



**OFFICIAL GUIDE TO SOUTH AFRICA 2017/18**

# Mineral Resources

The South African mining industry remains a significant contributor to the country's inclusive economic growth, transformation and skills development. It continues to offer unparalleled opportunities for both local and international investors, and has provided impetus for the development of infrastructure

The country is richly endowed with mineral resources and produces more than 30 metal and mineral products. It has huge potential with respect to mineral reserves, exploration and production. The country ranks first in the quantity of world reserves of chrome ore, fluorspar, manganese ore, platinum group metals (PGMs) and zirconium.

The Department of Mineral Resources (DMR) continues to focus, among other things, on ensuring the best utilisation of mineral resources, monitoring mining rights, and ensuring compliance with safety and environmental legislation, all of which in turn, contribute towards promoting investment in South Africa, as well as contributing more broadly to an equitable and inclusive economy.

Specific initiatives include promoting investment in the minerals and upstream petroleum sector include research on shale gas; assisting small, medium and micro enterprises (SMMEs); marketing and providing information, and licensing.

In the medium term, the department planned to focus on accelerating transformation and empowerment in the mining sector by: eradicating barriers to the socio-economic development of mining communities; providing technical support to beneficiation projects; increasing the participation of small-scale miners; and fostering greater value chain integration.

Further focus areas include ensuring the health and safety of miners and mining communities, protecting and rehabilitating the environment, ensuring the best use of mineral resources, and attracting investment in the minerals and upstream petroleum sectors.

The department aims to eradicate illegal mining or zama-zamas through stakeholder forums established in Mpumalanga, Free State, Gauteng, Northern Cape and Limpopo. The purpose of stakeholder forums (which include miners, the Chamber of Mines, workers and government representatives) is to implement a segmented approach to enforcement, and efforts to ensure compliance. These measures include:

- promoting legitimate mining activities; sealing off holes and old mining shafts; policing and law enforcement;
- conducting training workshops for all stakeholders; and rehabilitating illegal mining sites.

## Entities

- **Mine Health and Safety Council:** Researches and advises the Minister in terms of mine health and safety, as well as promotes a culture of health and safety in the mining industry.
- **Council for Mineral Technology Research (Mintek):** Provides research, development and technology that fosters the development of business in the mineral and mineral products industries.
- **Council for Geoscience (CGS):** Develops and publishes world-class geoscience knowledge products and provides geoscience-related services to the South African public and to industry.
- **South African State Diamond and Precious Minerals Regulator:** Regulates the diamond, platinum and gold sectors.
- **State Diamond Trader:** Promotes equitable access to and beneficiation of diamond resources, addresses distortions in the diamond industry and corrects historical market failures to develop and grow South Africa's diamond-cutting and polishing industry.

## Mineral wealth

South Africa's mineral wealth is typically found in the following geological formations and settings:

### Mining Qualifications Authority (MQA)

The future of mining in the country depends largely on the successful implementation of skills development initiatives.

Particular focus is placed on artisan and artisan aid as well as other technical skills. Capacity building within the DMR and associated institutions has also been prioritised in respect of identified critical areas of skills shortage and necessary interventions have been introduced, which include learnership programmes and bursary schemes.

The MQA was established as a sector education and training authority, and facilitates the development of appropriate knowledge and skills in the mining, minerals and jewellery sectors.

### Petroleum Agency South Africa (PASA)

The PASA regulates exploration and production activities, and is the custodian of the national petroleum exploration and production database. The agency funds its activities from the sale of data and reserves accumulated from its exploration work.

As the custodian of South Africa's petroleum data, the agency will conduct research, source data, and enhance and store such data on a world-class data management platform. The platform ensures that quality data is accessible for potential and existing operators. The agency will evaluate South African oil and gas reserves (including shale gas) to determine prospects, and attract oil and gas investment into South Africa.

### Shale gas exploration

Through its state-owned agencies, CGS and PASA, the DMR has been conducting the Karoo Deep Drilling and Geo-Environmental Baseline programme. This programme is based in Beaufort West and seeks to better understand the potential impact of geo-resource exploration activities (minerals, gas, deep groundwater, and geothermal) on the Karoo geo-environment.

