HARMONY™

MINERAL RESOURCES AND MINERAL RESERVES 2017

Harmony Gold Mining Company Limited (Harmony), a gold mining and exploration company with 67 years of experience, has operations in South Africa – one of the world's best known gold mining regions – and in Papua New Guinea – one of the world's premier new copper-gold regions. At Harmony, we understand the impact that our company has on the lives of the people we employ, the communities that surround our mines and the environment, as well as the economic contribution that we make to the countries in which we operate.

KEY FEATURES

YEAR-ON-YEAR

FIFTH CONSECUTIVE ANNUAL INCREASE IN UNDERGROUND GRADE RECOVERED (FY17: 5.07g/t) (FY16: 5.02g/t)

PRODUCTION GUIDANCE MET FOR SECOND CONSECUTIVE YEAR (FY17: 1.088Moz) (FY16: 1.082Moz)

NET DEBT REDUCED TO R887 million (US$68 million) (FY16: R1.08 billion, US$74 million)

HEDGING STRATEGY SECURES CASH MARGINS (FY17: R1.7 billion (US$126 million) realised)

HEADLINE EARNINGS PER SHARE UP 35%
298 SA CENTS (21 US cents)
(FY16: 221 SA cents (15 US cents))

TOTAL DIVIDEND DECLARED FOR THE YEAR OF 85 SA CENTS (7 US cents)

OUR 2017 REPORTS

Our suite of reports for the financial year 2017 (FY17) records our activities and the progress we have made for the year running from 1 July 2016 to 30 June 2017. The full suite of reports includes:

Integrated Annual Report 2017

Financial Report 2017

Mineral Resources and Mineral Reserves 2017

Report to Shareholders 2017

These reports are available as pdfs together with supporting information at *www.har.co.za*, our reporting website. More detailed information on the environmental, socio-economic and governance aspects of our business is also available at *www.harmony.co.za.*

OUR REPORTS ONLINE

Harmony's full set of 2017 reports and supporting documents are available at *www.har.co.za.*

The electronic reports are interactive pdfs, with links to sections within the document and to external websites. The interactive links are indicated by text in red italics.

REFERENCE

A full glossary of terms is available on the website, *www.har.co.za*

Throughout this report, "$" or "dollar" refers to US dollar, unless otherwise stated.

"K" refers to kina, the currency of Papua New Guinea.

"Moz" refers to million ounces and "Mt"refers to million tonnes.

All production volumes are in metric tonnes (t), unless specifically stated as imperial tons.


Hidden Valley plant


Tshepong


Masimong

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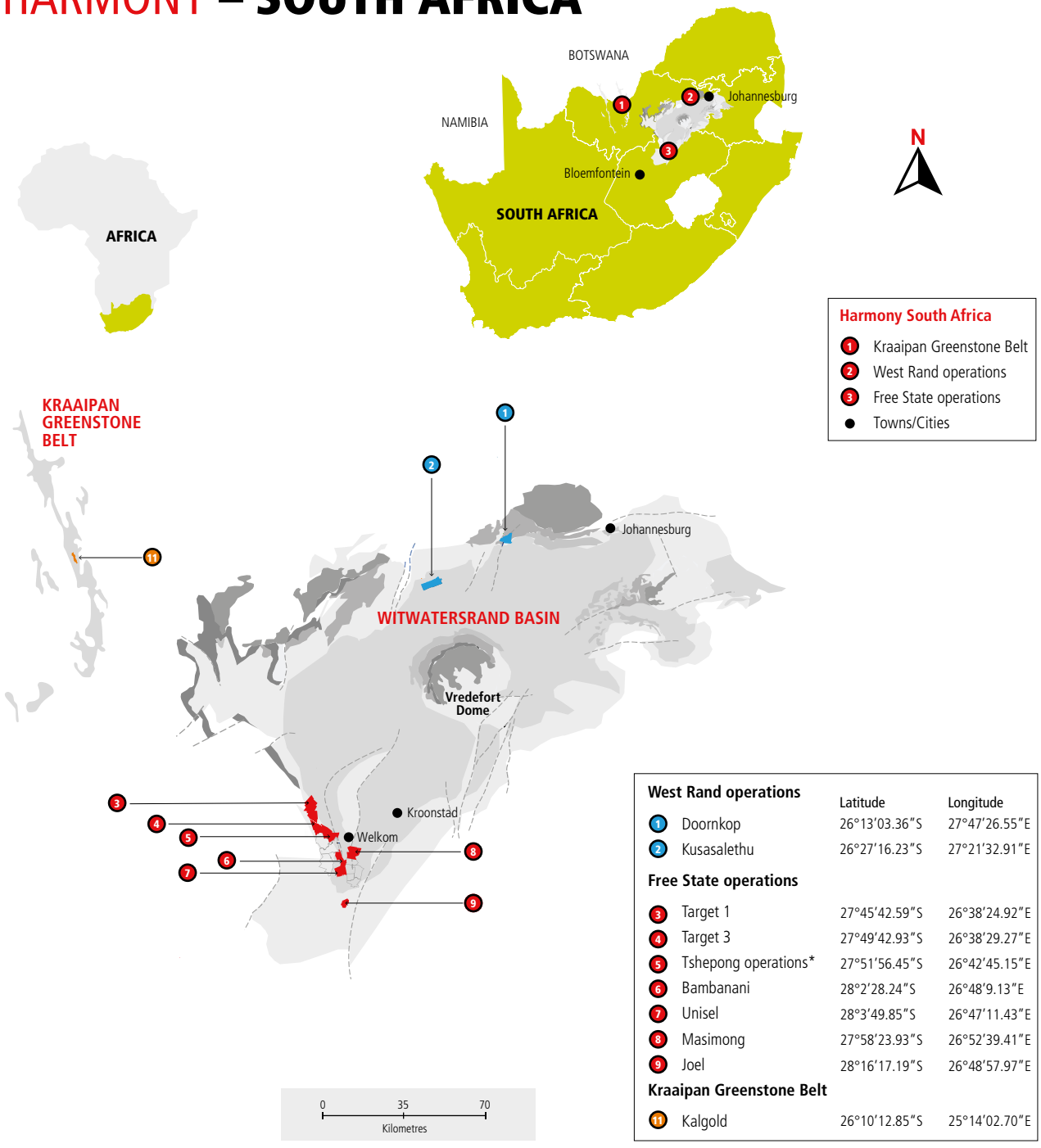
LOCATION OF OPERATIONS, PROJECTS AND EXPLORATION

HARMONY – SOUTH AFRICA



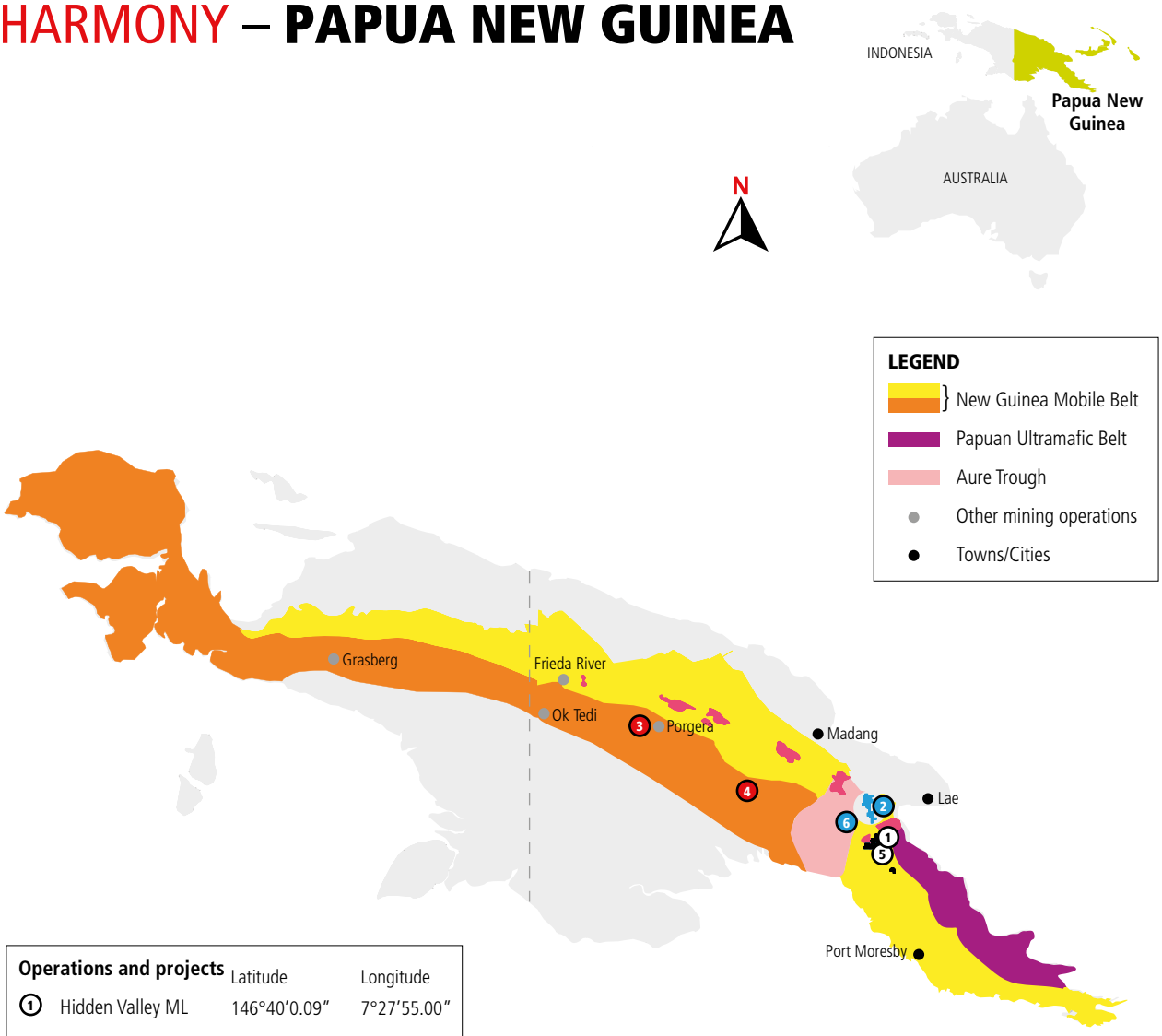
Projection: UTM Zone 36, Southern Hemisphere (WGS 84)

	Latitude	Longitude
West Rand operations		
1 Doornkop	26°13'03.36"S	27°47'26.55"E
2 Kusasalethu	26°27'16.23"S	27°21'32.91"E
Free State operations		
3 Target 1	27°45'42.59"S	26°38'24.92"E
4 Target 3	27°49'42.93"S	26°38'29.27"E
5 Tshepong operations*	27°51'56.45"S	26°42'45.15"E
6 Bambanani	28°2'28.24"S	26°48'9.13"E
7 Unisel	28°3'49.85"S	26°47'11.43"E
8 Masimong	27°58'23.93"S	26°52'39.41"E
9 Joel	28°16'17.19"S	26°48'57.97"E
Kraaipan Greenstone Belt		
11 Kalgold	26°10'12.85"S	25°14'02.70"E

** Tshepong operations is the combined Thsepong and Phakisa mining operation*

LOCATION OF OPERATIONS, PROJECTS AND EXPLORATION CONTINUED

HARMONY – PAPUA NEW GUINEA



Operations and projects		Latitude	Longitude
1	Hidden Valley ML	146°40'0.09"	7°27'55.00"
2	Wafi-Golpu project (50%)	146°27'59.43" 146°27'09.57"	6°51'35.23" 6°51'49.68"
Exploration			
3	Kili Teki	142° 42' 08"E	5° 23' 12"S
4	Poru	144° 17' 00"E	6° 22' 00"S
5	Hidden Valley district		
6	Morobe Exploration Joint Venture (50%)		

Harmony equity interest 100% unless otherwise indicated

Projection: UTM Zone 54, Southern Hemisphere (WGS 84)

COMPLIANCE AND SUMMARY

As at 30 June 2017

REPORTING CODE

Harmony's statement of mineral resources and mineral reserves as at 30 June 2017 is produced in accordance with the South African Code for the Reporting of Mineral Resources and Mineral Reserves (SAMREC) and the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC). It should be noted that mineral resources are reported inclusive of mineral reserves.

Harmony uses certain terms in the summary such as 'measured', 'indicated' and 'inferred' resources, which the United States' Securities and Exchange Commission guidelines strictly prohibit US-registered companies from including in their filings with the United States' Securities and Exchange Commission. United States investors are urged to consider the disclosure in this regard in our Form 20-F which is available on our website at https://www.harmony.co.za/investors/reporting/20f.

INTRODUCTION

Maintaining and growing our margins efficiently is essential to sustaining our business and meeting our strategic objectives. This includes delivering safely on our operational plans, reducing costs, improving productivity and maximising revenue. We are devoted to improving the company's operational performance.

Our values are entrenched in everything we do – safety, accountability, achievement, being connected and honest – and they inform our decisions and our actions. Realistic planning supports our strategy to optimise assets – our ore bodies, our infrastructure and our people. This will ensure safer, more profitable production. Our life of mine plans are prepared in line with this approach.

TOTAL MINERAL RESOURCES AND RESERVES

Harmony's total attributable gold equivalent mineral resource of 104.3Moz was declared as at 30 June 2017, a 0.9% decrease year on year from the 105.2Moz declared on 30 June 2016. Gold contained in the mineral resources at the South African operations represented 53.2% of Harmony's total, with the Papua New Guinea assets representing 46.8% of total gold and gold equivalent mineral resources as at 30 June 2017.

Harmony's total attributable gold and gold equivalent mineral reserves amounted to 36.7Moz of gold, a 0.5% decrease on the 36.9Moz declared at 30 June 2016. Gold reserve ounces at our South African operations accounted for 44.3% while the Papua New Guinea gold and gold equivalent ounces represented 55.7% of Harmony's total mineral reserves as at 30 June 2017.

South Africa

Underground operations

The company's mineral resources at the South African underground operations as at 30 June 2017 are 46.6Moz (159.4Mt at 9.10g/t), a decrease of 4.0% year on year from the 48.6Moz (162.1Mt at 9.32g/t) declared as at 30 June 2016. This decrease is mainly due to depletion. The company's mineral reserves at the South African underground operations as at 30 June 2017 are 9.1Moz (50.4Mt at 5.61g/t), a decrease of 5.9% year on year from the 9.7Moz (54.2Mt at 5.55g/t) declared as at 30 June 2016. The decrease is lower than normal depletion due to gains in reserves from Masimong, Doornkop and Kusasalethu.

Surface operations including Kalgold

Harmony's mineral resources at its South African surface operations as at 30 June 2017 were 8.8Moz (984.6Mt at 0.28g/t). Given an increase in reserves at Kalgold, Harmony's mineral reserves after normal depletion at its South African surface operations as at 30 June 2017 were 7.2Moz (827.8Mt at 0.27g/t), in line with the 7.1Moz (840.4Mt at 0.26g/t) declared at 30 June 2016.

Papua New Guinea

Operations

Mineral resources at our Papua New Guinea assets as at 30 June 2017 were 48.8Moz gold equivalent, an increase of 3.6% year on year from the 47.1Moz gold equivalent declared at 30 June 2016. This increase was mainly due to Harmony having acquired full ownership of Hidden Valley.

Mineral reserves at the Papua New Guinea assets as at 30 June 2017 were 20.5Moz, an increase of 1.5% on the 20.2Moz declared as at 30 June 2016.

INDEPENDENT REVIEW

Harmony's South African mineral resources and reserves at Joel, Target, Kalgold and the group statement were independently reviewed by The Mineral Corporation for compliance with SAMREC. The mineral resources of the Hidden Valley operation were independently reviewed by SRK Consulting Engineers and Scientists and those for Golpu were independently reviewed by AMC Consultants Pty Ltd for compliance with the standards set out in JORC.

EXPLORATION

Our exploration strategy is to target highly prospective underexplored terrains, pursue brownfields exploration targets close to existing infrastructure and thereby create value for shareholders by discovering large long-life bulk minable gold and copper-gold deposits and enhancing the profitability of our existing operations.

Key work streams underpinning the FY17 exploration programme include:

- brownfield exploration at Hidden Valley and Kalgold for high-grade satellite resources to leverage existing open pit operations and extend mine life
- brownfield exploration at our underground operations in South Africa
- greenfield exploration to enhance Harmony's world-class portfolio of copper gold assets in Papua New Guinea

Papua New Guinea

Kili Teke

The Kili Teke copper-gold deposit is 100% owned by Harmony. It represents the first greenfield porphyry copper gold discovery in Papua New Guinea since the Golpu copper gold deposit, which was identified in 1990 and then materially expanded some 20 years later in 2010. Harmony's exploration team played an integral role in both discoveries.

Kili Teke is a prolific complex with multiple mineralised intrusive events. Field work at the Kili Teke deposit has been scaled back in order to fully model the drilling results and undertake pre-concept study work to inform the next phase of follow-up drilling.

COMPLIANCE AND SUMMARY CONTINUED

As at 30 June 2017

South Africa

B-Reef

There is significant potential on the B Reef which is currently being mined as a high-grade secondary reef to the Basal Reef at Masimong and Tshepong. Ongoing exploration at these mines has yielded positive results and resulted in the addition of higher-grade ounces to the mineral reserves. The same B Reef channel is expected to exist at Phakisa and exploration drilling has begun from underground to delineate the high-grade payshoots.

Doornkop

A 2D seismic survey has been completed at Doornkop, in conjunction with long incline boreholes drilled from underground drilling platforms. This work has led to an increase in the mine's reserves and a better understanding of the geological structures.

Kalgold

The area beneath and surrounding the existing Kalgold operations is an exciting Greenstone Belt exploration opportunity. An extensive drilling program has been planned, which commenced towards the end of FY17. The exploration drilling is a low cost option that could contribute to surface growth ounces in the short to medium term.

COMPETENT PERSON'S DECLARATION

In South Africa, an ore reserve manager is appointed at each operation to take responsibility for the compilation and reporting of their operations' mineral resources and mineral reserves. In Papua New Guinea, competent persons are appointed for the mineral resources and mineral reserves for specific projects and operations.

The mineral resources and mineral reserves in this report are based on information compiled by the following competent persons, as at 26 October 2017.

Resources and reserves of South Africa:

Jaco Boshoff, BSc (Hons), MSc, MBA, Pr. Sci. Nat, MSAIMM, MGSSA, who has 22 years' relevant experience and is registered with the South African Council for Natural Scientific Professions (SACNASP), is a member of the South African Institute of Mining and Metallurgy (SAIMM) and of the Geological Society of South Africa (GSSA).
Mr Boshoff is Harmony's Lead Competent Person.

Physical address:
Randfontein Office park
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South Africa

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PO Box 2
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1760
South Africa

Resources and reserves of Papua New Guinea:

Gregory Job, BSc, MSc, who has 29 years' relevant experience and is a member of the Australian Institute of Mining and Metallurgy (AusIMM).

Physical address:
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189 Coronation Drive
Milton, Queensland 4064
Australia

Postal address:
PO Box 1562
Milton, Queensland
4064
Australia

Both these competent persons, who are full-time employees of Harmony, consent to the inclusion in this report of the matters based on the information in the form and context in which it appears.

Administrative information for professional organisations

AusIMM – The Australasian Institute of Mining and Metallurgy
PO Box 660, Carlton South, Vic 3053, Australia
Telephone: +61 3 9658 6100; Facsimile: +61 3 9662 3662
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SACNASP – The legislated regulatory body for natural science practitioners in South Africa
Private Bag X540, Silverton, 0127, Gauteng, South Africa
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http://www.sacnasp.org.za/

SAIMM – The Southern African Institute of Mining and Metallurgy
PO Box 61127, Marshalltown, 2107, Gauteng, South Africa
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http://www.saimm.co.za/

Phakisa

COMPLIANCE AND SUMMARY CONTINUED

As at 30 June 2017

Target

Target 3

Masimong

LEGAL ENTITLEMENT TO MINERALS REPORTED

Harmony's South African operations operate under new order mining rights in terms of the Minerals and Petroleum Resources Development of Act (MPRDA) of 2002 (Act No. 28, of 2002).

In Papua New Guinea, Harmony operates under the Independent State of Papua New Guinea Mining Act 1992. All required operating permits have been obtained and are in good standing. The legal tenure of each operation and project has been verified to the satisfaction of the accountable competent person.

ENVIRONMENTAL MANAGEMENT AND FUNDING

Harmony's environmental strategy aims to optimise our environmental performance by managing our environmental impacts, focusing on effective risk controls, reducing environmental liabilities, ensuring responsible stewardship of our products within our scope of influence, complying with environmental legislation and regulations. For further information regarding Harmony's approach to sustainability and environmental performance refer to the Integrated Annual Report 2016, which is available at *www.har.co.za.*

Details relating to the provision for environmental rehabilitation and funding can be found in note 26 in Harmony's audited annual financial statements that are presented in a separate report, the Financial Report 2017. This is also available online at *www.har.co.za.*

ASSUMPTIONS

In converting our mineral resources to mineral reserves, the following commodity prices and exchange rates were applied:

- A gold price of US$1 200/oz
- An exchange rate of R/US$13.61
- These parameters result in a rand gold price of R525 000/kg for the South African assets
- The Hidden Valley mine and Golpu project in the Morobe Mining Joint Ventures used commodity prices of US$1 200/oz Au, US$18.00/oz Ag, US$7.00/lb Mo and US$3.00/lb Cu at an exchange rate of US$0.76 per A$
- Gold equivalent ounces are calculated assuming US$1 200/oz Au, US$3.00/lb Cu and US$18.00/oz Ag, and assuming a 100% recovery for all metals

Note: Au = gold; Cu = copper; Ag = silver; Mo = molybdenum

For more information on Harmony's reporting code, our SAMREC compliance and the definitions used, refer to the section, *Harmony standard for SAMREC compliance reporting.*

INDEPENDENT AUDIT OPINION

THE MINERAL CORPORATION
ADVISORS TO THE MINERAL BUSINESS

04 September 2017

Mr A J Boshoff
Executive: Mineral Resources and Reserves
Harmony Gold Mining Company Limited
Randfontein Office Park
Corner Main Reef Road and Ward Avenue
Randfontein

Dear Mr Boshoff

INDEPENDENT AUDIT OF MINERAL RESOURCES AND RESERVES HARMONY GOLD MINING LIMITED

The Mineral Corporation completed an audit (the Audit) of Harmony Gold Mining Company Limited's (Harmony or the Group) Mineral Resource and Reserve Statement for 2016/2017. The objectives of the Audit were to provide assurance that Harmony's policies and procedures, if followed, would result in the reporting of Mineral Resources and Reserves in terms of the SAMREC Code (2016), and to provide assurance that the Mineral Resource and Reserve estimates have been compiled in accordance with Harmony's policies, and have therefore been be reported in accordance with the SAMREC Code (2016).

The Mineral Corporation reviewed Harmony's policies and procedures, through an examination of electronic documentation and discussions with Harmony personnel responsible for the management of the Mineral Resource and Reserve estimates. The Mineral Corporation has found that the Harmony Group policies and procedures are well established and are managed through regular interaction between Corporate and Operations staff. Appropriate levels of scrutiny and sign-off of the geological data are sought by the Group from its operations. A sound methodology for undertaking statistical and geostatistical analysis is in place. In addition, the methodology for assessing geological losses, the methodology for considering Mineral Resource classification and the determination of reasonable prospects for eventual economic extraction are sound. The Mineral Corporation reviewed Harmony's planning process, which was found to align with industry best practice. It has therefore been concluded by The Mineral Corporation that Harmony's policies and procedures, if followed, would result in the reporting of Mineral Resources and Reserves in terms of the SAMREC Code (2016).

The Joel, Target 1 and Kalgold operations were identified as being suitable representative sites at which to test whether Harmony's policies and procures were being followed. Site visits and detailed technical audits were undertaken at these three operations. No material issues regarding the policies and procedures that Harmony applies to the estimation of the Mineral Resource estimates were found. The Modifying Factors and planning parameters developed for Joel, Target 1 and Kalgold were reviewed and were found to align with the Harmony planning procedures and are supported by historical and planned performance improvements. No material issues were identified with the implementation of the planning process and the Life of Mine (LoM) plans comply with the technical requirements of the SAMREC Code (2016). It was also confirmed that no Inferred Resources were scheduled in the LoM plans. No material issues were identified with the process of converting the LoM tonnages into the primary Mineral Reserve Statements, and then into the Consolidated Mineral Reserve Statements. The Mineral Corporation is satisfied that the technical inputs contained in the Group financial model can be reconciled. In addition, the operations have been demonstrated to be economically viable.

The Mineral Corporation concludes that Harmony's policies and procedures for Mineral Resource and Reserve estimation, if followed, would result in the reporting of Mineral Resources and Reserves in terms of the SAMREC Code (2016). Based on the detailed audits at the Joel, Target 1 and Kalgold operations, The Mineral Corporation concludes that the Harmony procedures are generally being followed. No issues have been identified with the consolidation of Mineral Resource and Reserve figures in the Group's Consolidated Statement. We note that this opinion does not imply that The Mineral Corporation has accepted the role of Competent Person for the purpose of the Mineral Resources and Reserves estimation. Such role resides with the nominated personnel of Harmony.

Yours faithfully

STEWART NUPEN
Director
BSc (Honours), MBA, Pr.Sci.Nat. (400174/07), FGSSA

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EXPLORATION AND PROJECTS

EXPLORATION PROGRAMME IN PAPUA NEW GUINEA – FY17 HIGHLIGHTS AND MILESTONES

Advancement of the Wafi-Golpu project:

- Special mining lease application submitted in August 2016
- Completion of a targeted drilling programme has significantly improved the geotechnical understanding of relevant domains
- Start of feasibility study update, including trade-off studies of deep-sea tailings placement, terrestrial tailings storage and other tailings management solutions, and self-generated on-site power supply
- Collection of oceanographic data on the deep-sea placement of tailings
- Selection of final block cave extraction levels and the mine production rate
- Ongoing preparation of environmental impact study

Increased resource declared for Kili Teke prospect:

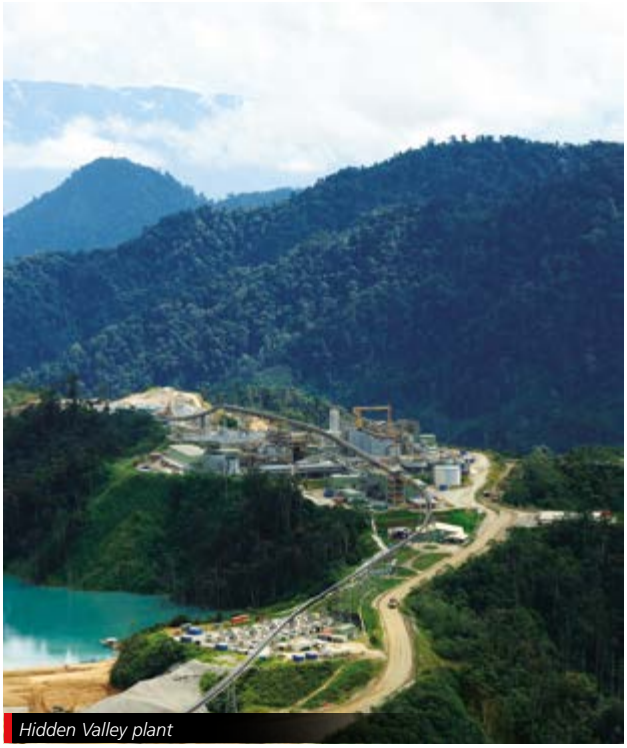
- FY17 inferred mineral resource update: 237Mt @ 0.3% copper, 0.24g/t gold and 168ppm molybdenum containing 802 000t copper, 1.81Moz of gold and 40 000t molybdenum

Consolidated exploration tenure in the Morobe Goldfield:

- 100% of the contiguous tenement package surrounding the Hidden Valley mining lease included with the acquisition of Hidden Valley
- 502km^2 of tenure centered on one of Papua New Guinea's premier goldfields – encompasses the historic Wau Gold Mining Centre
- Increased brownfield exploration focus – high-grade epithermal gold targets generated for drill testing as potential satellite deposits for Hidden Valley

Tenement rationalisation:

- Harmony (100%) tenement holding increased 66% to 1 265km^2 (FY16: 764km^2)
- Joint venture (Harmony 50%) tenement holding declined by 50% to 495 km^2 (FY16: 999km^2)
- EL1629 is held under an option to purchase by Pacific Niugini Minerals and who are also responsible for maintaining the joint venture tenement in good standing
- Harmony continues to manage exploration on the portfolio tenement package on behalf of the exploration portfolio joint venture participants (ultimate parent companies: Newcrest 50%; Harmony 50%)



Hidden Valley plant

PAPUA NEW GUINEA

KEY GEOLOGICAL FEATURES

Papua New Guinea is one of the world's most prospective yet under-explored terrains for porphyry copper-gold and epithermal gold mineralisation. The New Guinea mobile belt which spans the core of the Irian Jaya-Papua New Guinea mainland, is host to a number of world-class porphyry copper-gold and gold deposits including Golpu (Cu-Au), Ok Tedi (Cu-Au), Grasberg (Cu-Au), and Porgera (Au).

The central belt of rocks that makes up the highland spine of Papua New Guinea formed as a result of subduction related interaction between the Pacific plate (in the north), converging with the Australian plate (in the south). Deposits typical of subduction related arc settings include:

- Epithermal gold deposits which form at shallow depths, relatively close to the earth's surface, examples of which include Hidden Valley, Hamata, Kerimenge, Wau and Wafi
- Porphyry copper-gold systems which form at deeper levels in the crust are associated with the emplacement of intrusive stocks and dykes. These systems are among the largest sources of copper ore in the world, and can also contain significant amounts of gold, molybdenum and silver as by-products. Golpu is a high-grade porphyry copper-gold system

EXPLORATION AND PROJECTS CONTINUED

KEY LEGAL AND REGULATORY FEATURES

Papua New Guinea has a sophisticated legislative, regulatory and fiscal regime, broadly modelled upon Australian laws and practices.

Mining in Papua New Guinea is governed by the Mining Act of 1992. Minerals are owned by the state, which administers mining tenements through the offices of the Mineral Resources Authority. The types of tenements issued include: exploration licence; mining lease; special mining lease; alluvial mining lease; lease for mining purpose; and mining easement. Exploration licences are issued for a term not exceeding two years, and are renewable for further two year terms subject to compliance with expenditure and other conditions. Each licence contains a condition conferring on the state the right, exercisable at any time prior to the start of mining, to make a single purchase up to 30% equitable interest in any mineral discovery under the licence at a price pro rata to the accumulated exploration expenditure.

If (pursuant to a feasibility study approved by the board of directors), we want to develop a mine on a resource, we must follow a permitting process, including:

- applying to the Mineral Resources Authority for a mining lease (or, at the discretion of the Minister for Mines, a special mining lease). This includes our entering into a memorandum of agreement with local, provincial and national governments and landowners regarding the allocation of royalties payable to the state, and, in the case of a special mining lease, a mining development contract setting out our social performance obligations in respect of the proposed mining operation;
- applying to the Conservation and Environmental Protection Authority for a Level 3 environmental permit. This includes our undertaking an environment impact study.

The permitting process can be very time consuming (18-24 months, or longer in some cases). Mining companies must pay royalties to the state based on production (currently 2%).

Over the past two to three years, the state has undertaken a mining legislative and tax regime review, which is still underway. The subject of the review includes the Mining Act 1992, the Mining Safety Act 1997, the Income Tax Act 1959 and the Environment Act 2000, and applicable regulations. In addition, the review has addressed mineral policy generally, and mining-specific sector policies including offshore mining policy, sustainable development policy, involuntary relocation policy and mine closure policy.

The review has also considered the provisions of the state purchase option reservation, including possible changes to the percentage interest "cap", the consideration payable for the interest and the allocation of ownership of the acquired interest between the nominee of the State, the relevant Provincial Government and affected landowners.

The Chamber of Mines and Petroleum of Papua New Guinea, as the representative mining industry body, has been collating information and comments from industry participants regarding the review of current legislation and policy and engaging with the State as part of the response to the government's proposed legislative amendments, certain of which industry considers to be adverse (eg increased royalty rate; reduced state option strike price, prohibition of fly-in, fly-out, among others).

Pursuant to the tax regime review and notwithstanding industry objections, certain adverse changes to the fiscal regime were introduced with effect from 1 January 2017. The main changes were the introduction of an additional profit tax, the cessation of the double deduction allowance for exploration expenditure, and an increase in the rates of interest withholding and dividend withholding taxes.

National elections were held in August 2017, and the previous Government was returned. The review process is expected to continue.

Papua New Guinea exploration

EXPLORATION AND PROJECTS CONTINUED

Papua New Guinea exploration


Hidden Valley


Hidden Valley

HARMONY'S EXPLORATION ACTIVITIES

Harmony began actively exploring in Papua New Guinea in 2003. Since then, we have developed a high-quality project portfolio, both in established mineral provinces and in emerging gold and copper districts.

Harmony has advanced several gold and copper-gold prospects which are at various stages of exploration and evaluation across Harmony's lease areas. These include the Kili Teke prospect.

Our exploration strategy takes a balanced approach, incorporating both greenfield and brownfield exploration. We target highly prospective, underexplored terrains and mining districts to discover and develop large, long-life, bulk minable gold and copper-gold deposits. Key work streams underpin the FY17 exploration programme:

- Optimisation of feasibility and prefeasibility studies of the Wafi-Golpu copper-gold deposit
- Brownfield exploration at Wau (for Hidden Valley) for high-grade satellite deposits to optimise existing open pit operations
- Greenfield exploration to enhance Harmony's world-class copper-gold footprint in Papua New Guinea

In FY17, we spent R431 million (US$32 million) (FY16: R433 million; US$29.9 million) on exploration in Papua New Guinea.

The case for exploration investment in Papua New Guinea remains strong. Harmony closely monitors the environment for new opportunities to enhance our project portfolio, in line with core operating capabilities. The country is hugely prospective and under-explored. In addition, Harmony has an established track record of discovery and adding value through cost-effective exploration:

- Since 2003, resource growth from Harmony-held tenements, both those held in joint venture (Harmony's 50% equity share) and by Harmony alone (100%-held), amounts to 12.7Moz of gold and 5.1Mt of copper
- Discovery cost on a per ounce gold equivalent basis of less than US$10 is among the best in the world

Tenements held in joint venture

(Wafi-Golpu Joint Venture and Exploration Portfolio Joint Venture) (Harmony 50%)

Harmony is in a 50:50 joint venture with Newcrest Mining over a number of tenements in Morobe Province.

These tenements encompass the Wafi-Golpu project and span the Wafi Transfer and its strike extensions, and are prospective for epithermal gold and porphyry style copper-gold deposits. The exploration strategy is to discover bulk tonnage (~1Moz) or high-margin gold or copper-gold deposits to provide new resource options that can leverage infrastructure or complement the Wafi-Golpu project.

In conjunction with Harmony's acquisition of Newcrest's 50% interest in Hidden Valley, the exploration portfolio joint venture tenement portfolio was restructured and reduced to several tenements contiguous with the Wafi-Golpu project. The aggregate tenement package in Morobe Province, held in the 50:50 joint venture between Newcrest and Harmony, now stands at 496km^2 (FY16: 999km^2).

During FY17, total Harmony expenditure (50%) on exploration on the joint venture tenements in Morobe Province was R7 million (US$0.5 million), compared to R9 million (US$0.6 million) in FY16. Generative work using airborne geophysics in combination with mapping and surface sampling is planned to continue in FY18.

Overview of Wafi-Golpu and exploration portfolio exploration activity (Harmony 50%)

Wafi-Golpu project		
Target:	**Progress in FY17:**	**Targets/plans for FY18:**
Progress the Wafi-Golpu project to permitting and development	Lodged an application for a special mining lease and proposal for development in August 2016. Began a feasibility study update that will incorporate an increased mining rate, finalise tailings management studies (including deep-sea tailings placement as a potential tailings management option) and on-site, self-generation of power.	Complete the feasibility study update and lodge an amended proposal for development with the mineral resources authority. Complete the environmental and social impact assessment.
Exploration portfolio tenements (Wafi-Golpu district)		
Target:	**Progress in FY17:**	**Targets/plans for FY18:**
Wafi transfer zone – greenfields exploration targeting discovery of additional resources to expand Wafi-Golpu into a mineral district	Trial ZTEM airborne geophysical survey flown (283 line km) and 3D inversion modelling completed. First pass drill testing was completed at the Nambonga North Prospect (1 hole / 1 022m).	Extend regional ZTEM airborne geophysical coverage to assist in defining the limits of the Wafi-Golpu system. Petrophysical sampling and 3D inversion modelling to improve target ranking and interpretation of ZTEM data. Follow-up mapping and surface sampling and integration with geophysical datasets to develop drill targets.

Wafi-Golpu project

The Wafi-Golpu Project is owned by the Wafi-Golpu joint venture, a 50:50 unincorporated joint venture between subsidiaries of Harmony and Newcrest Mining Limited (Australia) respectively.

The Wafi-Golpu joint venture participants are the holders of exploration licences EL440 and EL1105, which are located approximately 65km southwest of Lae, in Morobe Province.

Lae, the second largest city in Papua New Guinea, will host the project's import and concentrate export facilities. The proposed mine site sits at an elevation of approximately 400m above sea level in moderately hilly terrain and is located near the Watut River, approximately 30km upstream from its confluence with the Markham River.

In February 2016, the Wafi-Golpu Joint Venture participants completed feasibility and prefeasibility studies for the Wafi-Golpu copper-gold project and declared updated resources and reserves for the project. Both studies confirmed a robust investment case. In August 2016, an application for a special mining lease was lodged, supported by a proposal for development.

Subsequent to the completion of these studies and after further geotechnical drilling, certain technical challenges were identified, including seismicity impacting the preferred location of the terrestrial tailings storage facility, and limitations on the capacity of identified potential terrestrial storage sites in the vicinity of the mine to accommodate the projected life of mine volume of mine tailings.

Deep-sea tailings placement was seen as a potential alternative tailings management strategy, as there are excellent geographical conditions around Papua New Guinea for the deep-sea placement of tailings with a number of other mines in the area using this method.

Papua New Guinea exploration

EXPLORATION AND PROJECTS CONTINUED

Papua New Guinea exploration

Papua New Guinea exploration

Papua New Guinea exploration

In light of this development and other changes to the proposed project configuration, work has begun on an update to the 2016 Golpu feasibility and prefeasibility studies. The studies, scheduled for completion in the third quarter of FY18, will include the following:

- An improved understanding of the geotechnical conditions expected at the proposed block caves
- Optimisation of mining and processing throughput rates
- Studies of deep-sea tailings placement, including an accelerated programme of oceanographic data collection. Number of environmental monitoring buoys have been deployed in the Huon Gulf to the south of Lae. Shipboard surveys are also being undertaken in the gulf
- A programme of work to address the chemical composition of the tailings and its reactivity with the oceanic environment of the Huon Gulf, and to identify any mitigating measures (including processing) which may be required
- A review of terrestrial tailings management options, including dry stacking
- A trade-off study, comparing deep-sea tailings deposition and terrestrial tailings management solutions, with a final recommendation to be made. Until the study has been concluded, both terrestrial and deep-sea options for tailings management remain open

The joint venture participants are also considering a site-based power station to reduce the risk of interruptions to the grid power supply. Work is continuing to review and align the proposal for development lodged in August 2016 with the outcomes of the updated studies. A framework of overarching principles for state and landowner engagement is also being prepared that will inform the details of the matters to be negotiated, both with the state (mining development contract) and at the Development Forum between the state and landowner representatives.

For further details of the mineral resources and reserves at Wafi-Golpu and Nambonga, see page 92.

Tenements held exclusively by Harmony

(Morobe Consolidated Goldfields Limited and Harmony Gold (PNG) Exploration Limited) (Harmony 100%)

With the acquisition of Newcrest's interest in the Hidden Valley mine, Harmony's 100%-owned tenement portfolio in Papua New Guinea increased to 1 265km^2 compared with FY16: 764km^2 (a 66% increase year-on-year). The increase included the acquisition by Harmony Gold (PNG) Exploration of the tenements held by the Exploration Portfolio Joint Venture in the area surrounding the Hidden Valley mine (EL 677, EL497 and EL2313).

A total of R147 million (US$10.6 million) was spent on 100% Harmony-owned projects in FY16 (FY16: R164 million/US$11.3 million). Investment in regional greenfield porphyry copper and gold exploration declined in the second half of FY17. Work programme expenditure was reprioritised to include development of brownfield gold targets within a 10km of the Hamata processing plant at Hidden Valley.

The FY17 resource update for Kili Teke stands at 782 000t of copper, and 1.8Moz of gold. The deposit is open at depth and along strike to the southeast. Drill spacing remains broad. Potential to increase the resource base is excellent and follow-up work is planned for FY18.

For futher details on Kili Teke and its mineral resource, see page 97.

EXPLORATION AND PROJECTS CONTINUED

Details of the FY17 work programme are outlined below:

Kili Teke Project – EL2310

Target:	Progress in FY17:	Targets/plans for FY18:

Targeting copper-gold porphyry	19 holes / 11,876m drilled during the year. A revised mineral resource estimate for Kili Teke was published Q1FY17 and comprised 222Mt at 0.35 % copper and 0.25 g/t gold and 170ppm molybdenum (782,000t copper, 1.75Moz gold, 38,000t molybdenum). Global resource grades declined slightly compared to the maiden resource due to the effect of late-stage barren intrusive phases.	Work programme planned to target resource base expansion:
		• Drill testing strike and depth extensions
		• Drill testing peripheral targets for additional centres of mineralisation based on:
		  • Airborne geophysics
		  • Follow-up surface mapping and sampling

Poru Project – EL2386

Target:	Progress in FY17:	Targets/plans for FY18:
Large scale epithermal gold-silver deposit +4Moz gold	Exploration during the year focussed on first pass detailed mapping and surface sampling. Some 1 341 soil samples, 111 rock chip samples and 315 trench channel samples were collected and analysed for gold and multi-elements. Detailed mapping was completed over the Caldera. Results have outlined significant zones of multi-element anomalism (silver-gold-lead zinc) to the northeast of the historic prospect area defined by Kennecott Exploration.	Drill target development including: • Infill soil sampling and follow-up mapping • Data compilation and interpretation including integration of ASD field spectrometer data

Hidden Valley District Project – EL497, EL677, EL2386

Target:	Progress in FY17:	Targets/plans for FY18:
Brownfields exploration within a 10km radius of the Hidden Valley plant to develop replacement resources and support expansion	Over 870 samples were collected and a number of quality targets were finalised for drill testing in the first half of FY18 which include: • **The Koranga Upflow zone:** mapped contact breccia with over 600m of strike with small scale informal mining on exposures, together with high-grade historic gold intercepts up to 24m @ 6.36g/t Au • **Kunai Hill:** open ended mineralised zone with over 200m of strike where historic intercepts include 24m @ 3.3g/t Au. Extensive supergene gold occurs in overlying Namie Breccia to the southeast, with informal mining The drill targets represent potential new high-grade satellite resource areas to supplement mill feed at Hidden Valley.	• Finalise community agreements and drill pad preparation • Drill testing prioritised targets: Initial drill program comprises 3,400m

Project generation

Target:	Progress in FY17:	Targets/plans for FY18:
Develop a project pipeline capable of delivering additional quality resources to sustain growth and regional operations	Initial reconnaissance completed on EL677 at the Udat Creek prospect was completed, approximately 20km west of the Hidden Valley Mine. In all, 389 surface samples were collected which included ridge and spur soils, rock chip and stream sediment samples. Results are extremely encouraging with visible gold obtained from panned stream sediment concentrates over a 2.5km footprint. Outcrop of high-grade mineralised skarn was also confirmed in mapping from the prospect area. Tenement monitoring for new opportunities continued.	Follow-up work at Udat creek including • Extension of reconnaissance surface sampling and mapping • Drill target development Prospect identification and development including: • Ridge and spur soil sampling, mapping and rock-chip sampling • Integration of geophysics including IP, ZTEM and airborne magnetics

EXPLORATION AND PROJECTS CONTINUED

SOUTH AFRICA

All of our underground mines are in the Witwatersrand Supergroup. Most of these can be found in the south-western corner of the Witwatersrand Basin or Free State goldfields, and comprise sedimentary rocks that extend laterally for hundreds of kilometres into the West Rand goldfields and East Rand Basin. The Kraaipan Greenstone Belt can be found further north-west where we have an open pit operation. Additional information on the geology is provided by operation in this report.

