



# South Deep Gold Mine

## Technical Short Form Report

South Deep Gold Mine is an intermediate to deep level gold mine comprising two shaft systems that mine various auriferous conglomerates from open ground and pillars that occur at depths between 1,575 m and 3,500 m below surface. The shaft systems comprise the older South Shaft complex with its main shaft and two sub vertical shafts, and the newer flagship complex, known as Twin Shafts. Ore is processed at a central metallurgical plant. The mining rights comprise a total of 3,566 ha.

The key milestones for South Deep in the next three years include:

- the commissioning of the new tailings facility in 2011;
- the equipping of the Ventilation Shaft in the next 18 months, with the concurrent deepening (240 m) of the shaft to a final depth of 2,995 m; and
- the commissioning of the Ventilation Shaft for hoisting in 2012.

These milestones are necessary to facilitate the build up to full production by December 2014. At full production South Deep will produce between 750 – 800 koz pa.

This Technical Short Form Report reflects the latest Life of Mine plan, coupled with an updated Mineral Resource and Mineral Reserve statement, as at 30 June 2009. All Mineral Resource and Mineral Reserve figures reported are managed unless otherwise stated and Mineral Resources are inclusive of Mineral Reserves.

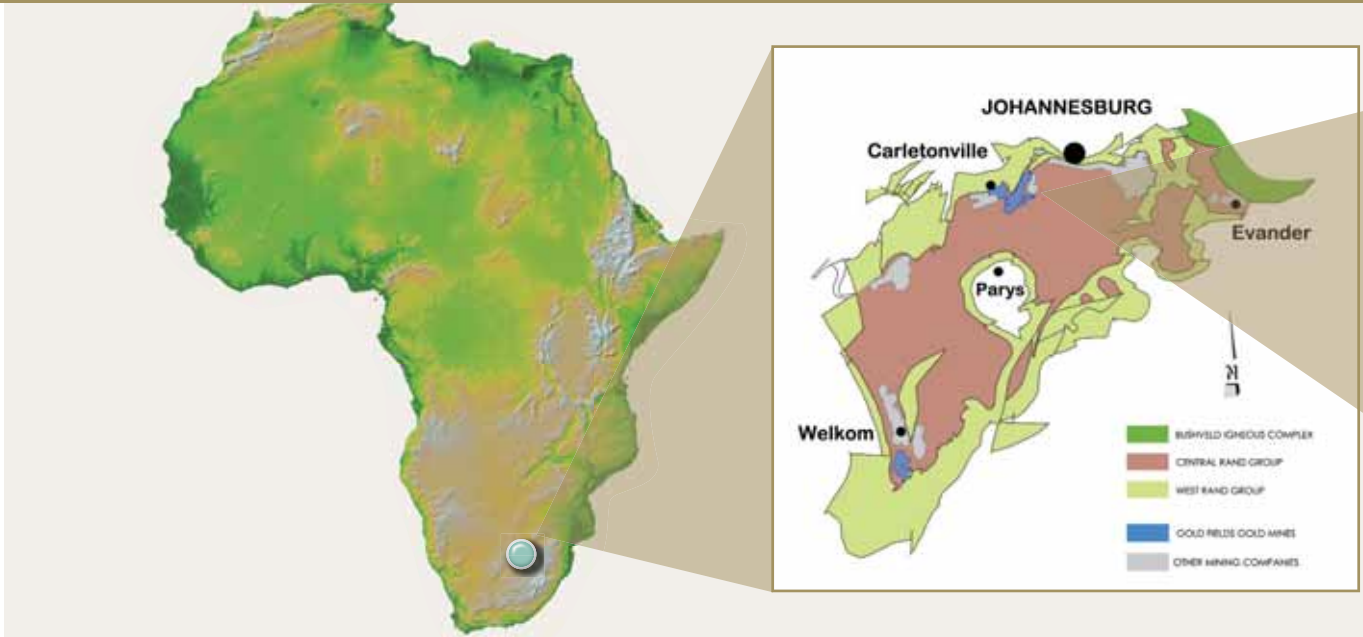
### Salient Features

- Enhanced orebody modelling has resulted in improved mining layout and planning
- Positioning for a highly efficient, safe, low cost, fully mechanised extraction of a world class orebody.
- Focus remains on developing the South Deep Mine to achieve steady state sustainable production in the next five years.
- Mineral Resources of 63.8 Moz (excludes 14.6 Moz in Uncle Harry's)
- Mineral Reserves of 29.5 Moz.
- The current Life of Mine is estimated to extend to 2052 (43 years).

