

The role of earth science in informing policy and the regulatory process for mine approvals

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Numerical groundwater models and their supporting geological, hydrogeological and ecohydrological conceptual models are sometimes the greatest 'sticking point' in the assessment and approval process of a project. Uncertainty in regards to the models robustness can lead to delays in regulatory decisions, resulting in model updates, additional data acquisition and, often, lengthy conversations. This leads to frustration both for the mine's proponent and the regulator.

Often the primary cause is the lack of geological (earth science) data and information which have been incorporated into these models. This leads to a high level of uncertainty in the predicted impacts, particularly to Matters of National Environmental Significance (MNES), which is often compounded by the use of deterministic numerical groundwater models.

Mining companies, quite rightly, invest heavily in proving up the resource to demonstrate an economic return. Less investment is forthcoming to obtain data that will inform impact modelling with companies wanting to gain approval to mine before spending on 'non resource' data which produces an additional tension in the approval process. This means that basic data such as hydraulic conductivity, both vertical and horizontal, particularly for aquitards, is limited or non-existent. Further, there is often limited assessment of potential cumulative impacts to receptors in an area.

Development of new, innovative and low-cost techniques is essential to overcome this issue to allow a quicker assessment and approval process with subsequent cost savings, not only for the proponent but to the public purse.

This presentation will highlight some of the common issues that slow the mine assessment and approval process and suggest key areas of focus for research in the earth science space.