

SHELTERED/SHALLOW ZONE WOLDERWIJD

HYDRAULIC AND MORPHOLOGIC ANALYSIS

Rijkswaterstaat Midden Nederland has the task to realise 50 hectares of sheltered shallow zone in the Randmeren East for the development of flora and fauna. At this moment, 42 hectares have been realised, so there is a remaining task of 8 hectares. This remaining part must be realised in the Wolderwijd area. Svašek Hydraulics has developed this sheltered / shallow zone together with Kragten and Rijkswaterstaat Oost Nederland.

The sheltered / shallow zone has to be constructed with natural materials. The final design resulted in a straight sand dam, oriented in such a way that the net wave-driven sand transport is zero. Reeds and rushes are planted on the sand dam to reduce the wave effect on the dam. The sand dam is locked up on both sides by stacked layers of so called *legakkers* (a structure of willow wood), which act as a kind of natural dam. The shallow zone is created behind the sand dam.

The wind climate is described by using 20 years of hourly wind data from the KNMI station in Lelystad. Then, with use of the wind growth formulas of Bretschneider, taking into account the effective fetch length, the wave climate at the

sheltered / shallow zone is determined. The design wave conditions are determined with this climate.

For the design wave conditions also the waves caused by passing of professional and recreational craft are investigated. However, these appear to be not normative.

To determine the influence of the wind on the water level and the current velocities, the numerical model WAQUA is used. With this model the water level and current velocities are determined for various wind conditions.

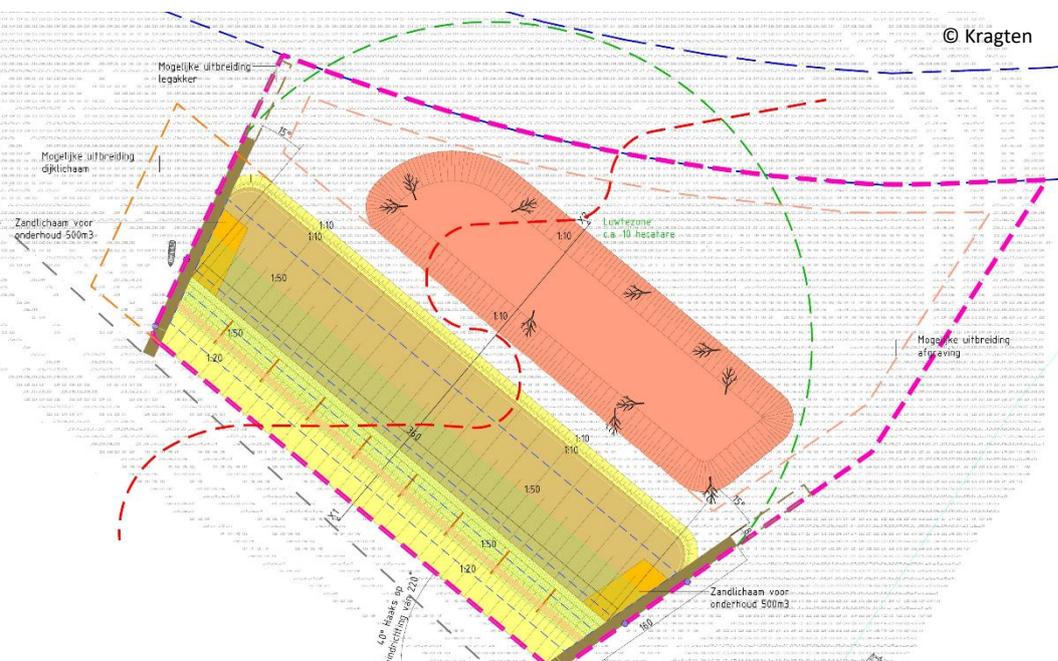
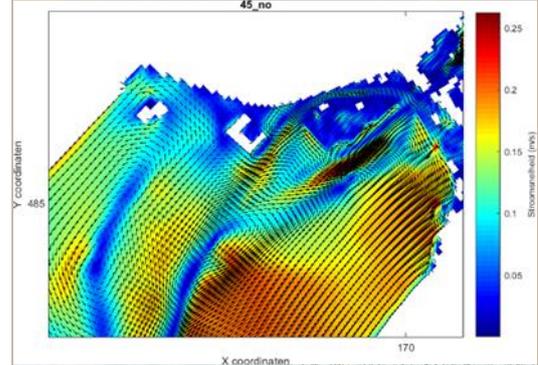
Finally, the morphological stability of the sand dam and the shallow zone is investigated.

CLIENT
Kragten

LOCATION
Veluwerandmeer, the Netherlands

DATE
2019

SERVICES
Development of sheltered / shallow zone
Determine wind and wave climate
Determine design water level and current velocities
Analysis morphological stability



SVASEK
HYDRAULICS
COASTAL, HARBOUR AND RIVER CONSULTANTS

Svašek Hydraulics
Kratonkade 23
3024 ES Rotterdam
the Netherlands

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