

# OPERATIONS 2018



Ensuring operational excellence will enable us to deliver our strategy to produce safe, profitable ounces and increase margins.



## HIGHLIGHTS



# FY18

- Achieved production guidance for third consecutive year and beating all-in sustaining unit cost guidance
- Successful acquisition and integration of Moab Khotsong
- Excellent project delivery at Hidden Valley

## OPERATIONAL EXCELLENCE IS AN IMPERATIVE

Our successful operational performance is based primarily on the philosophy of operational excellence.

Operational excellence is aimed at creating an environment that enables safe, consistent, predictable and profitable production. In addition to safety, it encompasses infrastructure and asset maintenance, grade and cost management, and capital allocation. This will contribute to improved safety, fewer unplanned work stoppages, improved mining flexibility and optimised costs, among others, and ultimately to the successful delivery on our strategic objectives.

In all of this safety is paramount. Safe operating performance is essential to sustaining our business in the long run. This entails delivering safely on our operational plans, reducing unit costs, improving productivity and thereby maximising the generation of free cash flow.

Our approach takes into account the long-term sustainability of the company as a whole. We aim to mine those areas which will return a positive cash flow. As we are price takers, we control what we can – safety, costs and production.

## OPERATIONAL EXCELLENCE

Disciplined mining is integral to ensuring the safety of our employees, improving productivity and efficiencies and achieving our targets. Ensuring operational excellence helps to create an enabling environment. Safety is considered at all times, teams are motivated, and the workplace environment promotes and enhances productivity.

### CREATE AN ENABLING ENVIRONMENT – BUILD SUCCESSFUL, PERFORMANCE DRIVEN AND MOTIVATED TEAMS

Safety and health	Infrastructure	Grade and mining flexibility	Capital allocation	Cost
<ul style="list-style-type: none"> <li>• Live longer journey</li> <li>• Risk management and focus on critical controls</li> </ul>	<ul style="list-style-type: none"> <li>• Asset management and planned maintenance to limit impact of unplanned stoppages</li> </ul>	<ul style="list-style-type: none"> <li>• No mining below cut-off</li> <li>• Increased availability of stoping panels</li> <li>• Remove bottlenecks and manage constraints</li> </ul>	<ul style="list-style-type: none"> <li>• Focused capital allocation that prioritises growth and sustaining capital expenditure</li> </ul>	<ul style="list-style-type: none"> <li>• Focused cost management and project delivery</li> <li>• Improve productivity</li> </ul>

### = SAFE, CONSISTENT, PREDICTABLE AND PROFITABLE PRODUCTION

Our South African operations have been performing consistently. Increased flexibility, availability of stoping panels and fewer unplanned engineering stoppages due to focused asset management and maintenance have improved the predictability of our production performance. Our disciplined grade management approach has also been important in delivering on guidance and managing cost inflation.

**Managing operational risks:** Operational risk management is integral to our business and entails managing risks effectively while working safely and being proactive. Risk management is essential 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.

## IMPROVING THE QUALITY OF OUR PORTFOLIO

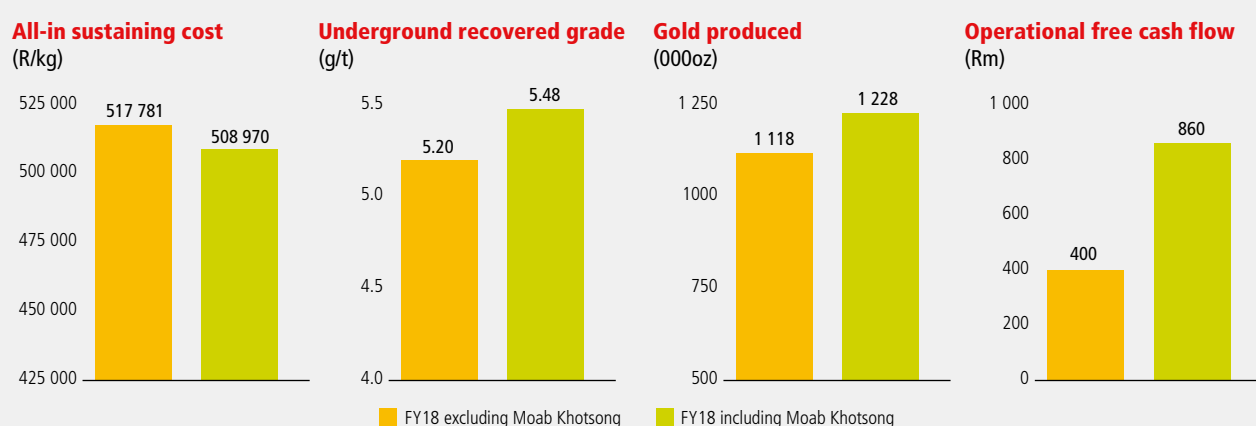
Our growth aspiration to produce 1.5Moz and improve the quality of our asset portfolio was set out at the end of financial year 2016 (FY16). Since then, Harmony has re-invested in Hidden Valley and, in FY18, acquired Moab Khotsong.

These operations will boost cash flow generation by increasing annual production by approximately 450 000 to 500 000 ounces at an average life of mine all-in sustaining unit cost of below US\$950/oz.

The Hidden Valley investment in the stage 5 and 6 cutbacks was delivered safely, below budget and on schedule.

Given the quality of the Moab Khotsong operation, its inclusion into our asset portfolio from 1 March 2018 had an immediate impact on Harmony's FY18 results.

### MOAB KHOTSONG'S IMPACT ON HARMONY'S OPERATING PERFORMANCE IN FOUR MONTHS – A COMPARISON



# OPERATIONS 2018 CONTINUED

## OPERATING PERFORMANCE IN FY18

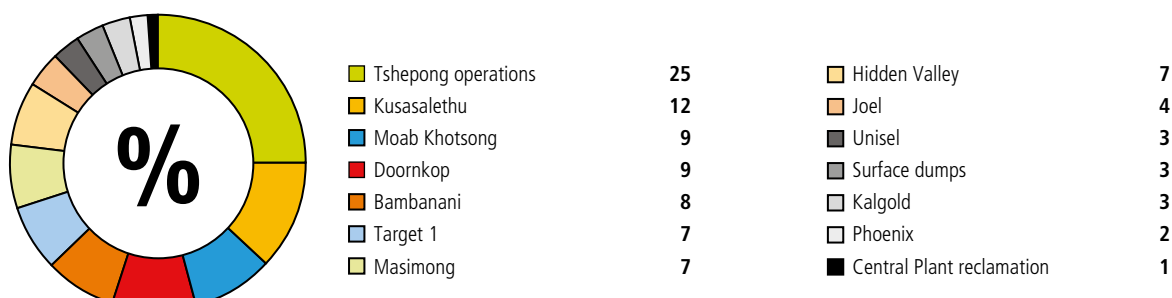
**Relevant GRI indicators: G4-13 and G4-EC1**

Safety is a priority. We recognise that more needs to be done to ensure a safe working place for all our employees. Sadly, 13 of our colleagues lost their lives in mine-related accidents in FY18. The implementation of our safety programme is focused on stopping significant unwanted events. All stakeholders are committed to and actively enforce a safe working environment. For more information on our safety performance, see [Safety and health](#).

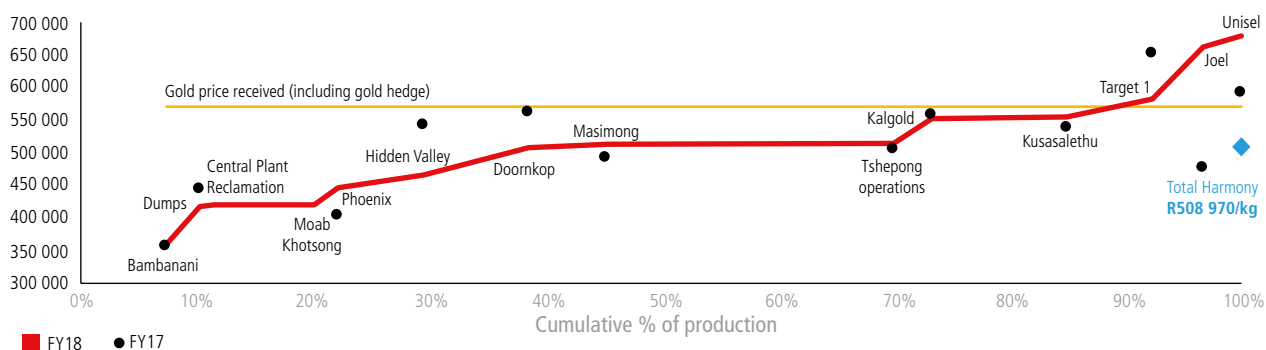
Operational excellence in FY18 was key in achieving our annual production guidance for a third consecutive year and increasing underground grade for a sixth consecutive year. In FY18, Harmony increased production by 13%, produced 1.228Moz of gold (FY17: 1.088Moz) and achieved an 8% increase in underground grade mined of 5.48g/t (FY17: 5.07g/t).

