

## Project Reference P80

## Coastal Protection



## Marang Breakwater

**Project**

Marang Rivermouth Improvement Project, Terengganu.

**Client**

Department of Irrigation & Drainage, Malaysia (DID)

**Contract Sum**

RM29,836,522

**Contract Period**

June 1999 ~ Aug 2002 (38 mths)

**Consulting Engineer**

Sepakat Setia Perunding Sdn Bhd

In 1999, the Malaysian Government through DID engaged SYS to build a breakwater at the rivermouth of Marang River for the fishermen community and island-hopping tourism.

The breakwater, designed in symmetrical bow-shape, had an entrance navigation channel in the middle and two “internal jetties” which forms a constriction to create a flushing effect (with the tides) so that the river channel would not be silted up.

The breakwater is made of 255,500m<sup>3</sup> of granite rocks, laid on the seabed over 81,150m<sup>2</sup> of 390g/m<sup>2</sup> non-woven geotextile and armoured with 37,160m<sup>3</sup> of G40 precast concrete tetrapods (56% x7.5MT, 35% x3.8MT and 9% x11MT) in two layers. Each arm of the breakwater is about 700m long.

Within the breakwater 552,700m<sup>3</sup> of sand was dredged with a cutter-suction dredger to form a navigation channel and a sedimentation basin. The sand was pumped to nourish the beach at the roots of the breakwater and also to reclaim a piece of land within the breakwater. A grab dredger was also used to dredge 17,800m<sup>3</sup> of rocks in the navigation channel.

After an initial 8 months of delay due to objections from an adjacent beach resort, the breakwater was relocated and realigned and the project was completed in August 2002.

