

**CHLOORKOP EASTERN CANAL**  
**MIDRAND, GAUTENG, SOUTH AFRICA**

## Lining Systems - Capping

**Problem**

Chloorkop effluent farm is located approximately 10km east of Midrand and is operated by Sentrachem, a subsidiary of the DOW Chemical Company. In terms of the water regulations all "clean water" must be diverted around the farm. In order to comply with this regulation, river diversion canals on both the eastern and western sides redirect water around the property. Since the farm was originally established in the 1950's, the residential development around the farm has increased resulting in additional run-off being channelled into the natural watercourse. To cater for the increased run-off quantities the existing eastern canal of the farm, whose purpose is to divert the natural river course past the salt-water dams into the spruit below, needed to be upgraded.

**Solution**

The design detailed the construction of an earth canal protected in areas of high velocities with Reno mattresses and gabion retaining walls to stabilise the embankments. The gabion products are manufactured from heavily zinc coated double twist hexagonal mesh to SANS 1580:2005. To halt degradation of the bed canal, a series of vertical weirs were constructed so that the canal slope between the toes and the crests were stable for the soils concerned not to erode, with the excess water energy being dissipated at the toe of each structure.

Gabions and Reno mattresses were also used in areas where the occurrence of hydraulic jumps was expected and where changes in horizontal alignment occurred.

The vertical gabion weirs and Reno mattress spillways were concrete capped to prevent the movement of the rock fill within the baskets and prevent the excessive abrasion of the double twisted wire due to water dissipation. Herbaceous and woody plants were readily established within the stable environment of the stone fill.

**Client:** SENTRACHEM**Designer / Consultant:** ALAN ROBINSON  
CONSULTING ENGINEERS**Contractor:** EWT CONSTRUCTION**Products used (Qty.)**

- Reno Mattress unknown

**Date of construction:** 12/2001 - 08/2003

Gabion weirs to dissipate energy and protect the bed canal



Channel lining immediately after installation



Natural vegetation established a few months after completion