In FY18, Harmony achieved an all-in sustaining unit cost of R508 970/kg (US\$1 231/oz), beating annual guidance of R520 000/kg and the all-in sustaining unit cost of R516 687/kg (US\$1 182/oz) in FY17.

### Contribution to group production by operation



### All-in sustaining costs FY18 compared to FY17 (R/kg)



Details of performance by each operation are provided from page 5 of this document.

#### Performance highlights

- **Doornkop:** gold produced increased by 28%, due to an 18% increase in recovered grade to 4.93g/t and a 9% increase in tonnes milled. Doornkop's excellent safety performance enhanced the performance of the operation in FY18
- **Central Plant Reclamation:** the inaugural annual performance from the operation was successful. The operation produced 502kg (16 139oz) of gold, processed 3.8 million tonnes at an all-in sustaining cost of R420 016/kg (US\$1 017/oz)

- Stable production performance and improved recovery grades at the Tshepong operations, Bambanani and Masimong

#### Performance from other South African operations

- **Kusasaletu:** a tragic seismic event impacted results in FY18. Encouraging development grades indicate that recovery grades are expected to improve in FY19
- **Kalgold:** waste stripping due to the pit merger continued in FY18. A drilling and exploration programme is underway

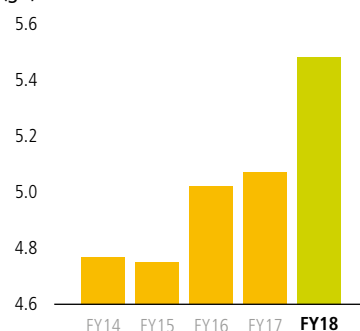
#### Addressing underperformance

- **Unisel:** a mature operation reaching the end of its life of mine was restructured during the March 2018 quarter. Mining of the Leader Reef was stopped to accelerate mining of the higher grade Basal Reef pillar areas. An improved performance is expected from Unisel during FY19
- **Target 1:** improved on its FY17 performance, where production had been hampered by unfavourable mining conditions in the higher grade areas. Exploration drilling during

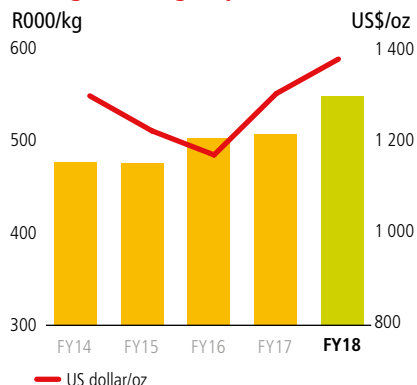
the year resulted in lower grade estimates for certain blocks that had previously been included in the life-of-mine plan but have now subsequently been excluded. The operation requires capital investment to improve productivity. The capital required will be assessed against capital allocation priorities and criteria to determine a suitable way forward for Target 1

- **Joel:** was hampered by the unavailability of planned mining areas due to geological intrusions. The Joel decline project is nearing completion and development in the footwall areas has commenced. Development is expected to continue for 12 to 18 months, following which grades are expected to increase to reserve grade

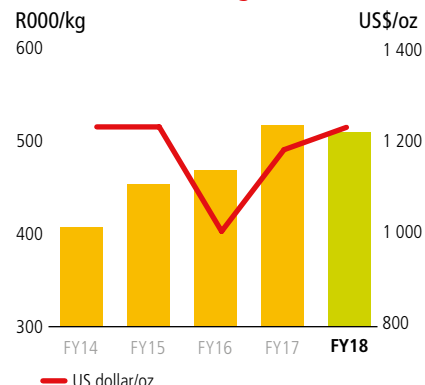
**Annual underground grade recovered (g/t)**



**Average annual gold price received**



**Annual all-in sustaining costs**



## OUTLOOK FOR FY19

Our target for FY19 is to produce approximately 1.45Moz at an all-in sustaining cost of R515 000/kg.

Key focus areas in FY19 will be to:

- improve safety focus and performance at all operations
- meet all operational targets and generate free cash flow
- realise synergies at Moab Khotsong operations
- deliver on the Hidden Valley operational plan
- increase focus on cost management and unit cost reductions

### FY19 production and capital guidance

Operation	Production	Capital expenditure <sup>1,2</sup>		Life of mine
	(oz)	(Rm)	(US\$m)	(years)
Tshepong operations	287 000	1 032	78	17
Moab Khotsong	248 000	595	45	7
Bambanani	82 000	70	5	5
Target 1	86 500	311	23	7
Doornkop	106 500	349	26	16
Joel	50 000	147	11	9
Kusalethu	155 500	311	23	5
Masimong	72 500	106	8	3
Unisel	32 000	35	3	2
<b>Underground operations – total<sup>3</sup></b>	<b>1 120 000</b>	<b>2 956</b>	<b>222</b>	
South African surface operations (tailings and waste rock dumps)	84 500	39	4	14+
Kalgold	39 000	69	5	15
Hidden Valley <sup>4</sup>	201 500	1 491	112	5
<b>Total</b>	<b>~1.45Moz</b>	<b>4 555</b>	<b>343</b>	

<sup>1</sup> Excludes Golpu

<sup>3</sup> At a grade of ~5.85g/t

<sup>2</sup> At an exchange rate of R13.30/US\$

<sup>4</sup> Includes deferred stripping

# OPERATIONS 2018 CONTINUED

## SOUTH AFRICA

### Tshepong operations

		FY18*	FY17*	FY16*
<b>Number of employees</b>				
– Permanent		8 347	8 110	7 779
– Contractors		673	588	600
Total		9 020	8 698	8 379
<b>Operational</b>				
Volumes milled	(000t) (metric)	1 716	1 695	1 774
	(000t) (imperial)	1 893	1 869	1 956
Gold produced	(kg)	9 394	8 828	9 019
	(oz)	302 026	283 827	289 968
Gold sold	(kg)	9 338	8 816	9 020
	(oz)	300 223	283 439	289 999
Grade	(g/t)	5.47	5.21	5.08
	(oz/t)	0.160	0.152	0.148
Productivity	(g/TEC)	93.93	92.28	97.29
<b>Development results</b>				
Total metres		23 089	19 462	23 099
Reef metres		3 159	3 028	3 530
Capital metres		588	599	0
<b>Financial</b>				
Revenue	(Rm)	5 389	5 062	4 942
	(US\$m)	419	372	341
Average gold price received	(R/kg)	577 058	574 165	547 906
	(US\$/oz)	1 397	1 314	1 175
Cash operating cost	(Rm)	3 829	3 677	3 223
	(US\$m)	298	270	222
Production profit	(Rm)	1 590	1 391	1 723
	(US\$m)	123	102	119
Capital expenditure	(Rm)	1 008	717	630
	(US\$m)	78	52	43
Cash operating cost	(R/kg)	407 575	416 493	357 345
	(US\$/oz)	987	953	757
All-in sustaining cost	(R/kg)	514 537	507 368	437 550
	(US\$/oz)	1 245	1 161	939
<b>Safety</b>				
Number of fatalities		2	1	2
Lost-time injury frequency rate per million hours worked		7.80	7.09	6.51
<b>Environment</b>				
Electricity consumption	(GWh)	454	466	453
Water consumption – primary activities	(ML)	2 701	2 719	2 385
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	441	463	460
Intensity data per tonne treated				
– energy		0.26	0.27	0.26
– water		1.57	1.60	1.34
– greenhouse gas emissions		0.26	0.27	0.26
Number of reportable environmental incidents			0	0
<b>Community</b>				
Local economic development	(Rm)	9	12	13
Training and development	(Rm)	92	74	72

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

## Tshepong operations *continued*

### Other salient features

Status of operation	Steady state operation: development continues
Life of mine	17 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 reserves as at 30 June 2018

	Proved reserves			Probable reserves			Total mineral reserves		
Reserves (metric)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	19.7	5.93	117	3.7	4.84	18	23.5	5.76	135
Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	21.7	0.173	3 762	4.1	0.141	581	25.9	0.168	4 343

The Tshepong operations are located in the Free State Province, near Welkom, about 250km from Johannesburg. The Tshepong operations includes the Tshepong and Phakisa mining sections. The close proximity of these sections allowed for this integration, which has resulted in the use of excess hoisting capacity 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 600m to 2 600m. Tshepong uses conventional undercut mining and Phakisa primarily uses conventional open mining of the Basal Reef. The B Reef is exploited as a high-grade secondary reef. Ore mined is processed at the Harmony One plant.

