Yarra Valley Water's smart sewer success

Because many homes in Melbourne were built before sewerage was available, many properties in the outer northern and eastern suburbs are still using septic tank systems.

Many of these septic tank systems do not comply with current regulations and are a potential risk to public health, local waterways and the environment.

The Yarra Valley Water Community Sewerage Program is working to provide these properties with new access to sewerage infrastructure, which will prevent aging septic systems from leaking untreated or poorly treated wastewater into neighbouring properties, drains and waterways.

As part of the Community Sewerage Program, Yarra Valley Water and Yarra Ranges Shire Council identified over 4,000 homes in the Dandenong Ranges with septic systems that were unable to contain wastewater on site and require new piped sewerage infrastructure.

Committed to implementing the most sustainable solution, Yarra Valley Water considered the suitability of both gravity and pressure systems – the undulating nature of the Dandenong Ranges made a gravity system challenging and costly, so a pressure system was the preferred option.

The smart pressure system proposed by Iota, the commercial arm of South East Water, offered significant advantages, including major cost savings, improved operational efficiencies, an enhanced customer experience and minimal impact on the environment – a win-win for Yarra Valley Water and the local community.

Smart solution supports cost-effective sewer network design

Yarra Valley Water engaged Iota to design a smart sewer system that would be operated by a smart controller.

Sally Crook, Community Sewer Programs Manager at Yarra Valley Water, explained, "The decision was made to install a low pressure sewer network, saving Yarra Valley Water an estimated $38 million (over 16%) in capital expenditure, when compared to a traditional gravity network.

"To optimise the new network and provide monitoring and control capabilities across the undulating system, which is prone to power outages, Yarra Valley Water opted for a smart low pressure sewer system.

"This direction supports Yarra Valley Water to realise projected additional capital savings, and projected operational savings of $660,000 per annum over the life of the project when at full implementation."

Developed and proven within the South East Water network, OneBox® is a smart low pressure sewer solution that monitors and controls the wastewater levels inside a storage tank at the home and releases the contents intelligently into the sewer network, smoothing flows throughout the day and reducing the risk of spills.

The ability to control wastewater flows during normal operation and following prolonged power outages minimises the need for large-diameter sewer pipes, making the system cheaper and less disruptive to install while putting less strain on downstream assets.

According to Ms Crook, this reduced construction footprint – a result of the smaller pipes and minimal excavation required to install the OneBox® units – was ideally suited to the difficult terrain and ground conditions present in the area.

"The Dandenong Ranges is a heavily forested, hilly area. Past experience told us there would be access issues and widespread shallow rock and boulders, which complicate construction, drilling and planning in the area."

The smart sewer system is currently being tested in a pilot program servicing 150 properties in parts of Kallista and The Patch, with plans to install a smart pressure solution at thousands more properties – both residential and commercial – in the Dandenong Ranges.

By avoiding the removal of mature native trees and native vegetation, Yarra Valley Water was not only able to protect the pristine environment that the Dandenong Ranges is known for, but also accelerate the speed of the project's approval.

"The normal planning process for a major infrastructure project like this would be up to 12 months," Eamon Casey, Solutions Design Manager at Iota, said.

"Because we were able to avoid significant tree removal, planning approval was granted within just ten weeks, which meant we could get the pilot underway very quickly."

Yarra Valley Water has the ability to control the OneBox® units at premise- and network-wide levels from any desktop or mobile device, and can remotely shut down pumps to inhibit catchments ahead of significant rain events.

Future-proofing the Dandenong Ranges with modern wastewater services

With its water utility heritage, Iota's in-depth knowledge and industry experience was an important contributing factor to the overall success of the pilot.

"Yarra Valley Water has really enjoyed working with Iota. The design process was very efficient and we learnt a lot from the experience," Ms Crook said.

"One of the things Iota did for us, that they are uniquely experienced in is hydraulic modelling and the sizing."

Yarra Valley Water will work with its principal design partner, Jacobs, to manage the ongoing design and implementation of the Dandenong Ranges Sewerage Scheme.

Following the success of the pilot, thousands of properties will be progressively transferred from septic systems to a smart pressure sewer network over the next ten years.

For more information on Yarra Valley Water's Community Sewerage Program, visit **yvw.com.au/csp**

South East Water | iota

For more information,
email us at info@iota.net.au
or visit iota.net.au