

CUSTOMER CASE STUDY

Taswater: Saving oysters with AVEVA™ PI System™

Challenge

- Prevent and respond to spills in ecologically sensitive environments

Solution

- Use pump data from AVEVA PI System and analytics in Seeq Workbench to identify potential sewage blockages

Benefits

- Reduced blockage-response time by up to 13 hours

AVEVA products used

- AVEVA PI System
- AVEVA™ PI Server
- AVEVA™ PI Vision™

At 10am on August 24, 2017, a customer in Midway Point, a small suburb outside of Hobart, Tasmania, reported a sewage spill on his property. Midway Point stands adjacent to Pitt Water Nature Reserve, home to rare birds, butterflies, and the largest oyster lease in Tasmania, covering some 14 hectares. In late August, Pitt Water oysters, prized for their briny flavor and consistency, were just coming into peak condition.

TasWater, the state's primary water and sewage service provider, responded to the call immediately, but unfortunately, 6,000 liters of wastewater had already spilled into Pitt Water, contaminating oyster beds and shutting down production for three weeks. It was an ecological and economic disaster for Tasmania, which harvests 48 million oysters annually as part of a \$24 million industry. TasWater had to find a way to catch blockages and spills more quickly. In collaboration with Nukon, TasWater began using AVEVA PI System as part of a pilot program to use sewage pump stations (SPS) data to spot and respond to blockages and spills before they turned into ecological disasters.

Sewage networks and sensitive environments don't always mix

Sewage systems and pump stations are by nature finicky assets. "Sewage spills are an unavoidable reality of managing a sewage network," said Matt Jordan, Manager of Network Asset Performance at TasWater, during his presentation at PI World San Francisco 2018. "With the volume of our network, keeping it blockage free is impossible." TasWater, which manages almost 5,000 kilometers of sewer mains, suffers about 2,000 spills and main breaks a year. About 70% of these are due to tree roots, but those can be predicted and prevented through root cutting.

"The one that really gets us is foreign objects," said Jordan. "These are items like nappies or diapers or hand towels or coke bottles. You name it, and it somehow ends up in the sewage system. You may have the best maintenance strategy in the world, but the day after you clean it, a foreign object can end up in there. They are the ones that are unpredictable."

Sps monitoring solution: A new and simple innovation for the water industry

Sewage pump station (SPS) sites have defined operating characteristics. There are peaks in pump activity at the beginning and end of the day when people are generally using more water. Utilizing advanced analytics from Seeq, some of Nukon's own tools, and the infrastructure provided by AVEVA PI System, Nukon and TasWater devised an innovative method for identifying potential blockages. By analyzing just a single data point, whether a pump was running or not, TasWater discovered that the "time to fill" or time between pump runs was the key determinant of a station's operating profile. When the time between pump runs goes beyond what is normal, it suggests that the wet well (which collects the incoming water from the sewer system) is taking too long to fill and a blockage may be occurring upstream.

First Nukon and TasWater created models of normal pump behavior. Then they used the asset framework of AVEVA PI Server, to set up event frames and notifications for out of bounds conditions.

"The notifications happen in real time so there is no waiting around," said Andrew May, a Senior Consultant at Nukon. Had they had this data model in August 2017, they could have detected the Midway Point blockage 13 hours before the customer called to report it.

New insights and easy roll out

The low implementation cost and quick deployment were a great benefit to TasWater. Using the templates feature of the asset framework of AVEVA PI Server, they quickly expanded the pilot project from the initial pump station to all of the SPS sites in Midway Point within a month. Currently they track about 50,000 data points, a number that should quickly increase to over 200,000.

"We're hopeful this program can be used wherever our assets are in high risk areas and help TasWater work more responsively with shellfish growers for better outcomes."

- Alexander Jovicic

Department Manager of Service Optimisation, TasWater

Though they haven't yet experienced another blockage event, their data model has already given them unexpected insight into their sewage network. For example, an increase in pump activity during a recent storm event revealed leaky segments in the sewer system. This knowledge about the location of leaky sewers has allowed them to target funding to minimize inflow and infiltration and avoid excessive pump usage.

After their pilot program concludes, TasWater hopes to roll out their new system to all of their pump stations located in sensitive areas, thus expanding their ability to protect the health and safety of their customers, the environment, and those delicious oysters.

For more information about TasWater and AVEVA PI System, watch the [full presentation here](#).