



AGS (HK) Technical Seminar

The Ground Investigation for a Storage Cavern in Metamorphic Rock at 600m Depth

by

Dr Ian Gray
(Sigra Pty Ltd)

Date : Wednesday, 11 March 2026

Time : 18:30 – 19:30 (Hong Kong Time)

Venue : The webinar will be conducted in hybrid mode, on Zoom platform and at Arup Hong Kong Office (Level 5, Festival Walk, 80 Tat Chee Avenue, Kowloon Tong, Kowloon, Hong Kong).

Enquiry : agshk.org@gmail.com

Fee :

- Free of charge: for all Zoom's attendance and AGS HK member joining f2f meeting.
- HKD 20: for Non AGS HK member joining f2f meeting (payment upon registration and refund will be made to non-successful applicants)

Registration : Please indicate your attendance mode in registration link.

<https://www.ags-hk.org/event-details/the-ground-investigation-for-a-storage-cavern-in-metamorphic-rock-at-600m-depth>

Please register by 18:30 on 11 March 2026. Successful applicants will receive webinar details after registration. CPD certificate will be sent to the attendees, who attended more than 80% of the webinar time, within 2 weeks after the webinar. (The participants to attend the seminar in person (f2f) is limited to 40 and separate emails will be sent to successful f2f registration with further details.)

Book Prize : Professionals under 35 years of age are encouraged to submit a Book Prize Report (max. 500 words) on webinars and site visits arranged by AGS (HK).

Contributors to successful Book Prize Reports will be awarded a Book Prize that comprises of a book "Geology of Site Investigation Boreholes in Hong Kong" written by Chris Fletcher, and a coupon of HK\$500 for Eslite Spectrum (誠品生活) or equivalent. The successful Book Prize Report will also be published on the AGS (HK) website to showcase your accomplishment.

Prior to report submission, please refer to the "The AGS Book Prize Reports – Assessment Framework"* on the AGS (HK) website. You may submit your Book Prize Report to our assessors by uploading the report file through the AGS (HK) website at <https://www.ags-hk.org/book-prize>. Should you have any questions, please contact us at agshk@meinhardt.com.hk.

*Link to the AGS Book Prize Reports – Assessment Framework:

https://www.ags-hk.org/files/ugd/521a4c_b94496034732484687441c4ed4d0b9.pdf



香港岩土及岩土環境工程專業協會
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Synopsis:

This presentation outlines the investigation works for a deep compressed air storage cavern located in a complex metamorphic environment. The ground investigation combined HQ-3 coring from surface and from an adjacent underground mine, including two sub-horizontal 460m boreholes drilled across the planned cavern. Core was logged for structural features and tested for rock properties, with several methods adapted to address significant rock anisotropy, including modified point load, triaxial, and shear tests.

A major focus was the assessment of groundwater inflow and potential air leakage. Pore pressure and permeability were measured using staged testing along the horizontal boreholes with a straddle packer system, downhole valves, and precision pressure monitoring, following adapted oilfield practice.

Rock stress conditions were evaluated using three-dimensional overcore tools, and both vertical and horizontal holes were logged with acoustic televiewer and full-wave sonic sondes. The study concluded the heterogeneous rock mass was suitable provided appropriate design measures were implemented.

About the Speaker:

Dr Ian Gray is the Managing Director of Sigra Pty Ltd, the company he founded 31 years ago. Sigra provides services in geomechanics and geofluids for the civil, mining, and petroleum industries. Ian began his studies with a BE in Civil Engineering, completed in 1976. He then undertook a Master's degree in Engineering Geology and completed his PhD studies while working in coal mines in North and Central Queensland, finishing in 1983.

Over his career, he has worked as a civil engineer, geotechnical engineer (mining and civil), mining engineer, reservoir engineer, engineering geologist, and hydrogeologist, and has designed a significant amount of equipment as well as several mines. He also spent six years working in Hong Kong.