Underground exploration

A total of 62 860m (FY16: 63 281m) was drilled across Harmony's underground operations in South Africa.

Using a method known as continuous coring, underground exploration drilling is done as per required intervals from existing underground excavations (haulages and cross cuts). This drilling is done to determine the elevation and grade of the targeted reef horizon as well as the geological features in the immediate surrounding lithology. It assists in structural geological interpretation and evaluation of specific areas as well as in the compilation of regional structural geological and evaluation models. Mine geologists and planners use this information to determine a mine's development strategy and eventually its economic viability.

Brownfields exploration in South Africa

A summary of brownfields exploration conducted in South Africa in FY17 and planned for FY18:

Tshepong B Reef

Target:	Progress in FY17:	Targets/plans for FY18:
At the Tshepong section, exploration continues to maintain current levels of B Reef mining. Drilling is being conducted to identify areas of economic value in the down dip extensions of the current B Reef channels being mined.	Eighteen exploration holes have been completed, with values ranging between 8cmg/t and 3580cmg/t. Thus far the drilling has assisted in delineating the channel boundaries of the down dip extensions of the B Reef channels identified in the Leeubosch, Midas and Horizon dyke areas.	Drilling of a further 10 holes will continue in three different areas over four levels at the Tshepong section.

Phakisa B Reef

Target:	Progress in FY17:	Targets/plans for FY18:
Currently, there is no mining of the B Reef at the Phakisa section. Exploration drilling is being undertaken to identify areas of economic value in the down-dip extensions of the channels being mined at the neighbouring Tshepong section. Significant potential may exist to mine the B Reef north of the shaft pillar on the Phakisa section.	Four exploration holes have been completed, the values range between 38cmg/t and 487cmg/t. Although progress has been slow, the drilling has assisted in improving understanding of the boundaries of the B Reef channel to the north of the Zindaba Dyke.	Drilling of an additional 13 holes will continue from 69 to 75 levels north of the Zindaba Dyke from the 65 line northwards.

Doornkop Main Reef

Target:	Progress in FY17:	Targets/plans for FY18:
The Main Reef is located 60-70m below the South Reef with classification as a minor reef that can be explored or mined using the existing South Reef infrastructure.	A total of eight boreholes had been drilled and completed by March 2017. The geological model was updated with information obtained from the reef intersections.	No further drilling is planned at this stage.

Doornkop South Reef

Target:	Progress in FY17:	Targets/plans for FY18:
Current South Reef structural model in the inferred areas is based on that of the Kimberly Reef, which lies stratigraphically 800m above the South Reef. Drilling of long-incline boreholes will be done to assist with modelling of the South Reef on levels 202, 207 and 212.	Geological interpretation has been done, drilling platforms have been identified and drilling schedules established to confirm the levels where South Reef can be mined.	Drilling will begin from seven different platforms to confirm the presence of the South Reef on levels 202, 207 and 212.

EXPLORATION AND PROJECTS CONTINUED

Doornkop seismic survey

Target:	Progress in FY17:	Targets/plans for FY18:
Currently our South Reef structural model is based on that of the Kimberly Reef, which lies stratigraphically 800m above the South Reef. The recently completed seismic survey identified and located major geological structures and confirmed the South Reef levels.	Field work including a total of 92 line kilometres and 12 widely spaced dip and strike lines over the Doornkop lease area was completed in December 2016.	Geophysical structural interpretation has been completed and a start made on development of the 3D models of all the potential economic reef horizons. All historical information is being incorporated into the new model so as to increase confidence levels and have a more accurate geological model with better defined production levels.

Kalgold

Target:	Progress in FY17:	Targets/plans for FY18:

High-grade gold satellite deposits and resource extensions to provide operational flexibility and/or support re-optimisation and expansion of the current operation.	Within the mining lease area, data consolidation and review was completed and a number of priority drill targets were developed for additional high-grade open pit ore sources. These include:
	• Depth and strike extensions of mineralisation along the main **Watertank – A Zone** line of lode
	• **Spanover border prospect** where historic drill intercepts include GR75: 24m @ 1.3g/t Au from 12m
	• **Windmill** line of load with historic drill intercepts including MDGP603: 20m @ 3.6g/t Au from 60m remain open for follow-up drilling.
	Outside of the mining lease on the surrounding prospecting rights, some 50 boreholes (3,793m) were completed. The reconnaissance drilling program was designed to establish stratigraphy and mineralised strike extensions north and south of the known deposits. The drilling was successful in intersecting significant intervals of BIF (banded iron formation) with accompanying highly anomalous levels of gold mineralisation.
		For the Kalgold mining lease area a drill proposal comprising 67 holes, ~19,350m has been finalised and approved for completion in H1 FY18. Follow-up drilling will be planned based on results.
		Drill target development on the surrounding prospecting rights including:
		• Madibe Block:
		  • Systematic surface geochemical sampling and mapping
		  • Drill target development through integration of airborne geophysical data, surface mapping and geochemistry
		• Northern Farms and Goldridge south areas: drill target development through surface sampling and mapping, and application of geophysical techniques including induced polarization and electromagnetic surveys as appropriate

Harmony – White Rivers Exploration joint venture

Target:	Progress in FY17:	Targets/plans for FY18:
The main objective of this exploration joint venture is to explore and develop potential gold resources at White Rivers Exploration (Pty) Limited's Beisa Project and abutting exploration areas within Harmony's adjacent Target complex.	In terms of the agreement, White Rivers and Harmony (through Loraine Gold Mines Limited and Avgold Limited) will have initial and fixed interests of 65% and 35% respectively in the exploration joint venture. White Rivers will fund and manage exploration activities to prefeasibility study level. Initial exploration activities, which include collation of historical data, interpretation and verification of data, and geological modelling, are in progress. The initial resource in the project area has been identified and the scoping study has been carried out.	Mineral resource modelling is in progress

EXPLORATION AND PROJECTS CONTINUED

PROJECTS

A summary of projects underway in South Africa in FY17:

Joel North

Target:	Progress in FY17:	Targets/plans for FY18:
In order to access the ore body from 137 level, two declines are being developed at 12° from 129 level – a chairlift decline and a conveyor belt decline. Primary footwall development is currently taking place on 137 level.	All capital development has been completed. The temporary conveyor is in use, which allows rock to be tipped at the bottom of the decline and transported up to 129 level. Equipping of the permanent conveyor is currently being done as is the construction of the box fronts on 137 level.	Completion of the whole project including all construction and equipping. Gaining access to the reef horizon and being positioned to start stoping.

Tailings retreatment expansion

Target:	Progress in FY17:	Targets/plans for FY18:
Retreatment of additional tailings in the Free State (Saints project).	A feasibility study on phase 1 of the Saints project to treat an additional 1Mt of tailings was completed. The study showed that 333 000tpm of tailings could be profitably treated at an extended Central Plant. However the project implementation decision has been delayed by a year in view of more cost effective ways of using available capital. The phase 2 pre-feasibility study, which considered the treatment of 667 000tpm as a bolt on to the Harmony 1 plant, was near completion at year end. However, high capital costs at current gold prices will delay further work on this project for the foreseeable future.	It is planned to further optimise the Saints phase 1 project study.

Central plant tailings reclamation

Target:	Progress in FY17:	Targets/plans for FY18:
Reclaim material from FSS5 tailings facility for processing at the central plant (to be converted for tailings re-treatment) at a rate of 300 000t annually. Central plant operation will be similar to the highly profitable Phoenix operation, which has been in operation since 2007.	Construction of this project was completed by the end of May 2017 and largely commissioned by the end of the financial year. The project was delivered on time and under budget.	Ramp up throughput to 300 000tpm by the end of July 2017 and maintain this level of throughput.

Target 3 shaft

Target:	Progress in FY17:	Targets/plans for FY18:
Target 3 shaft was placed on care and maintenance in FY15. This project entailed looking at the possibility of opening the shaft again and mining only the higher grade Basal Reef.	An in-house concept study was completed in November 2016 and an externally led feasibility study by June 2017. The project showed that the shaft could be profitably mined if operations were geographically confined and only the basal reef was mined. The high capital cost and long lead time, due to the rehabilitation needed in the shaft and accesses, has meant that a decision on this project has been delayed for the time being.	Target 3 shaft is a main pumping shaft and some rehabilitation work in the shafts will take place while the pumping operations are conducted.

RESOURCE AND RESERVE RECONCILIATION

MINERAL RESOURCES

As at 30 June 2017, attributable gold equivalent mineral resources were 104.3Moz, down from 105.2Moz in June 2016 The following table show the year on year reconciliation of the mineral resources.

Gold and gold equivalent mineral resource reconciliation

	Tonnes	Moz
June 2016 – Gold and gold equivalents	3 271	105.2
Changes during FY17		
Mined	(44)	(1.4)
Geological changes and Hidden Valley 100%	30	1.0
Gold equivalents	(14)	(0.3)
June 2017 – Gold and gold equivalents	**3 243**	**104.3**

Mineral resource comparison by operation – FY16 vs FY17

Gold	FY16 (Moz)	FY17 (Moz)	Depletion (Moz)	Net of depletion variance (Moz)	Net of depletion variance (%)	Comments
SOUTH AFRICA UNDERGROUND						
Free State						
Tshepong operations	23.266	22.999	0.411	0.144	0.6	No material change
Bambanani	0.523	0.456	0.098	0.032	6.1	Resource not down in line with depletion owing to the m^2 gained from the reduction in the extent of some safety pillars by the rock engineering department
Unisel	0.677	0.586	0.075	-0.015	-2.3	No material change
Joel	2.856	2.178	0.105	-0.574	-20.1	Decrease mainly due to depletion and changes in geological structure (updated drilling intersections)
Masimong	0.711	0.966	0.126	0.380	53.5	Increase due mainly to an increase in the B Reef resource and development successes
Target 1	4.846	4.626	0.089	-0.131	-2.7	No material change
Target 3	3.119	3.119	0	0	0	Work continues on steep stopes, reef overlaps and minor reefs
Free State – total	**36.000**	**34.931**	**0.905**	**-0.164**	**-0.5**	
West Rand						
Doornkop	4.494	4.319	0.106	-0.069	-1.5	No material change
Kusasalethu	8.075	7.366	0.165	-0.543	-6.7	Decrease due to depletions and an increase in the resource cut-off
West Rand – total	**12.569**	**11.685**	**0.272**	**-0.612**	**-4.9**	
South Africa underground – total	**48.569**	**46.616**	**1.177**	**-0.776**	**-1.6**	

RESOURCE AND RESERVE RECONCILIATION CONTINUED

Gold	FY16 (Moz)	FY17 (Moz)	Depletion (Moz)	Net of depletion variance (Moz)	Net of depletion variance (%)	Comments
SOUTH AFRICA SURFACE						
Kraaipan Greenstone Belt						
Kalgold	1.195	1.273	0.047	0.124	10.4	Resource increase due to additional data applied to model that resulted in a reduction in the size of the pillar between the A-Zone and Watertank pits
Free State Surface						
Phoenix	0.712	0.646	0.070	0.004	0.6	No material change
St Helena	2.230	1.656	0	-0.574	-25.7	FSS3 and FSS5, previously the St Helena project, now included in the Central Plant project
Central Plant	0.551	0.574	0	0.023	4.2	FSS3 and FSS5, previously the St Helena project, now included in the Central Plant project
Waste rock dumps	0.356	0.334	0.036	0.014	4.0	No material change
Tailings	4.217	4.122	0	-0.095	-2.3	No material change
Free State surface – total	**8.066**	**7.333**	**0.106**	**-0.628**	**-7.8**	
Total Kalgold Tailings dam	**0.201**	**0.201**	**0**	**0**	**0**	
South Africa surface – total (including Kalgold)	**9.463**	**8.807**	**0.152**	**-0.504**	**-5.3**	
TOTAL SOUTH AFRICA (underground, surface, Kalgold)	**58.032**	**55.423**	**1.329**	**-1.280**	**-2.2**	

RESOURCE AND RESERVE RECONCILIATION CONTINUED

Mineral resource comparison by operation – FY16 vs FY17 continued

Gold	FY16 (Moz)	FY17 (Moz)	Depletion (Moz)	Net of depletion variance (Moz)	Net of depletion variance (%)	Comments
PAPUA NEW GUINEA						
Hidden Valley/Kaveroi	1.880	3.897	0.101	2.118	112.6	Increase due to purchase of Newcrest's 50% share
Hamata	0.110	0.184	0	0.074	66.9	Increase due to purchase of Newcrest's 50% share
Wafi	3.621	3.621	0	0	0	No material change
Golpu	9.282	9.282	0	0	0	No material change
Nambonga	0.505	0.507	0	0.001	0.3	No material change
Kili Teke	1.751	1.810	0	0.059	0.0	No material change
Papua New Guinea – total	**17.150**	**19.301**	**0.101**	**2.252**	**13.1**	
Gold grand total	**75.182**	**74.724**	**1.430**	**0.972**	**1.3**	
Gold equivalents						
Silver – equivalent gold ounces						
Hidden Valley	0.475	1.137	0	0.662	139.2	Increase due to purchase of Newcrest's 50% share
Copper – equivalent gold ounces						
Golpu	24.788	23.755	0	-1.033	-4.2	Change attributable to change in prices used in the gold equivalent assumptions only
Nambonga	0.240	0.235	0	-0.006	-2.4	Change attributable to change in prices used in the gold equivalent assumptions only
Kili Teke	4.494	4.416	0	0	0	No material change
Copper gold equivalent – total	29.522	28.405	0	-1.116	-3.8	
Papua New Guinea – total equivalent gold ounces	**29.997**	**29.542**	**0**	**-0.455**	**-1.5**	
Papua New Guinea – total gold and including gold equivalent ounces	**47.147**	**48.844**	**0.091**	**1.788**	**3.8**	
GRAND TOTAL (EXCLUDING EQUIVALENTS)	**75.182**	**74.724**	**1.430**	**0.972**	**1.3**	
GRAND TOTAL (INCLUDING EQUIVALENTS)	**105.179**	**104.266**	**1.430**	**0.517**	**0.5**	

RESOURCE AND RESERVE RECONCILIATION CONTINUED

MINERAL RESERVES

As at 30 June 2017, Harmony's attributable gold equivalent mineral reserves were 36.7Moz, down from 36.9Moz. The year on year mineral reserves reconciliation is shown below.

Gold and gold equivalent mineral reserve reconciliation

	Tonnes	Moz
June 2016 – Gold and gold equivalents	1 148	36.9
Changes during FY17		
Mined	(36)	(1.2)
Life-of-mine extensions and 100% of Hidden Valley	42	1.3
Gold equivalents	(11)	(0.3)
June 2017 – Gold and gold equivalents	**1 143**	**36.7**

Mineral reserve comparison by operation – FY16 vs FY17

Gold	FY16 (Moz)	FY17 (Moz)	Depletion (Moz)	Net of depletion variance (Moz)	Net of depletion variance (%)	Comments
SOUTH AFRICA UNDERGROUND						
Free State						
Tshepong operations	5.144	4.787	0.293	-0.06	-1.2	No material change
Bambanani	0.449	0.401	0.093	0.045	10.0	Reserves decline by less than depletion owing to area gained from the reduction in the extent of some safety pillars as determined by rock engineering, as well as to an increase in grade over the life of mine
Unisel	0.348	0.302	0.055	0.009	2.6	No material change
Joel	0.875	0.755	0.079	-0.041	-4.6	Decrease due mainly to depletion and geological structure changes
Masimong	0.223	0.312	0.083	0.172	76.8	The good progress made with high-grade on-reef development resulted in an increase in the reserves available for mining. Life of mine increased from three to four years, despite depletion
Target 1	0.992	0.705	0.084	-0.204	-20.5	Decrease due to a change in mine design from massive mining to narrow-reef mining, based on information obtained from geological drilling, and a loss of ground in block 5 owing to geological changes
Free State – total	**8.031**	**7.261**	**0.688**	**-0.082**	**-1.0**	

RESOURCE AND RESERVE RECONCILIATION CONTINUED

Mineral reserve comparison by operation – FY16 vs FY17 continued

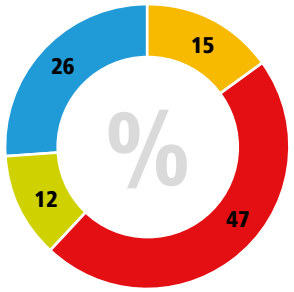
Gold	FY16 (Moz)	FY17 (Moz)	Depletion (Moz)	Net of depletion variance (Moz)	Net of depletion variance (%)	Comments
West Rand						
Doornkop South Reef	0.709	0.735	0.086	0.112	15.8	Increase due to additional reserves being included, based on long incline borehole drilling programme
Kusasalethu	0.914	1.088	0.143	0.316	34.6	Life of mine extended from five to six years, owing to an extension of payable ground in the eastern side of the mine
West Rand – total	**1.623**	**1.823**	**0.229**	**0.428**	**26.4**	
South Africa underground	**9.654**	**9.084**	**0.916**	**0.346**	**3.6**	
SOUTH AFRICA SURFACE						
Kraaipan Greenstone Belt						
Kalgold	0.608	0.934	0.047	0.372	61.1	Increase due to improved evaluation model and pit optimisation, which reduced the size of the pillar between the A-Zone and Watertank pits
Free State Surface						
Phoenix	0.712	0.646	0.070	0.004	0.6	No material change
St Helena	1.507	0.933	0	-0.574	-38.1	FSS3 and FSS5, previously the St Helena project, now included in the Central Plant project
Central Plant	0.551	0.574	0	0.023	4.2	FSS3 and FSS5, previously the St Helena project, now included in the Central Plant project
Free State (other)						
Waste rock dumps	0.065	0.064	0	0	-0.5	
Tailings	3.661	4.028	0	0.367	10.0	Includes deposits from Central and Harmony One plants
Free State Surface – total	**6.495**	**6.245**	**0.070**	**-0.180**	**-2.8**	
South Africa surface – total (including Kalgold)	**7.104**	**7.179**	**0.116**	**0.192**	**2.7**	
SOUTH AFRICA – TOTAL	**16.758**	**16.263**	**1.033**	**0.538**	**3.2**	
PAPUA NEW GUINEA						
Hidden Valley/Kaveroi	0.644	1.291	0.094	0.741	115.0	Increase due to purchase of Newcrest's 50% share.
Hamata	0.074	0.096	0	0.022	29.2	Increase due to purchase of Newcrest's 50% share.
Golpu	5.522	5.522	0	0.000	0.0	No change
Papua New Guinea – total	**6.240**	**6.908**	**0.094**	**0.762**	**12.2**	
Harmony – total	**22.998**	**23.171**	**1.126**	**1.300**	**5.7**	

RESOURCE AND RESERVE RECONCILIATION CONTINUED

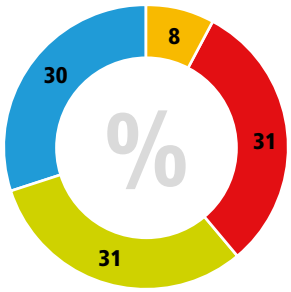
Mineral reserve comparison by operation – FY16 vs FY17 continued

Gold equivalents	FY16 (Moz)	FY17 (Moz)	Depletion (Moz)	Net of depletion variance (Moz)	Net of depletion variance (%)	Comments
Silver – equivalent gold ounces						
Hidden Valley	0.178	0.407	0	0.228	128.0	Increase due to purchase of Newcrest's 50% share.
Copper – equivalent gold ounces						
Golpu	13.741	13.168	0	-0.572	-4.2	Decline attributable to changes in prices used in the gold equivalent assumptions
Equivalent gold ounces – total	**13.918**	**13.575**	**0**	**-0.344**	**-2.5**	
Papua New Guinea – total gold and equivalent gold ounces	**20.159**	**20.483**	**0**	**0.324**	**1.6**	
GRAND TOTAL (EXCLUDING EQUIVALENTS)	**22.998**	**23.171**	**1.126**	**1.300**	**5.7**	
GRAND TOTAL (INCLUDING EQUIVALENTS)	**36.916**	**36.746**	**1.126**	**0.956**	**2.6**	

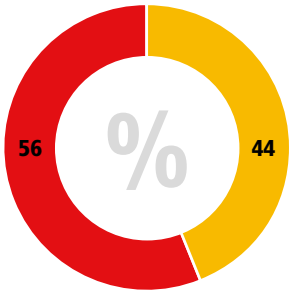
Contribution to gold mineral resources



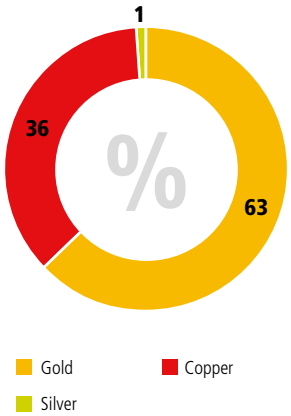
Contribution to gold mineral reserves



Contribution to gold and gold equivalent reserves by country



Contribution to gold and gold equivalent reserves by metal



RELATIONSHIP BETWEEN HARMONY'S MINERAL RESOURCES AND MINERAL RESERVES

SOUTH AFRICA UNDERGROUND

Increasing level of geoscientific knowledge and confidence

Mineral resources (total)

Tonnes	Gold		
Mt	g/t	000kg	000oz
159.4	9.10	1 450	46 616

Reported as *in situ* mineralisation estimates

Mineral reserves (total)

Tonnes	Gold		
Mt	g/t	000kg	000oz
50.4	5.61	283	9 084

Reported as mineable production estimates

Inferred

Tonnes	Gold		
Mt	g/t	000kg	000oz
51.4	8.63	444	14 272

Indicated

Tonnes	Gold		
Mt	g/t	000kg	000oz
54.7	8.64	472	15 191

Probable

Tonnes	Gold		
Mt	g/t	000kg	000oz
13.3	5.07	67	2 163

Measured

Tonnes	Gold		
Mt	g/t	000kg	000oz
53.3	10.01	534	17 153

Proved

Tonnes	Gold		
Mt	g/t	000kg	000oz
37.1	5.80	215	6 921

Consideration of mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors (the 'modifying factors')

SOUTH AFRICA SURFACE (INCLUDING KALGOLD)

Increasing level of geoscientific knowledge and confidence

Mineral resources (total)

Tonnes	Gold		
Mt	g/t	000kg	000oz
984.6	0.28	274	8 807

Reported as *in situ* mineralisation estimates

Mineral reserves (total)

Tonnes	Gold		
Mt	g/t	000kg	000oz
827.8	0.27	223	7 179

Reported as mineable production estimates

Inferred

Tonnes	Gold		
Mt	g/t	000kg	000oz
65.3	0.36	24	764

Indicated

Tonnes	Gold		
Mt	g/t	000kg	000oz
649.5	0.27	174	5 592

Probable

Tonnes	Gold		
Mt	g/t	000kg	000oz
641.7	0.26	170	5 462

Measured

Tonnes	Gold		
Mt	g/t	000kg	000oz
269.8	0.28	76	2 450

Proved

Tonnes	Gold		
Mt	g/t	000kg	000oz
186.0	0.29	53	1 717

Consideration of mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors (the 'modifying factors')

RELATIONSHIP BETWEEN HARMONY'S MINERAL RESOURCES AND MINERAL RESERVES CONTINUED

SOUTH AFRICA TOTAL

Increasing level of geoscientific knowledge and confidence

Mineral resources (total)

Tonnes	Gold	
Mt	000kg	000oz
1 144.0	1 724	55 423

Reported as *in situ* mineralisation estimates

Mineral reserves (total)

Tonnes	Gold	
Mt	000kg	000oz
878.1	506	16 263

Reported as mineable production estimates

Inferred

Tonnes	Gold	
Mt	000kg	000oz
116.7	468	15 036

Indicated

Tonnes	Gold	
Mt	000kg	000oz
704.2	646	20 783

Probable

Tonnes	Gold	
Mt	000kg	000oz
655.0	237	7 624

Measured

Tonnes	Gold	
Mt	000kg	000oz
323.1	610	19 603

Proved

Tonnes	Gold	
Mt	000kg	000oz
223.1	269	8 639

Consideration of mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors (the 'modifying factors')

PAPUA NEW GUINEA – ATTRIBUTABLE GOLD

Increasing level of geoscientific knowledge and confidence

Mineral resources (total)

Tonnes		Gold	
Mt	g/t	000kg	000oz
822.1	0.73	600	19 301

Reported as *in situ* mineralisation estimates

Mineral reserves (total)

Tonnes		Gold	
Mt	g/t	000kg	000oz
215.8	1.00	215	6 908

Reported as mineable production estimates

Inferred

Tonnes		Gold	
Mt	g/t	000kg	000oz
338.7	0.39	133	4 267

Indicated

Tonnes		Gold	
Mt	g/t	000kg	000oz
482.9	0.97	467	15 018

Probable

Tonnes		Gold	
Mt	g/t	000kg	000oz
215.3	1.00	214	6 892

Measured

Tonnes		Gold	
Mt	g/t	000kg	000oz
0.5	1.04	1	17

Proved

Tonnes		Gold	
Mt	g/t	000kg	000oz
0.5	1.04	1	17

Consideration of mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors (the 'modifying factors')

RELATIONSHIP BETWEEN HARMONY'S MINERAL RESOURCES AND MINERAL RESERVES CONTINUED

TOTAL ATTRIBUTABLE GOLD – HARMONY UNDERGROUND AND SURFACE

Increasing level of geoscientific knowledge and confidence

Mineral resources (total)

Tonnes	Gold	
Mt	000kg	000oz
1 966.1	2 324	74 724

Reported as *in situ* mineralisation estimates

Inferred

Tonnes	Gold	
Mt	000kg	000oz
455.5	600	19 303

Indicated

Tonnes	Gold	
Mt	000kg	000oz
1 187.1	1 114	35 801

Measured

Tonnes	Gold	
Mt	000kg	000oz
323.6	610	19 620

Mineral reserves (total)

Tonnes	Gold	
Mt	000kg	000oz
1 093.9	721	23 171

Reported as mineable production estimates

Probable

Tonnes	Gold	
Mt	000kg	000oz
870.3	451	14 516

Proved

Tonnes	Gold	
Mt	000kg	000oz
223.6	269	8 655

Consideration of mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors (the 'modifying factors')

TOTAL ATTRIBUTABLE GOLD AND GOLD EQUIVALENTS – HARMONY UNDERGROUND AND SURFACE

Increasing level of geoscientific knowledge and confidence

Mineral resources (total)

Tonnes	Gold Equivalents	
Mt	000kg	000oz
1 966.1	3 243	104 266

Reported as *in situ* mineralisation estimates

Inferred

Tonnes	Gold Equivalents	
Mt	000kg	000oz
455.5	845	27 167

Indicated

Tonnes	Gold Equivalents	
Mt	000kg	000oz
1 187.1	1 788	57 475

Measured

Tonnes	Gold Equivalents	
Mt	000kg	000oz
323.6	610	19 623

Mineral reserves (total)

Tonnes	Gold Equivalents	
Mt	000kg	000oz
1 093.9	1 143	36 746

Reported as mineable production estimates

Probable

Tonnes	Gold Equivalents	
Mt	000kg	000oz
870.3	874	28 087

Proved

Tonnes	Gold Equivalents	
Mt	000kg	000oz
223.6	269	8 659

Consideration of mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors (the 'modifying factors')

MINERAL RESOURCES STATEMENT (IMPERIAL)

Operations	Measured resources			Indicated resources			Inferred resources			Total mineral resources		
Gold	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
SOUTH AFRICA UNDERGROUND												
Free State												
Tshepong operations	27.1	0.327	8 865	13.1	0.299	3 919	37.9	0.270	10 215	78.1	0.295	22 999
Bambanani	1.0	0.442	456	–	–	–	–	–	–	1.0	0.442	456
Unisel	1.5	0.205	302	1.3	0.202	271	0.1	0.191	14	2.9	0.203	586
Joel	2.9	0.245	709	5.7	0.248	1 421	0.2	0.235	47	8.8	0.247	2 178
Masimong	3.3	0.224	730	1.1	0.192	212	0.1	0.169	23	4.5	0.215	966
Target 1	8.7	0.241	2 086	7.8	0.227	1761	4.6	0.169	779	21.0	0.220	4 626
Target 3	7.7	0.265	2 057	5.1	0.207	1 063	–	–	–	12.9	0.242	3 119
Free State underground	**52.2**	**0.291**	**15 206**	**34.1**	**0.253**	**8 647**	**42.9**	**0.258**	**11 078**	**129.2**	**0.270**	**34 931**
West Rand												
Doornkop South Reef	3.0	0.235	714	4.0	0.235	932	11.7	0.227	2 648	18.7	0.230	4 294
Doornkop Main Reef	0.1	0.157	14	0.1	0.161	8	0.0	0.155	3	0.2	0.158	25
Kusasalethu	3.5	0.352	1 219	22.1	0.254	5 604	2.1	0.256	543	27.7	0.266	7 366
West Rand underground	**6.6**	**0.295**	**1 947**	**26.1**	**0.251**	**6 544**	**13.8**	**0.231**	**3 194**	**46.5**	**0.251**	**11 685**
South Africa underground	**58.8**	**0.292**	**17 153**	**60.3**	**0.252**	**15 191**	**56.7**	**0.252**	**14 272**	**175.7**	**0.265**	**46 616**
SOUTH AFRICA SURFACE												
Kraaipan Greenstone Belt												
Kalgold	6.0	0.025	147	33.0	0.028	927	6.9	0.029	198	45.9	0.028	1 273
Kalgold tailings dam	–	–	–	–	–	–	26.2	0.008	201	26.2	0.008	201
Kalgold	**6.0**		**147**	**33.0**		**927**	**33.1**		**399**	**72.1**		**1 474**
Free State surface												
Free State (Phoenix)	80.5	0.008	646	–	–	–	–	–	–	80.5	0.008	646
Free State (St Helena)	210.9	0.008	1 656	–	–	–	–	–	–	210.9	0.008	1 656
Free State (Central Plant)	–	–	–	74.2	0.008	574	–	–	–	74.2	0.008	574
Free State (other):												
– Waste rock dumps	–	–	–	4.3	0.015	64	21.8	0.012	270	26.1	0.013	334
– Tailings	–	–	–	604.4	0.007	4 028	17.0	0.006	94	621.5	0.007	4 122
Free State surface	**291.4**	**0.008**	**2 303**	**683.0**	**0.007**	**4 666**	**38.9**	**0.009**	**364**	**1 013.2**	**0.007**	**7 333**
South Africa surface (including Kalgold)	**297.4**	**0.008**	**2 450**	**716.0**	**0.008**	**5 592**	**72.0**	**0.011**	**764**	**1 085.4**	**0.008**	**8 807**
South Africa – total	**356.2**		**19 603**	**776.2**		**20 783**	**128.7**		**15 036**	**1 261.1**		**55 423**
PAPUA NEW GUINEA												
Hidden Valley	0.5	0.030	14	87.6	0.043	3 795	2.6	0.033	87	90.7	0.043	3 897
Hamata	0.1	0.032	2	3.0	0.057	171	0.2	0.043	10	3.3	0.056	184
Wafi [1]	–	–	–	62.5	0.050	3 146	12.5	0.038	475	75.0	0.048	3 621
Golpu [1]	–	–	–	379.2	0.021	7 905	74.8	0.018	1 377	454.0	0.020	9 282
Nambonga [1]	–	–	–	–	–	–	22.0	0.023	507	22.0	0.023	507
Kili Teke	–	–	–	–	–	–	261.2	0.007	1 810	261.2	0.007	1 810
Papua New Guinea – total	**0.5**	**0.030**	**17**	**532.3**	**0.028**	**15 018**	**373.4**	**0.011**	**4 267**	**906.2**	**0.021**	**19 301**
HARMONY – TOTAL	**356.7**		**19 620**	**1 308.5**		**35 801**	**502.0**		**19 303**	**2 167.3**		**74 724**

MINERAL RESOURCES STATEMENT (IMPERIAL) CONTINUED

Operations	Measured resources		Indicated resources		Inferred resources		Total mineral resources	
Gold equivalents [2]	Tons (Mt)	Au eq (000oz)	Tons (Mt)	Au eq (000oz)	Tons (Mt)	Au eq (000oz)	Tons (Mt)	Au eq (000oz)
Silver								
Hidden Valley	0.5	4	87.6	1 100	2.6	34	90.7	1 137
Total	**0.5**	**4**	**87.6**	**1 100**	**2.6**	**34**	**90.7**	**1 137**
Copper								
Golpu [1]	–	–	379.2	20 575	74.8	3 180	454.0	23 755
Nambonga [1]	–	–	–	–	22.0	235	22.0	235
Kili Teke	–	–	–	–	261.2	4 416	261.2	4 416
Total	**–**	**–**	**379.2**	**20 575**	**358.0**	**7 831**	**737.2**	**28 405**
Silver and copper – total as gold equivalents	**0.5**	**4**	**466.8**	**21 674**	**360.6**	**7 864**	**827.9**	**29 542**
Papua New Guinea – total including gold equivalents	**0.5**	**20**	**532.3**	**36 692**	**373.4**	**12 131**	**906.2**	**48 844**
HARMONY – TOTAL INCLUDING GOLD EQUIVALENTS	**356.7**	**19 623**	**1 308.5**	**57 475**	**502.0**	**27 167**	**2 167.3**	**104 266**

Other metals

PAPUA NEW GUINEA

Silver	Tons (Mt)	Grade (oz/t)	Ag (000oz)	Tons (Mt)	Grade (oz/t)	Ag (000oz)	Tons (Mt)	Grade (oz/t)	Ag (000oz)	Tons (Mt)	Grade (oz/t)	Ag (000oz)
Hidden Valley	0.5	0.575	272	87.6	0.837	73 272	2.6	0.846	2 231	90.7	0.836	75 776
Golpu [1]	–	–	–	379.2	0.038	14 247	74.8	0.031	2 322	454.0	0.036	16 569
Nambonga [1]	–	–	–	–	–	–	22.0	0.084	1 838	22.0	0.084	1 838
Total	**0.5**	**0.58**	**272**	**466.8**	**0.187**	**87 519**	**99.4**	**0.064**	**6 390**	**566.7**	**0.166**	**94 182**

Copper	Tons (Mt)	Grade (%)	Cu (Mlb)	Tons (Mt)	Grade (%)	Cu (Mlb)	Tons (Mt)	Grade (%)	Cu (Mlb)	Tons (Mt)	Grade (%)	Cu (Mlb)
Golpu [1]	–	–	–	379.2	0.985	8 232	74.8	0.771	1 273	454.0	0.950	9 505
Nambonga [1]	–	–	–	–	–	–	22.0	0.191	92	22.0	0.191	92
Kili Teke	–	–	–	–	–	–	261.2	0.307	1 767	261.2	.307	1 767
Total	**–**	**–**	**–**	**379.2**	**0.985**	**8 232**	**358.0**	**0.173**	**3 132**	**737.2**	**0.590**	**11 364**

Molybdenum	Tons (Mt)	Grade (lb/t)	Mo (Mlb)	Tons (Mt)	Grade (lb/t)	Mo (Mlb)	Tons (Mt)	Grade (lb/t)	Mo (Mlb)	Tons (Mt)	Grade (lb/t)	Mo (Mlb)
Golpu [1]	–	–	–	379.2	0.188	71	74.8	0.143	11	454.0	0.180	82
Kili Teke	–	–	–	–	–	–	261.2	0.335	88	261.2	0.335	88
Total	**–**	**–**	**–**	**379.2**	**0.188**	**71**	**336.0**	**0.292**	**98**	**715.2**	**0.237**	**169**

SOUTH AFRICA

Uranium	Tons (Mt)	Grade (lb/t)	U_3O_8 (Mlb)	Tons (Mt)	Grade (lb/t)	U_3O_8 (Mlb)	Tons (Mt)	Grade (lb/t)	U_3O_8 (Mlb)	Tons (Mt)	Grade (lb/t)	U_3O_8 (Mlb)
Free State underground												
Masimong	–	–	–	3.8	0.384	1	1.5	0.294	0	5.3	0.359	2
Tshepong operations	13.2	0.394	5	23.7	0.409	10	42.0	0.227	10	78.9	0.310	24
Free State underground	**13.2**	**0.394**	**5**	**27.5**	**0.406**	**11**	**43.5**	**0.229**	**10**	**84.2**	**0.313**	**26**
Free State surface	**–**	**–**	**–**	**197.1**	**0.199**	**39**	**–**	**–**	**–**	**197.1**	**0.199**	**39**
South Africa – total	**13.2**	**0.394**	**5**	**224.6**	**0.225**	**50**	**43.5**	**0.229**	**10**	**281.3**	**0.233**	**66**

[1] *Harmony's 50% attributable portion*

[2] *Gold equivalent ounces are calculated assuming a US$1 200/oz Au, US$3.00/lb Cu and US$18.00/oz Ag with 100% recovery for all metals*
Rounding of numbers may result in slight computational discrepancies
Note: 1 ton = 907kg = 2 000lb
1 troy ounce = 31.10348 grams

MINERAL RESOURCES STATEMENT (METRIC)

Operations	Measured resources			Indicated resources			Inferred resources			Total mineral resources		
Gold	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
SOUTH AFRICA underground												
Free State												
Tshepong operations	24.6	11.21	276	11.9	10.27	122	34.3	9.25	318	70.8	10.10	715
Bambanani	0.9	15.15	14	–	–	–	–	–	–	0.9	15.15	14
Unisel	1.3	7.02	9	1.2	6.93	8	0.1	6.54	0.4	2.6	6.97	18
Joel	2.6	8.40	22	5.2	8.51	44	0.2	8.06	1	8.0	8.46	68
Masimong	3.0	7.69	23	1.0	6.58	7	0.1	5.78	1	4.1	7.36	30
Target 1	7.8	8.27	65	7.0	7.78	55	4.2	5.79	24	19.1	7.55	144
Target 3	7.0	9.10	64	4.7	7.10	33	–	–	–	11.7	8.31	97
Free State underground	**47.3**	**9.99**	**473**	**31.0**	**8.68**	**269**	**38.9**	**8.86**	**345**	**117.2**	**9.27**	**1 086**
West Rand												
Doornkop South Reef	2.8	8.04	22	3.6	8.07	29	10.6	7.78	82	16.9	7.88	134
Doornkop Main Reef	0.1	5.38	0.4	0.05	5.51	0.3	0.02	5.32	0.1	0.1	5.41	1
Kusasalethu	3.1	12.08	38	20.0	8.70	174	1.9	8.77	17	25.1	9.13	229
West Rand underground	**6.0**	**10.13**	**61**	**23.7**	**8.59**	**204**	**12.5**	**7.93**	**99**	**42.2**	**8.61**	**363**
South Africa underground	**53.3**	**10.01**	**534**	**54.7**	**8.64**	**472**	**51.4**	**8.63**	**444**	**159.4**	**9.10**	**1 450**
SOUTH AFRICA surface												
Kraaipan Greenstone Belt												
Kalgold open pit	5.4	0.84	5	29.9	0.96	29	6.2	0.99	6	41.6	0.95	40
Kalgold tailings dam	–	–	–	–	–	–	23.8	0.26	6	23.8	0.26	6
Kalgold	**5.4**		**5**	**29.9**		**29**	**30.0**		**12**	**65.4**		**46**
FREE STATE surface												
Free State (Phoenix)	73.0	0.28	20	–	–	–	–	–	–	73.0	0.28	20
Free State (St Helena)	191.3	0.27	52	–	–	–	–	–	–	191.3	0.27	52
Free State (Central Plant)	–	–	–	67.3	0.27	18	–	–	–	67.3	0.27	18
Free State (other):												
– Waste rock dumps	–	–	–	3.9	0.51	2	19.8	0.42	8	23.7	0.44	10
– Tailings	–	–	–	548.3	0.23	125	15.5	0.19	3	563.8	0.23	128
Free State surface	**264.4**	**0.27**	**72**	**619.6**	**0.23**	**145**	**35.3**	**0.32**	**11**	**919.2**	**0.25**	**228**
South Africa surface (including Kalgold)	**269.8**	**0.28**	**76**	**649.5**	**0.27**	**174**	**65.3**	**0.36**	**24**	**984.6**	**0.28**	**274**
South Africa – total	**323.1**		**610**	**704.2**		**646**	**116.7**		**468**	**1 144.0**		**1 724**
PAPUA NEW GUINEA												
Hidden Valley	0.4	1.04	0.4	79.4	1.49	118	2.4	1.14	3	82.3	1.47	121
Hamata	0.1	1.09	0.1	2.7	1.96	5	0.2	1.46	0.3	3.0	1.90	6
Wafi [1]	–	–	–	56.7	1.72	98	11.3	1.30	15	68.1	1.65	113
Golpu [1]	–	–	–	344.0	0.71	246	67.9	0.63	43	411.9	0.70	289
Nambonga [1]	–	–	–	–	–	–	19.9	0.79	16	19.9	0.79	16
Kili Teke	–	–	–	–	–	–	237.0	0.24	56	237.0	0.24	56
Papua New Guinea – total	**0.5**	**1.04**	**1**	**482.9**	**0.97**	**467**	**338.7**	**0.39**	**133**	**822.1**	**0.73**	**600**
HARMONY – TOTAL	**323.6**		**610**	**1 187.1**		**1 114**	**455.5**		**600**	**1 966.1**		**2 324**

MINERAL RESOURCES STATEMENT (METRIC) CONTINUED

Operations	Measured resources		Indicated resources		Inferred resources		Total mineral resources	
Gold equivalents [2]	Tonnes (Mt)	Au eq (000kg)	Tonnes (Mt)	Au eq (000kg)	Tonnes (Mt)	Au eq (000kg)	Tonnes (Mt)	Au eq (000kg)
Silver								
Hidden Valley	0.4	0.1	79.4	34	2.4	1	82.3	35
Copper								
Golpu [1]	–	–	344.0	640	67.9	99	411.9	739
Nambonga [1]	–	–	–	–	19.9	7	19.9	7
Kili Teke	–	–	–	–	237.0	137	237.0	137
Total	**–**	**–**	**344.0**	**640**	**324.8**	**244**	**668.8**	**884**
Silver and copper – total as gold equivalents	**0.4**	**0.1**	**423.5**	**674**	**327.2**	**245**	**751.0**	**919**
Papua New Guinea – total including gold equivalents	**0.5**	**1**	**482.9**	**1 141**	**338.7**	**377**	**822.1**	**1 519**
HARMONY – TOTAL INCLUDING GOLD EQUIVALENTS	**323.6**	**610**	**1 187.1**	**1 788**	**455.5**	**845**	**1 966.1**	**3 243**

Other metals

PAPUA NEW GUINEA

Silver	Tonnes (Mt)	Grade (g/t)	Ag (000kg)	Tonnes (Mt)	Grade (g/t)	Ag (000kg)	Tonnes (Mt)	Grade (g/t)	Ag (000kg)	Tonnes (Mt)	Grade (g/t)	Ag (000kg)
Hidden Valley	0.4	19.73	8	79.4	28.69	2 279	2.4	29.01	69	82.3	28.65	2 357
Golpu [1]	–	–	–	344.0	1.29	443	67.9	1.06	72	411.9	1.25	515
Nambonga [1]	–	–	–	–	–	–	19.9	2.87	57	19.9	2.87	57
Total	**0.4**	**19.73**	**8**	**423.5**	**6.43**	**2 722**	**90.2**	**2.20**	**199**	**514.1**	**5.70**	**2 929**