South Deep is located in the West Rand Goldfields situated in the geologically unique and world renowned Witwatersrand Basin, which remains the most significant gold depository in the history of mining.

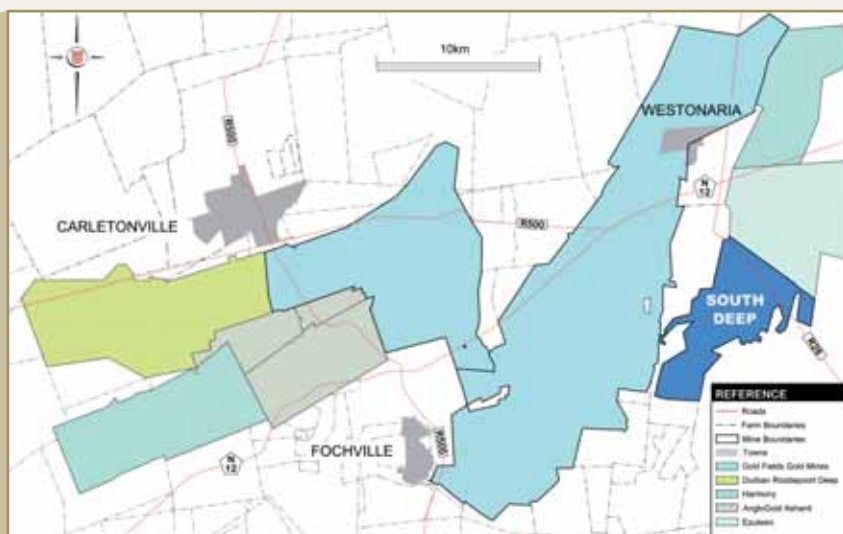
The discovery of the payable Ventersdorp Contact Reef (VCR) and Upper Elsburg conglomerates in the early 1950's, in the southern part of the goldfields, led to the establishment of the Elsburg Gold Mining Company Limited in 1965, which was later consolidated with the Western Area Limited (WAL). Continued exploration in the late 1970's confirmed earlier indications that the target reef horizons extend well to the south in the area which has become known as the South Deep Project Area (SDPA).

By 1980 it was recognised that the SDPA orebody, as well as having reefs which could be mined by conventional mining methods, also had potential for wide orebody mechanised mining. In the years to follow, surface and underground drilling, together with detailed seismic surveys, further enhanced the grade distribution and geological models, which led to the establishment of the South Deep Gold Mine in 1990, under the stewardship of JCI. Gold Fields Limited acquired South Deep Gold Mine in December 2006 (Barrick's 50%) and April 2007 (WAL interest).



