



# OPERATIONAL PERFORMANCE

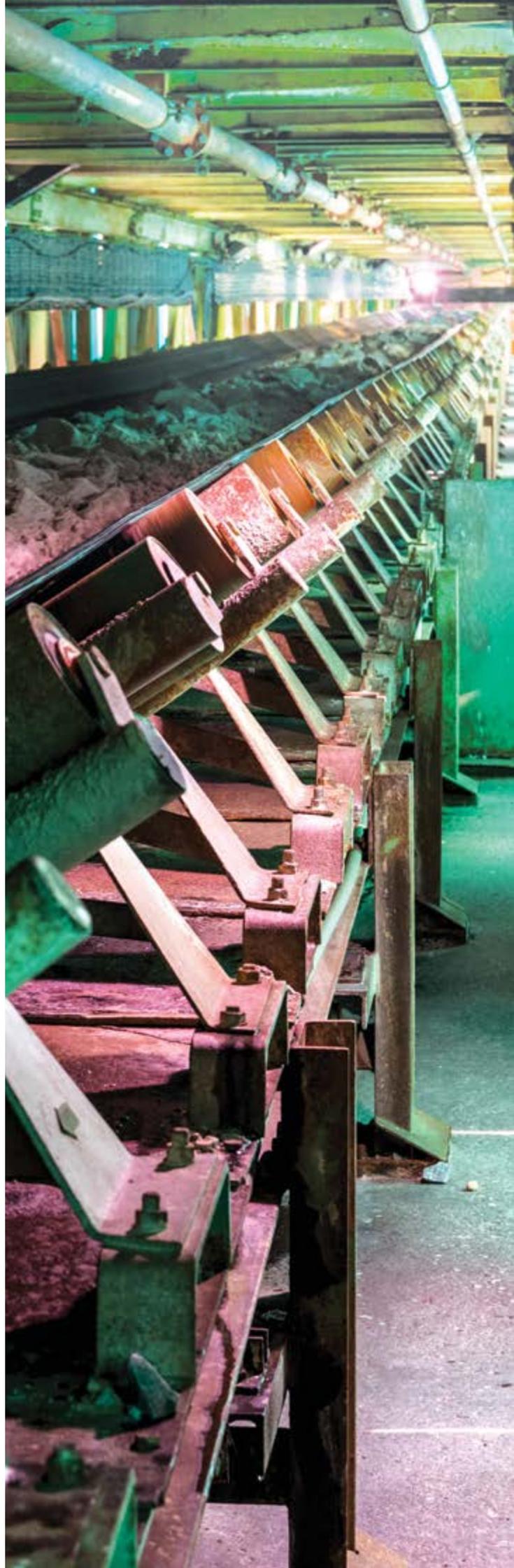
2019



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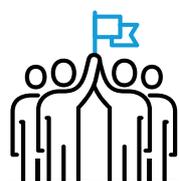


# OPERATIONAL PERFORMANCE FY19



The operational excellence strategic pillar is vital to delivery on our strategy – producing safe, profitable ounces and increasing margins.

## FY19 HIGHLIGHTS



Operational excellence aims to create a safe and enabling environment for delivery on our operational plans, reduced unit costs and improved productivity so as to maximise the generation of free cash flow.

### – Safety

- **Safety is an imperative**

- **Maintained our focus on safety risk management**, the monitoring of controls leadership and safe behaviour to embed a **proactive safety culture**

- **Group lost-time injury frequency rate improved** to 6.16 per million hours worked

### – Production

- **17% increase in production – Moab Khotsong and Hidden Valley** boost production and cash flow

- **Production guidance achieved** in line with annual guidance – fourth consecutive year

- **2% increase** in underground recovered grade – seventh consecutive annual increase



Tshepong Operations

## Key aspects of operational excellence

### OPERATIONAL EXCELLENCE IS CORE TO GENERATING CASH FLOW

Our approach to improved operational performance is driven by our commitment to operational excellence and to ensuring safe, consistent, predictable and profitable production.

We aim to create an enabling environment for delivery on our operational plans, reduced unit costs and improved productivity so as to maximise the generation of free cash flow.

#### SAFETY AND HEALTH

- Live longer journey
- Risk management and focus on critical controls

#### INFRASTRUCTURE MANAGEMENT

- Improved insurance rating
- Fewer unplanned stoppages

#### MANAGEMENT OF GRADE AND MINING FLEXIBILITY

- No mining below cut-off grade
- Incorporating flexibility into our mining plans

#### ENVIRONMENTAL AND SOCIAL MANAGEMENT

- Sustainable and responsible environmental stewardship
- Community engagement and social upliftment

#### COST MANAGEMENT

- Focused cost management and project delivery
- Improved productivity

#### CAPITAL ALLOCATION

- Prioritised and focused capital allocation for growth and to sustain the business

# OPERATIONAL PERFORMANCE CONTINUED

## SAFETY AND OPERATIONAL RISK MANAGEMENT

**Safety** is an imperative. We are committed to ensuring safe production, to preventing fatalities and to embedding a proactive safety culture. Tragically, 11 of our colleagues lost their lives in separate mining-related incidents during FY19. Harmony embarked on a safety performance improvement journey in FY16 that has included the adoption of global best practice safety standards, including among others, a four-layered risk-based management approach, implementation of modernised safety systems, and an intensified focus on leadership development and training to address behaviour to achieve our goal of zero fatalities. We have seen improvements in FY19 with the group's lost-time injury frequency rate improving to 6.16 (6.26 in FY18) and the group fatal injury frequency rate improving to 0.13 (0.16 in FY18) (per 1 million hours worked). Refer to *Safety and health* for further details.

**Managing operational risks:** Operational risk management is integral to our business and entails managing risks effectively while working safely and being proactive. Risk management helps to ensure that all supporting systems are functioning efficiently. Safety hazards and operational business risks are identified and dealt with continuously at each of our operations.

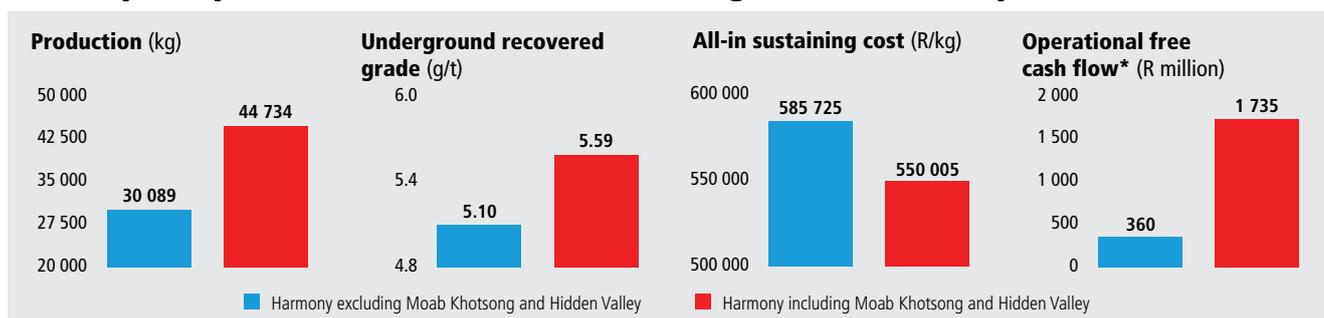
## WHAT WE DID IN FY19

In line with our strategy, both annual gold production and cash flows were boosted by the inclusion of a full year of production from Moab Khotsong and Hidden Valley, as illustrated in the graphs below

In FY19, Harmony increased production by 17% to 1.438Moz of gold (FY18: 1.228Moz) and achieved a 2% increase in underground grade mined to 5.59g/t (FY18: 5.48g/t).

Harmony achieved an all-in sustaining unit cost of R550 005/kg (US\$1 207/oz), an 8% increase year on year, due largely to increases in salary and wages and Eskom electricity tariffs, among others, and lower production from the Tshepong Operations in FY19.

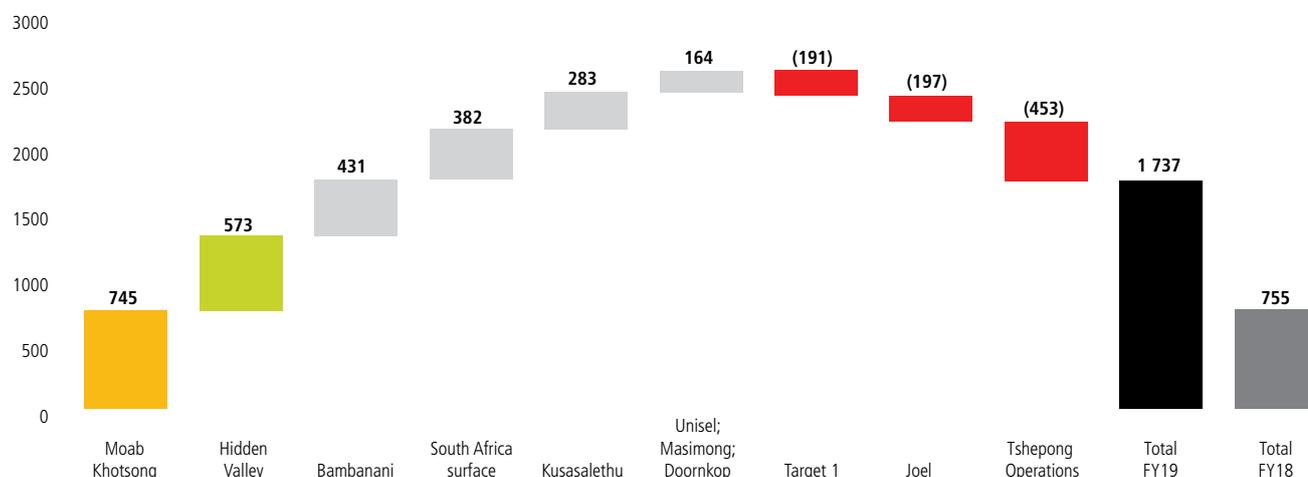
## Harmony today – with and without Moab Khotsong and Hidden Valley



## Operating free cash flow

Harmony is focused on generating operating free cash flow\*. In FY19, Moab Khotsong and Hidden Valley proved the merits of our investment strategy and were the largest contributors to operational free cash flow.

### FY19 operating free cash flow\* (R million)



\* Operating free cash flow = Revenue – cash operating cost – capital expenditure +/- impact of run of mine (ROM) costs as per operating results

## Performance at selected operations FY19:

**Moab Khotsong:** Recorded gold production of 7 928kg (254 891oz) at an average recovered grade of 8.17g/t for the first full year in which this operation was included in our portfolio.

**Hidden Valley:** Excellent safety performance, good operational momentum and disciplined cost management contributed to gold production of 6 222kg (200 042oz), generating operating free cash flow of R573 million (US\$40 million) at a margin of 16%. Stripping of the cutbacks will continue for the next two and a half years to enable delivery of an average all-in sustaining cost of less than US\$950/oz over the life of mine.