Copper	Tonnes (Mt)	Grade (%)	Cu (000t)	Tonnes (Mt)	Grade (%)	Cu (000t)	Tonnes (Mt)	Grade (%)	Cu (000t)	Tonnes (Mt)	Grade (%)	Cu (000t)
Golpu [1]	–	–	–	344.0	1.09	3 734	67.9	0.85	577	411.9	1.05	4 311
Nambonga [1]	–	–	–	–	–	–	19.9	0.21	42	19.9	0.21	42
Kili Teke	–	–	–	–	–	–	237.0	0.34	802	237.0	0.34	802
Total	**–**	**–**	**–**	**344.0**	**1.09**	**3 734**	**324.8**	**0.44**	**1 421**	**668.8**	**0.77**	**5 155**

Molybdenum	Tonnes (Mt)	Grade (ppm)	Mo (000t)	Tonnes (Mt)	Grade (ppm)	Mo (000t)	Tonnes (Mt)	Grade (ppm)	Mo (000t)	Tonnes (Mt)	Grade (ppm)	Mo (000t)
Golpu [1]	–	–	–	344.0	94	32	67.9	72	5	411.9	90	37
Kili Teke	–	–	–	–	–	–	237.0	168	40	237.0	168	40
Total	**–**	**–**	**–**	**344.0**	**94**	**32**	**304.9**	**146**	**45**	**648.9**	**118**	**77**

SOUTH AFRICA

Uranium	Tonnes (Mt)	Grade (kg/t)	U_3O_8 (Mkg)	Tonnes (Mt)	Grade (kg/t)	U_3O_8 (Mkg)	Tonnes (Mt)	Grade (kg/t)	U_3O_8 (Mkg)	Tonnes (Mt)	Grade (kg/t)	U_3O_8 (Mkg)
Free State underground												
Masimong	–	–	–	3.4	0.19	1	1.3	0.15	0	4.8	0.18	1
Tshepong operations	12.0	0.20	2	21.5	0.20	4	38.1	0.11	4	71.6	0.15	11
Free State underground	**12.0**	**0.20**	**2**	**25.0**	**0.20**	**5**	**39.4**	**0.11**	**5**	**76.4**	**0.16**	**12**
Free State surface	**–**	**–**	**–**	**178.8**	**0.10**	**18**	**–**	**–**	**–**	**178.8**	**0.10**	**18**
South Africa – total	**12.0**	**0.20**	**2**	**203.8**	**0.11**	**23**	**39.4**	**0.11**	**5**	**255.2**	**0.12**	**30**

[1] Harmony's 50% attributable portion

[2] Gold equivalent ounces are calculated assuming a US$1 200/oz Au, US$3.00/lb Cu and US$18.00/oz Ag with 100% recovery for all metals

Rounding of numbers may result in slight computational discrepancies

Note: 1 tonne = 1 000kg = 2 204lb

1 troy ounce = 31.10348 grams

MINERAL RESERVES STATEMENT (IMPERIAL)

Operations	Proved reserves			Probable reserves			Total mineral reserves		
Gold	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)	Tons (Mt)	Grade (oz/t)	Gold (000oz)
SOUTH AFRICA UNDERGROUND									
Free State									
Tshepong operations	23.2	0.173	4 002	5.0	0.156	785	28.2	0.170	4 787
Bambanani	1.2	0.337	401	–	–	–	1.2	0.337	401
Unisel	1.3	0.133	170	1.0	0.134	131	2.3	0.134	302
Joel	2.3	0.146	335	2.7	0.156	420	5.0	0.151	755
Masimong	2.3	0.122	281	0.3	0.094	31	2.6	0.119	312
Target 1	3.5	0.122	430	2.2	0.125	274	5.7	0.123	705
Free State underground	**33.8**	**0.166**	**5 619**	**11.2**	**0.146**	**1 642**	**45.0**	**0.161**	**7 261**
West Rand									
Doornkop South Reef	2.4	0.145	343	2.7	0.145	392	5.1	0.145	735
Kusasalethu	4.7	0.203	959	0.7	0.180	129	5.4	0.200	1 088
West Rand underground	**7.1**	**0.183**	**1 302**	**3.4**	**0.152**	**521**	**10.5**	**0.173**	**1 823**
South Africa underground	**40.9**	**0.169**	**6 921**	**14.6**	**0.148**	**2 163**	**55.5**	**0.164**	**9 084**
SOUTH AFRICA SURFACE									
Kraaipan Greenstone Belt									
Kalgold	4.9	0.028	138	24.4	0.033	796	29.3	0.032	934
Free State – surface									
Free State (Phoenix)	80.5	0.008	646	–	–	–	80.5	0.008	646
Free State (St Helena)	119.7	0.008	933	–	–	–	119.7	0.008	933
Free State (Central Plant)	–	–	–	74.2	0.008	574	74.2	0.008	574
Free State (other):									
– Waste rock dumps	–	–	–	4.3	0.015	64	4.3	0.015	64
– Tailings	–	–	–	604.4	0.007	4 028	604.4	0.007	4 028
Free State surface	**200.1**	**0.008**	**1 580**	**683.0**	**0.007**	**4 666**	**883.1**	**0.007**	**6 245**
South Africa surface (including Kalgold)	**205.1**	**0.008**	**1 717**	**707.4**	**0.008**	**5 462**	**912.4**	**0.008**	**7 179**
South Africa – total	**246.0**		**8 639**	**722.0**		**7 624**	**968.0**		**16 263**
PAPUA NEW GUINEA									
Hidden Valley	0.5	0.030	14	26.9	0.047	1 277	27.4	0.047	1 291
Hamata	0.1	0.032	2	1.5	0.063	93	1.5	0.062	96
Golpu [1]	–	–	–	209.0	0.026	5 522	209.0	0.026	5 522
Papua New Guinea – total	**0.5**	**0.030**	**17**	**237.3**	**0.029**	**6 892**	**237.9**	**0.029**	**6 908**
HARMONY – TOTAL	**246.5**		**8 655**	**959.3**		**14 516**	**1 205.8**		**23 171**

MINERAL RESERVES STATEMENT (IMPERIAL) CONTINUED

Operations	Proved reserves		Probable reserves		Total mineral reserves	
Gold equivalents [2]	Tons (Mt)	Au eq (000oz)	Tons (Mt)	Au eq (000oz)	Tons (Mt)	Au eq (000oz)
Silver						
Hidden Valley	0.5	4	26.9	403	27.4	407
Copper						
Golpu [1]	–	–	209.0	13 168	209.0	13 168
Silver and copper – total as gold equivalents	**0.5**	**4**	**235.8**	**13 571**	**236.3**	**13 575**
Papua New Guinea – total including gold equivalents	**0.5**	**21**	**237.3**	**20 462**	**237.9**	**20 483**
HARMONY – TOTAL INCLUDING GOLD EQUIVALENTS	**246.5**	**8 659**	**959.3**	**28 087**	**1 205.8**	**36 746**

Other metals

PAPUA NEW GUINEA

	Tons	Grade	Ag	Tons	Grade	Ag	Tons	Grade	Ag
Silver	(Mt)	(oz/t)	(000oz)	(Mt)	(oz/t)	(000oz)	(Mt)	(oz/t)	(000oz)
Hidden Valley	0.5	0.575	272	26.9	0.998	26 835	27.4	0.991	27 107
	Tons	Grade	Cu	Tons	Grade	Cu	Tons	Grade	Cu
Copper	(Mt)	(%)	(Mlb)	(Mt)	(%)	(Mlb)	(Mt)	(%)	(Mlb)
Golpu [1]	–	–	–	209.0	1.144	5 269	209	1.144	5 269

[1] *Harmony's 50% attributable portion*

[2] *Gold equivalent ounces are calculated assuming a US$1 200/oz Au, US$3.00/lb Cu and US$18.00/oz Ag with 100% recovery for all metals*

Metal figures are fully inclusive of all mining dilutions and gold losses, and are reported as mill delivered tonnes and head grades

Metallurgical recovery factors have not been applied to the reserve figures

Rounding of numbers may result in slight computational discrepancies

Note: 1 ton = 907kg = 2 000lb

1 troy ounce = 31.10348 grams

MINERAL RESERVES STATEMENT (METRIC)

Operations	Proved reserves			Probable reserves			Total mineral reserves		
Gold	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)	Tonnes (Mt)	Grade (g/t)	Gold (000kg)
SOUTH AFRICA UNDERGROUND									
Free State									
Tshepong operations	21.0	5.91	124	4.6	5.36	24	25.6	5.82	149
Bambanani	1.1	11.54	12	–	–	–	1.1	11.54	12
Unisel	1.2	4.56	5	0.9	4.6	4	2.0	4.58	9
Joel	2.1	5.00	10	2.4	5.35	13	4.5	5.19	23
Masimong	2.1	4.19	9	0.3	3.23	1	2.4	4.07	10
Target 1	3.2	4.18	13	2.0	4.29	9	5.2	4.22	22
Free State underground	**30.7**	**5.70**	**175**	**10.2**	**5.02**	**51**	**40.8**	**5.53**	**226**
West Rand									
Doornkop South Reef	2.1	4.97	11	2.5	4.96	12	4.6	4.96	23
Kusasalethu	4.3	6.95	30	0.6	6.18	4	4.9	6.85	34
West Rand underground	**6.4**	**6.29**	**41**	**3.1**	**5.21**	**16**	**9.5**	**5.94**	**57**
South Africa underground	**37.1**	**5.80**	**215**	**13.3**	**5.07**	**67**	**50.4**	**5.61**	**283**
SOUTH AFRICA SURFACE									
Kraaipan Greenstone Belt									
Kalgold	4.5	0.96	4	22.1	1.12	25	26.6	1.09	29
Free State surface									
Free State (Phoenix)	73.0	0.28	20	–	–	–	73.0	0.28	20
Free State (St Helena)	108.6	0.27	29	–	–	–	108.6	0.27	29
Free State (Central Plant)	–	–	–	67.3	0.27	18	67.3	0.27	18
Free State (other):									
– Waste rock dumps	–	–	–	3.9	0.51	2	3.9	0.51	2
– Tailings	–	–	–	548.3	0.23	125	548.3	0.23	125
Free State surface	**181.6**	**0.27**	**49**	**619.6**	**0.23**	**145**	**801.1**	**0.24**	**194**
South Africa surface (including Kalgold)	**186.0**	**0.29**	**53**	**641.7**	**026**	**170**	**827.8**	**0.27**	**223**
South Africa – total	**223.1**		**269**	**655.0**		**237**	**878.1**		**506**
PAPUA NEW GUINEA									
Hidden Valley	0.4	1.04	0.4	24.4	1.63	40	24.8	1.62	40
Hamata	0.1	1.09	0.1	1.3	2.17	3	1.4	2.12	3
Golpu [1]	–	–	–	189.6	0.91	172	189.6	0.91	172
Papua New Guinea – total	**0.5**	**1.04**	**1**	**215.3**	**1.00**	**214**	**215.8**	**1.00**	**215**
HARMONY – TOTAL	**223.6**		**269**	**870.3**		**451**	**1 093.9**		**721**

MINERAL RESERVES STATEMENT (METRIC) CONTINUED

Operations	Proved reserves		Probable reserves		Total mineral reserves	
Gold equivalents [2]	Tonnes (Mt)	Au eq (000Kg)	Tonnes (Mt)	Au eq (000Kg)	Tonnes (Mt)	Au eq (000Kg)
Silver						
Hidden Valley	0.4	0.1	24.4	13	24.8	13
Copper [1]						
Golpu	–	–	189.6	410	189.6	410
Silver and copper – total as gold equivalents	**0.4**	**0.1**	**214.0**	**422**	**214.4**	**422**
Papua New Guinea – total including gold equivalents	**0.5**	**1**	**215.3**	**636**	**215.8**	**637**
HARMONY – TOTAL INCLUDING GOLD EQUIVALENTS	**223.6**	**269**	**870.3**	**874**	**1 093.9**	**1 143**

Other metals
PAPUA NEW GUINEA

Silver	Tonnes (Mt)	Grade (g/t)	Ag (000kg)	Tonnes (Mt)	Grade (g/t)	Ag (000kg)	Tonnes (Mt)	Grade (g/t)	Ag (000kg)
Hidden Valley	0.4	19.73	8	24.4	34.23	835	24.8	33.98	843

Copper	Tonnes (Mt)	Grade (%)	Cu (000t)	Tonnes (Mt)	Grade (%)	Cu (000t)	Tonnes (Mt)	Grade (%)	Cu (000t)
Golpu [1]	–	–	–	189.6	1.26	2 390	189.6	1.26	2 390

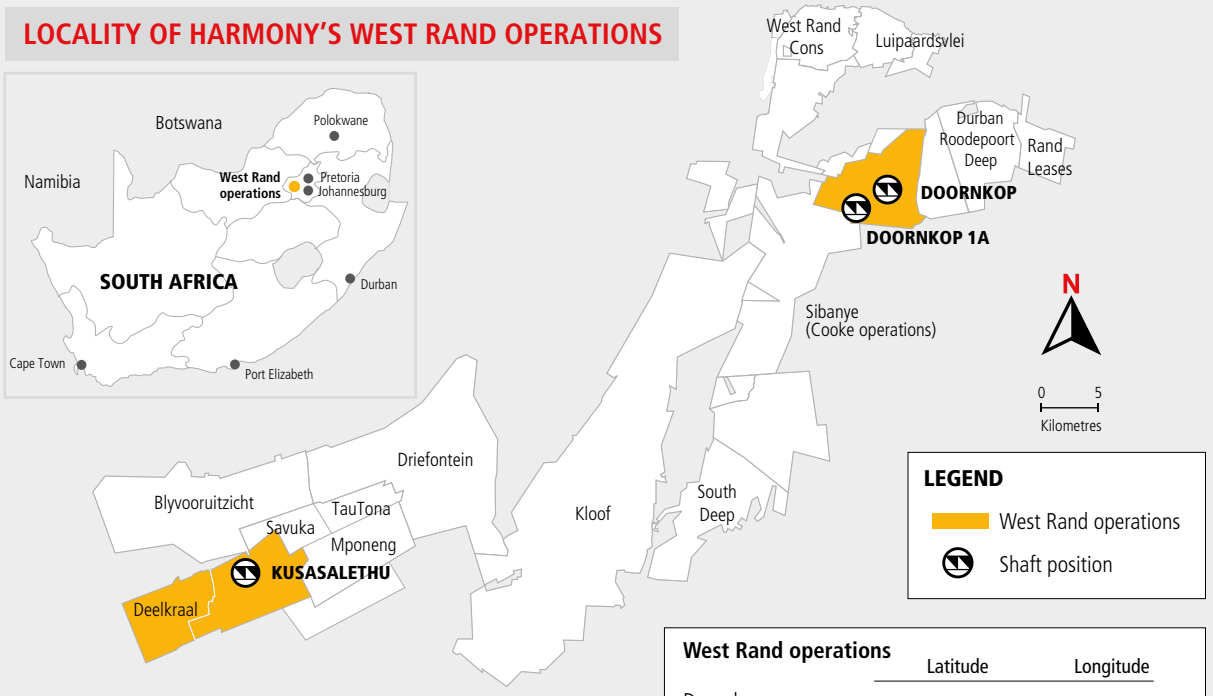
[1] *Harmony's 50% attributable portion*

[2] *Gold equivalent ounces are calculated assuming a US$1 200/oz Au, US$3.00/lb Cu and US$18.00/oz Ag with 100% recovery for all metals*
Metal figures are fully inclusive of all mining dilutions and gold losses, and are reported as mill delivered tonnes and head grades
Metallurgical recovery factors have not been applied to the reserve figures
Rounding of numbers may result in slight computational discrepancies
Note: 1 tonne = 1 000kg = 2 204lb
1 troy ounce = 31.10348 grams

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – WEST RAND

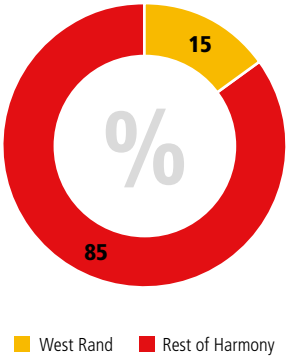
Harmony's West Rand operations are Doornkop and Kusasalethu, which together have mineral resources of 11.7Moz and mineral reserves of 1.8Moz as at 30 June 2017

LOCALITY OF HARMONY'S WEST RAND OPERATIONS

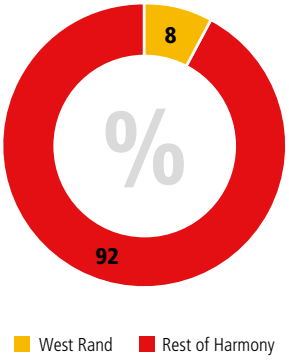


West Rand operations	Latitude	Longitude
Doornkop	26°13'03.36"S	27°47'26.55"E
Kusasalethu	26°27'16.23"S	27°21'32.91"E

Contribution to gold mineral resources



Contribution to gold mineral reserves



RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – WEST RAND CONTINUED

Location

The Doornkop shaft complex is located south of Krugersdorp, 30km west of Johannesburg, on the northern rim of the Witwatersrand Basin, in the province of Gauteng. The property lies between Cooke 1 shaft, belonging to Sibanye Gold Limited, and Durban Roodepoort Deep Mines.

Kusasalethu is situated on the West Wits Line, nestled between the Savuka and Mponeng mines to the east and the dormant Deelkraal to the west. Kusasalethu is situated 14km south of Carletonville and 90km southwest of Johannesburg.

West Rand stratigraphic column

Group	Sub-group	Formation	Informal unit and reefs	Member
Klipriviersberg		Westonaria	Klipriviersberg/ Ventersdorp lava	
		Venterspost	Ventersdorp Contact Reef	
Central Rand Group	Turffontein	Mondeor	Elsburg massives and individuals	Modderfontein Waterpan
		Elsburg	Quartzites and conglomerates	Gemsbokfontein
				Planvlakte
				Gemspost
				Vlakfontein
		Kimberley	Shale	Kimberley Reefs
	Johannesburg	Booysens shale	Upper transitional Shale Lower transitional	Kimberley shale
		Krugersdorp	Bird amygdaliod Bird reefs White reef	Bird
			Luipaardsvlei quartzite	Luipaardsvlei
		Livingstone conglomerate	Livingstone Reef	Livingstone Reef
		Randfontein quartzite		
		Johnstone conglomerate	Johnstone Reef	Johnstone Reef
		Langlaagte quartzite		
		Main conglomerate	Leader Reef South Reef Main Reef	Langlaagte
West Rand Group	Jeppestown	Roodepoort		

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – WEST RAND CONTINUED

Doornkop

DOORNKOP

History

Exploration in the area started in the early 1930s with sinking of the main and ventilation shafts beginning in 1983 by JCI. By 1989, steady production had been achieved from mining of the Kimberly Reef which is shallower than the South Reef that is currently being mined. The deepening of the South Reef shaft was approved in October 1991 with the reef being intersected in October 1993. Stoping of the South Reef began in 1995. Shaft deepening continued with stoppages in between from November 1996 to May 1999. Harmony acquired Doornkop in January 2000. The South Reef project was re-launched in January 2003, resulting in the deepening of the mine to 1 980m below collar.

Nature of the operation

Doornkop is a single-shaft operation which exploits the South Reef some 2 000m below surface. The South Reef is a narrow reef, exploited by means of conventional stoping. The ore mined at Doornkop is processed at the mine's carbon-in-pulp plant, situated directly next to shaft. Mining of the Kimberley Reef was suspended during FY14 so as to focus on the build-up of mining of the South Reef and to prevent losses resulting from the lower gold price. Mining of the Kimberley Reef may be resumed should economic circumstances improve sufficiently.

Mineral rights/legal aspects and tenure

The current mining right encompasses an area of 2 941.021 hectares and was successfully converted, executed and registered as a new order mining right at the Mineral and Petroleum Resources Titles Office (MPRTO) on 25 February 2009 under MPT 18/2009. DMR Reference GP30/5/1/2/2/09MR is valid from 7 October 2008 to 6 October 2038.

Geology

The Doornkop shaft lease area is bounded by and lies to the southeast of the major northeasterly striking Roodepoort fault, which dips to the south and constitutes the southern edge of the Witpoortjie horst block or gap. This horst block comprises the stratigraphically older sediments of the West Rand Group, the overlying Central Rand Group sediments having been removed by erosion. A number of other faults, forming part of and lying southeast of the Roodepoort fault, including the Saxon fault, also constitute conspicuous structural breaks. A second major fault, the Doornkop fault, which trends in an east-west direction, occurs toward the southern portion of the lease area. This fault dips to the south and has an up-throw to the north.

Nearly the entire upper Witwatersrand section is present in the lease area and therefore all the major zones are present, though due to the distance of the area from the primary source of gold, the number of economic bands and their payability is limited. Eight of the well-known reefs are present in the area, but only the South Reef and potentially the Kimberly Reef are considered viable at this stage.

The South Reef is between 7.5m and 60m above the Main Reef horizon. The hanging wall of the South Reef consists of siliceous quartzites with non-persistent bands of 'blue-shot' grit and thin argillite partings. The footwall to the South Reef is a light coloured and fairly siliceous quartzite. Secondary conglomerate bands and stringers in the hanging wall and footwall of the South Reef may contain sporadic gold values. The general strike of the reef is east-west, with a flat dip from 5 to 15 degrees.

Due to the limited geological information, one of the biggest risks for the operation has been the intersection of any geological structures that may have a significant change in the reef elevations which can result in some of the resources ending up below infrastructure, rendering it inaccessible from current levels with a potential to negatively affect the declared reserves. To curb this risk, an extensive exploration drilling programme from underground platforms and using long incline borehole machines has been embarked on, which will lead to fewer geological surprises and/or changes in mine design. A recently completed seismic survey will also help with geological understanding of the regional structure and reef elevations in the major blocks. Structural interpretation of the seismic survey information has begun and all changes will be reflected in the coming year's geological interpretation and life-of-mine designs.

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – WEST RAND CONTINUED

Mining methods and mine planning

The mining method used is longwall mining with stability pillars being left on major geological structures. The flat dip which results in the development of long cross cuts presents challenges in terms of ore handling, especially for the bottom part of the raises, ventilation and the long lead times between the start of cross cut development to completion of stoping per raise line.

Mineral processing

The plant is a carbon-in-pulp plant with a milling capacity of 225 000 tonnes a month. This includes approximately 120 000 tonnes a month of ore from Sibanye's Cooke operations which is toll treated at Doornkop.

Infrastructure

Doornkop's surface and underground infrastructure, including its power and water supplies, can cope with current planned peak production level requirements. The 192, 197 and 202 levels are track bound while current development on 207 and 212 levels is trackless with plans in place to eventually make these levels track bound. Work continues on certain essential underground infrastructure on the South Reef, including the permanent tipping arrangements required to make the 207 and 212 full production levels. Ore is hoisted through the main shaft. Currently, the mine uses Sibanye's Cooke 1 shaft, which is 7km away, as a second escape way.

Mineral resource estimation

The estimation method used for local measured data on the shaft is ordinary kriging (OK) and for local indicated and inferred data is simple macro kriging (SMK). Estimates are generally kriged into 30mx30m blocks for the measured resources from the point support data. Indicated resources are kriged into 60mx60m blocks, using the associated regularised variograms together with a macro kriging decluster. Similarly, inferred resources are estimated using the associated regularised variograms and kriging into 120mx120m blocks. Any un-kriged areas in the inferred regions are then covered by global mean estimates. Geozones are based on grade distribution and structure to ensure correct grade estimates for the different areas.

Environmental impact

In line with the Mineral and Petroleum Resources Development Act of 2004, Doornkop has in place an approved environmental management plan. All environmental aspects and impacts emanating from mining activities are documented in the environmental management plan's accompanying report and in the environmental aspect register as required by the act and ISO 14001:2004 standard.

Annual performance monitoring and audits are conducted by the Department of Mineral Resources to verify compliance with the following legislation:

- Mine Health and Safety Act 29 of 1996
- National Water Act 36 of 1998
- National Environmental Management Act 107 of 1998
- Mineral and Petroleum Resources Development Act 28 of 2004

As required by the relevant regulations, external environmental audits or performance assessments to verify compliance with the approved EMP are conducted every second year by an independent environmental consultant and a report is submitted to the Department of Mineral Resources. Internal environmental legal compliance audits are also conducted to verify compliance. An online Doornkop environmental legal register on www.drayer-legal.co.za is used to monitor compliance and to obtain applicable and relevant environmental legal updates for the operation.

Bio-monitoring surveys are conducted on surface water streams close to the operation to comply with draft water use licence conditions and National Water Act 36 of 1998 to:

- Determine the condition of the biological communities in the rivers through indices such as SASS5, IHAS (Version 2.2); and IHIA, as well as to determine the chemical water quality in the streams during the wet seasons
- Provide baseline reference conditions for future studies in order to assist Doornkop management in identifying environmental liabilities that might result from current mining activities regarding the potential contamination of surface streams

Doornkop has been ISO 14001 accredited since 2010 and complies with the requirements of the ISO 14001: 2004 standard. It is also ICMI accredited and audited annually as per ISO 14001's requirements and the Cyanide Management Code. In line with its accreditation, every effort is made to either eliminate or minimise the effects of mining activities on the environment and adjacent communities.

Material risks: Material risks which may impact Doornkop's reserve and resource statements are as follows:

Significant risks

- Unexpected geological features

Remedial action

- Extensive exploration drilling from underground platforms, long incline borehole drilling and seismic survey

Competent person **Ore Reserve Manager** Hilton Chirambadare *BSc Geology, Mathematics, BSc Hons Geo, GDE, MENG, SACNASP*	15 years' experience in gold mining: 12 years on Witwatersrand gold deposits (underground) and three years on the Greenstone Belt (surface)

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – WEST RAND CONTINUED

DOORNKOP continued

Gold – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
South Reef	2.8	8.04	22	714	3.6	8.07	29	932	10.6	7.78	82	2 648	16.9	7.88	134	4 294
Main Reef	0.1	5.38	0.4	14	0.05	5.51	0.3	8	0.02	5.32	0.1	3	0.1	5.41	1	25
Total	**2.8**	**7.96**	**23**	**728**	**3.6**	**8.03**	**29**	**940**	**10.6**	**7.78**	**82**	**2 651**	**17.1**	**7.86**	**134**	**4 319**

Modifying factors

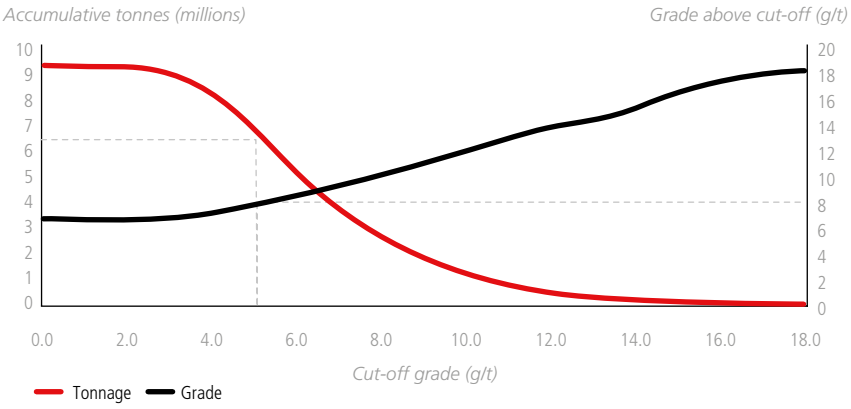
	MCF	SW	MW	PRF
	(%)	(cm)	(cm)	(%)
South Reef	81	124	147	96

Gold – Mineral reserves

	Proved reserves				Probable reserves				Total mineral reserves			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
South Reef	2.1	4.97	11	343	2.5	4.96	12	392	4.6	4.96	23	735

Doornkop: Measured and indicated resource grade-tonnage curve

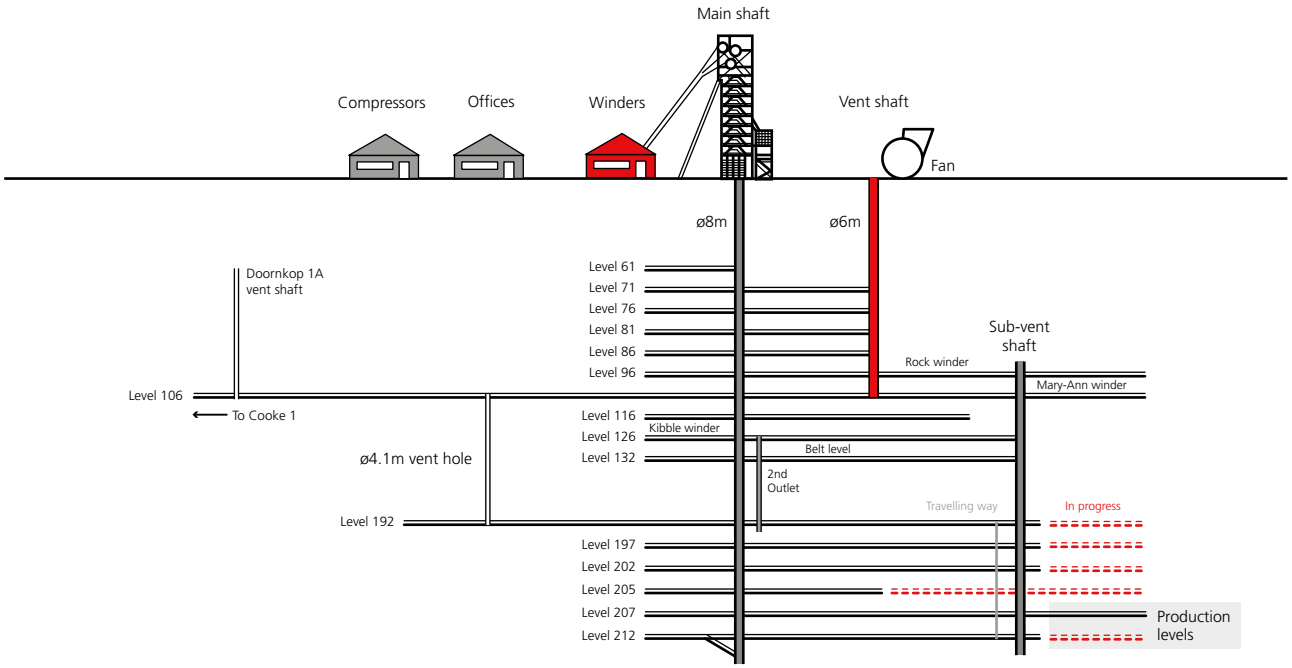
South Reef



RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – WEST RAND CONTINUED

Doornkop: Schematic of shaft and mining layout



DOORNKOP

SOUTH REEF

LEGEND

- Mining right
- Shaft position
- Fault zones
- Dykes
- Infrastructure
- Mined out

Mineral Resources

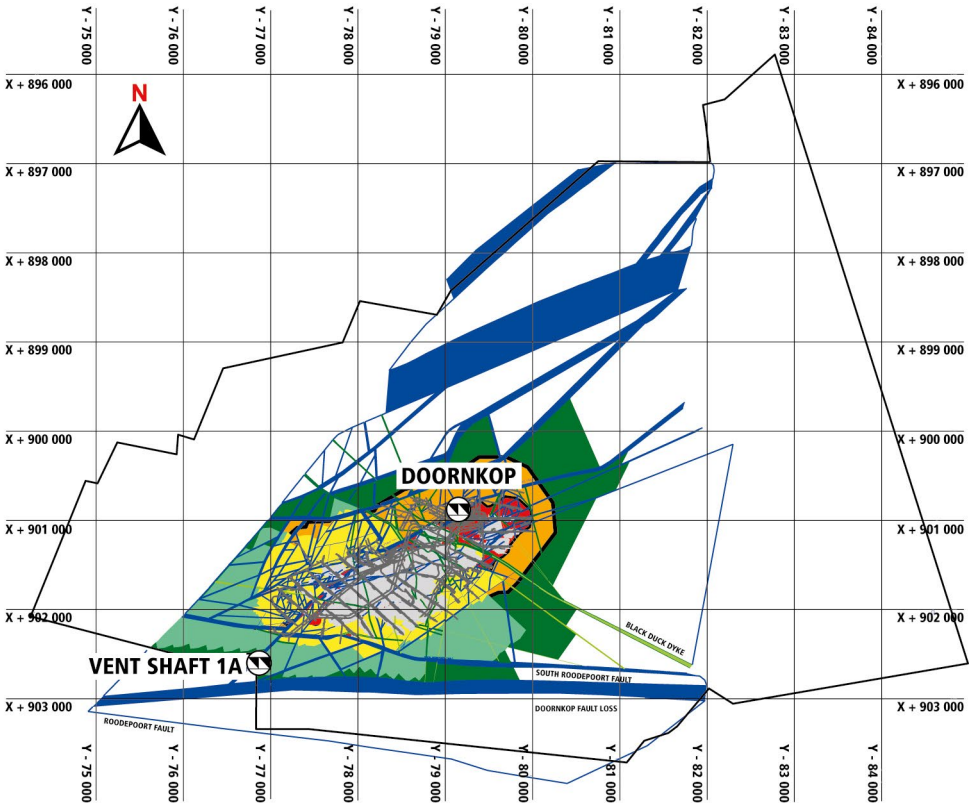
- Measured
- Indicated
- Inferred
- Inferred resources in LOM

Mineral Reserves

- Proved and probable

0 1 000 2 000
Metres

Co-ordinate system Lo. 27°
Constants: Y = 0.00
X = +2 000 000
Latitude: 26°13' 03.36"S
Longitude: 27°47' 26.55"E



RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – WEST RAND CONTINUED

Kusasalethu

KUSASALETHU

History

Harmony acquired the Elandsrand and Deelkraal mines from the then AngloGold Limited in 2001. Shaft sinking of twin vertical shafts at Elandsrand had begun in January 1975 and was completed in December 1978 with first gold produced in 1979. Elandsrand changed its name to Kusasalethu in February 2010. Kusasalethu means "our future" in Zulu.

Nature of the operation

The 10m-diameter rock/ventilation shaft was sunk to 2 195m and the man/material shaft to 2 127m. By June 1984, a 10m-diameter sub-vertical rock/service shaft was completed to a depth of 3 048m and a 7m-diameter sub-vertical ventilation shaft to a depth of 3 048m. Both of these shafts were deepened to a final depth below surface of 3 318m and 3 388m respectively as part of the deepening project to extract the higher-grade pay shoot towards the west of the mine. In December 2014, a decision was taken to suspend operations in the old portion of Kusasalethu and to restructure the mine. Subsequently mining above 98 level ceased.

Kusasalethu employs the sequential-grid method of mining, which is in essence an upside-down Christmas tree configuration. This method is used to direct seismic stresses away from current working areas into virgin rock areas.

Given the decrease in reserves at Kusasalethu in recent years, a result of normal depletion, a revised, shortened life-of-mine plan was implemented in FY15. This plan aims to optimise the mine's cash flow at a higher grade and create a much 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.

Mineral rights/ legal aspects and tenure

The current mining lease encompasses a total area of 51km². Kusasalethu holds a mining right that has been successfully converted, executed and registered as a new order mining right at the Mineral and Petroleum Resources Titles Office (MPRTO). GP30/5/1/2/2/07MR is valid from 18 December 2007 to 17 December 2037

Geology

Kusasalethu is situated in the West Wits Basin and mines the Ventersdorp Contact Reef as its main ore body.

The Ventersdorp Contact Reef facies model at Kusasalethu is based on the Paleotopographic or Slope and Terrace model. Nine facies types have been recognised at Kusasalethu, eight sedimentological and one structural. Four of the facies are thick, high-grade, geologically distinct reef terraces separated from one another by thin low-grade slope reef. The sand-filled channel is a thick low-grade facies. Sandy Terrace Complex is found on the same elevation as Terrace Complex but is essentially a pebbly quartzite with no grade. The Mondeor conglomerates have been identified sub-cropping against the Ventersdorp Contact Reef in stopes in certain areas and have been delineated as a separate facies in these areas.

The Elsburgs conglomerates, found on the western side of Kusasalethu, form the footwall to the Ventersdorp Contact Reef and are part of the Turffontein Supergroup. It is a predominantly polymictic matrix supported conglomerate of well-packed and moderately sorted, sub-rounded smoky (80%), black/grey (15%) quartz pebbles, chert (3%) and some elongated shale pebbles (2%). The matrix is pale yellow to light green and medium-grained also pyritic in places.

The Ventersdorp Contact Reef is overlain by the Ventersdorp Lava belonging to the Ventersdorp Supergroup. The reef is light to mid-grey in colour and fine crystalline, seldom containing phenocrysts. In places it is amygdaloidal with quartz and pyrite mineralisation. Flow structures are also present at the base of the lava. It breaks into very angular fragments due to weak jointing and flow banding – it would appear to be andesitic in composition.

Geological discontinuities observed at Kusasalethu include faults, dykes and sills. Sills may occur in the footwall in areas adjacent to certain dykes. Flat bedding plane faulting also occurs and results in reef duplication, elimination and brecciation. Faults and dykes are classified according to their relative geologic ages, and are as follows: Pre-Ventersdorp Contact Reef, Ventersdorp, Platberg, Bushveld and Pilanesberg structures.

Kusasalethu mines in blocky ground created by structures in the form of dykes and faults. The dykes are fairly basic in composition and they tend to strike north-northeast and south-southwest with a general dip of 75 degrees. The faults, however, have a strike mostly of east-southeast and west-northwest with a few exceptions. Generally, faults here are normal faults with the accompanying loss of ground with varying throws – from mere centimetres to a massive 60m (the Kittims and De Twem faults).

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – WEST RAND CONTINUED

Mining methods and mine planning

Mining is by means of sequential grid mining with regional dip stabilising pillars, backfill and pre-conditioning to offset the effects of mining at this depth. Mining is conducted over five levels from 98 level to 113 level. Large geological structures are stabilised by means of clamping pillars. Mine planning is done in two major phases, a life of mine plan is done annually and six-month plans are reviewed monthly, to ensure ample time to react in changes in the dynamic mining environment. All planning is done in the digital environment by means of computer assisted draughting (CAD).

Mineral processing

Ore mined is processed on site at the Kusasalethu gold plant. Gold is extracted by means of milling, cyanide leaching, carbon-in-pulp concentration and electrowinning to absorb the carbon to produce doré. No smelting is done on site and gold is dispatched to Rand Refinery twice a week.

Infrastructure

Ore mined is transported by rail bound equipment to the shaft's main ore pass system where it gravity feeds to 115 level. Ore is then hoisted via the sub-vertical shaft to above 73 level, where it is transferred by conveyor belt to 73 level and gravity feeds to 77 level from where it is hoisted to surface via the rock and ventilation shaft. Due to the depth of mining, major engineering infrastructure is complex. Infrastructure includes refrigeration and cooling installations, both on surface and underground.

Mineral resource estimation

Data for valuation is obtained by means of chip sampling on the reef horizon in a 6m x 6m grid. Supplemental information is obtained from underground exploration drilling and existing surface exploration boreholes. All sampling done is subject to QA/QC as prescribed by SAMREC to ensure quality and accuracy of data. Based on similarities in geology, the mining lease is divided into a total of eight geozones. Based on confidence levels for geostatistical data, valuation is by means of a computer-generated block model as follows:

- Measured blocks 30m x 30m grid
- Indicated blocks 60m x 60m grid
- Inferred blocks 120m x 120m grid

The block model is then digitally transferred to the digital environment for valuation.

Environmental impact

Kusasalethu environmental aspects and impacts are managed according to the environmental management programme as approved by the DMR in terms of the Mineral and Petroleum Resources Development Act of 2004. All environmental aspects and impacts emanating from mining activities are documented in a dedicated report and in the environmental aspect register as required by the act and the ISO 14001:2004 standard.

Annual performance monitoring audits are conducted by the departments of Mineral Resources and of Water and Sanitation to verify compliance with the following legislation:

- Mine Health and Safety Act 29 of 1996
- National Water Act 36 of 1998
- National Environmental Management Act 107 of 1998
- Mineral and Petroleum Resources Development Act 28 of 2002

All environmental impacts arising from mining activities are managed in terms of the requirements of the approved environmental management programme and the water use licence, and ISO 14001:2004.

As required by the relevant regulations, environmental audits or performance assessments to verify compliance with the approved environmental management programme are conducted every second year by an independent environmental consultant and a report is submitted to the DMR Internal environmental legal compliance audits are also conducted. An off-site legal environmental register is used to monitor compliance and to obtain applicable and relevant environmental legal updates for the operation.

Bio-monitoring surveys are also conducted on surface water streams close to the operation to ensure compliance with the conditions of the water use licence issued in terms of National Water Act 36 of 1998 to:

- determine the condition of biological communities in the rivers and streams through indices such as SASS5, IHAS (Version 2.2); and IHIA, as well as to determine the chemical water quality in the streams during the wet seasons
- provide baseline reference conditions for future studies in order to assist Kusasalethu management in identifying environmental liabilities that might result from current mining activities regarding the potential contamination of surface streams

In addition, a full chemical analysis is done as follows:

- Monthly sampling of surface streams
- Quarterly monitoring of groundwater by testing boreholes

Kusasalethu is ISO 14001-accredited and complies with the requirements of the ISO 14001:2004 standard, the operation is also ICMI-accredited and audited annually in line with the requirements of ISO 14001 and the Cyanide Management Code. The operation was accredited initially in 2011, then again in 2014 and most recently in 2017. In line with this accreditation every effort is made to eliminate or minimise the effects of mining activities to the environment and adjacent communities.

