

DIRECTORY D6/2022

## **OPERATING PLATINUM GROUP METAL MINES IN SOUTH AFRICA, 2022**

DIRECTORATE: MINERAL ECONOMICS AND STATISTICS



**mineral resources  
& energy**

Department:  
Mineral Resources and Energy  
**REPUBLIC OF SOUTH AFRICA**

**OPERATING PLATINUM GROUP METALS MINES**  
**IN**  
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**Cover Picture:** *The Impala Platinum Holdings Ltd. shaft 9 mine tower in Rustenburg, South Africa.*

**Source:** *Photographer: Waldo Swiegers/Bloomberg*

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## ABBREVIATIONS AND SYMBOLS

4E	platinum, palladium, rhodium, gold
6E	platinum, palladium, rhodium, ruthenium, iridium, gold
DMRE	Department of Mineral Resources and Energy
FY	Financial year
g/t	grams per ton
JV	joint venture
Kt/pm	kilo tons (thousand tons per month)
LOM	life of mine
Moz	million ounces
Mt	million tons
n/a	information not available
pa	per annum
Pd	palladium
PGMs	platinum group metals (platinum, palladium, rhodium, ruthenium, iridium)
Pt	platinum

## **1. THE OCCURRENCE AND PRODUCTION OF PLATINUM-GROUP METALS (PGMs) IN SOUTH AFRICA**

In South Africa (SA), PGMs, together with the by-products gold, silver, chrome, nickel, copper, and cobalt, occur in economic concentrations in three separate, extensive layered reefs associated with the mafic rocks of the Rustenburg Layered Suite of the Bushveld Complex. They are the Merensky Reef, the UG2 Chromitite Layer, and the Platereef. The PGMs occur as alloyed native metals, as platinoid minerals (e.g., sperrylite and braggite) and in copper, nickel, cobalt and iron-bearing sulphide minerals (e.g., pentlandite, pyrrhotite and chalcopyrite). Small quantities of PGMs are also produced as by-products from the gold deposits of the Witwatersrand Basin and from the copper ores of the Phalaborwa Complex. Furthermore, PGMs are produced as a by-product of nickel mining on the Uitkomst Complex in the Mpumalanga Province.

In 2022 PGMs in SA were recovered from 24 mining operations employing more than 165 219 workers, including contractors. The ore extracted from the mines is processed by concentrators onsite, before being further processed by smelters and refineries. Only Anglo Platinum (Amplats), Impala Platinum (Implats), Lonmin and Northam Platinum wholly own smelting and refining operations situated in SA. Northam, however, does not own PGMs refining facilities, due to insufficient volumes of production. Instead, the company's PGMs concentrate is toll processed by a German company, Heraeus, with platinum and palladium refined in SA and other PGMs in Germany. Smelting and refining operations treat concentrates not only from companies' wholly owned operations, but also from joint ventures and third parties in the form of toll treatment contracts.

The PGMs' excellent catalytic qualities, resistance to corrosion, chemical inertness and high melting points render them most suitable for several specialist applications. The three main PGMs, platinum, palladium, and rhodium, are used primarily in catalytic converters in emission control equipment. However, they also have other important specialised applications such as jewellery, investment, high technology, electrical, chemical and petroleum refining industries. As a result, the majority of refined SA PGMs production is sold to a diverse range of customers across various global

destinations, most notably Asia and Europe, the largest markets in terms of catalytic converters and jewellery industries. Smaller portions are consumed locally, almost entirely by the catalytic converters industry, and in North America in industrial applications. This directory is aimed at providing a list of current PGMs producers in SA.

Despite the impact of Covid-19 pandemic, South Africa's PGMs Industry was vibrant on the back of Rustenburg subsidiary mines assuming full control (via its subsidiary) of low-cost fully mechanized Kroondal and African Rainbow Minerals' acquisition of Anglo American's decommissioned Bokoni mine, effective from 1 September 2022.

The Directory outlines 24 operations, including (Phalaborwa Mining and Indaba Diggings & Industry) which produce very small amounts to be profiled. The profiles include location, ownership, reserves, output and labour, as well as prospects. It should be noted that the production indicated refers to total production in 2021 as reported to the DMR, while labour refers to employment figures as they stood by the end of December 2022.



