innoflow
wastewater specialists

Tamahere Country Club

Waikato, NZ

Project Overview

On-site Wastewater System

Photo credit: image retrieved from www.tamahereountryclub.co.nz

Developer
Sanderson Group Ltd

Regulator
Waikato Regional Council

Design, Build Contractors
Innoflow Technologies NZ Ltd

Operations & Maintenance Providers
S3 Ltd

Design Parameters
Final Planned Development
205 villas- 371 people at 165 L/p
23 apartments - 30 people at 165 L/p
61 care rooms - 61 people at 220 L/p
30 staff at 50 L/p
30 visitors at 15 L/p
I&I factor: 1.6

Built in two phases:
Phase 1(2020-2022): 70,000 L/day
Phase 2 (2022-2023): 130,000 L/day

Resource Consent Effluent Quality Limits
<20 mg/L $cBOD_5$
<30 mg/L TSS
<150Kg TN/hectare/year

System Performance: Average Effluent Quality (Since Installation)
2.4 mg/L $cBOD_5$
3.4 mg/L TSS
38.7 mg/L TN
9.8 mg/L TP

Phase 1 & Phase 2
Design Details

Phase 1 Actual Flows (between December 2020 – March 2022)
Actual Median Flow (11,500 L/day)
Actual Peak Flow (93,860 L/day)

Phase 2 Actual Flows (between August 2022 – November 2023)
Actual Median Flow (30,320 L/day)
Actual Peak Flow (127,460 L/day)

Start-Up Date
December 2022

Collection
Gravity network to a pump station and then to the wastewater treatment plant

Phase 1 Wastewater Treatment System
Primary Treatment
9 x 25 m^3 septic tanks
Secondary Treatment
3 x 25 m^3 recirculation tanks with dosing pumps
8 x AdvanTex® AX100 pods
Treated Effluent Storage
2 x 25 m^3 treated effluent tanks
Land Treatment System
3 x 60m long by 6m wide by 0.6m deep conventional beds (24mm/day loading rate)

Phase 2 Wastewater Treatment System (Upgrade)
Primary Treatment
Additional 2 x 25 m^3 septic tanks
Secondary Treatment
Additional 3 x 25 m^3 pre-anoxic tanks
Additional (stage 1) 3 x 25 m^3 recirculation tanks with dosing pumps
Additional 2 x 25 m^3 post anoxic tanks with dosing pumps
Additional (stage 2) 2 x 25 m^3 recirculation tanks with dosing pumps
Additional (stage 1) 3 x AdvanTex® AX100 pods
Additional (stage 2) 4 x AdvanTex® AX100 pods
Treated Effluent Storage
Retain existing tanks (installed at Phase 1)
Land Treatment System
Additional 12 x 41.6m long by 6m wide by 0.6m deep conventional beds (24mm/day loading rate)
Monitoring and Control
Orenco Controls™ TCOM™ telemetry panel

Equipment Supplier
Innoflow Technologies NZ Ltd.

Operation and Maintenance Provider
S3 Ltd

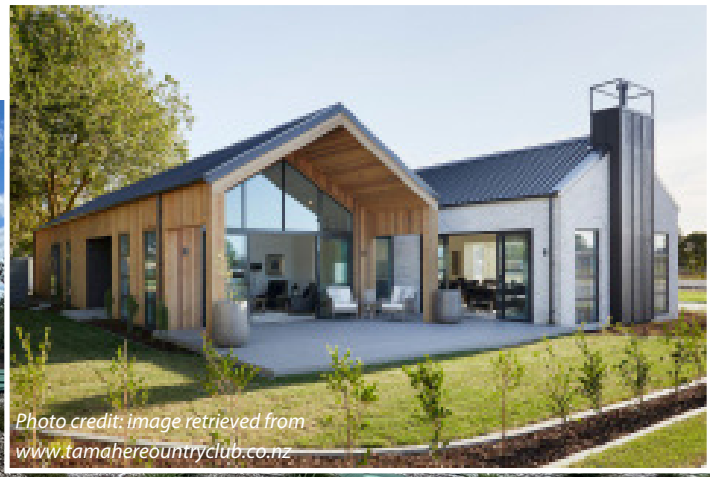


Photo credit: image retrieved from www.tamahereountryclub.co.nz

Wastewater treatment plant

Our Office
311a Postman Road Dairy Flat,
Auckland 0794, New Zealand

Phone
09 426 1027
0800 466 635 (0800innoflow)

Background Challenges
The Story

Tamahere country club is a multi-staged retirement living development based in the Waikato region of New Zealand. The development includes an impressive number of fit for purpose living and recreational spaces, including villas, apartments, care facility rooms as well as a range of amenities such as the club house, gym, spa, pool, cinema, library and golf range, bar and restaurant. In its final phase, the site has been designed to generate peak flows of 130,000 L/day.

