

Guide to groundwater monitoring for the coal industry

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Abstract

It is well established in literature that the environmental impacts associated with the coal industry are numerous. In respect of South Africa's groundwater resources the major impact of the coal industry is a reduction in groundwater quantity and quality. There is therefore a need to proactively prevent or minimise these potential impacts through long-term protection and improved water management practices. One such initiative is to implement monitoring programmes in various sectors of the coal industry for groundwater quality and quantity. Groundwater monitoring requires sophisticated interlinked stages which are often overlooked or not fully understood. Consequently a methodical approach must be undertaken in order to have an effective and economical groundwater monitoring system. This paper provides a comprehensive guide to the establishment of a groundwater monitoring programme for environmental practitioners in the coal industry. An inclusive 7-stage methodology is presented describing the different stages of establishing a groundwater monitoring programme, focusing on the 'why', 'how', and 'who' of groundwater monitoring.

Keywords: coal industry, monitoring programme, water management, environmental impact, acid mine drainage, conceptual model, risk assessment, geophysics, drilling methods, borehole construction.