

C A S E S T U D Y

An Affordable Wastewater Solution for Commercial Properties

GALSTON GORGE RECREATION CENTRE, AUSTRALIA

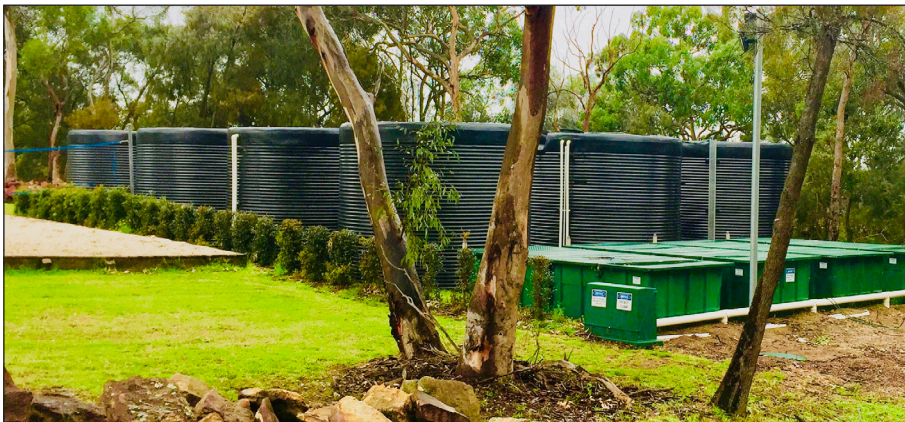
Problem An overnight conference and recreation center located in the mountains had several onsite wastewater treatment units that weren't meeting treatment level requirements.

Solution The project engineer recommended the failing units be replaced with an AdvanTex® Wastewater Treatment System, due to its small footprint, transportability, and track record for reliably meeting or exceeding required treatment standards. Innoflow Australia Pty. Ltd. would assist with the design, coordinate the installation, and handle ongoing operation and maintenance.

Mountaintop Facility Needed Compact, Reliable Treatment System

The Crusaders' (CRU®) Galston Gorge Conference and Recreation Centre in Australia hosts up to 220 people at a time for various overnight events throughout the warmer months of the year. Its popular facilities include twelve lodges, seven meeting and conference rooms, a gym, a dining hall, and several outdoor activity sites. Unfortunately, its onsite wastewater treatment units weren't able to meet the required treatment levels and needed to be replaced.

The Centre hired an environmental engineering firm to evaluate the options. Although a sand filter could meet the treatment requirements, it would take up too much space. The same was true of an activated-sludge treatment system when taking into account flow-balance tankage requirements. A membrane bioreactor system would also be able to meet the treatment standards, but the cost would be too high.



The Galston Gorge Centre replaced its failed treatment units with an Orenco AdvanTex Wastewater Treatment System (the green pods in the foreground). The system's small footprint, transportability, and reliability made it the best choice for this mountainous location. (Treated-effluent storage tanks for wet weather are pictured behind the AdvanTex system.)

Commercial Market

Project Overview

GALSTON, AUSTRALIA



Design Parameters

- Accommodations for up to 220 people
- 30 m³/day (7,925 gpd) design flow (surge-control tankage ensures consistent daily flow)

Raw Influent

- < 450 mg/L BOD
- < 500 mg/L TSS
- < 85 mg/L TKN
- < 15 mg/L TP

Treatment Requirements

- < 20 mg/L BOD₅
- < 30 mg/L TSS
- < 30 cfu/100 mL fecal coliform

Effluent Quality*

- < 2 mg/L BOD
- < 10 mg/L TSS
- < 1 cfu/100 mL E. coli

Installation Date

- June 2017

Collection System

- Orenco liquid-only sewer with gravity collection

Primary Treatment

- Septic tankage (repurposed): 37 m³ (9,775 gallons)
- Septic tankage (new): 67.5 m³ (17,830 gallons)
- Grease tankage: 6 m³ (1,585 gallons)
- Surge-control tankage: 30 m³ (7,925 gallons)
- Pre-anoxic tankage: 23 m³ (6,075 gallons)

* Sample collected on 10 March 2021 and analyzed by a third party.

sidebar continued on back page

GALSTON GORGE RECREATION CENTRE, AUSTRALIA

Wastewater flows at Galston Gorge come primarily from staff housing, guest cabins, toilet and shower blocks, and kitchen and laundry facilities. Because of the seasonal nature of the business, the flows are highly variable. The new wastewater treatment system would need to produce consistently high-quality filtrate despite these sporadic flows, as well as accommodate very shallow soils at the site.



Orenco's AdvanTex treatment technology is well suited for use in remote locations and consistently meets the strict effluent standards they typically require.

After considering all options, project engineer Jasmine Kable recommended a packed-bed filter system. In particular, she recognized that an Orenco AdvanTex Treatment System was best suited for this project, due to the size constraints, the difficult mountaintop location, and the required treatment levels. The AdvanTex technology was expected to do an excellent job of nitrification and denitrification. It could also meet strict organic and suspended solids limits, even during peak flow conditions.

Kable consulted with the Galston Gorge site director and then worked with Innoflow Australia, which played a key role in the final treatment system design. Innoflow was able to repurpose the failed systems at Galston Gorge by converting them into septic tanks and installing Orenco effluent pumping units in the tanks to transport partially treated wastewater to the new AdvanTex treatment facility.

Innoflow also coordinated installation at the facility, which includes additional primary treatment tankage to maximize overall performance while allowing for a smaller, less expensive secondary treatment system consisting of four AdvanTex AX100 units. A drip irrigation system with a Wisconsin mound provides final polishing of the treated effluent.

Located at the top of a mountain, with steep banks all around and limited space available for a new wastewater treatment system, the Galston Gorge Centre presented a challenge for designers. Fortunately, AdvanTex treatment technology is well suited for such sites and consistently meets the strict nutrient limits they often require.

Andrew Reeves, the site director at CRU Galston Gorge, says, "I've been very pleased with the AdvanTex system, as it outstrips any other system I have seen or used. The level of routine maintenance it requires is acceptable, especially considering the lack of reactionary maintenance it has so far needed."

Data used by Orenco to derive the representations and conclusions contained within this Case Study were current as of April 2021.

Commercial Market

Secondary Treatment

- Four AdvanTex AX100 treatment pods
- Recirculation tankage: 46 m³ (12,150 gals.)

Tertiary Treatment

- UV disinfection

Dispersal**

- Subsurface drip irrigation: 12,000 m (39,370 ft)
- Wisconsin mound
- Treated water storage tankage: 327.6 m³ (86,540 gallons)

Monitoring and Control

- Orenco TCOM™ telemetry panel for 24/7 remote monitoring

Designers

- Whitehead & Associates Environmental Consultants
- Innoflow Australia Pty. Ltd.

Installer

- Innoflow Australia Pty. Ltd.

Service Provider

- Innoflow Australia Pty. Ltd.

*** The dispersal field isn't used during saturated ground conditions, so a large volume of storage tankage is required during extended wet weather.*



Tanks from the old treatment system were retrofitted with Orenco Biotube® pump packages and repurposed as septic tanks.

For information about Prelos™ Sewer, AdvanTex® Wastewater Treatment, or Orenco Controls™, contact Orenco Systems®, Inc.



800-348-9843 • +1 541-459-4449
www.orenco.com