



Auckland project restores sacred coastal inlet

Employees recently put the finishing touches on a five-year upgrade and expansion of a wastewater treatment plant in New Zealand that has led to the reparation of damaged coastline deemed sacred by local Maori tribal members.

Serving nearly 1 million Auckland residents, the technically advanced Mangere Wastewater Treatment Plant is a welcomed facility and was dedicated by the community Oct. 1.

The completion of the upgrade along with the removal of 40 years of accumulated sludge—more than 4.5 million cubic yards—has resulted in the restoration of the Manukau Harbor, an inlet where swimming and shell gathering was banned for decades.

Since the original plant was built in the mid-1950s, effluent flowed from the primary treatment plant into several oxidation ponds spanning nearly two square miles of the inlet. It was a natural treatment process using sunlight, fresh air and bacteria to break down the effluent.

“Our old people gave up their traditional fishing and shellfish gathering grounds, their local beach and the Oruarangi Creek estuary where they launched their fishing boats,” said Maurice Wilson, a local tribesman. “In many ways, they made the biggest sacrifice of all.”

The ponds became a breeding ground for swarms of midges (gnatlike flies) and the source of severe odor problems. And they

were the source of discontent among locals and a long-term challenge for the client, Watercare Services Ltd., which was created in the early 1990s by local governments to manage the area’s water and wastewater infrastructure.

The task at hand: address the problems associated with the antiquated, undersized facility. To do so, the client, armed with recommendations from the community, including Maori tribal representatives, sought out a means to restore Manukau Harbor, upgrade the treatment plant and meet

New Zealand’s new, stricter environmental regulations.

With help from OMI, CH2M Beca, a joint venture, and consortium partners Fletcher Construction, Bovis Lend Lease and New Zealand Water Services took on the challenge in 1998 to modernize the treatment plant to include biological nutrient removal and ultraviolet treatment.

Today, the tertiary-treated wastewater is channeled along a causeway to Puketutu Island, where it is stored in a 42-acre intertidal storage basin. Twice a day, after high



Eastern bar-tailed godwit now flock to Manukau Harbor.



A New Zealand fur seal suns itself on the newly restored beach.

Habitat is being restored for native species such as the eastern bar-tailed godwit, fur seal and the lesser knot. Manukau is now clean enough





tide, the effluent is released into the inlet. The new plant's discharge is meeting the industry's highest quality standards and has resulted in a dramatic turnaround for the inlet.

"The key reward for me is the hugely increased amenity value," said Julian Elder, who worked with Watercare as a consultant before the project began and then worked for CH2M Beca during the delivery. "Knowing that people are now fishing and gathering shellfish from an area that held oxidation ponds, and that this is an area that people will now come to and

enjoy the scenery and the beaches is a great outcome."

Migratory birds, including wading fowl such as the lesser knot and the eastern bar-tailed godwit, are again using Manukau as a summer stopover. Native trees are being planted on the coastline and the Oruarangi Creek and estuary are being restored.

"Now our places are coming back to us. In the end, the Manukau is what it is all about," Wilson said. "Only a few of us are old enough to remember how it used to be, but when I heard the sound of the sea rolling back in after all those years, it was truly a great day."

Facts and stats

- The 500,000 Maori people in New Zealand are a composition of many Iwi tribes
- The term Maori is derived from Ma-Uri, meaning "children of heaven"
- The Mangere UV plant is one of the world's largest
- The treatment cycle for wastewater has been reduced from 21 days to 13 hours
- The coastal cleanup is thought to be the largest of its type in New Zealand history

With public involvement, Watercare Services developed a consent agreement with the community that includes rigorous quality and environmental standards:

- 98% reduction in fecal coliform in the plant's effluent
- 67% reduction in biochemical oxygen demand
- 79% reduction in suspended solids
- 92% reduction in ammonia (87% in winter)
- 82% reduction in total nitrogen (33% in winter)
- The coastal area will be returned to a sustainable natural environment

Mates on hand from stem to stern

OMI's Matt Mates was involved in the Manukau Project from the bidding process all the way through to training plant employees to commissioning the facility.



"I was primarily an internal consultant, dealing with specific process problems most of the time," Mates said.

The contract called for operating cost guarantees. OMI's management and operational expertise was critical to nailing down accurate projections. During the first six months on the project, Mates was joined by OMI's Vicki Gaufield, Ron Petcher and Gary Shreve. Mates remained onboard throughout the project to provide OMI's operational know-how.

"CH2M wanted to drive through a design and process that worked, and I am the operations person that was there to do and support that with the resources at my disposal," said Mates, who also trained and mentored plant employees.



The harbor attracts migrating fowl, such as these lesser knots.



Traditional shellfish gathering returns to Manukau Harbor.

to support traditional activities such as fishing and gathering shellfish.

