

Govt allocates R70m for rehabilitation of 8 000 derelict mines

There are currently 4 772 officially-listed abandoned mines in South Africa, which is five times the number of currently operational mines. While this may appear to be a surprisingly large number, Department of Minerals and Energy (DME) director for mine environmental policy, research and development Elize Swart elaborates that when abandoned sand quarries and other small operations are taken into account, this figure increases to 8 000 ownerless and derelict mines within the country. With the implementation of the Mineral and Petroleum Resources Development Act (MPRDA) in 2002, these abandoned mines have now become the legacy of the DME and, as a consequence, it now falls to the State to deal with those operations whose owners cannot be traced. Owing to this responsibility, a budget of R70-million has been allocated to Swart and her division this year to make inroads into the rehabilitation and closure of abandoned mines. In an interview with Mining Weekly, Swart elaborates on the DME's abandoned mines programme and its plans to spend the allocated funding, which includes the establishment of an extensive database of all abandoned operations, the immediate rehabilitation of highly-hazardous derelict mines, and the initiation of discussions into the formation of a public-private partnership to assist government in its daunting task.

Background

Swart tells Mining Weekly that there are two primary reasons why South Africa has a significantly large number of abandoned mines. Firstly, formal mining in South Africa is more than 120 years old, the majority of which was conducted under legislation that was not overly cognisant of environmental management and mine rehabilitation. "Historical laws did not prescribe rigorous requirements for environmental management and mine closure," says Swart. "Provisions for mine rehabilitation and closure in terms of the old Mines and Works Act introduced in 1956, was intended to make the mine safe, but did not address the environmental rehabilitation of the mine." Swart elaborates that this resulted in a large number of mines being closed where residual environmental impacts had not been addressed and others had simply been abandoned. The other major reason for the abandonment of mines is the depletion of a resource or a change in market conditions that render mines financially unviable. This is particularly the case with regard to cost-intensive commodities, such as gold, that are sensitive to down cycles in price and market fundamentals. This is illustrated by the fact that on the Witwatersrand alone, there are 490 derelict and ownerless gold-mining shafts and areas of subsidence, says Swart.

Database

One of the most significant aspects of the DME's abandoned mines programme is the creation of an extensive database, encompassing all information relating to local ownerless and derelict mines. Swart says that this database is essential so that the department can acquire an overarching and thorough understanding of the extent of this situation. As a result, a portion of the R70-million funding assigned to the mine and environmental management division has been allocated to the development of a database of derelict and ownerless mines and related projects. Swart explains that, to date, the number of entries verified on the database is 4 772. "Detailed information regarding the deposit types, mining methods and mine status is provided on the database and entries are spatially referenced," says Swart. "Information regarding the legal and ownership status of these mines is currently being captured." The full database of abandoned mines is currently being ranked in terms of hazards and major risks associated with abandoned mines to allow for prioritisation actions.

The major risks associated with abandoned mines include air pollution by dust and, in the case of some coal mines, combustion products resulting from burning mine workings or dumps; contamination of ground and surface water with acid, salts and metals; and the real physical hazards posed by sites with open shafts and unstable slopes. Swart elaborates that a comprehensive ranking system has been developed, examining the different hazards associated with abandoned mines, combining the experience of a number of countries which have under-taken similar programmes. "South Africa has done pioneering work internationally in the development of this database, which includes all commodities, while similar international programmes only focus on one commodity within a specific area," says Swart.

This ranking process has been divided into two phases, a desktop phase, relying on the available information regarding the mines and their receiving environments, and a detailed site-specific phase, involving detailed field investigations. Swart states that the first stage of the desktop phase has been performed for each of the exposure pathways and clusters of high-hazard mines have been identified.

Current activities

Swart tells Mining Weekly that the main priority of the DME currently is to conclude the complete rehabilitation of the remaining high-hazard asbestos mining sites. The DME initiated the rehabilitation of derelict and ownerless asbestos mines, which contain the highest number of hazards, in 1986. Since then - and including the asbestos mines prioritised for rehabilitation within this financial year - the DME has completed the closure of approximately 70% of the high-hazard derelict and ownerless asbestos mines, says Swart. In broad terms, the rehabilitation of derelict and ownerless asbestos mines and dumps includes the grading and reshaping of the slopes of the asbestos waste dumps down to 18°, the covering of all reshaped and contaminated areas with topsoil, the construction of water runoff control measures, the demolition and covering of old structures containing asbestos previously used during mining or milling operations, the rehabilitation of asbestos contaminated access roads previously used during mining operations, and the cleaning up of associated secondary asbestos pollution. Swart elaborates that, in addition to the asbestos mines, 80 derelict and ownerless gold-mining shafts on the Witwatersrand have been prioritised for closure as they lie close to residential areas. "Of these, the DME is currently rehabilitating and closing 25 high-hazard ownerless shafts and mine openings, primarily within the Eastern Basin," says Swart.

"A second phase has also been initiated this financial year where another 25 ownerless shafts and mine openings will be closed." In addition to the physical rehabilitation of abandoned mines, Swart believes that part of addressing the legacy of abandoned mines is the strengthening of environmental enforcement. As a result, the enforcement of newly legislated standards is to be stepped up to prevent the addition of any current mines to the backlog. "We have developed a dedicated electronic audit system to strengthen environmental enforcement.

"With improved surveillance, the State will be able to quantify what is needed, and dictate to mines how much they need to provide for closure and rehabilitation," says Swart. The DME is also involved in various initiatives to strengthen environmental enforcement, such as the amendment of the MPRDA and its supporting regulations, the development of a mine environmental management guideline series to support the implementation of the legislation, the finalisation of a site inspection assistant tool (SIAT), and the formation of strategies for regional mine closure.

Public-private participation

Owing to the fact that derelict and ownerless mines are the sole responsibility of the State and that only a percentage of the allocated R70-million will be used for the actual rehabilitation of abandoned mines, Swart confides that at the current rate, the South African government will be busy for the next 500 to 800 years rehabilitating the abandoned mines on the current database. This

is due to the fact that the rehabilitation of abandoned mines is not the only priority of the State, with health, housing and education at the forefront of government's responsibility. "It is therefore realised that government needs the assistance of other stakeholders to address the legacy of the past," says Swart. "To this end, we need to form partnerships with the mining industry, the private sector and with international agencies to tackle the worst 20%.

"However, in order to establish partnerships, structures need to be established to get these partners around the table to start negotiating and make decisions in this regard." To date, a number of government departments, including the DME, the Council for Geosciences, Mintek and the Council for Scientific and Industrial Research, have put their skills and resources together to tackle the issues of sustainable development and safe closure of mines. Other interested parties, such as the mining industry, local governments, unions, communities and nongovernmental organisations, have been included in the formulation and implementation of action plans.

Chief among these action plans is the implementation of a Sustainable Development through Mining programme, which aims to identify and prioritise derelict and ownerless mines for rehabilitation. A draft agreement of this programme has been finalised. It is the intention to establish a multi-stakeholder committee in terms of the MPRDA to advise the Minerals and Energy Minister on matters pertaining to the Sustainable Development through Mining programme. The DME is awaiting the board's approval to proceed with the establishment of such a committee. Swart concludes that the Chamber of Mines has provided the DME with its dedicated support regarding the draft agreement of this programme and the establishment of a committee in this regard.

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