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – WEST RAND CONTINUED

Material risks: Material risks which may impact Kusasalethu's reserve and resource statements are as follows:

Significant risks

- Seismicity
- Water build up at Deelkraal
- Backfill volumes
- Major engineering infrastructure failure

Remedial action

- Control of mining sequence and appropriate support systems
- De-watering of the Deelkraal area through 98 level
- Waste rock dump on surface used to supplement backfill volumes
- Extended production breaks scheduled over past two years to allow for infrastructure upgrades

Competent person	
Ore Reserve Manager, Johann Ackerman *BSc Geology, with distinction UFS (2005)* *SAIMM*	23 years' hard rock, deep level and ultra-deep level gold mining experience on the Witwatersrand Supergroup

KUSASALETHU

Gold – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Ventersdorp Contact Reef	3.1	12.08	38	1 219	20.0	8.70	174	5 604	1.9	8.77	17	543	25.1	9.13	229	7 366

Modifying factors

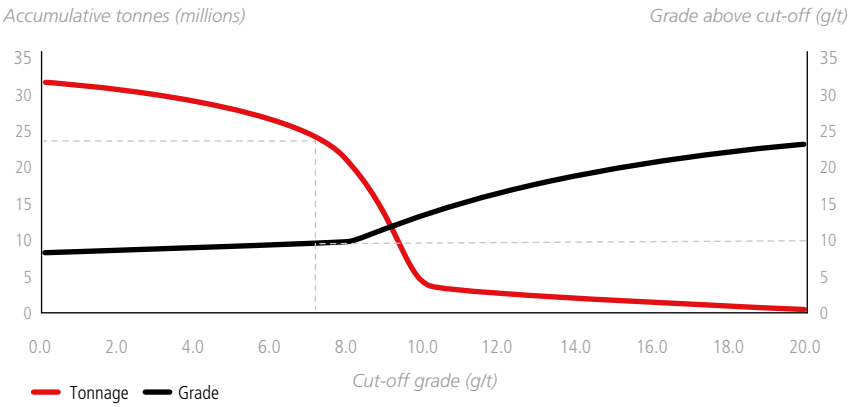
	MCF (%)	SW (cm)	MW (cm)	PRF (%)
Ventersdorp Contact Reef	85	132	156	94

Gold – Mineral reserves

	Proved reserves				Probable reserves				Total mineral reserves			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Ventersdorp Contact Reef	4.3	6.95	30	959	0.6	6.18	4	129	4.9	6.85	34	1 088

Kusasalethu: Measured and indicated resource grade-tonnage curve

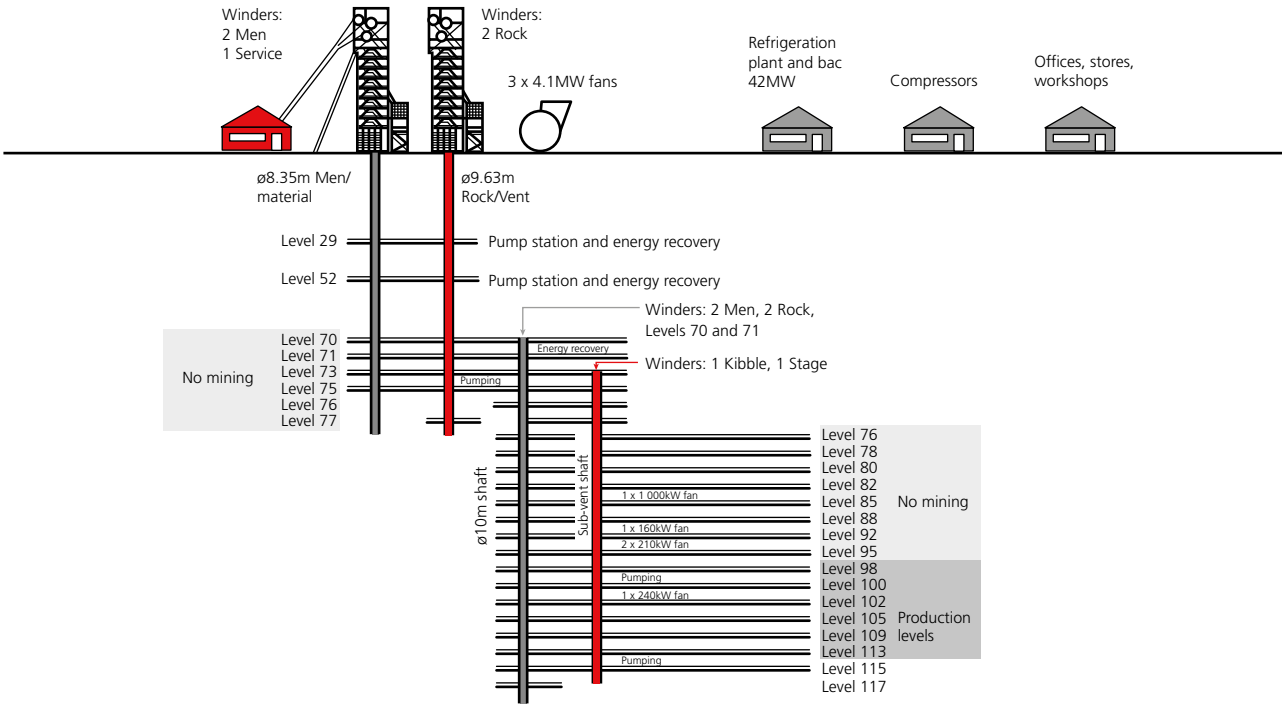
Ventersdorp Contact Reef



RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – WEST RAND CONTINUED

Kusasalethu: Schematic of shaft and mining layout



KUSASALETHU

VENTERSDORP CONTACT REEF

LEGEND

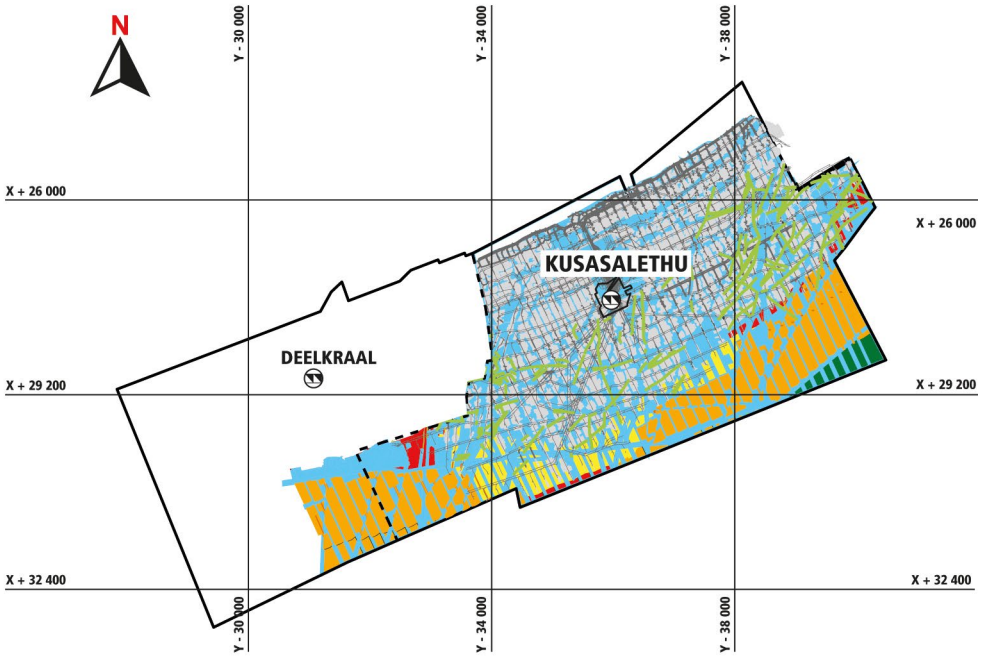
- Mining right
- Shaft position
- Intermine boundary
- Fault zones and dykes
- Abandoned pillars
- Infrastructure
- Mined out

Mineral Resources

- Measured
- Indicated
- Inferred

Mineral Reserves

- Proved and probable



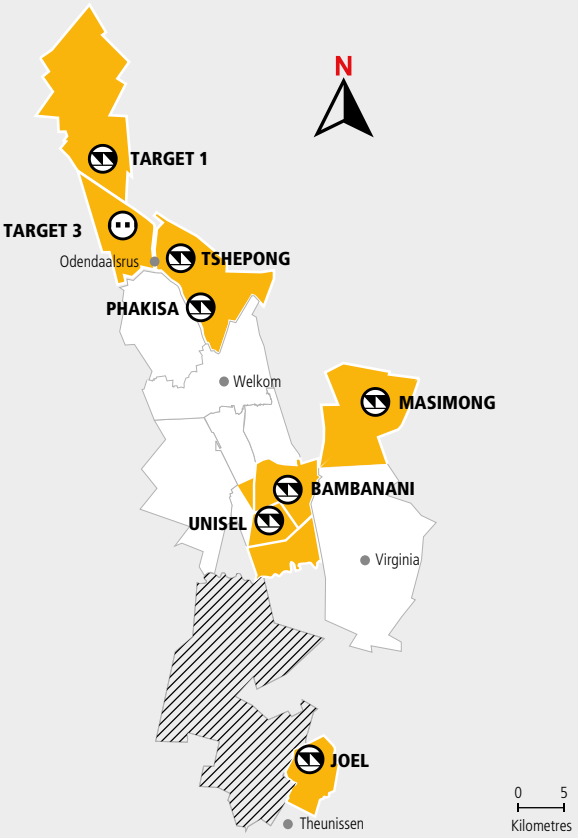
0 1 000 2 000
Metres

Co-ordinate system Lo. 27°
Constants: Y = -0.00
X = +2 900 000
Latitude: 26°27' 16.23"S
Longitude: 27°21' 32.91"E

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – FREE STATE

Harmony's underground mining operations in the Free State had combined mineral resources of 34.9Moz and mineral reserves of 7.3Moz at 30 June 2017

LOCALITY OF HARMONY'S FREE STATE OPERATIONS

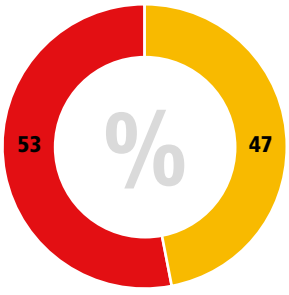


LEGEND

- Free State operations
- Neighbouring mines
- Location of operating shafts
- Care and maintenance

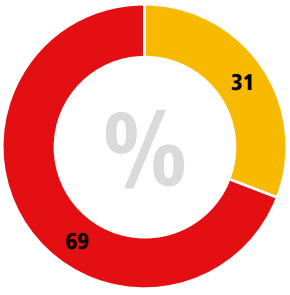
Free State operations	Latitude	Longitude
Target 1	27°45'42.59"S	26°38'24.92"E
Target 3	27°49'42.93"S	26°38'29.27"E
Tshepong	27°51'56.45"S	26°42'45.15"E
Phakisa	27°54'1.27"S	26°43'30.05"E
Masimong	27°58'23.93"S	26°52'39.41"E
Bambanani	28°2'28.24"S	26°48'9.13"E
Unisel	28°3'49.85"S	26°47'11.43"E
Joel	28°16'17.19"S	26°48'57.97"E

Contribution to gold mineral resources



Free State underground operations
Rest of Harmony

Contribution to gold mineral reserves



Free State underground operations
Rest of Harmony

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

LOCATION

Harmony's Free State operations comprise seven underground mines – including the mechanised Target 1 mine. These mines are located at the southwestern corner of the Witwatersrand Basin, between the towns of Allanridge, Welkom, Theunissen and Virginia.

Joel mine is the most southerly of the gold mines mined within the Harmony stable and is situated some 40km south of Welkom, 30km southeast of Virginia and 20km north of Theunissen. The mine has a common boundary with the Sibanye gold mine (Beatrix Mine) to the west of the mine property.

Unisel mine is situated to the north of Joel between the city of Welkom and town of Virginia. It is bounded to the north by Brand 5 shaft and West shaft and to the east by Bambanani.

Bambanani mine is located 10km southeast of Welkom. The East shaft is bound to the west by Bambanani West shaft and to the north by President Steyn No. 2 shaft.

Masimong mine is located on the north eastern side of the De Bron Fault approximately 12km east from the city of Welkom and 10km north from the town of Virginia. It is bounded to the south by Masimong 4 shaft and Saaiplaas 3 shaft.

Tshepong operations comprises the following:

- **Phakisa** section is located north west of Masimong 5 shaft between the town of Odendaalsrus and the city of Welkom some 13km north of the city of Welkom. It is bounded to the south by Eland shaft, to the west by Nyala shaft and to the north by Tshepong shaft.
- **Tshepong** section is located to the north of Phakisa between the town of Odendaalsrus and the township of Kutloanong some 20km north of Welkom. It is bounded to the north by the dormant Jeanette mine, to the south and east by the Phakisa mine, and to the southwest by Nyala shaft.

Target 1 mine is the most northerly of Harmony's mines in the Free State and is situated some 30km north of the town of Welkom.

Target 3 mine, located south of Target 1, is on care and maintenance.

REGIONAL GEOLOGY

Harmony's Free State operations are located at the southwestern corner of the Witwatersrand Basin, between the towns of Allanridge, Welkom, Theunissen and Virginia. The basin, situated on the Kaapvaal Craton, has been filled by a 6km thick succession of sedimentary rocks, which extends laterally for hundreds of kilometres.

The Free State goldfield is divided into two sections, cut by the northsouth striking De Bron fault. This major structure has a downward vertical displacement to the west of about 1 500m in the region of Bambanani, as well as a dextral shift of 4km. This known lateral shift allows a reconstruction of the ore bodies to the west and east of the De Bron fault. A number of other major faults (Stuirmanspan, Dagbreek, Arrarat and Eureka) lie parallel to the De Bron fault.

To the west of the De Bron fault, current operating mines are Target, Tshepong, Phakisa, Unisel, Bambanani and Joel. Dips of the reef are mostly towards the east, averaging 30 degrees but become steeper approaching the De Bron fault. To the east of the fault lies Masimong mine. These reefs mostly dip towards the west at 20 degrees, although Masimong is structurally complex and dips of up to 40 degrees have been measured. Between these two blocks lie the uplifted Horst block of West Rand Group sediments with no reef preserved.

The western margin area is bound by synclines and reverse thrust faults and is structurally complex. Towards the south and east, reefs sub-crop against overlying strata, eventually cutting out against the Karoo to the east of the lease area.

Most of the mineral resource tends to be concentrated in reef bands located on one or two distinct unconformities. A minority of the mineral resource is located on other unconformities. Mining that has taken place is mostly deep-level underground mining, exploiting the narrow, generally shallow dipping tabular reefs.

The Basal Reef is the most common reef horizon and is mined at all shafts except Target 1 and Joel. It varies from a single pebble lag to channels of more than 2m thick. It is commonly overlain by shale, which thickens northwards. Tshepong section has resorted to undercutting in its mining panels to reduce the effect of shale dilution.

The second major reef is the Leader Reef, 15m to 20m above the Basal Reef. This is mined at Unisel to the south. Further north, it

Target

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – FREE STATE CONTINUED

becomes poorly developed with erratic grades. The reef consists of multiple conglomerate units, separated by thin quartzitic zones, often totaling up to 4m thick. A selected mining cut on the most economic horizon is often undertaken.

The B Reef is a highly channelised ore body located 140m stratigraphically above the Basal Reef. Because of its erratic nature, it has only been mined at Masimong, Tshepong, and the Target 2 and Target 3 shafts. Within the channels, grades are excellent, but this reduces to almost nothing outside the channels. Consequently, these shafts have undertaken extensive exploration to locate these pay channels.

The A Reef is also a highly channelised reef, located some 40m above the B Reef, within an extensive channel that lies along the western margin from Nyala to Lorraine. It consists of multiple conglomerate bands of up to 4m thick and a selected mining cut is usually required to optimise the ore body.

Joel mine, 30km south of Welkom, is the only Harmony Free State operation to mine the Beatrix Reef.

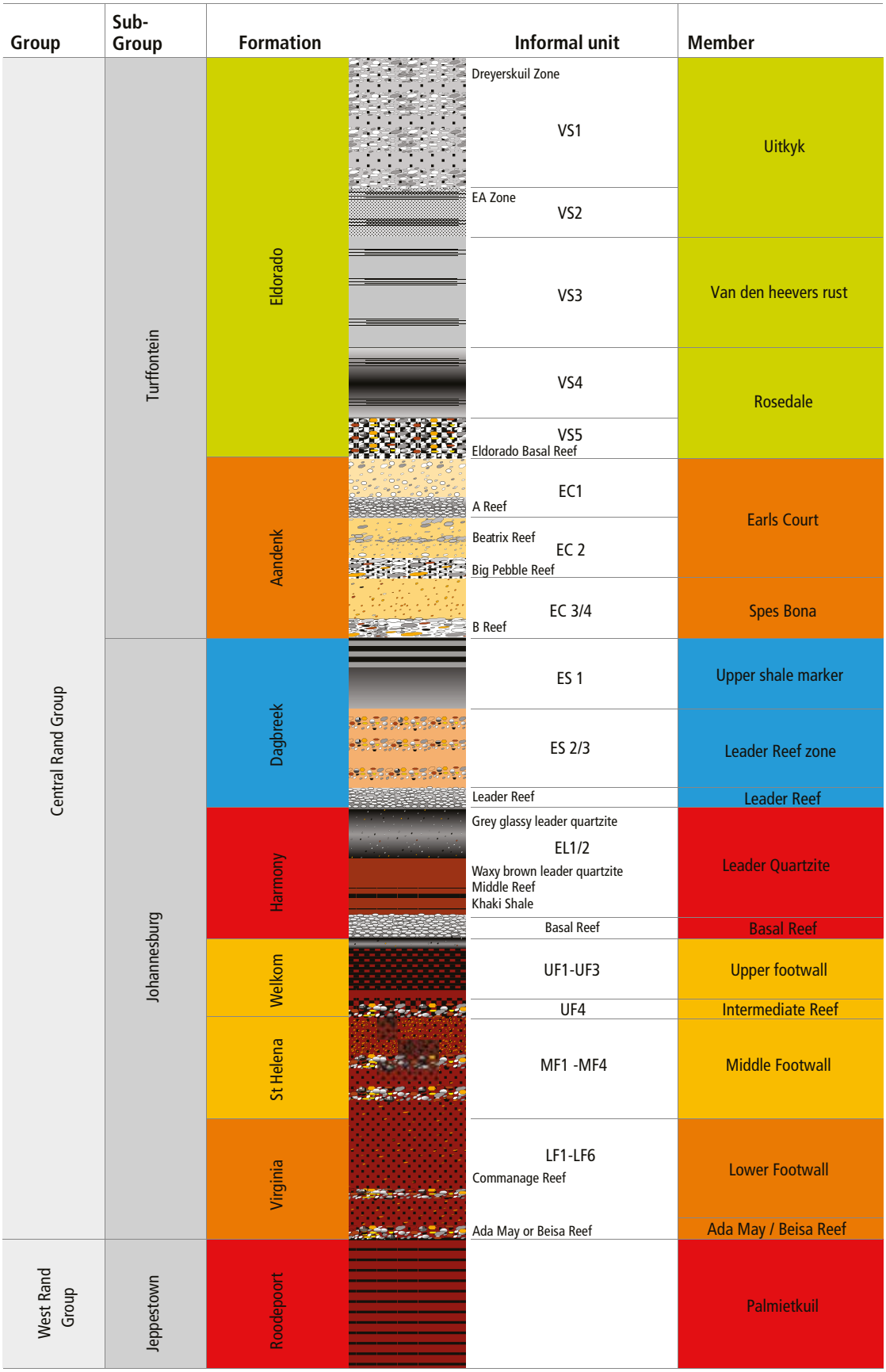
The Target operation is at the northern extent of the Free State goldfields, some 20km north of Welkom. The reefs currently exploited are the Elsburg-Dreyerskuil conglomerates, which form a wedge-shaped stacked package, comprising 35 separate reef horizons, often separated by quartzite beds. The Elsburg Reefs are truncated by an unconformity surface at the base of the overlying Dreyerskuil member. Below the sub-crop, the Elsburg dips steeply to the east, with dips becoming progressively shallower down dip. Close to the sub-outcrop, the thickness of the intervening quartzites reduces, resulting in the Elsburg Reefs coalescing to form composite reef packages that are exploited by massive mining techniques at Target mine. The Dreyerskuil also consists of stacked reefs dipping shallowly to the east. These reefs tend to be less numerous, but more laterally extensive than the underlying Elsburg Reefs.

Free State surface operations

RESOURCES AND RESERVES BY OPERATION

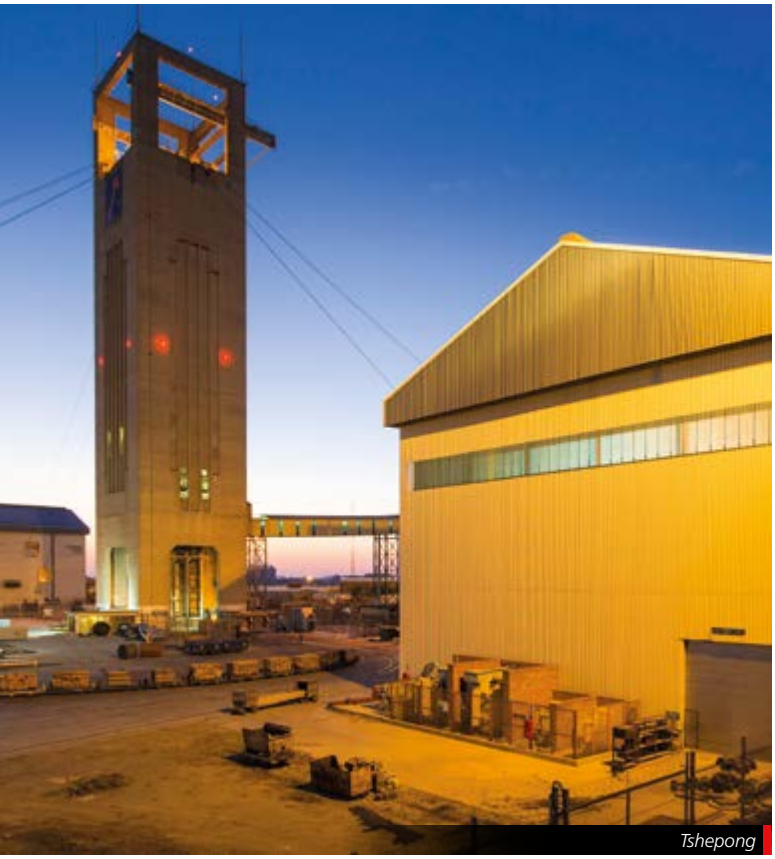
SOUTH AFRICA – FREE STATE CONTINUED

FREE STATE STRATOGRAPHIC COLUMN



RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED



Tshepong

TSHEPONG OPERATIONS

Following the successful conclusion of the study to investigate their integration, Tshepong section and the Phakisa section have been consolidated as a single entity, the Tshepong operations. The integration and consolidation of these two mines will enable Harmony to optimise existing synergies, reduce costs and make better use of Tshepong's underutilised infrastructure.

History

The feasibility study for the development of the Tshepong section was concluded in 1984. Site establishment started in September 1984 and shaft sinking had begun by 1986. Shaft sinking and equipping of the shaft were completed in 1991, with the mine being commissioned in November 1991.

The Phakisa section began as a project in October 1993, with shaft sinking commencing in February 1994. It was formerly known as Free State Geduld 4, Freddies 4 and Tshepong South. In 1995, sinking was halted on 59 level due to the low gold price prevailing at that time. Subsequently, the financial climate improved and operations resumed in September 1996. Sinking was then completed to the station brow on 75 level. Low gold prices again resulted in the shaft being mothballed in the last quarter of 1999. In January 2002, Harmony acquired a stake in Phakisa as part of the Freegold acquisition from AngloGold Ashanti Ltd, following which the operation was acquired in full in September 2003. Sinking and equipping was completed to a depth of 2 427m in 2006.

Nature of operation

Tshepong section is a mature underground operation mining at moderate depths of between 1 600m and 2 200m below surface. The bulk of mining currently takes place in the northwestern and northeastern portions of the lease area.

The Phakisa section is a moderate- to deep-level conventional underground operation which now, together with the Tshepong mine, makes up the Tshepong operations. Currently, mining activity largely takes place in the north of the mine lease area, however, over the next three years the focus will shift to the south of the lease area.

Geology

The principal gold-bearing ore body at the Tshepong and Phakisa sections is the stratiform and stratabound Basal Reef (known as the Basal Reef Zone or BRZ). This unit comprises a thin conglomerate at the base of the BRZ, overlain by clean 'placer' quartzites. The BRZ is underlain by a thick series of siliceous and argillaceous quartzites comprising the Welkom Formation and is overlain by shales and quartzites of the Harmony Formation, both of the Johannesburg sub-Group of the Central Rand Group. Although not apparent within the Mines Lease, the BRZ sits unconformably on the Welkom Formation.

At the Phakisa section, the reef dips towards the east at 25° in the north and up to 45° in the south. The Lower Cycle Black Chert facies predominates in the north with a north-west south-east value trend. The reef consists of an oligomictic small pebble matrix-supported conglomerate lag with fly-speck carbon contact. The rest of the reef package constitutes barren siliceous fine-grained reef quartzite. The entire reef package reaches up to 160cm thick and is overlain by 1cm – 30cm of lower Khaki Shale. This in turn is overlain by the approximately 3-4m thick Waxy Brown Leader Quartzite, above which lies the 3-4m thick Upper Khaki shale.

The Upper Cycle Black Chert facies Basal Reef prevails in the south of the lease area, and consists of a slightly polymictic (yellow shale specks present), matrix-supported medium pebble conglomerate with a more gradational contact absent of carbon where mineralisation is associated with fine disseminated and buck-shot pyrite. The conglomerate is slightly thicker compared to the Lower Cycle, but is also overlain by barren reef quartzite, the entire package reaching characteristically up to only 40cm thick. The lower Khaki Shale is up to 1m thicker.

The Central Rand Group itself is overlain in turn by lavas and sediments of the Ventersdorp System and the more recent sediments of the Karoo Group.

The B Reef occurs approximately 150 metres stratigraphically above the Basal Reef (or approximately two production working levels). Consequently, the B Reef is not normally intersected in either Basal Reef development or routine diamond drilling.

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

The lowest unit is a basal lag (Zone A), sitting on the underlying Doornkop Quartzite Formation. Where this unit is developed (or preserved), it may be highly mineralised oligomictic or polymictic conglomerate, with visible gold, buckshot pyrite and carbon mineralisation. This unit may carry gold values of many thousands of cmg/t and represents a potentially rewarding exploration target.

The unit overlying the Zone A may be either Zone B, which is comprised of a mildly erosive pebbly quartzite formation, and/or the stratigraphically younger Zone C, which is a polymictic conglomerate with low values which is also erosional into the underlying A and B zones.

Mining method

At the Tshepong section, the reef horizon is accessed via conventional grid development. The shaft's primary economic reef horizon is the Basal Reef that is extracted by undercut mining, leaving a quartzite beam in the hangingwall to ensure the stability of the overlaying shale. Minor amounts of B Reef that do not exceed 18% of the on-reef area mined annually are extracted via open stoping mining. The B Reef is located approximately 140m stratigraphically above the Basal Reef, necessitating separate infrastructure (i.e. footwall development) from that for the Basal Reef. The presence of khaki shale approximately 6m thick above the Basal Reef strains the footwall development rates of the B Reef, requiring the installation of ring sets for the first 25m of development. The Tshepong section has significant reserves to maintain a long-term life, however, extraction of ore from pillars will become more important as the life of mine progresses, but volumetrically these reserves are not significant.

At the Phakisa section, the Basal Reef is mined conventionally from a single shaft barrel reaching a depth of 2 600m below collar. The reef horizon is accessed by means of conventional grid development and is extracted as an open mining operation to the south of the 69 raise line, but undercut mining began as the mining continued to the north. Phakisa reached full production in October 2016. Pillar crews are also planned as the life of mine progresses to ensure depletion of the pillar reserves within the life-of-mine time frame.

Infrastructure

The surface and underground infrastructure for the Tshepong section as well as the power and water supplies available exceed planned peak production requirements. Broken rock handling above 66 level is track-bound, transferred to a number of inter-level sub-vertical transfer systems that gravity feeds to the main silos on 68 level. The broken rock handling below 66 level is track-bound, transferred to a decline belt system that feeds to the silos on 66 level from where the rock is transferred by track to the main inter-level sub-vertical transfer system on 66 level. The rock is hoisted to surface through the main shaft. From the shaft the rock is transported to the processing plant by train.

At the Phakisa section, surface and underground infrastructure as well as the power and water services available exceed planned peak life of mine production requirements. Broken rock handling on all levels is track-bound, transferred to a number of inter-level sub-vertical transfer systems that feed the main silos on 77 level. From 77 level, the rock is hoisted to 55 level where a rail-veyor system transports the rock from Phakisa to the Nyala shaft, from where the rock is hoisted to surface by means of the koepe winder, and then transported to the processing plant by train.

Mineral processing

Stoping ore and development rock from the Tshepong section are hoisted and processed separately above 66 level. Below 66 level, stoping and development rock is hoisted and processed as one product currently.

At the Phakisa section, stoping ore and development rock are hoisted and processed separately. The reef, stoping ore, is milled and processed at Harmony one plant with gold recovered by means of cyanide leaching.

Tshepong operations shares the Harmony One plant with three other Harmony operations and four Harmony waste rock dumps. The plant's design capacity exceeds the maximum planned production from these sources. Gold is recovered by means of gold cyanide leaching.

Legal aspects and tenure

The current mining right for the Tshepong operation encompasses an area of 10798.74ha. The ARMgold/Harmony Freegold joint venture holds a number of mining rights in the Free State Goldfields which have been successfully converted and executed as new order mining rights, some of which are still to be registered at the Mineral and Petroleum Resources Titles Office (MPRTO). The mining right for Tshepong operations, FS30/5/1/284MR, is valid from 11 December 2007 to 10 December 2029.

Mineral resource estimation

The valuation model using Datamine includes all the underground chip sampling data points and boreholes values drilled in the Phakisa lease area. Geozones are determined based on reef facies types and value trends. Phakisa and Tshepong share 14 geozones in the Tshepong operations mega-mine. The geozones are capped at an optimal percentile using a system called the quantile process to avoid over-estimation due to high outlying values. Based on confidence levels for geostatistical data, valuation is by means of a computer-generated block model as follows:

- Measured blocks 30m x 30m grid
- Indicated blocks 60m x 60m grid
- Inferred blocks 120m x 120m grid

The block model is then digitally transferred to the digital environment for valuation. The entire lease area is blocked and cut against major structure, geozones and haloes. The blocks are evaluated by importing the valuation model from Datamine into CadsMine, and applying the kriging method in the valuation browser of CadsMine.

RESOURCES AND RESERVES BY OPERATION CONTINUED
SOUTH AFRICA – FREE STATE

TSHEPONG OPERATIONS CONTINUED

Mineral resources have been estimated on the basis of geoscientific knowledge with input from the ore reserve manager, geologists and geostatistical staff. The mine's mineral resources are categorised, blocked-out and ascribed an estimated value. Computerised geostatistical estimation processes are used.

Environmental impact

The Tshepong operations, which comprises the Tshepong and Phakisa sections, aims to prevent pollution, or otherwise minimise, mitigate and remediate harmful effects of our Operation on the Environment and hence maintain the ISO 14001 certification.

We are also committed to ensuring compliance with the applicable environmental legislation. A key focus is the development of Integrated Water and Waste Management Plans. These plans will be pivotal in the overall management of water and will indicate how we can better use and re-use our water. Another area of focus is promoting awareness and training around green environmental management in general.

There has been a notable improvement in terms of waste management and the storage of potential contaminants. However, construction of a surface receiving store is possible solution to the management and control of chemical spills and housekeeping issues.

Material risks: Material risks which may impact the reserve and resource statements for the Tshepong operations are:

For the Tshepong section:

Significant risks

- Complexity of ore body
- Ventilating of decline area

Remedial action

- Extensive exploration drilling
- Holing to the Phakisa section on 73, 75 levels and installation of booster fans

For the Phakisa section:

Significant risks

- Logistics
- Ventilation
- Flexibility

Remedial action

- Upgrade of koepe rock winder and rail-veyor
- Completion of Alimac hole and ice dam on 55 level and holing to the Tshepong section on 73, 75 levels
- Increase development and number of equipping crews

Competent person	
Senior Ore Reserve Manager – Tshepong operations Theodorus Pieter van Dyk *BSc Hons (Geology), SACNASP*	19 years' relevant experience
Ore Reserve Manager – Tshepong section Andrew Louw *BSc Hons (Geohydrology), SACNASP (pending)*	21 years' relevant experience

RESOURCES AND RESERVES BY OPERATION CONTINUED

SOUTH AFRICA – FREE STATE

TSHEPONG OPERATIONS

Gold – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Tshepong operations	**24.6**	**11.21**	**276**	**8 865**	**11.9**	**10.27**	**122**	**3 919**	**34.3**	**9.25**	**318**	**10 215**	**70.8**	**10.10**	**715**	**22 999**

Modifying factors

	MCF (%)	SW (cm)	MW (cm)	PRF (%)
Tshepong operations	**73**	**111**	**132**	**96**

Gold – Mineral reserves

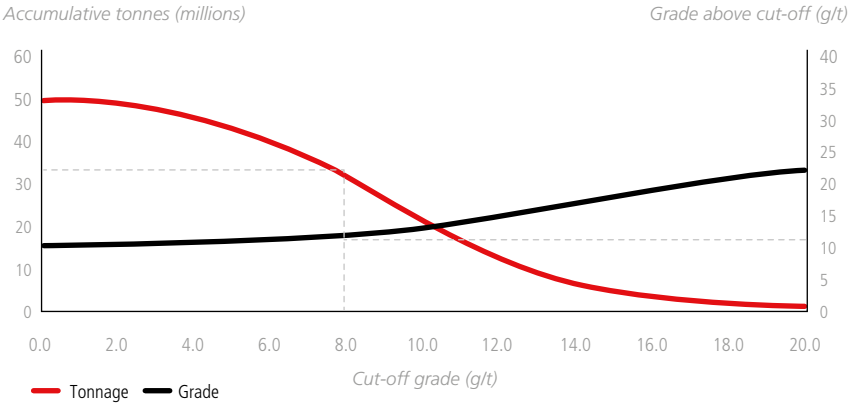
	Proved reserves				Probable reserves				Total mineral reserves			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Tshepong operations	**21.0**	**5.91**	**124**	**4 002**	**4.6**	**5.36**	**24**	**785**	**25.6**	**5.82**	**149**	**4 787**

Uranium – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral reserves			
	Tonnes		U_3O_8	U_3O_8	Tonnes		U_3O_8	U_3O_8	Tonnes		U_3O_8	U_3O_8	Tonnes		U_3O_8	U_3O_8
	(Mt)	(kg/t)	(Mkg)	(Mlb)	(Mt)	(kg/t)	(Mkg)	(Mlb)	(Mt)	(kg/t)	(Mkg)	(Mlb)	(Mt)	(kg/t)	(Mkg)	(Mlb)
Tshepong operations	**12.0**	**0.20**	**2 357**	**5**	**21.6**	**0.20**	**4 402**	**10**	**38.1**	**0.11**	**4 321**	**10**	**71.6**	**0.15**	**11 081**	**24**

Tshepong Operations: Measured and indicated resource grade-tonnage curve

Basal and B Reef

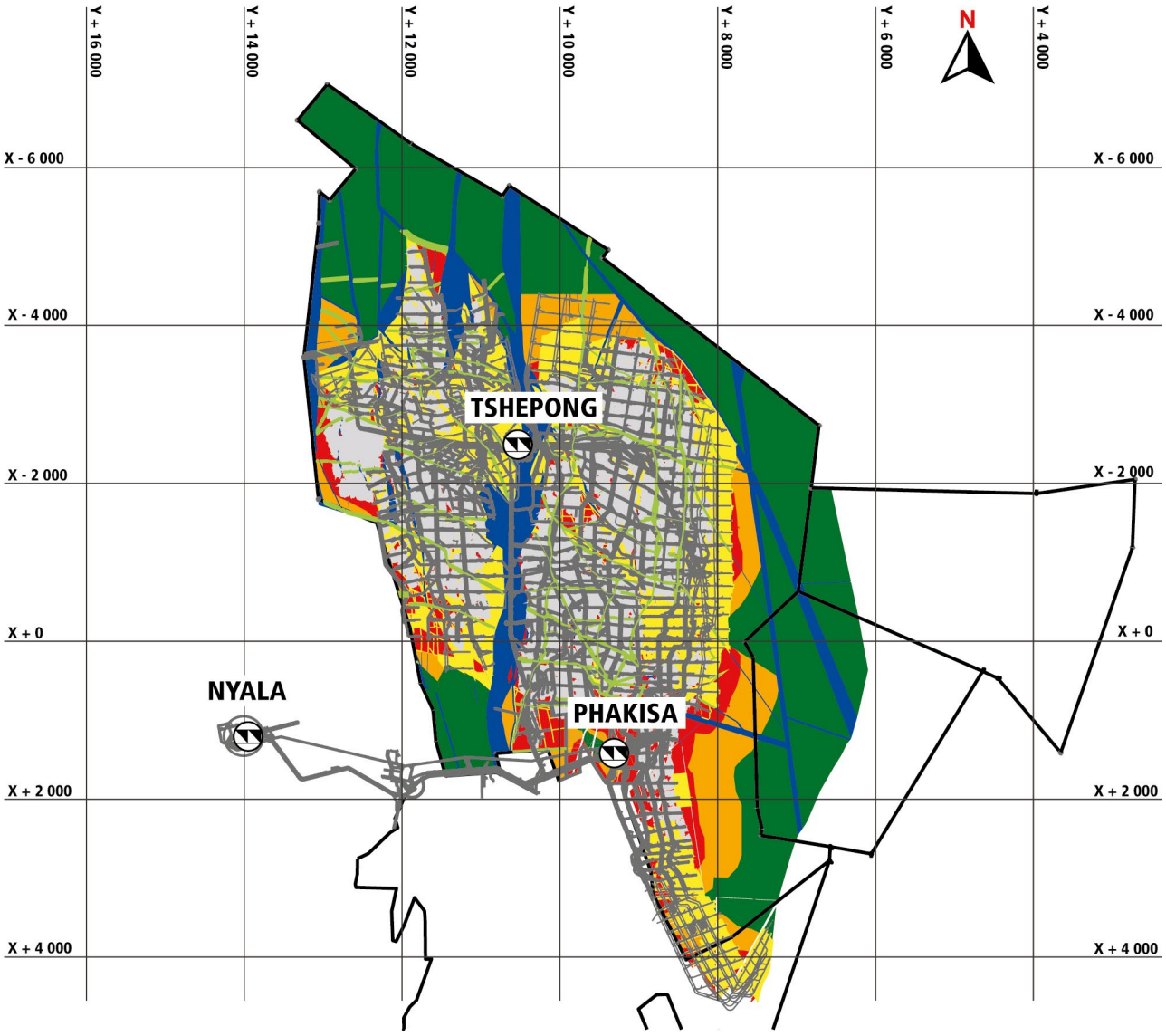


RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

TSHEPONG OPERATIONS

BASAL REEF



LEGEND

- Mining right
- Shaft position
- Fault zones
- Dykes
- Infrastructure
- Mined out

Mineral Resources

- Measured
- Indicated
- Inferred

Mineral Reserves

- Proved and probable

0 1 000 2 000
Metres

Co-ordinate system Lo. 27°
Constants: Y = 0.00
X = +3 100 000.00

TSHEPONG
Latitude: 27°51' 56.45"S
Longitude: 26°42' 45.15"E

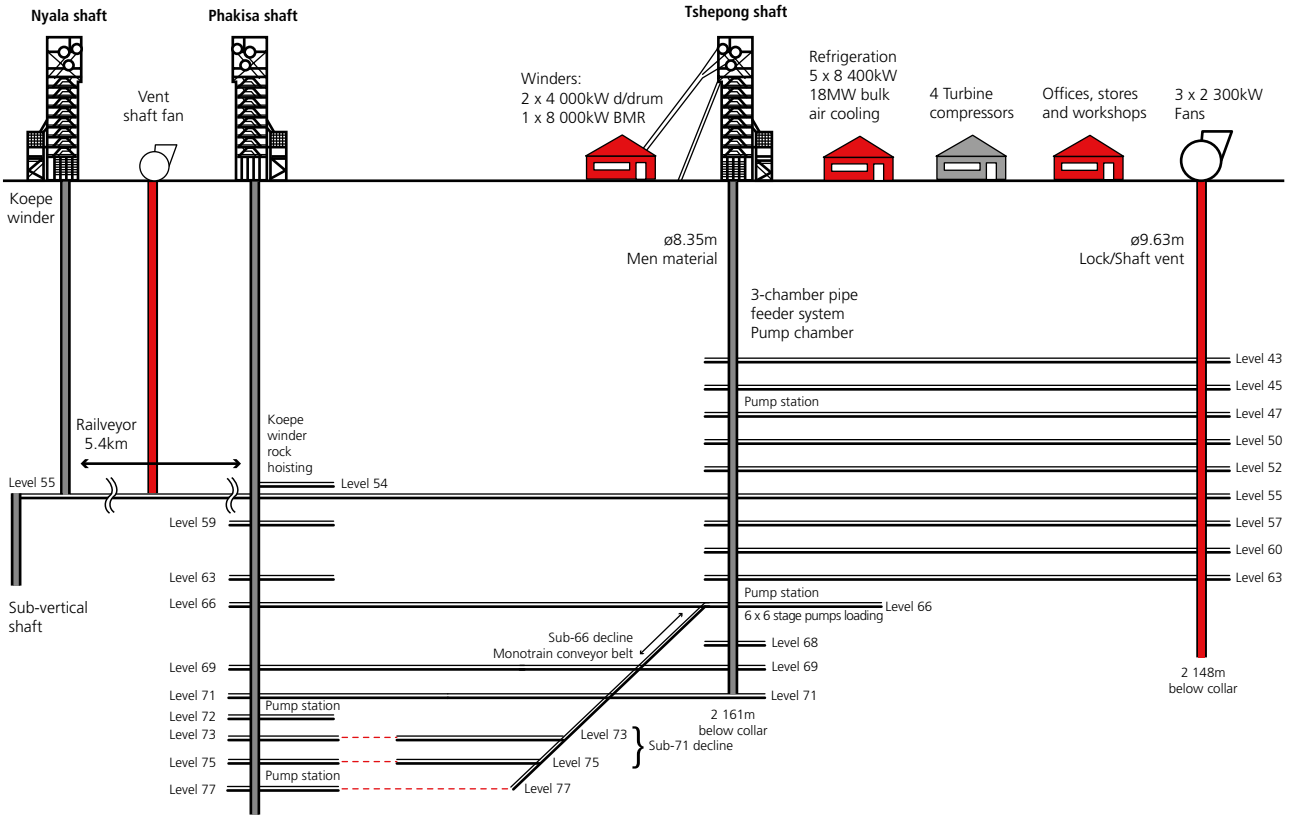
PHAKISA
Latitude: 27°54' 1.27"S
Longitude: 26°43' 30.05"E

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

TSHEPONG OPERATIONS CONTINUED

Tshepong Operations: Schematic shaft and mining layout of the Nyala, Phakisa and Tshepong shafts



Tshepong

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – FREE STATE CONTINUED


Bambanani

BAMBANANI

History

Shaft sinking operations (by Anglo American Corporation) began at President Steyn 4 shaft in February 1969 and were completed, to a final depth of 2 365m below surface, in September 1971. The Basal Reef was intersected at a depth of 2 075m yielding 1 252cmg/t over 235.7cm. The sub-vertical shaft was sunk in the late 1970s to a depth of 3 328m below surface. The sub-shaft came into production in 1982.

The shaft then became known as Freegold 1 East in 1997 when President Steyn was closed. In October 1998, the shaft became part of the then AngloGold and its name was changed again to Bambanani East. In January 2002, the shaft was sold to the Harmony/ARM consortium and, in October 2003, Harmony became the sole owner.

Geology

The Basal Reef is the predominant gold-bearing reef at Bambanani. The Steyn facies of the Basal Reef covers approximately 90% of Bambanani's mining lease area of and overlays, with a very slight angular sub-conformity, the UF1 quartzite of the Welkom Formation. It is overlain by the Khaki Shale unit of the Harmony Formation in the north, but to the south it is overlain by the younger Waxy-Brown Leader Quartzite which erodes the Khaki Shale. Decisions to undercut the Basal Reef may be influenced by the presence and thickness of the Khaki Shale. Thickness of the reef may vary from a few centimetres to over 10m, but it is typically between 1m and 3m thick.

The Stuirmanspan Fault in the west and the De Bron-Vermeulenskraal Fault system in the east bound the Basal Reef at Bambanani Mine. Both are northward striking dextral extensional faults, with significant westerly downthrows. The reef dips easterly and varies from 25 degrees in the west to 45 degrees in the east, or through local deformation against fault can lead to vertical reefs in places. Smaller faults break up the reef but are generally sub-parallel to the main structures.

Mineral rights /legal aspects and tenure

The current mining right encompasses an area of 2 355.85 hectares and was successfully converted, executed and registered as a new order mining right at the Mineral and Petroleum Resources Titles Office on 26 January 2008. The mining right FS30/5/1/2/2/83MR is valid from 11 December 2007 to 10 December 2029.

Mining methods and mine planning

Bambanani is in the final stages of its life of mine and mining is limited to the extraction of the shaft pillar. Mining of the shaft pillar is focused on mini longwalls on the north side and centre of the pillar, separated by safety pillars left along designated main geological structures. Ore transport is through a decline system, stretching from 58 to 75 levels, situated on the northern side of the shaft pillar, to Bambanani West, where hoisting takes place.

Most of the panels are mined on undercut, leaving a reef beam of approximately 80cm in the hangingwall in order to build a beam to support the shale. The challenge remains to control the stoping width and the stability of the beam in a highly fractured and faulted environment, with sill intrusions, weak waxy brown quartzite hangingwall above the shale, complicated by ball and pillow formations.

Backfill has been successfully introduced in all of the panels. The quality of installation has improved drastically as the crew has gained knowledge and understanding of the underground application. The focus will now be to improve the amount of backfill placed vs square metres mined, as well to focus on quality control which will include regular testing of the backfill product.

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – FREE STATE CONTINUED

The seismic system is operational and the seismic data is used and applied in the design of the mining sequence. Seismic response is also monitored and correlated with monthly production data, to establish the relationship between volumes mined and the seismic response.

Mineral processing

Bambanani does not have its own mineral processing plant and the mine's ore is transported by rail for 7km to the Harmony 1 plant for processing. This is a centrally located plant that is used by other Harmony mines in the Free State.

