KAYTECH CASE STUDY

# ENHANCING SLOPE STABILITY IN EARTH DAMS WITH GEOSYNTHETICS FOR EROSION CONTROL

## GEOSYNTHETICS USED

**bidim® A4:** Used to separate and filter material thereby improving the overall stability of the soil.

**Multi-Cell® PP**: a honeycombed structure that is manufactured from strips of a coated slit film woven polypropylene tape that are stitched alternatively together to form a three dimensional diamond shaped cells.

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## PROJECT DESCRIPTION

The Lynnfield Wastewater Treatment Works, located in the Umngeni-Uthukela Water region, faced significant erosion along the side slopes of its earth stormwater dam. Excessive rainfall, combined with limited vegetation, led to soil loss, increasing the risk of a global slip failure that could have compromised the dam and nearby concrete infrastructure. Although a liner wasn't required, erosion control measures were essential to stabilise the slopes. Geosynthetics were selected as the preferred solution, providing a confinement system to secure the soil and growing medium, promote vegetation growth, and enhance long-term slope stability.

## A BETTER SOLUTION

Kaytech's bidim® A4, a nonwoven geotextile, was selected for its filtration and separation capabilities, which were essential for slope stabilisation.

It provided a stable working surface during installation and prevented the Multi-Cell® PP system, a 3D cellular confinement solution, from settling into the in-situ soil, maintaining its 100 mm height. Its porous structure facilitated water filtration while keeping soil layers separate, creating optimal conditions for vegetation growth.

The Multi-Cell® PP system was filled with soil and hydroseeded to promote grass growth and reduce erosion. The confined soil improved shear strength, helping to limit erosion on the inclined slopes. As vegetation took root, the grass further stabilised the soil, enhancing long-term slope integrity.

Since installation, the side slopes have significantly improved, with healthy grass cover reducing erosion and enhancing stability. The combination of bidim® A4 and Multi-Cell® PP has reinforced the dam's side slopes, minimised erosion risks, and supported long-term vegetative growth for sustained slope stability.

KAYTECH ENGINEERED FABRICS
ALWAYS A BETTER SOLUTION

Multi-Cell® PP used to protect the dam side walls from erosion.

Eroded slope prior to rehabilitation.

Subsoil wrap-around wall constructed using bidim® A4.

The site post-installation.

## Did you know?

### Versatility

bidim® A4 is used in various applications, including earth retaining structures, railway separation, subsoil drainage, erosion control against tidal action, and protecting the liners of untreated water dams.

### Vegetation Support

Multi-Cell® PP enhances soil strength and promotes grass growth for long-term slope stability.

### Cost Savings

Multi-Cell® PP's compact panels reduce transportation costs due to their lightweight and space-saving design.