



# Masterplan Lonrho Oil Service Terminal, Ghana

Svašek Hydraulics has supported the development of a masterplan for an Oil Service Terminal in Ghana. The support consisted of 1) the establishment of the nearshore wave climate, 2) a wave tranquillity study, 3) coastline impact study and 4) the quantification of the maintenance dredging requirement.

The nearshore wave climate has been established by means of a SWAN simulations with which an offshore wave data set has been transformed to a nearshore wave data set. This transformed wave climate was input to both the morphological study and the wave tranquillity study.

For various harbour layouts the wave conditions and associated downtime at the berths have been calculated with the HARES (HARbour RESonance) model suite, developed by Svašek Hydraulics.

The impact of the harbour on the coastline has been assessed by means of a coupled FINEL2D-SWAN model. The SWAN model delivers wave-induced forces and near bed orbital velocities to FINEL2D. FINEL2D calculates the sediment transport fluxes in the surf zone both with and without the presence of the harbour. In that manner the absolute as well as the relative impact of the harbour on the sediment fluxes and thus on the coastline evolution could be assessed.

Analysis and processing of in situ measurements, supported by FINEL2D simulations, were used to quantify the annual maintenance dredging both of the approach channel and the harbour basin.

**Client**  
Royal Haskoning

**Location**  
Ghana

**Date**  
2012

**Services**  
SWAN wave modeling  
HARES wave tranquillity study  
FINEL2D morphological modeling  
Data analysis