## 1. OPERATING PGMs MINES IN SA

Controlling Company	Mine and Location	Ownership	Mining	Reserves	Output and Labour	Prospects	Contact Details
<p>African Rainbow Minerals (ARM)</p> <p>ARM House 29 Impala Road Chislehurst Sandton 2146 PO Box 786136, Sandton, 2146</p> <p>Tel: 011 779 1300 Fax: 011 779 1312</p> <p>E-mail: ir.admin@arm.co.za www.arm.co.za</p>	<p><b>Modikwa Platinum mine.</b></p> <p>15 km north-west of Burgersfort, on the border between Mpumalanga and Limpopo provinces.</p>	<p>41.5 % held through ARM Mining Consortium. Local communities own an effective 8.5 % and Anglo-American Platinum owns 50 %</p>	<p>Underground mining on the UG2 reef.</p>	<p>Total Reserves: ~45.1 Mt 4E. LOM: more than 30 years.</p>	<p>294 541 Pt oz 4 463 employees.</p>	<p>Investing in Modikwa Mine to enable the mine to increase production volumes to 380 000 6E PGM ounces per annum by F2026.</p>	<p>Mthi Mtshengu (GM) Tel: 013 230 2044</p>
	<p><b>Nkomati mine.</b></p> <p>45 kilometers west of Barberton and 35 kilometers east of Machadodorp.</p>	<p>Managed as a 50/50 unincorporated JV with Norilsk Nickel Africa.</p>	<p>Underground and open pit primary nickel mining on the Uitkomst Complex.</p>	<p>Total Reserves: ~167.51 Mt 4E LOM: To 2027.</p>	<p>0 Pt oz. (C&amp;M) 161 employees</p>	<p>Feasibility study completed. Operations to resume in 2023, pending mining approvals.</p>	<p>Bettina Symoond (GM) Tel: 013 712 8338</p>
	<p><b>Two Rivers Platinum.</b></p> <p>Near Steelpoort, Mpumalanga province.</p>	<p>ARM 54 %, Implats 46 %</p>	<p>Underground mining on the UG2 reef.</p>	<p>Total Reserves: ~70.72 Mt 4E. LOM: more than 30 years.</p>	<p>301 935 Pt oz. 3 771 employees.</p>	<p>Increased milling capacity by 40 000 tons per month at Two Rivers Mine, enabling the mine to ramp up to 360 000 6E PGM ounces per annum by F2023.</p>	<p>Johannes Joubert (GM) Tel: 013 230 2812</p>
	<p><b>Bokoni Platinum Mine.</b></p> <p>Limpopo Province, South Africa, and forms part of the North-Eastern Limb of the Bushveld Complex.</p>	<p>ARM1 Bokoni Mine Consortium 85 % via Bokoni Platinum Mine. SPV Employee Shares: 5 % Communities: 5 % (BI).</p>	<p>Mechanised on-reef mining method utilizing existing proven technology.</p>	<p>Total Reserves ~346.6 Mt* LOM: 23 Years.</p>	<p>349 Pt oz. 1 967 employees.</p>	<p>Targeted steady-state production of 300 000 6E PGM oz per annum.</p>	<p>Bernard Wessels (GM) Tel: 015 620 000.</p>

Controlling Company	Mine and Location	Ownership	Mining	Reserves	Output and Labour	Prospects	Contact Details
Anglo American Platinum (Amplats)  55 Marshall Street Marshalltown Johannesburg 2001  Tel: 011 373 6111 Fax: 011 373 5617  angloamerican.com	<b>Dishaba mine.</b>  Between Northam and Thabazimbi, Limpopo province.	Wholly owned by Amplats.	Underground mining on the Merensky and UG2 reefs.	Total Reserves: ~73.3 Mt 4E. LOM: >24 years	388 274 Pt oz. 6 746 employees.	The mine is expected to maintain current production levels.	Lefuka Moorosi (GM) Tel: 014 784 2003
	<b>Mogalakwena Platinum mine (Complex)</b>  30 km north-west of Mokopane, Limpopo province.		Open-pit mining on the Plat reef.	Total Reserves: ~1 268 Mt 4E. LOM: >40 years	1 214. Pt oz 6 759 employees	Commissioning is expected to be completed during Q2 2022. It is expected that the unit will increase Mogalakwena north concentrator's production capacity by over 8%.	Richard Cox (GM) Tel: 015 418 2129
	<b>Amandelbult</b>  Limpopo, between the towns of Northam and Thabazimbi, on the North-western Limb of the Bushveld Complex.		Conventional scattered-breast mining with strike pillars, mechanised mining areas and open pits.	Total Reserves: ~73.3 Mt 4E. LOM: >40 years.	773.2 Pt oz 2 321 employees	Cut its production forecast for 2023 and 2024 due to lower grades at its Mogalakwena operations and lower volumes from Amandelbult, but 2022 output remained within target.	Patrick Morutla (Manager) Tel: 014 784 1245
	<b>Mototolo Mine.</b>  Mototolo mine is a large platinum mine located in the North-Eastern part of South Africa in Burgersfort, Limpopo.		Board and pillar-Underground mining on the UG2 reef.	Total Reserves: ~ 25.7 5E Moz LOM: To 2050.	Pt oz 2 932 3 537 employees	The fully mechanised Der Brochen 240ktpm project will bring into operation a new shaft to progressively complement production from Mototolo's Borwa and Lebowa shafts.	Kennedy Sengani (Manager) Tel: 013 230 6700
	<b>Tumela mine.</b>  Between Northam and Thabazimbi, Limpopo province.		Underground Mining on the Merensky and UG2 reefs.	Total Reserves: ~37.5 Mt 5E. LOM: >18 years	554 263 Pt oz. 7 358 employees.	The mine is expected to maintain current production levels.	Jeannette Hobrink (GM) Tel: 014 784 1152

