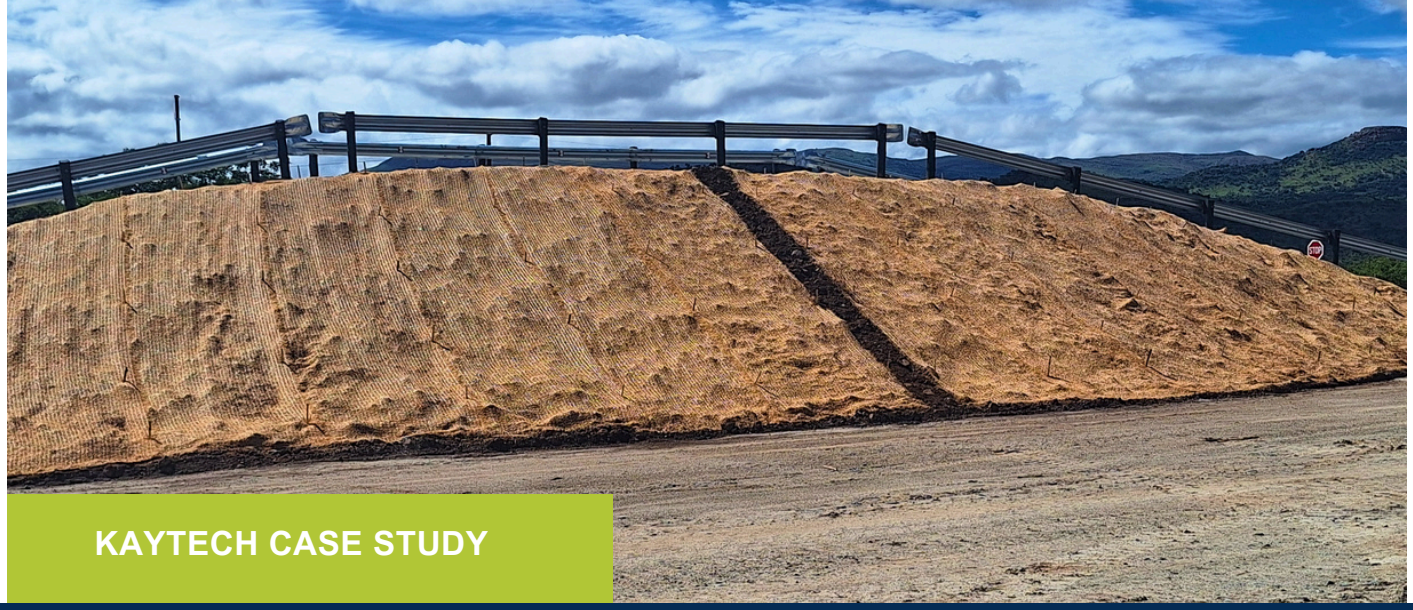


KAYTECH CASE STUDY

SLOPE STABILISATION USING BIODEGRADABLE EROSION CONTROL ON A HAUL ROAD EMBANKMENT

GEOSYNTHETICS USED

Enviromat®: A biodegradable erosion control mat manufactured from natural fibres formed into an open matrix structure.

Enviromat®: Installed over hydroseeded berm slopes to provide temporary surface stabilisation and protect the soil during vegetation establishment.

CONTACT

Christiaan Van Wyk

083 265 7089

christiaanv@kaytech.co.za

www.kaytech.co.za

53 Harris Avenue, Sebenza, Edenvale, Johannesburg

PROJECT DESCRIPTION

The new haul road at Mototolo Mine traversed low-lying drift areas and side slopes requiring slope stabilisation. Hydroseeding alone was insufficient, as freshly seeded soil on slopes are highly susceptible to erosion, threatening early vegetation establishment and slope stability. A robust method was required to protect the seedbed, prevent soil displacement, and ensure the development of a stable vegetative cover. The project aimed to implement an interim protective system that would support vegetation growth while maintaining long-term slope stability and environmental compliance.