Sadly, two fatalities occurred in FY18.

In FY18, the Tshepong operations was the group's second highest contributor to cash flow. Improved production was boosted by increased volumes and higher grades achieved in the first half of the year due to disciplined mining, especially from Phakisa North and the Tshepong decline.

Gold production increased by 6% to 9 394kg (302 026oz) in FY18, primarily due to a 5% increase in underground recovered grade to 5.47g/t (0.160oz/t). Ore milled increased by 1% to 1 716 000 tonnes (1 893 000 tons). The average rand gold price received remained flat at R577 058/kg (FY17:R574 165/kg) (In dollar terms the gold price received increased by 6% mainly due to the strengthening of the Rand/US\$ exchange rate in FY18). Revenue increased year on year to R5 389 million (13% increase to US\$419 million).

Cash operating costs were well contained and increased by only 4% to R3 829 million (increased by 10% to US\$298 million).

Capital expenditure increased by 41% to R1 008 million (increased by 50% to US\$78 million). Capital increased due to higher ongoing development at Phakisa and expenditure related to the Tshepong Sub-71 (nearing completion) and Sub-75 decline projects and ventilation upgrades for purposes of supporting the integration. The optimisation project to support the integration began in FY18. Construction of pump station and refrigeration plant on 66 level will continue in FY19. The Alimak (a mechanical platform used for vertical development) access development was completed in the fourth quarter of the year and the Alimak hole development is scheduled for completion in FY19.

Key deliverables in FY19 will be improving safety performance, reducing costs in all disciplines, adhering to maintenance schedules, quality mining and focusing on the development section in order to sustainably create face length.

# OPERATIONS 2018 CONTINUED

## Moab Khotsonq

		FY18*
<b>Number of employees</b>		
– Permanent		5 804
– Contractors		1 014
Total		6 818
<b>Operational</b>		
Volumes milled	(000t) (metric)	327
	(000t) (imperial)	360
Gold produced	(kg)	3 296
	(oz)	105 969
Gold sold		3 165
		101 757
Grade	(g/t)	10.08
	(oz/t)	0.294
Productivity	(g/TEC)	135.17
<b>Development results</b>		
Total metres		9 527
Reef metres		1 328
Capital metres		380
<b>Financial</b>		
Revenue	(Rm)	1 672
	(US\$m)	130
Average gold price received	(R/kg)	528 387
	(US\$/oz)	1 279
Cash operating cost	(Rm)	1 037
	(US\$m)	81
Production profit	(Rm)	720
	(US\$m)	56
Capital expenditure	(Rm)	173
	(US\$m)	13
Cash operating cost	(R/kg)	314 526
	(US\$/oz)	761
All-in sustaining cost	(R/kg)	420 286
	(US\$/oz)	1 017
<b>Safety</b>		
Number of fatalities		1
Lost-time injury frequency rate per million hours worked		11.18
<b>Environment</b>		
Electricity consumption	(GWh)	114
Water consumption – primary activities	(ML)	1 702
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	110
Intensity data per tonne treated		
– energy		0.35
– water		5.20
– greenhouse gas emissions		0.35
Number of reportable environmental incidents		
<b>Community</b>		
Local economic development	(Rm)	7
Training and development	(Rm)	13

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

## Moab Khotsong *continued*

### Other salient features

Status of operation	Steady state operation: development continues
Life of mine	7 years
Nameplate hoisting capacity (per month)	160 000 tonnes (176 000 tons)
Compliance and certification	New order mining right

### Mineral reserves as at 30 June 2018

	Proved reserves			Probable reserves			Total mineral reserves		
Reserves (metric)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	2.5	10.32	25	2.6	9.50	25	5.1	9.90	50
Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	2.7	0.301	815	2.9	0.277	800	5.6	0.289	1 615

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 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.

The acquisition of Moab Khotsong meets Harmony's strategic objective of increasing the quality of its asset portfolio and increasing margins. Moab Khotsong is a high-grade, cash-generative operation that has already had a positive impact on Harmony's FY18 performance since its incorporation on 1 March 2018.

Moab Khotsong processed 327 000 tonnes (360 000 tons), producing 3 296kg (105 969oz) at a recovered grade of 10.08g/t (0.294oz/t) which resulted in a production profit of R720 million (US\$56 million) in the four months from March 2018 to June 2018.

The integration of Moab Khotsong included the transfer of Harmony's existing accounting and payroll systems. This had been successfully completed by the end of FY18.

Management is focused on optimising costs and efficiencies to further enhance the performance of Moab Khotsong.

Studies to optimise the performance by potentially mining the Great Noligwa shaft pillar and remnant pillars are underway as well as is a study on the Zaaiplaats project. The outcomes of these studies will determine if these potential projects will be progressed.

FY19 production and grade guidance is 248 000oz and 9.49g/t respectively.



# OPERATIONS 2018 CONTINUED

## Bambanani

		FY18	FY17	FY16
<b>Number of employees</b>				
– Permanent		1 568	1 464	1 491
– Contractors		163	205	321
Total		1 137	1 669	1 812
<b>Operational</b>				
Volumes milled	(000t) (metric)	233	231	232
	(000t) (imperial)	257	254	256
Gold produced	(kg)	2 821	2 750	3 013
	(oz)	90 698	88 415	96 870
Gold sold	(kg)	2 804	2 745	3 015
	(oz)	90 151	88 253	96 934
Grade	(g/t)	12.11	11.90	12.99
	(oz/t)	0.353	0.348	0.378
Productivity	(g/TEC)	150.60	148.42	156.54
<b>Development results</b>				
Total metres		1 495	1 591	1 743
Reef metres		0	130	105
Capital metres		0	0	0
<b>Financial</b>				
Revenue	(Rm)	1 616	1 576	1 617
	(US\$m)	126	116	112
Average gold price received	(R/kg)	576 398	574 227	536 410
	(US\$/oz)	1 395	1 314	1 151
Cash operating cost	(Rm)	905	874	808
	(US\$m)	70	64	56
Production profit	(Rm)	720	705	806
	(US\$m)	56	52	56
Capital expenditure	(Rm)	64	77	106
	(US\$m)	5	6	7
Cash operating cost	(R/kg)	320 724	317 833	268 305
	(US\$/oz)	776	727	576
All-in sustaining cost	(R/kg)	360 462	357 025	304 634
	(US\$/oz)	873	817	654
<b>Safety</b>				
Number of fatalities		1	1	0
Lost-time injury frequency rate per million hours worked		2.43	5.23	3.59
<b>Environment</b>				
Electricity consumption	(GWh)	145	143	140
Water consumption – primary activities	(ML)	1 527	1 200	1 434
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	141	141	142
Intensity data per tonne treated				
– energy		0.62	0.64	0.60
– water		6.60	5.19	6.18
– greenhouse gas emissions		0.62	0.64	0.60
Number of reportable environmental incidents		0	0	0
<b>Community</b>				
Local economic development	(Rm)	11	14	9
Training and development	(Rm)	25	20	25

## Bambanani *continued*

### Other salient features

Status of operation	Mature operation with focus on mining of the shaft pillar for the next few years after which it will be at the end of its operating life
Life of mine	5 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 reserves as at 30 June 2018

	Proved reserves			Probable reserves			Total mineral reserves		
Reserves (metric)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	1.0	12.08	12	–	–	–	1.0	12.08	12
Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	1.1	0.352	386	–	–	–	1.1	0.352	386

Bambanani, located in the Free State Province, near Welkom and about 260km from Johannesburg, has two surface shafts (the East and West shafts). Mining is conducted to a depth of 2 365m. Activities at the mine focus on the Basal Reef and are limited to shaft pillar extraction. 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.

