MAASVLAKTE 2
ENGINEERING SUPPORT ROTTERDAM PORT EXTENSION

During the tender and construction phase of the "Maasvlakte 2", the extension of the port of Rotterdam, Svašek Hydraulics was an integral part of the contractor's design team. As such almost the entire scope of our services was applied in this project.

Hydraulic boundary conditions for the sea defence of the Maasvlakte were derived with SWAN. For both daily conditions and extreme conditions.

The morphological development of the sand borrow pits, that were used for the construction of the sand bodies, for 50 years ahead was predicted using the morphological module of FINEL2D.

In every construction phase the safety of the existing port, the "Maasvlakte", had to be guaranteed. It was possible to break down parts of the old sea defence before the new one was constructed. The wave impact in every construction phase was assessed using SWAN calculations and later on HARES to simulate the wave penetration into the harbour area.

In cooperation with Meteoconsult twice a day a combined wave and weather forecast was distributed to the ships.

A transformation matrix based on SWAN calculations was used to transform the deep water forecast of Meteoconsult at Europlatform to the Maasvlakte 2. In addition, daily operational current forecast maps generated with FINEL2D including meteo effects and the influence of the most recent bathymetric changes were sent to the ships.

In several construction phases of the hard sea defence the morphological response of the underlying sand body to the construction of the stone layers and temporal platforms for the cranes was assessed.

In one of the final construction phases the sea defence had to be closed, creating a closed basin. The closure has been performed with sand only. Feasibility calculations and predictions of the sand losses were made using the morphological module of FINEL2D including the "production feature". This feature makes it possible to construct a slowly growing sand 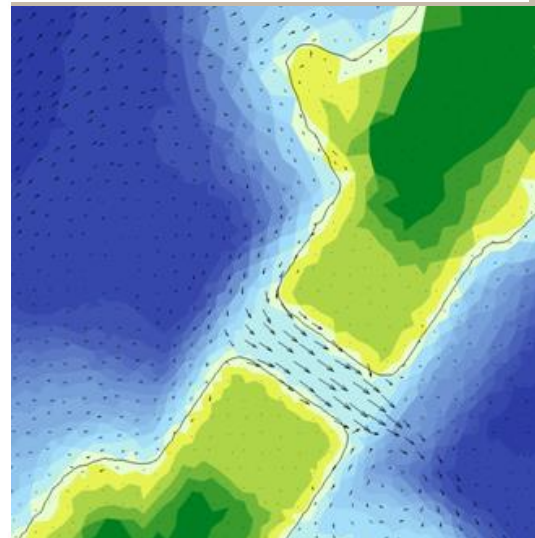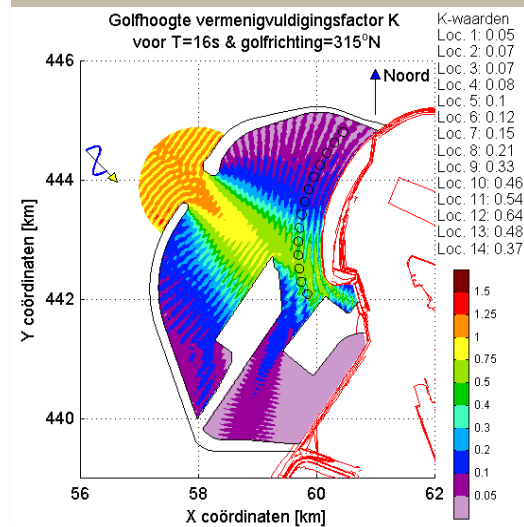body in the model that closes the gap in the end.