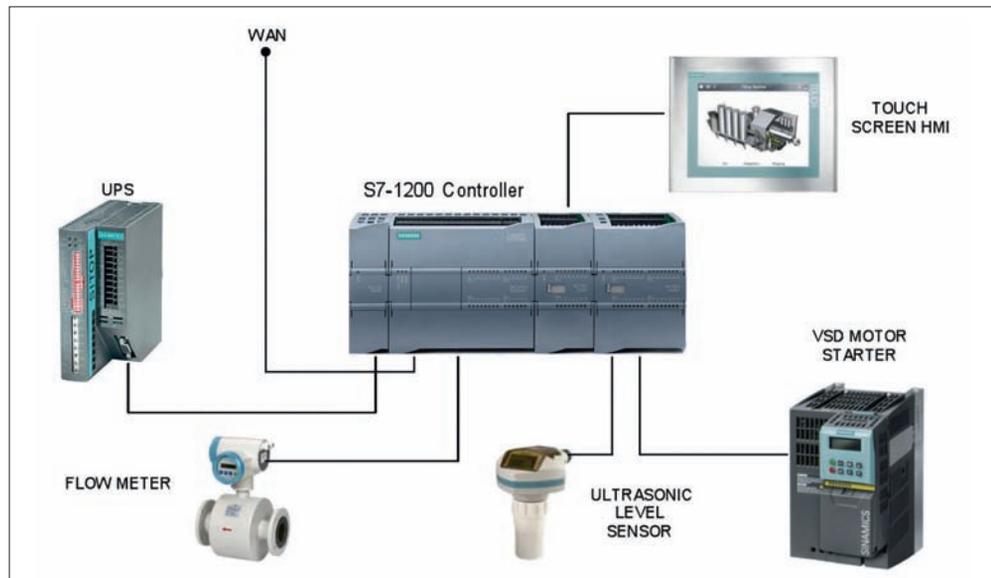
"Regular UPS and generator backup power at the data centre is provided, as well as 24 hour maintenance support together with regular off-site backups and secure storage of server images."

Big benefits

CEO of Wattle Range Council, Frank Brennan, believes substantial cost, environmental and operational benefits will flow from automation of the wastewater systems of participating councils.

"It will help us to avoid spillages and ensure that the community wastewater management schemes comply with the licensing requirements of the EPA and the Department of Health," he said.

"A more interactive approach to managing the scheme will be provided because the SCADA system will enable the wastewater systems to be more effectively controlled and monitored in real



CONTROL: This graphic illustrates a typical pump station layout.

time from a central point. This should enable costs to be significantly reduced, particularly the cost of staff travel over substantial distances.

"Opportunities could now also open up to utilise similar SCADA systems to manage and monitor other council operations such as water quality in swimming pools, stockyard effluent systems, irrigation systems in parks, and stormwater pump systems."

According to Rashlee's Michael

Stephenson, set-up of Stage 1 of the project is progressing to plan and is expected to be commissioned early in 2013. "Once fully implemented, this pilot project is likely to provide a strong impetus for promotion of the model to other regions across the state, as well as potentially to other regions across Australia," he said.

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