Evaluation of Dutch backward erosion piping models and a future perspective

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The prediction of backward erosion piping is important for safety assessment of dikes in the Netherlands, where subsurface conditions are prone to this erosion mechanism. In the current assessment methodology, the adapted Sellmeijer rule is in use. In combination with the national safety philosophy and uncertainty in input parameters, this model results in high failure probabilities. This paper evaluates the Sellmeijer model and the recently developed Shields-Darcy model alongside recent developments in research on modelling of backward erosion piping, leading to a future perspective.