## Key Features

<b>Independent Audit</b>	Figures reported in this declaration are as reviewed and approved by independent external consultants as at 30 June 2009
<b>Prepared by</b>	Gold Fields Limited
<b>Effective date</b>	30 June 2009
<b>Source of Information</b>	This Technical Statement is a summary of the internally sourced document entitled F2010 South Deep Competent Persons Report
<b>Personal Inspection</b>	Personal inspection is conducted by the Competent Persons as listed, who are full time employees of Gold Fields Limited
<b>General Location</b>	South Deep Gold Mine is situated in the Magisterial Districts of Westonaria and Vanderbijlpark (Gauteng Province), some 45 km southwest of Johannesburg at latitude 26° 25' S and longitude 27° 40' E. It is accessed via the N12 provincial road between Johannesburg and Potchefstroom
<b>Licence Status and Holdings</b>	The arial extent of the South Deep Mining Authorisation (ML 8/99), granted by the Department of Minerals and Energy (DME) on 26 March 1999, is 3,566 ha. All required operating permits have been obtained, and are in good standing. Application for the conversion of the old order mining right to a new form mining right, as required in terms of the Minerals and Petroleum Resources Development Act No. 28, 2002 (the MPRD Act) is in progress
<b>Operational Infrastructure</b>	South Deep Gold Mine operates one gold plant and is accessed from surface through two shaft systems, the Twin Shaft Complex of which the main shaft comprises a single-drop to a depth of 2,995 m, and the South Shaft Complex. The mine has been subdivided into two main areas, namely that "above current infrastructure" to 110 level (2,888 m below surface), and that below current infrastructure to 135 level (3,500 m below surface)
<b>Climate</b>	No extreme climatic conditions are experienced that may affect mining operations
<b>Deposit Type</b>	Intermediate to deep level gold mine (>2,000 m below surface) exploiting auriferous palaeoplacers (reefs), i.e. the Ventersdorp Contact Reef (VCR) of the Venterspost Formation and conglomerates that comprise the Upper Elsburg Reefs of the Mondeor Formation
<b>Life of Mine (LoM)</b>	It is estimated that the current Mineral Reserves will be depleted in 2052
<b>Environmental</b>	The systems, procedures, training etc. are at international best practice levels. ISO 14001:2004 certification has been obtained for this operation. The mining remains on track for OHSAS 18001:1999 certification during F2010 and obtained full compliance for International Cyanide Management Code and certification in December 2008
<b>Regulatory Codes</b>	Gold Fields reports its Mineral Resources and Mineral Reserves in accordance with the South African Code for The Reporting of Exploration Results, Mineral Resources and Mineral Reserves (2007 SAMREC Code), and other relevant international codes such as SEC Industry Guide 7, JORC Code and NI 43 – 101. The Mineral Resources and Mineral Reserves are underpinned by a sufficient Mineral Resource Management process and protocol to ensure adequate corporate governance in respect of the intent of the Sarbanes-Oxley Act



**Gold Fields has stated that:**  
**“If we cannot mine safely, we will not mine”.**  
**This principle is embedded at South Deep.**

## Operating Statistics

Year ended June		F2009	F2008	F2007*
Main development	km	7.2	5.9	2.9
Main on-reef development	km	4.3	3.1	1.7
Main on-reef development value	g/t	5.9	6.0	6.2
Area mined	'000 m <sup>2</sup>	0	42.0	48.0
Tons milled	'000	1,241	1,367	1,104
Source of ore				
– Underground	'000 tons	1,038	1,066	776
– Yield	g/t	6.1	6.5	6.2
– Stockpile	'000 tons	203	301	328
– Yield	g/t	1.3	0.8	0.9
– Average yield	g/t	4.4	5.3	4.6
– Gold produced	kg	5,434	7,220	5,076
	'000 oz	175	232	163
Operating cost				
– Underground	R/ton	1,134	1,170	896
– Surface	R/ton	53	54	75
<b>Total</b>	<b>R/ton</b>	<b>957</b>	<b>924</b>	<b>652</b>
Gold sold	kg	5,434	7,220	5,166
Cash cost	\$/oz	717	727	595
	R/kg	207,803	169,889	137,689
Capital expenditure	Rm	1,020.5	784.7	283.4
NCE	R/kg	406,423	283,712	197,636
Number of employees in service		2,273	4,322	4,639
Expected Life-of-Mine	years	43	44	45
Mineral Reserves	million tons	149	150	155
Head grade of Mineral Reserves	g/t	6.1	6.0	6.1

\* 2007 figures for 7 months (December 2006 – June 2007)

Rounding off of figures presented in this report may result in minor computational discrepancies, where this occurs it is not deemed significant.

## Geological Setting and Mineralisation

The South Deep Gold Mine lies at the northwestern edge of the Witwatersrand Basin, known as the West Rand Goldfield.

The mining right area is underlain by outliers of Karoo Supergroup shales and sandstones followed by the Pretoria Group sediments and the Chuniespoort Group dolomites. The Chuniespoort Group overlies the Klipriviersberg Group volcanic rocks, which in turn are underlain by the Central Rand Group that hosts the gold-bearing conglomerates (reefs), exploited by South Deep.

