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New risk-based dike assessment instrument ready to use

After an intensive period of five years of research and development, Deltares has completed an entirely new assessment instrument for dikes. The instrument will help to implement the recently adopted safety standards which provide a basic level of protection for every Dutch citizen, and includes the latest scientific insights about the strength of flood defences and hydraulic boundary conditions.

Primary flood defences protect 60% of the Netherlands from flooding. They are designed according to extremely strict standards and are tested regularly. Flood defence managers conduct these assessments using an assessment instrument provided by the national government. A complete update of the assessment instrument was required in response to two major changes. Firstly, new legislation has been introduced with up-to-date protection standards, providing every Dutch citizen with a basic level of protection. Secondly, more has been learnt about dike strength, climate change and the behaviour of water systems and these advances had to be included in the assessment instrument.

The new legislation is risk-based and it has resulted in minimum protection levels for dike sections in terms of maximum failure probabilities. An instrument was needed to test whether a dike meets the standard. It had to include our knowledge about a range of failure mechanisms, water-system behaviour and risk assessment. It also needed to deliver reliable, consistent and reproducible answers in a cost-effective way in order to help government with decisions about upgrading dikes and setting the associated priorities. The assessments are supported with software, schematisation guidelines and instruction fact sheets, as well as a set of reports, including reports on technical matters and the water system.

https://beeldbank.rws.nl, Rijkswaterstaat / Your Captain Luchtfotografie

The success of the instrument depends on trained staff, adequate data and the deliverables described above. Knowledge, experience and data relating to the technical status of the flood defences are just as important as the instrument itself. Deltares and Rijkswaterstaat therefore organised training and final drills during which the flood defence managers had the opportunity to get acquainted with the modules of the instrument. They were able to see the value of the instrument and learn about the data requirements for their own region so that they could plan for the next assessment cycle.