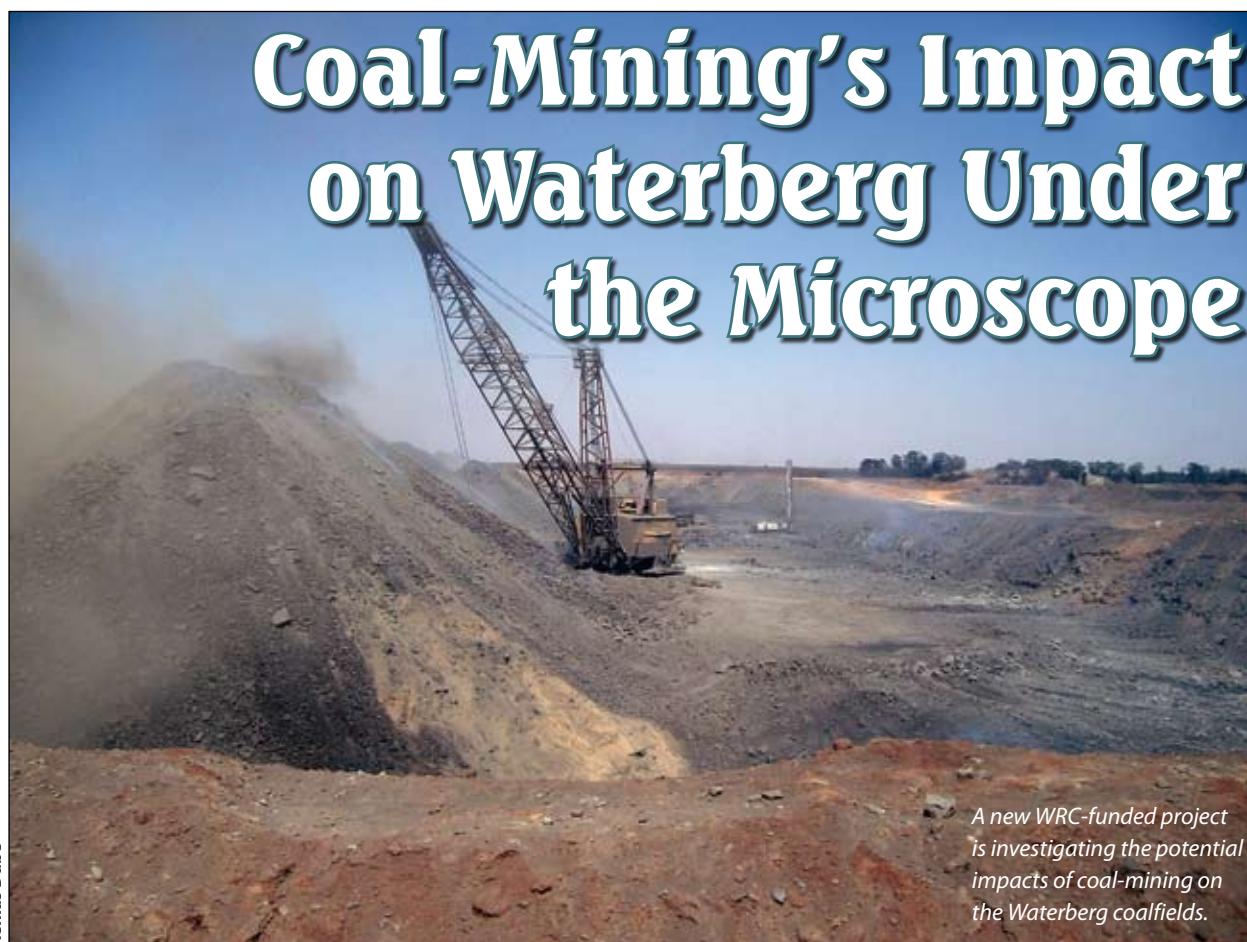




Coal-Mining's Impact on Waterberg Under the Microscope

Renias Dube



A new WRC-funded project is investigating the potential impacts of coal-mining on the Waterberg coalfields.

