

CASE STUDY



Wanganui Wastewater Treatment Plant

The Challenge

For many years Wanganui pumped its wastewater into the Wanganui River, then in later years implemented an ocean outfall system. In the early 1990s a working party was formed to find a better solution to deal with untreated wastewater rather than pumping it out to sea.

The solution was to build two lagoons for wastewater treatment.

The Design

MWH were the consulting engineers. The design incorporated a 10 metre deep aerated lagoon with a capacity of 180,000m³ and a settlement pond 8 metres deep with a capacity of 32,000m³. This project was unique as it was not a regular shaped lagoon; the side slopes were formed to follow the natural curves of the sand dunes.

An HDPE liner was specified for the project. A drainage system was installed beneath the lined aerated lagoon to remove liquid that might otherwise become trapped and cause gas which could cause the HDPE liner to whale or fail.

The Construction

The subgrade was predominantly sand with some silt, which caused some difficulty when it came to welding the liner. A slip sheet was utilised to provide a firm surface for the welder to drive on and to stop any sand getting into the weld area and the welder itself.

With the site being so close to the ocean, wind was a major factor on this project and made for some challenging moments. As the wind passed over the side slope embankment it created a negative pressure, causing the liner to billow up above the anchor trench. The installation crew had to apply a robust ballasting system to prevent uplift and/or wind entry.

Application	Wastewater Pond
Location	Wanganui, New Zealand
Product	1.5mm Geoshield HDPE Smooth
Job Owner	Wanganui City Council
Engineer	MWH
Contractor	Inframax
Date	2006 - 2007
Liner Area	60,000m ²

Wanganui Wastewater Treatment Plant

The **Construction** cont.

Liner construction required panels to be pre-cut and shaped to fit the internal and external curves. There were also three large concrete structures that required a water tight seal for the inlet, outlet and boat ramp. This was achieved by using a stainless steel batten bar and rubber gasket system.

Wedge welding was the primary method for seaming the membrane liner. Wedge welders produce a double track weld; between these two welds is an air channel which can be used to non-destructively air pressure test the integrity of the entire weld seam.

The **Performance**

Weather and soil conditions caused construction delays. However, both reservoirs were successfully commissioned in 2007.