**Tshepong Operations:** Gold production decreased by 15% to 7 967kg (256 146oz), due to a 10% decrease in the recovered grade to 4.94g/t and a 6% decrease in tonnes milled. The performance was impacted mainly by a lack of flexibility, a result of the decline in the availability of stoping panels to mine. Post year end, we expect improvements in the mine's overall performance, following focused stoping development, and an improvement in overall mining and grade discipline.

**Joel:** Gold production decreased by 4% to 1 567kg (50 379oz), as a result of a 6% decrease in tonnes milled to 429 000t. Grade increased by 1% to 3.65g/t. The Joel decline project is nearing completion and an increase in both production and grade is expected in FY20.

**Target 1:** Gold production decreased by 7% to 2 653kg (85 296oz) due to a 14% decrease in tonnes milled to 588 000t, partially offsetting the 7% increase in recovered grade to 4.51g/t. A capital efficiency project to move the ore and rock crusher, associated mining activities and services closer to the working areas is underway to improve the overall efficiency and productivity of the mining circuit at Target 1.

Details of performance by each operation are provided in the document, *Operations 2019* available online at [www.har.co.za](http://www.har.co.za).

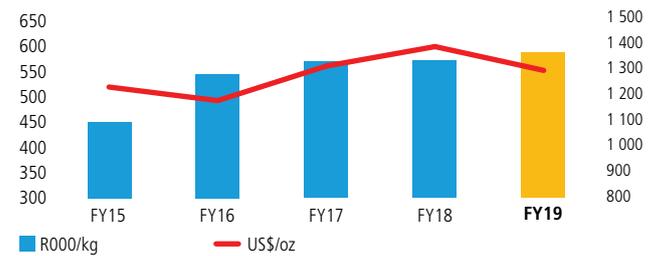


Unisel

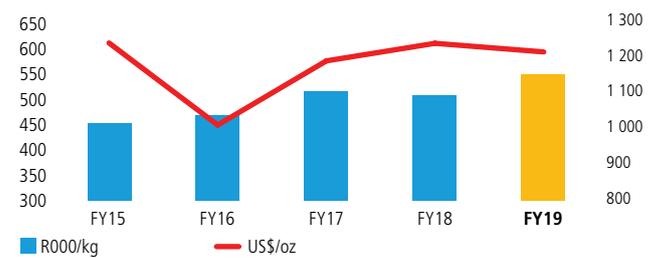
## Annual underground recovered grade (g/t)



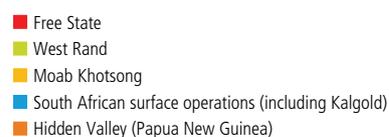
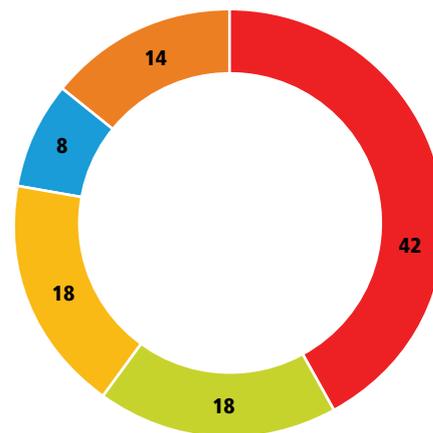
## Average annual gold price received



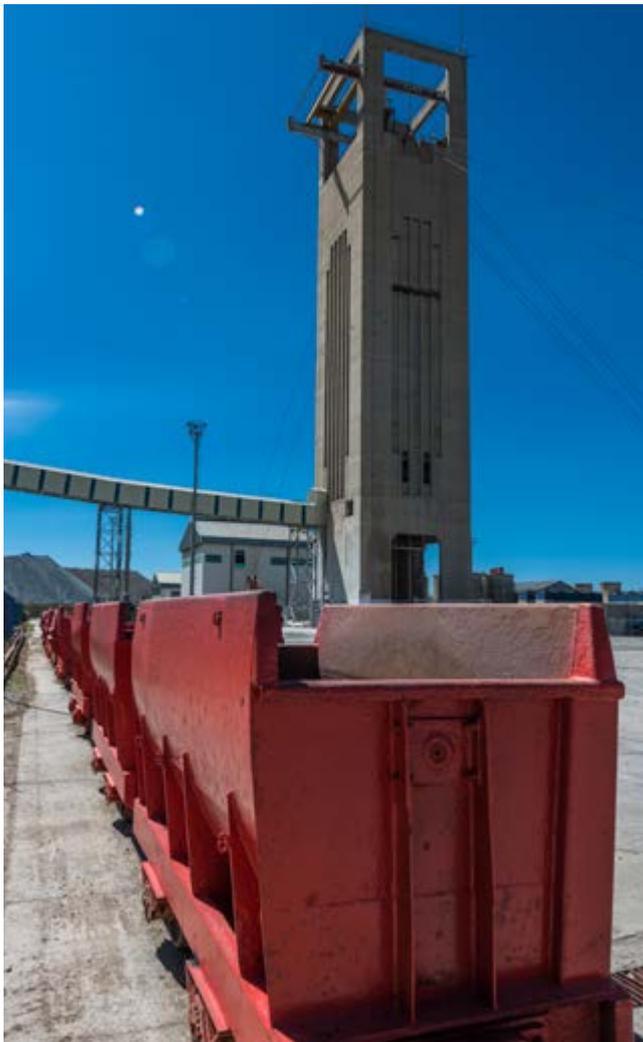
## Annual all-in sustaining costs



## Production by region



# OPERATIONAL PERFORMANCE CONTINUED



Tshepong Operations

## FY20 OUTLOOK

### Operations geared to take advantage of higher gold prices

In the next financial year (FY20), we plan to produce approximately 1.46Moz of gold at an all-in sustaining unit cost of R579 000/kg.

As price takers, we aim to control what we can – safety, costs and production. Harmony has a mixed portfolio of assets which are highly leveraged operationally to the gold price. Operational excellence – which includes safety – will remain a key focus area to ensure delivery on our strategy to increase margins and to position our operations to take full advantage of a rising gold price environment.

Harmony's operational gearing is illustrated in the graph below:

### All-in sustaining cost margin: scenarios at varying gold prices (R/kg)



\* FY20E based on guidance assumptions: production of 1.46Moz at an all-in sustaining cost of R579 000/kg (including impact of gold hedge)

### Key focus areas and actions FY20:

- Improve safety focus and performance at all operations
- Meet all operational targets and generate free cash flow
- Improve operating performance at Tshepong Operations
- Increase focus on cost management and reduce unit cost by improving safety performance, delivering on our production plans, and increasing the underground recovered grade and the productivity of our mining teams

## FY20 production and capital guidance

Operation	Production (oz)	Capital expenditure <sup>1,2</sup>		Life of mine (years)
		(Rm)	(US\$m)	
Tshepong operations	290 000	1 083	77	19
Moab Khotsong	246 000	730	52	9
Bambanani	77 000	63	4	4
Doornkop	113 000	372	26	17
Joel	61 000	164	12	10
Target 1	84 000	408	29	7
Kusasaletu	169 000	285	20	5
Masimong	69 000	25	2	1
Unisel	32 000	11	1	1
<b>Underground operations – total<sup>3</sup></b>	<b>1 141 000</b>	<b>3 141</b>	<b>223</b>	
South African surface operations (tailings and waste rock dumps)	87 000	34	2	14+
Kalgold	42 000	20	1	12
Hidden Valley <sup>4</sup>	190 000	1 521	108	4
<b>Total</b>	<b>~1.460 Moz</b>	<b>4 716</b>	<b>334</b>	

<sup>1</sup> Excludes Wafi-Golpu

<sup>3</sup> At an underground recovered grade of ~5.96g/t

<sup>2</sup> At an exchange rate of R14.11/US\$

<sup>4</sup> Includes deferred stripping



Moab Khotsong

NO SELF  
PROPELLED  
VEHICLE  
BEYOND  
THIS POINT

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS

### Tshepong Operations

		FY19*	FY18*	FY17*
<b>Number of employees</b>				
– Permanent		8 091	8 347	8 110
– Contractors		724	673	588
Total		8 815	9 020	8 698
<b>Operational</b>				
Volumes milled	(000t) (metric)	1 612	1 716	1 695
	(000t) (imperial)	1 777	1 893	1 869
Gold produced	(kg)	7 967	9 394	8 828
	(oz)	256 146	302 026	283 827
Gold sold	(kg)	7 922	9 338	8 816
	(oz)	254 698	300 223	283 439
Grade	(g/t)	4.94	5.47	5.21
	(oz/t)	0.144	0.160	0.152
Productivity	(g/TEC)	84.62	93.93	92.28
<b>Development results</b>				
Total metres		23 259	23 089	19 462
Reef metres		3 323	3 159	3 028
Capital metres		809	588	599
<b>Financial</b>				
Revenue	(Rm)	4 685	5 389	5 062
	(US\$m)	330	419	372
Average gold price received	(R/kg)	591 331	577 058	574 165
	(US\$/oz)	1 297	1 397	1 314
Cash operating cost	(Rm)	4 008	3 829	3 677
	(US\$m)	283	298	270
Production profit	(Rm)	712	1 590	1 391
	(US\$m)	50	123	102
Capital expenditure	(Rm)	1 130	1 008	717
	(US\$m)	80	78	52
Operating free cash flow <sup>1</sup>	(Rm)	(453)	552	668
	(US\$m)	(32)	43	50
Cash operating cost	(R/kg)	503 033	407 575	416 493
	(US\$/oz)	1 103	987	953
All-in sustaining cost	(R/kg)	636 281	514 537	507 368
	(US\$/oz)	1 396	1 245	1 161
Average exchange rate	(R/US\$)	14.18	12.85	13.60
<b>Safety</b>				
Number of fatalities		4	2	1
Lost-time injury frequency rate per million hours worked		7.75	7.80	7.09
<b>Environment</b>				
Electricity consumption	(GWh)	466	454	466
Water consumption – primary activities	(ML)	2 778	2 701	2 719
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	535	441	463
Intensity data per tonne treated				
– energy		0.29	0.26	0.27
– water		1.72	1.57	1.60
– greenhouse gas emissions		0.33	0.26	0.27
Number of reportable environmental incidents		0	0	0

\* From FY18, the Tshepong and Phakisa mines have been integrated and reported on as a single entity, Tshepong operations

<sup>1</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Tshepong Operations continued

		FY19*	FY18*	FY17*
<b>Community</b>				
Local economic development	(Rm)	18	9	12
Training and development	(Rm)	86	92	74

\* From FY18, the Tshepong and Phakisa mines have been integrated and reported on as a single entity, Tshepong operations

<sup>1</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

#### Other salient features

Status of operation	Steady state operation: development continues
Life of mine	19 years
Nameplate hoisting capacity (per month)	283 000 tonnes (312 000 tons)
Compliance and certification	New order mining right – December 2007 ISO 14001 ISO 9001

#### Mineral reserve estimates as at 30 June 2019

Reserves (metric)	Proved reserves			Probable reserves			Total mineral reserves		
	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	20.0	5.87	117	3.8	4.70	18	23.8	5.68	135

Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
		22.0	0.171	3 774	4.2	0.137	576	26.2	0.166

#### Overview of operations

Tshepong Operations is located in the Free State province, near Welkom, approximately 250km from Johannesburg, and includes the Tshepong and Phakisa underground mines. The close proximity of these mines allowed for this integration, which has resulted in the use of excess hoisting capacity and underused infrastructure at Tshepong and the debottlenecking of Phakisa's restrained infrastructure. The integration and reporting of the Tshepong operations as a single entity began in FY18.

