Polder2C's - Flood Defence

Climate change is affecting countries in the 2 Seas area, the Netherlands, Belgium, France and the United Kingdom, faster and to a greater extent than was previously expected. The rising sea level is a serious threat to these countries. The Polder2C's project is aiming for climate adaptation in a unique way. An important goal of this project is to improve our knowledge of how strong our flood defences are.





Polder2C's project

The INTERREG Polder2C's is an international research project. Within the framework of the updated Sigmaplan for the river Schelde, the Hedwige-Prosperpolder will be transformed into tidal nature. Thirteen project partners, led by the Dutch Foundation of Applied Water Research (STOWA) and the Flemish Department of Mobility and Public Works (DMOW, Flanders Hydraulics Research), are working together to improve the 2 Seas regions' capacity to adapt to the challenges caused by climate change.

Living Lab Hedwige-Prosperpolder

Transforming the Hedwige-Prosperpolder offers a unique testing ground, the Living Lab Hedwige-Prosperpolder, to validate flood defence practices. The project entails testing in the polder, guidance on levee maintenance and validation of flood defence infrastructure. The activities in the field of flood defence focus on destructive field tests, showing innovative techniques and developments and a survey.

Destructive Field Tests

How strong are our current flood defences? What is the impact of environmental elements such as the weather, the presence of vegetation or man-made objects on our flood defences? To answer these questions numerous destructive field tests are carried out in the Living Lab. During these tests the levee is exposed to increasing loading conditions, imitating an extreme storm event by the use of pump-driven simulators as well as prevailing tidal conditions until failure occurs. The following test types are considered:

- 1. Wave overtopping
- 2. Steady/continuous overflow (with significant flows of water)
- 3. Wave impact
- 4. Breach growth

Survey

One of our goals is to find out what the current state is, a T0 baseline, of our levee condition. This is required to evaluate impact of the tests in relation to the parameters that characterise the levees, as there are differences in structure, slope and vegetation. The data that are needed to form a baseline dataset are gathered by survey. Based on all the data we will make a digital twin. This is a computer model of the levee which can be used as a data source to simulate experiments. The following data sets are required:

- 1. Detailed geometry of the levees
- Geotechnical and sedimentological properties of the top soil and deeper structure, properties of the cover layer including vegetation and animal burrows
- 3. Morphological defects, such as burrows or wet spots
- 4. Hydraulic properties of the levee structure

More information

Do you want to learn more about the flood defence activities and results? Visit **Flood Defence Activities**.

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"The strength of Polder2C's lies in the high number of levee tests and repair exercises, which essentially makes us more aware and thus more robust."

> Patrik Peeters, Department of Mobility and Public Works -Project Manager Flood Defence

Project partners