The reef horizons exploited at South Deep include the Ventersdorp Contact Reef (VCR) and the stacked reef horizons that comprise the Upper Elsburgs. An important feature of this deposit is defined by a linear north-northeast trending subcrop of the Upper Elsburg reefs against the VCR. To the east of the subcrop, high grades associated with wider payable bands are found in the proximal zone while in the more distal areas, higher grade zones occur in narrow bands. The primary economic target is the Upper Elsburg reef package with the VCR being a secondary economic target.

## Local geology

In the western half of the mining authorisation, the VCR occurs as a single reef horizon that overlies the footwall lithologies of the Upper Elsburg succession.

The Upper Elsburgs, which subcrop below the VCR in a north-northeast trend, comprise multiple stacked reef horizons that form part of an easterly divergent clastic wedge. This wedge attains a thickness of approximately 130 m in the vicinity of the eastern boundary of the mining authorisation.

The structure at South Deep is dominated by north-south trending fault systems, which include the West Rand, Panvlakte and Waterpan Faults. The stratigraphy and the West Rand – Panvlakte Faults are further offset by younger east-west trending local wrench faults that generally have a dextral displacement.

The West Rand/Panvlakte/Waterpan horst block is situated between the Kloof and South Deep Gold Mines and regionally demarcates the western boundary of South Deep. A series of dykes also straddle the mine lease, are orientated roughly north-south, and can attain thicknesses of up to 35 m. The younger, post Black Reef age dykes separate the overlying dolomite into water compartments.

The Upper Elsburg Reefs constitute 93% of the Mineral Reserves and are an ideal mechanised mining target, while the VCR constitutes the remaining 7%.

## VCR

The VCR represents the final phase of sedimentation prior to the extrusion of the lavas of the Klipriviersberg Group and unconformably overlies the Upper Elsburgs and strata. The VCR structure and facies model has been updated using the latest available information, which will facilitate 3D evaluation and more efficient mine design and scheduling. VCR sedimentation is independent from that of the Upper Elsburgs and is characterised by quartzite dominated facies types. Two facies types are recognised, with Sandy 1 defined as always having a basal conglomerate developed whereas the Sandy 2 type is predominantly of quartzite. By implication the Sandy 1 facies is the higher grade prospective target. The VCR strikes roughly east-west and has a regional dip of approximately 15° to the south-southeast. Local variations in dip are largely due to structure.

## Upper Elsburgs

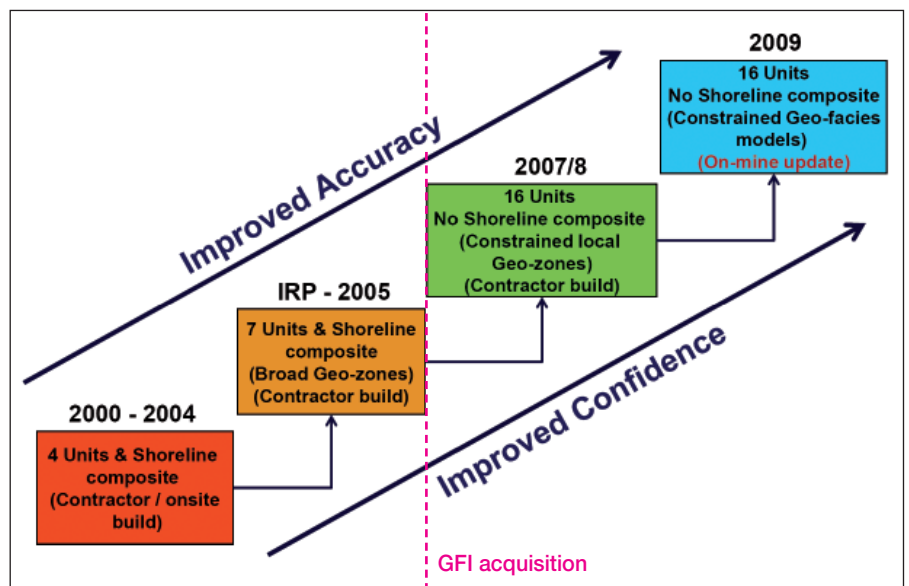
A paradigm improvement in the stratigraphic and sedimentological resolution within the Upper Elsburg reef units has been developed over the past two years, which will facilitate 3D evaluation and fit for purpose mine design and scheduling. Updated models are being generated using improved resource modelling techniques, in line with Gold Fields protocols. Importantly, accurate grade and tonnage factors are now defined for mining of the Upper Elsburgs.