Mining is conducted at depths ranging from 1 500m to 2 300m. The Tshepong section is a mature underground operation, using conventional undercut mining. The Phakisa section primarily uses the conventional mining method. Rock from Phakisa is transported via a rail-veyor system from Phakisa to the Nyala shaft, from where the rock is hoisted to surface. The principal gold-bearing orebody is the Basal Reef and the B Reef is exploited as a high-grade secondary reef. Ore mined is processed at the Harmony One plant. Gold is recovered by means of gold cyanide leaching.

#### Operating performance FY19

Tshepong Operations had a challenging operational performance in FY19, mainly impacted by a lack of flexibility due to a reduction in the availability of stoping panels to mine. Safety-related stoppages and measures taken to halt the spate of illegal mining incidents further impacted the momentum and performance of the operation in FY19. A strong and stable management team has been re-enforced. An increased focus on improving flexibility, speeding up development, disciplined mining and grade management have already resulted in improved overall performance post the financial year end.

Regrettably, four fatalities occurred at Tshepong Operations in FY19.

In FY19, Tshepong Operations was the group's largest gold operation (contributing 18% of group gold production). However, the lower production performance compared to FY18, due to the challenging operating performance in FY19, significantly impacted operating free cash flow generation<sup>1</sup>. An operating free cash flow loss of R453 million (US\$32 million loss) was recorded in FY19 compared to R552 million profit (US\$43 million profit) in FY18.

<sup>1</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Tshepong Operations continued

Gold production decreased by 15% to 7 967kg (256 146oz) in FY19. The lack of available stoping panels resulted in a 6% decrease in ore milled to 1 612 000 tonnes (1 777 000 tons) and a 10% decrease in underground recovered grade to 4.94g/t (0.144oz/t). The average rand gold price received increased by 2% to R591 331kg (in dollar terms the gold price received decreased by 7% mainly due to the weakening of the average rand/ US\$ exchange rate in FY19). Revenue decreased 13% year on year to R4 685 million (21% decrease to US\$330 million). Cash operating costs increased by 5% to R4 008 million (decreased by 5% to US\$283 million) mainly due to inflationary increases in wages and salaries and Eskom electricity tariff increases.

Capital expenditure increased by 12% to R1 130 million (increased by 3% to US\$80 million). Capital expenditure increased mainly due to increased growth or major capital expenditure related to the Sub-75 decline project and the optimisation and ventilation projects to support the integration.

B Reef exploration at Tshepong Operations continued during FY19 and a new block of ground was identified at the Phakisa section where development towards the B Reef will begin in FY20.

Key focus areas in FY20 will be to improve safety performance, quality mining and focusing on development in order to sustainably create available face length.

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Moab Khotsong

		FY19	FY18*
<b>Number of employees</b>			
– Permanent		5 421	5 804
– Contractors		1 036	1 014
Total		6 457	6 818
<b>Operational</b>			
Volumes milled	(000t) (metric)	970	327
	(000t) (imperial)	1 069	360
Gold produced	(kg)	7 928	3 296
	(oz)	254 891	105 969
Gold sold	(kg)	7 794	3 165
	(oz)	250 583	101 757
Grade	(g/t)	8.17	10.08
	(oz/t)	0.238	0.294
Productivity	(g/TEC)	120.67	135.17
<b>Development results</b>			
Total metres		10 472	9 527
Reef metres		1 202	1 328
Capital metres		1 432	380
<b>Financial</b>			
Revenue	(Rm)	4 470	1 672
	(US\$m)	315	130
Average gold price received	(R/kg)	573 522	528 387
	(US\$/oz)	1 258	1 279
Cash operating cost	(Rm)	3 167	1 037
	(US\$m)	223	81
Production profit	(Rm)	1 369	720
	(US\$m)	96	56
Capital expenditure	(Rm)	559	173
	(US\$m)	39	13
Operating free cash flow <sup>1</sup>	(Rm)	745	462
	(US\$m)	53	36
Cash operating cost	(R/kg)	399 414	314 526
	(US\$/oz)	876	761
All-in sustaining cost	(R/kg)	477 581	420 286
	(US\$/oz)	1 048	1 017
Average exchange rate	(R/US\$)	14.18	12.85
<b>Safety</b>			
Number of fatalities		1	1
Lost-time injury frequency rate per million hours worked		9.75	11.18
<b>Environment</b>			
Electricity consumption	(GWh)	766	114
Water consumption – primary activities	(ML)	6 898	1 702
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	700	110
Intensity data per tonne treated			
– energy		0.79	0.35
– water		7.11	5.20
– greenhouse gas emissions		0.72	0.35
Number of reportable environmental incidents		0	0
<b>Community</b>			
Local economic development	(Rm)	19	7
Training and development	(Rm)	48	13

\* Incorporated into Harmony's portfolio from 1 March 2018. The figures reported for FY18 are for the four months from March 2018 to June 2018

<sup>1</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Moab Khotsong continued

Other salient features	
Status of operation	Steady state operation: development continues
Life of mine	9 years
Nameplate hoisting capacity (per month)	160 000 tonnes (176 000 tons)
Compliance and certification	New order mining right ISO 14001

### Mineral reserve estimates as at 30 June 2019

Reserves (metric)	Proved reserves			Probable reserves			Total mineral reserves		
	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	4.0	7.29	29	2.8	9.70	28	6.9	8.28	57

Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
		4.4	0.213	945	3.1	0.283	887	7.6	0.242

### Overview of operations

Harmony acquired Moab Khotsong from AngloGold Ashanti Limited in March 2018. Moab Khotsong, which includes the mining and surface infrastructure of the adjacent Great Noligwa mine, is located near the towns of Orkney and Klerksdorp, about 180km south-west of Johannesburg. The mining lease area lies just south of the Vaal River, which forms a natural boundary between South Africa's North West and Free State provinces.

Mining is based on a scattered mining method together with an integrated backfill support system that incorporates bracket pillars. The geology at Moab Khotsong is structurally complex with large fault-loss areas between the three mining areas (top mine (Great Noligwa), middle mine and lower mine (growth project and Zaaiplaats project in prefeasibility study phase). Vaal Reef is the primary reef exploited. The economic reef horizons are mined between 1 791m and 3 052m below surface. Ore mined is processed at the Great Noligwa gold plant. The plant uses the reverse gold leach method, with gold and uranium being recovered through gold cyanide and acid uranium leaching.

### Operating performance FY19

The acquisition of Moab Khotsong in March of FY18 met Harmony's strategic objective of increasing the quality of its asset portfolio and increasing margins. The inclusion of Moab Khotsong for the full financial year boosted both group production and free cash flow in FY19.

Moab Khotsong is the group's second largest gold operation and largest contributor to operating free cash flow. In FY19, Moab Khotsong processed 970 000 tonnes (1 069 000 tons), producing 7 928kg (254 891oz) at a recovered grade of 8.17g/t (0.238oz/t). The operation recorded revenue of R4 470 million (US\$315 million) and incurred cash operating costs of R3 167 million (US\$223 million) and capital expenditure of R559 million (US\$39 million), resulting in the operation generating operating free cash flow of R745 million (US\$53 million) in FY19.

Sadly, one fatality occurred at the Moab Khotsong operation in FY19.

While there have been operational cost reductions mainly related to allocated overhead costs, management continues to focus on optimising costs and identifying cost efficiencies to further enhance the financial performance of Moab Khotsong. In FY19, infrastructure was upgraded to split reef and waste to the plant to improve future gold recoveries. Moab Khotsong's overall performance in FY19 was impacted by safety enhancements in the middle mine (higher grade section) during the first half of FY19 resulting in lower production from this section and a lock up of higher-grade tonnes underground. These operating matters have been addressed by management, which will increase production going forward.

The Great Noligwa pillar extraction feasibility study has been approved by the board. Safety was a key aspect of the feasibility study process. Harmony has extensive pillar mining expertise which will be utilised in developing the infrastructure for the pillar extraction and the mining thereof. The project has extended Moab Khotsong's life of mine by approximately two years.

The prefeasibility study on the Zaaiplaats project is still in progress.

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Bambanani

		FY19	FY18	FY17
<b>Number of employees</b>				
– Permanent		1 504	1 568	1 464
– Contractors		157	163	205
Total		1 661	1 731	1 669
<b>Operational</b>				
Volumes milled	(000t) (metric)	230	233	231
	(000t) (imperial)	254	257	254
Gold produced	(kg)	2 515	2 821	2 750
	(oz)	80 860	90 698	88 415
Gold sold	(kg)	2 495	2 804	2 745
	(oz)	80 216	90 151	88 253
Grade	(g/t)	10.93	12.11	11.90
	(oz/t)	0.318	0.353	0.348
Productivity	(g/TEC)	135.22	150.60	148.42
<b>Development results</b>				
Total metres		1 173	1 495	1 591
Reef metres		0	0	130
Capital metres		0	0	0
<b>Financial</b>				
Revenue	(Rm)	1 477	1 616	1 576
	(US\$m)	104	126	116
Average gold price received	(R/kg)	591 962	576 398	574 227
	(US\$/oz)	1 299	1 395	1 314
Cash operating cost	(Rm)	985	905	874
	(US\$m)	69	70	64
Production profit	(Rm)	483	720	705
	(US\$m)	34	56	52
Capital expenditure	(Rm)	61	64	77
	(US\$m)	4	5	6
Operating free cash flow <sup>1</sup>	(Rm)	431	647	625
	(US\$m)	30	51	46
Cash operating cost	(R/kg)	391 550	320 724	317 833
	(US\$/oz)	859	776	727
All-in sustaining cost	(R/kg)	441 226	360 462	357 025
	(US\$/oz)	968	873	817
Average exchange rate	(R/US\$)	14.18	12.85	13.60
<b>Safety</b>				
Number of fatalities		1	1	1
Lost-time injury frequency rate per million hours worked		2.65	2.43	5.23
<b>Environment</b>				
Electricity consumption	(GWh)	146	145	143
Water consumption – primary activities	(ML)	1 470	1 527	1 200
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	133	141	141
Intensity data per tonne treated				
– energy		0.63	0.62	0.64
– water		6.39	6.60	5.19
– greenhouse gas emissions		0.57	0.62	0.64
Number of reportable environmental incidents		0	0	0
<b>Community</b>				
Local economic development	(Rm)	4	11	14
Training and development	(Rm)	26	25	20

