



THE CENTRAL SCOTLAND REGIONAL GROUP OF THE GEOLOGICAL SOCIETY

Notice of event: Thursday 21st November 2019
Atkins, 200 Broomielaw, Glasgow, G1 4RU

5.45pm for 6:00pm

THERE WILL BE NO ENTRY TO THIS VENUE BEFORE 5:45pm

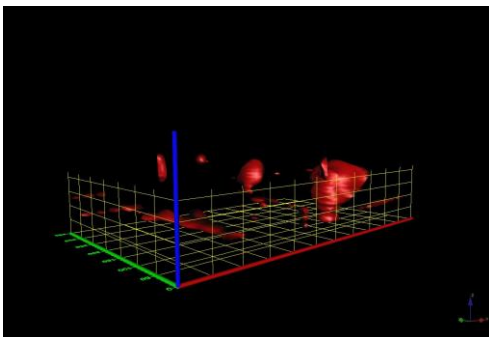
Enhanced Hydrogeological Mitigation Strategy

by

Sara Mehrabi and Dimos Koungelis
Tunnels and Underground Structures, COWI UK

While it is a well-accepted fact that there is often, if not always, an environmental cost associated with the construction of underground structures, the continuous need for development and connectivity of communities necessitates further expansion of the existing infrastructure, both in reach and capacity. Underground structures offer an attractive solution in the face of the anticipated limitations of developed areas and as such have been expanding faster than ever before.

Tunnel alignments and the location of other underground structures are a product of urban configuration and population distribution rather than the natural underground conditions. This frequently imposes more severe damage on the underground environment and increases the stresses on the structures. Encountering unsuitable ground and groundwater conditions, more often than not, proves costly to the design and execution of the structure.



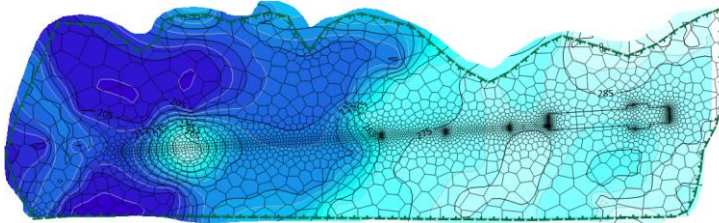
In line with the United Nations Sustainable Development Goals (SDGs), protection of Water Resources and sustainable improvements to Industry, Innovation and Infrastructure (Goals 6 and 9), we discuss a method that optimises the rehabilitation of the hydrogeological environment to mimic pre-construction conditions as closely as practicable by using advanced 3D analysis of geodata.

Registered Charity Number 210161

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We introduce you to the project used as the case study, in Saudi Arabia, and present scenarios and results to provide for a comparative scene where the advantages of a more refined mitigation strategy can be demonstrated.

More information on the Central Scotland Regional Group can be found on our [webpage](#).

Presenters



The two presenters are from **COWI UK** (formerly Donaldson Associates) who, between them, have delivered projects in over 20 countries. **Dr Dimos Koungelis** and **Dr Sara Mehrabi** will be demonstrating how the more advanced tools available to us today can be used to refine and enhance the designed mitigation strategy of the hydrogeological system following the construction of an underground structure. Dimos, a Principal Geotechnical Design Engineer with 14 years' experience in research and industry, has remarkable experience in the design of temporary and permanent works tunnels, caverns and shafts in both soil and rock, complex numerical modelling for soil/structure interaction and ground improvement techniques. Sara is a Technical Director for Hydrogeology with 16 years' experience in construction dewatering, mining, sustainability, experimental and computational hydrogeology and hydrogeochemistry. As an international hydrogeologist, she has accumulated a wealth of experience, working with many industry leaders, and within various cultural environments.

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