The Upper Elsburgs represent a broad upward coarsening cycle of conglomerates and interbedded quartzites within which several smaller upward fining cycles occur. The discrete stratigraphic units of which currently 16 are described, are the product of these smaller

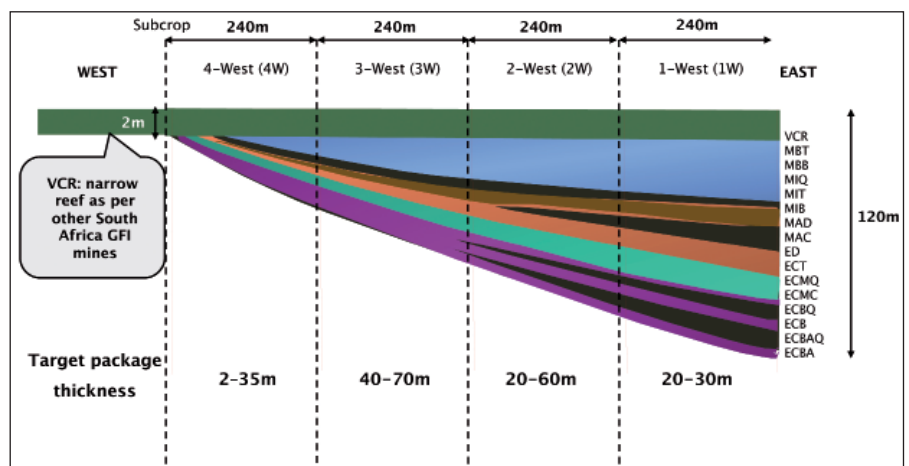
upward fining cycles. The bases of each of the conglomeratic units are unconformity bounded surfaces with nine such unconformity bounded sequences distinguished.

With each of the unconformity bounded sequences, economic gold mineralisation shows a strong positive spatial correlation with the coarse conglomeratic units, while the matrix supported (sandy) conglomerate units generally host sub to uneconomical gold concentrations. Based on these associations, gold distribution within each of the stratigraphic units is being remodelled.

The Upper Elsburgs have an average dip of some 12° toward the south-southeast, but this is effected by a low amplitude, high



Evolution of the Upper Elsburg sedimentological 3D model



Schematic section depicting easterly divergent Upper Elsburgs clastic wedge and target package thickness



wave length regional syncline that trends approximately north-south through the centre of the mine. This feature is more pronounced towards the south of the property.

### Exploration and Drilling

The tempo of exploration has significantly increased year-on-year and is multi-disciplined with a combination of surface and underground drilling as well as seismic re-modelling to test future mining extensions, structural complexity and economic potential.

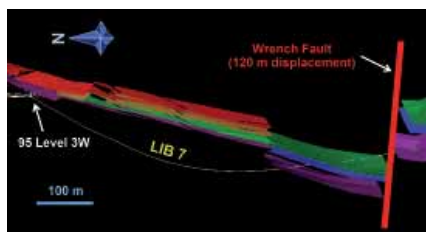
Gold Fields was pleased to announce that on 27 July 2007, an agreement was reached in terms of which JCI and Randgold and Exploration Company Limited (R&E) will relinquish certain rights which they have to the Uncle Harry's ground, this being subject to the approval of the shareholder representation of at least 50% of the shares entitled to vote at general meetings of both JCI and R&E. Uncle Harry's equates to the Kalbasfontein Prospecting Right. It is estimated that the contiguous ground immediately to the east of South Deep, contains an Inferred Mineral Resource of 14.6 Moz at a cut-off grade of 3 g/t. This ground will be accessed through the existing South Deep infrastructure.

An extensive exploration programme was initiated in 2007, to facilitate improved planning and optimisation to ensure robust geological and evaluation models. Results of this programme will underpin the resource definition of the VCR and the evaluation of the Upper Elsberg reefs. The programme will provide clarification on the orebody potential below infrastructure as well as an assessment of the regional potential of contiguous Prospecting Rights, which includes the Uncle Harry's ground.