Historic mining activity on the Witbank and Highveld coalfields, currently the most important sources of South Africa's mined coal, has left deep scars on the landscape and a legacy of polluted mine-water flowing from an increasing number of closed and defunct mines. Now a new project, funded by the Water Research Commission (WRC), hopes to reduce similar future impacts on the Waterberg. Lani van Vuuren reports.

At present, the Highveld and Witbank coalfields are the source of more than 80% of South Africa's total coal output. However, as these coalfields are nearing depletion all eyes are turning to the Waterberg treasure chest and its significant virgin coal reserves in the north of South Africa. It has been suggested that the coalfield has up to 50 billion tons of coal waiting to be unearthed.

Fuelling development in the area is Eskom announcement that it is looking to construct several new power stations in the area in years to come. The first, Eskom's R80-million Medupi dry-cooled

coal-fired generating plant, is already under construction outside Lephalale. To feed this new electricity-generating giant the power generation company and mining giant Exxaro Resources, owner of Grootegeluk mine (the only colliery operating on the Waterberg Coalfield at present), signed a coal-supply agreement last year.

In terms of the agreement, Grootegeluk will, over the next 40 years, supply an average of 14,6 million tons per year of power station grade coal to the power station. This is over and above the 14,6 million t/y of coal supplied to Matimba, Eskom's other dry-cooled

power station in the area. Meanwhile Exxaro has already started spending millions of Rands on expanding Grootegeluk to meet its obligations to Eskom. Incidentally, Grootegeluk is already the largest openpit colliery in South Africa. Other international mining houses, including AngloCoal, have also started exploration in the area.

The availability of water is a significant inhibiting factor regarding the exploitation of coal in the Waterberg as large volumes of water are needed for mining, beneficiation and processing purposes. However, both surface and groundwater are very scarce in the



region. Environmental impact assessment studies are currently underway to augment water resources in the area. One development being strongly considered at present is the raising of the Mokolo Dam, situated outside Lephalale. This dam is currently being used mainly by the Matimba power station as well as irrigation farmers in the area and the town of Lephalale.

While conventional mining methods can exploit the shallow coal resources, alternative technologies, such as coalbed methane extraction and underground coal gasification are the only currently known technologies that may be able to exploit the deep formation resources. It is these alternative technologies that are the focus of the newly-launched WRC investigation.

While it is known from local and international experience that coal mining has a pronounced impact on surface and groundwater quality and quantity, the fact that new extraction options are being considered in addition to the more traditional mining options, brings additional uncertainties to the fore, reports notes WRC research manager Dr Jo Burgess. "Although several factors in addition to its effects on water resources have to be considered when deciding on a mining method, the long-term nature of the consequences for water quality calls for careful consideration of alternatives. It is desirable that both

Eskom's Matimba power station outside Lephalale will in future be joined by Medupi, currently under construction.

Lani van Vuuren



developers and regulators be aware of the long-term liabilities and costs associated with different mining methods," she tells *the Water Wheel*.

The project is in the form of a scoping level study to consolidate the existing information about the geohydrology and pre-mining water quality of water resources associated with the Waterberg coal reserves, predict how the water resources would be affected by alternative mining methods, and make provisional recommendations on the management of the water resources. The project also hopes to identify further research needs concerning the impact of mining of the

Waterberg coal reserves on water reserves.

The study is being led by the Institute for Groundwater Studies at the University of the Free State's Faculty of Natural and Agricultural Sciences, with participation from several international mining houses, and Eskom. According to Dr Burgess, one of the greatest challenges of the project is the current gaps in existing information as well as the lack of coordination of this information. "We also have a large number of stakeholders in this area, many of whom are as yet unidentified."

The project is expected to be completed in 2010. 

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