

Project: Jackett Island ELCOROCK® 2.5m³ Containers  
Date: May 2015  
Client: Tasman District Council  
Location: Port Motueka



## ELCOROCK®

Port Motueka and Jackett Island face north east and are exposed to occasional storms from this quarter. The wave climate on the coast in these locations is significantly modified much of the time by the Motueka sand spit and shoal complex with the highest 100 year storm tide and wave run-up height reaching up to 4m above mean sea level. At the southern end of the island, where erosion is at its greatest, a property frontage with a house close by had been affected by wave erosion.

The initial solution was for a sand container retaining wall to be constructed to give protection along the property frontage. The choice of 0.75m³ sand filled containers did not perform as well as expected and resulted in a section of this wall being considered for reconstruction.

Geofabrics have been involved with **ELCOROCK®** containers for over 25 years, and extensive research has gone into sand container development and installation methodology. After discussions with Council, it was agreed that the **ELCOROCK® 2.5m³** sand containers would be more appropriate for this site.

The use of the Geofabrics developed installation equipment was key to a successful outcome. The equipment includes a large stand supporting 2 hoppers which is established on site for filling the containers and the use of 2 J Bins incorporating a quick hitch system to connect to a 30 tonne excavator for the safe transport and placement the containers into position.

The sand used for filling the **ELCOROCK® 2.5m³** sand containers was sourced close to the site and was clean and free flowing resulting in the containers being filled to full capacity with each weighing approximately 6 tonne when wet. The sand was placed in the hoppers by a smaller excavator, with the aid of water being pumped into the hopper. The water aids in the compaction, and minimises the voids as it is important the containers are filled to their maximum capacity.



Laying of filled **ELCOROCK®** sand bags



Front on view of **ELCOROCK®** wall



Completed **ELCOROCK®** wall

On-site training was provided by Geofabrics staff and with tide levels influencing the installation, the majority of work done on Jackett Island was between the high tides.

Typically 5-6 containers were able to be filled per hour. They were stored on the beach individually so that they could be picked up using the J bin for easy placement.

The slope leading down from the property to the beach was trimmed back and then covered with a specialised coastal geotextile, **ELCOMAX® 600R**. The base of the slope was dug below the existing beach level to enable keying in below the anticipated scour depth. On some more aggressive sites, the base sand containers usually incorporate an extended length of geotextile that is laid below the adjacent sand container providing anchorage for the base container to rotate downwards to prevent undermining of the foundation, in the same way a **Reno Mattress** works under **gabions**.

The dimensions of each container measured 600mm deep, 1600mm wide and 2400mm long. Each container was placed so that the edge where the sand container is closed off was facing towards the slope face away from the sea. This reduces damage due to stress from wave action or vandalism. Damage to the containers can be repaired with kits that are available through Geofabrics New Zealand Ltd.

The first installation of approximately 29 x **ELCOROCK® 2.5m<sup>3</sup>** containers was carried out in December 2013, with **ELCOMAX® 600R** coastal geotextile used along the base and up the trimmed slope. After several storms, the **ELCOROCK® 2.5m<sup>3</sup>** containers had showed no sign of movement and were obviously more suitable for this site than the existing smaller containers.

As a result in July 2014, a further 70 x **ELCOROCK® 2.5m<sup>3</sup>** containers were installed. To date these have performed admirably and are an asset to the Tasman District Council.

The consultant involved with these installations was Tonkin & Taylor, based in the Nelson office, who has a wide involvement in coastal applications internationally. The contractor was a locally based company, Taylors Contracting Ltd based in Brightwater, Nelson.

#### How ELCOROCK® works.

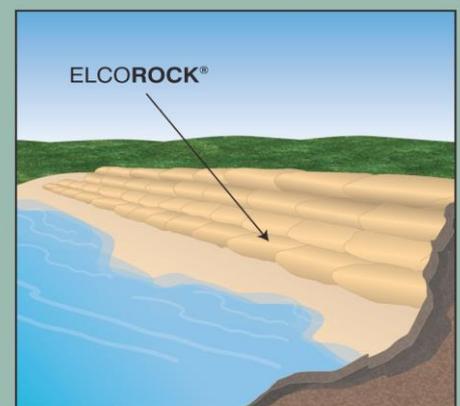
The **ELCOROCK®** shoreline protection system consists of sand-filled geotextile containers which form a stabilising, defensive barrier in coastal areas. The system provides enhanced public amenity, allowing greater public access at reduced risk for the asset owner.

A world-leader in geosynthetic erosion protection, the **ELCOROCK®** 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. **ELCOROCK®** 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.

**ELCOROCK®** 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 **ELCOROCK®** system with ongoing R&D, installation systems and design support.



ELCOROCK® Application

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