

COLOMBO PORT CITY

MORPHOLOGICAL MODELLING OF A RECLAMATION

The Colombo Port City Development is a large 200 hectare land reclamation. Once finished it will be protected by a low-crested offshore breakwater with a length of more than 3 kilometres, but during construction much of the sandy reclamation will be exposed to the sea. Svašek Hydraulics has provided the modelling part of CDR International 's design support on the reclamation and marine works for this complex project.

Monsoon conditions with high waves from the west are able to generate massive alongshore sediment transport at Colombo. During the 2015 monsoon season most of the reclaimed area up to that point was shifted by waves to the south (see top two figures on the right). It was decided that a thorough understanding of the transport processes, anchored in a full processed based morphological model, was necessary before continuing the reclamations works.

Svašek Hydraulics set-up a coupled SWAN FINEL2D morphological model. The SWAN model is calibrated on measurements and forced by constructed 2D spectra. The spectra represent both the

ever present southern swell waves and the season dependent monsoon waves (each month of the year has been represented by an idealized wave climate). After accounting for the presence of non-erodable layers, wave reflection on existing breakwaters and cross shore processes, the model was soundly validated against the large morphological changes of mid 2015 (see lower figure on the right).

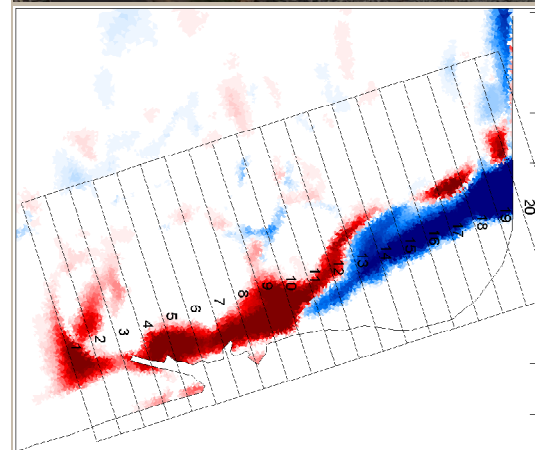
The model has later been applied to compute a variety of work stages under a variety of conditions. The results have provided CDR with the means to successfully provide design support for the project.

CLIENT
CDR International

LOCATION
Sri Lanka

DATE
2015-2016

SERVICES
Development of morphological model
Simulations of different work stages



SVASEK
HYDRAULICS
COASTAL, HARBOUR AND RIVER CONSULTANTS

Svasek Hydraulics
Schiehaven 13G
3024 EC Rotterdam
the Netherlands

Phone: +31 10 467 13 61
Internet: www.svasek.com
E-mail: info@svasek.com