

# Hydro-mechanical modelling of the Boom Clay excavation, convergence and contact with concrete lining

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## Abstract

The Boom Clay is considered as one of the potential host rock formation in Belgium for radioactive waste repository in deep geological layers. Gallery excavations will induce large hydro-mechanical disturbances around disposal system that need to be well understood and characterised. This study discusses particularly the role of interactions between the lining of the galleries and the host formation in the numerical characterisation of excavations in Boom Clay. The excavation and the convergence of the connecting gallery of the HADES underground research facility in Mol is modelled in a hydro-mechanical framework. Zero-thickness interface elements are used to manage numerically the contact between the host rock and the lining. Numerical pre-dictions are compared with strains measurements recorded within the concrete segments of the lining in the underground research laboratory in Mol. The study highlights the impact of the anisotropic behavior of the host rock on the response of the model.