Controlling Company	Mine and Location	Ownership	Mining	Reserves	Output and Labour	Prospects	Contact Details
<p>Impala Platinum</p> <p>No. 2 Fricker Road Illovo 2196</p> <p>Tel: 011 731 9000 Fax: 011 731 9254</p> <p>www.implats.co.za</p>	<p><b>Marula Platinum mine.</b></p> <p>35 km Northwest of Burgersfort, Limpopo province.</p>	<p>Impala 73%, BEE partners 27%.</p>	<p>Underground mining on the UG2reef.</p>	<p>Total Reserves: ~18Mt 4E (attributable). LOM: To 2064.</p>	<p>219 278 Pt oz. 4 571 employees.</p>	<p>Additional product stockpile to accommodate for temporary ore storage. Establish an additional pipeline to the Phase 2 TSF (follows approved and existing pipeline route). Undertake a structural upgrade of existing infrastructure (change house and compressed airline) at the Clapham Shaft Complex footprint.</p>	<p>Werner Louw (Operations Manager) Tel: 013 214 6438</p>
	<p><b>Impala Platinum mine.</b></p> <p>Near Rustenburg Northwest province. Situated on the western limb of the world-renowned Bushveld Complex near Rustenburg in South Africa</p>	<p>Impala is 96% owned by Implats</p>	<p>Underground and opencast mining on the Merensky and UG2 reefs.</p>	<p>Total Reserves: ~Mt 4E. LOM: Beyond 2042.</p>	<p>1 415,148 Pt oz. 37 467 employees.</p>	<p>Life-of-mine at 1 Shaft has been extended for three years at a production rate of 80koz 6E per annum:</p> <ul style="list-style-type: none"> <li>• 9 Shaft is scheduled to close in H1 FY2021</li> <li>• Both growth shafts (16 and 20) are ramping up to deliver approximately 550koz 6E at full production in October 2022, slightly delayed due to the Covid-19 pandemic.</li> </ul>	<p>Kobus Wagner (Planning Manager) Tel: 014 569 0000</p>