At the time of initial development (2019), Council sewer mains were not available for the developer to connect to, therefore the viability of this project relied on treating and discharging wastewater generated from the facility onsite. Furthermore, the construction of this village was planned to be done in stages over several years, therefore any wastewater system needed to be staged according to the development in a practical and cost-effective manner.

Given the high quality and luxury aesthetic of the development, the onsite wastewater system had to operate in a way that is consistent in high treatment, is resilient to variable flows, and creates no odour or visual offence. Visual impact was one of the key criteria for this development.

Finally, having a relatively large volume of wastewater applied to land, high and consistent treatment was necessary to limit the impact and preserve the environmental surrounding.

With this, Sanderson Group Ltd distributed their engineering requirements to several wastewater system providers, which led to awarding the contract to Innoflow Technologies NZ Ltd (Innoflow).

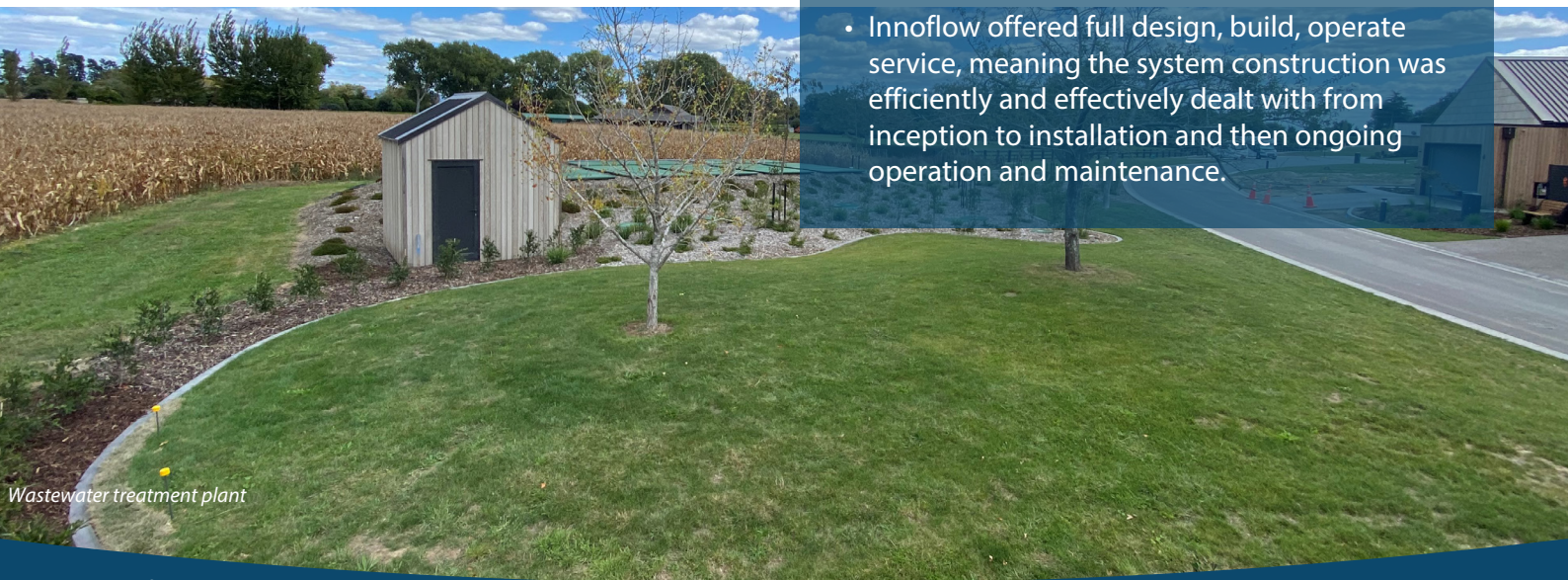
Nathan Sanderson (developer) quotes that he proceeded with Innoflow due to the company's "good reputation" and gained confidence in the system's ability to "deliver good results from plant, with no/minimal smell, noise and visual impact as well as having options to expand when needed". Overall, Nathan considered the tender to provide "good value" and appreciates Innoflow's on-going "backup service".

Solution

Innoflow proposed an AdvanTex™ recirculating packed bed reactor as the communal wastewater treatment plant of choice.

The key benefits of this proposal that best aligned with the requirements of this development were:

- Ability for the system to scale up as the development grew
- 30-year track record of installing systems for similar developments, adding credibility to Resource Consent applications
- Treatment process demonstrated both high level of treatment and reliable performance
- System has low power consumption, low operator input requirements and long-life components
- Innoflow offered 5-year warranties on the system, much more than the standard 1-year period provided as a standard by other suppliers.
- System has a visually aesthetic appearance and could fit seamlessly within the development.
- Innoflow offered full design, build, operate service, meaning the system construction was efficiently and effectively dealt with from inception to installation and then ongoing operation and maintenance.