Regrettably, one fatality occurred at Bambanani in FY18. Focus on safety and fatal risk management remains critical for this operation.

Bambanani is Harmony's most profitable mine. Gold production increased by 3% to 2 821kg (90 698oz) in FY18. This was primarily due to the increase in recovered grade by 2% to 12.11g/t. Volumes milled remained flat year on year at 233 000 tonnes (257 000 tons) in FY18.

Revenue was up by 3% to R1 616 million (9% increase to US\$126 million) mainly due to higher production in FY18.

Cash operating costs increased by 4% to R905 million (or 9% to US\$70 million), mainly due to the increase in annual wages and electricity tariffs.

Capital expenditure decreased by 17% to R64 million (a decrease of 17% to US\$5 million). The decrease was due to reduced capital spending as the Bambanani shaft pillar major capital project was completed at the end of FY17.

The operation is performing well. Safety and disciplined mining are key to its success.

# OPERATIONS 2018 CONTINUED

## Target 1

		FY18	FY17	FY16
<b>Number of employees</b>				
– Permanent		1 663	1 689	1 653
– Contractors		284	222	272
Total		1 947	1 911	1 925
<b>Operational</b>				
Volumes milled	(000t) (metric)	680	745	739
	(000t) (imperial)	749	822	814
Gold produced	(kg)	2 854	2 669	3 387
	(oz)	91 758	85 809	108 895
Gold sold	(kg)	2 828	2 642	3 419
	(oz)	90 922	84 942	109 923
Grade	(g/t)	4.20	3.58	4.58
	(oz/t)	0.123	0.104	0.134
Productivity	(g/TEC)	146.90	126.66	155.77
<b>Development results</b>				
Total metres		3 883	3 656	3 459
Reef metres		431	104	182
Capital metres		620	0	0
<b>Financial</b>				
Revenue	(Rm)	1 630	1 506	1 833
	(US\$m)	127	111	126
Average gold price received	(R/kg)	576 316	570 091	536 196
	(US\$/oz)	1 395	1 304	1 150
Cash operating cost	(Rm)	1 334	1 356	1 242
	(US\$m)	104	100	86
Production profit	(Rm)	312	161	583
	(US\$m)	24	12	40
Capital expenditure	(Rm)	309	324	322
	(US\$m)	24	24	22
Cash operating cost	(R/kg)	467 271	508 082	366 814
	(US\$/oz)	1 131	1 162	787
All-in sustaining cost	(R/kg)	582 200	651 833	471 876
	(US\$/oz)	1 409	1 491	1 012
<b>Safety</b>				
Number of fatalities		1	0	2
Lost-time injury frequency rate per million hours worked		10.18	11.80	4.91
<b>Environment</b>				
Electricity consumption	(GWh)	187	186	247
Water consumption – primary activities	(ML)	553	678	808
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	189	184	251
Intensity data per tonne treated				
– energy		0.23	0.25	0.33
– water		0.81	0.91	1.09
– greenhouse gas emissions		0.27	0.25	0.33
Number of reportable environmental incidents		0	0	0

## Target 1 *continued*

<b>Community</b>				
Local economic development	(Rm)	4	5	4
Training and development	(Rm)	41	36	34
<b>Other salient features</b>				
Status of operation	Recapitalisation of operation currently being evaluated.			
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 reserves as at 30 June 2018

	Proved reserves			Probable reserves			Total mineral reserves		
Reserves (metric)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	3.2	4.32	14	2.0	4.29	9	5.2	4.31	23
Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	3.5	0.126	442	2.3	0.125	282	5.8	0.126	724

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 945m. 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 processed at the Target plant. The gold mineralisation currently exploited at Target 1 is contained within a succession of Elsburg and Dreyerskuil quartz pebble conglomerate reefs.

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. Future success will depend on the availability of trackless mining equipment and performance regarding volumes and grade.

Sadly, Target 1 reported one fatality in FY18.

The production performance in FY18 improved after production in FY17 was severely affected by unstable ground conditions which hampered further mining in the higher grade areas. Narrow reef mining of lower grade areas had been implemented to access the ore.

Gold production increased by 7% to 2 854kg (91 758oz) in FY18 as a result of the 17% increase in the recovered grade to 4.20g/t (FY17: 3.58g/t). Ore milled decreased by 9% to 680 000 tonnes (749 000 tons) due to the availability of higher grade areas in FY18.

Revenue increased by 8% to R1 630 million (14% increase to US\$127 million) as a result of the increase in the production delivered in FY18.

Cash operating costs were lower year on year by 2% to R1 334 million (4% increase to US\$104 million). Reduced volumes milled offset the increase in annual labour costs and electricity tariffs.

Capital expenditure decreased by 5% to R309 million (FY17: R324 million) (unchanged at US\$24 million). Recapitalisation of the mine is required to improve productivity and efficiencies (the crushing system is to be moved nearer to the working areas). Management is evaluating this capital project against other capital priorities and will decide on the way forward for Target 1 during FY19.

# OPERATIONS 2018 CONTINUED

## Doornkop

		FY18	FY17	FY16
<b>Number of employees</b>				
– Permanent		3 073	2 847	2 471
– Contractors		669	645	443
Total		3 742	3 492	2 914
<b>Operational</b>				
Volumes milled	(000t) (metric)	696	641	630
	(000t) (imperial)	767	706	695
Gold produced	(kg)	3 429	2 673	2 730
	(oz)	110 245	85 939	87 772
Gold sold	(kg)	3 404	2 712	2 712
	(oz)	109 440	87 193	87 193
Grade	(g/t)	4.93	4.17	4.33
	(oz/t)	0.144	0.122	0.126
Productivity	(g/TEC)	94.97	77.08	83.49
<b>Development results</b>				
Total metres		9 595	9 961	7 766
Reef metres		1 478	1 337	1 688
Capital metres		806	1 316	0
<b>Financial</b>				
Revenue	(Rm)	1 958	1 553	1 480
	(US\$m)	152	114	102
Average gold price received	(R/kg)	575 077	572 494	545 770
	(US\$/oz)	1 392	1 310	1 171
Cash operating cost	(Rm)	1 418	1 224	1 058
	(US\$m)	110	90	73
Production profit	(Rm)	547	312	433
	(US\$m)	43	23	30
Capital expenditure	(Rm)	274	243	208
	(US\$m)	21	18	14
Cash operating cost	(R/kg)	413 586	457 752	387 585
	(US\$/oz)	1 001	1 047	831
All-in sustaining cost	(R/kg)	508 065	562 907	473 562
	(US\$/oz)	1 230	1 288	1 016
<b>Safety</b>				
Number of fatalities		0	0	0
Lost-time injury frequency rate per million hours worked		6.78	7.50	12.27
<b>Environment</b>				
Electricity consumption	(GWh)	193	188	203
Water consumption – primary activities	(ML)	344 <sup>1</sup>	947	1 135
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	199	186	206
Intensity data per tonne treated				
– energy		0.28	0.30	0.32
– water		0.49	1.48	1.80
– greenhouse gas emissions		0.27	0.30	0.32
Number of reportable environmental incidents		0	0	0
<b>Community</b>				
Local economic development*	(Rm)	6	8	4
Training and development	(Rm)	47	42	30

\* Included in the total for FY16 is an amount of R1 million that was capitalised as part of the hostel upgrades (FY17: R0 million, FY18: R0 million)

<sup>1</sup> Year-on-year decrease due to the installation of the 5ML recycling plant.

## Doornkop *continued*

### Other salient features

Status of operation	Mining takes place on the South Reef at this single-shaft operation.
Life of mine	16 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 reserves as at 30 June 2018

	Proved reserves			Probable reserves			Total mineral reserves		
Reserves (metric)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	3.0	5.01	15	4.0	5.07	20	7.0	5.05	35
Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	3.3	0.146	480	4.4	0.148	648	7.7	0.147	1 129

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 1 978m. The operation focuses on narrow-reef conventional mining of the South Reef. Ore from the operation is processed at the Doornkop plant.