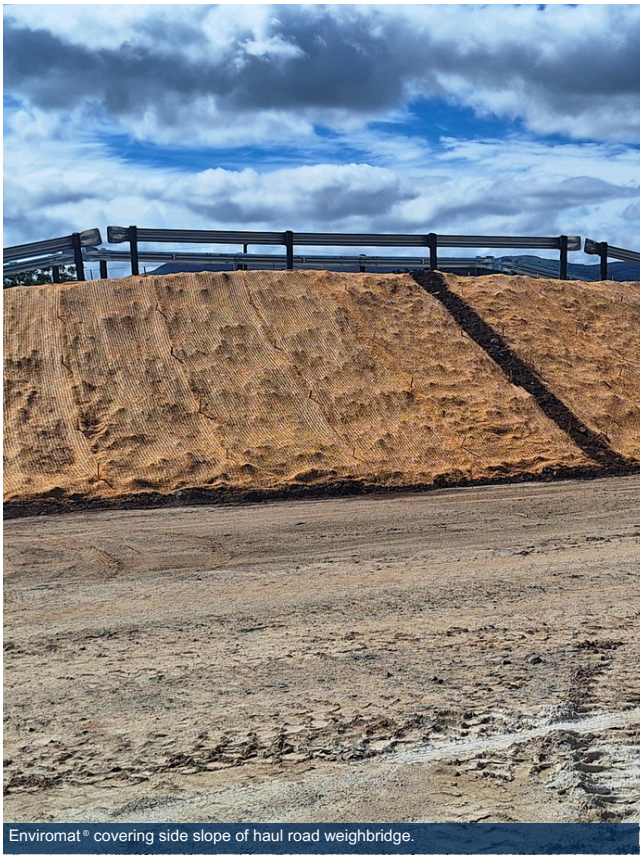
A BETTER SOLUTION

Erosion control blankets stabilise soil by providing a protective layer that dissipates rainfall energy and reduces the velocity of surface runoff. This mechanism prevents detachment of soil particles and displacement of seeds during the critical early stages of vegetation establishment (Rickson, 2006; Koerner, 2012). The blankets also maintain soil-seed contact and retain moisture, creating a favourable microenvironment for germination and root growth.

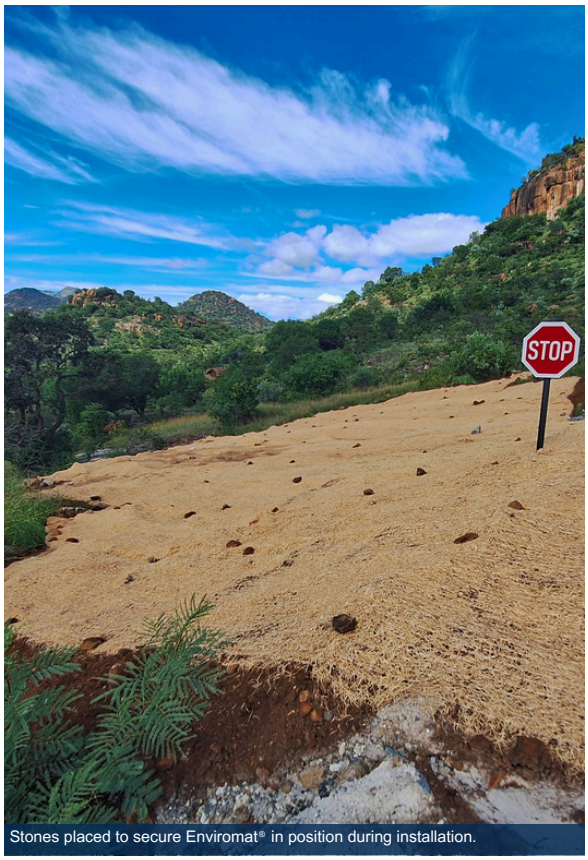
Following hydroseeding, biodegradable Enviromat® blankets were installed across the haul road side slopes. The mats were secured with wooden pegs to ensure continuous contact with the soil surface, preventing underflow that could erode or displace seeded material. The open matrix structure of the blankets allows seedlings to emerge while trapping soil particles and dissipating surface water energy. Over the course of one to two growing seasons, the vegetation establishes root networks that reinforce the soil, at which point the Enviromat® naturally biodegrades. This method eliminates the need for manual removal while providing temporary but essential protection during early slope stabilisation.

The installation of Enviromat® provided reliable, temporary erosion control across drift areas and side slopes. Seed displacement and surface washout were minimised, enabling consistent vegetation establishment. As the blankets biodegraded, mature root systems maintained slope stability, creating a self-sustaining vegetative cover. This approach reduced maintenance requirements, limited soil loss, and enhanced the long-term structural integrity of the haul road embankments, ensuring compliance with environmental and operational standards.

Close-up of Enviromat® installed on haul road side slope.



Enviromat® covering side slope of haul road weighbridge.



Stones placed to secure Enviromat® in position during installation.

Did you know?

Slope Energy Dissipation

Erosion control blankets dissipate the kinetic energy of rainfall and surface runoff, reducing soil particle detachment on steep slopes.

Seed-Soil Contact

Continuous contact between seed and soil is critical for germination; blankets prevent seed displacement even during high runoff events.

Biodegradable Support

Temporary matting can be engineered to degrade after vegetation establishes, eliminating removal and allowing a seamless transition to self-sustaining slopes.