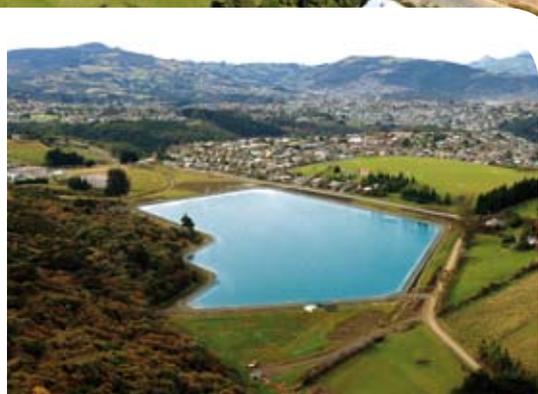


CASE STUDY



Mt Grand Reservoir

The Challenge

The Dunedin City Council required a raw water storage facility adjacent to the Mount Grand water plant. The storage was required to improve security of supply in the event of extended maintenance being required on the 58km long supply pipeline. The storage would also provide improved operational flexibility at times of high turbidity in the supply.

To avoid the raw water characteristics being affected by local groundwater, a Geoshield High Density Polyethylene (HDPE) liner was installed. After three years of earthworks construction, Viking Containment was called upon to install and weld together the HDPE liner, which finally transformed the once swampy land at the head of Abbott's Creek in Brockville into a new reservoir for Dunedin's city water supply.

The Design

This is one of the largest reservoirs that Viking Containment has installed. The liner area is 76,000m² (16 football fields), with a water storage capacity of 380 million litres.

A leak detection system was incorporated beneath the liner to allow water to flow to collection drains in each section. If there was a leak, it could be identified in the affected area. The drains also enabled the removal of groundwater beneath the liner without disrupting the subgrade surface.

The Construction

The liner rolls were deployed on-site using a 20 tonne excavator. The installation team pulled the liner panels 160 metres across the reservoir using a winching system that reduced installation time and costs.

Application	Raw Water Storage Reservoir
Location	Brockville, Dunedin, New Zealand
Product	2.00mm Geoshield HDPE Smooth
Job Owner	Dunedin City Council
Engineer	Opus Consulting
Contractor	Fulton Hogan
Date	2006
Liner Area	76,000m ²

Mt Grand Reservoir

The **Construction** cont.

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.

Wind uplift was one of the biggest risks during installation of this project. Over 11,000 sand bags were used to help hold the liner down during construction.

The **Performance**

Weather and soil conditions caused construction delays. However, the liner was installed over a period of 16 days. The reservoir was commissioned in 2006. Commissioning was a slow carefully monitored process. Most of the initial filling had to take place at night when the liner was fully contracted to avoid trapping thermal expansion wrinkles.

