

Pilot with hybrid flood defence at Houtribdijk in the Netherlands

In The Netherlands, on the south side of the dyke 'Houtribdijk' between Lelystad and Enkhuizen, an innovative dike reinforcement is tested. This sandy foreshore consists of 70,000 m³ of sand and was built in the summer of 2014. The Dutch Ministry of Infrastructure and the Environment carries out the pilot together with EcoShape-Building with Nature.

Researchers study this test section until 2018 to see how this body of sand evolves and how effective it is as a means for strengthening the dike. In 2016 a preliminary answer is expected to the question: 'what is the best way to design a safe, stable and cost effective for sandy foreshores?'. The pilot is part of the nationwide Second Flood Protection Programme (HWBP-2).

Research

A sandy foreshore consists of a large quantity of sand, which is placed before the existing dike. This body of sand reduces the strength of the waves, thereby eliminating or reducing the impact of the waves on the dike. Strengthening of an existing dike with a sandy foreshore is already a proven solution on seashores. For other conditions, such as in lakes, this is not yet the case. There is a need for knowledge development on the effectiveness of this type of solution in lakes. In this project questions on the effect of waves on the foreshore and the influence of growth of vegetation on the stability of the foreshore will be answered. With this knowledge, criteria can be formulated on which locations are suitable for placing a foreshore.



Advantages

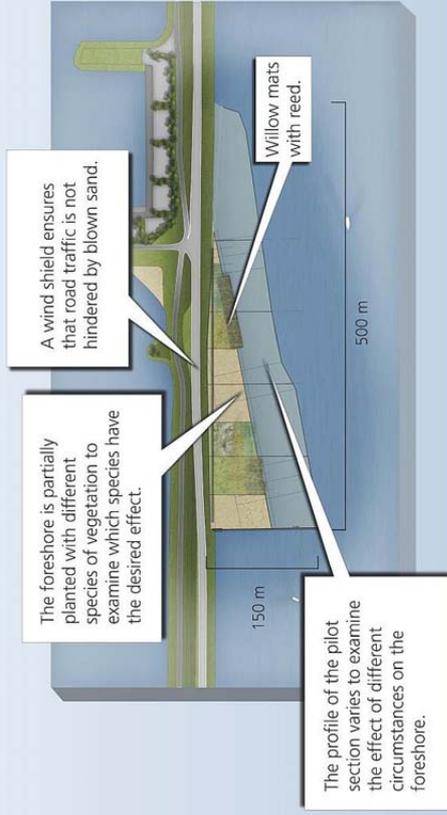
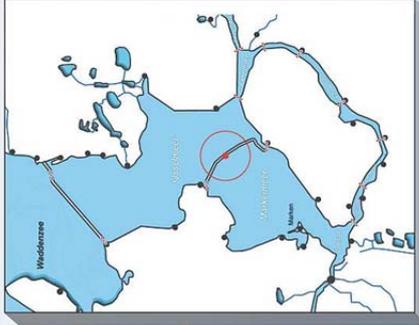
(Inter)nationally there is a need for more sustainable solutions for flood protection. A sandy foreshore is in many places cheaper to construct and maintain than a traditional dike reinforcement. Moreover, it is more durable and enhances the natural and recreational facilities and possibilities of an area.

Test Section

For the pilot a 400 meter long test section was constructed, varying in width and height. On designated areas of the test section, different types of vegetation were planted. By doing so, various situations can be tested simultaneously for their effectiveness. With the knowledge gained in this project the concept can be applied with more certainty in other locations. More information: http://www.ecoshape.nl/en_EN/houtribdijk.html

PILOT Sandy Foreshore

The pilot sandy foreshore is an innovative, natural dyke reinforcement for use in lakes. A foreshore consists of a large quantity of sand, which is placed in front of an existing dike. At the test location on the Houtribdijk in The Netherlands, 70,000 m³ of sand was deposited and different types of vegetation were planted on the foreshore. Researchers will examine how this type of dike reinforcement behaves regarding the reduction of impact of waves on the dike, how nature develops and how the foreshore design influences these factors. The test section will be monitored for four years. The final results of the pilot are expected in 2018. With the knowledge gained here, the concept can later be applied to other locations.



The profile of the pilot section varies to examine the effect of different circumstances on the foreshore.

Vegetation enhances the stability of the foreshore and stimulates the development of nature.

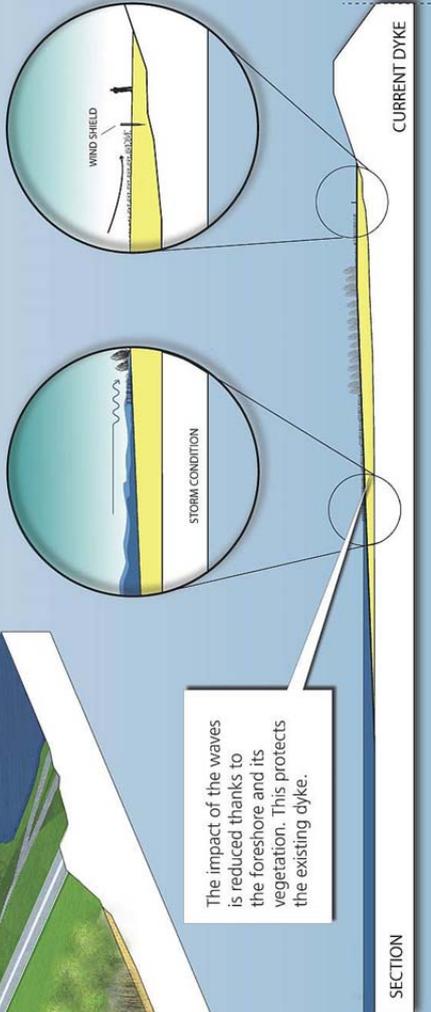
No vegetation will be planted here. It will develop by itself here.

The sheet pile wall keeps the pilot section in place.

A camera on a mast monitors the operation and development of the foreshore.

A wave meter measures the impact of waves.

The impact of the waves is reduced thanks to the foreshore and its vegetation. This protects the existing dyke.



SECTION

CURRENT DYKE