

# OPERATIONAL PROFILE 2017



## SURFACE OPERATIONS SOUTH AFRICA

Surface Operations encompasses those facilities at the Vaal River and West Wits operations which process and extract gold from:

- marginal ore dumps on surface
- tailings storage facilities on surface

Surface Operations also includes Mine Waste Solutions (MWS), which operates independently, processing slurry material reclaimed hydraulically from the various tailings storage facilities. Uranium is produced as a by-product, as is backfill for use as mining support in mined out areas underground.

# HIGHLIGHTS

## PRODUCTION INCREASED

and profitability maintained

## MWS – INCREASE OF 18%

in production year-on-year

## IMPROVED RECOVERIES

## WATER USAGE CONTINUES TO DECLINE

As at 31 December 2017:

- **MINERAL RESOURCE** of 6.59Moz (inclusive)
- **ORE RESERVE** of 6.11Moz



## Operational performance

### Production

Surface Operations' production was up 3% at 192,000oz for the year. At MWS, production was 18% higher at 109,000oz compared with the same period in 2016, given the improvement in feed grades from the Sulphur Paydam and East tailing storage facilities, coupled with improved recoveries. The yield increase was as expected as the Sulphur Paydam is normally associated with higher reef values. Production was also boosted by higher volumes of floor cleaning material reclaimed. Gold recovery efforts improved in the last quarter of the year to around 7%, aided by reagent suite optimisation and improved carbon management. Operations at the flotation and uranium circuit remain suspended as investigations into improved water reticulation continue.

Production from hard rock dumps was lower owing to a drop in tonnage throughput, and lower recoveries due to the increased amount of clean-up material which is refractory in nature. The sticky nature of the material processed through the Surface Operations' plants negatively impacted metallurgical efficiencies. Surface Operations' production was also affected by the suspension of the Kopanang marginal ore dumps and reduced availability of the mill at the Kopanang gold plant.

### Costs

Total cash costs at \$969/oz were 8% lower than in 2016. In line with the company's continued focus on improving efficiencies, a cost savings plan was adopted towards the end of 2016 to realise synergies from shared services among business units. This entailed,

among others, the review of all commodity and service contracts to optimise agreements where possible and align related costs.

### Capital expenditure

Overall, capital expenditure at Surface Operations declined to \$12m (2016: \$17m).

## Sustainability performance

For further information on sustainable development activities related to Surface Operations, including safety and health, employee relations, the environment, communities, and security and human rights, refer to:

- *the Regional reviews – South Africa* in the <IR>, available at [www.aga-reports.com](http://www.aga-reports.com)
- <SDR>, also available at [www.aga-reports.com](http://www.aga-reports.com)

## SURFACE OPERATIONS – KEY STATISTICS

	Units	2017	2016	2015
<b>Operational performance</b>				
Cut-off grade <sup>(1)</sup>	oz/t	0.006	0.007	0.007
	g/t	0.20	0.24	0.23
Recovered grade	oz/t	0.005	0.005	0.005
	g/t	0.17	0.16	0.18
Tonnes treated/milled	Mt	35.8	36.4	33.6
Gold production	000oz	192	186	193
Total cash cost	\$/oz	969	899	912
All-in sustaining cost	\$/oz	1,045	1,004	1,006
Capital expenditure	\$m	12	17	17
Productivity (gold and uranium)	oz/TEC	7.60	7.82	8.12
<b>Safety</b>				
No. of fatalities		0	0	1
All injury frequency rate (AIFR)	per million hours worked	4.21	5.63	5.14
<b>People</b>				
Total average no. of employees		3,161	3,140	2,929
– Permanent		2,500	2,702	2,239
– Contractors		661	438	690
<b>Environment</b>				
Water usage	ML	6,002	6,475	7,974
Water usage per tonne treated	kL/t	0.23	0.25	0.33
Energy usage	PJ	0.83	0.74	0.73
Energy usage per tonne treated	GJ/t	0.03	0.03	0.03
Greenhouse gas (GHG) emissions (CO <sub>2</sub> e)	000t	201	207	193
GHG emissions per tonne treated	t CO <sub>2</sub> e/t	8	8	8
Cyanide usage	t	6,430	6,349	6,469
No. of reportable environmental incidents		1	0	0
Total rehabilitation liabilities	\$m	25	20	18

<sup>(1)</sup> Based on the Ore Reserve.