It is anticipated that the information and data gathered through this study will further inform the augmentation of regulatory instruments and the monitoring of shale gas operations.

### Reserves

#### Gold

The large-scale gold mines operating in South Africa include the record setting TauTona Gold Mine, which extends 3,9 km underground. TauTona means "great lion" in Setswana. South Africa accounts for 10.5% of the world's gold reserves. The Witwatersrand Basin remains the world's largest gold resource.

#### Coal

Government has emphasised the importance of ensuring a sustainable local coal supply for the country's energy requirements. This commodity currently plays a vital role in meeting South Africa's primary energy needs, as well as in the economy in general. It is recognised that coal contributes to the economy, not only to supply energy, but through the generation of export revenue, contributing to GDP and employment.

### Platinum group metals

Platinum, palladium, rhodium, osmium, ruthenium and iridium occur together in nature alongside nickel and copper. Platinum, palladium and rhodium, the most economically significant of the PGMs, are found in the largest quantities.

The remaining PGMs are produced as co-products. South Africa is the world's leading platinum and rhodium producer, and the second-largest palladium producer after Russia. South Africa's production is sourced entirely from the Bushveld Complex, the largest known PGM-resource in the world.

### Platinum

South Africa accounts for 96% of known global reserves of the PGMs. The Merensky Reef, stretching from southern Zimbabwe through to the Rustenburg and Pretoria regions, is the centre of platinum mining in South Africa, playing host to companies such as Rustenburg Platinum Mines and Bafokeng Rasimone Platinum Mines.

### Palladium

South Africa is the world's second-largest palladium producer. All of South Africa's production is sourced from the Bushveld Igneous Complex, which hosts the world's largest resource of PGMs.

Palladium, together with platinum, is more abundant than any of the other PGMs. It has the lowest melting point (1 554°C) of all the PGMs. Its most remarkable property is its ability to absorb enormous amounts of hydrogen at room temperature.

### Ferrous minerals

It is the largest new investment in the manganese industry in the country and supports government's drive to increase the beneficiation in South Africa.

The furnace is designed to produce 120 000 kt of High Carbon Ferro Manganese a year, and includes improvements to ensure increased reliability, availability and also improved pollution control during the production process.

### Copper

Palabora, a large copper mine, smelter and refinery complex managed by the Palabora Mining Company in Limpopo is South Africa's only producer of refined copper.

Producing about 80 000 t per year, it supplies most of South Africa's copper needs and exports the balance.

Useful byproduct metals and minerals include zirconium chemicals, magnetite and nickel sulphate as well as small quantities of gold, silver and platinum.

### Manganese

South Africa has significant proven manganese reserves, but exploitation of the mineral has not reflected its development potential.

### Diamonds

South Africa plans to process a greater proportion of its gems locally to keep more profit in the country. Government wants to cut and refine 70% of the diamonds mined in South Africa by 2023.

### Industrial minerals

Of the hundreds producers of industrial minerals in South Africa, almost half are in the sand and aggregate sector.

There are producers of clays (brickmakiąg), limestone and dolomite, dimension stone, 28 salt and silica in South Africa.

Bulk consumption of industrial minerals is realised in the domestic market, as most are low-priced commodities and sold in bulk, making their economic exploitation highly dependent on transport costs and distance to markets.

### Geology

South Africa has a long and complex geological history dating back more than 3 700 billion years.

The preservation of so much Archaean geology, dating back more than 2 500 million years, has resulted in the Archaean Witwatersrand Basin, as well as several greenstone belts, being preserved.

### Housing and Living Conditions Standards

By mid-2018, the DMR was in the process of reviewing the Housing and Living Conditions Standards, which were developed in terms of Section 100 of the Mineral and Petroleum Resources Development Act of 2002.

The review seeks to address the historic and systematic policies of discrimination and marginalisation of mineworkers in terms of their working, housing and living conditions, and to provide for the progressive realisation and protection of their basic constitutional right to human dignity through provision of adequate access to housing, better living conditions and related amenities.