<sup>1</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Bambanani continued

#### Other salient features

Status of operation	Mature operation with focus on mining of the shaft pillar for the next few
Life of mine	4 years
Nameplate hoisting capacity (per month)	32 000 tonnes (35 000 tons)
Compliance and certification	New order mining right – December 2007 ISO 14001 – not certified but operates according to standards requirements ISO 9001 OHSAS 18001

#### Mineral reserve estimates as at 30 June 2019

Reserves (metric)	Proved reserves			Probable reserves			Total mineral reserves		
	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	0.7	11.69	9	–	–	–	0.7	11.69	9

Reserves (imperial)	Tons	Grade	Gold	Tons	Grade	Gold	Tons	Grade	Gold
	(Mt)	(oz/t)	(000oz)	(Mt)	(oz/t)	(000oz)	(Mt)	(oz/t)	(000oz)
	0.8	0.341	278	–	–	–	0.8	0.341	278

#### Overview of operations

Bambanani, located in the Free State province, near Welkom and about 260km from Johannesburg, has two surface shafts, the East shaft pillar being mined and West shaft, from where ore is hoisted to surface. Mining is conducted to a depth of 2 219m. Bambanani is in the final stages of its life of mine and mining is limited to the extraction of the high-grade shaft pillar. The Basal Reef is the predominant gold-bearing reef at Bambanani. The ore mined is sent to Harmony One plant for processing. Given the high risk of seismicity at Bambanani, efforts are focused on managing support systems and the rehabilitation of areas with challenging ground conditions.

#### Operating performance FY19

Sadly, one fatality occurred at Bambanani in FY19.

Bambanani contributes 6% to overall group production and is Harmony's third most profitable mine. Gold production decreased by 11% to 2 515kg (80 860oz) in FY19. This was primarily due to the decrease in recovered grade by 10% to 10.93g/t (0.318oz/t). Volumes milled remained steady year on year at 230 000 tonnes (254 000 tons) in FY19. The grade profile going forward is expected to be in line with that of FY19. The reserve grade at 30 June 2019 is 11.69g/t (0.341g/t).

Revenue declined by 9% to R1 477 million (17% decrease to US\$104 million) mainly due to lower production and lower gold sold year on year.

Cash operating costs increased by 9% to R985 million (or decreased by 1% to US\$69 million), mainly due to salary and wage increases and higher electricity tariffs. Capital expenditure decreased by 4% to R61 million (a decrease of 20% to US\$4 million).

The operation is performing well, with safety and disciplined mining being key to its success.

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Doornkop

		FY19	FY18	FY17
<b>Number of employees</b>				
– Permanent		3 133	3 073	2 847
– Contractors		751	669	645
Total		3 884	3 742	3 492
<b>Operational</b>				
Volumes milled	(000t) (metric)	730	696	641
	(000t) (imperial)	805	767	706
Gold produced	(kg)	3 273	3 429	2 673
	(oz)	105 229	110 245	85 939
Gold sold	(kg)	3 255	3 404	2 712
	(oz)	104 650	109 440	87 193
Grade	(g/t)	4.48	4.93	4.17
	(oz/t)	0.131	0.144	0.122
Productivity	(g/TEC)	85.07	94.97	77.08
<b>Development results</b>				
Total metres		8 834	9 595	9 961
Reef metres		1 621	1 478	1 337
Capital metres		497	806	1 316
<b>Financial</b>				
Revenue	(Rm)	1 931	1 958	1 553
	(US\$m)	136	152	114
Average gold price received	(R/kg)	593 301	575 077	572 494
	(US\$/oz)	1 302	1 392	1 310
Cash operating cost	(Rm)	1 593	1 418	1 224
	(US\$m)	112	110	90
Production profit	(Rm)	367	547	312
	(US\$m)	26	43	23
Capital expenditure	(Rm)	308	274	243
	(US\$m)	22	21	18
Operating free cash flow <sup>1</sup>	(Rm)	30	266	86
	(US\$m)	2	21	6
Cash operating cost	(R/kg)	486 795	413 586	457 752
	(US\$/oz)	1 068	1 001	1 047
All-in sustaining cost	(R/kg)	572 132	508 065	562 907
	(US\$/oz)	1 255	1 230	1 288
Average exchange rate	(R/US\$)	14.18	12.85	13.60
<b>Safety</b>				
Number of fatalities		2	0	0
Lost-time injury frequency rate per million hours worked		5.22	6.78	7.50
<b>Environment</b>				
Electricity consumption	(GWh)	212	193	188
Water consumption – primary activities	(ML)	266	344 <sup>2</sup>	947
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	193	199	186
Intensity data per tonne treated				
– energy		0.29	0.28	0.30
– water		0.36	0.49	1.48
– greenhouse gas emissions		0.26	0.27	0.30
Number of reportable environmental incidents		0	0	0
<b>Community</b>				
Local economic development	(Rm)	8	6	8
Training and development	(Rm)	46	47	42

<sup>1</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

<sup>2</sup> Year on year decrease due to the installation of the 5ML recycling plant

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Doornkop continued

#### Other salient features

Status of operation	Mining takes place on the South Reef at this single-shaft operation
Life of mine	17 years
Nameplate hoisting capacity (per month)	103 000 tonnes ( 113 000 tons)
Compliance and certification	New order mining right – October 2008 ISO 14001 ISO 9001 OHSAS 18001

#### Mineral reserve estimates as at 30 June 2019

Reserves (metric)	Proved reserves			Probable reserves			Total mineral reserves		
	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	5.3	4.92	26	5.6	4.86	27	10.9	4.89	53

Reserves (imperial)	Tons	Grade	Gold	Tons	Grade	Gold	Tons	Grade	Gold
	(Mt)	(oz/t)	(000oz)	(Mt)	(oz/t)	(000oz)	(Mt)	(oz/t)	(000oz)
	5.9	0.144	845	6.2	0.142	872	12.0	0.143	1 718

#### Overview of operations

Doornkop, a single-shaft operation, is located in the Gauteng province of South Africa, approximately 30km west of Johannesburg, on the northern rim of the Witwatersrand Basin. Mining is conducted to a depth of 2 219m below surface, with ore hoisted through the main shaft. The operation focuses on narrow-reef conventional mining of the South Reef. Ore from the operation is processed at the Doornkop plant, a carbon-in-pulp plant.

#### Operating performance FY19

Doornkop achieved four million fatality-free shifts in March 2019, a feat which was achieved over more than four years and the first time ever achieved by a deep-level underground gold mine in South Africa. Regrettably, two unrelated fall-of-ground fatalities occurred at Doornkop shortly after the milestone achievement.

Gold production decreased by 5% to 3 273kg (105 229oz) in FY19. A 9% decrease in underground recovered grade to 4.48g/t (0.131oz/t) offset the 5% increase in volumes milled to 730 000 tonnes (805 000 tons) in FY19. Lower recovered grades and safety stoppages related to the two fatalities impacted Doornkop's performance in FY19.

Revenue decreased slightly by 1% to R1 931 million (11% decrease to US\$136 million) mainly due to the higher average gold price received partially offsetting lower production. Cash operating costs increased by 12% to R1 593 million (increased by 2% to US\$112 million) mainly due to salary and wage increases, higher electricity tariffs and increased volume in ore milled.

Capital expenditure increased by 12% to R308 million (increased by 5% to US\$22 million) mainly due to planned capital expenditure for the construction of a second outlet following the planned closure of Sibanye-Stillwater's Cooke 1 operation and the continuing construction and development of 207 and 212 levels.

Achieving planned development targets to enable the life of mine production build up and an increase in production from level 207 and 212 to enhance mining flexibility will remain key focuses in FY20.

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Joel

		FY19	FY18	FY17
<b>Number of employees</b>				
– Permanent		1 867	1 914	1 962
– Contractors		115	184	171
Total		1 982	2 098	2 133
<b>Operational</b>				
Volumes milled	(000t) (metric)	429	454	514
	(000t) (imperial)	473	501	567
Gold produced	(kg)	1 567	1 635	2 246
	(oz)	50 379	52 566	72 211
Gold sold	(kg)	1 612	1 656	2 280
	(oz)	51 827	53 242	73 303
Grade	(g/t)	3.65	3.60	4.37
	(oz/t)	0.107	0.105	0.127
Productivity	(g/TEC)	78.10	82.23	113.57
<b>Development results</b>				
Total metres		3 378	3 331	3 477
Reef metres		1 288	431	1 596
Capital metres		0	620	532
<b>Financial</b>				
Revenue	(Rm)	957	954	1 309
	(US\$m)	67	74	96
Average gold price received	(R/kg)	593 531	576 023	573 986
	(US\$/oz)	1 302	1 394	1 313
Cash operating cost	(Rm)	967	910	928
	(US\$m)	68	71	68
Production (loss)/profit	(Rm)	(14)	34	373
	(US\$m)	(2)	3	27
Capital expenditure	(Rm)	187	250	243
	(US\$m)	13	19	18
Operating free cash flow <sup>1</sup>	(Rm)	(197)	(206)	138
	(US\$m)	(14)	(16)	10
Cash operating cost	(R/kg)	617 116	556 468	413 088
	(US\$/oz)	1 354	1 347	945
All-in sustaining cost	(R/kg)	701 644	661 921	477 484
	(US\$/oz)	1 539	1 602	1 092
Average exchange rate	(R/US\$)	14.18	12.85	13.60
<b>Safety</b>				
Number of fatalities		0	2	1
Lost-time injury frequency rate per million hours worked		3.16	2.87	2.54
<b>Environment</b>				
Electricity consumption	(GWh)	87	81	85
Water consumption – primary activities	(ML)	838	788	922
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	80	79	84
Intensity data per tonne treated				
– energy		0.20	0.18	0.17
– water		1.95	1.74	1.79
– greenhouse gas emissions		0.19	0.18	0.16
Number of reportable environmental incidents		0	0	0
<b>Community</b>				
Local economic development	(Rm)	4	5	7
Training and development	(Rm)	19	23	20

<sup>1</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Joel continued

Other salient features	
Status of operation	Twin-shaft operation – technically challenging, decline project nearing completion
Life of mine	10 years
Nameplate hoisting capacity (per month)	75 000 tonnes (83 000 tons)
Compliance and certification	New order mining right – December 2007 ISO 14001 – not certified but operates according to the standard's requirements ISO 9001 OHSAS 18001

### Mineral reserve estimates as at 30 June 2019

Reserves (metric)	Proved reserves			Probable reserves			Total mineral reserves		
	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	2.9	4.95	15	1.4	4.87	7	4.4	4.93	22

Reserves (imperial)	Proved reserves			Probable reserves			Total mineral reserves		
	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	3.2	0.144	468	1.6	0.142	225	4.8	0.144	693

### Overview of operations

Joel is located in the Free State province, about 292km from Johannesburg, on the southern edge of the Witwatersrand Basin. The mine comprises two shafts: North and South. The primary economic reef horizon is a narrow tabular Beatrix Reef deposit, which is accessed via conventional grid development. Mining is currently being conducted to a depth of 1 379m below collar. The Joel plant was decommissioned in FY19 and ore mined is processed at the Harmony One plant.

