

WAVE CONDITIONS PORT OF VLISSINGEN

CONSTRUCT HYDRAULIC DATABASE WITH HB-HAVENS

Along the coast of the Western Scheldt, hydraulic boundary conditions (HR) are available for extreme wave conditions at varying water levels. These HR are usually not available inside harbours. For the Outer Harbour of Vlissingen, Svašek Hydraulics has determined realistic HR using the Rijkswaterstaat software package HB-Havens. These HR are essential for a reliable assessment of the safety of the primary flood defences within the harbour.

The wave conditions in the harbour are determined by wave penetration from the Western Scheldt, local wind growth within the harbour itself, and wave reflection and transmission at the various shores and harbour dams. The available HR database on the Western Scheldt for the harbour entrance was translated to various output locations along the flood defences within the harbour using HB-Havens.

The wave penetration in the harbour was modelled using the numerical wave model HARES. This model was developed by Svašek Hydraulics and integrated into HB-Havens. The numerical wave model SWAN was used to determine the local wind wave growth within the harbour, which is also integrated into HB-Havens.

All relevant combinations of wave conditions and water levels from the HR point at the harbour entrance were translated to various locations inside the harbour using HARES.

As water levels rise, wave transmission over the breakwater increases, and more harbour areas become submerged. Therefore, a separate HARES computational grid was created for each calculated water level.

Using the numerical wave model SWAN, all combinations of wind and water levels were calculated to determine the contribution of local wave growth in the harbour.

The results from HARES and SWAN were imported into HB-Havens, after which a database was created containing the wave conditions at the predefined output points in the harbour. This database can be directly used to assess the safety of the flood defences using the Rijkswaterstaat applications Hydra-NL and Riskeer.

CLIENT

Scheldestromen Water Board

LOCATION

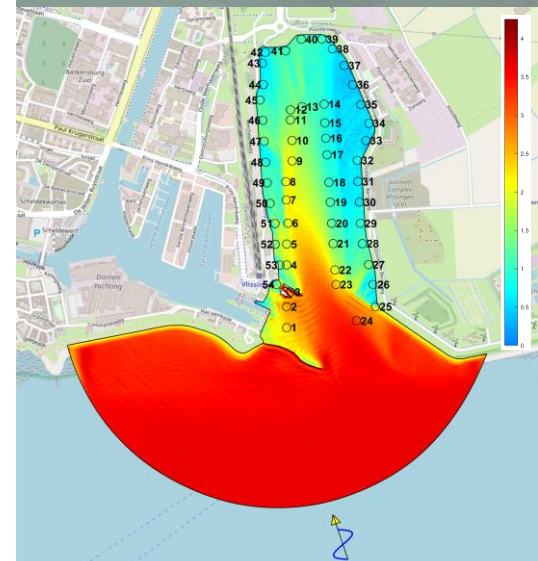
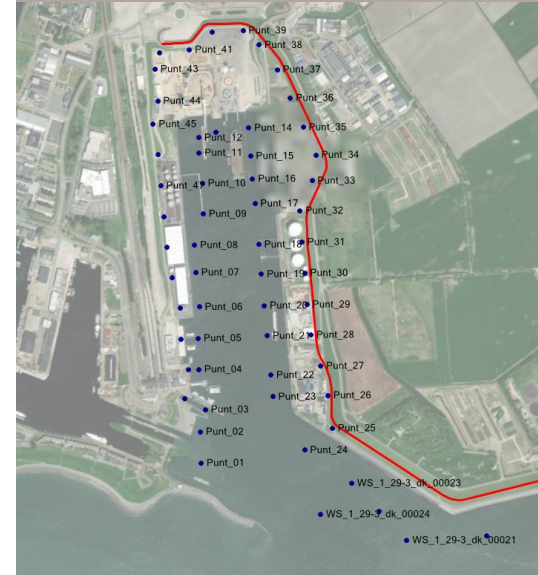
Outer harbour Vlissingen

DATE

2025

SERVICES

- Constructing hydraulic database (waves) for the Outer Harbour of Vlissingen



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