Wastewater treatment plant

Our Office
311a Postman Road Dairy Flat,
Auckland 0794, New Zealand

Phone
09 426 1027
0800 466 635 (0800innoflow)

System Operation

The first phase of the system was installed in 2020 which comprised a one-stage AdvanTex™ recirculating packed bed reactor, designed for secondary treatment (20 mg/L for $cBOD_5$ and 3 mg/L TSS). Although the system worked effectively, Sanderson Group Ltd wanted to improve environmental impact and provide further protection to ground water sources.

For this reason, the second phase wastewater system was reconfigured to provide a two-stage plant that provided advanced secondary treatment (15 mg/L for $cBOD_5$ and TSS). The result of this enhancement was very high effluent quality (average 2.4 mg/L for $cBOD_5$ and 3.4 mg/L TSS) and subsequent low organic and nutrient loading to land, despite greater usage.

The land application system included conventional beds that were integrated in landscaped pathways, as shown below. This is an excellent means of treated effluent reuse, made possible by consistently high performance from the AdvanTex™ wastewater treatment plant.

The system includes a 2-way telemetry enabled TCOM™ control panel, meaning that the wastewater system's functions and alarms are remotely monitored by the service provider (S3 Ltd). This has provided the developer the advantage of having an operator that always has access to the system, and therefore can actively manage any potential issues before they arise.

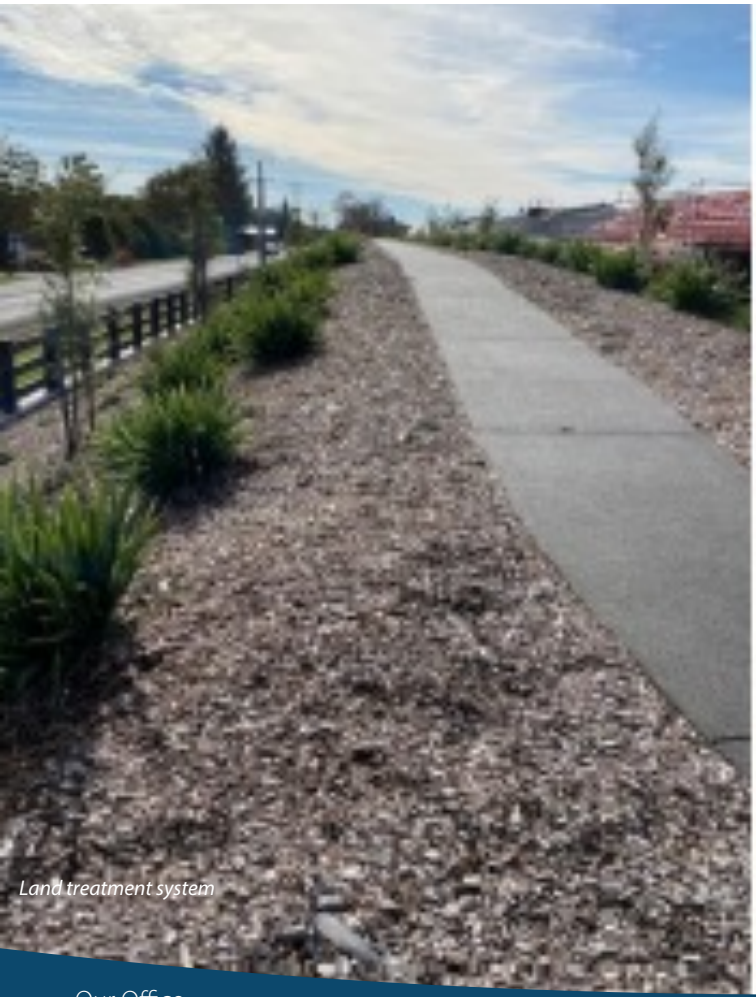
The TCOM panel also automatically logs daily effluent flows, which supports consent compliance reports for the regional council.

More Information

This case study is one of many examples of how onsite wastewater treatment can be merged into a development's landscape in a way that is sustainable and beautiful.

Innoflow can be contacted on 09 426 1027 and info@innoflow.co.nz for design and pricing information.

Photo credit: image retrieved from www.tamahereountryclub.co.nz



Land treatment system

Our Office
311a Postman Road Dairy Flat,
Auckland 0794, New Zealand

Phone
09 426 1027
0800 466 635 (0800innoflow)

wastewater specialists

Contact **Innoflow** for Design and Pricing Information
+64 9 426 1027 or **info@innoflow.co.nz**

Our Office
311a Postman Road Dairy Flat,
Auckland 0794, New Zealand

Phone
09 426 1027
0800 466 635 (0800innoflow)