### Operating performance FY19

Joel recorded no fatalities in FY19.

The 137 decline capital project is scheduled to be completed in FY20. The decline project was initiated to extend the life of Joel by approximately eight to nine years and is included in the current life of mine plan. Development of the 137 level ore passes and other infrastructure continued in FY19.

Gold production decreased by 4% to 1 567kg (50 379oz), as a result of a 6% decrease in tonnes milled to 429 000 tonnes (473 000 tons). Grade increased by 1% to 3.65g/t (0.107oz/t). The Joel decline project is nearing completion and an increase in both production and grade is expected in FY20.

Cash operating costs increased by 6% to R967 million (decreased by 4% to US\$68 million) mainly due to increased ore mined and increase in wages and salaries and higher electricity tariffs.

Capital expenditure decreased by 25% to R187 million (decreased by 32% to US\$13 million), mainly as the major capital expenditure related to the 137 decline project nears completion.

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Target 1

		FY19	FY18	FY17
<b>Number of employees</b>				
– Permanent		1 604	1 663	1 689
– Contractors		335	284	222
Total		1 939	1 947	1 911
<b>Operational</b>				
Volumes milled	(000t) (metric)	588	680	745
	(000t) (imperial)	650	749	822
Gold produced	(kg)	2 653	2 854	2 669
	(oz)	85 296	91 758	85 809
Gold sold	(kg)	2 685	2 828	2 642
	(oz)	86 324	90 922	84 942
Grade	(g/t)	4.51	4.20	3.58
	(oz/t)	0.131	0.123	0.104
Productivity	(g/TEC)	132.94	146.90	126.66
<b>Development results</b>				
Total metres		3 378	3 883	3 656
Reef metres		118	431	104
Capital metres		179	620	0
<b>Financial</b>				
Revenue	(Rm)	1 585	1 630	1 506
	(US\$m)	112	127	111
Average gold price received	(R/kg)	590 298	576 316	570 091
	(US\$/oz)	1 295	1 395	1 304
Cash operating cost	(Rm)	1 478	1 334	1 356
	(US\$m)	104	104	100
Production profit	(Rm)	94	312	161
	(US\$m)	7	24	12
Capital expenditure	(Rm)	297	309	324
	(US\$m)	21	24	24
Operating free cash flow <sup>1</sup>	(Rm)	(190)	(13)	(174)
	(US\$m)	(13)	(1)	(13)
Cash operating cost	(R/kg)	557 264	467 271	508 082
	(US\$/oz)	1 222	1 131	1 162
All-in sustaining cost	(R/kg)	662 816	582 200	651 833
	(US\$/oz)	1 454	1 409	1 491
Average exchange rate	(R/US\$)	14.18	12.85	13.60
<b>Safety</b>				
Number of fatalities		0	1	0
Lost-time injury frequency rate per million hours worked		6.35	10.18	12.02
<b>Environment</b>				
Electricity consumption	(GWh)	173	187	186
Water consumption – primary activities	(ML)	474	553	678
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	162	189	184
Intensity data per tonne treated				
– energy		0.29	0.23	0.25
– water		0.81	0.81	0.91
– greenhouse gas emissions		0.28	0.27	0.25
Number of reportable environmental incidents		0	0	0
<b>Community</b>				
Local economic development	(Rm)	6	4	5
Training and development	(Rm)	45	41	36

<sup>1</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Target 1 continued

Other salient features	
Status of operation	Crusher and related infrastructure project well underway
Life of mine	7 years
Nameplate hoisting capacity (per month)	97 000 tonnes (107 000 tons)
Compliance and certification	New order mining right – December 2007 ISO 14001 ISO 9001 OHSAS 18001

### Mineral reserve estimates as at 30 June 2019

Reserves (metric)	Proved reserves			Probable reserves			Total mineral reserves		
	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	3.2	4.38	14	1.5	4.66	7	4.6	4.47	21

Reserves (imperial)	Proved reserves			Probable reserves			Total mineral reserves		
	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	3.5	0.128	444	1.6	0.136	221	5.1	0.130	665

### Overview of operations

Target 1 is located in the Free State province, some 270km southwest of Johannesburg. Mining operations comprise one primary underground shaft, to a depth of approximately 2 300m below surface where current mining takes place. While most of the ore extracted comes from mechanised mining (massive mining techniques), conventional stoping is still employed primarily to destress areas ahead of mechanised mining. Ore mined is milled and processed at the Target plant, and gold is recovered through gold cyanide leaching. The gold mineralisation currently exploited at Target 1 is contained within a succession of Elsburg and Dreyerskuil quartz pebble conglomerate reefs.

The Target 1 shaft is used to transport men, material and rock from surface to 203 level from where a single decline, equipped with a conveyor belt, connects to 255 level some 2 050m below surface. The decline splits at 255 level into a conveyor decline and a vehicle decline, descending to the extent of development currently at 291 level, 2 300m below surface.

Target 1's operational performance is focused on trackless development to ensure timeous availability of massive stopes and to prevent excessive dilution from waste and backfill in the pillar areas, which could impact negatively on the delivered grade.

### Operating performance FY19

Target 1 recorded no fatalities in FY19.

Gold production decreased by 7%, due to a 14% decrease in tonnes milled to 588 000 tonnes (650 000 tons) partially offsetting the 7% increase in recovered grade to 4.51g/t (0.131oz/t).

Cash operating costs were 11% higher year on year, increasing to R1 478 million (remained flat at US\$104 million in US\$ terms) mainly due to increases in wages and salaries, higher electricity tariffs and once-off inventory adjustments.

Capital expenditure decreased by 4% to R297 million mainly due to lower capital expenditure incurred at the Target plant.

The Target 1 optimisation project to improve productivity and efficiencies began in FY19 and is well underway. The capital project will result in moving the ore and rock crusher, related infrastructure, associated mining activities and services closer to working areas.

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Kusasaletu

		FY19	FY18	FY17
<b>Number of employees</b>				
– Permanent		4 011	3 980	4 050
– Contractors		930	692	538
Total		4 941	4 672	4 588
<b>Operational</b>				
Volumes milled	(000t) (metric)	742	670	607
	(000t) (imperial)	817	738	670
Gold produced	(kg)	4 989	4 429	4 394
	(oz)	160 400	142 395	141 270
Gold sold	(kg)	5 028	4 301	4 498
	(oz)	161 653	138 281	144 614
Grade	(g/t)	6.72	6.61	7.24
	(oz/t)	0.196	0.193	0.211
<b>Productivity</b>	(g/TEC)	98.94	91.54	89.05
<b>Development results</b>				
Total metres		5 437	4 016	5 101
Reef metres		1 217	776	1 185
Capital metres		0	0	0
<b>Financial</b>				
Revenue	(Rm)	2 975	2 483	2 575
	(US\$m)	210	193	189
Average gold price received	(R/kg)	591 742	577 313	572 376
	(US\$/oz)	1 298	1 397	1 309
Cash operating cost	(Rm)	2 377	2 091	2 019
	(US\$m)	168	163	148
Production profit	(Rm)	580	457	494
	(US\$m)	41	35	36
Capital expenditure	(Rm)	316	289	289
	(US\$m)	22	22	21
Operating free cash flow <sup>1</sup>	(Rm)	282	103	267
	(US\$m)	20	8	20
Cash operating cost	(R/kg)	476 417	472 177	459 422
	(US\$/oz)	1 045	1 143	1 051
All-in sustaining cost	(R/kg)	556 621	554 302	541 247
	(US\$/oz)	1 221	1 342	1 238
Average exchange rate	(R/US\$)	14.18	12.85	13.60
<b>Safety</b>				
Number of fatalities		3	5	0
Lost-time injury frequency rate per million hours worked		9.05	6.25	10.29
<b>Environment</b>				
Electricity consumption	(GWh)	624	595	616
Water consumption – primary activities	(ML)	3 205	2 609	613
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	569	577	610
Intensity data per tonne treated				
– energy		0.84	0.90	1.01
– water		4.32	3.89	1.00
– greenhouse gas emissions		0.77	0.3	0.10
Number of reportable environmental incidents		0	2	3
<b>Community</b>				
Local economic development	(Rm)	9	6	5
Training and development	(Rm)	52	33	45

<sup>1</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Kusasaletu continued

#### Other salient features

Status of operation	Mature, steady state operation positioned for profitability
Life of mine	5 years
Nameplate hoisting capacity (per month)	172 000 tonnes (190 000 tons)
Compliance and certification	New order mining right – December 2007 ISO 14001 ISO 9001 Cyanide Code

#### Mineral reserve estimates as at 30 June 2019

Reserves (metric)	Proved reserves			Probable reserves			Total mineral reserves		
	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	3.6	6.79	24	0.9	6.67	6	4.5	6.76	30

Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
		3.9	0.198	779	1.0	0.194	194	4.9	0.197

#### Overview of operations

Kusasaletu is located about 90km from Johannesburg, near the border of Gauteng and North West provinces, in the West Witwatersrand Basin where it mines the Ventersdorp Contact Reef as its primary ore body. The mine comprises twin vertical and twin sub-vertical shaft systems, and uses conventional mining methods in a sequential grid layout. Mining is conducted to a depth of 3 388m and is Harmony's deepest mine. Ore mined is treated at the Kusasaletu plant. A shortened life of mine plan was implemented in FY16. This plan aims to optimise the mine's cash flow at a higher grade and create a stronger operating margin while providing the flexibility necessary to access the high-grade payshoot of the Ventersdorp Contact Reef below infrastructure, should economic circumstances allow.

#### Operating performance FY19

Sadly, three fatalities occurred at Kusasaletu in FY19, one of which was a gravity-related fall of ground.

Gold production increased by 13% to 4 989kg (160 400oz), as a result of an 11% increase in tonnes milled to 742 000 tonnes (817 000 tons) and a 2% increase in recovered grade to 6.72g/t (0.196oz/t). The operation has been free cash flow positive for the past three financial years, generating operating free cash flow of R282 million (US\$20 million) in FY19, a more than 100% increase year on year.

Revenue increased by 20% to R2 975 million in FY19 (increased by 9% to US\$210 million) mainly as a result of the increase in gold production and higher gold sold year on year.

