



Waste Containment Slope Stabilisation Bellville, Western Cape

Case Study

Project: Bellville Landfill Site – New Cells 1 and 2

Client: Cape Metropolitan Council

Consultant: Jeffares & Green

Contractor: Amandla Construction
Aquatana

Date: February to May 2003

Product: **Geogrip 350**
bidim® A6

Quantity: approx 16 000 m²

The Bellville landfill site is one of the few remaining operational sites in the Cape Peninsula, but is expected to reach its maximum capacity in the near future.

With the scarcity of suitable new sites and the demand for airspace, the optimisation of approximately 5 ha of land allocated for two new cells was critical. By having steeper cell side slopes, capacity could be increased. The engineers identified that the friction angle between the protection geotextile and the geomembrane was the critical component in the design of the side slopes.



Various candidate protection materials were tested by the engineers in conjunction with the geomembrane. Tests were performed in a shear box under saturated conditions for a range of normal pressures between 50 kN/m² and 400 kN/m². Geogrip 350 proved to provide the highest friction angle, and the angle of the side slopes was designed accordingly. Geogrip 350 is a nonwoven, continuous filament, needlepunched geotextile, heat-treated on the one side to create a coarser surface with subsequent improved friction. Geogrip 350 was used along all the side slopes, while **bidim® A6** was used on the flat area of the cells.