Infrastructure

Work continues in the shaft pillar on levels 66, 69, 71 and 73. Ore transport is by means of a decline system, stretching from 58 to 75 levels, situated on the northern side of the shaft pillar, to West Mine, where hoisting takes place. The linking level is the 60 level, where cross-tramming is done.

Mineral resource estimation

The estimation method used for local measured estimates on the shaft is Ordinary Kriging and for local indicated and inferred estimates is simple macro kriging. The orientations and ranges of each geo-zone's semi-variogram are used to determine the kriging search parameters, which are optimised. Estimates are generally kriged into 30mx30m blocks for the measured resources from the point support data. The indicated resources are kriged into 60mx60m blocks, using the associated regularised variograms together with a macro kriging declustered data set. Similarly, the inferred resources are estimated using the associated regularised variograms and kriging into 120mx120m blocks. Any "unkriged" areas in the inferred regions are then covered by global mean estimates.

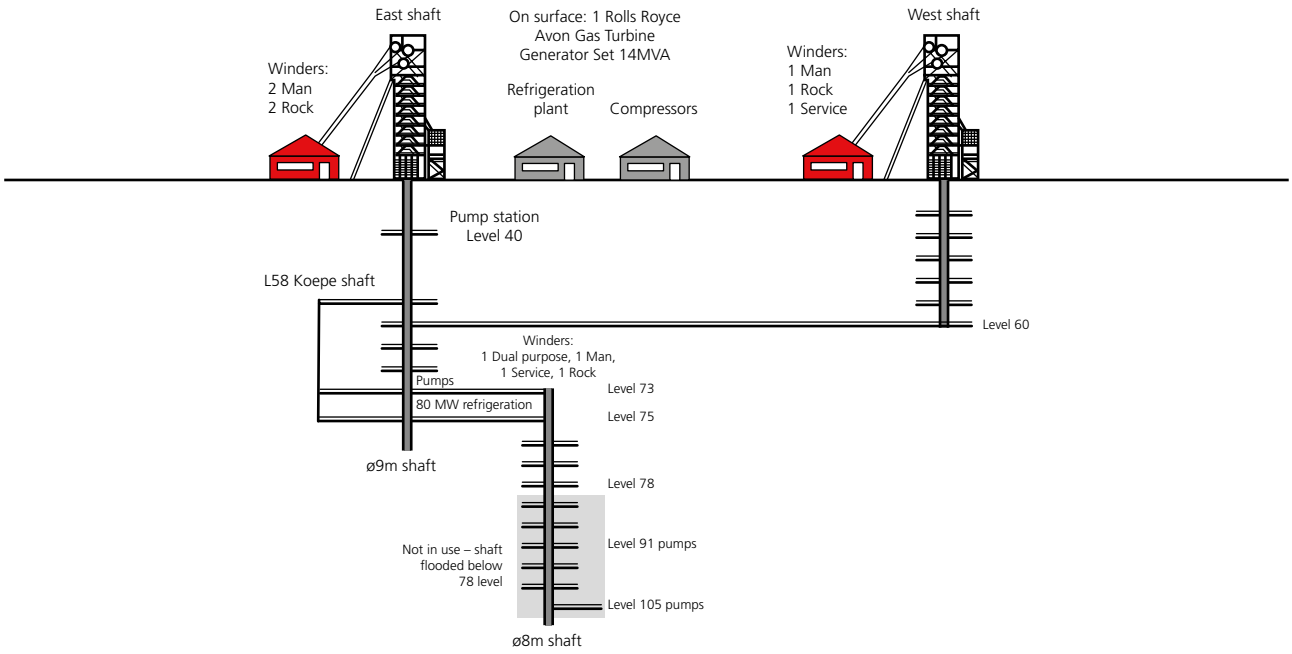
Environmental impact

Bambanani's environmental aspects and impacts are managed according to its Environmental Management Programme as approved by the DMR in terms of the MPRDA. All environmental aspects and impacts emanating from mining activities are documented in the approved EMPR and the environmental aspect register as required by the MPRDA and ISO 14001:2004 standard, in terms of which they are also managed.

Annual performance monitoring and audits are conducted by the DMR to verify compliance with the following legislation:

- Mine Health and Safety Act 29 of 1996
- National Water Act 36 of 1998
- National Environmental Management Act 107 of 1998
- Mineral and Petroleum Resource Development Act 28 of 2002

Bambanani: Schematic of shaft and mining layout



RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

Material risks: Material risks which may impact Bambanani's reserve and resource statements are as follows:

Significant risks
- Seismicity

Remedial action
- Support design, monitoring system

Competent person **Ore Reserve Manager,** Japie van der Merwe *BSc (Hon), SACNASP*	33 years' experience in Witwatersrand gold mining and exploration

BAMBANANI

Gold – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Bambanani	0.9	15.15	14	456	–	–	–	–	–	–	–	–	0.9	15.15	14	456

Modifying factors

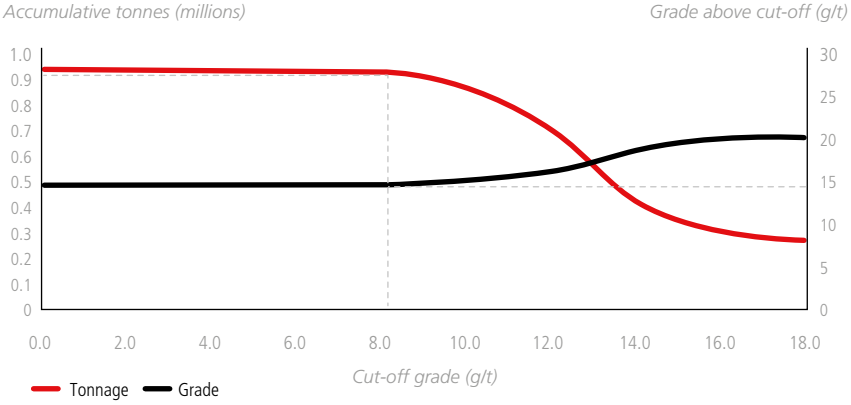
	MCF (%)	SW (cm)	MW (cm)	PRF (%)
Bambanani	96	180	220	96

Gold – Mineral reserves

	Proved reserves				Probable reserves				Total mineral reserves			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Bambanani	1.1	11.54	12	401	–	–	–	–	1.1	11.54	12	401

Bambanani: Measured and indicated resource grade-tonnage curve

Basal Reef



RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

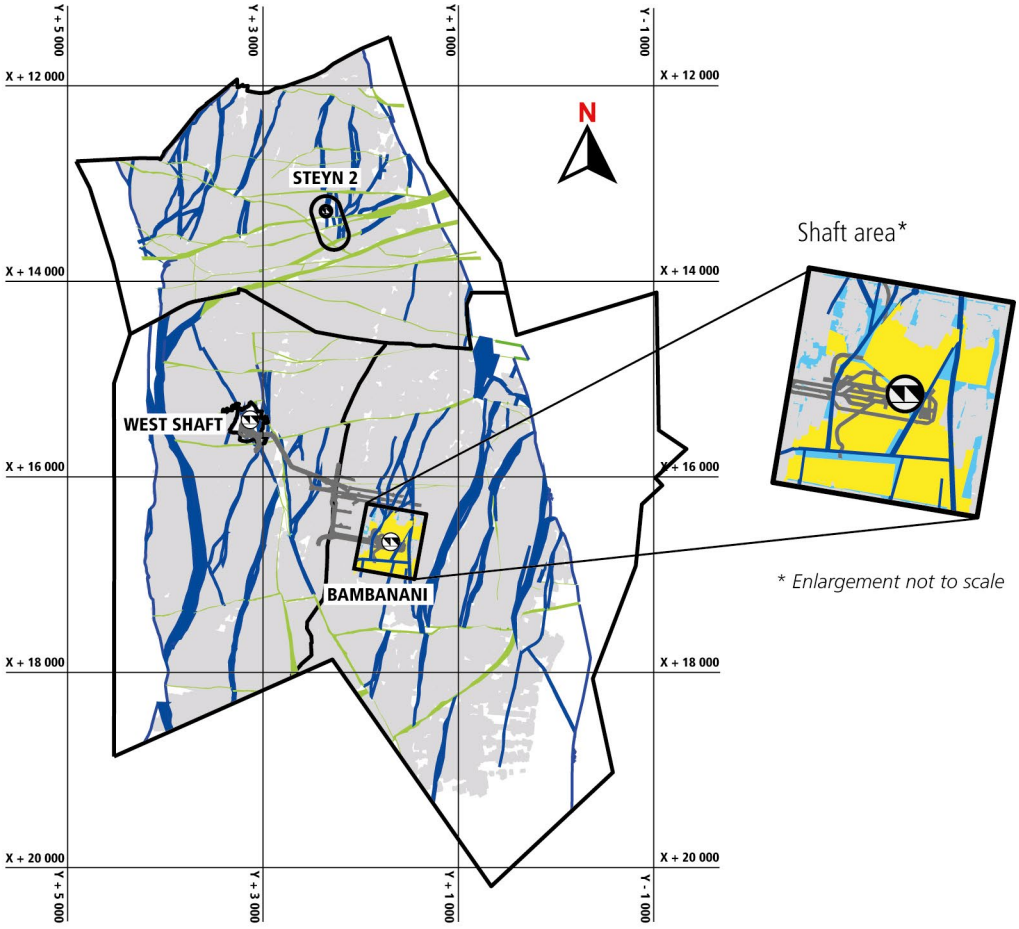
BAMBANANI
BASAL REEF

LEGEND

- Mining right
- Shaft position
- Infrastructure
- Fault zones
- Abandoned pillars
- Dykes
- Mined out

Mineral Reserves

- Proved and probable



0 500 1 000
Metres

Co-ordinate system Lo. 27°
Constants: Y = +17 678.241m
X = +3 086 102.792m
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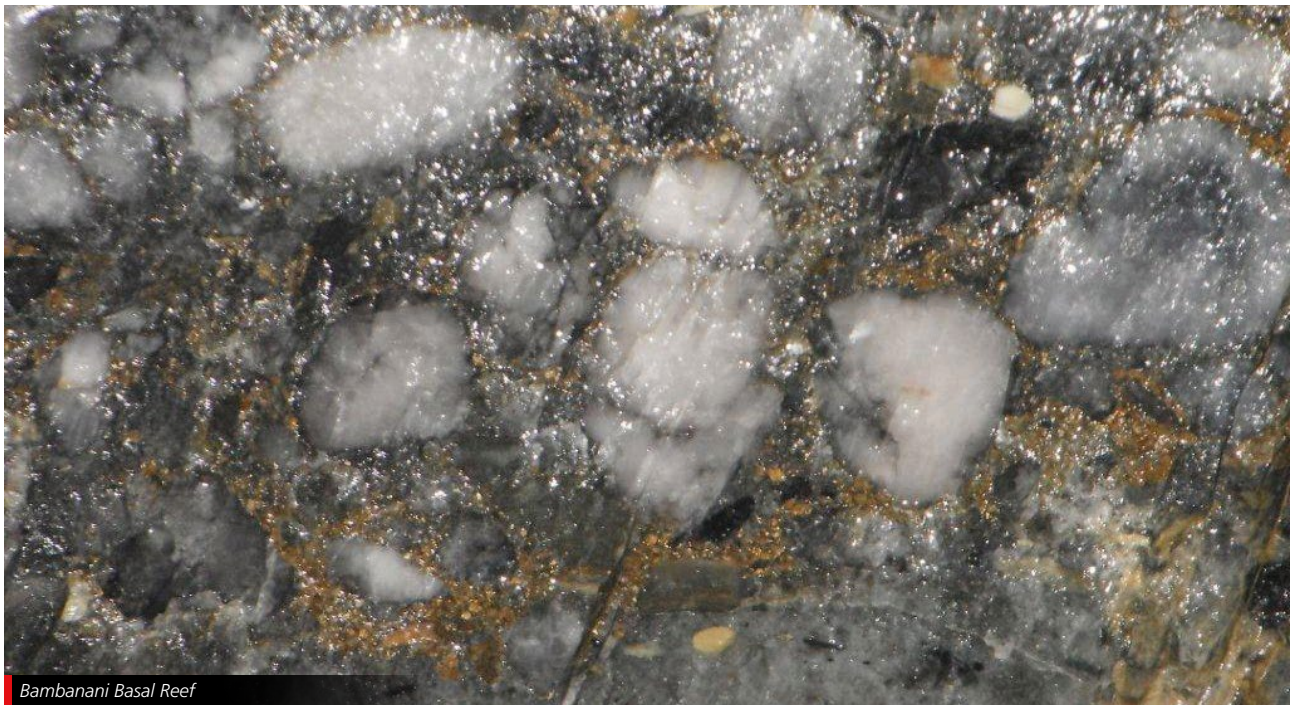
Longitude: 26°48' 9.13"E



Bambanani Basal Reef

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

Unisel

UNISEL

History

Unisel began as a joint venture between Union Corporation and African Selection Trust in 1972, following a drilling programme undertaken in the ground between the Sand River and the President Brand mine. Site preparation and shaft sinking began in 1974 and production in 1979. On the amalgamation of Union Corporation and General Mining, Unisel continued operations under the mining house Gencor and then Gengold. In 1995, Randgold purchased Unisel from Gengold. When Randgold split, Unisel became part of Harmony's stable of mines.

Nature of operation

Unisel is a mature, underground, single-shaft mining operation, operating at depths from 1 100m to 2 200m below surface. Mining operations are scattered and, due to the age of the shaft and the extent of mining, lie 2-4km from the shaft.

Geology

Unisel mines gold-bearing reefs from the Witwatersrand Super Group, which is situated on the Kaapvaal Craton. The mine lies in the Free State goldfields on the south-western edge of the basin. The Basal and Leader reefs are the main economic horizons in the Unisel area. The Basal Reef occurs at the base of the Harmony Formation and overlies the footwall beds (Welkom Formation) with a marked unconformity. This erosional unconformity cuts progressively deeper into the footwall when traced from north to south. The Leader Reef lies at the base of the Dagbreek Formation. The separation between the Basal and the Leader reefs varies from subcrop of the Basal against the Leader Reef in the west to 17m in the eastern areas of the lease. The subcrop is beyond the mine lease area, within the lease area between the two major gold-bearing reefs, which varies from 13m in the west to 17m in the east. The Middle Reef is a channelised deposit forming a discreet channel running from west to east. This channel lies to the north of the shaft. Stratigraphically, it lies between the Basal and Leader reefs.

Structurally, the sedimentary package, within which Unisel mines, strikes north south and dips to the east with dips ranging between 25 and 40 degrees. Faulting consists predominantly of north-south trending normal faults dipping to the west with a right lateral displacement. The most significant is the Stuirmanspan fault of about 800m and the Unisel fault of 110m. West-east trending thrust faults cut through the property.

Igneous intrusions, in the form of dykes and sills, are present with the sill lying sub-parallel to the Basal and Leader reefs with an effect on mining operations with the reef horizon split by the sill.

Mineral rights and tenure

Unisel has mining rights on the farms Jurgaenhof 490, Tarka 656 and Vermeulens Kraal Noord 480. These mining rights are registered as new order mining rights. The extent of the mining rights is 3095.5366 hectares.

Mining methods and mine planning

Mining operations take place from 2 level down to 13 level, by means mainly of breast panel mining. Limited down-dip panels and wide raises are undertaken periodically. Footwall development comprises haulages and crosscuts with service ways and ore passes developed to access the reef horizons. Face length cannot exceed 30m and strike pillars are left as support between the panels.

Planning to extract higher-grade portions of the shaft pillar has begun. This ground will be extracted by means of breast panel mining, as described above. The mine is currently in "harvest" mode and has a remaining operating life of 4.5 years.

Mineral processing

Unisel does not have its own mineral processing plant. The ore mined is transported by rail for 8km to the Harmony One plant for processing. This is a centrally located plant used by other Harmony mines in the Free State.

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

Infrastructure

The Unisel complex consists of a steel headgear with a collar elevation of 496m below datum, giving access to workings from 2 level (at 1 655m below datum) to 10 level (2 375m below datum). A decline shaft from 10 level to 13 level at 2 641m below datum gives access to the lowest shaft levels.

The shaft has a second outlet to Bambanani to the north at 10 level. Other holings to adjacent mines lead to the old Brand 5 shaft on 4 level.

Mineral resource estimation

The estimation method used for local measured estimates on the shaft is Ordinary Kriging and, for local indicated and inferred estimates, is simple macro Kriging. Estimates are generally kriged into 30mx30m blocks for the measured resources from the point support data. The indicated resources are kriged into 60mx60m blocks, using the associated regularised variograms together with a macro kriging declustered and, similarly, the inferred resources are estimated using the associated regularised variograms and kriging into 120mx120m blocks. Any unkriged areas in the inferred regions are then covered by global mean estimates. Geozones are based on grade distribution to ensure correct grade estimates are done for the different areas.

Environmental impact

Unisel environmental aspects and impacts are managed according to the environmental management programme (EMPR) approved by the Department of Mineral Resources (DMR) in terms of Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA). All environmental aspects and impacts emanating from mining activities are documented in the approved EMPR and the environmental aspect register as required by MPRDA and ISO 14001:2004 standard.

Annual performance monitoring and audits are conducted by the DMR to verify compliance with the following legislation:

- Mine Health and Safety Act 29 of 1996
- National Water Act 36 of 1998
- National Environmental Management Act 107 of 1998
- MPRDA

All environmental impacts emanating from mining activities are managed in terms of the EMPR and ISO 14001:2004 requirements.

Material risks: Material risks which may impact Unisel's reserves and resource statement are as follows:

Significant risks

- Scaling of shaft ore pass system
- Aged shaft infrastructure and equipment
- Scattered mining and environmental risks

Remedial action

- Ensure waste and reef systems are maintained
- Preventative maintenance schedules and repairs
- Establish dedicated return airways

Competent person Izak J Meyer *M.SSC, NHD Mineral Resource Management, SAIMM*	 39 years' gold mining experience
Ore Reserve Manager Trevor Welbourne *BSc Geology, SAIMM*	 37 years' experience in Witwatersrand gold mining and exploration

Unisel

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – FREE STATE CONTINUED

UNISEL

Gold – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Unisel	1.3	7.02	9	302	1.2	6.93	8	271	0.1	6.54	0	14	2.6	6.97	18	586

Modifying factors

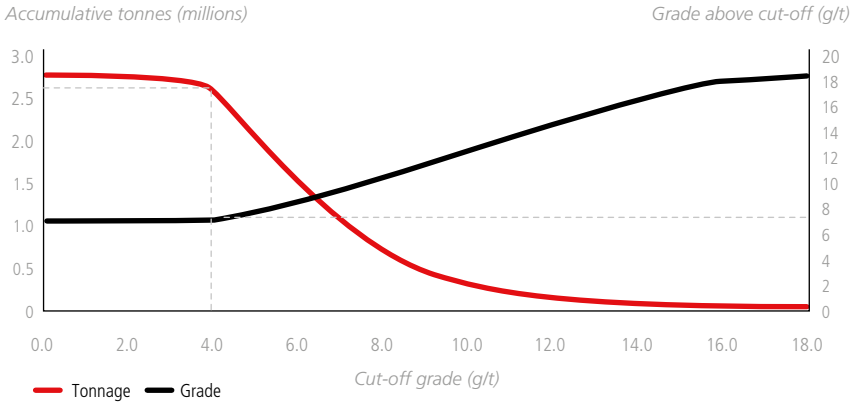
	MCF (%)	SW (cm)	MW (cm)	PRF (%)
Unisel	77	184	224	96

Gold – Mineral reserves

	Proved reserves				Probable reserves				Total mineral reserves			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Unisel	1.2	4.56	5	170	0.9	4.60	4	131	2.0	4.58	9	302

Unisel: Measured and indicated resource grade-tonnage curve

Basal, Leader and Middle reefs

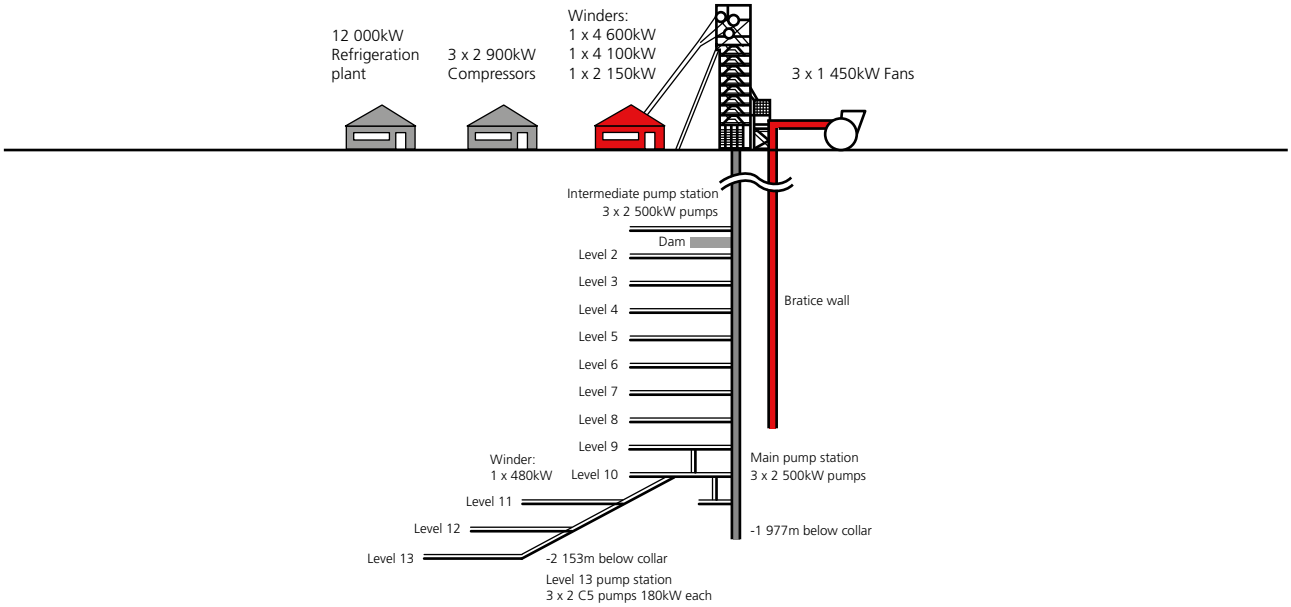



Unisel

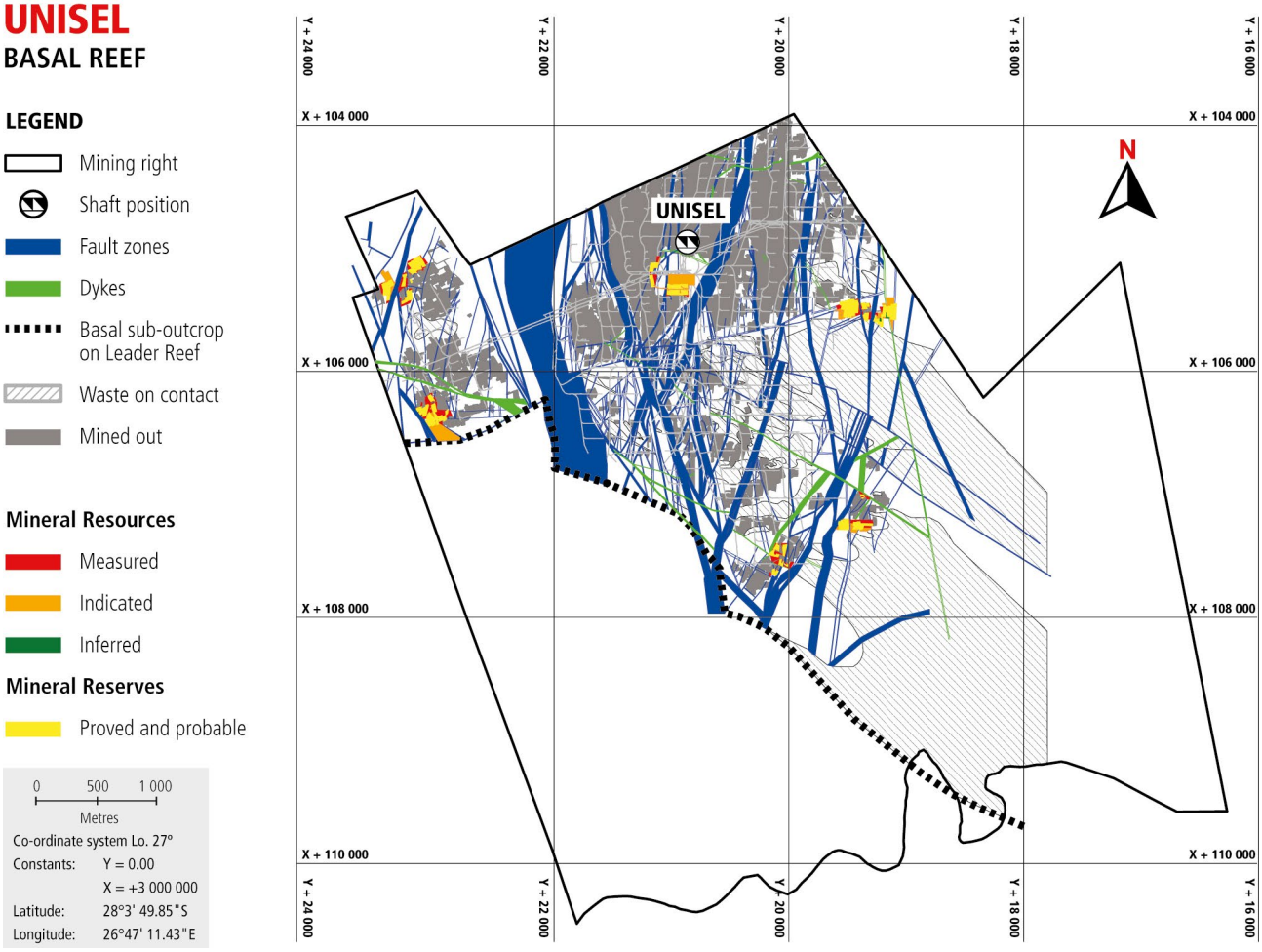
RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

Unisel: Schematic of shaft and mining layout



UNISEL
BASAL REEF



RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – FREE STATE CONTINUED


Joel

JOEL

History

Active prospecting in the area began on the farms Leeuwbult 580 and Leeuwfontein 256 in 1981. Work began on the construction of the twin shaft system in September 1985 and was completed by December 1987. Joel South was designed to be a fully trackless mining operation. The mine, previously known as HJ Joel, had its name changed to Joel in 1998 when AngloGold was established. The name was later changed to Taung in 1999, reverting to Joel in January 2002 when the Freegold joint venture between Harmony and ARMgold assumed responsibility for the operation.

NATURE OF THE OPERATION

Joel consists of two interconnected shaft complexes, the south shaft complex, which is currently in operation, and the north shaft complex, which is still to be completed.

The south shaft complex has two shafts, namely 3 shaft (men, material and mineral) and 4 shaft (ventilation and services). This shaft system was sunk beyond the reef sub-outcrop and is located on the southern extremity of the ore body. These two shafts go down to 1 050m below collar and cover four levels, namely 60 and 70 levels, (which are mined out trackless levels); 90 level which is the main transfer level, and 95 level which houses the pumping and loading facilities.

The north shaft complex is a single-shaft system, sunk and lined to 1 471m below collar, but not yet equipped to hoist people. Feasibility studies were conducted in 2005 to determine the extent to which this shaft could be used to extend Joel's life of mine by opening up the 129 level. This shaft was upgraded in February 2006 to enable hoisting of ore through the north shaft barrel. Hoisting was halted in March 2007 owing to deterioration of the shaft infrastructure. The shaft has since been re-equipped to hoist ore and acts as a second outlet for the mine.

A short one-compartment lift shaft from 110 level gives access to 121 level. The single drum winder installed here was used to transport men and material down to 121 level and also to do hopper hoisting of the development and some stoping ore on this level. The lift shaft has since been deepened to access to 129 level. The lift shaft will service men and material only whereas the north shaft will be dedicated to hoisting ore.

The two shaft complexes are connected by a triple decline system, spanning four levels and consisting of a belt decline of ±1 600m in length (decommissioned), a chairlift decline to 110 level and two material declines in tandem down to 117 level. The levels on the decline are 98, 104, 110 and 117, of which the bottom two are connected to north shaft. There are no holings connections from Harmony to Beatrix.

Joel's current life of mine expectancy is 10 years. This includes mining up to 137 level and the Beatrix block swop.

In order to access the ore body from 137 level, two declines are being developed at 12° from 129 level – a chairlift decline and a conveyor belt decline. Primary footwall development is currently taking place on 137 level.

Mineral rights/legal aspects and tenure

The current mining right encompasses an area of 2 355.8ha and was successfully converted, executed and registered as a new order mining right at the Mineral and Petroleum Resources Titles Office (MPRTO) on 6 August 2010 under 73/2010MR.

Geology

The main structures at Joel are associated with the Platberg Extensional event, which formed the De Bron and associated faults. These faults are north-south striking, steeply dipping and typically have downthrows to the east in the order of 10 to 100m. These form a graben against the De Bron Fault, which has a 450m up throw to the east. East of the De Bron Fault the reef has been truncated/eroded against the Karoo Supergroup.

Minor eastwest striking faults are also present; however, displacements on these faults are generally less than 10m, which are believed to be Klipriviersberg in age. Low angle reverse faulting is also present. These structures trend north-south, have small displacements and dip towards the east. These structures may be related to the central Rand Contractional event.

The Klippan Formation has been preserved as an east west trending erosional channel that has eroded deeply through the Witwatersrand sediments and has eliminated the Beatrix/VS5 horizon in the eastern portion of the mine and cut out a significant chunk in an east west direction through the middle of the lease area. Regionally the Klippan Formation is preserved in the north south-striking basin, known as the Virginia Basin in the Southern Free State, which parallels the De Bron Fault.

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

A deep erosional channel of Platberg Group volcano-sedimentary rock, known as the Klippan Channel, truncates the Beatrix Reef some 1.8km to the north of Joel South Shaft. This washout feature is wedge-shaped with its apex to the west and widens to the east.

The estimated dimension from the apex to the eastern property boundary is approximately 1.8km. The reef has been shown to be continuous to the north of this feature.

Where unaffected by the Klippan Channel, the reef is bound to the east by the De Bron Fault, which strikes north-northeast. The CD Fault, which strikes northeast and is roughly halfway between the two shafts, has a 320m sinistral lateral displacement, which has moved ground south of the fault towards the northeast.

The complex nature of the reef has resulted in a highly irregular distribution of gold throughout the mining area. There are broad low- and high-grade zones over hundreds of metres, which are considered likely to be repeated within the reef environment beyond the limits of the current development. However, the detailed grade distribution within these zones remains very unpredictable.

For the purposes of resource estimation, a detailed facies model is used and is based on detailed sedimentological observations.

Mining methods and mine planning

Joel operates at an intermediate mining depth and the mining method is tailor-made for both the variable grades intersected as well as associated rock-related hazards anticipated at this depth.

Due to variable grades as well as geological complexity, the mining is conducted mainly in terms of a pre-developed scattered mining system. This system allows for un-pay and geologically complex areas to be left unmined with some cognisance taken of the overall panel configuration and stability of footwall development. This allows for mining to be selective based on the proven ore reserve during the development phase.

In addition, the stability of stoping panels in an intermediate stress environment, may require additional stabilising pillars be left to support the immediate hangingwall. These take the form of inter-panel crush pillars left between neighbouring mining panels. The major rock-related risk is unexpected panel collapses.

Minor falls of ground due to geology, bedding, shale and jointing do occur but are mostly addressed via a proven in-stope support system. As the largest portion of Joel production currently being mined between 121 and 129 levels, production is relatively concentrated to four or five raise lines.

Mining also has progressed to more complex geological areas and dip and strike related structures are more commonly intersected. The changes to higher support resistance systems due to the intersection of more complex geological environment has been largely successful and the occurrence of large geological driven "back breaks" and falls of ground are rare. Timber-based packs were introduced along gullies and as breaker line support in panels to improve hangingwall stability in these areas. From a management perspective, it is of utmost importance that geological structures are reported, mapped and properly supported using high-support resistance pack units to ensure a stable stoping horizon.

Due to the marginal increase in depth and the complex geological environment, the incidence of low magnitude (< 1.5) seismic events has slowly increased. This activity has manifested mainly in reasonably low stress (45Mpa) strike orientated dyke intersections with stoping excavations. The installation of a 10 station regional seismic network to highlight potentially unstable areas and structures prone to bursting was completed and the seismic data used to highlight potential problem areas. The seismic network is properly maintained and the operational and health status of the network kept well above the 80%

Mineral processing

Joel plant currently receives reef from only Joel at a rate of approximately 45 000 tons a month. The reef has an average moisture content of between 3% and 5 %. Reef is transported from the shaft using trucks which tip the ore into the plant feed bin. The reef is then transported from the feed bin by conveyor belt to the mill silos.

The ore is fed from the concrete silos via two mill feed conveyors into the mills. Fully autogenous milling is a milling process in which the entire run of mine (ROM) ore stream is fed directly into the mills. The average feed rate to the mills is between 50 and 75tph. The milling circuit consists of two single stage ROM mills that are controlled on maximum power and load for optimum milling. Each ROM mill is 4.27m in diameter and 10m in length, the mill grind varies between 70% and 80% passing minus 75 microns.

The carbon-in-pulp circuit at Joel Plant is made up of six tanks in which carbon is transferred counter current to the flow of pulp. The carbon is retained in the respective tank with the use of Kambalda screens, the slurry is pumped to the residue tank and from there to the tailings dam.

Infrastructure

The upper levels of Joel are in the mature phase of operation. The decline project, from 129 to 137 levels, which started in 2011 is scheduled to be completed in 2018. Production from the 137 level E5 raise is expected to start in March 2018.

Mineral resource estimation

The estimation method used for local measured estimates on the shaft is Ordinary Kriging (OK) and for local indicated and inferred estimates is simple macro kriging (SMK). Estimates are generally kriged into 30mx30m blocks for measured resources from the point support data. Indicated resources are kriged into 60mx60m blocks, using the associated regularised variograms together with a macro kriging decluster.

Similarly, inferred resources are estimated using the associated regularised variograms and kriging into 120mx120m blocks. Any un-kriged areas in the inferred regions are then covered by global

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – FREE STATE CONTINUED

JOEL CONTINUED

mean estimates. Geozones are based on grade distribution to ensure correct grade estimates are done for the different areas.

Environmental impact

Environmental aspects and impacts at Joel are managed according to the Environmental Management Programme, as approved by DMR in terms of Mineral and Petroleum Resource Development Act of 2004. All environmental aspects and impacts emanating from mining activities are documented in the associated EMP report and the environmental aspect register as required by the MPRDA and ISO 14001:2004 standard.

Annual performance monitoring and audits are conducted by the DMR to verify compliance with the following legislation:

- Mine Health and Safety Act 29 of 1996
- National Water Act 36 of 1998
- National Environmental Management Act 107 of 1998
- Mineral and Petroleum Resource Development Act 28 of 2002

All environmental impacts emanating from mining activities are managed in terms of the EMPR and ISO 14001:2004 requirements.

Environmental audits or performance assessments are conducted every second year to verify compliance with Joel's approved EMP, as required by Regulation 55 of the MPRDA, by independent environmental consultants and the report submitted to the Department of Mineral Resources. In addition, an internal environmental legal compliance audit is conducted to verify compliance. An online based Joel mine environmental legal register on www.drayer-legal.co.za is used to monitor compliance and to obtain applicable and relevant environmental legal updates for the operation.

Bio-monitoring surveys are also conducted on surface water streams close to the operation to comply with draft water use license conditions and National Water Act 36 of 1998 to:

- Determine the condition of the biological communities in the rivers through indices such as SASS5, IHAS (Version 2.2); and IHIA, as well as to determine the chemical water quality in the streams during the wet seasons;
- Provide baseline reference conditions for future studies in order to assist Joel mine management in identifying environmental liabilities resulting from actions of current mining activities in respect of potential contamination of surface streams.

The operation is ISO 14001 accredited and conforms with the requirements of ISO 14001: 2004 standard, the operation is also ICMI accredited and audited annually as per ISO 14001 requirements and the Cyanide Management Code. The operation was accredited in 2010 and remains accredited to eliminate or minimise the effects of mining activities to the environment and adjacent communities.

Joel

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – FREE STATE CONTINUED

Material risks: Material risks which may impact Joel's reserves and resource statement are as follows:

Significant risks
- Flooding of 145 level (shaft bottom)
- Flexibility

Remedial action
- Installation of second submersible pump as a standby and commissioning of clean-up dam on 145 level
- Prioritise decline project development and construction

Competent person	
Ore Reserve Manager, Deon Lodder *Professional Mine Surveyor – PMS 0169 – PLATO;* *Business Management and Leadership Degree – UFS;* *Mine Surveyor's Certificate of Competency:* *National Higher Diploma – Mine Surveying;* *NTC 6 – Civil Engineering*	32 years' experience in gold mining

JOEL

Gold – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Joel	2.6	8.40	22	709	5.2	8.51	44	1 421	0.2	8.06	1	47	8.0	8.46	68	2 178

Modifying factors

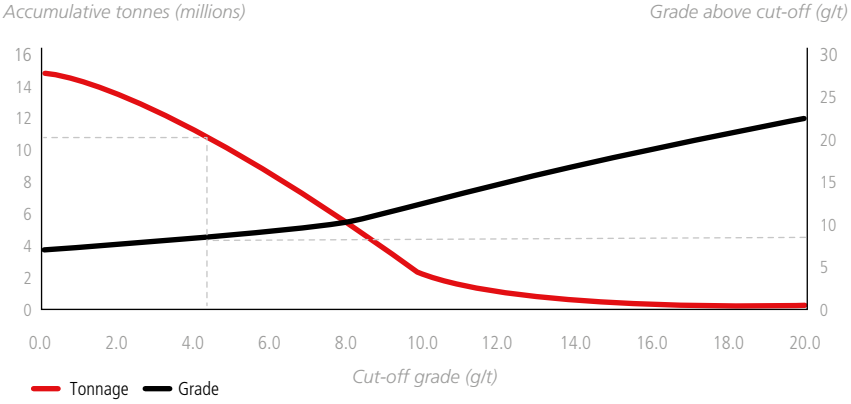
	MCF (%)	SW (cm)	MW (cm)	PRF (%)
Joel	84	159	189	95

Gold – Mineral reserves

	Proved reserves				Probable reserves				Total mineral reserves			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Joel	2.1	5.00	10	335	2.4	5.35	13	420	4.5	5.19	23	755

Joel: Measured and indicated resource grade-tonnage curve

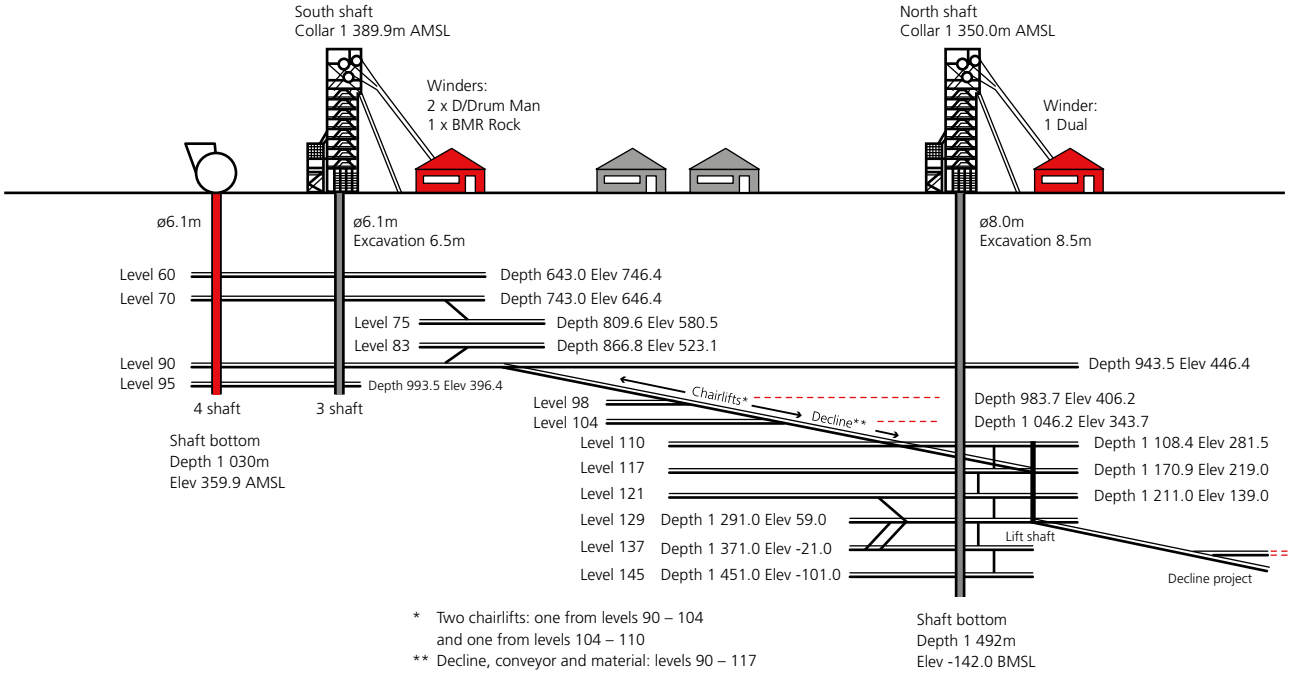
Beatrix Reef



RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

Joel: Schematic of shaft and mining layout



* Two chairlifts: one from levels 90 – 104 and one from levels 104 – 110

** Decline, conveyor and material: levels 90 – 117

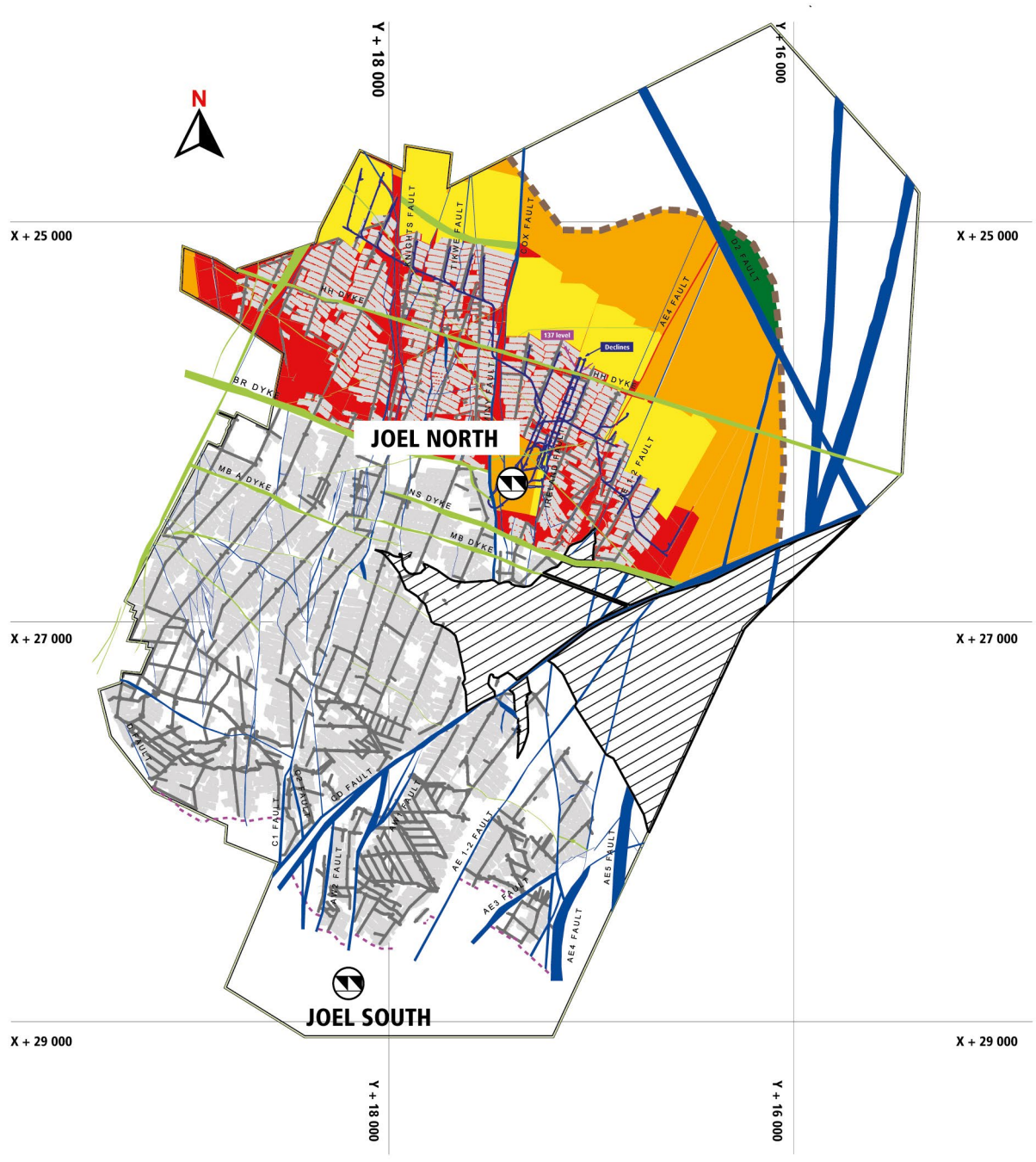
Joel

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

JOEL

BEATRIX REEF



LEGEND

- Mining right
- Shaft position
- Klippan erosion channel
- Fault zones
- Dykes
- Beatrix sub-outcrop against Karoo Supergroup
- Beatrix sub-outcrop on VS5
- 129 level development indicating declines
- 137 level development indicating declines
- Infrastructure
- Mined out

Mineral Resources

- Measured
- Indicated
- Inferred

Mineral Reserves

- Proved and probable

0 500 1 000
Metres

Co-ordinate system Lo. 27°
Constants: Y = 0.00
X = +3 100 000.00
Latitude: 28°16' 17.19"S
Longitude: 26°48' 57.97"E

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – FREE STATE CONTINUED


Masimong

MASIMONG

History

Masimong was originally known as Erfdeel when it was being sunk by Anglo American's Gold and Uranium Division in 1985. Harmony purchased Saaiplaas 3 from Anglo American's Gold and Uranium Division in March 1997 and shortly thereafter the two Erfdeel shafts in September1998 which were renamed Saaiplaas 4 and 5. After the closure of Saaiplaas 3 in early 1998, following the collapse of the gold price, an opportunity arose to reopen the entire shaft complex in September 1998 when it was renamed Masimong and comprised the Saaiplaas 4 and 5 shafts.