Doornkop delivered an excellent safety performance in FY18 and achieved 3 million fatality free shifts on 24 February 2018. There were no fatalities in FY18. The lost-time injury frequency rate improved by 9% to 6.78 per million hours worked in FY18 from 7.50 in FY17.

Gold production increased by 28% to 3 429kg (110 245oz) in FY18. A 9% increase in ore milled to 696 000 tonnes (767 000 tons) and an 18% increase in the recovered gold grade to 4.93g/t (0.144oz/t) resulted in the increased production. The improved performance was aided by the availability of mining areas, disciplined mining and improved efficiencies from the Doornkop Plant.

Revenue increased by 26% to R1 958 million (33% increase to US\$152 million) due to the excellent production performance in FY18.

Cash operating costs increased by 16% to R1 418 million (increased by 22% to US\$110 million) mainly as a results of increased production.

Capital expenditure increased by 13% to R274 million (increased by 17% to US\$21 million) owing to an increase in shaft capital development on the 207 and 212 levels. Planned capital expenditure for FY19 includes the construction of a second outlet following the planned closure of Sibanye-Stillwater's Cooke 1 operation and continuing construction and development of 207/212 levels.

The planned seismic survey was completed during FY17. The related 3D modelling completed for Doonkop results in a geological model that significantly improves the structure of the orebody. Focus on achieving planned development targets to enable the life of mine production build up and an increase in production areas to enhance mining flexibility will be key in FY19.

# OPERATIONS 2018 CONTINUED

## Joel

		FY18	FY17	FY16
<b>Number of employees</b>				
– Permanent		1 914	1 962	1 796
– Contractors		184	171	97
Total		2 098	2 133	1 893
<b>Operational</b>				
Volumes milled	(000t) (metric)	454	514	542
	(000t) (imperial)	501	567	597
Gold produced	(kg)	1 635	2 246	2 278
	(oz)	52 566	72 211	73 239
Gold sold	(kg)	1 656	2 280	2 245
	(oz)	53 242	73 303	72 179
Grade	(g/t)	3.60	4.37	4.20
	(oz/t)	0.105	0.127	0.123
Productivity	(g/TEC)	82.23	113.57	117.33
<b>Development results</b>				
Total metres		3 331	3 477	3 541
Reef metres		431	1 596	2 315
Capital metres		620	532	485
<b>Financial</b>				
Revenue	(Rm)	954	1 309	1 220
	(US\$m)	74	96	84
Average gold price received	(R/kg)	576 023	573 986	543 442
	(US\$/oz)	1 394	1 313	1 166
Cash operating cost	(Rm)	910	928	845
	(US\$m)	71	68	58
Production profit	(Rm)	34	373	389
	(US\$m)	3	27	27
Capital expenditure	(Rm)	250	243	215
	(US\$m)	19	18	15
Cash operating cost	(R/kg)	556 468	413 088	371 080
	(US\$/oz)	1 347	945	796
All-in sustaining cost	(R/kg)	661 921	477 484	424 617
	(US\$/oz)	1 602	1 092	911
<b>Safety</b>				
Number of fatalities		2	1	1
Lost-time injury frequency rate per million hours worked		2.87	2.54	3.49
<b>Environment</b>				
Electricity consumption	(GWh)	81	85	108
Water consumption – primary activities	(ML)	788	922	816
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	79	84	109
Intensity data per tonne treated				
– energy		0.18	0.17	0.19
– water		1.74	1.79	1.50
– greenhouse gas emissions		0.18	0.16	0.19
Number of reportable environmental incidents		0	0	0
<b>Community</b>				
Local economic development	(Rm)	5	7	3
Training and development	(Rm)	23	20	15

**Joel** *continued***Other salient features**

Status of operation	Twin-shaft operation – technically challenging
Life of mine	9 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 reserves as at 30 June 2018**

	Proved reserves			Probable reserves			Total mineral reserves		
Reserves (metric)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	2.5	4.74	12	1.8	5.33	9	4.3	4.99	21
Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	2.8	0.138	381	2.0	0.156	305	4.7	0.145	686

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 conducted to a depth of 1 452m. Ore mined is processed at the Joel plant.

Regrettably, there were two fall-of-ground fatalities in FY18.

Progress was made in the 137 decline capital project and is scheduled to be completed by January 2019. The decline project was initiated to extend the life of Joel by approximately eight years and is included in the current life-of-mine plan.

Joel's performance in FY18 was impacted significantly by the unavailability of mining areas due to geological intrusions (Klippan intrusion). This resulted in the mining of lower grade areas while development of 137 level and the required ore passes is underway. Development will continue in FY19, following which grades are expected to improve in FY20.

Gold production decreased by 27% to 1 635kg (52 566oz) in FY18. Recovered gold grades decreased by 18% to 3.60g/t (0.105oz/t), and further impacted by the 12% decrease in ore milled to 454 000 tonnes (501 000 tons). The decrease in production resulted in a 27% decrease in revenue to R954 million (23% decrease to US\$74 million).

Cash operating costs decreased by 2% to R910 million (increased by 4% to US\$71 million) largely as a result of the decrease in tonnages mined, offsetting increases in wages and electricity tariffs.

Capital expenditure increased by 3% to R250 million (increased by 6% to US\$19 million), mainly as the 137 decline project nears completion.



# OPERATIONS 2018 CONTINUED

## Kusasaletu

		FY18	FY17	FY16
<b>Number of employees</b>				
– Permanent		3 980	4 050	3 944
– Contractors		692	538	539
Total		4 672	4 588	4 483
<b>Operational</b>				
Volumes milled	(000t) (metric)	670	607	668
	(000t) (imperial)	738	670	736
Gold produced	(kg)	4 429	4 394	3 863
	(oz)	142 395	141 270	124 198
Gold sold	(kg)	4 301	4 498	3 822
	(oz)	138 281	144 614	122 880
Grade	(g/t)	6.61	7.24	5.78
	(oz/t)	0.193	0.211	0.169
Productivity	(g/TEC)	91.54	89.05	77.80
<b>Development results</b>				
Total metres		4 016	5 101	7 183
Reef metres		776	1 185	1 517
Capital metres		0	0	0
<b>Financial</b>				
Revenue	(Rm)	2 483	2 575	2 078
	(US\$m)	193	189	143
Average gold price received	(R/kg)	577 313	572 376	543 633
	(US\$/oz)	1 397	1 309	1 166
Cash operating cost	(Rm)	2 091	2 019	1 848
	(US\$m)	163	148	127
Production profit	(Rm)	457	494	262
	(US\$m)	35	36	18
Capital expenditure	(Rm)	289	289	360
	(US\$m)	22	21	25
Cash operating cost	(R/kg)	472 177	459 422	478 277
	(US\$/oz)	1 143	1 051	1 026
All-in sustaining cost	(R/kg)	554 302	541 247	584 498
	(US\$/oz)	1 342	1 238	1 254
<b>Safety</b>				
Number of fatalities		5	0	2
Lost-time injury frequency rate per million hours worked		6.25	10.29	7.06
<b>Environment</b>				
Electricity consumption	(GWh)	595	616	611
Water consumption – primary activities	(ML)	2 609	613	1 671
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	577	610	620
Intensity data per tonne treated				
– energy		0.9	1.01	0.91
– water		3.89	1.00	2.50
– greenhouse gas emissions		0.3	0.10	0.91
Number of reportable environmental incidents		2	3	1
<b>Community</b>				
Local economic development*	(Rm)	6	5	5
Training and development	(Rm)	33	45	26

## Kusasaletu *continued*

### Other salient features

Status of 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 reserves as at 30 June 2018

	Proved reserves			Probable reserves			Total mineral reserves		
Reserves (metric)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	3.7	7.26	27	0.6	5.34	3	4.3	7.00	30
Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	4.0	0.212	857	0.7	0.156	101	4.7	0.204	959

Kusasaletu is located about 90km from Johannesburg, near the provincial border of Gauteng and North West Province, in the West Witwatersrand Basin where it mines the Ventersdorp Contact Reef as its main 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, making it Harmony's deepest mine. Ore mined is treated at the Kusasaletu plant.

