

Review of operations – Impala Platinum



Key features

- Improved safety performance
- Conversion of mining rights awarded
- Platinum production declined 1% to 1044Moz of platinum
- Costs remained under pressure
- Smelter upgrade on track
- Refineries expansion under way
- Power crisis being assessed

Mining

Production: Production of 1.044Moz of platinum and 1.841Moz of PGMs decreased 1% and 2% respectively on the previous year.

The reduction in tonnes milled to 15.9Mt in FY2008, down from 16.3Mt in FY2007, was largely due to a decline in the volume of Merensky ore mined. This was a function of underperformance at mainly 12 and 14 shafts.

The ratio of the higher grade Merensky to UG2 ore mined was 49:51 compared to 50:50 in FY2007. This change in the ore mix together with the deterioration in dilution, especially of the UG2 ore mined, and the increase in development tonnes trammed to the mill,

resulted in the average grade mined declining to 4.64g/t from 4.71g/t (5PGE+Au).

The power crisis in South Africa dominated the second half of the year. The two-day shutdown at the end of January, followed by a cut in electricity supply to 90% of the operation's requirements, contributed to a loss of production equivalent to approximately 8 000oz of platinum for the six months to end June 2008. This loss was compounded by the Presidential Safety Audits, run under the auspices of the Department of Minerals and Energy, which resulted in several shafts being closed for a number of days while undergoing inspection. These stoppages resulted in a further loss of around 12 000oz of platinum.

The on-going shortage of critical skills at miner and supervisory level hampered efforts to sustain initiatives to further improve both safety and productivity. The high turnover of staff at these levels had a marked impact on team management and short-term planning.

The production incentive scheme introduced in May 2007, however, had a positive effect on productivity. Face advance per employee decreased to 15.1m from 15.2m, while centares per panel team per month increased marginally to 400 centares (FY2007: 395 centares).

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Impala Rustenburg key statistics

		FY2008	FY2007	% change
Mining sales	Rm	20 889	17 401	20.0
Platinum		12 087	9 573	26.3
Palladium		1 173	1 068	9.8
Rhodium		5 179	4 061	27.5
Nickel		1 506	1 758	(14.3)
Other		944	941	0.3
Mining cost of sales		(7 345)	(6 643)	(10.6)
On-mine operations		(5 860)	(4 798)	(22.1)
Concentrating and smelting operations		(1 057)	(918)	(15.1)
Refining operations		(476)	(377)	(26.3)
Amortisation		(691)	(594)	(16.3)
Increase in inventory		739	44	1 579.5
Mining gross profit		13 544	10 758	25.9
Profit from metal purchased transactions	Rm	54	39	38.5
Sales of metals purchased		15 638	12 413	26.0
– IRS		14 914	12 229	22.0
– Other		724	184	293.5
Cost of metals purchased		(15 584)	(12 374)	229.0
– IRS		(14 846)	(12 226)	221.4
– Other		(738)	(148)	(398.6)
Gross profit in Implats group		13 598	10 797	25.9
Gross margin ex-mine	%	65	62	4.9
Other operating costs	Rm	(426)	(385)	(10.6)
Royalty expense		(548)	(1 624)	66.3
Sales volumes ex-mine				
Platinum	000oz	1 043.7	1 119.3	(6.8)
Palladium	000oz	426.7	446.9	(4.5)
Rhodium	000oz	101.9	110.6	(7.9)
Nickel	000t	6.7	7.1	(2.8)
Sales volumes metals purchased – IRS				
Platinum	000oz	640.7	677.3	(5.4)
Palladium	000oz	410.9	433.8	(5.3)
Rhodium	000oz	92.7	92.2	0.5
Nickel	000t	3.4	4.7	(27.7)
Prices achieved ex-mine				
Platinum	\$/oz	1 588	1 190	33.4
Palladium	\$/oz	381	335	13.7
Rhodium	\$/oz	6 941	5 104	36.0
Nickel	\$/t	30 206	31 645	(4.5)
Exchange rate achieved ex-mine	R/\$	7.29	7.20	1.3
Production ex-mine				
Tonnes milled	000t	15 855	16 302	(2.7)
Platinum refined	000oz	1 044.0	1 055.3	(1.0)
Palladium refined	000oz	436.6	472.0	(7.5)
Rhodium refined	000oz	124.9	102.9	21.4
Nickel refined	000t	6.9	7.0	(1.4)
PGM refined production	000oz	1 841.1	1 872.4	(1.7)
Total cost*	Rm	7 819	6 477	(20.7)
per tonne milled	R/t	493	397	(24.2)
	\$/t	68	55	(23.6)
per PGM ounce refined	R/oz	4 247	3 459	(22.7)
	\$/oz	585	481	(21.6)
per platinum ounce refined	R/oz	7 489	6 138	(22.0)
	\$/oz	1 031	853	(20.9)
net of revenue received for other metals	R/oz	(941)	(1 280)	(26.5)
	\$/oz	(130)	(178)	(27.0)
Capital expenditure	Rm	3 415	2 098	62.8
	\$m	470	292	61.0
* Includes share-based payments	Rm	985	554	(77.8)

The latter was not as effective as a result of the lack of ore reserve flexibility at 11, 12 and 14 shafts. To address this, a revised best practice mining cycle is to be rolled out at all Impala shafts following trial runs at 11 and 1 shafts.

Development metres increased by 16% to 91 000m from 78 000m in FY2007, despite poor performance with on-reef development by contractors.

The drill-jig technology contributed to improved safety with the completion of the roll-out of in-stope roof bolting on all Merensky panels. However, achievement of the secondary objectives of increased productivity and reduced physical effort was disappointing. Rock-drill operators remain unconvinced of the benefits of this technology and the drill-jigs have consequently been withdrawn. (The roll-out of this technology will continue at Marula where its viability and efficiency will be monitored).