Controlling Company	Mine and Location	Ownership	Mining	Reserves	Output and Labour	Prospects	Contact Details
Indaba Digging Industry CC  202 Trichard Road ParkrandGauteng, Gauteng, 1459 South Africa	<b>Indaba DiggingIndustry CC</b>  In Boksburg nearGermiston Gauteng Province.	Wholly owned by Indaba Digging Industry	Mine surface, Tailings	Total Reserves: Recovery LOM: N/A	BP Pt oz 11-50 employees	The plat is in the process of modification to maximize production and efficiency.	D Ndaba (Manager) Tel: 011 913 4599
Northam Platinum  1st Floor, 1A Albury Park Magaliezicht Avenue Dunkeld West 2196  Tel: 011 759 6000 Fax: 011 325 4795  www.northam.co.za	<b>Booysendal mine.</b>  35 km from Mashishing, straddling theborder of Limpopo and Mpumalanga provinces.	Wholly owned byNortham Platinum.	Underground mining on UG2.	Total Reserves: 78.16 ~Mt 4E. LOM: Beyond12 July 2039.	419 902 Pt oz. 6 437 employees.	The current Booysendal South mine plan to develop three UG2 modules (BS1, BS2 and BS4), together with a single Merensky module (BSM1), unlocks Mineral Reserves of almost 8 Moz 4E, mineable for approximately 30 years.	Wonderboy Kekana (Mine Manager) Tel: 013 235 6900
	<b>Zondereinde mine.</b>  South of Thabazimbi, Limpopo province.		Underground Mining on the Merensky and UG2 reefs.	Total Reserves: 96.32 ~Mt 4E. LOM: 2041	353 922 Pt oz. 10 332 employees.	Zondereinde — optimised mining schedule & extension of mine.	Danny Gonzalves (Mine manager) Tel: 014 784 3000
	<b>Eland Platinum Mine.</b>  Open Pit & Underground.		Underground Mining on the Merensky and UG2 reefs.	Total Reserves: 30.91 Mt 4 E LOM: 2036	52 861 Pt oz. 1 659 employees	(Eastplats) and its subsidiary Barplats Mines have completed the sale of the Maroelabult resource property to Eland Platinum.	Leon van Schalkwyk (Director) +27 11 759 6000.

Controlling Company	Mine and Location	Ownership	Mining	Reserves	Output and Labour	Prospects	Contact Details
<p>Royal Bafokeng Platinum</p> <p>The Pivot No 1 Monte Casino Boulevard Block C 4<sup>th</sup> floor. Fourways.</p> <p>Tel: +27 (0) 10 590 4510 Fax: 0862 109 421.</p> <p>Bafokengplatinum.co.za</p>	<p><b>Styl drift Platinum Mine.</b></p> <p>32 km NW from Rustenburg, South Africa</p>	<p>Wholly owned by RBP</p>	<p>Merensky resource areas with mining heights varying between 2.0m</p>	<p>Total Reserves: 30.91 Mt 4 E LOM: 2063</p>	<p>320 koz/p Pt oz. 4 250 employees</p>	<p>The mine is currently ramping up to its first phase capacity of 320,000 platinum group metals (PGM) ounces annually.</p>	<p>Bongani Mahlangu Chain Manager Tel: +27 14 153 0040</p>
	<p><b>Bafokeng-Rasimone Platinum mine.</b></p> <p>In Phokeng near Rustenburg, Northwest Province.</p>	<p>RBPlat 67%, acquired a 34.52% interest in Royal Bafokeng Platinum Limited (RBPlat)</p>	<p>Underground mining on the Merensky and UG2 reefs.</p>	<p>Total Reserves: ~40.38 Mt 4E. LOM: Beyond 2065.</p>	<p>417 665 Pt oz. 6 366 employees.</p>	<p>Additional exploration borehole drilling, together with a 3D seismic survey of the south-eastern portion of the Maseve mining block were reported by RBPlat to be planned for the 2022 calendar year</p>	<p>Glen Harris (GM) Tel: 014 153 0013</p>
<p>Sedibelo Resources</p> <p>6 Ecofusion Office Park 324 Witch-Hazel Avenue Highveld Park 0157</p> <p>Tel: 012 661 4280 Fax: 012 661 4139</p> <p>www.sedibeloplatinum.com</p>	<p><b>Pilanesberg Platinum mine.</b></p> <p>80 km North west of Rustenburg, North West province.</p>	<p>Sedibelo Platinum 72.39 Bakgatla Pallinghurst JV 25.96%.</p>	<p>Simultaneous open pit mining of the Merensky, UG2 and pseudo-reefs.</p>	<p>Total Reserves: ~122.1 Mt 3 PGE and Au LOM: Beyond 2032</p>	<p>110 549 Pt oz. 1 773 employees.</p>	<p>The mine is expected to maintain current production levels.</p>	<p>Aart Broekhuizen (GM) Tel: 014 555 1800</p>

