

MARSAXLOKK FISHING PORT

WAVE STUDY FOR BREAKWATER ALTERNATIVES

The fishing port of Marsaxlokk regularly experiences wave conditions that are not comfortable for moored vessels. To improve the wave conditions in the northeast part of Marsaxlokk Bay and at the fishing port a new to build breakwater at Qretjen Point is being considered. Besides the Qretjen breakwater also some other alternatives are investigated.

For each alternative, as well as for the present situation and the situation a few years ago (before presence of LNG storage tanker) the wave climate at several locations in Marsaxlokk Bay is determined by numerical wave modelling.

The basis for the wave penetration study is the wave climate just outside Marsaxlokk Bay. This 'offshore' wave climate has been determined with a SWAN numerical wave model of the Mediterranean Sea, using a 20 year time series of wind fields.

Then the 20 year time series of the wave climate outside Marsaxlokk Bay is transferred into the bay using the numerical wave model HARES. For this purpose a 3D transfer matrix has been set up for many conditions of wave heights, wave periods and wave directions (for various output locations). These HARES calculations include both direction and frequency spreading. These calculations are performed for all different scenarios.

With the 3D-matrices the wave time series just outside Marsaxlokk Bay is translated by interpolation or extrapolation to the output locations in Marsaxlokk Bay. The results are used to establish the local wave climate at several locations in the bay in the form of artificial 20 years time series.

These time series at each location are then used to determine yearly wave conditions at that location and the extreme design conditions in front of the Qretjen and Delimara breakwaters. With the local wave climate at the output locations and all different scenario's the effectiveness of the measures are analysed.

With the extreme wave conditions in front of the proposed Qretjen breakwater the armour layers are designed. In the design a return period of 100 years is applied.

CLIENT

Transport Malta

LOCATION

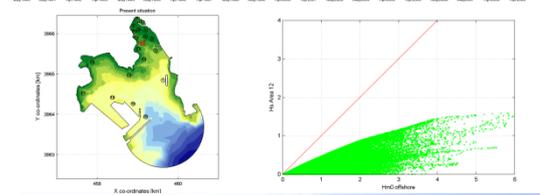
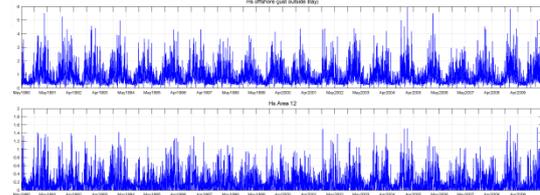
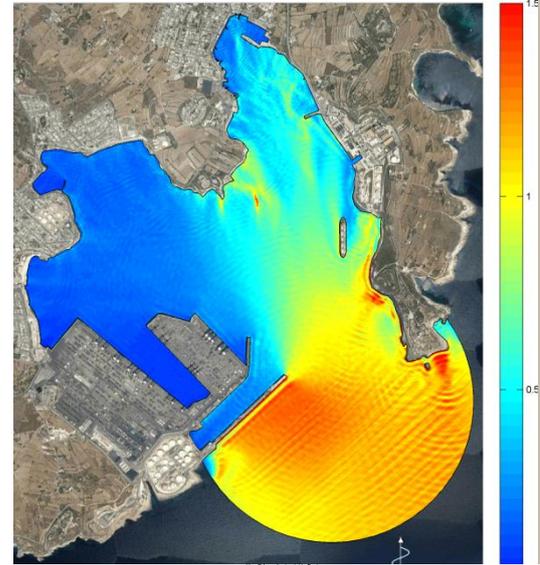
Marsaxlokk Bay, Malta

DATE

2018

SERVICES

HARES wave penetration modelling
Design Qretjen breakwater



SVASEK

HYDRAULICS

COASTAL, HARBOUR AND RIVER CONSULTANTS

Svašek Hydraulics
Schiehaven 13G
3024 EC Rotterdam
the Netherlands

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