Impala's old order mining rights were successfully converted and the social and labour plans approved.

Costs: Costs were adversely affected by the sharp increases in input costs, which ranged from a 12% rise in labour costs (which accounts for 54% of total costs at Impala), 65% higher steel price to a 100% hike in fuel costs. These price increases contributed to the total cash cost per tonne milled rising by 24% from R397/t to R493/t. The cost per platinum ounce rose by 22% from R6 138/oz to R7 489/oz (including share-based payments). The cost per platinum ounce excluding share-based payments rose 17% to R6 546/oz.

Capital: Capital projects at Impala Rustenburg include the development of 16, 17 and 20 shafts. The 20 shaft project is currently around four months behind schedule, largely

as a result of poor contractor performance, which is a function of a dearth of skills. The 16 shaft project remains on schedule. Expenditure on these shaft projects has been affected by the increased prices of consumables.

In March 2008, the 17 shaft project was approved by the board. The higher planned expenditure relates to the much deeper shaft, ventilation and refrigeration requirements and longer construction times which have escalated costs. Also, mining at such depths involves significant rock engineering/support installations. Shaft sinking has commenced.

A summary of project timelines is as follows:

20 shaft	R3.6 billion	Full production of 150 000oz of platinum scheduled for 2013
16 shaft	R4.0 billion	Full production of 185 000oz of platinum scheduled for 2015
17 shaft	R8.9 billion	Full production of 180 000oz of platinum scheduled for 2018

Total capital expenditure for FY2008 amounted to R3.4 billion, which was mostly spent on the shaft development projects, the two remaining decline projects (the 11 and 14 shaft declines) and the project to expand UG2 production at 10, 12 and 14 shafts. Capital expenditure at Impala's mining operations is considered maintenance capital aimed at ensuring annual production of between 1.0Moz and 1.1Moz of platinum.

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Mineral Processes

Production: In FY2008, 15.9Mt of ore were milled, a decline of 2.7% on FY2007. Reasons for this decline were twofold – firstly, the reduced volumes of Merensky ore mined had a major impact and, secondly, the loss of 120 000t of production as a result of the power shutdown in late January 2008. The less-than-favourable ore mix resulted in overall metallurgical recoveries declining to 82.9% from 83.3% in the previous year.

In terms of power consumption, the flexibility offered by the current three-furnace operation at Mineral Processes enabled Impala Rustenburg to manage and minimise the effects of the power crisis on its operation and production levels.

Costs: Operating costs for the year were R67/t milled (FY2007: R56/t), an increase of 19.0%, largely a result of higher prices of steel, coal and chemicals.

Capital: The current smelter expansion will cost R1 billion, with approximately half of this being spent on the third furnace and half on gas cleaning equipment.

The smelter expansion is proceeding on schedule and on budget. Hot commissioning of the third furnace was completed in June 2007. The dryer will be commissioned in August 2008 and the converter and gas cleaning equipment in December 2008.

This expansion, will increase Impala's smelting capacity to 2.8Moz of platinum.

Given the success of the tailings retreatment plant, a R70 million expansion which will effectively double the plant's capacity was approved by the board in February 2008. Construction has begun and the expanded tailings retreatment plant is scheduled for commissioning in September 2008. Estimations

are that the larger plant will contribute 0.5% to overall recovery rates.

Refineries

Production: Refineries produced 1.907Moz of platinum and 3.644Moz of PGMs in FY2008, down 5.9% and 5.6% respectively on the previous year. These declines were mainly due to the significant reduction in the toll treatment undertaken on behalf of Lonmin. If the processing of the Lonmin material in FY2007 is excluded, Implats' own headline production increased marginally year-on-year.

Some interim capacity was installed in the existing plant to address bottlenecks in the rhodium refining circuit. As part of the expansion to 2.8Moz of platinum, the existing processing line at the enhanced precious metal refinery will be expanded for all metals. The current rhodium-iridium facility cannot be expanded any further due to real estate constraints, and hence a new enlarged rhodium-iridium refining facility is to be constructed. This facility is scheduled for commissioning in FY2011 and will be premised on the new resin technology developed in-house which was extensively tested at plant scale during the past year.

The holistic effluent strategy adopted during the year resulted in record levels of water recycling, thus reducing the Refineries demand for fresh water.

Costs: Refining costs (excluding share-based payments) per gross platinum ounce and per gross PGM ounce, which rose by 12.5% and 12.6% respectively to R307/oz and R161/oz, were affected by the reduced levels of throughput. The extraordinary price increases experienced in the second half of the financial year, including an 82% increase in coal, a 39% rise in ammonia and a 20% increase in other major chemicals, also negatively influenced costs.

Capital: Capital expenditure rose to R389 million in FY2008 (FY2007: R161 million) as the capacity expansions at the BMR and the PMR continued. Capital expenditure to date on these projects is R542 million and R352 million respectively.

Capital expenditure of R875 million is planned for FY2009 which will cover the expansion programme, the continuation of the copper-winning and reduction autoclave replacement and boiler upgrade programmes, as well as the consolidated and expanded effluent evaporation plant.

Growth: The start of the phase II expansion to the Base Metals Refinery was postponed due to delays relating to the environmental impact assessment. However, the project is now progressing satisfactorily and on budget, and remains scheduled for completion in 2010.

At the Precious Metals Refinery, the phase III expansion, increasing refining capacity to 2.3Moz, was completed. The feasibility study for phase IV was finalised and will be presented to the board for project approval in November 2008. If obtained, this project is scheduled for completion by 2011.