Controlling Company	Mine and Location	Ownership	Mining	Reserves	Output and Labour	Prospects	Contact Details
<p>Sibanye-Stillwater</p> <p>Constantia Office Park Cnr 14th Avenue and Hendrik Potgieter Road Bridgeview House, Ground Floor (Lakeview Avenue) Weltevreden Park 1709, South Africa</p> <p>Tel: +27 (0) 11 278 9600</p> <p>www.sibanyestillwater.com</p>	<p><b>Rustenburg Platinum mines.</b></p> <p><i><b>Rustenburg:</b> Bathopele, Siphumelele and Thembelani mines.</i></p> <p>Near Rustenburg, Northwest province</p>	Wholly owned by Sibanye	Underground Mining on the Merensky and UG2 reefs	<p>Total Reserves: ~125.1 Mt 4 E</p> <p>LOM: Estimated 2046</p>	Pt oz  0 employees.	Sibanye will focus on consolidating and optimizing operational performance as well as improving utilization of existing infrastructure.	Benedict Ngesi (GM) Tel: 014 5981660
	<p><b>Bathopele Platinum Mine.</b></p> <p>Located near Rustenburg, South Africa. It is extended in an area of 17km<sup>2</sup></p>	Sibanye-Stillwater and Anglo-American Platinum	Underground mining on the Western Limb.	<p>Total Reserves: ~LOM: Estimated 2026</p>	Pt 280 Koz/m  2 456 employees	Bord and Pillar mining layout in the low profile (LP) section, while breast mining layout is applied for the extra low profile (XLP) section. Mining is carried out depths ranging from 40m to 350m below the surface.	Dawie van Aswegen (GM) Tel: 014 598 3132

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Sibanye-Stillwater  Constantia Office Park Cnr 14th Avenue and Hendrik Potgieter Road Bridgeview House, Ground Floor (Lakeview Avenue) Weltevreden Park 1709, South Africa  Tel: +27 (0) 11 278 9600  www.sibanyestillwater.com	<b>Marikana East</b> <b>Kroondal Platinum Mre</b>  Northwest province, 12km outside the town of Rustenburg and some 120km north-west of Johannesburg	50:50 pool and share agreement between Sibanye- Stillwater's and Anglo-American Platinum	Underground Mining on theUG2 reefs.	Total Reserves: ~10.4 Mt 4E LOM: To 2032  <b>Extension:</b> Siphumelele 3 Shaft Total Reserves: 14.7 Mt 4E	526 691 Pt oz 8 714 employees	The Siphumelele 3 shaft is part of the Kroondal Extension area, an area situated down-dip of the original PSA agreement	James Wellsted Investor Relations Tel: 083 453 4014
	<b>Marikana West</b>  Mine Middelkraal, Middelkraal, Marikana, Northwest		Underground Mining on theUG2 reefs.			Changed to Lonmin Limited and now renamed Sibanye UK Limited) ("Lonmin") broad-based black. economic empowerment ("B- BBEE") structure in relation to Western Platinum Proprietary Limited	

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<p>Sibanye-Stillwater</p> <p>Constantia Office Park Cnr 14th Avenue and Hendrik Potgieter Road Bridgeview House, Ground Floor (Lakeview Avenue) Weltevreden Park 1709, South Africa</p> <p>Tel: +27 (0) 11 278 9600</p> <p>www.sibanyestillwater.com</p>	<p><b>Lonmin Marikana Platinum mine.</b></p> <p>In Marikana near Rustenburg, Northwest province.</p>	<p>Lonmin 82%, Incwala Resources 18%.</p>	<p>Underground and opencast mining on the Merensky and UG2 reefs.</p>	<p>Total Reserves: 144.2 Mt 4E LOM: To 2038</p>	<p>508 Pt koz. employees.</p>	<p>Sibanye to notify Amplats of two years to end the toll treatment contract so that it can then start putting the equivalent of 460,000oz of platinum-in-concentrate through the Lonmin smelting and refining complexes.</p>	<p>Charl Viljoen (Manager: Rowland Shaft) Tel: 014 571 2869</p>
<p>Siyanda Resources (Pty) Ltd</p> <p>12th Floor Nedbank Building 81 Main Street Marshalltown</p> <p>Tel: +27 (0) 832 2543</p> <p>www.siyandaresources.com</p>	<p><b>Union Platinum Mine.</b></p> <p>15 km west of Northam, in both the Limpopo and Northwest provinces.</p>	<p>Siyanda Resources 85%, Bakgatla ba Kgafela community 15%</p>	<p>Underground mining on mostly UG2 and limited Merensky reefs.</p>	<p>Total Reserves 39.10 4E Moz 4E LOM: To 2030</p>	<p>335 394 Pt oz n.a employees</p>	<p>As from 1 February 2018, Siyanda Resources took over Anglo Platinum (Unionmine)</p>	<p>Liesel Roets Head of Finance Tel: 011 832 2543</p>