
Location	Lagos
Type of project	2D and 3D physical model tests for stability of outer breakwater armoured with Xbloc® armour units
Client	Delta Marine Consultants b.v. for the Lagos Free Trade Zone Company



Description

In this project DHI managed successfully to assist the client in obtaining an optimal design for the breakwater structures in Port at Lekki.

The project was carried out in two succeeding parts, 2D flume tests and 3D shallow water tests. During flume tests two cross-sections were tested: a rubble mound structure with wave screen armoured with Xbloc® units and a caisson breakwater. During the flume tests both the wave screen and the caisson design were altered to accommodate for the large wave forces.

3D basin tests showed the necessity of changing the layout of the breakwater adding a spur breakwater on the lee side to protect the lee side of the breakwater further landwards. This was the result of wave agitation caused by refracting and diffracting waves causing leeside armour stability to fail. The modified layout proved very successful.

The project showed that DHI services in the form of physical model testing can make a large difference for the client as similar knowledge cannot be achieved by desktop studies.