A seismic event triggered a fall-of-ground accident which led to five fatalities in August 2017. Management are still deeply saddened by this event. Safety standards and controls have been reviewed and new procedures and controls enforced to prevent such an event from recurring.

The recovered gold grade decreased by 9% to 6.61g/t (0.193oz/t) due to the unavailability of higher grade areas. The decrease in grade was offset by a 10% increase in the volume of ore milled to 670 000 tonnes (738 000 tons), resulting in the flat gold production performance year on year, increasing by 1% to 4 429kg (142 395oz).

The operation was impacted by illegal industrial action during November 2017. Management instituted disciplinary measures against the instigators and the AMCU branch leadership was dismissed. Employee and union relations after the illegal industrial action have been stable and calm has been restored.

Revenue decreased by 4% to R2 483 million in FY18 (increased by 2% to US\$193 million) as a result of the 4% decrease in gold sold to 4 301kg (138 281oz).

Cash operating costs increased by 4% to R2 091 million (10% to US\$163 million) mainly due to wage increases and higher electricity tariffs.

Capital expenditure of R289 million recorded in FY18 and FY17 (5% increase to US\$22 million due to the strengthening of the rand against the dollar by 6% to R12.85/US\$ in FY18).

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

# OPERATIONS 2018 CONTINUED

## Masimong

		FY18	FY17	FY16
<b>Number of employees</b>				
– Permanent		2 432	2 437	2 478
– Contractors		108	107	112
Total		2 540	2 544	2 590
<b>Operational</b>				
Volumes milled	(000t) (metric)	647	640	650
	(000t) (imperial)	714	706	716
Gold produced	(kg)	2 623	2 538	2 432
	(oz)	84 332	81 599	78 190
Gold sold	(kg)	2 609	2 539	2 432
	(oz)	83 882	81 631	78 191
Grade	(g/t)	4.05	3.97	3.74
	(oz/t)	0.118	0.116	0.109
Productivity	(g/TEC)	92.82	89.73	83.85
<b>Development results</b>				
Total metres		5 287	4 754	4 755
Reef metres		2 067	1 054	1 549
<b>Financial</b>				
Revenue	(Rm)	1 505	1 452	1 318
	(US\$m)	117	107	91
Average gold price received	(R/kg)	576 729	571 870	541 806
	(US\$/oz)	1 396	1 308	1 162
Cash operating cost	(Rm)	1 161	1 115	1 038
	(US\$m)	90	82	72
Production profit	(Rm)	351	339	280
	(US\$m)	27	25	19
Capital expenditure	(Rm)	129	119	110
	(US\$m)	10	9	8
Cash operating cost	(R/kg)	442 586	439 457	426 904
	(US\$/oz)	1 071	1 005	916
All-in sustaining cost	(R/kg)	513 197	500 938	493 527
	(US\$/oz)	1 242	1 146	1 059
<b>Safety</b>				
Number of fatalities		1	1	2
Lost-time injury frequency rate per million hours worked		8.61	10.54	10.05
<b>Environment</b>				
Electricity consumption	(GWh)	173	170	172
Water consumption – primary activities	(ML)	824	825	715
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	167	169	175
Intensity data per tonne treated				
– energy		0.27	0.27	0.26
– water		1.27	1.29	1.10
– greenhouse gas emissions		0.27	0.27	0.26
Number of reportable environmental incidents		0	0	0
<b>Community</b>				
Local economic development	(Rm)	6	7	6
Training and development	(Rm)	27	23	22

## Masimong *continued*

### Other salient features

Status of operation	Mature, single shaft operation nearing the end of its life of mine
Life of mine	3 years
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 reserves as at 30 June 2018

	Proved reserves			Probable reserves			Total mineral reserves		
Reserves (metric)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	1.7	4.28	7	0.1	3.42	0	1.8	4.23	8
Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	1.9	0.125	234	0.1	0.100	13	2.0	0.123	246

Masimong is located in the Free State Province, near Welkom, about 260km from Johannesburg. 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 secondary B Reef. Mining is conducted to a depth of 2 050m. Ore mined is processed at the Harmony One plant.

Sadly, there was one fatality at Masimong in FY18.

Masimong once again delivered a good performance in FY18. The operation continues to focus on accessing higher grade B Reef areas. The recovered grade increased by 2% to 4.05g/t (0.118oz/t). Ore milled increased by 1% to 647 000 tonnes (714 000 tons). Gold produced increased by 3% to 2 623kg (84 332oz).

The increase in gold production contributed to a 4% increase in revenue to R1 505 million (9% increase to US\$117 million, due to increased production and the strengthening of the average rand/US dollar exchange rate by 6% from R13.60 in FY17 to R12.85 in FY18).

Cash operating costs increased by 4% to R1 161 million (10% increase to US\$90 million) mainly due to higher volumes produced and wage increases. Capital expenditure increased by 8% to R129 million (increased by 14% to US\$10 million). Capital was spent mainly on ongoing development.

Exploration for higher grade B Reef areas will continue in FY19.

# OPERATIONS 2018 CONTINUED

## Unisel

		FY18	FY17	FY16
<b>Number of employees</b>				
– Permanent		1 016	1 839	1 817
– Contractors		80	152	128
Total		1 096	1 991	1 945
<b>Operational</b>				
Volumes milled	(000t) (metric)	376	394	424
	(000t) (imperial)	415	436	467
Gold produced	(kg)	1 280	1 595	1 704
	(oz)	41 152	51 280	54 785
Gold sold	(kg)	1 272	1 590	1 705
	(oz)	40 896	51 120	54 817
Grade	(g/t)	3.40	4.05	4.02
	(oz/t)	0.099	0.118	0.117
Productivity	(g/TEC)	70.04	73.56	77.43
<b>Development results</b>				
Total metres		2 921	3 647	3 145
Reef metres		1 325	1 575	1 917
Capital metres		1 028	0	0
<b>Financial</b>				
Revenue	(Rm)	733	915	925
	(US\$m)	57	67	64
Average gold price received	(R/kg)	576 222	575 650	542 487
	(US\$/oz)	1 395	1 317	1 164
Cash operating cost	(Rm)	774	839	754
	(US\$m)	60	62	52
Production profit/(loss)	(Rm)	(38)	77	171
	(US\$m)	(3)	6	12
Capital expenditure	(Rm)	85	78	62
	(US\$m)	7	6	4
Cash operating cost	(R/kg)	604 311	525 732	442 359
	(US\$/oz)	1 463	1 203	949
All-in sustaining cost	(R/kg)	678 436	591 913	496 099
	(US\$/oz)	1 642	1 354	1 064
<b>Safety</b>				
Number of fatalities		0	0	0
Lost-time injury frequency rate per million hours worked		10.86	13.57	9.61
<b>Environment</b>				
Electricity consumption	(GWh)	99	112	112
Water consumption – primary activities	(ML)	488	441	563
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	96	112	113
Intensity data per tonne treated				
– energy		0.26	0.28	0.26
– water		1.30	1.12	1.33
– greenhouse gas emissions		0.26	0.28	0.26
Number of reportable environmental incidents		0	0	0
<b>Community</b>				
Local economic development*	(Rm)	5	5	4
Training and development	(Rm)	19	24	23

## 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	2 years
Nameplate hoisting capacity (per month)	63 000 tonnes (69 000 tons)
Compliance and certification	New order mining right – December 2007 ISO 9001

### Mineral reserves as at 30 June 2018

	Proved reserves			Probable reserves			Total mineral reserves		
Reserves (metric)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	0.3	4.89	1	0.1	5.69	0	0.3	5.02	2
Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	0.3	0.143	43	0.1	0.166	10	0.4	0.146	53

Unisel is located in the Free State Province, near Virginia, about 270km from Johannesburg. Mining is conducted to a depth of 2 153m 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 an estimated two years. 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.

In FY18, Unisel recorded its third consecutive year without a fatality.

Gold production declined by 20% to 1 280kg (41 152oz) in FY18 due to the 16% decrease in underground recovered grade to 3.40g/t (0.099oz/t) and 5% decrease in ore milled to 376 000 tonnes (415 000 tons). The decrease in gold production resulted in a 20% decrease in revenue to R733 million (15% decrease to US\$57 million).