Masimong 5 shaft (formerly Saaiplaas 5), the youngest of the shafts, was sunk in 1985. Reef and waste transport were transferred via a twin haulage system to Masimong 4 (Saaiplaas 4 TBC) until September 2001, by when equipping of the reef and the waste-hoisting infrastructure had been completed at 5 shaft. Mining operations at Masimong 4 shaft and Saaiplaas 3, which had been sunk in 1981 and 1976 respectively, subsequently ceased as they were no longer economically viable. With the start of hoisting operations at Masimong 5 shaft, Masimong 4 was downscaled to a service and small-scale mining shaft in the quarter ended 30 June 2001.

By 30 June 2002, prevailing market conditions had improved and mining at Masimong 4 became economically viable once more. Additional personnel were redeployed to develop and access new areas of Masimong 4 to facilitate future production. In addition, extraction of the shaft pillar at Saaiplaas 3 was terminated, owing to technical difficulties. Subsequently in June 2004, operations at Masimong 4 were rationalised, and the mine is currently used solely for pumping.

During the FY12, a bulk head water plug was installed to seal off Saaiplaas 3 from the rest of the Masimong complex. Saaiplaas 3 was then abandoned due to flooding. Operations at Masimong 5 remain very susceptible to changes in the gold price as it is one of the lowest average mining grade underground operations still in production on the Witwatersrand Basin.

Nature of the operation

Masimong is a single-shaft operation which exploits two reef horizons namely the Basal and B reefs between 1 650m and 2 010m below surface. The Basal and B reefs are narrow tabular bodies, exploited by means of conventional stoping. These reefs are mined as open stopes.

Mineral rights/legal aspects and tenure

The current mining right encompasses an area of 2 2582.99ha and was successfully converted, executed and registered as a new order mining right at the Mineral and Petroleum Resources Titles Office (MPRTO) on 11 December 2007. DMR Reference FS30/5/1/2/2/82MR is valid from 11 December 2007 to 10 December 2029.

Geology

Mining takes place in a structurally complex zone between two major north-south trending faults the De Bron/Homestead Fault in the west and the Saaiplaas Fault in the east. The ore body has been subjected to severe deformation and contains numerous folds (anticlines and synclines) as well as an abundance of smaller faults.

The dip of the reef bands is very variable – from 45 degrees to the east, adjacent the western side of the lease, to less than 2 degrees in parts of the southern area.

Production is hosted within two quartz pebble conglomerate bodies, developed above unconformity surfaces, termed reefs. These two reefs are known as the Basal and "B" reefs. Approximately 80% of the centares (1 centare = 1 square metre) are from the Basal Reef horizon and 20% from the "B" Reef horizon.

Mining methods and mine planning

Masimong mines at moderate depths of between 1 650m and 2 010m below surface. The reef horizon is accessed by means of conventional grid development. The economic reef horizons

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – FREE STATE CONTINUED

extracted are the Basal Reef and the B Reef. Basal Reef accounts for approximately 80% of the on-reef production profile, and is mined on open and undercut operations, depending on whether the reef is overlain by shale. B Reef mining makes up the remaining 20% of the on-reef production profile. It is located approximately 120m stratigraphically above the Basal Reef, thus necessitating separate infrastructure (i.e. footwall development). The presence of the upper shale marker approximately 20m thick below the B Reef strains the development rates of the B Reef, requiring drop raising to be done to effect holing on all box holes. Also all on-reef development needs to be done by means of wide raising. Despite the marginality of the ore body and the current economic environment, reserves on the mine give a life expectancy of four years, mainly due to the successful opening of known value trend extensions.

Mineral processing

Ore mined is transported by rail for processing at the Harmony 1 carbon-in-pulp plant, situated some 12km from the shaft.

Infrastructure

Surface infrastructure includes a well-established network of paved roads and railway lines as well as a water pipeline and electrical lines to supply and deliver the materials required and to transport the ore hoisted to the central gold plant for treatment.

The underground infrastructure is that of a mature, low-cost mining operation approaching the end of its economic lifespan. The only undeveloped area of any economic significance lies to the south and southeast of the shaft in ground formerly located within the Masimong 4 shaft area.

Mineral resource estimation

The estimation method used for local measured data on the shaft is ordinary kriging and for local indicated and inferred estimates is simple macro kriging. Estimates are generally kriged into 30mx30m blocks for measured resources from the point support data. Indicated resources are kriged into 60mx60m blocks, using associated regularised variograms together with a macro kriging decluster. Similarly, inferred resources are estimated using the associated regularised variograms and kriging into 120mx120m blocks. Geozones are based on grade and facies distribution to ensure correct grade estimates are calculated for the different areas.

Environmental impact

Masimong's environmental aspects and impacts are managed according to the Environmental Management Programme (EMP) approved by DMR in terms of Mineral and Petroleum Resource Development Act of 2004. All environmental aspects and impacts emanating from mining activities are documented in the approved EMPR and the environmental aspect register, as required by MPRDA and ISO 14001:2004 standard.

Annual performance monitoring and audits are conducted by the Department of Mineral Resources to verify compliance to the following legislation:

- Mine Health and Safety Act 29 of 1996
- National Water Act 36 of 1998
- National Environmental Management Act 107 of 1998
- Mineral and Petroleum Resource Development Act 28 of 2002

All environmental impacts emanating from mining activities are managed in terms of the EMPR and ISO 14001:2004 requirements.

Environmental audits or performance assessments are conducted every year to verify compliance with the approved EMPR, as required by Regulation 55 of the MPRDA, by independent environmental consultants and the report submitted to the Department of Mineral Resources. In addition, an internal environmental legal compliance audit is conducted to verify compliance. An online based Masimong environmental legal register on www.drayer-legal.co.za is used to monitor compliance and to obtain applicable and relevant environmental legal updates for the operation.

Bio-monitoring surveys are also conducted on surface water streams close to the operation to comply with draft water use licence conditions and National Water Act 36 of 1998 to:

- Determine the condition of the biological communities in rivers through indices such as SASS5, IHAS (Version 2.2); and IHIA, as well as to determine the chemical water quality in the streams during the wet seasons;
- Provide baseline reference conditions for future studies in order to assist Masimong management in identifying environmental liabilities resulting from actions of current mining activities in respect of potential contamination of surface streams.

The operation is ISO 14001 accredited and conforms the requirements of ISO 14001: 2004 standard, the operation is audited annually as per ISO 14001 requirements. The operation has been accredited in 2012 and remains committed to eliminating or minimising the effects of mining activities on the environment and adjacent communities.

Masimong

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

Material risks: Material risks which may impact Masimong's reserves and resource statement are as follows:

Significant risks

- Adverse gold price changes
- Unexpected geological features
- Unexpected value/ grade loss

Remedial action

- Targeting the opening of the high-grade Basal area, pillars and B Reef value zones as replacement ground
- Extensive exploration drilling from underground platforms
- Extensive exploration drilling to confirm grade trends ahead of extraction and reduction of all external dilution factors

Competent person	
Survey: Head of department, Evans Malaola *MSCC, NHD Mineral Resource Management, Plato PMS 0196*	32 years' experience in the mining industry
Ore Reserve Manager, Muthelo Fhulufhelo Olga *BSc Hons (Geology), SACNASP (pending)*	10 years' experience in deep-level gold mining

MASIMONG

Gold – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Masimong	3.0	7.69	23	730	1.0	6.58	7	212	0.1	5.78	1	23	4.1	7.36	30	966

Modifying factors

	MCF (%)	SW (cm)	MW (cm)	PRF (%)
Masimong	66	137	155	96

Gold – Mineral reserves

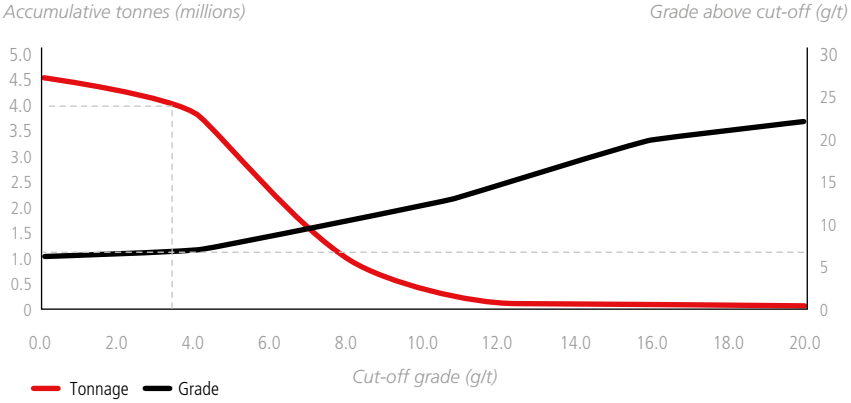
	Proved reserves				Probable reserves				Total mineral reserves			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Masimong	2.1	4.19	9	281	0.3	3.23	1	31	2.4	4.07	10	312

Uranium – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		U_3O_8	U_3O_8	Tonnes		U_3O_8	U_3O_8	Tonnes		U_3O_8	U_3O_8	Tonnes		U_3O_8	U_3O_8
	(Mt)	(kg/t)	(Mkg)	(Mlb)	(Mt)	(kg/t)	(Mkg)	(Mlb)	(Mt)	(kg/t)	(Mkg)	(Mlb)	(Mt)	(kg/t)	(Mkg)	(Mlb)
Masimong	–	–	–	–	3.4	0.19	658	1	1.3	0.15	199	1	4.8	0.18	857	2

Masimong: Measured and indicated resource grade-tonnage curve

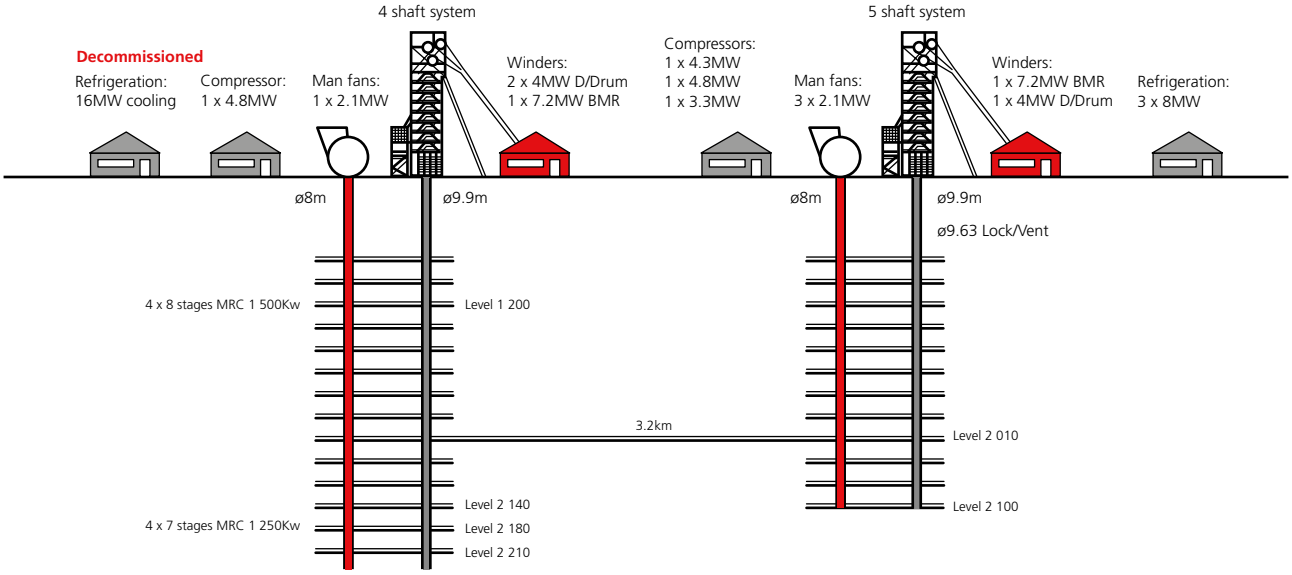
Basal Reef and B Reef



RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

Masimong: Schematic of shaft and mining layout



MASIMONG

BASAL REEF

LEGEND

- Mining right
- Shaft position
- Basal reef sub-outcrop on Leader Reef
- Inter-mine boundary
- Fault zones
- Dykes
- Infrastructure
- Mined out

Mineral Reserves

- Proved and probable

0 500 1 000
Metres

Co-ordinate system Lo. 27°
Constants: Y = 0.00
X = +3 000 000.00
Latitude: 27°58' 23.93"S
Longitude: 26°52' 39.41"E

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

Target 1

TARGET 1

History

Outcropping on the Target 1 property (originally Loraine property) is an inlier of Ventersdorp conglomerate (the Bothaville Formation) and it was the similarity of these conglomerates to those of the Witwatersrand Sequence that focused interest in this area, and led to the discovery of the Free State Goldfield. Prospecting on these conglomerates was first undertaken around 1890 via a vertical and incline shaft at the outset. The initial model for exploration north of the Loraine gold mine, which at the time was managed by Anglovaal Ltd, was proposed by DW Boshoff (Chief Geologist) in 1978. The Lorraine gold mine held the mineral rights immediately to the north of the mine. The Target Exploration Company Ltd, a company formed by Anglovaal for the specific purpose of exploration, later acquired this area. Options to mineral rights north of Target were acquired by Sun Mining and Prospecting Company (Pty) Ltd. The feasibly studies were centred on Sun Concept Mine South (CMS). The formation of Avgold Ltd in 1996 was intended to further the gold mining and exploration interests of Anglovaal Mining Limited. Harmony acquired Target in 2002.

Nature of operation

The Target ore body is located some 5km to the north of the original Lorraine 1 shaft and is accessed via a 6km-long 12 degree decline developed from the 203 level of the vertical shaft system. Initially the decline was developed to provide a drilling platform for the exploration and evaluation of the ore body, but was later used as the main access for all services, logistics, personnel and the extraction of ore.

The ore body is composed of some 67 or more individual conglomerates located in the Uitkyk (Elsburg – EA) and Van der Heeversrust (Dreyerskuil – DK), members of the upper Eldorado (Elsburg) Formation. These reefs lend themselves to massive mining techniques where composited conglomerate units can be mined as one stope. These stopes are long-hole drilled and blasted and tonnages are cleaned and transported by trackless machinery, some of which is remotely operated. Massive mining is particularly relevant where the reefs become condensed and steeper in the western portion of the ore body. Massive mining contributes to 70% of total tonnes stoped. Massive stopes have to be mined in a sequence, broadly from down-dip to up-dip. Previously mined stopes are backfilled for support, environmental and safety concerns.

Conventional narrow-reef scattered mining makes up the remaining 8% of stope tonnes mined where individual reefs are extracted in places where massive mining is inappropriate or uneconomic. Included in mine planning is that certain stopes will be mined on the stratigraphically highest gold-bearing units to provide over-stoping for the future massive stopes to be mined.

Geology

Target is located on the western margin of the Achaean Witwatersrand Gold Basin, which is on the Kaapvaal Craton of South Africa. The sediments of the Central Rand Group occur within an oval-shaped basin, which has a 160km-long axis through the Welkom area and Johannesburg, and a short axis of about 80km. The Central Rand Basin is superimposed on the West Rand Group or Lower Witwatersrand Basin, which has a much larger aerial extent at the centre of the Kaapvaal Achaean Craton.

A thrust fault system has resulted in the post-depositional folding of the strata into a synclinal shape. This "border feature" is the western limit of the graben structure, some 10km wide, which contains the majority of the Welkom gold mines. The eastern limit of this graben is the well-defined De Bron Fault. The Target 1 gold prospect is a northward continuation of the Free State Goldfield.

The full potential of the Basal Reef, which produced 85% of the gold from this area, has yet to be established in the Target area because initial drilling focused on the shallower Elsburg and Kimberley reefs due to time constraints. The reefs in the Aandenk (Kimberley) Formation include the B Reef at the base, the Big Pebble Reef and the A Reef. The Eldorado (Elsburg) Formation is developed as a sequence of oligomictic auriferous conglomerates referred to as the EA Reefs, which have been mined extensively at the Lorraine gold mine. The EA Reefs are overlain by a remnant of the diamictite facies of the south, termed the Boulder Beds at Lorraine. The reefs and associated quartzites represent alluvial sediment influx from a source area to the west. The distribution of gold mineralisation is clearly related to the sedimentology and this primary sedimentological control of gold distribution is understood. However research has shown that some remobilisation of gold has taken place over small distances. This is not extensive enough to mask the sedimentary controls.

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

Mining methods and mine planning

The stoping methods can be grouped into long-hole stoping and development mining techniques, as follows:

Long-hole stoping methods	
Massive open	Narrow-reef conventional
Wide open	
Development methods	
Drift and fill	Cut and fill
Drift and pillar	Narrow-reef

Massive open stoping

The massive open stope philosophy is based on mining a large volume of ore at a low working cost. The proximity of the reefs in the sub-outcrop area allow for a combination of the reefs to be mined using this method. The main fan massive open stopes are critical in the first three years of operation. The same principles and methodology are applied to areas where similar geology allows for mining of a massive stope.

Wide open stoping

The main focus area in the wide open stopes is the main fan block where two stoping areas will be mined. The stoping method involves an extraction process but the method can be applied to any block of similar dimensions (reef widths in excess of 10m and a dip in excess of 200m). The mining method has been designed to utilise the benefits of long-hole stoping methods and backfill.

Narrow-reef mining

The schedule reflects that 8% of the initial monthly tonnage is to be mined from the Dreyerskuil (DK1A, DK4 and DK9) reefs by means of the conventional narrow-reef mining method, which is essential as it must provide a destressed environment for the bulk of mechanised stoping. There is no practical and safe alternative to this method. The rate of overstoping must liberate sufficient destressed reserves to enable the planned 62 000tpm production rate to be achieved.

Mineral processing

Target hoists its ore and development rock together, and it is milled and processed at Target Plant adjacent to the mine. Target Mine shares Target Plant with a Harmony waste rock dump, which is monitored and managed by surface sources. The plant's design capacity exceeds the maximum planned production from these sources. Gold is recovered through gold cyanide leaching. The reef is milled and processed at Target Plant.

Infrastructure

The general area of Target 1 (mining right: FS30/5/1/2/2/14MR) is well developed in terms of access and mining-related infrastructure. Mining has been conducted in the Free State Goldfields for nearly 60 years. Access to all three shafts is by well-maintained paved road. The area also has well-established rail links and an airfield.

The Target 1 operation includes a single underground mine constructed as an extension to the Loraine gold mine and uses 1 shaft as access. The mine has decline systems off this shaft extending 5km to 6km to the mining areas some 2 300m below surface.

The mine is essentially a trackless bulk mining operation using conventional labour-intensive methods.

In addition, 1 shaft is used to transport men, material and rock between surface and the 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.

Mineral resource estimation

Geological modelling, via wire-frames of faults and lower surfaces of mineralised packages, is the primary control in the geostatistical evaluation. The estimation method used for local measured, indicated and inferred estimates at Target is Ordinary Kriging. A total of 23 reef packages are estimated individually and data from adjacent reefs are not made available for estimation. Estimates are generally kriged into what are called parent cells and then assigned to sub cells, using associated variograms and estimation parameters.

Discrimination between mineral resource categories on the basis of data density and spatial relationships of gold grades is defined through variography. Where block grades are estimated by data separated by distances greater than the maximum grade continuity ranges, they have been classified as an inferred mineral resource. Thus blocks not informed by the first kriging run (where the search ellipse was matched to grade continuity ranges) are entirely inferred. Each reef model is then restored to its original wireframe position and combined into a single 3D model. Geozones are based on structure while the mineral resource classification is based on the slope of regression.

The Datamine Mining Software System is currently in use on this shaft. A macro system has been generated, linked to a customised scripting menu. This menu allows for professional and easy management of the data and the building of geostatistical models.

Environmental impact

Target's royalty obligation is not based on properties but on the transfer of a mineral resource. The Closure Cost Report, detailing Target's environmental liability, is detailed in the Harmony Group Environmental Liability Assessment HAR3797 report prepared by Digby Wells Environmental.

Target 1

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – FREE STATE CONTINUED

TARGET 1 CONTINUED

Material risks: Material risks which may impact Target 1's reserves and resource statement are as follows:

Significant risks

- Grade dilution from waste/backfill in the massive stopes
- Trackless development production
- Solo reserve drilling
- Ventilation constraints

Remedial action

- Reduce pillar mining between mined out areas
- Weekly monitoring and tracking
- Optimise and schedule planned maintenance on solo machines
- Optimise ventilation and cooling capability

Competent person	
Ore Reserve Manager, Cindi Henderson *BSc Hons (Geology), SACNASP*	14 years' experience

TARGET 1 AND 3

Gold – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Target 1	7.8	8.27	65	2 086	7.0	7.78	55	1 761	4.2	5.79	24	779	19.1	7.55	144	4 626
Target 3	7.0	9.10	64	2 057	4.7	7.10	33	1 063	–	–	–	–	11.7	8.31	97	3 119

Modifying factors

	MCF (%)	SW (cm)	MW (cm)	PRF (%)
Target 1 (massives)	95	–	–	96

Gold – Mineral reserves

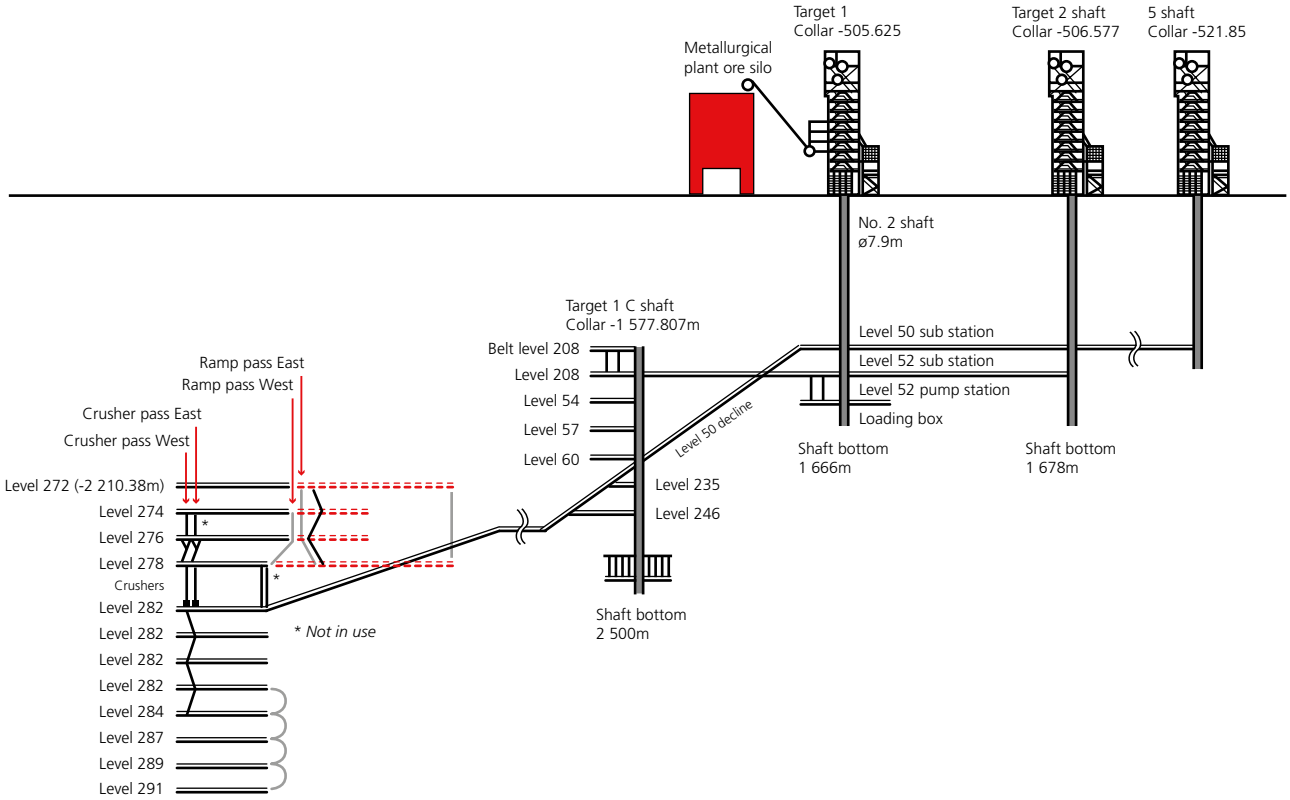
	Proved reserves				Probable reserves				Total mineral reserves			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Target 1	3.2	4.18	13	430	2.0	4.29	9	274	5.2	4.22	22	705

Due to the mechanised massive method of ore mining, the mineral resources for Target 1 are reported at a cut-off grade of 2.98g/t and reflect the tonnage and grade estimates for the individual reef packages and therefore do not account for the potential dilution by quartzite between the reef packages. This dilution is accounted for in the stope optimisation process, which informs the mineral reserve estimates. Target 1 is investigating refinements to its mineral resource estimation process to take into account dilution where appropriate, and to enhance the assessment of reasonable prospects for economic extraction, particularly for narrow reefs.

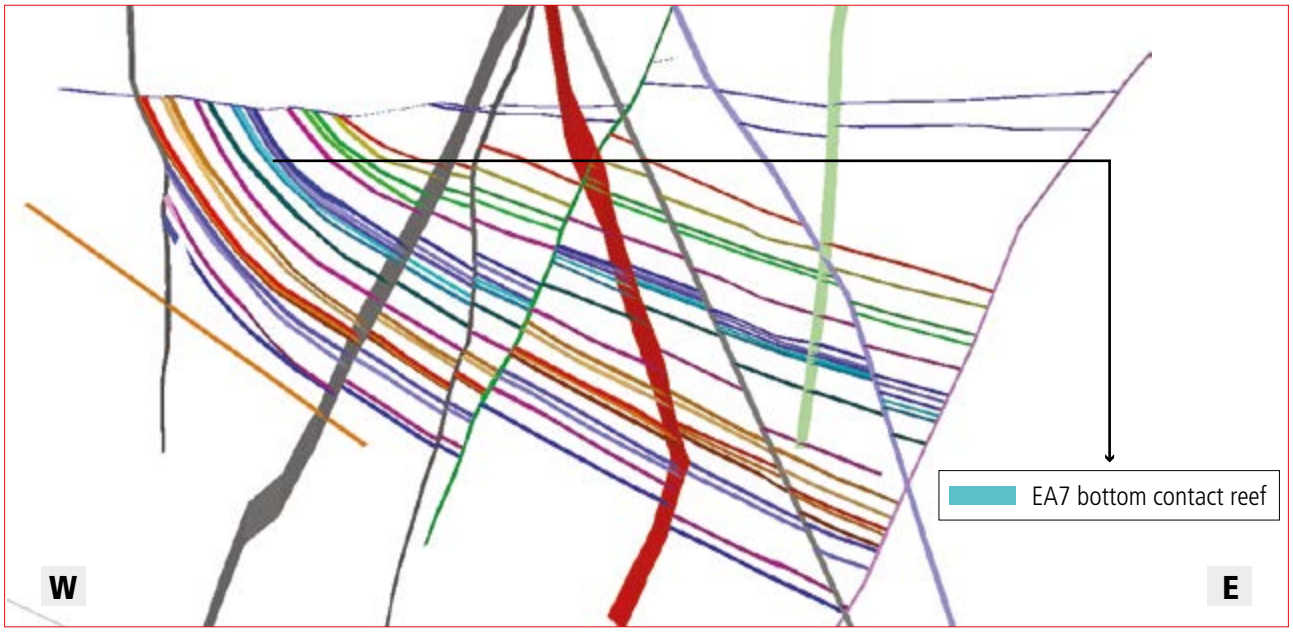
RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

Target 1: Schematic of shaft and mining layout



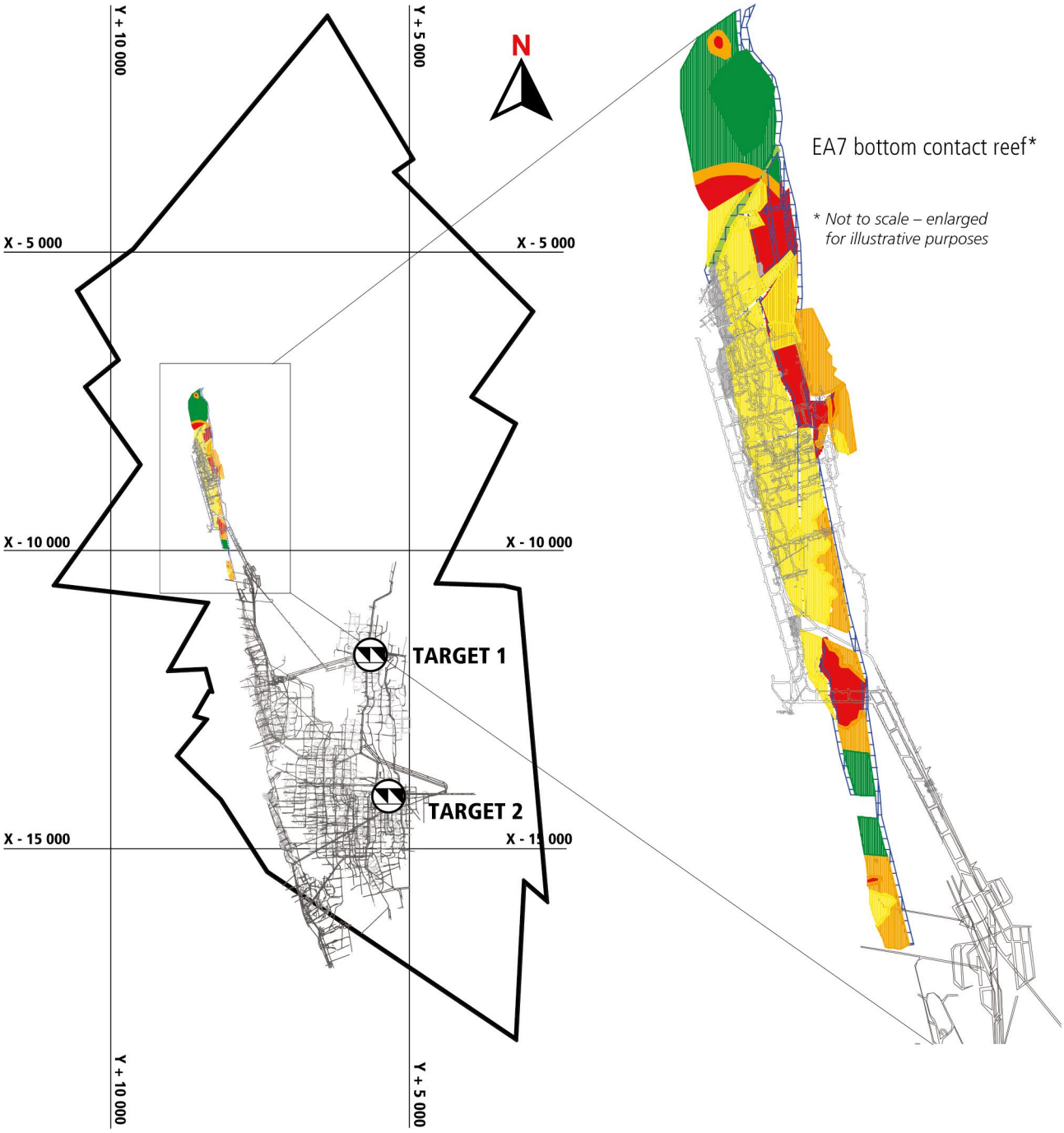
Target 1: West-east section view of Elsburg reefs to indicate the relation of the EA7 bottom contact reef in accordance with the other reefs



RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

TARGET 1



LEGEND

- Mining right
- Shaft position
- Fault zones
- Dykes
- Infrastructure
- Mined out

Mineral Resources

- Measured
- Indicated
- Inferred

Mineral Reserves

- Proved and probable

0 1 000 2 000
Metres

Co-ordinate system Lo. 27°
Constants: Y = +30 000.0
X = +306 0000

RESOURCES AND RESERVES BY OPERATION

SOUTH AFRICA – FREE STATE CONTINUED

TARGET 3

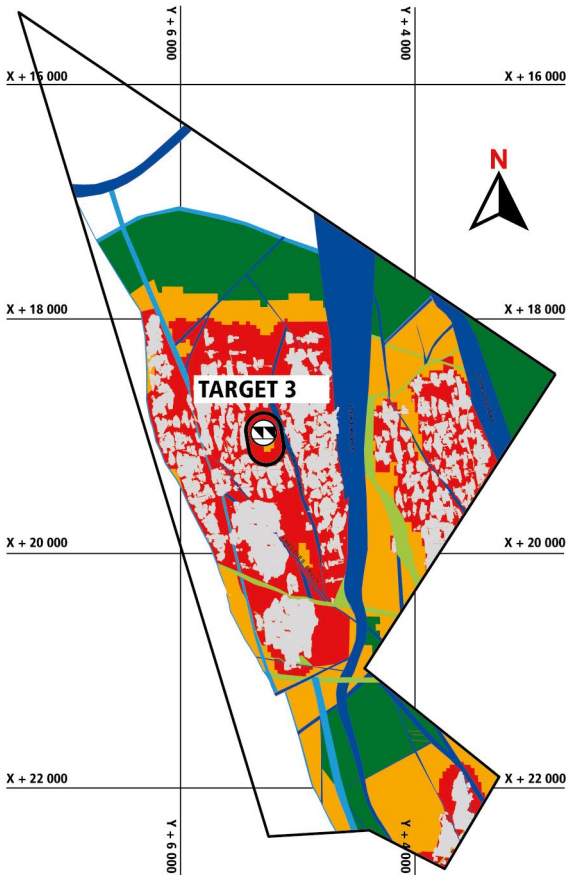
BASAL REEF

LEGEND

- Mining right
- Shaft position
- Fault zones
- Reserve faults
- Dykes
- Mined out

Mineral Resources

- Measured
- Indicated
- Inferred



0 500 1 000
Metres

Co-ordinate system Lo. 27°
Constants: Y = 35,322,988
X = 3,079,252,094

Latitude: 27:49:42,9344"S
Longitude: 26:38:29,2741"E

Target

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – SURFACE OPERATIONS

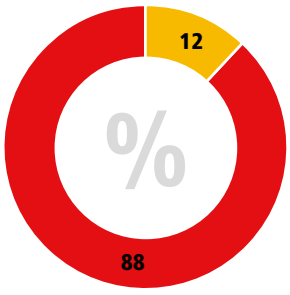
Harmony's surface assets in South Africa together had total mineral resources of 8.8Moz and total mineral reserves of 7.2Moz at 30 June 2017

LOCATION OF HARMONY'S SURFACE OPERATIONS IN SOUTH AFRICA

LEGEND
Surface operations

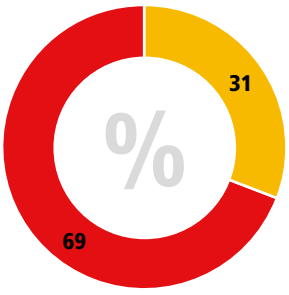
	Latitude	Longitude
Kalgold	26°10'12.85"S	25°14'02.70"E

Contribution to gold mineral resources



South Africa: Surface operations
Rest of Harmony

Contribution to gold mineral reserves



South Africa: Surface operations
Rest of Harmony

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – SURFACE OPERATIONS CONTINUED

Kalgold

KALGOLD

Location
Kalgold is located on the Kraaipan Greenstone Belt, 55km southwest of Mahikeng, between Mahikeng and Stella, along the Mahikeng-Vryburg road (N18) in North West Province, South Africa. The mine is surrounded by farm land. The closest community is at Kraaipan, approximately 15km to the south of the mine.

History
Exploration of the Kraaipan Greenstone belt began in 1980 through Shell Minerals Division. The D-Zone one area was discovered in 1991 on the farm Goldridge. In 1994, West Rand Cons Exploration acquired the ore body and mining started in December 1995. Ore was treated by heap leaching until the installation of the first two mills in 1997. Harmony acquired the mine in 1999. In 2003, a third mill was added to increase treatment capacity. The D-Zone pit was mined out in 2009.

Nature of operation
Kalgold is an open pit mining operation. The A-Zone pit, currently the only active mining pit, includes the former Watertank pit with which it merged.

Geology
The Kraaipan Greenstone Belt forms part of the Kaapvaal Craton and is overlain by late Archaean Ventersdorp lavas and tertiary sediments. The Kraaipan Group consists of three formations: the Khunwana, Ferndale and Gold Ridge formations. The Gold Ridge Formation is the oldest and contains banded iron formations, which is the host rock of gold mined in the Kalahari Goldridge deposits.

The Kalgold operation is located within the geological terrain of the Archaean Kraaipan Greenstone Belt. This greenstone environment is exposed in discontinuous outcrops of steeply dipping rocks, which define three narrow, sub-parallel belts that strike approximately north-south. The Goldridge deposits occur within the central belt, which comprises banded iron formations, magnetite quartzite, chert, greywacke, shale and schist. The greenstones are surrounded by intrusive granites and gneisses. These rocks have a complex history of deformation, which includes folding, faulting and shearing.

Younger cover rocks include isolated patches of lavas of the Ventersdorp Supergroup with much of the area blanketed by Aeolian Kalahari sands. Sparse outcrops of quartz porphyry belonging to the Makwasie Formation occur in the region. Several large dykes with a predominant east-west trend have intruded the region.

The geology of the lease area and its immediate vicinity is characterised by ferruginous chemical and clastic sediments inter-bedded with meta-lavas and non-ferruginous meta-sedimentary rocks. Outcrops in the area are sparse and generally restricted to ferruginous rock types, which are more resistant to erosion. Magnetite quartzite and clastic sediments form a low ridge to the west of the lease area. Eastwards of this unit, the iron-rich rocks generally comprise chemical sediments represented by magnetite-rich banded iron formations, cherty banded iron formations and banded chert. These units are interbedded with mafic schist, greywacke and sparse black shale. The geology of the D-Zone is used as a benchmark at Kalgold. The new pits are well established at the A-Zone and Watertank areas, and the blasthole database is now significant. The geology consists of mafic schist, which forms the immediate footwall, a banded iron formation horizon as the main ore body and a succession of clastic sediments consisting of shale, greywacke and volcanic conglomerates as the hanging wall.

Gold mineralisation is hosted by steeply dipping banded iron formations interbedded with schist, shale and greywacke. Banded iron formations consist of rhythmically banded chemical sediments comprising alternating light and dark laminae, which vary from 10mm to 50mm in thickness.

The banded iron formations are oxidised to a depth of about 40m to 60m below surface. Near surface the material is red and porous, composed of quartz, hematite and goethite with minor magnetite. At depth, the unaltered banded iron formation consists of quartz, siderite, pyrite, pyrrhotite and magnetite with minor chlorite, calcite and stilpnomelane. In general, gold mineralisation has an erratic and localised distribution. Individual gold grains are on average less than 10µm in diameter and occur in clusters. Gold is generally associated with goethite in the weathered rocks and with pyrite and pyrrhotite in the fresh material.

Geological modelling has been completed using Datamine software. Drill holes and blastholes have been surveyed and used to construct a series of west-east sections from north to south through the various pit areas. The A-Zone and Watertank areas have been modelled as a single contiguous area as the geology and data is continuous and contiguous.

A wireframe geological model has been constructed by linking individual sections to form a continuous wireframe model.

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – SURFACE OPERATIONS CONTINUED

KALGOLD CONTINUED

The construction of the sections includes outlines for the mineralised zones and waste zones. The definition of the mineralised zones is based primarily on the lithological contacts between the banded iron formations and waste material (volcanic/sedimentary schists).

The geological model is constructed in the form of a wire frame from exploration borehole intersections, blasthole information and geological mapping within the pit and is updated regularly as new information becomes available.

Mining methods and mine planning

Ore at Kalgold is mined by means of open-pit mining.

A total of 71 843m of exploration and evaluation drilling has been undertaken to date within the mineral lease area and on surrounding properties. The D-Zone, A-Zone and Watertank areas have been proven with several prospective zones that warrant further investigation having been identified.

The A-Zone occurs to the north of the D-Zone at a similar stratigraphic position. It is a composite deposit consisting of a number of mineralised cherty, and banded iron formation units that are inter-bedded with schist and shale. The A-Zone has an overall strike of 850m and comprises individual zones of mineralisation, which are steeply dipping and have strike lengths from 20m to 500m. Reef widths range between 15m to 70m. A total of 232 reverse-circulation percussion boreholes, representing a combined depth of 12 700m, have been drilled into the A-Zone. Six diamond boreholes (1 310m) were also drilled.

The A-Zone West is situated in the footwall of the A-Zone ore body. The ore bodies are separated by a chloritic schist unit that pinches out to the north. A-Zone West has an overall strike of 750m and width of 20m thinning to 25m in the north. A total of 172 reverse-circulation boreholes were drilled along section lines spaced 25m apart. A total of 6 450m was drilled.

The Watertank is a long, narrow deposit hosted by cherty banded iron formation, which has a similar stratigraphic position to the D-Zone and the A-Zone. The host rock banded iron formation is steeply dipping and has a strike length of 950m and an average width of 45m. The mineralised zone within this unit ranges between 2m and 12m in width. A total of 168 boreholes, representing 10 969m of drilling, have been completed on section lines spaced at 25m to 50m intervals.

The A-Zone and Watertank pits are planned to be joined together into one pit with a pillar in-between. The pillar is the result of a gap in the exploration data in this area. Harmony has embarked on a new exploration programme aimed at optimising the current mining area, including this pillar between A-Zone and Watertank.

