



## Railway Line Embankments Erosion Control Sishen to Saldanha, Northern Cape

### Case Study

<b>Project:</b>	Transnet Orex Line Embankment Erosion	<b>Date:</b>	April 2010
<b>Client:</b>	Transnet	<b>Product:</b>	Neoweb
<b>Consultant:</b>	Transnet (in-house)	<b>Quantity:</b>	22 750 m <sup>2</sup>
<b>Contractor:</b>	RME		

Originally constructed in 1976 the orex line runs from the town of Sishen in the Northern Cape to the port at Saldanha in the Western Cape. At the time of construction the embankments for the line were constructed using the insitu material. This decision was taken in order to eliminate the cost of importing material but the insitu material turned out rather dispersive and combined with the dry, arid nature of the terrain, resulted in severe erosion of the embankments.



Over the years many attempts have been made to refurbish these slopes employing many natural and synthetic materials but none of these past methods provided satisfactory results.

In 2009 the Israeli based geocell manufacturer PRS, relaunched their Neoweb product to the South African market. This was identified by the design engineers of Transnet to be a far superior cellular containment geosynthetic than anything available in the country. The cell walls were stiffer and the textured surface provided enhanced frictional grip for the infill material.

With the assistance of design engineers from PRS, a design proposal was put forward to solve the orex line erosion control problem. This design was checked by the

Transnet design engineers who utilized their vast local knowledge of the site conditions to optimize the design. The product was ordered and delivered to site from Israel within 5 weeks.

Representatives from Kaytech visited the site near the small town of Kenhardt to assist the contractors with the installation of this new product. Installation guidelines and recommendations from the manufacturer helped the contractor simplify the installation.

The design entailed clearing the slope of all the scrapings deposited during routine maintenance of the line, filling deep gullies and laying out the Neoweb panels. These were then secured in an anchor trench at the top of the embankment and pegged to the slope with metal reinforcing bars which were secured to the Neoweb using Neoclips. The Neoweb was then filled with material from a local borrow pit.

Strict safety regulations had to be adhered to as all the work was done while the line was fully operational. The stiff walls of the Neoweb boosted quick installation on the steep slopes resulting in limited exposure for the workers to the 4km long trains hurtling by at 100km/h.

