

CASE STUDY

Drainage | Tailings Facility | Sylvania Metals Tailings Facility, Marikana

May 2012

Client Samancor

Contractor Frasers Tailings

Consultant Sylvania Civil Projects Dept

Product

Kaytape | 3 000m²
ZipCore | 3 000m²
Megaflo 150 | 640m
bidim® A6 | 3 000m²



An equivalent of **18 888** recycled PET bottles was used in this project

Problem

Without proper drainage on the dam, water pressure would increase all along the toe of the dam wall, causing water to seep through the toe as well as the wall itself. This increase in water pressure would also result in a decrease in the shear strength of the material deposited, and ultimately affect the stability of the dam.

Solution

The consultants to SamancorCr specified a completely synthetic filter drain system as opposed to the traditional sand and stone design for economic and ease of implementation reasons.

The area around the dam wall perimeter was first cleared, shaped and then compacted. A central longitudinal groove was then formed into which the **ZipCore®** sheeting was laid and **Megaflo®** pipe placed over.

The **Megaflo®** and **Zipcore®** was then covered with a layer of **Kaytape® S270**, retaining an open flow path above the **Zipcore®**. The Kaytape is followed by a layer of **bidim® A6**, which was tucked underneath the sides of the **ZipCore®**.

Compatibility testing of the tailings and **bidim®** were conducted at Geolaboratory in Pinetown to select the most appropriate grade to ensure durability of the fabrics' filtering capacity.

Once the drain was installed, coarse tailings were



Megaflo®, bidim®, Zipcore®, Kaytape® drainage solution



The geosynthetic perimeter drain

CASE STUDY

cycloned to cover the newly installed drain, extending beyond the drain, and ultimately forms the perimeter wall.

Benefits

Efficacy of the design is proven by water flowing from the new system into the collector drains, and no sign of water seepage on the dam wall. The cost-saving and ease of application can be carried forward to other tailings facilities.