The Windmill deposit is the smallest of the Goldridge ore bodies but contains generally higher gold grades. It is positioned stratigraphically below the other three deposits and is hoisted by a magnetite-rich banded iron formation unit, which is inter-bedded with schist. The host rock banded formation has a strike length of 950m and thins to the north and south with a maximum width of 25m at the centre. Mineralisation within this unit occurs over a length of 800m with widths ranging from 2m to 17m. This deposit is structurally complex with displacements by faulting and dips varying from 75 to 90 degrees east. A total 8 800m of drilling has been completed along lines spaced 50m apart.

Kalgold's current mining right encompasses an area of 4 595.3ha and was successfully converted, executed and registered as a new order mining right at the Mineral and Petroleum Titles Registration Office on 9 November 2010 under the Mining Right Protocol 574/2008. The DMR reference number NW30/5/1/2/2/77MR, valid for a period of 30 years (from 28 August 2008 to 27 August 2038).

Mineral processing

Ore reception

The Kalgold plant receives ore from the pit at a rate of approximately 129 000 tonnes per month. The ore has an average moisture content of approximately 1%.

Ore is transported from the pit by truck and tipped into the plant run-of-mine pad. The ore is then fed into the pre-primary crusher for the first stage of comminution. Pre-primary product reports to the primary crusher before going through the final stage in the secondary and tertiary crushers. Tertiary crusher product is temporarily stored in the dome prior to milling.

Milling

The ore is fed from the dome to the A, B and C ball mills. The identical A and B mills are generally fed at 55tph. The C mill is the biggest with throughput of 105tph to 110tph. The mill product ranges from 75% to 80% passing 75 micron. The A and B mill cluster cyclone overflow gravitates into a vibrating screen for trash removal while the C mill uses a conventional linear screen. The cyclone overflow, which has a relatively low density, is pumped out to the thickeners for dewatering prior to leaching. Pebble lime is introduced in the system via the C14 conveyor belt for pH control.

Thickening

Lime and flocculant are the two main components of the thickening process. During thickening, lime acts as a coagulant and the flocculant binds the particles together to increase the settling rate of the particles. Lime addition generally ranges between 700g/t to 1 000g/t whereas flocculant addition usually ranges between 8g/t to 10g/t. The lime also maintains a protective level of alkalinity in the leach section to prevent generation of poisonous cyanide gas in the process. The two thickeners are equipped with two variable-speed underflow pumps to control the density in the cyanidation process. The thickener overflow gravitates to the mill process tanks for reuse in the milling process.

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – SURFACE OPERATIONS CONTINUED

Leaching
The thickener underflow, which normally ranges from 50% to 55%, reports into the pre-aeration tank for pre-condition prior addition of the cyanide. The pre-conditioning is performed in order to render cynocides less reactive to cyanide. Cyanide is automatically added to either Leach 2 or Leach 3, depending on the degree of the pre-aeration stage. Kalgold ore requires large amounts of cyanide in order to complete the leaching process. Addition of cyanide generally ranges from 0.6kg/t to 1.8kg/t. Oxygen is injected into the leach tanks to improve the gold dissolution process. The leaching retention time generally varies from 30 to 40 hours. Generally, 75% dissolution takes places in the two leaching tanks. The slurry then gravitates to the carbon-in-leach (CIL) tanks for further leaching and adsorption.

Carbon in leach (CIL)
The dissolved gold, still in pulp, is transferred to the CIL circuit where activated carbon is added to adsorb the gold in solution. The CIL tanks are fitted with rotary screens to allow movement of the carbon in a counter-current manner with the slurry. There are seven stages in the CIL process. The slurry, with 85% of the gold extracted, is pumped through a cyanide destruction circuit into D-Zone pit, which is currently the tailings storage facility. Once the carbon loading in the head tank reaches required gold loading, the carbon is pumped to the loaded make-up screen for the elution process.

Recovery process
The Kalgold plant employs the Zadra elution process for gold recovery. Carbon is treated with a hot caustic and cyanide solution. The pregnant solution is pumped into the electrowinning circuit for gold recovery. Eluted carbon then passes through the acid column to be treated with hydrochloric acid for the removal of inorganic material. Acid-treated carbon is rinsed with high-pH water to neutralise the acid. Acid-treated carbon is then transferred into the kiln for regeneration of the carbon. The regeneration process takes place at temperatures above 700 degrees in the absence of air in order to drive off the organic material.

The electrowinning cathodes are washed through the gold table and filtered through the press to retain the gold sludge, which is then dried, weighed and dispatched to Rand Refinery for the refinery process.

Environmental impact
Kalgold's environmental aspects and impacts are managed in line with an environmental management programme (EMPR) approved by the DMR in terms of Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA), as amended in 2008. All environmental aspects and impacts emanating from mining activities are documented in the approved EMPR and the environmental aspect register, as required by MPRDA and ISO 14001:2015 standard.

Annual environmental performance monitoring and compliance audits are conducted by the DMR and Department of Environmental Affairs to verify compliance with the following legislation:

- Mine Health and Safety Act 29 of 1996
- National Water Act 36 of 1998
- National Environmental Management Act 107 of 1998
- MPRDA
- National Heritage Resources Act 25 of 1999
- National Forests Act 84 of 1998
- National Environmental Management: Air Quality Act 39 of 2004

Environmental performance assessments are conducted on an annual basis as per the commitments stipulated in the approved EMPR, and environmental authorisations in terms of Regulation 55 of the Mineral and Petroleum Resources Development Regulations, by an independent environmental consultant, and the report is submitted to the DMR. Internal environmental legal compliance audits are also conducted every two years to verify compliance with all relevant legal requirements. An online-based Kalgold environmental legal register (at www.drayer-legal.co.za) is updated to include changes in applicable and relevant environmental legislation and associated regulations.

Bio-monitoring surveys are conducted on a monthly basis to determine the status of surrounding surface water streams close to the operation. The status quo of the water bodies is monitored for water quality in relation to guidelines within the water use license conditions and in terms of the National Water Act.

In addition to the bio-monitoring surveys, a groundwater and dust monitoring programme is implemented monthly and quarterly to determine the status of groundwater quality and quantity, as well as levels of dust fallout in terms of the National Water Act and National Environmental Management: Air Quality Act, and to determine compliance with the conditions stipulated in the water use license and provisional atmospheric emissions licence.

Kalgold is ISO 14001-accredited and conforms to the requirements of the ISO 14001:2004 standard. The operation attained its accreditation in 2010 and remains accredited to eliminate or minimise the effects of mining activities on the environment and adjacent communities. The mine is currently working towards ISO 14001 recertification in terms of the new ISO 14001:2015 requirements. In September 2016, the mine received a water use licence from the Department of Water and Sanitation, and approval of the D-Zone open-pit closure plan from the DMR. In January 2017, the mine was granted approval for an amendment to the environmental management programme.

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – SURFACE OPERATIONS CONTINUED

Material risks: Material risks which may impact Kalgold's reserves and resource statement are as follows:

Significant risks
- Slope failure

Remedial action
- Pre-split blasting to protect high walls

Competent person	
Ore Reserve Manager, Lourens Joubert *MSc Natural Sciences (Geology), SACNASP*	10 years' experience in gold mining

KALGOLD

Gold – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
Kalgold	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Open pit	5.4	0.84	5	147	29.9	0.96	29	927	6.2	0.99	6	198	41.6	0.95	40	1 273
Tailings dam	–	–	–		–	–	–	–	23.8	0.26	6	201	23.8	0.26	6	201
Kalgold – total	5.4	0.84	5	147	29.9	0.96	29	927	30.0	0.41	12	400	65.4	0.70	46	1 474

Modifying factors

	MCF (%)	Dilution (%)	PRF (%)
Kalgold open pit	100	3.5	85

Gold – Mineral reserves

	Proved reserves				Probable reserves				Total mineral reserves			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
Kalgold	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Open pit	4.5	0.96	4	138	22.1	1.12	25	796	26.6	1.09	29	934

Kalgold

RESOURCES AND RESERVES BY OPERATION

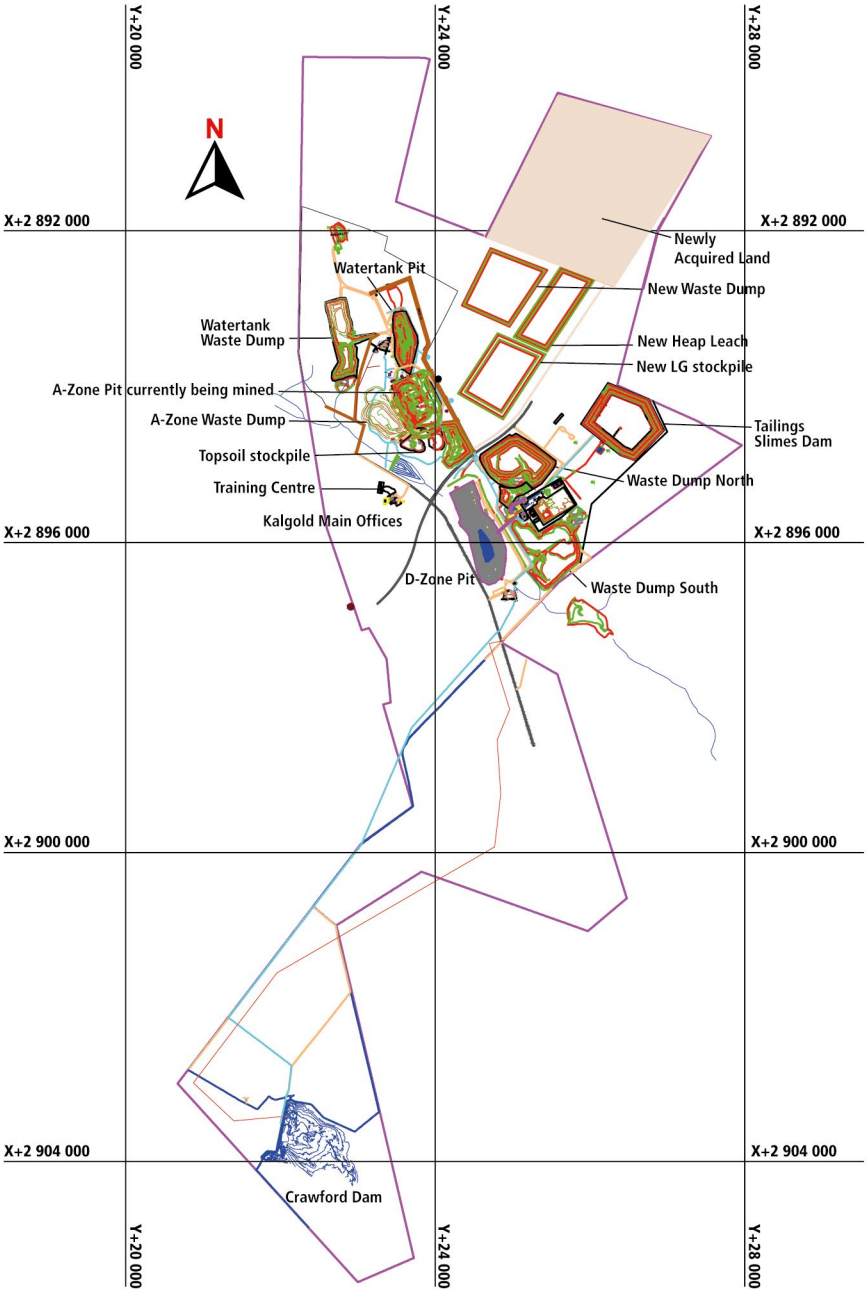
SOUTH AFRICA – SURFACE OPERATIONS CONTINUED

KALGOLD

KRAAIPAN GREENSTONE BELT

LEGEND

- New waste dump
- Existing waste dump
- Mining lease area boundary
- Kalgold office structures
- Existing mining pit – A Zone pit
- National/regional roads
- Mine access roads
- Newly acquired land



0 1 000 2 000
Metres

Co-ordinate system Lo. 27°
Latitude: 26°10' 12.85"S
Longitude: 25°14' 02.70"E

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – SURFACE OPERATIONS CONTINUED


Free State surface operations

FREE STATE SURFACE SOURCES

The Free State surface source operations comprise the following:

- The Phoenix operation, located adjacent to Harmony's current and historical operations in the Free State, involves the retreatment of tailings from tailings storage facilities in the region to extract any residual gold. The Phoenix operation makes use of the Saaiplaas Plant, located close to the historic Saaiplaas 2 shaft area and in close proximity to Masimong 4 shaft. Phoenix began operating in 2007
- St Helena – in study phase
- Central Plant retreatment project – material reclaimed from the FSS5 tailings facility is to be processed at Central Plant which has adapted for tailings retreatment. Plant commissioning began in June 2017 with ramp-up to capacity of 300 000t a month achieved by the end of July 2017
- Around 4Mt of reserves remain in the form of rock dumps in the vicinity of the Free State operations. A programme, run by Metallurgical Services, to mill and process these dumps as and when there is spare capacity available, began in FY10
- Tailings – Reserves of 548.3Mt of material in the tailings storage facilities in the Free State are estimated to contain around 4Moz of gold

PHOENIX

Phoenix or the Tswelopele Beneficiation Operation makes use of Harmony's Saaiplaas plant.

The Saaiplaas plant was built in 1954, but most of the original structures and equipment were broken down c.1990 and removed, with the exception of the pachuca tanks, which remain in service until the present time. The plant was extended in 1980 with the addition of a ROM milling section, additional pachucas and filters. The old sections have been decommissioned and progressively demolished since the 1990s and the newer sections remain in operation. The plant originally formed part of the Anglo American Free State gold mining operations. The design capacity of Saaiplaas plant was 330 000tpm.

The Saaiplaas plant originally processed ore from Saaiplaas 1, 2 and 3 shafts. Saaiplaas 1 closed c.1980, Saaiplaas 2 c.1996, and Saaiplaas 3 c.2000. At one time, Saaiplaas Plant also processed ore from the Erfdeel (now Masimong) shafts. With the decline of mining in the area, Saaiplaas Plant was relegated to processing un-milled surface source material (waste) at a rate of 110 000tpm under Harmony's ownership until 2007.

The mills were stopped in July 2007. All material currently processed by the plant is recovered by hydro mining from old, desiccated slimes dams in the area, and this requires no crushing or milling. The ore receiving silos, conveying and milling functions have been mothballed or demolished since July 2007, when milling ceased.

The original design life of the slimes retreatment project was five years (to end 2011). This short life was due to restricted deposition capacity for the residues generated at the planned processing rate of 500 000tpm. This was further reduced to 424 000tpm from September 2011 due to stability concerns. A major capital project was undertaken to build a replacement cyclone-deposition dam at St Helena 1, 2 and 3. This dam will allow the deposition of 500 000tpm again, to extend the life of operation to 2029.

Nature of operations

Hydro mining on several slimes dams is conducted under contract. High-pressure monitors are used on the dams being mined to pulp material that then reports to a transfer pump station, from where the material is conveyed to Saaiplaas plant in a separate 450mm diameter rubber-lined pipeline in respect of each of the dams being hydro mined.

The Saaiplaas plant has been downgraded to a slimes retreatment plant. Only hydro-mined material from old, desiccated slimes dams is sent to the plant for processing. The Phoenix project is positioned for low-cost, high profit-margin low-grade tailings reprocessing.

Two more carbon-in-leach (CIL) tanks have been added to increase residence time to achieve optimal dissolution and reduce soluble loss

Location

The Saaiplaas plant is located in the heart of the Free State goldfields near Welkom in the Free State Province of South Africa, at latitude of 28°02'00"S and longitude 26°52'18"E, at an elevation of approximately of 1,600m above mean sea level.

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – SURFACE OPERATIONS CONTINUED

Description of hydro-mining and mineral processing operations

Production plans

Current planned processing rate is 500 000 a month with the new St Helena 1, 2 and 3 cyclone dam in operation as the residue disposal facility. As a result, life has been extended by a further 17 years. Two tanks have been added to increase residence time to achieve optimal dissolution and reduce soluble loss.

Two surface sources are currently being mined:

- Brand-A Dam has had some 30% of its material removed already. It has a grade of 0.37 g/t Au at 45% recovery
- No 21 Dam (which replaced Harmony No 1 Dam as a source from end-2011) has a grade of 0.27 g/t Au at 45% recovery
- At Harmony No 1 Dam, only cleaning-up remains

FSS6, FSS4 and FSS1 dams replaced the old Saaiplaas dams at end 2011 for deposition purposes. Deposition into these dams and Brand D Dam, was stopped with the commissioning of the St Helena 1, 2 and 3 dam which is able to accept the full production of the Saaiplaas Plant.

Saaiplaas Plant began processing material from the St Helena 1, 2 and 3 dam in February/March 2013. This dam is now the sole deposition area for Saaiplaas Plant. The commissioning of the St Helena 1, 2 and 3 dam allowed the planned increase in plant throughput to the required 500 000tpm over the next c.17 years. As St Helena 1, 2 and 3 dam is on an existing site, it did not require any environmental permitting that a new site would have needed.

Hydro mining currently yields recovered slimes at an average in situ grade of 0.300 g/t. Saaiplaas Plant recovers 45% of the contained grade in the recovered pulped material it receives, yielding 70kg Au a month (planned), which represents c.1.5% of Harmony's gold production. The operating unit cost is R39/t at 500 000tpm. The Saaiplaas project is positioned for low-cost, high profit-margin, low-grade tailings reprocessing.

Hydro-mining

The hydro-mining (monitoring) process consists of the use of water monitors (cannons) to re-pulp the hardened slimes to a relative density of around 1.4. 100mm and 150mm diameter high-pressure monitors are in use on the dams. The re-pulped slimes flows under gravity to a penstock suction to a transfer pump which delivers to one of two vibrating screens to remove oversize and the underflow falls into a sump. A separate pump station at each dam pumps the pulp via 450mm diameter rubber lined pipelines to the plant.

The slimes pumps are Envirotech D-frame 3-5 stage units (depending upon the distance to be pumped).

Oxygen is injected into the transfer pipeline to the plant to neutralize cyanide consuming components and so optimise gold dissolution in the plant.

Free State surface operations

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – SURFACE OPERATIONS CONTINUED

Upon receipt of the pulp at the plant, lime is added to adjust the pH to 10.5. From the receiving tower, the slimes are transferred into one of the four thickeners located at the plant. Each of the thickeners has a maximum throughput capacity of 150,000t. After thickening, the desired relative density of the material is 1.450.

There is no mechanical agitation, all agitation being by means of air. The insured advises that this has the advantage of keeping the carbon in suspension. The methodology employs standard CIL technology. Simultaneous gold leach and adsorption occurs with the carbon in each of the six tanks in each train.

Thickener underflow is pumped to one of two linear screens above the mass flow tanks to remove grid and woodchips larger than 800µm to create a clear size cut between slurry and carbon particle sizes. Cyanide is added at the mass flow conditioning tanks to facilitate pressure leaching which takes place in the pipeline. Pregnant carbon can then be recovered in the CIL process. Oxygen is injected in the pipeline to CIL to optimise the overall leach reaction.

The material is then pumped to one of two sets of six tanks each. These are operated on the carousel-basis, with the numbering of the tanks rotating with use. Total residency time for the material to pass through the five tanks in each train is around 10 hours.

A residue linear screen is used to recover leaked carbon. Residue from the tank is pumped the currently active tailings dam by tailings disposal pumps. Loaded carbon is screened out via a linear screen at the mass flow section, pumped into a transport carbon tanker and sent to Central Plant. Regenerated carbon is returned to Saaiplaas Plant for re-use in the process.

RESOURCES AND RESERVES BY OPERATION
SOUTH AFRICA – SURFACE OPERATIONS CONTINUED

FREE STATE SURFACE SOURCES

Gold – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Phoenix	73.0	0.28	20	646	–	–	–	–	–	–	–	–	73.0	0.28	20	646
St Helena	191.3	0.27	52	1 656	–	–	–	–	–	–	–	–	191.3	0.27	52	1 656
Central Plant	–	–	–	–	67.3	0.27	18	574	–	–	–	–	67.3	0.27	18	574
Other:																
- Waste rock dumps	–	–	–	–	3.9	0.51	2	64	19.8	0.42	8	270	23.7	0.44	10	334
- Tailings	–	–	–	–	548.3	0.23	125	4 028	15.5	0.19	3	94	563.8	0.23	128	4 122
Grand total	**264.4**	**0.27**	**72**	**2 303**	**619.6**	**0.23**	**145**	**4 666**	**35.3**	**0.32**	**11**	**364**	**919.2**	**0.25**	**228**	**7 333**

Modifying factors

	MCF (%)	PRF (%)
Phoenix	100	45
St Helena	100	45
Central Plant	100	52
Other	100	52

Gold – Mineral reserves

	Proved reserves				Probable reserves				Total mineral reserves			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Phoenix	73.0	0.28	20	646	–	–	–	–	73.0	0.28	20	646
St Helenaa	108.6	0.27	29	933	–	–	–	–	108.6	0.27	29	933
Central Plant	–	–	–	–	67.3	0.27	18	574	67.3	0.27	18	574
Other:												
– Waste rock dumps	–	–	–	–	3.9	0.51	2	64	3.9	0.51	2	64
– Tailings	–	–	–	–	548.3	0.23	125	4 028	548.3	0.23	125	4 028
Total	**181.6**	**0.27**	**49**	**1 580**	**619.6**	**0.23**	**145**	**4 666**	**801.1**	**0.24**	**194**	**6 245**

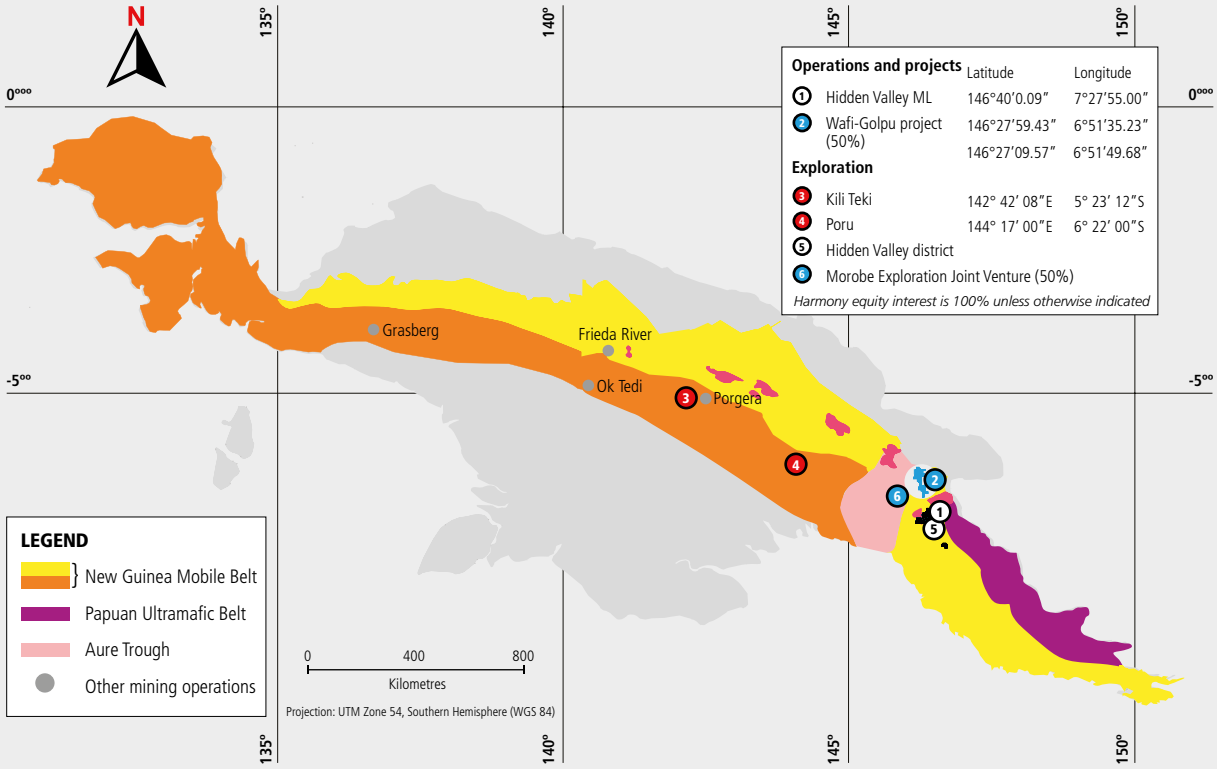
Uranium – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		U_3O_8	U_3O_8	Tonnes		U_3O_8	U_3O_8	Tonnes		U_3O_8	U_3O_8	Tonnes		U_3O_8	U_3O_8
	(Mt)	(kg/t)	(Mkg)	(Mlb)	(Mt)	(kg/t)	(Mkg)	(Mlb)	(Mt)	(kg/t)	(Mkg)	(Mlb)	(Mt)	(kg/t)	(Mkg)	(Mlb)
Total	–	–	–	–	178.8	0.10	17 817	39	–	–	–	–	178.8	0.10	17 817	39

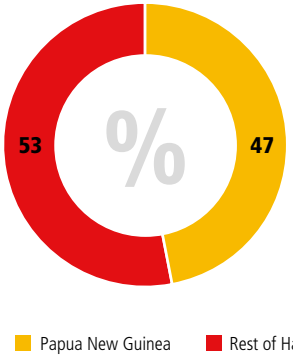
RESOURCES AND RESERVES BY OPERATION
PAPUA NEW GUINEA

Harmony's assets in Papua New Guinea had combined attributable mineral resources of 19.3Moz (48.8Moz including gold equivalents) and attributable mineral reserves of 6.9Moz (20.5Moz including gold equivalents) at 30 June 2017.

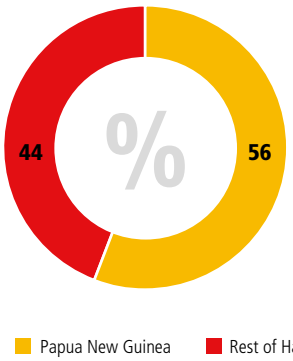
PAPUA NEW GUINEA



Contribution to gold and gold equivalent mineral resources



Contribution to gold and gold equivalent mineral reserves



RESOURCES AND RESERVES BY OPERATION

PAPUA NEW GUINEA CONTINUED

Hidden Valley

HIDDEN VALLEY

Property descrpition and location

The Hidden Valley mine is located at latitude 7°22"S and longitude 146°39"E, approximately 15km south-southeast of the township of Wau and approximately 90km south-southwest from Lae, the capital of Morobe Province in Papua New Guinea. The closest major towns to the project are Wau and Bulolo. Lae, the nearest maritime port in the region, is connected to Bulolo by a tarred two-lane main road. The operation is now wholly owned by Harmony through Morobe Consolidated Goldfields.

The mine is located at elevations between 2,800m and 1700m above sea level within steep mountainous and forested terrain that experiences approximately 3m of rainfall per year

History

The Hidden Valley deposits were discovered by CRA in 1980s and the deposits changed hands through various exploration companies until finally settling with Morobe Consolidated Goldfields (MCG), a wholly owned subsidiary of Harmony.

Mine construction commenced in 2007 with the 40km road access from Bulolo to the mine site.

In 2009, Harmony entered in to the Hidden Valley Joint Venture with Newcrest Mining Limited earning 50% of the deposit and joint management rights. First gold was poured in May 2009 with the mine being officially opened in September 2010.

On 25 October 2016, Harmony purchased Newcrest's 50% portion and now is (again) the 100% owner of the Hidden Valley mine.

Nature of operations

Hidden Valley is an operating open pit gold and silver mine. Two separate open pit mines feed a 4.0Mtpa processing plant. Silver and gold dore bars are produced. Current mine life is till 2024 with opportunities for expansion.

Mineral rights / legal aspects and tenure

The deposits lie on Mining Lease ML151 which was granted in 2005. The mining lease has a tenure of 20 years taking its expiry to 2025 with an option for extension.

At the time of the previous June 2016 report, the operation was a 50:50 joint venture between Harmony, through Morobe Consolidated Goldfields Limited (MCG) and Newcrest, through Newcrest PNG 1 Limited. However in September 2016 Harmony assumed 100% ownership of Hidden Valley by acquiring 100% of Newcrest PNG 1 Limited (now Harmony PNG20 Limited). The mine is now 100% owned and managed by Harmony (through MCG).

Geology

The deposit is a structurally controlled vein-stockwork gold-silver deposit located in the Morobe Granodiorite of the Wau Graben. Gold-silver mineralisation is contained in carbonate-adularia-quartz-sulphide vein-stockworks and in a few instances in hydrothermal breccias. Discrete zones of intense stockwork fracture and mineralised veining comprise individual lodes. At the Hidden Valley deposit gold and silver are related to steeply dipping (Kaveroi Creek Zone) and flat-lying (Hidden Valley Zone) sheeted vein swarms associated with an underlying shallow thrust.

Mining methods and mine planning

Mining operations occur in two open pits 6km apart, Hidden Valley and Hamata of which Hidden Valley is the largest. Both mines employ conventional open pit mining techniques with back-hoe excavators and rigid dump trucks as the primary load and haul equipment. Front-end loaders are used for crusher feed and stockpile reclaim. A number of articulated smaller dump trucks are used for construction, and to a lesser extent mining in Hamata.

Mining bench configuration consists of 18 m inter-berm heights, mined as 3m x 6m benches of 2m x 3m flitches (in ore).

Waste is disposed of in engineered valley fill waste dumps, with toes keyed in and buttressed using competent non-acid producing rock. This waste is currently captured in the Western Sector dump which is nearing its fill capacity. The construction of the next dump, Neikywe, is underway with the pushdown ramp, underdrains, and toe construction. Neikwiye Valley dump will provide the waste rock capacity for the remainder of the Stage 6 Reserve.

RESOURCES AND RESERVES BY OPERATION

PAPUA NEW GUINEA CONTINUED

Mineral processing

Crushed ore is conveyed from the Hidden Valley pit via a 4.5km long overland pipe conveyor (OLC). Ore from the Hamata pit is trucked to the Hamata crushing station, located next to the ore processing plant.

The Hidden Valley process plant was designed to treat nominally 4.2Mtpa of gold/silver bearing ore. The process uses a two stage crushing circuit followed by a SAG mill, gravity, CCD/Merril Crowe circuit for silver and carbon in leach circuit for the gold. A silver/gold dore bar is produced and flown off site for refining and sale.

Tailings are disposed of in a terrestrial tailings storage facility (TSF) located to the South-West of the process plant. Dam-wall construction of the TSF is ongoing and largely constitutes placement of suitable oxide and fresh competent material sourced from mining in the Hamata pit. The processing inventory in this Ore Reserve estimate is constrained by remaining TSF capacity at ~26Mt. Construction of an additional facility is under study to accommodate resource growth strategies.

Infrastructure

Hidden Valley is a well-established mine serviced from Lae by sealed 100km road to Bulolo and then a well maintained gravel road for the remaining 40km to site. All goods are transported to site via this route with some emergency goods flown to Bulolo.

There is an airstrip at Bulolo from where the fly-in and fly-out workers commute. However the bulk of employees are from the local area and are bussed to their towns and village. The mining camp on site houses all employees and provides health and recreation facilities. Power is provided by the state owned PNG Power. This power is generated by hydro schemes. 100% contingency is provided by a bank of diesel generators.

Waste dumps and the tailings storage facility are under construction and built as the mine progresses.

Mineral resource estimation

Both the Hidden Valley and the Hamata models have been estimated using a localised multiple indicator Kriged (LMIK) method using a 12mx12mx6m standard mining units and constrained within broad three-dimensional wireframe domains based on gold and silver grade, alteration and structure. This method accommodates the large panels required for a robust estimate using a long-standing well-known estimation method, but also allows the estimation of localised SMU-sized blocks for mine planning purposes. A revised model is used for the Hidden Valley deposit. This has been reviewed by SRK. Checks against historical production indicate that both these models are robust when appropriate modifying factors are applied. In Hidden Valley's case a 10% discount on the tonnes is applied.

Pit optimisations are run on measured and indicated resource categories only. All mineral resource classifications are maintained and converted to ore reserve classifications inside pit designs. There is no measured material classified in either pit, all measured resources reported comprise stockpile material only. All mine operating plans are compiled using measured, indicated and inferred resource categories

Environmental impact

The Hidden Valley Environmental Impact Statement (EIS) was submitted to the Department of Environment and Conservation (DEC) in February 2004. The EIS was accepted by DEC, (now the Conservation and Environmental Protection Agency – CEPA) in June 2004 and was referred to all stakeholders and advertised publicly for review according to regulatory requirements. In March 2005, the original environmental waste discharge and environmental water extraction permits were issued to Hidden Valley which currently operates within mining lease ML151 and is the holder of the following environment permits:

- EP WE-L3 (38) last amended 23/11/2012 and expiring 29/03/2030
- EP WD-L3 (50) last amended 07/11/2012 and expiring 29/03/2030

The Hidden Valley environmental management plan (EMP) identifies potential environmental impacts and management strategies associated with the operation of the mine. The EMP describes Hidden Valley's approach to environmental management and outlines the standards, procedures and systems developed to meet the objectives set out in the mine's approvals and permits, as required under Papua New Guinea legislation. The EMP also details the environmental monitoring requirements and reporting commitments of Hidden Valley to CEPA. The EMP is updated every three years in accordance with Hidden Valley's Environment Permit.

A detailed environmental monitoring programme has been prepared as part of the EMP which includes water, sediment and air quality monitoring, hydrological studies, land clearance assessment and aquatic biota studies. Water quality monitoring within the major tributaries of the Watut and Bulolo Rivers forms a critical component of the monitoring program due to the potential for impacts on the downstream environment as a result of the mining operation.

The environmental improvement plan (EIP), approved by DEC on 26 April 2011 was developed in response to an independent environmental audit commissioned by DEC in 2010. The EIP included 40 specific actions to improve environmental management at the mine, the actions were completed in February 2015 and a close out report was submitted to CEPA in March of the same year. The EIP close-out was approved by CEPA in February 2017.

The were no major environmental non-compliances.

Competent person	
Resource **Group Resource Geologist Harmony SE Asia,** Ronald Reid *Australian Institute of Geoscientsis (AIG)*	+10 years' experience
Reserve **Executive General Manager Resources and New Business Harmony SE Asia,** Greg Job *AusIMM*	+25 years' experience

RESOURCES AND RESERVES BY OPERATION

PAPUA NEW GUINEA CONTINUED

HIDDEN VALLEY AND HAMATA

Gold – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Hidden Valley	0.9	1.04	1	29	158.9	1.49	236	7 591	4.8	1.14	5	175	164.5	1.47	242	7 794
Hamata	0.1	1.09	0.1	5	5.4	1.96	11	342	0.4	1.46	1	20	6.0	1.90	11	3.67
Total	**1.0**	**1.04**	**1**	**33**	**164.3**	**1.50**	**247**	**7 933**	**5.2**	**1.16**	**6**	**195**	**170.5**	**1.49**	**254**	**8 161**

Modifying factors

	MCF (%)	Dilution (%)	PRF (%)
Hidden Valley	100	90	88
Hamata	100	90	88

Gold – Mineral reserves

	Proved reserves				Probable reserves				Total mineral reserves			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Hidden Valley	0.9	1.04	1	29	48.8	1.63	79	2 553	49.6	1.62	80	2 582
Hamata	0.1	1.09	0	5	2.7	2.17	6	187	2.8	2.12	6	191
Grand total	**1.0**	**1.04**	**1**	**33**	**51.4**	**1.66**	**85**	**2 740**	**52.4**	**1.65**	**86**	**2 773**

Silver – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Ag	Ag	Tonnes		Ag	Ag	Tonnes		Ag	Ag	Tonnes		Ag	Ag
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Hidden Valley	0.9	19.73	17	545	158.9	28.69	4 558	146 545	4.8	29.01	139	4 461	164.5	28.65	4 714	151 551

Silver – Mineral resources as gold equivalents

	Measured	Indicated	Inferred	Total
	(000oz)	(000oz)	(000oz)	(000oz)
Hidden Valley	7	2 199	67	2 274

Modifying factors

	MCF (%)	Dilution (%)	PRF (%)
Hidden Valley	95	6	61

Silver – Mineral reserves

	Proved reserves				Probable reserves				Total mineral reserves			
	Tonnes		Ag	Ag	Tonnes		Ag	Ag	Tonnes		Ag	Ag
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Hidden Valley	0.9	19.73	17	545	48.8	34.23	1 669	53 670	49.6	33.98	1 686	54 215

Silver – Mineral reserves as gold equivalents

	Proved	Probable	Total
	(000oz)	(000oz)	(000oz)
Hidden Valley	8	805	813

RESOURCES AND RESERVES BY OPERATION

PAPUA NEW GUINEA CONTINUED

Papua New Guinea

GOLPU, WAFI, NAMBONGA

Property descrpition and location

The Golpu, Wafi and Nambonga deposits are located in eastern Papua New Guinea, approximately 60km southwest of Lae in the Morobe Province. Access to the project from Lae is via a combination of sealed and unsealed roads with a travel time of four hours. The operation is a 50:50 joint venture between Harmony Gold Mining Limited (Wafi Mining Limited) and Newcrest Mining Limited (Newcrest PNG2 Limited).

History

The Wafi area mineralisation was first identified in 1979 by CRA Exploration with the discovery of the underlying Golpu Porphyry by Elders Resources Limited in 1990. Since this time, several companies have completed exploration and resource-definition drilling programmes with associated mine development studies.

Nature of operations

The operations are in advanced exploration and project studies phase. Golpu, the most advanced, is currently busy with the feasibility study for stage 1 and the prefeasibility study for stage 2. No mining has occurred in the project area

Mineral rights/legal aspects and tenure

The deposits lie on exploration lease EL440 which is 50% owned by Harmony through Wafi Mining Ltd and Newcrest Mining Ltd, through Newcrest PNG2 Limited.

Geology

The operations and projects fall within the New Guinea Mobile Belt of Papua New Guinea which is one of the world's pre-eminent geological terrains for porphyry copper-gold and epithermal gold mineralisation.

Golpu is ranked as a world-class deposit in terms of its size and the grade. Wafi-Golpu includes the Golpu copper-gold porphyry deposit, the Nambonga copper-gold porphyry deposit, and the Wafi high sulphidation epithermal gold deposit. Knowledge of the Wafi-Golpu system is limited by the extent of drilling and the deposit remains open for future expansion. Exploration activity is guided by strong indications that the resource will continue to grow at depth as a better understanding is gained of the nature and extent of the mineralised systems.

GOLPU

The Golpu deposit is the largest of the deposits and found in a block of deformed Upper Mesozoic to Middle Miocene metasedimentary rocks cut by Miocene-Pliocene calc-alkaline dioritic intrusives. Copper and gold mineralisation results from a porphyry system with the upper portion overprinted by high sulphidation epithermal alteration. The deposit is also 60km north northwest of the porphyry-related gold-silver-base metal Hidden Valley-Kaveroi mines and other related deposits in the Bulolo Graben (e.g. Edie Creek, Kerimenge, Upper Ridges).

The Golpu mineral resource is approximately 800m by 400m elliptical in plan and extends from 200m below surface to greater than 2 000m depth. The deposit remains open at depth.

The system consists of multiple, hornblende-bearing diorite porphyries intruded into host sediments. Intrusives range from small dykes to small stocks and apopheses. Hydrothermal alteration related to the porphyry copper-gold mineralisation forms a predictable zonal arrangement grading from potassic core to propylitic margins. A high sulphidation epithermal system is 'telescoped' over the upper portion of the porphyry system forming a central alunite-quartz (advanced argillic) core grading out to dickite-kaolinite (argillic) with an outer margin of sericite alteration. This results in either epithermal-dominant, interaction (mixed) or porphyry-only zones.

The Golpu mineral resource has been updated as at 31 December 2015 to align with the results of Golpu 2015 stage 1 feasibility and stage 2 (life-of-mine) prefeasibility studies. The key change is the applied cut-off grade that defines the volume with reasonable prospects of eventual economic extraction. The Golpu resource is constrained within a marginal breakeven shell using Wafi-Golpu Joint Venture 2015 gold and copper revenues and the estimated long-term cost structure developed in the 2015 Golpu stage 2 prefeasibility study. The December 2014 Mineral Resource was reported within a 0.2%

RESOURCES AND RESERVES BY OPERATION

PAPUA NEW GUINEA CONTINUED

copper shell representative of the revenue and cost structures of the 2012 Golpu prefeasibility study. There was no additional drilling that impacted the Golpu mineralised volume and the underlying geology and grade model is unchanged from that used in the December 2014 Mineral Resource.

WAFI

The Wafi deposit is centred on high sulphidation epithermal mineralisation within a larger epithermal and porphyry related complex in granted Exploration Licence EL440, approximately 60km southwest of Lae, Papua New Guinea. The Wafi deposit outcrops less than 1km to the south of the top of the Golpu porphyry deposit.

The Wafi mineralisation has been defined over a surface area of 1 100mx800m and up to 600m below surface, with the majority of the material potentially exploitable by open pit mining methods. No reserve is declared and no mining has been undertaken in the project area to date.

NAMBONGA

The Nambonga deposit is located 700m east of Golpu and is hosted in a diorite porphyry stock, termed the Nambonga Porphyry. Chalcopyrite is the dominant copper mineral in the porphyry, which is associated with silicification, either pervasive or as veins. Gold is thought to be intergrown with the chalcopyrite or pyrite.

The approximate extents of the system are 500m (eastwest), 400m (northsouth) and 1 000m vertically.

The Nambonga resource model contains estimates for gold, silver, copper, lead, zinc and sulphur. Estimation domains are based on a combination of lithology, alteration and mineralisation. The Nambonga deposit is an advanced exploration target and no mining has been undertaken in the project area to date.

There has been no change to the Wafu Golpu resources or reserves this year.

Mining methods and mine planning (Golpu feasibility)

The Golpu feasibility calls for a block cave approach to the mining of the ore body. The caves will be amenable to "staged" development which allows for optimising the capital efficiency and progressively de-risks the project prior to further investments. Twin decline access the ore body form surface.

In the first phase cave, ore will be loaded directly into crushers by load haul dump units. In subsequent caves, additional crushers shall be commissioned outside the haulage level which will be fed by larger trucks. Internal passes will be equipped with grizzlies, mobile rock breakers and feeders and installed to limit LHD tramming distances.

Mineral processing (Golpu feasibility)

The proposed processing method has been based on known technology utilising testwork results gathered in the Mine 1 pre-feasibility optimisation study and previous studies. A copper and gold concentrate will be produced form a conventional crush, grind, float processing plant. Concentrate will be shipped from the port of Lae as a final product. Gold will also be produced as doré for delivery to a precious metal refinery.

Infrastructure (Golpu feasibility)

No major infrastructure is currently located at Golpu besides the exploration camp and access roads. The feasibility study contemplates:

- Upgraded and rerouted access road from Lae to site
- Accommodation and services to support the mining and processing operation
- Concentrate trucking system
- Concentrate handling facilities at the Port of Lae
- Main incomer and electrical reticulation system for a 6Mtpa operation
- Tailings storage facility.

The Golpu mineral resource is estimated by Ordinary Kriging within alteration and lithological domains for gold, copper, silver, molybdenum and sulphur elements. The mineral resource is reported within a breakeven value shell that applies the stage 2 prefeasibility study block-cave mining, treatment and general and administration costs with metallurgical recovery models and associated non-site realisation (TCRC) costs of the copper concentrate product. Revenue of gold and copper are the only economic elements included in the value estimate. The mineral resource reports the contained metal content of silver and molybdenum but revenues are not included in the estimation of the reporting cut-off. The PFS assumes no silver and molybdenum payable recovery however both elements have been included in the mineral resource as there is reasonable prospects of eventual economic extraction with limited changes to the metallurgical flow-sheet and operational procedures. Silver and molybdenum have no impact on the reported Mineral Resource volume.

The Wafi mineral resource estimate was estimated by localised Multiple Indicator Kriging method (LMIK) and reported within a spatially constraining pit using revenue of US$1 400/oz gold. Non-refractory gold (NRG) material is reported at a 0.4g/t cut-off where NRG is defined as greater than 70% cyanide soluble gold as AuCN assays within the database. Refractory material below the NRG surface and within the spatial constraining pit shell is reported at a cut-off of 0.9 g/t gold.

The Nambonga Mineral Resource is an Ordinary Kriged estimate based on an unconstrained domained geological model and is reported within mineralised domains.