Cash operating costs increased by 14% to R2 377 million (3% to US\$168 million) mainly due to higher volumes milled, salary and wage increases and higher electricity tariffs. Capital expenditure increased by 9% to R316 million (unchanged in US\$ terms at US\$22 million) mainly due to increased ongoing capital development and inflationary cost increases.

Safety, disciplined mining and improved grades are key to Kusasaletu's successful performance in the future.

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Masimong

		FY19	FY18	FY17
<b>Number of employees</b>				
– Permanent		2 247	2 432	2 437
– Contractors		120	108	107
Total		2 367	2 540	2 544
<b>Operational</b>				
Volumes milled	(000t) (metric)	602	647	640
	(000t) (imperial)	664	714	706
Gold produced	(kg)	2 309	2 623	2 538
	(oz)	74 237	84 332	81 599
Gold sold	(kg)	2 291	2 609	2 539
	(oz)	73 657	83 882	81 631
Grade	(g/t)	3.84	4.05	3.97
	(oz/t)	0.112	0.118	0.116
Productivity	(g/TEC)	82.48	92.82	89.73
<b>Development results</b>				
Total metres		3 167	5 287	4 754
Reef metres		765	2 067	1 054
<b>Financial</b>				
Revenue	(Rm)	1 359	1 505	1 452
	(US\$m)	96	117	107
Average gold price received	(R/kg)	593 003	576 729	571 870
	(US\$/oz)	1 301	1 396	1 308
Cash operating cost	(Rm)	1 214	1 161	1 115
	(US\$m)	86	90	82
Production profit	(Rm)	154	351	339
	(US\$m)	11	27	25
Capital expenditure	(Rm)	109	129	119
	(US\$m)	8	10	9
Operating free cash flow <sup>1</sup>	(Rm)	36	215	218
	(US\$m)	2	17	16
Cash operating cost	(R/kg)	525 703	442 586	439 457
	(US\$/oz)	1 153	1 071	1 005
All-in sustaining cost	(R/kg)	593 408	513 197	500 938
	(US\$/oz)	1 302	1 242	1 146
Average exchange rate	(R/US\$)	14.18	12.85	13.60
<b>Safety</b>				
Number of fatalities		0	1	1
Lost-time injury frequency rate per million hours worked		5.88	8.61	10.54
<b>Environment</b>				
Electricity consumption	(GWh)	161	173	170
Water consumption – primary activities	(ML)	721	824	825
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	147	167	169
<b>Intensity data per tonne treated</b>				
– energy		0.27	0.27	0.27
– water		1.20	1.27	1.29
– greenhouse gas emissions		0.24	0.27	0.27
Number of reportable environmental incidents		0	0	0
<b>Community</b>				
Local economic development	(Rm)	6	6	7
Training and development	(Rm)	26	27	23

<sup>1</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Masimong continued

#### Other salient features

Status of operation	Mature, single shaft operation nearing the end of its life of mine
Life of mine	1 year
Nameplate hoisting capacity (per month)	112 000 tonnes (124 000 tons)
Compliance and certification	New order mining right – December 2007 ISO 14001 ISO 9001 OHSAS 18001

#### Mineral reserve estimates as at 30 June 2019

Reserves (metric)	Proved reserves			Probable reserves			Total mineral reserves		
	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	0.6	4.37	3	0.04	3.53	0.1	0.7	4.33	3

Reserves (imperial)	Tons	Grade	Gold	Tons	Grade	Gold	Tons	Grade	Gold
	(Mt)	(oz/t)	(000oz)	(Mt)	(oz/t)	(000oz)	(Mt)	(oz/t)	(000oz)
	0.7	0.127	88	0.04	0.103	4	0.7	0.126	93

#### Overview of operations

Masimong is located in the Free State province, near Welkom, about 260km from Johannesburg. Masimong is a single-shaft operation. The Masimong complex comprises an operating shaft (5 shaft) and 4 shaft, which, although closed for mining, is used for ventilation, pumping and as a second escape outlet. Masimong exploits the Basal Reef and the B-Reef by means of conventional tabular narrow reef stoping method. Mining is conducted at a depth of between 1 650m and 2 010m below collar. Ore mined is processed at the Harmony 1 plant.

#### Operating performance FY19

Masimong recorded no fatalities in FY19.

Gold production decreased by 12% to 2 309kg (74 237oz), due to a 5% decrease in recovered grade to 3.84g/t (0.112oz/t) and a 7% decrease in tonnes milled to 602 000 tonnes (664 000 tons). The operation's performance was impacted by a reduction in higher-grade B Reef year on year.

The lower gold production contributed to a 10% decrease in revenue to R1 359 million (18% decrease to US\$96 million, due to lower production and the weakening of the average rand/US dollar exchange rate by 10% from R12.85 in FY18 to R14.18 in FY19).

Cash operating costs increased by 5% to R1 214 million (4% decrease to US\$86 million) mainly due to inflationary wage and salary increases. Capital expenditure decreased by 16% to R109 million (decreased by 20% to US\$8 million) as capital development reduced year on year.

Masimong is nearing the end of its economic life and the short-term extension thereof is largely limited.

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Unisel

		FY19	FY18	FY17
<b>Number of employees</b>				
– Permanent		880	1 016	1 839
– Contractors		52	80	152
Total		932	1 096	1 991
<b>Operational</b>				
Volumes milled	(000t) (metric)	256	376	394
	(000t) (imperial)	283	415	436
Gold produced	(kg)	1 212	1 280	1 595
	(oz)	38 966	41 152	51 280
Gold sold	(kg)	1 207	1 272	1 590
	(oz)	38 807	40 896	51 120
Grade	(g/t)	4.73	3.40	4.05
	(oz/t)	0.138	0.099	0.118
Productivity	(g/TEC)	110.50	70.04	73.56
<b>Development results</b>				
Total metres		2 035	2 921	3 647
Reef metres		1 177	1 325	1 575
Capital metres		0	1 028	0
<b>Financial</b>				
Revenue	(Rm)	713	733	915
	(US\$m)	50	57	67
Average gold price received	(R/kg)	590 468	576 222	575 650
	(US\$/oz)	1 295	1 395	1 317
Cash operating cost	(Rm)	569	774	839
	(US\$m)	40	60	62
Production profit/(loss)	(Rm)	149	(38)	77
	(US\$m)	10	(3)	6
Capital expenditure	(Rm)	45	85	78
	(US\$m)	3	7	6
Operating free cash flow <sup>1</sup>	(Rm)	99	(126)	(2)
	(US\$m)	7	(10)	(1)
Cash operating cost	(R/kg)	469 108	604 311	525 732
	(US\$/oz)	1 029	1 463	1 203
All-in sustaining cost	(R/kg)	523 823	678 436	591 913
	(US\$/oz)	1 149	1 642	1 354
Average exchange rate	(R/US\$)	14.18	12.85	13.60
<b>Safety</b>				
Number of fatalities		0	0	0
Lost-time injury frequency rate per million hours worked		4.02	10.86	13.57
<b>Environment</b>				
Electricity consumption	(GWh)	62	99	112
Water consumption – primary activities	(ML)	367	488	441
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	57	96	112
Intensity data per tonne treated				
– energy		0.03	0.26	0.28
– water		0.36	1.30	1.12
– greenhouse gas emissions		0.04	0.26	0.28
Number of reportable environmental incidents		1	0	0
<b>Community</b>				
Local economic development*	(Rm)	3	5	5
Training and development	(Rm)	11	19	24

\* Reported as part of waste rock dumps prior to the conversion of Central Plant to a tailings retreatment facility, which began operating in FY18

<sup>1</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – UNDERGROUND OPERATIONS continued

### Unisel continued

#### Other salient features

Status of operation	Mature operation reaching the end of its life of mine. Mining focused on higher grade areas of shaft pillar
Life of mine	1 year
Nameplate hoisting capacity (per month)	63 000 tonnes (69 000 tons)
Compliance and certification	New order mining right – December 2007 ISO 9001

#### Mineral reserve estimates as at 30 June 2019

Reserves (metric)	Proved reserves			Probable reserves			Total mineral reserves		
	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	0.2	4.81	1	0.1	4.13	0.2	0.2	4.65	1

Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
		0.2	0.140	29	0.1	0.121	7	0.3	0.136

#### Overview of operations

Unisel is located in the Free State province, near Virginia, about 270km from Johannesburg. Unisel is a mature, underground, single-shaft mine, operating at depths from 1 100m to 2 200m below surface. Conventional scattered mining and pillar reclamation take place to primarily access the Basal Reef. Ore mined is processed at Harmony One plant.

Unisel is nearing the end of its operating life and is Harmony's oldest operating mine. Mining of the Leader Reef was terminated in the second half of FY18. Unisel's ageing infrastructure presents significant challenges to the mine's operational flexibility and to the maintenance of production. Mining focuses on targeted areas of the shaft pillar and is expected to continue for one more year. Employees and unions receive regular updates on the mine's performance and future plans. Post closure, Harmony will arrange to transfer the Unisel workforce to other operations where positions are available. Portable skills training will be a key focus going forward.

#### Operating performance FY19

In FY19, Unisel recorded its fourth consecutive year without a fatality and achieved over 1.5 million fatality free shifts.

Gold production decreased by 5% to 1 212kg (38 966oz) in FY19. Mining of the higher-grade areas of the shaft pillar resulted in a 32% decrease in volumes milled to 256 000 tonnes (283 000 tons), but a 39% increase in underground recovered grade to 4.73g/t (0.138oz/t). Operating free cash flow increased to R99 million (US\$7 million) in FY19 compared to the operating free cash flow loss of R126 million (US\$10 million) in FY18. The decrease in gold production resulted in a 2% decrease in revenue to R713 million (12% decrease to US\$50 million).

Lower volumes milled resulted in a 26% decrease in cash operating costs to R569 million (decreased by 33% to US\$40 million).

Capital expenditure decreased by 47% to R45 million (decreased by 57% to US\$3 million) mainly due to the major capital project to prepare sections of the pillar to be mined being completed in FY18.

