

## WAY LOLA KECIL RIVER BANK PROTECTION BULA, MALUKU, INDONESIA

### Channelling Works

#### Problem

Way Lola Kecil is located in the North-East of Seram Island, Maluku Province of Indonesia. An unconfined river body was threatening the surrounding areas, populated by the local community, with frequent floods coming during the rainy season.

The objective was to build a dike in order to confine the high water flow level avoiding thus the flooding of the areas in its vicinity. The dike was planned to be build with locally available loose soil (mainly silty sand).

#### Solution

The Public Works Department decided therefore to build the dike and to cover it in with a durable and flexible revetment system to prevent the erosion of the fine soil particles.

It has been decided to line the entire dike using Gabions and Reno Mattresses (refer to the typical dike section).

Reno Mattresses allow tangential river flow velocities up to 6m/s without any substantial damage (according to the test results gathered during the Colorado State University hydraulic test campaign). Mattresses are also very flexible modular elements which allow high levels of deformation and settlements without compromising the lining integrity.

During the construction phases, the Mattresses lining experienced a severe flood without any visible damage.

Reno Mattresses have shown to be a valid alternative to the traditional lining systems used in Indonesia (rip-rap or masonry walls) both in terms of flexibility, durability and cost effectiveness.

Area 2 and 3 The river banks are protected with stepped gabion walls coupled with Reno Mattresses extended in the river body as scour protection.

Area 1 and 4 The new construction dikes are totally covered with Reno Mattresses (anchored with 1m steel bars). The protection has been extended in the river body for approximately 3,5m in order to minimize the scour at the toe of the dike. All the products have been installed together with a nonwoven geotextile (MacTex MXL) with filtration function.

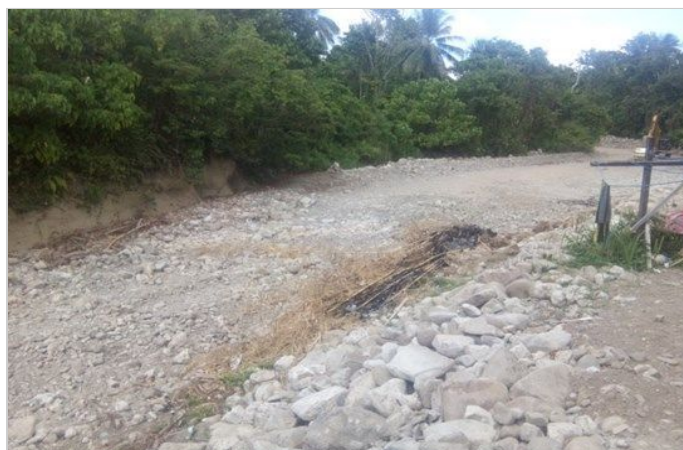
**Client:** INDONESIAN MINISTRY OF PUBLIC WORKS

**Designer / Consultant:** PT MACCAFERRI INDONESIA

#### Products used (Qty.)

- Gabion	N/A
- Reno Mattress	N/A
- MacTex Non-woven Geotextile	N/A

**Date of construction:** 07/2015 - 12/2015



River Condition Before Intervention



River Condition Before Intervention



Area 2 and 3 after construction



Area 1 and 4 after construction



Area 5 after construction