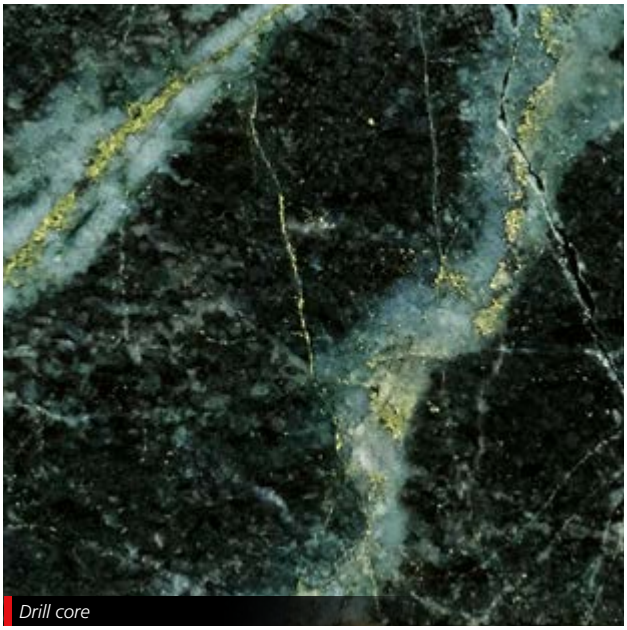
Environmental impact

The projects are in exploration and feasibility study stage and as such have only minor environmental impacts. The environment aspect are regulated by CEPA (Conversation and Environmental Protection Agency) and Golpu reports regularly to this agency.

An environmental impact assessment is being compiled as part of the mine approval process.

RESOURCES AND RESERVES BY OPERATION
PAPUA NEW GUINEA CONTINUED

The Wafi mineralisation has been defined over a surface area of 1 100mx800m and up to 600m below surface, with the majority of the material potentially exploitable by open pit mining methods. No reserve is declared and no mining has been undertaken in the project area to date.


Drill core

Nambonga resource

The Nambonga deposit is located 700m east of Golpu and is hosted in a diorite porphyry stock, termed the Nambonga Porphyry. Chalcopyrite is the dominant copper mineral in the porphyry, which is associated with silicification, either pervasive or as veins. Gold is thought to be intergrown with the chalcopyrite or pyrite.

The approximate extents of the system are 500m (eastwest), 400m (northsouth) and 1 000m vertically.

The Nambonga resource model contains estimates for gold, silver, copper, lead, zinc and sulphur. Estimation domains are based on a combination of lithology, alteration and mineralisation. The Nambonga deposit is an advanced exploration target and no mining has been undertaken in the project area to date.

Competent persons

Golpu	
Resource **Group Resource Geologist Newcrest Mining Ltd,** Paul Dunham *AusIMM*	+25 years' experience
Reserve **Area Manager Mining Golpu Project Feasibility Study,** Pasqualino Manca *AusIMM*	+25 years' experience
Wafi and Nambonga	
Resource **Executive General Manager Resources and New Business Harmony SE Asia,** Greg Job *AusIMM*	+25 years' experience


Papua New Guinea exploration

RESOURCES AND RESERVES BY OPERATION

PAPUA NEW GUINEA CONTINUED

WAFI

(Harmony Newcrest Joint Venture 100% portion)

Gold – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Wafi	–	–	–	–	113.5	1.72	196	6 292	22.7	1.30	30	950	136.1	1.65	225	7 242

GOLPU

(Harmony Newcrest Joint Venture 100% portion)

Gold – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Golpu	–	–	–	–	688.0	0.71	492	15 811	135.8	0.63	86	2 754	823.8	0.70	577	18 565

Modifying factors

	MCF (%)	Dilution (%)	PRF (%)
Golpu	100	0	61

Gold – Mineral reserves

	Proved reserves				Probable reserves				Total mineral reserves			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Golpu	–	–	–	–	379.1	0.91	343	11 043	379.1	0.91	343	11 043

Silver – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Ag	Ag	Tonnes		Ag	Ag	Tonnes		Ag	Ag	Tonnes		Ag	Ag
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Golpu	–	–	–	–	688.0	1.29	886	28 494	135.8	1.06	144	4 643	823.8	1.25	1 031	33 138

Copper – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Cu	Cu	Tonnes		Cu	Cu	Tonnes		Cu	Cu	Tonnes		Cu	Cu
	(Mt)	%	(Mkg)	(Mlb)	(Mt)	%	(Mkg)	(Mlb)	(Mt)	%	(Mkg)	(Mlb)	(Mt)	%	(Mkg)	(Mlb)
Golpu	–	–	–	–	688.0	1.09	7 468	16 464	135.8	0.85	1 154	2 545	823.8	1.05	8 622	19 009

Copper – Mineral resources as gold equivalents

	Measured (000oz)	Indicated (000oz)	Inferred (000oz)	Total (000oz)
Golpu	–	41 149	6 361	47 510

RESOURCES AND RESERVES BY OPERATION

PAPUA NEW GUINEA CONTINUED

GOLPU continued

Modifying factors

	MCF (%)	Dilution (%)	PRF (%)
Golpu	100	0	92

Copper – Mineral reserves

	Proved reserves				Probable reserves				Total mineral reserves			
	Tonnes (Mt)	%	Cu (Mkg)	Cu (Mlb)	Tonnes (Mt)	%	Cu (Mkg)	Cu (Mlb)	Tonnes (Mt)	%	Cu (Mkg)	Cu (Mlb)
Golpu	–	–	–	–	379.1	1.26	4 780	10 538	379.1	1.26	4 780	10 538

Copper – Mineral reserves as gold equivalents

	Proved	Probable	Total
	(000oz)	(000oz)	(000oz)
Golpu	–	26 337	26 337

Molybdenum – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes (Mt)	(ppm)	Mo (Mkg)	Mo (Mlb)	Tonnes (Mt)	(ppm)	Mo (Mkg)	Mo (Mlb)	Tonnes (Mt)	(ppm)	Mo (Mkg)	Mo (Mlb)	Tonnes (Mt)	(ppm)	Mo (Mkg)	Mo (Mlb)
Golpu	–	–	–	–	688.0	94	65	142	135.8	72	10	21	823.8	90	74	164

NAMBONGA

(Harmony Newcrest Joint Venture 100% portion)

Gold – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes (Mt)	Gold (g/t)	Gold (000kg)	Gold (000oz)	Tonnes (Mt)	Gold (g/t)	Gold (000kg)	Gold (000oz)	Tonnes (Mt)	Gold (g/t)	Gold (000kg)	Gold (000oz)	Tonnes (Mt)	Gold (g/t)	Gold (000kg)	Gold (000oz)
Nambonga	–	–	–	–	–	–	–	–	39.8	0.79	32	1014	39.8	0.79	32	1 014

Silver – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes (Mt)	Ag (g/t)	Ag (000kg)	Ag (000oz)	Tonnes (Mt)	Ag (g/t)	Ag (000kg)	Ag (000oz)	Tonnes (Mt)	Ag (g/t)	Ag (000kg)	Ag (000oz)	Tonnes (Mt)	Ag (g/t)	Ag (000kg)	Ag (000oz)
Nambonga	–	–	–	–	–	–	–	–	39.8	2.87	114	3 675	39.8	2.87	114	3 675

Copper – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes (Mt)	%	Cu (Mkg)	Cu (Mlb)	Tonnes (Mt)	%	Cu (Mkg)	Cu (Mlb)	Tonnes (Mt)	%	Cu (Mkg)	Cu (Mlb)	Tonnes (Mt)	%	Cu (Mkg)	Cu (Mlb)
Nambonga	–	–	–	–	–	–	–	–	39.8	0.21	84	184	39.8	0.21	84	184

Copper – Mineral resources as gold equivalents

	Measured	Indicated	Inferred	Total
	(000oz)	(000oz)	(000oz)	(000oz)
Nambonga	–	–	469	469

RESOURCES AND RESERVES BY OPERATION
PAPUA NEW GUINEA CONTINUED


Exploration drilling at Kili Teke

KILI TEKE

Location
Kili Teke is located on EL2310, some 50km north-northwest of the Tari Township (which is the provincial capital of the Hela Province in the Highlands of Papua New Guinea) and approximately 40km west-northwest of Porgera. The nearest road access point, which connects through to the Highlands Highway at Tari is approximately 14km from the Kili Teke prospect.

History
Outcropping mineralised breccia and copper gold skarn mineralisation at Kili Teke was initially identified in historic reconnaissance work undertaken in the early 1990s. Following a review of previous exploration results in the district, an exploration licence application over the area containing the Kili Teke resource was lodged by Harmony Gold Exploration (Papua New Guinea) Limited (Harmony Gold Exploration) in October 2013. EL2310 was subsequently granted in May 2014, and field work programmes by Harmony defined a broad (kilometre scale), high-tenor copper-gold anomaly at Kili Teke, indicative of the zonal geochemical distribution and alteration footprint associated with a major mineralised porphyry copper-gold system. Initial drilling began in November 2014 with significant results first returned in hole 7 of the drill programme:

KTDD007: 422m @ 0.55% Cu, 0.43 g/t Au, from 131m
Which included: 202m @ 0.74% Cu, 0.57g/t Au, from 137m

Nature of operation
Kili Teke is at an advanced exploration stage and activities are dominated by resource definition and exploration drilling. Pre-concept scoping studies help inform drill planning.

Legal aspects and tenure
The Kili Teke deposit is located on exploration licence EL2310 which is 100% owned by Harmony Gold Exploration. The tenement spans 252km^2 and is current until 23 May 2018.

The Papua New Guinea government issues and administers mining tenements under the Mining Act 1992, through the offices of the Mineral Resources Authority. Exploration licences are issued for a term not exceeding two years, and are renewable for further two-year terms subject to compliance with expenditure and other conditions. Each licence contains a condition conferring on the Papua New Guinea government the right to make a single purchase up to 30% equitable interest in any mineral discovery under the licence at a price pro rata to the accumulated exploration expenditure.

As at 31/8/2017, all licence conditions and expenditure commitments for EL2310 have been fulfilled, and the tenement is in good standing.

Geology
The Kili Teke deposit comprises porphyry style copper-gold mineralization hosted in a multiphase calc-alkaline dioritic to monzonitic intrusive complex. Host rocks comprise interbedded siliciclastics and limestone of the Papuan Fold Belt. Uranium-lead zircon age dating highlights Pliocene age dates in the range of 3.5 ± 0.04Ma (million years) to 3.59 ± 0.07Ma for emplacement of the mineralised porphyry phases. Late-mineral porphyry phases have been identified in the drilling and impact grade continuity within the deposit, where they intrude and stope out the earlier more mineralised phases. Overall the geometry of the deposit reflects a relatively steeply plunging, pipe like body, with mineralisation decreasing away from the central high grade stockwork zones of copper-gold mineralisation. Intense marbleisation and copper-gold skarn mineralisation is developed around the peripheral contact with the host sequence, and variably developed skarn mineralisation also occurs along internal structural and contact zones within the complex.

Mining methods and mine planning
Kili Teki is at the concept study level of work. This work has confirmed technically-viable solutions exist for mining, processing, infrastructure and logistics at Kili Teke, and no fatal flaws were identified.

Mining options consider open pit and bulk undergoud mining options with open pit the preferred option to take to further studies. This contemplated standard open pit mining with shovels and trucks. Waste dump locations have been priliminary identified as has terrestrial tailings storage facility locations.

Mineral processing
First pass rougher kinetic test work for metallurgical recovery shows that copper recovers extremely well (90%) and gold recovers well (65%) through standard copper flotation process. An option for smelting was considered by high capital cost has precluded this process with a copper concentrate product the most likely option to consider in further studies

Further deposit concept and study work is planned for FY18 in conjunction with the drill programme.

RESOURCES AND RESERVES BY OPERATION

PAPUA NEW GUINEA CONTINUED

Mineral resource estimation

The current resource for Kili Teke has been generated from over 22 000m of drilling, along with detailed surface mapping, sampling and airborne geophysical survey data. Estimation has been constrained by a 0.125% copper shell, which represents the approximate natural break to mineralisation from the surrounding host sequence and unmineralised intrusive phases.

The modelling process used is similar to the previous (November 2015) model, with estimation by ordinary kriging of 4m composites utilising a three-pass search ellipse into a regular block model comprising 60mx60mx60m parent blocks and 20mx20mx20m sub-blocks. An inferred resource has been reported from the resulting resource model and is based on a 0.2% Cu cut-off along with sample support criteria. The resource estimate is constrained approximately 650m below surface at the 780mRL, although mineralisation remains open at depth.

Environmental impact

The projects are in exploration and feasibility study stage and as such have only minor environmental impacts. The environment aspect are regulated by CEPA (Conversational and Environmental Protection Agency) and Kili Teki reports regularly to this agency.

Exploration

The Kili Teke deposit remains open to the southeast and at depth down plunge. Study work, together with data consolidation and update modelling, is underway to inform the FY18 drill program. Key targets will include

- Zones of skarn mineralisation within and around the main intrusive complex. Skarn mineralisation has not yet been included in the model. These have potential to develop into high-grade massive sulphide lodes which could be selectively mined provided grade continuity and size (tonnage) can be established. KTDD025 for example intersected: 7.8m @ 12.98% Cu, 11.45 g/t Au from 920.5m
- The deposit remains open at depth where trends in the copper-sulphur ratios suggest higher-grade (bornite) stockwork mineralisation may be developed
- The deposit remains open to the southeast under cover of the limestone cap. Further drilling to scope out the full extent of the intrusive complex is planned
- Additional intrusive centres with mineralisation outside of the current resource area; potentially driving marbleisation intersected at the Gold Ridge Anomaly or the intense alteration and accompanying sulphides evident at the Transfer Zone Porphyry target

Competent person	
Resource	
Group Resource Geologist Harmony SE Asia, Ronald Reid *Australian Institute of Geoscientsis (AIG)*	+10 years' experience

KILI TEKE

Gold – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Gold		Tonnes		Gold		Tonnes		Gold		Tonnes		Gold	
	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)	(Mt)	(g/t)	(000kg)	(000oz)
Kili Teke	–	–	–	–	–	–	–	–	237.0	0.24	56	1 810	237.0	0.24	56	1 810

Copper – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Cu	Cu	Tonnes		Cu	Cu	Tonnes		Cu	Cu	Tonnes		Cu	Cu
	(Mt)	%	(Mkg)	(Mlb)	(Mt)	%	(Mkg)	(Mlb)	(Mt)	%	(Mkg)	(Mlb)	(Mt)	%	(Mkg)	(Mlb)
Kili Teke	–	–	–	–	–	–	–	–	237.0	0.34	802	1 767	237.0	0.34	802	1 767

Molybdenum – Mineral resources

	Measured resources				Indicated resources				Inferred resources				Total mineral resources			
	Tonnes		Mo		Tonnes		Mo		Tonnes		Mo		Tonnes		Mo	
	(Mt)	(ppm)	(Mkg)	(Mlb)	(Mt)	(ppm)	(Mkg)	(Mlb)	(Mt)	(ppm)	(Mkg)	(Mlb)	(Mt)	(ppm)	(Mkg)	(Mlb)
Kili Teke	–	–	–	–	–	–	–	–	237.0	168	40	88	237.0	168	40	88

Copper – Mineral resources as gold equivalents

	Measured	Indicated	Inferred	Total
	(000oz)	(000oz)	(000oz)	(000oz)
Kili Teke	–	–	4 416	4 416

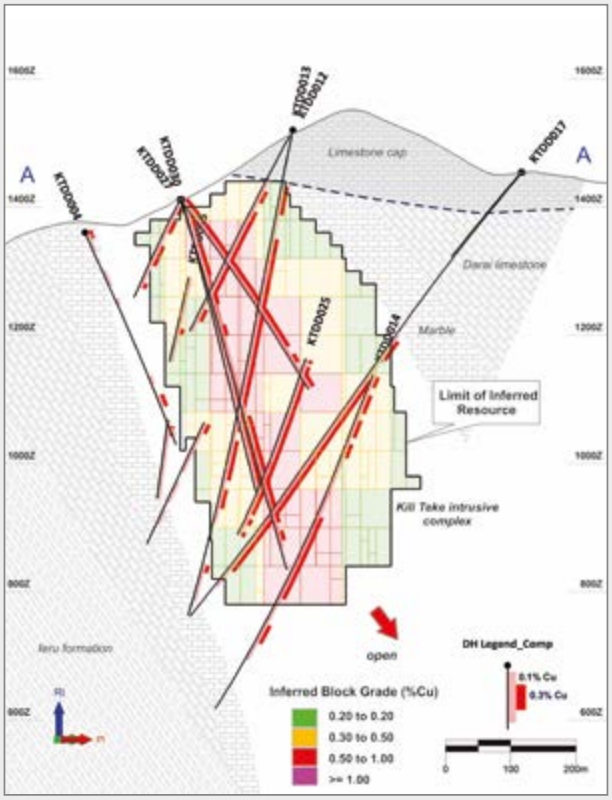
RESOURCES AND RESERVES BY OPERATION

PAPUA NEW GUINEA CONTINUED

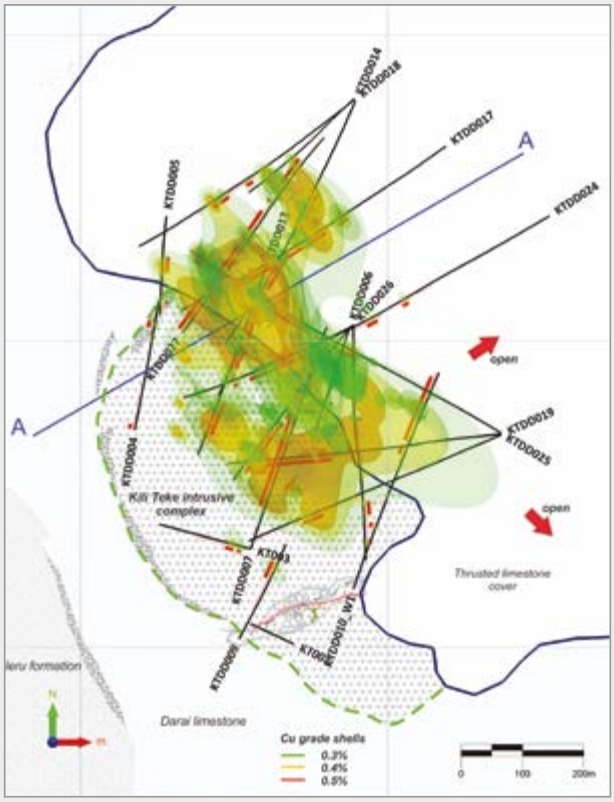
Kili Teke deposit

Overall the geometry of the deposit remains as a relatively steeply plunging, pipe-like intrusive complex, with mineralisation decreasing away from the central high-grade stockwork zones of copper gold mineralisation. Intense marbleisation and skarn mineralisation is developed around the peripheral contact with the host sequence. Variably developed skarn mineralisation also occurs along internal structural and contact zones. See diagrams below.

Block model slice with schematic geology



Geological interpretation showing drill hole locations and copper grade shells



Exploration drilling at Wau

HARMONY STANDARD
FOR SAMREC COMPLIANCE REPORTING

The following standards, processes and procedures are followed and adhered to at all Harmony's underground mines in South Africa.

SAMPLING STANDARD

A standard procedure for the sampling of stopes and development ends is used to ensure quality of sampling information and safety in its collection. All samplers and sampling crews are trained based on the rules of the sampling standard. The standard specifies all the steps and rules involved in the preparation of the face and the collection of samples, as well as all safety aspects of sampling. Particular attention is given to quality of information captured, and planned task observations are routinely carried out to ensure adherence to the standard.

Quality assurance and quality control (QAQC)

Assessment of assaying accuracy and precision is carried out through the use of certified Standard Reference Materials, blanks and duplicates. Standard Reference Materials, blank samples and duplicate samples are added with the actual underground chip samples and drillhole samples sent to the assay laboratory. For analysis of underground chip-samples, the total number of Standard Reference Materials, blank samples and duplicate samples to be added to the daily underground samples will equal approximately 5% of the total underground samples submitted for that day. Generally, this equates to approximately 2% of each type of QAQC sample. For analysis of underground/surface drill-holes, QAQC is required to be more stringent in terms of numbers of Standard Reference Materials, blank samples and duplicate samples submitted. One gold Standard Reference Materials, one uranium Standard Reference Materials, one duplicate and one blank is required for every 20 drill-hole samples assayed. In other words, QAQC material will equate to approximately 15% of the total drill-hole samples analysed. If the Standard Reference Materials or blank sample has been deemed to have failed, the entire batch of samples assayed with this failed QAQC sample must be identified. A request must then be sent to the laboratory requesting them to repeat the assay procedure on all samples within this batch. A second Standard Reference Materials or blank sample must be provided to the laboratory to be included with the batch of samples. Should the batch of samples fail the QAQC standards again, these samples will be excluded from the sampling database (not captured in the sampling system), and the sampling will be repeated if necessary.

Assay laboratory

Fire assay is the oldest and, in most circumstances, still the best method for determining the concentration of precious metals in ores and metallurgical products. Essentially, the method consists of two consecutive pyrochemical separations. The finely ground sample is fused with a suitable flux, under reducing conditions which promote the separation of the precious metals from the gangue, with simultaneous collection, normally as a lead alloy. Subsequently, the lead is removed by oxidising fusion (cupellation) and the precious metals, thus isolated, are available for measurement.

Harmony's assay laboratory performs various types of analysis, but the laboratory is only ISO 17025 accredited for the analysis of gold and uranium. Underground ore samples are received and prepared for fire assay gold, uranium and relative density analysis. Plant samples e.g. residues, head samples, carbons, and solutions are also analysed for gold. Determination of gold fines is determined on bullion samples and sludge. The laboratory undertakes precious metal determinations on SAPS (exhibits) and securities recovered samples.

Water samples are also analysed to determine the quality. Tests are conducted for the presence of cyanide and trace metals tests, as is bacteriological testing.

The laboratory is accredited to ISO/IEC 17025 for all gold analysis. This means that it is competent in meeting international and national laboratory standards and provides reliable testing services. In terms of the ISO/IEC 17025 laboratory systems accreditation, feedback is provided to the laboratory on whether it is conducting its work in accordance with international criteria for technical competence. This feedback assists the laboratory in continually improving its performance in terms of data quality and laboratory effectiveness.

Société Générale de Surveillance (SGS) – Performance Laboratories Randfontein is a fully equipped laboratory providing analytical services using fire assay, instrumental and classical techniques for precious and base metal ores. The laboratory provides services to the major mining houses, including Harmony, in South Africa as well as exploration companies currently active in Africa.

The laboratory is ISO 17025:2005 accredited for the analysis of gold, uranium and the platinum group metals. This international standard confirms that the laboratory operates a quality system, is technically competent and is able to generate valid results. The quality system is applied across the entire laboratory, irrespective of the accreditation status of the method. This is critical in providing results on which major decisions regarding mining and plant operations are based.

Sample preparation plant

To determine the grade of the ore hoisted at the mines, we make use of go-belt sampling.

A belt sample of up to 1 000kg is received at the plant from the shaft. The sample is first put through a 300mm screen prior to drying with infra-red heaters. Primary crushing to <70mm is then followed by a secondary crushing to <25mm, after which the sample is reduced. At the primary splitter 7/8 of the sample is discarded via a conveyor belt and 1/8 of the sample progress to final drying. Tertiary crushing to <6mm is then followed by secondary splitting. Again 7/8 of the sample is discarded and 1/8 of the sample is pulverised to 85% <106 micron. At the final splitting, all eight sub-samples are packaged and sent to the laboratory for analyses.

The sample ticket with the necessary information from the shaft, accompanies the sample throughout the process. Empty bins are hosed out, whilst cleaning continues as part of the procedure to avoid contamination. At regular intervals grading analyses are done at the assay laboratory. A quartz sample is done to monitor any possible contamination.

HARMONY STANDARD
FOR SAMREC COMPLIANCE REPORTING CONTINUED

To ensure that a high standard of preparation is maintained at each step of the process, which includes the adherence to safety standards and is checked by a supervisor.

REPORTING CODE

Harmony uses the South African Code for the Reporting of Exploration Results, SAMREC, which sets out the internationally recognised procedures and standards for reporting mineral resources and ore/mineral reserves in South Africa. This code was developed by the South African Institute of Mining and Metallurgy and is the recommended guideline for reserve and resource reporting for companies listed on the JSE Limited. Harmony's reporting of its Australian and Papua New Guinea mineral resources and mineral reserves also complies with the Australian Code for the JORC of the Australian Institute of Mining and Metallurgy. This code is materially the same as SAMREC. In reporting reserves, distinct cognisance has also been taken of Industry Guide 7 of the United States Securities Exchange Commission.

Definitions as per the SAMREC code

Mineral resources

A mineral resource is a concentration (or occurrence) of material of economic interest in or on the earth's crust in such form, quality and quantity that there are reasonable and realistic prospects for eventual economic extraction. The location, quantity, grade, continuity and other geological characteristics of a mineral resource are known, estimated from specific geological evidence and knowledge, or interpreted from a well-constrained and portrayed geological model.

Mineral resources are sub-divided in order of increasing confidence in respect of geoscientific evidence into inferred, indicated and measured categories.

An inferred mineral resource is that part of a mineral resource for which tonnage, grade and mineral content can be estimated with a low level of confidence. It is inferred from geological evidence and sampling, and assumed, but not verified geologically and/or through analysis of grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that may be limited in scope or of uncertain quality and reliability.

An indicated mineral resource is that part of a mineral resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence. It is based on exploration, sampling and testing of information from material gathered from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but are spaced closely enough for continuity to be assumed.

A measured mineral resource is that part of a mineral resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence. It is based on detailed and reliable information from exploration, sampling and testing of material from locations such as outcrops, trenches, pits, workings and drill holes. The locations are spaced closely enough to confirm geological and grade continuity.

Mineral reserves

A mineral reserve is the economically mineable material derived from a measured and/or indicated mineral resource. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of a prefeasibility study for a project, and a life-of-mine plan for an operation, must have been completed, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors (the modifying factors). Such modifying factors must be disclosed.

A probable mineral reserve is the economically mineable material derived from a measured and/or indicated mineral resource. It is estimated with a lower level of confidence than a proved mineral reserve. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of a prefeasibility study for a project, and a life-of-mine plan for an operation, must have been carried out, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. Such modifying factors must be disclosed.

A proved mineral reserve is the economically mineable material derived from a measured mineral resource. It is estimated with a high level of confidence. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of a prefeasibility study for a project, and a life-of-mine plan for an operation, must have been carried out, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. Such modifying factors must be disclosed.

HARMONY REPORTING IN COMPLIANCE WITH SAMREC

To meet SAMREC's requirements that the material reported as a mineral resource should have 'reasonable and realistic prospects for eventual economic extraction', Harmony has determined an appropriate cut-off grade which has been applied to the quantified mineralised body according to a process incorporating a long-term view on future economic modifying factors. In applying this process, Harmony uses a gold price of R635 000/kg to derive a cut-off grade to determine the mineral resources at each of its South African underground operations.

Mineral resources have been estimated on the basis of geoscientific knowledge with input from the company's ore reserve managers, geologists and geostatistical staff. Each mine's mineral resources are categorised, blocked-out and ascribed an estimated value. At all our mines, computerised geostatistical estimation processes are used.

To define that portion of a measured and indicated mineral resource that can be converted to a proved and probable mineral reserve, Harmony applies the concept of a cut-off grade. At our underground South African mines, this is done by defining the optimal cut-off as the lowest grade at which an ore body can be mined such that

HARMONY STANDARD
FOR SAMREC COMPLIANCE REPORTING CONTINUED

the total profits, under a specified set of mining parameters, are maximised. The cut-off grade is determined using the company's Optimiser software, which requires the following as input:

- the database of measured and indicated resource blocks (per shaft section)
- an assumed gold price which, for this mineral reserve statement, was taken as R525 000/kg
- planned production rates
- the mine recovery factor which is equivalent to the mine call factor multiplied by the plant recovery factor
- planned cash operating costs (rand per tonne)

Rand per tonne cash operating costs are historically based but take cognisance of distinct changes in the cost environment such as restructuring, right-sizing, and other cost-reduction initiatives, and for below-infrastructure ounces, an estimate of capital expenditure.

The block cave reserve at Golpu in Papua New Guinea uses proprietary block cave optimisation software to define the optimal mine plan and sequencing. The open-pit reserve at Hidden Valley in Papua New Guinea is using the Whittle optimisation programme to guide the most efficient mine design given the commodity prices and cost inputs assumed.

The mineral reserves represent that portion of the measured and indicated resources above the cut-off grade in the life-of-mine plan and have been estimated after consideration of the factors affecting extraction, including mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors.

A range of disciplines, including geology, survey, planning, mining engineering, rock engineering, metallurgy, financial management, human resources management and environmental management, have been involved at each mine in the life-of-mine planning process and the conversion of resources into reserves.

The modifying factors related to the ore flow that are used to convert the mineral resources to mineral reserves through the life-of-mine planning process are stated for each shaft. For these factors, historical information is used, except if there is a valid reason to do otherwise. As a result of the depth at which mining occurs and the resulting rock engineering requirements at our South African underground mines, some shafts include stope support pillars into the design of their mining layouts which accounts for discounts of 7% to 10%. A further 15% discount is applied as a life-of-mine factor to provide for unpay and off-reef mining. In general, life-of-mine plan extraction factors do not exceed 85% and are reflected in the mineral reserves.

Tshepong

GLOSSARY OF TERMS

Term	Definition
Acidic	Descriptor for silica rich igneous rocks (containing greater than 65% silica) such as rhyolite or granite.
Alluvium	Relatively recent deposits of sedimentary material laid down in riverbeds, flood plains, lakes, or at the base of mountain slopes.
Alteration	Any physical or chemical change in a rock resulting from fluids moving through the rock.
Anticline	An arch or fold in layers of rock.
Assay	An analysis to determine the presence and concentration of one or more chemical components.
Basalt	An extrusive mafic volcanic rock.
Basic	Descriptor for silica poor igneous rocks such as basalt or gabbro.
Below infrastructure	That part of a company's mineral reserve that can only be accessed following certain capital expenditure which has yet to be approved.
BIF	Banded iron formation
Block caving	A mining method suited for large low-grade ore bodies that are unsuitable for open cut mining. In development a series of evenly spaced crosscuts are made at the bottom of the ore block from which raises are driven up into the ore. The ore block is then undercut so that it begins to collapse (or cave) into the raises. The weight of the material above provides the force to fracture and crush the underlying ore which is drawn from the drawpoints on the crosscuts. As ore is withdrawn the cave progresses up through the ore body.
Bornite	A copper iron sulphide that commonly defines the core of porphyry copper-gold deposits.
Breccia	Fractured and broken rock that results from structural, volcanic or sedimentary processes.
Bulk mining	Any large-scale mechanised method of mining involving significant volumes of material being extracted on a daily basis.
Caldera	A large, basin shaped volcanic depression, more or less circular in form, that results from the collapse of the earth's surface into an exhausted magma chamber.
Chalcocite	A copper sulphide mineral common in zones of secondary enrichment.
Chalcopyrite	A copper iron sulphide that comprises the bulk of ore in many copper mines.
Concentrate	The product of the milling process that contains a high percentage of the valuable metals. The concentrate is commonly the final product produced on-site and is sent to a third party for separation or smelting.
Conglomerate	A sedimentary rock consisting of rounded, water worn pebbles or boulders cemented into a solid mass.
Contact	A geological term used to describe the line or plane along which two different rock types meet.
Contact metamorphism	Metamorphism of country rocks adjacent to an intrusion caused by heat and fluids from the intrusion.
Craton	A part of the earth's crust that has attained stability and has been little deformed for a long period of geological time.
Crosscut	An opening underground that is cut at right angles from the main level drive or shaft that generally links to and cuts the ore body, may also refer to a link between different drives.
Country rocks	The surrounding "host" rocks into which an igneous intrusion or ore body is emplaced.
Cut-off grade	The lowest grade of copper or gold ore that is considered economic to mine.
DatamineTM	Software
Decline	A tunnel below the horizontal that allows access to the ore body.
Deposit	A concentration of mineral matter, sedimentary or volcanic material, commonly refers to an accumulation of mineralised material that need not be economic to extract.
Diamond drilling	A method of obtaining samples of rock that utilises a diamond encrusted drill bit to cut long cylindrical sticks of core.
Diatreme	A long vertical pipe or plug filled with volcanic breccia formed by explosive release of energy from a gas-charged magma.
Dilution	Unmineralised rock that is by necessity removed along with ore during the mining process that effectively lowers the overall grade of the ore.
Diorite	Plutonic or intrusive rocks of intermediate composition between acidic and basic.
Dip	The angle at which a bed, stratum, or vein is inclined from the horizontal, measured perpendicular to the strike and in the vertical plane.

GLOSSARY OF TERMS CONTINUED

Disseminated ore	Ore carrying small distributed particles or valuable minerals distributed more or less uniformly through the rock.
Drawpoint	An underground opening at the bottom of the stope through which broken ore is extracted.
Dyke	A long and relatively thin body of igneous rock that, while in the molten state, intruded a fissure in older rocks.
Enrichment	The process of upgrading the concentrations of various elements into more concentrated deposits.
Epithermal deposit	A mineral deposit consisting of veins and replacement bodies containing precious metals or, more rarely, base metals; that form close to the earth's surface at high levels in the crust.
Exploration	Prospecting, sampling, mapping, drilling and other work involved in the search for ore.
Fault	A break in the continuity of a body of rock. It is accompanied by a movement on one side of the break relative to the other so that what were once parts of one continuous rock stratum or vein are now separated. The amount of displacement of the parts may range from a few inches to thousands of feet. Various descriptive names have been given to different kinds of faults, including but not limited to; closed fault, dip fault, dip-slip fault, distributive fault, flaw fault, gravity fault, heave fault, hinge fault, horizontal fault, longitudinal fault, normal fault, oblique fault, oblique slip fault, open fault, overthrust fault, parallel displacement fault, pivotal fault, reverse fault, rotary fault, step fault, strike fault, strike-slip fault, thrust fault, transcurrent fault, translatory fault, underthrust, vertical fault.
Felsic	An igneous rock having abundant light-coloured minerals and enriched in lighter elements such as silica and aluminium.
Flotation	A milling process in which valuable particles are induced to become attached to bubbles and float where they are more easily separated.
Fold	A curve or bend of a planar structure such as rock strata, bedding planes, foliation, or cleavage. A fold is usually a product of deformation, although its definition is descriptive and not genetic and may include primary sedimentary structures.
Gabbro	A dark, coarse-grained mafic igneous rock.
Gangue	The commercially worthless material that surrounds, or is closely mixed with, the ore.
Gold equivalent ounces	In instances where individual deposits may contain multiple valuable commodities with a reasonable expectation of being recovered; for example gold + copper in the one deposit, Harmony computes a gold equivalent to more easily assess the value of the deposit against gold only mines. Harmony does this by calculating the value of each of the deposits commodities then divides the product by the price of gold. For example ((gold ounces * gold price per ounce) + (copper pounds* copper price per pound))/gold price per ounce; this will return the gold equivalent of a gold and copper deposit. All calculations are done using metal prices as stipulated in attached documentation. Harmony assumes a 100% metallurgical recovery in its calculations unless otherwise stated.
Graben	A block of rock bound by faults that has moved downward to form a depression between adjacent fault blocks.
Granite	A light coarse-grained felsic intrusive rock.
Granodiorite	A light coarse-grained intermediate intrusive rock.
Greenstone	A field term for any compact dark green altered or metamorphosed basic igneous rock that owes its colour to chlorite.
Head grade	The average grade of ore fed into the mill.
Horst	An elongate, relatively uplifted crustal unit or block that is bounded by faults, the opposite of a graben. It is a structural form and may or may not be expressed geomorphologically.
Hydrothermal mineral deposits	Relating to hot fluids circulating in the earth's crust; generally the source of metals found in
Igneous rock	Rocks formed by the solidification of molten material below the earth's crust.
Intrusive	A body of igneous rock formed by the consolidation of magma intruded into country rock, in contrast to lava which is extruded onto the earth's surface.
Lava	A general name for the molten rock ejected by volcanoes.
Mafic	An igneous rock composed chiefly of dark, ferromagnesium minerals and enriched in heavier elements such as iron.
Magma	The molten material within the earth from which igneous rocks are formed.

GLOSSARY OF TERMS CONTINUED

Maramuni arc	A part of the New Guinea Mobile Belt, an arc across the island of Papua New Guinea within which a large portion of economic deposits are found.
Matrix	The finer-grained material between the larger particles of a rock or the material surrounding a fossil or mineral.
Metallurgy	The study of extracting metals from their ores.
Mesozoic	An era of geologic time, from the end of the Paleozoic to the beginning of the Cenozoic, or from about 225 million years to about 65 million years ago.
Mine call factor	Is the ratio, expressed as a percentage, which the specific product accounted for in "recovery plus residue" bears to the corresponding product "called for" by the mine's measuring and valuation methods.
MW	Milling width is a calculated width expressing the relationship between the total reef area excavated and the total tonnes milled from underground sources.
Mobile belt	A belt of folded and mountainous terrain that defines the core of the island of Papua New Guinea, considered to define the leading edge of the Australian content where it is in collision with the pacific ocean plate.
Non-refractory	Gold or copper ore that is easily extracted using standard and well tested mill and plant technologies.
Ophiolite	A section of the earth's oceanic crust and the underlying mantle that has been uplifted and often emplaced (or obducted) onto the edge of a continental plate; commonly the product of subduction systems. The material comprises mafic and ultramafic rocks and minerals.
Ore	A mixture of minerals and gangue from which at least one of the minerals can be extracted at a profit.
Orogeny	A period of mountain building characterised by compression and folding within the earth's crust.
Oxidation	Generically refers to a chemical reaction of the rock when exposed to oxygen and surface water, resulting in oxide material in a mining environment.
Plunge	The inclination and orientation of a fold axis or other linear feature, measured in the vertical plane.
Porphyry	An igneous rock of any composition that contains conspicuous phenocrysts in a fine-grained groundmass that has intruded into the upper crust rapidly. A rock name descriptive of the groundmass composition usually precedes the term e.g. diorite porphyry.
Porphyry copper	A specific deposit type associated with the intrusion of multiple phases of porphyry. The heat and associated fluids commonly carry and precipitate metals such as gold, copper, molybdenum and silver.
PRF	Plant recovery factor is the ratio, expressed as a percentage, of the mass of the specific mineral product actually recovered from ore treated at the plant to its total specific mineral content before treatment.
Pyrite	Iron sulphide that usually occurs in veins, as magmatic segregation, as an accessory in igneous rocks, and in metamorphic rocks, in sedimentary rocks including coal seams; It is commonly associated with gold.
Quartzite	A very hard metamorphosed sandstone, consisting chiefly of quartz grains that are so completely cemented with secondary silica that the rock breaks across or through the grains rather than around them.
Raise	Any tunnel having an inclination above the horizontal in the direction of workings.
Recovery	The percentage of valuable metal in the ore that can be recovered by metallurgical treatment.
Refractory	Ore type that contains gold or copper that is 'locked up' and difficult to extract without specialised processing equipment.
Resource	The estimated amount of material in a mineral deposit, based on limited drilling but considered to be available for eventual economic extraction.
Rhyolite	A fine-grained extrusive igneous rock with the same chemical composition as granite.
Schist	A foliated metamorphic rock that has undergone sufficient strain so as to align all the mineral components into a roughly parallel arrangement.
Shaft	A vertical or inclined excavation in rock for the purpose of accessing the ore body, usually equipped with a hoist and winder to move miners and materials between the surface and various levels underground.
Silica	Fine grained silicon dioxide (such as quartz).
Siliceous	An alteration type where a large portion of the original rock has been replaced by silica.
Skarn	Lime-bearing silicates of any geologic age derived from nearly pure limestone or dolomite with the introduction of large amounts of silica, aluminium, iron and magnesium.
Stockwork	A mineral deposit in the form of a network of veinlets diffused in the country rock.
Stope	An excavation in a mine from which ore is, or has been, removed.

GLOSSARY OF TERMS CONTINUED

Strike	The bearing from north of a geological structure such as a bed, fault or ore body, defined as a horizontal line measured across the surface perpendicular to the dip.
Strip	To remove the overburden and waste to reveal the ore underneath.
Stripping ratio	The ratio of tonne of waste removed to tonnes of ore recovered in an open pit mine.
Subduction	The process in plate tectonics whereby a portion of one of the earth's plates is drawn down below another.
Sub-level	A level in an underground mine between two main working levels.
Sub-outcrop	A rock stratum that unconformably underlies another rock stratum.
Syncline	Concave fold in stratified rock, in which strata dip down to meet in a trough.
Tailings	Material rejected from the milling process from which much of the economic material has been removed.
SW	Stoping width is the width of the excavation made during stoping operations.
TSF	Tailings storage facility (or tailings pond) – where the tailings are stored until the end of mining when the facility is capped and rehabilitated.
Unconformity	The structural relationship between rock strata in contact, characterised by a lack of continuity in deposition due to a period of non-deposition, weathering, or erosion prior to the deposition of the younger beds. An unconformity is often marked by absence of parallelism between the strata where the younger overlying stratum does not conform to the dip and strike of the older underlying rocks.
Volcanic	Derived from volcanoes.
Waste	Unmineralised or low-grade material that cannot be mined at a profit.
Winze	Any tunnel having an inclination below the horizontal in the direction of workings.

FORWARD-LOOKING STATEMENTS

This report contains forward-looking statements within the meaning of the safe harbour provided by Section 21E of the Securities Exchange Act of 1934, as amended, and Section 27A of the Securities Act of 1933, as amended, with respect to our financial condition, results of operations, business strategies, operating efficiencies, competitive positions, growth opportunities for existing services, plans and objectives of management, markets for stock and other matters. These include all statements other than statements of historical fact, including, without limitation, any statements preceded by, followed by, or that include the words "targets", "believes", "expects", "aims", "intends", "will", "may", "anticipates", "would", "should", "could", "estimates", "forecast", "predict", "continue" or similar expressions or the negative thereof.

These forward-looking statements, including, among others, those relating to our future business prospects, revenues and income, wherever they may occur in this report and the exhibits to this report, are essentially estimates reflecting the best judgment of our senior management and involve a number of risks and uncertainties that could cause actual results to differ materially from those suggested by the forward-looking statements. As a consequence, these forward-looking statements should be considered in light of various important factors, including those set forth in this report. Important factors that could cause actual results to differ materially from estimates or projections contained in the forward-looking statements include, without limitation: overall economic and business conditions in South Africa, Papua New Guinea, Australia and elsewhere, estimates of future earnings, and the sensitivity of earnings to the gold and other metals prices, estimates of future gold and other metals production and sales, estimates of future cash costs, estimates of future cash flows, and the sensitivity of cash flows to the gold and other metals prices, statements regarding future debt repayments, estimates of future capital expenditures, the success of our business strategy, development activities and other initiatives, estimates of reserves statements regarding future exploration results and the replacement of reserves, the ability to achieve anticipated efficiencies and other cost savings in connection with past and future acquisitions, fluctuations in the market price of gold, the occurrence of hazards associated with underground and surface gold mining, the occurrence of labour disruptions, power cost increases as well as power stoppages, fluctuations and usage constraints, supply chain shortages and increases in the prices of production imports, availability, terms and deployment of capital, changes in government regulation, particularly mining rights and environmental regulation, fluctuations in exchange rates, the adequacy of the Group's insurance coverage and socio-economic or political instability in South Africa and Papua New Guinea and other countries in which we operate.

For a more detailed discussion of such risks and other factors (such as availability of credit or other sources of financing), see the company's latest Integrated Annual Report and Form 20-F which is on file with the Securities and Exchange Commission, as well as the company's other Securities and Exchange Commission filings. The company undertakes no obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after the date of this report or to reflect the occurrence of unanticipated events, except as required by law.

DIRECTORATE AND ADMINISTRATION

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Harmony Gold Mining Company Limited was incorporated and registered as a public company in South Africa on 25 August 1950

Registration number: 1950/038232/06

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