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – SURFACE OPERATIONS

### Kalgold

		FY19	FY18	FY17
<b>Number of employees</b>				
– Permanent		238	237	241
– Contractors		346	334	395
Total		584	571	636
<b>Operational</b>				
Volumes milled	(000t) (metric)	1 619	1 550	1 506
	(000t) (imperial)	1 785	1 709	1 660
Gold produced	(kg)	1 249	1 250	1 205
	(oz)	40 156	40 189	38 742
Gold sold	(kg)	1 263	1 231	1 213
	(oz)	40 605	39 577	38 999
Grade	(g/t)	0.77	0.81	0.80
	(oz/t)	0.022	0.024	0.023
Productivity	(g/TEC)	150.85	147.96	123.82
<b>Financial</b>				
Revenue	(Rm)	750	710	695
	(US\$m)	53	55	51
Average gold price received	(R/kg)	593 482	576 630	573 010
	(US\$/oz)	1 302	1 396	1 311
Cash operating cost	(Rm)	695	565	557
	(US\$m)	49	44	41
Production profit	(Rm)	50	157	131
	(US\$m)	3	12	10
Capital expenditure	(Rm)	61	108	96
	(US\$m)	4	8	7
Operating free cash flow <sup>1</sup>	(Rm)	(4)	34	45
	(US\$m)	0	3	3
Cash operating cost	(R/kg)	556 283	452 365	462 037
	(US\$/oz)	1 220	1 095	1 057
All-in sustaining cost	(R/kg)	624 147	552 032	558 731
	(US\$/oz)	1 369	1 336	1 278
Average exchange rate	(R/US\$)	14.18	12.85	13.60
<b>Safety</b>				
Number of fatalities		0	0	0
Lost-time injury frequency rate per million hours worked		0.88	0	2.19
<b>Environment</b>				
Electricity consumption	(GWh)	54	53	54
Water consumption – primary activities	(ML)	583	324	392
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	66	51	53
Intensity data per tonne treated				
– energy		0.03	0.03	0.04
– water		0.36	0.21	0.26
– greenhouse gas emissions		0.04	0.03	0.36
Number of reportable environmental incidents		1	0	0
<b>Community</b>				
Local economic development	(Rm)	9	3	2
Training and development	(Rm)	5	6	7

<sup>1</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – SURFACE OPERATIONS continued

### Kalgold continued

#### Other salient features

Status of operation	Open-pit mining operation
Life of mine	12 year
Nameplate hoisting capacity (per month)	112 000 tonnes (124 000 tons)
Compliance and certification	New order mining right – August 2008 ISO 14001 ISO 9001

#### Mineral reserve estimates as at 30 June 2019

Reserves (metric)	Proved reserves			Probable reserves			Total mineral reserves		
	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	9.4	0.87	8	8.9	1.18	11	18.4	1.02	19

Reserves (imperial)	Proved reserves			Probable reserves			Total mineral reserves		
	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	10.4	0.026	265	9.8	0.034	339	20.2	0.030	605

#### Overview of operations

Kalgold is an open-pit gold mine situated on the Kraaipan Greenstone Belt, 55km southwest of Mahikeng in North West province. Mining takes place from the A-Zone pit. Mining is ramping up at the pillar between the A-Zone and Watertank pit. Ore mined is processed at the carbon-in-leach Kalgold plant.

#### Operating performance FY19

Kalgold maintained its fatality-free record in FY19.

Gold production remained flat year on year at 1 249kg (40 156oz) (FY18: 1 250kg (40 189oz)). Ore milled increased by 5% to 1 619 000 tonnes (1 785 000 tons). The recovered grade decreased by 5% to 0.77g/t (0.022oz/t). Revenue increased by 6% to R750 million (a 4% decrease to US\$53 million) due to higher gold sold and average gold price received year on year.

Cash operating costs increased by 23% to R695 million (11% increase to US\$49 million) due to increased production stripping year on year.

Capital expenditure decreased by 43% to R61 million (decreased by 50% to US\$4 million), mainly due to a reduction in the capitalisation of stripping activities resulting from the A-Zone pit and Watertank pit merger year on year.

Safety and creating mining flexibility by opening up the pit and feeding the plant at sustainable feed grades remain key to the success of the operation.

A near-mine exploration programme began at Kalgold in FY18. Drill results have been very encouraging and a mineral resource update and prefeasibility study to optimise/expand the Kalgold operation based on the results of the exploration drilling is underway. For more detailed information on the progress being made at Kalgold, see the section *Exploration and projects* in the *Integrated Annual Report 2019*.

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – SURFACE OPERATIONS continued

### Phoenix (tailings retreatment)

		FY19	FY18	FY17
<b>Number of employees</b>				
– Permanent		87	87	82
– Contractors		249	252	261
Total		336	349	343
<b>Operational</b>				
Volumes milled	(000t) (metric)	6 133	5 962	6 729
	(000t) (imperial)	6 762	6 575	7 420
Gold produced	(kg)	756	737	918
	(oz)	24 306	23 695	29 515
Gold sold	(kg)	750	739	932
	(oz)	24 113	23 759	29 964
Grade	(g/t)	0.123	0.124	0.136
	(oz/t)	0.004	0.004	0.004
Productivity	(g/TEC)	185.84	183.88	187.96
<b>Financial</b>				
Revenue	(Rm)	433	397	512
	(US\$m)	31	31	38
Average gold price received	(R/kg)	577 889	537 547	549 777
	(US\$/oz)	1 268	1 301	1 258
Cash operating cost	(Rm)	344	326	364
	(US\$m)	24	25	27
Production profit	(Rm)	92	71	140
	(US\$m)	7	5	10
Capital expenditure	(Rm)	6	3	5
	(US\$m)	–	–	–
Operating free cash flow <sup>1</sup>	(Rm)	83	68	143
	(US\$m)	7	6	11
Cash operating cost	(R/kg)	455 370	442 526	396 486
	(US\$/oz)	999	1 071	907
All-in sustaining cost	(R/kg)	462 579	446 268	404 685
	(US\$/oz)	1 015	1 080	926
Average exchange rate	(R/US\$)	14.18	12.85	13.60
<b>Safety</b>				
Number of fatalities		0	0	0
Lost-time injury frequency rate per million hours worked		0	0	0
<b>Environment</b>				
Electricity consumption	(GWh)	41	41	42
Water consumption – primary activities	(ML)	304	260	249
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	37	40	42
Intensity data per tonne treated				
– energy		0.007	0.007	0.006
– water		0.05	0.04	0.04
– greenhouse gas emissions		0.006	0.007	0.006
Number of reportable environmental incidents		1	0	0

<sup>1</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – SURFACE OPERATIONS continued

### Phoenix (tailings retreatment) continued

#### Other salient features

Status of operation	Retreatment of tailings
Life of mine	10 year

#### Mineral reserve estimates as at 30 June 2019

Reserves (metric)	Proved reserves			Probable reserves			Total mineral reserves		
	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	55.8	0.27	15	–	–	–	55.8	0.27	15

Reserves (imperial)	Proved reserves			Probable reserves			Total mineral reserves		
	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	61.5	0.008	490	–	–	–	61.5	0.008	490

#### Overview of operations

Phoenix, a tailings retreatment operation, involves the retreatment of tailings from tailings storage facilities in the Free State region to extract any residual gold situated. Phoenix is located in Virginia in the Free State province and makes use of the Saaiplaas plant to retreat tailings. During FY13, Harmony finalised an empowerment agreement and transferred 30% of its shareholding in the Phoenix operation to black economic empowerment owners. Phoenix is 100% held by Tswelopele Beneficiation Operation (Proprietary) Limited of which Harmony is a 70% shareholder.

#### Operating performance FY19

Phoenix improved its operating performance year on year due to an increase in volumes processed and costs which were well contained.

Year on year, gold production increased by 3% to 756kg (24 306oz), mainly as a result of a 3% increase in volumes processed to 6 133 000 tonnes (6 762 000 tons). The recovered grade decreased by 1% to 0.123g/t (0.004oz/t).

During the last quarter of FY19, the Tswelopele board approved the participation of the Phoenix operation in Harmony's rand gold hedging programme.

Operational success depends on maintaining plant efficiency and reducing pump and pipe failures (adequate spillage control).

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – SURFACE OPERATIONS continued

### Central Plant Reclamation (tailings retreatment)

		FY19	FY18	FY17
<b>Number of employees</b>				
– Permanent		99	100	114
– Contractors		136	182	68
Total		235	282	182
<b>Operational</b>				
Volumes milled	(000t) (metric)	3 872	3 810	–
	(000t) (imperial)	4 269	4 201	–
Gold produced	(kg)	579	502	–
	(oz)	18 615	16 139	–
Gold sold	577	577	508	–
	18 551	18 551	16 333	–
Grade	(g/t)	0.150	0.132	–
	(oz/t)	0.004	0.004	–
Productivity	(g/TEC)	307.23	261.72	–
<b>Financial</b>				
Revenue	(Rm)	342	293	–
	(US\$m)	24	23	–
Average gold price received	(R/kg)	592 359	576 829	–
	(US\$/oz)	1 299	1 396	–
Cash operating cost	(Rm)	212	191	–
	(US\$m)	15	15	–
Production profit	(Rm)	130	98	–
	(US\$m)	9	8	–
Capital expenditure	(Rm)	7	22	156
	(US\$m)	1	2	11
Operating free cash flow <sup>1</sup>	(Rm)	123	80	(156)
	(US\$m)	8	6	(11)
Cash operating cost	(R/kg)	366 364	381 131	–
	(US\$/oz)	804	923	–
All-in sustaining cost	(R/kg)	378 038	420 016	–
	(US\$/oz)	829	1 017	–
Average exchange rate	(R/US\$)	14.18	12.85	13.60
<b>Safety</b>				
Number of fatalities		0	0	1
Lost-time injury frequency rate per million hours worked		2.09	0	12.51
<b>Environment</b>				
Electricity consumption	(GWh)	23	24	*
Water consumption – primary activities	(ML)	191	180	*
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	21	23	*
Intensity data per tonne treated				
– energy		0.01	0.01	*
– water		0.05	0.05	*
– greenhouse gas emissions		0.005	0.006	*
Number of reportable environmental incidents		0	1	*

\* Reported as part of waste rock dumps prior to the conversion of Central Plant to a tailings retreatment facility, which began operating in FY18

<sup>1</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – SURFACE OPERATIONS continued

### Central Plant Reclamation (tailings retreatment) continued

#### Other salient features

Status of operation	Retreatment of tailings
Life of mine	16 years

#### Mineral reserve estimates as at 30 June 2019

Reserves (metric)	Proved reserves			Probable reserves			Total mineral reserves		
	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	–	–	–	60.5	0.27	16	60.5	0.27	16

Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	–	–	–	66.7	0.008	517	66.7	0.008	517

#### Overview of operations

Central Plant Reclamation, a tailings retreatment operation situated near Welkom in the Free State, commenced production at the beginning of FY18. Central Plant, which had previously processed waste rock dumps, was converted into a tailings retreatment operation during FY17.

#### Operating performance FY19

Central Plant performed well in FY19. The operation recorded a 2% increase in volumes processed to 3.87 million tonnes (4.27 million tons) and a 14% increase in recovered grade to 0.150g/t (0.004oz/t) resulting in a 15% increase in gold production to 579kg (18 615oz). All-in sustaining unit cost decreased by 10% to R378 038/kg (in US\$ terms decreased by 18% to US\$829/oz).

The capital expenditure for FY17 of R156 million (US\$11.5 million) was related to the Central Plant tailings conversion project which was completed at the end of FY17.

Focus at the Central Plant is on improving plant efficiencies for optimal gold recovery. A feasibility study to expand the operation from processing 300 000 tonnes per month to a potential 500 000 tonnes per month is subject to board approval in accordance with the group's capital allocation evaluation criteria which are aimed at improving safety and increasing margins.