Cash operating costs decreased by 8% to R774 million (decreased by 3% to US\$60 million), mainly due to lower volumes milled following the decision to stop mining of the Leader Reef.

Capital expenditure increased by 9% to R85 million (increased by 17% to US\$7 million) mainly due to capital spent on preparing sections of the pillar to be mined over Unisel's remaining life of mine.

# OPERATIONS 2018 CONTINUED

## SOUTH AFRICA – SURFACE OPERATIONS

### Kalgold

		FY18	FY17	FY16
<b>Number of employees</b>				
– Permanent		237	241	235
– Contractors		334	395	377
Total		571	636	612
<b>Operational</b>				
Volumes milled	(000t) (metric)	1 550	1 506	1 479
	(000t) (imperial)	1 709	1 660	1 630
Gold produced	(kg)	1 250	1 205	1 103
	(oz)	40 189	38 742	35 463
Gold sold	(kg)	1 231	1 213	1 086
	(oz)	39 577	38 999	34 916
Grade	(g/t)	0.81	0.80	0.75
	(oz/t)	0.024	0.023	0.022
Productivity	(g/TEC)	147.96	123.82	116.79
<b>Financial</b>				
Revenue	(Rm)	710	695	595
	(US\$m)	55	51	41
Average gold price received	(R/kg)	576 630	573 010	548 072
	(US\$/oz)	1 396	1 311	1 176
Cash operating cost	(Rm)	565	557	548
	(US\$m)	44	41	38
Production profit	(Rm)	157	131	55
	(US\$m)	12	10	4
Capital expenditure	(Rm)	108	96	39
	(US\$m)	8	7	3
Cash operating cost	(R/kg)	452 365	462 037	496 991
	(US\$/oz)	1 095	1 057	1 066
All-in sustaining cost	(R/kg)	552 032	558 731	549 590
	(US\$/oz)	1 336	1 278	1 179
<b>Safety</b>				
Number of fatalities		0	0	0
Lost-time injury frequency rate per million hours worked		0	2.19	0
<b>Environment</b>				
Electricity consumption	(GWh)	53	54	49
Water consumption – primary activities	(ML)	324	392	375
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	51	53	50
Intensity data per tonne treated				
– energy		0.03	0.04	0.03
– water		0.21	0.26	0.25
– greenhouse gas emissions		0.03	0.36	0.03
Number of reportable environmental incidents		0	0	0
<b>Community</b>				
Local economic development	(Rm)	3	2	2
Training and development	(Rm)	6	7	5

**Other salient features**

Status of operation	Open-pit mining operation
Life of mine	15 years
Compliance and certification	New order mining right – August 2008 ISO 14001 ISO 9001

**Mineral reserves as at 30 June 2018**

	Proved reserves			Probable reserves			Total mineral reserves		
Reserves (metric)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	9.4	0.95	9	11.8	1.05	12	21.1	1.01	21
Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	10.3	0.028	286	13.0	0.031	397	23.3	0.029	683

Kalgold is an open-pit 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 a carbon-in-leach plant located at Kalgold.

Kalgold maintained its fatality-free record in FY18.

Gold production improved by 4% to 1 250kg (40 189oz), which was mainly due to an increase in ore milled by 3% to 1 550 000 tonnes (1 709 000 tons) and 1% increase in the recovered grade to 0.806g/t (0.024oz/t). Revenue increased by 2% to R710 million (an 8% increase to US\$55 million) as a result of increased production.

Cash operating costs increased by 1% to R565 million (7% increase to US\$44 million).

Capital expenditure increased by 13% to R108 million (increased by 14% to US\$8 million), mainly due to the R98 million (US\$7.6 million) capitalisation of stripping activities resulting from the A-Zone pit and Watertank pit merger.



# OPERATIONS 2018 CONTINUED

## Phoenix (tailings retreatment)

		FY18	FY17	FY16
<b>Number of employees</b>				
– Permanent		87	82	82
– Contractors		252	261	296
Total		349	343	378
<b>Operational</b>				
Volumes milled	(000t) (metric)	5 962	6 729	6 465
	(000t) (imperial)	6 575	7 420	7 129
Gold produced	(kg)	737	918	804
	(oz)	23 695	29 515	25 849
Gold sold	(kg)	739	932	788
	(oz)	23 759	29 964	25 335
Grade	(g/t)	0.124	0.136	0.124
	(oz/t)	0.004	0.004	0.004
Productivity	(g/TEC)	183.88	187.96	177.72
<b>Financial</b>				
Revenue	(Rm)	397	512	429
	(US\$m)	31	38	30
Average gold price received	(R/kg)	537 547	549 777	544 390
	(US\$/oz)	1 301	1 258	1 168
Cash operating cost	(Rm)	326	364	320
	(US\$m)	25	27	22
Production profit	(Rm)	71	140	117
	(US\$m)	5	10	8
Capital expenditure	(Rm)	3	5	5
	(US\$m)	–	–	–
Cash operating cost	(R/kg)	442 526	396 486	398 122
	(US\$/oz)	1 071	907	854
All-in sustaining cost	(R/kg)	446 268	404 685	403 907
	(US\$/oz)	1 080	926	866
<b>Safety</b>				
Number of fatalities		0	0	0
Lost-time injury frequency rate per million hours worked		0	0	2.06
<b>Environment</b>				
Electricity consumption	(GWh)	41	42	40
Water consumption – primary activities	(ML)	260	249	267
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	40	42	41
Intensity data per tonne treated				
– energy		0.007	0.006	0.006
– water		0.04	0.04	0.04
– greenhouse gas emissions		0.007	0.006	0.006
Number of reportable environmental incidents		0	0	0

**Phoenix (tailings retreatment)** *continued***Other salient features**

Status of operation	Retreatment of tailings
Life of mine	12 years

**Mineral reserves as at 30 June 2018**

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)
	62.7	0.29	18	–	–	–	62.7	0.29	18
Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	69.1	0.008	575	–	–	–	69.1	0.008	575

Phoenix, a tailings retreatment operation situated in Virginia in the Free State Province, 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 operations to black economic empowerment owners.

Phoenix's operational performance in FY18 was impacted by lower volumes processed and lower recoveries. Recovery grades are expected to improve in FY19.

Year-on-year, gold production decreased by 20% to 737kg (23 695oz), mainly as a result of a 9% decrease in the recovered grade to 0.124g/t (0.004oz/t), and an 11% reduction in volumes processed to 5 962 000 tonnes (6 575 000 tons).

The 2% decrease in the average rand gold price received and decrease in gold production, resulted in a 22% decrease in revenue to R397 million (decrease of 18% to US\$31 million). Cash operating costs decreased by 10% to R326 million (decreased by 7% to US\$25 million) due to the lower volumes processed in FY18.

Operational success depends on maintaining plant efficiency and reducing pump and pipe failures (adequate spillage control). Grade variability and the theft of pipelines and electrical cables are the main risks being managed at Phoenix. Security has been increased in an effort to halt the endemic theft of piping and cables that can affect the integrity of operations.

# OPERATIONS 2018 CONTINUED

## Central Plant Reclamation (tailings retreatment)

		FY18	FY17
<b>Number of employees</b>			
– Permanent		100	114
– Contractors		182	68
Total		282	182
<b>Operational</b>			
Volumes milled	(000t) (metric)	3 810	–
	(000t) (imperial)	4 201	–
Gold produced	(kg)	502	–
	(oz)	16 139	–
Gold sold		508	
		16 333	
Grade	(g/t)	0.132	–
	(oz/t)	0.004	–
Productivity	(g/TEC)	261.72	
<b>Financial</b>			
Revenue	(Rm)	293	–
	(US\$m)	23	–
Average gold price received	(R/kg)	576 829	
	(US\$/oz)	1 396	–
Cash operating cost	(Rm)	191	–
	(US\$m)	15	–
Production profit	(Rm)	98	–
	(US\$m)	8	–
Capital expenditure	(Rm)	22	156
	(US\$m)	2	11
Cash operating cost	(R/kg)	381 131	–
	(US\$/oz)	923	–
All-in sustaining cost	(R/kg)	420 016	–
	(US\$/oz)	1 017	–
<b>Safety</b>			
Number of fatalities		0	1
Lost-time injury frequency rate per million hours worked		0	12.51
<b>Environment</b>			
Electricity consumption	(GWh)	24	*
Water consumption – primary activities	(ML)	180	*
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	0.04	*
Intensity data per tonne treated			
– energy		0.006	*
– water		0.05	*
– greenhouse gas emissions		0.006	*
Number of reportable environmental incidents		1	*

\* Reported as part of waste rock dumps prior to conversion of Central Plant as a tailings retreatment operation, which commenced operations in FY18.

