

The application of ecohydrology to mine water impact assessment

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Abstract The assessment of the impact of proposed, and in some situations existing, mining operations on groundwater is, on occasion, hampered, particularly during the early stages of project development, by a lack of groundwater information beyond the immediate footprint of the proposed mine. This paper will review the use of ecohydrology or ecohydrogeology to derive hydrogeological information that can facilitate the development of groundwater conceptual models for environmental impact assessment, in the absence of conventional groundwater data.

The use of ecohydrological methods for groundwater characterisation and conceptual model development is not routine. This paper will present a synopsis of ecohydrological indicators of groundwater in a range of climatic regimes and their application to the assessment of the environmental impact of mining operations. Additional supporting information requirements, such as an understanding of the meteorological conditions and underlying geology, to maximize the benefits of the ecohydrological method will be highlighted and discussed.

The use of ecohydrology provides a valuable tool for groundwater investigations particularly when other data is not available. In addition the limitations of the ecohydrological approach will be discussed and potential areas for future research outlined.

The application of ecohydrology/eco hydrogeology to groundwater investigations for mine impact assessments in areas with limited or no existing data provides a valuable addition to conventional hydrogeological approaches. The use of ecohydrology has the potential to allow the development of better constrained hydrogeological conceptual models at an earlier stage of study in the absence of more conventional hydrogeological data and to allow additional refinement when combined with conventional hydrogeological data.

Keywords Ecohydrology, ecohydrogeology, groundwater, ecology

