

# world water

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## Advanced Water Treatment

Dynamic growth in 2019

# Effluent sewer and treatment system solve wastewater crisis

A scenic community in New Zealand solves its wastewater collection and treatment challenges by installing an Orenco Effluent Sewer and AdvanTex Treatment System. Four years later, the system continues to provide reliable service. **Bill Hensley** of Orenco Systems, Inc. explains.

In 2007, the picturesque community of Piopio, New Zealand, was on the verge of a wastewater crisis. Located in a valley on alluvial soils, frequent rainfall and poor drainage create a high water table, especially in wintertime. These conditions, combined with septic tanks in excess of 30 years old, meant that nearly all soakage fields, also called drainfields, were failing. With a population of less than 400, Piopio is home to a surprising assortment of retail attractions and services, including a museum, several bed and breakfast establishments, the award-winning Fat Pigeon Café, and an 18-hole golf course north of town.

Residents may not have realized the urgent need for a sewer and sewage treatment system, but the governing Waitomo District Council had identified the town as qualifying for wastewater funding through the national Ministry of Health. After a thorough bidding process that considered various treatment options, the Council chose an Orenco® Effluent Sewer and AdvanTex® Treatment System, given its robust treatment and low operating and capital costs.

According to Christiaan Van Rooyen of the Waitomo District

Council, the Orenco treatment plant offered by InnoFlow Technologies was selected because it provided the overall lowest whole-life cost while meeting the regulatory requirements and public health needs of the community. Because the effluent would be discharged into a nearby river, it was also important to choose a solution such as AdvanTex that had guaranteed results. Based in Auckland, InnoFlow Technologies has completed several hundred commercial wastewater projects, including about 20 effluent sewers.

Total project costs were US\$2.8 million in addition to goods and services tax (GST). The District Council's initial 2-year contract with InnoFlow provided for the design and installation of an Orenco Effluent Sewer, an AdvanTex Treatment System, and a rock outfall for the final aeration of effluent prior to dispersal into the Mokau River. The contract also included the purchase and installation of 198 interceptor tanks for all local homes and businesses, plus the disposal of old septic tanks. Finally, a subsidiary of InnoFlow was contracted to provide operating services during the initial 2 years.

Because Piopio and the surrounding countryside are rather hilly, the

## 2.8m

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township's effluent sewer is comprised of approximately 65 percent Septic Tank Effluent Pump (STEP) units and only 35 percent Septic Tank Effluent Gravity (STEG) units. Nevertheless, the small-diameter collection lines that feed into the treatment system are well suited for a variety of terrain, as they are buried 76–91-centimeters (cm) deep (30–36 inches) and designed to follow the contour of the land.

Although residents of Piopio were initially anxious about how the installation of new tanks would affect their gardens, driveways, and the overall appearance of their homes, InnoFlow allayed these fears by engaging directly with homeowners through a lengthy public consultation process that included discussion of specific tank placements and methods of remediation – such as topsoil replacement, hand-seeding, and raking – that InnoFlow would employ following installation.

In the end, property owners took note of the relative simplicity of the process, with the placement of most residential septic tanks accomplished in less time than expected. Furthermore, installing the shallowly buried collection lines that connect each home to the wastewater system was also a fairly quick and easy process, thus minimizing disruption to the daily activities and traffic flow within the community. Two years after installation, effluent test results continued to be excellent, averaging well below allowable limits set by the District Council, according to Van Rooyen.

Former Waitomo District Council Operations Manager Allen Scholtz adds, “I think the end result demonstrates that we did choose the best solution for the project. The big factors were price and quality of results. The key was that we did not compromise quality for the sake of affordability.”

Local citizens are also satisfied with the way things have turned out regarding their new wastewater treatment facility. Placed near the southern edge of town in a residential area just off the main road, the site is well landscaped and blends smoothly into its surroundings.

Before the system was built, the creek that runs through town was known to give off a distinctly unpleasant odor, undoubtedly caused by contaminated groundwater that found its way from the failing soakage fields of nearby homes into the stream. The installation of the new reliable, efficient wastewater system enables Piopio to continue being a favorite stopping-off point for those passing through, in addition to being a lovely refuge for those who call it home.

### Author's Note

*Bill Hensley is the international project manager at Orenco Systems, based in Sutherlin, Oregon, United States.*



Above: A rock outfall provides final aeration of effluent in Piopio. Photo by InnoFlow Technologies

Left: The Orenco Effluent Sewer and AdvanTex Treatment System that serves the community of Piopio.

Photo by Orenco