## Central Plant Reclamation (tailings retreatment) *continued*

### Other salient features

Status of operation	Retreatment of tailings
Life of mine	18 years

### Mineral reserves as at 30 June 2018

	Proved reserves			Probable reserves			Total mineral reserves		
Reserves (metric)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	–	–	–	64.6	0.27	17	64.6	0.27	17
Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	–	–	–	71.2	0.008	552	71.2	0.008	552

Central Plant Reclamation, a tailings retreatment operation situated near Welkom in the Free State, began production in July 2018. Central Plant, which previously processed waste rock dumps, was converted into a tailings retreatment operation during FY17.

Central Plant's inaugural annual performance was very successful. The operation processed 3.8 million tonnes and produced 502kg (16 139oz), at an all-in sustaining cost of R420 016/kg (US\$1 017/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 on time and below budget.

Focus at the Central Plant is on improving plant efficiencies for optimal gold recovery. Increased security measures have been implemented to combat vandalism and theft, the main risks encountered.

# OPERATIONS 2018 CONTINUED

## Waste rock dumps

		FY18	FY17	FY16
<b>Operational</b>				
Volumes milled	(000t) (metric)	2 821	2 810	3 041
	(000t) (imperial)	3 110	3 099	3 353
Gold produced	(kg)	1 081	1 055	1 065
	(oz)	34 755	33 918	34 241
Grade	(g/t)	0.383	0.375	0.350
	(oz/t)	0.011	0.011	0.010
<b>Financial</b>				
Revenue	(Rm)	610	609	577
	(US\$m)	47	45	40
Average gold price received	(R/kg)	567 737	572 172	544 996
	(US\$/oz)	1 374	1 309	1 169
Cash operating cost	(Rm)	450	459	427
	(US\$m)	35	34	29
Production profit	(Rm)	164	142	158
	(US\$m)	13	10	11
Capital expenditure	(Rm)	3	7	18
	(US\$m)	–	1	1
Cash operating cost	(R/kg)	415 993	434 715	401 033
	(US\$/oz)	1 007	995	860
All-in sustaining cost	(R/kg)	417 462	445 451	422 205
	(US\$/oz)	1 010	1 019	906
<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	66
Water consumption – primary activities	(ML)	*	234	394
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	*	51	67
Intensity data per tonne treated				
– energy		*	0.02	0.02
– water		*	0.08	0.12
– greenhouse gas emissions		*	0.02	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.

## 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 reserves as at 30 June 2018

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)	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

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, which in turn depends on the availability of underground ore delivered for milling. Waste and waste rock dump deliveries to Kusasalethu Plant (situated near the border of Gauteng and North West Province) supplement mining volumes in order to secure sufficient backfill to use as support in stoping areas. Waste rock dumps situated near Orkney and 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 the Gauteng province commenced 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.

Volumes milled, recovered grades and gold produced remained steady year on year. Production was boosted by the inclusion of Moab surface operations from 1 March 2018 and commencement of surface waste rock dump processing at the Doornkop Plant. Processing of ore and waste material received from Sibanye-Stillwater's Cooke operations, at Harmony's Doornkop plant was terminated in FY18.

# OPERATIONS 2018 CONTINUED

## PAPUA NEW GUINEA

### Hidden Valley

		FY18	FY17*	FY16*
<b>Number of employees</b>				
– Permanent		1 295	1 192	
– Contractors		790	881	
Total		2 085	2 073	1 1618
<b>Operational</b>				
Volumes milled	(000t) (metric)	2 499	2 889	1 729
	(000t) (imperial)	2 757	3 186	1 906
Gold produced <sup>2</sup>	(kg)	2 862	2 965	2 257
	(oz)	92 015	95 327	72 565
Gold sold <sup>2</sup>	(kg)	2 763	3 119	2 340
	(oz)	88 833	100 278	75 233
Grade	(g/t)	1.36	1.07	1.31
	(oz/t)	0.039	0.035	0.038
<b>Financial</b>				
Revenue	(Rm)	409	1 500	1 320
	(US\$m)	31	110	91
Average gold price received	(R/kg)	550 956	544 442	564 272
	(US\$/oz)	1 283	1 246	1 210
Cash operating cost	(Rm)	228	1 214	1 082
	(US\$m)	17	89	75
Production profit	(Rm)	175	186	108
	(US\$m)	14	14	7
Capital expenditure <sup>2</sup>	(Rm)	1 563	1 335	121
	(US\$m)	122	98	8
Cash operating cost	(R/kg)	287 028	466 847	479 196
	(US\$/oz)	669	1 068	1 028
All-in sustaining cost	(R/kg)	466 256	543 186	597 398
	(US\$/oz)	1 094	1 241	1 282
<b>Safety</b>				
Number of fatalities		0	0	1
Lost-time injury frequency rate per million hours worked		0	0.52	1.39
<b>Environment</b>				
Electricity consumption	(GWh)	59	53	54
Water consumption – primary activities	(ML)	1 359	1 309	715
Greenhouse gas emissions	(000t CO <sub>2</sub> e)	57	53	55
Intensity data per tonne treated				
– energy		0.02	0.02	0.03
– water		0.54	0.45	0.41
– greenhouse gas emissions		0.02	0.07	0.03
Number of reportable environmental incidents		0	0	0

\* The FY16 key statistics in the table above represent Harmony's 50% interest in the Hidden Valley mine and are not comparable to the FY17 or FY18 results. Following Harmony's acquisition of the remaining 50% of Hidden Valley in October 2016, Hidden Valley has been accounted for at 100% from the end of October 2016.

<sup>1</sup> Employees of the Hidden Valley joint venture

<sup>2</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), (FY16:nil). Revenue of R1 045 million (US\$85 million) and the associated costs were capitalised during FY18 (FY17: R195 million, US\$14 million).

## Hidden Valley *continued*

### Other salient features

Status of operation	Open-pit mining operation producing gold and silver. The pre-stripping of stage 5 commenced in October 2016. Commercial levels of production achieved in the June 2018 production month.
Life of mine	5 years
Compliance and certification	Mining lease approved by Papua New Guinea authorities

### Mineral reserves as at 30 June 2018 (including Hamata)

Gold	Proved reserves			Probable reserves			Total mineral reserves		
Reserves (metric)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
	1.9	0.92	2	23.8	1.63	39	25.7	1.58	41
Reserves (imperial)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
	2.1	0.027	57	26.3	0.048	1 250	28.4	0.046	1 306

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. Harmony increased its interest in Hidden Valley to 100% by acquiring the remaining 50% in October 2016 (FY17).

The major gold and silver deposits of the Morobe goldfield and Hidden Valley are hosted in the Wau Graben. Ore mined is treated at the Hidden Valley processing plant.

The acquisition of full ownership of Hidden Valley followed the decision to invest primarily in the further development of the Hidden Valley-Kaverioi stage 5 and 6 cutbacks. Excellent project delivery was demonstrated at Hidden Valley during the investment phase in the stage 5 and 6 cut backs, achieving an excellent safety performance, expenditure below budget and achieving commercial levels of production within schedule.

The safety performance at Hidden Valley over the investment phase was commendable – zero fatalities and lost-time injuries were achieved in FY18. There were no fatalities in FY17. A culture of zero harm, safety coaching and the use of critical control management are driving the safety performance at Hidden Valley.

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 the June 2018 month.

A planned major four-month plant and processing shutdown commenced in August 2017. 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 approximately 15 days ahead of schedule during November 2017.

The operational performance for FY18 and FY17 are not comparable due to the abovementioned plant shutdown.

Total capital expenditure increased by 17% in FY18 to R1 563 million (increased by 24% to US\$122 million).

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