

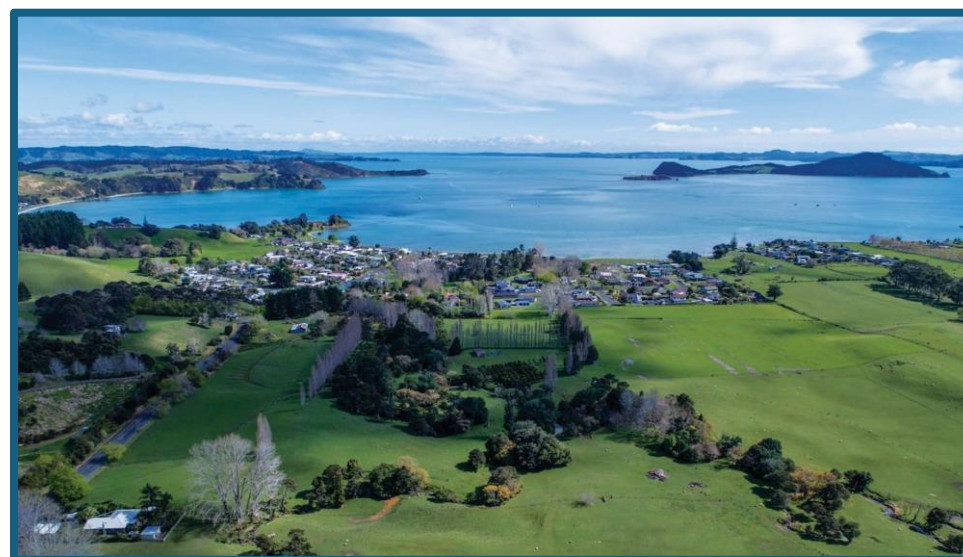
CASE STUDY

VACUUM TRANSFORMS HOLIDAY TOWN

KAWAKAWA BAY, NEW ZEALAND

Kawakawa Bay is a picturesque seaside township located on New Zealand’s east coast, around 45 minutes’ drive from Auckland’s CBD. The bay – which takes its name from Kawakawa trees which line the coastline – supports a resident population of around 700 people, which swells to more than 2,000 during the holiday seasons.

Like many New Zealand holiday towns, Kawakawa Bay’s wastewater was disposed of via septic tank systems on private properties. Over the years, poor maintenance of these systems resulted in untreated sewage being discharged to the beach, creating serious public health issues. Finally, in 2002, authorities were forced to close the beach and advise locals against eating shellfish and home-grown vegetables and fruit.



Kawakawa Bay, North Island New Zealand



The success of the project has led to the growth of vacuum sewer technology in the Auckland area. This includes a new housing development south of Auckland for 750 houses. It has also led to the replacing of septic tanks at the Clevedon town centre which will also allow for growth in the area for up to 2,800 houses.

Watercare management have stated that they see vacuum as being the technology of countries largest city.

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THE CHALLENGE

To replace an aging, ineffectual and toxic septic tank system with a cost effective, flexible and environmentally safe public sewerage network. Manukau Water Ltd's then Operations Manager, Simon Porter said the challenges and costs associated with constructing deep lines with a high ground water table meant a gravity system was quickly ruled out.

“Initially we focused on a low-pressure pump system,” he says, “but it became clear this option would also attract additional costs because many private properties in the holiday town would have required electrical upgrades to meet compliance standards.”

Kawakawa Bay required a replacement sewage system that could:

- be cost-effectively installed in a difficult terrain and flat topography
- cope with the region's high water-table, poor natural drainage and high rainfall
- be resilient to power outages
- offer the highest levels of environmental protection
- adapt to seasonal fluctuations in population.

key outcomes

1. **SINGLE VACUUM PUMP STATION**
The area had a high number of power outages, so having a system that would still operate during extended outages was critical to avoid any overflows or disruption of service. As the single pump station is the only location where power is required, a backup plan was easy to put in place. Eventually that became a solar option.
2. **SHALLOW TRENCHES FOR EXCAVATION**
In an existing residential community, shallow trenches was important. Ground conditions were very difficult and ensuring that residents were not cut off from their houses during construction was also important. Construction was rapid and this allowed for better environmental protection for the bay and the people using it.
3. **LOW MAINTENANCE COSTS**
As a monitoring system has been installed, remote operators are advised immediately if there is any problem with the network. This is vital in ensuring that there is no infiltration entering the system. By automating the increase and decrease of the amount of air in the system, it can cope easily during peak and off peak seasons.

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THE FLOVAC SOLUTION

In 2010, following extensive research, which included visits to Flovac systems in Queensland and New South Wales, Manukau Water commissioned the first vacuum sewerage system in New Zealand.

“Our research concluded that vacuum had all the advantages of being a clean solution that required minimal excavation,” says Porter. “After talking to operators in Australia, we also decided that a publicly-owned system was going to be desirable over a privately-owned system.

“One of the things that particularly impressed us was the simplicity of the connection to the vacuum pits and the fact that it was completely under our control, avoiding the need for individual home-owners to operate privately-owned systems. More recently the system has incorporated telemetry for monitoring, further enhancing our operational control.”

Another new initiative by council was the addition of a bank of Tesla solar batteries to provide sufficient power to run the vacuum station and support the local town in the event of power outages.



Tesla Solar Power Provision at the Vacuum Pump Station



Vacuum Pump Station Training

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AWARD WINNING INFRASTRUCTURE

“There was nervousness because this was first time a vacuum system was being used in New Zealand, and there was no local knowledge, but from an operational point of view it’s been a great experience.”

**Simon Porter – Former Head of Service Delivery
at Watercare Services**

THE RESULTS

The commissioning of a Flovac vacuum sewerage system in 2010 led to dramatic improvements in marine water quality in Kawakawa Bay, as evidenced by regular sampling. Just 12 months after the installation of the Flovac system, the bay was declared safe for swimming and warning signs were removed.

Since then, Flovac has installed vacuum systems across New Zealand, including Christchurch, the country’s second largest city.

“Vacuum has proved over a long period that it’s a good engineering option, and that’s why it is now being expanded to new residential developments in the Auckland region,” says Porter.

In 2014 Flovac’s wastewater system at Kawakawa Bay was awarded an Environment and Sustainability Award at the Arthur Mead Awards Function. The annual award honours projects that use sustainable features, avoid negative environmental effects, and promote community involvement.

for more information

Join us in shaping a sustainable future. To learn more about how Flovac is leading the change in environmental engineering and how we can assist in your wastewater management needs, contact us at info@flovac.com