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – SURFACE OPERATIONS continued

### Waste rock dumps

		FY19	FY18	FY17
<b>Operational</b>				
Volumes milled	(000t) (metric)	4 307	2 821	2 810
	(000t) (imperial)	4 749	3 110	3 099
Gold produced	(kg)	1 515	1 081	1 055
	(oz)	48 708	34 755	33 918
Grade	(g/t)	0.352	0.383	0.375
	(oz/t)	0.010	0.011	0.011
<b>Financial</b>				
Revenue	(Rm)	879	610	609
	(US\$m)	62	47	45
Average gold price received	(R/kg)	587 483	567 737	572 172
	(US\$/oz)	1 289	1 374	1 309
Cash operating cost	(Rm)	692	450	459
	(US\$m)	49	35	34
Production profit	(Rm)	195	164	142
	(US\$m)	14	13	10
Capital expenditure	(Rm)	8	3	7
	(US\$m)	1	–	1
Operating free cash flow <sup>1</sup>	(Rm)	179	157	143
	(US\$m)	12	12	10
Cash operating cost	(R/kg)	456 473	415 993	434 715
	(US\$/oz)	1 001	1 007	995
All-in sustaining cost	(R/kg)	462 178	417 462	445 451
	(US\$/oz)	1 014	1 010	1 019
Average exchange rate	(R/US\$)	14.18	12.85	13.60
<b>Safety</b>				
Number of fatalities		0	0	0
Lost-time injury frequency rate per million hours worked		0	0	0
<b>Environment</b>				
Electricity consumption	(GWh)	*	*	52
Water consumption – primary activities	(ML)	*	*	234
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	*	*	51
Intensity data per tonne treated				
– energy		*	*	0.02
– water		*	*	0.08
– greenhouse gas emissions		*	*	0.02
Number of reportable environmental incidents		0	0	0

\* Electricity and water consumption and related emission and intensity data for the respective plants at which the waste rock dumps are processed are accounted for as part of the primary operation's environmental results

<sup>1</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

# OPERATIONAL PERFORMANCE

## SOUTH AFRICA – SURFACE OPERATIONS continued

### Waste rock dumps continued

#### Other salient features

Status of operation	Processing of waste rock dumps is dependent on the availability of spare plant capacity and plant requirements for grinding material
Life of mine	± 1 year

### Mineral reserve estimates as at 30 June 2019

Reserves (metric)	Proved reserves			Probable reserves			Total mineral reserves		
	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	–	–	–	3.9	0.51	2	3.9	0.51	2

Reserves (imperial)	Proved reserves			Probable reserves			Total mineral reserves		
	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	–	–	–	4.3	0.015	64	4.3	0.015	64

### Overview of operations

Production from the processing of surface rock dumps situated in the Free State province of South Africa depends entirely on the availability of spare mill capacity at the Harmony One and Target plants. Waste and waste rock dump deliveries to Kusasalethu plant (situated near the border of Gauteng and North West provinces) supplement mining volumes in order to secure sufficient backfill to use as support in stoping areas. Waste rock dumps situated near Orkney (acquired as part of the Moab Khotsong operations) are treated at the Nologwa and Mispah plants. Milling of waste rock dumps at the Doornkop plant, situated in Gauteng, began in FY18.

The tailings retreatment conversion of the Central Plant in FY17 reduced capacity to process waste rock volumes. Waste rock dumps were not processed at the Central Plant in FY18 following the completion of the conversion of this plant to treat tailings.

### Operating performance FY19

The performance of the waste rock dumps year on year benefitted from the full financial year of production from processing waste rock dumps from Moab Khotsong and Doornkop.

In FY19, volumes processed increased by 53% to 4 307 000 tonnes (4 749 000 tons) and recovered grade decreased by 8% to 0.352g/t constant at (0.010oz/t) resulted in a 40% increase in production to 1 515kg (48 708oz). Operating free cash flow increased by 14% to R179 million (constant at US\$12 million) in FY19.

# OPERATIONAL PERFORMANCE

## PAPUA NEW GUINEA

### Hidden Valley

		FY19	FY18	FY17*
<b>Number of employees</b>				
– Permanent		1 391	1 295	1 192
– Contractors		709	790	881
Total		2 100	2 085	2 073
<b>Operational</b>				
Volumes milled	(000t) (metric)	3 886	2 499	2 889
	(000t) (imperial)	4 285	2 757	3 186
Gold produced <sup>1</sup>	(kg)	6 222	2 862	2 965
	(oz)	200 042	92 015	95 327
Gold sold <sup>1</sup>	(kg)	6 192	2 763	3 119
	(oz)	199 077	88 833	100 278
Grade	(g/t)	1.60	1.36	1.07
	(oz/t)	0.047	0.039	0.035
<b>Financial</b>				
Revenue	(Rm)	3 591	409	1 500
	(US\$m)	253	31	110
Average gold price received	(R/kg)	579 902	550 956	544 442
	(US\$/oz)	1 272	1 283	1 246
Cash operating cost	(Rm)	1 371	228	1 214
	(US\$m)	97	17	89
Production profit	(Rm)	2 229	175	186
	(US\$m)	157	14	14
Capital expenditure <sup>1</sup>	(Rm)	1 591	1 563	1 335
	(US\$m)	112	122	98
Operating free cash flow <sup>2</sup>	(Rm)	573	(1 374)	(837)
	(US\$m)	40	(107)	(62)
Cash operating cost	(R/kg)	220 323	287 028	466 847
	(US\$/oz)	483	669	1 068
All-in sustaining cost	(R/kg)	497 399	466 256	543 186
	(US\$/oz)	1 090	1 094	1 241
Average exchange rate	(R/US\$)	14.18	12.85	13.60
<b>Safety</b>				
Number of fatalities		0	0	0
Lost-time injury frequency rate per million hours worked		0.35	0	0.41
<b>Environment</b>				
Electricity consumption	(GWh)	117	59	53
Water consumption – primary activities	(ML)	1 827	1 359	1 309
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	208	57	53
Intensity data per tonne treated				
– energy		0.03	0.02	0.02
– water		0.47	0.54	0.45
– greenhouse gas emissions		0.05	0.02	0.07
Number of reportable environmental incidents		2	0	0

\* Harmony acquired the remaining 50% of Hidden Valley in October 2016. Hidden Valley accounted for at 100% since the end of October 2016

<sup>1</sup> FY18 gold produced includes 2 068kg (66 499oz) and gold sold 2 021kg (64 976oz) capitalised as part of pre-stripping of stages 5 and 6 (FY17: 364kg, 11 713oz), (FY19: nil). Revenue of R1 045 million (US\$85 million) and the associated costs were capitalised during FY18 (FY17: R195 million, US\$14 million)

<sup>2</sup> Operating free cash flow = revenue – cash operating cost – capital expenditure ± impact of run of mine (ROM) costs as per operating results

# OPERATIONAL PERFORMANCE

## PAPUA NEW GUINEA continued

### Hidden Valley continued

#### Other salient features

Status of operation	Open-pit mining operation producing gold and silver (by-product). The pre-stripping of stage 5 commenced in October 2016. Commercial levels of production was achieved in the June 2018 production month. Stripping of stage 6 commenced in FY19
Life of mine	4 years

### Mineral reserve estimates as at 30 June 2019

Reserves (metric)	Proved reserves			Probable reserves			Total mineral reserves		
	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	2.7	0.96	3	13.6	1.91	26	16.3	1.75	29

Reserves (imperial)	Proved reserves			Probable reserves			Total mineral reserves		
	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	3.0	0.028	85	15.0	0.056	833	18.0	0.051	918

#### Overview of operations

The Hidden Valley mine is an open pit gold and silver mine, situated in the Morobe province in Papua New Guinea, some 210km northwest of Port Moresby and approximately 90km south-southwest from Lae, the capital of the province. The mine is located at elevations between 2 800m and 1 700m above sea level within steep mountainous and forested terrain that experiences approximately 3m of rainfall per year. The major gold and silver deposits of Hidden Valley are located in the Morobe Granodiorite of the Wau Graben. Crushed ore is conveyed from the Hidden Valley pit via a 3.8km long overland pipe conveyor and is treated at the Hidden Valley processing plant, which uses a two stage crushing circuit followed by a SAG mill, gravity, CCD/Merrill Crowe circuit for silver and carbon-in-leach circuit for the gold.

In October 2016, Harmony increased its interest in Hidden Valley to 100% by acquiring the remaining 50% from its then joint venture partner.

The full acquisition of Hidden Valley followed the decision to invest primarily in the further development of the Hidden Valley-Kaveroi stage 5 and 6 cutbacks. Excellent project delivery was demonstrated during the re-investment phase, with our achieving an excellent safety performance, expenditure below budget and commercial levels of production attained within schedule in June 2018.

#### Operating performance FY19

Embedding a culture of zero harm, safety coaching and leadership and the use of critical control management are key focus areas driving the safety performance at Hidden Valley. Hidden Valley's safety and injury frequency rates are industry leading and the operation achieved a third consecutive year of zero fatalities, and two years without a lost-time injury.

Safety, good operational momentum and disciplined cost management contributed to Hidden Valley achieving guided gold production of 6 222kg (200 042oz) and generating operating free cash flow of R573 million (US\$40 million), making it the group's second largest contributor to operating free cash flow in FY19. Hidden Valley achieved an all-in sustaining unit cost of R497 399/kg (US\$1 090/oz).

Safety and operational improvement and productivity are key focus areas. Hidden Valley achieved a record annual mining rate of 30 million tonnes, compared to a planned annual mining rate of 28 million tonnes.

The re-investment programme began in FY17 and mainly included the pre-stripping of stage 5, upgrades to the crusher, overland conveyor and plant and investment in additional and replacement mobile fleet. A planned major four-month plant and processing shutdown began in August 2017 (FY18). Depleted ore stockpiles and a lack of mined ore to feed the plant necessitated the shutdown, during which extensive upgrades and maintenance were undertaken. This project was completed on schedule during November 2017.

The total investment capital amounted to net US\$175 million (planned investment of net US\$180 million, of which US\$68 million was spent in FY17). Commercial levels of production were achieved in June 2018.

Hidden Valley's operational performance in FY19, FY18 and FY17 is not comparable due to the re-investment programme.

# OPERATIONAL PERFORMANCE

## PAPUA NEW GUINEA continued

Stripping of the cutbacks will continue over the next two and a half years. Hidden Valley is expected to produce approximately 180 000oz to 200 000oz of gold and 3Moz of silver annually at an average life of mine all-in sustaining cost of US\$950/oz. Hidden Valley is expected to achieve an all-in sustaining cost average of less than US\$950/oz over the life of mine.

A prefeasibility study for the life of mine extension has been completed which considers a two to three-year extension and annual gold production of approximately 200 000oz. Progressing to feasibility study level is subject to board approval.