CASE STUDY

Geocontainer

Project:	Erosion Protection for Dune Rehabilitation
Date:	August 2005
Client:	Environment Bay of Plenty
Location:	Papamoa Beach, Mount Maunganui

GEOFABRICS®

ELCOROCK®

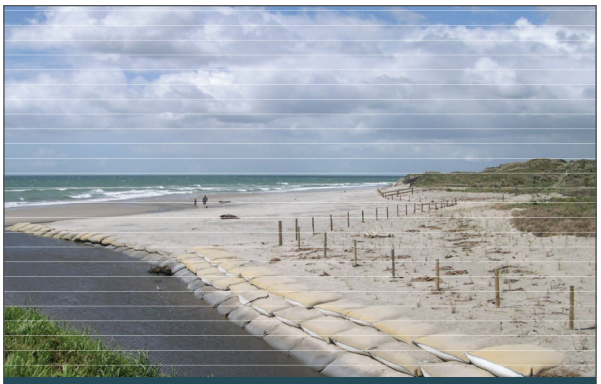
Erosion of sand dunes where streams exit at the coast is a continuing problem. In the natural dune environment it is not acceptable to introduce “hard” structures such as rock armour to control erosion. The emphasis is to retain the natural amenity value and public access and to utilise natural dune vegetation techniques to restore eroded dune systems rather than introduce hard structures. Designers have looked towards innovations in geosynthetic technologies to provide softer solutions to beach erosion protection.

Following the success of the sand filled tubes at the Waihi Beach Surf Life Saving Club site, the Environment Bay of Plenty Coast Care group has adopted a development of this system to help arrest dune erosion at other sites. The recently installed structure at Harrison’s Cut, Papamoa just south of Mt Maunganui utilised the specialist high abrasion and vandal resistant composite material **ELCOROCK®** containers filled with sand to train the stream outfall. The structure is designed to control the stream flow direction and stop its tendency to flow in an easterly direction where severe erosion and loss of the dune system has occurred.

While the stream outfall training is important, it is only part of the dune rehabilitation programme implemented by the Environment Bay of Plenty Coast Care group. The **ELCOROCK®** structure facilitates the retention and accretion of sand which is then stabilised with planting of Spinnefex and Pingao grasses. These native grasses further promote the natural establishment of the dunes by their ability to trap and retain sand.

Erosion of dunes prior to construction

ELCOROCK® filled for sewing closure and placement



Completed with dune planting and fencing

The dune area after initial completion

The stream training structure is constructed of 0.75m³ **ELCOROCK®** containers with filled dimensions of approximately 1.6m x 1.2m x 0.4m, placed in layers to a height of 1.2m. A modified container incorporating a geotextile wing provides for scour protection along the stream bed. Construction involved filling the containers with on site sand using a filling frame and small excavator, then sewing closed with a special portable sewing machine. The containers were then placed using a 20 tonne excavator with a modified bucket to lift and place the containers.

Once the **ELCOROCK®** structure was completed, sand was replaced behind and immediately planted by Coast Care and volunteers. As the planting establishes the dunes will be stabilised thus providing the erosion protection to the back dune reserve. In the short time since installation, accretion of sand has already occurred. The **ELCOROCK®** structure has provided a safe and useable amenity for public access.

How ELCOROCK® **works.**

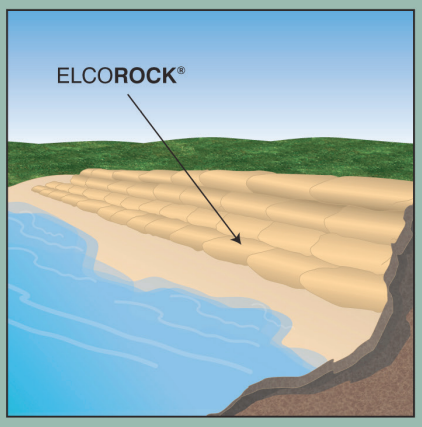
The ELCO**ROCK®** shoreline protection system consists of sand-filled geotextile containers which form a stabilising, defensive barrier in coastal areas. The system provides enhanced public amenity, allowing greater public access at reduced risk for the asset owner.

A world-leader in geosynthetic erosion protection, the ELCO**ROCK®** system effectively combats erosive forces in coastal regions and inland waterways. The robust containers are manufactured in Australia using a nonwoven geotextile with enhanced filtration and extreme UV resistance.

After 20 years of use in the harsh Australian environment, the system's resilience and strength has been proven many times over. ELCO**ROCK®** structures have withstood UV damage, coastal abrasion, vandalism and even Category 5 cyclones. The system is supported by extensive R&D and world class design modelling.

ELCO**ROCK®** structures provide a cost-effective alternative to traditional coastal structures made from concrete, rock armour, steel and timber. The system also enhances the environment by providing a stable base for marine growth.

Geofabrics supports the ELCO**ROCK®** system with ongoing R&D, installation systems and design support.



ELCO**ROCK®** **Application**