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

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 Spinifex and Pingao grasses. These native grasses further promote the natural establishment of the dunes by their ability to trap and retain sand.
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.