

工程地質模型：專案與岩土工程的風險

Baynes, F. J., Parry, S., & Novotný, J., 2021. Engineering geological models, projects and geotechnical risk. *Quarterly Journal of Engineering Geology and Hydrogeology*, 54(2), qjegh2020-080.

報告者：曾志清

指導教授：董家鈞 老師

報告日期：2024/12/13

摘要

工程地質模型 (EGM) 包括概念思想和觀測資料。觀測數據與偶然的不確定性有關，可以透過獲得更多的觀測來減少這種不確定性。概念性想法與認知不確定性有關，只有將更多知識納入模型中才能減少認知不確定性。概念思想是任何 EGM 的核心，並為觀察資料的評估提供框架。EGM 最強大的功能是能夠預測專案現場可能出現的情況並評估地面如何對專案產生不利影響，即如果正確開發，EGM 可以評估現場可能合理預見的情況由經驗豐富的承包商。這需要在專案的早期階段進行複雜的概念化，以預測地下可能存在的情況。因此，EGM 不僅僅是可視化；它還包括其他功能。它們應代表對項目具有工程意義的地質條件的理解，提供匯集工程地質知識的框架，支持良好的岩土工程決策，並允許評估潛在的岩土工程風險和可能的項目機會。

關鍵字：EGM 工程地質模型。

Engineering geological models, projects and geotechnical risk




F. J. Baynes^{1*}, S. Parry² and J. Novotný³

¹ Baynes Geologic Pty Ltd, 'Pineview', 138 Malmesbury Post Office Road, Malmesbury, VIC 3446, Australia

² Parry Engineering Geological Services Ltd, South of Ivy Bank, Church Street, Brassington, Derbyshire DE44HJ, UK

³ Czech Geological Survey, Klárov 3, 118 21 Praha 1, Czech Republic

 FJB, 0000-0002-2634-6857

* Correspondence: fredb@iinet.net.au

Abstract: Engineering geological models (EGMs) comprise both conceptual ideas and observational data. The observational data are associated with aleatory uncertainty which can be reduced by acquiring more observations. The conceptual ideas are associated with epistemic uncertainty which can be reduced only if more knowledge is incorporated into the model. The conceptual ideas are the core of any EGM and provide the framework for the evaluation of the observational data. The most powerful capability of an EGM is the ability to anticipate what might be present at a project site and evaluate how the ground could adversely affect the project, i.e. when developed correctly, an EGM allows an evaluation of what might reasonably be foreseen at a site by an experienced contractor. This requires sophisticated conceptualization at an early stage in the project to anticipate what might be in the ground. Consequently, EGMs are much more than visualizations; they should represent an understanding of the geological conditions that are of engineering significance to the project, provide the framework for assembling engineering geological knowledge, support good geotechnical engineering decisions and allow an evaluation of potential geotechnical risks and possible project opportunities.

Thematic collection: This article is part of the Ground models in engineering geology and hydrogeology collection available at: <https://www.lyellcollection.org/cc/Ground-models-in-engineering-geology-and-hydrogeology>

Received 21 April 2020; revised 10 July 2020; accepted 13 July 2020