### Underground drilling

A major capital Long Inclined Borehole (LIB) drilling programme has been initiated at South Deep on 95 and 110 levels. This drilling programme is designed to provide geological structure, facies and grade information in current mining areas, in zones below current infrastructure and south of the Wrench Fault which duplicates 110 level further south. The two year drilling programme involves some 17.4 km of drilling at an estimated cost of R15.3 million.

Conventional underground grid, prospect and infill grade control drilling is also planned for F2010 and will mainly take place from 95 level to evaluate both the VCR and Upper Elsberg reefs.



*LIB definition drilling programme*

### Surface drilling

The surface drilling programme that targets the Upper Elsbergs and VCR in the Phase II ground below 110 level, started in the first quarter of F2008. The programme is planned for 14 boreholes at an estimated cost of ~R200 million and is scheduled for completion by the end of F2011.

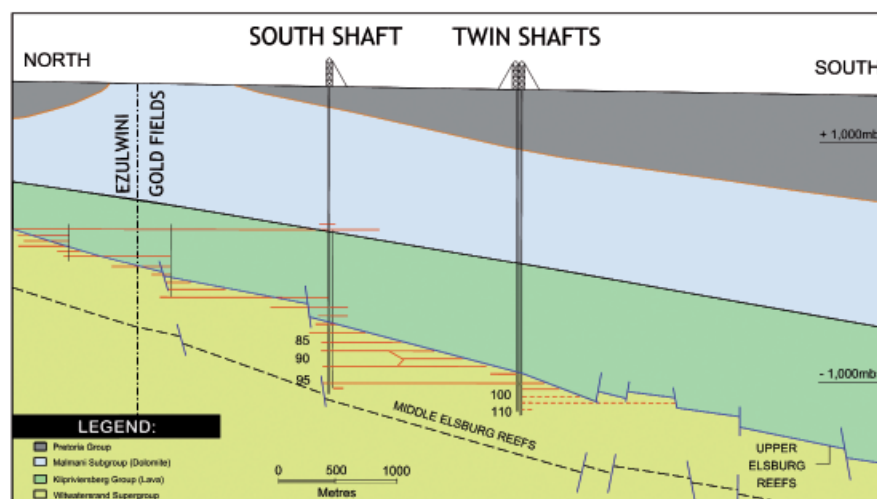
Of the nine rigs currently in the field, four will focus on intersecting the comparatively thin but closely stacked proximal Upper Elsberg succession immediately east of the subcrop. The remaining rigs are targeting the thicker, more distal Upper Elsbergs towards the east in the Uncle Harry's area. Post successful completion of this phase of drilling the rigs will move to drill three holes for the Upper Elsbergs in the east of the Mine Lease Area. A further three holes are planned to test the VCR west of the Elsberg subcrop.

### 3D Seismic survey

A 3D survey, originally acquired and processed in 2004 as a split data set over the deeper portions (below infrastructure) of the Kloof and South Deep gold mines, was merged after the acquisition of the South Deep Gold Mine, into one project to facilitate improved structural modelling across one contiguous area. The South Deep 3D seismic survey provided high quality data and gives an excellent image of the VCR reflector and structure disrupting it (known structure incorporated into seismic interpretation). The merged data set will also be utilised to produce an holistic regional tectonic model for the West Wits area.



*Surface drilling rig with Twin Shafts in background*



*Typical section through the South Deep orebody*

## Mining

South Deep is a fully mechanised operation (both stoping and development). The focus in the immediate future will be on expediting development accessing the orebody, completing the Twin Shaft infrastructure and increasing the rate of mechanised de-stress mining.

Capital expenditure for F2010 is estimated at R1.7 billion, concentrating on establishing infrastructure to underpin future production and gold output. The infrastructure projects are being undertaken to increase production to 330 kt per month and 750 – 800 koz per annum within a five year timeline.

Procurement of the low profile trackless equipment is complete.

## Mining methods

South Deep Gold Mine comprises two shaft systems (including two sub-vertical shafts) and one processing plant.

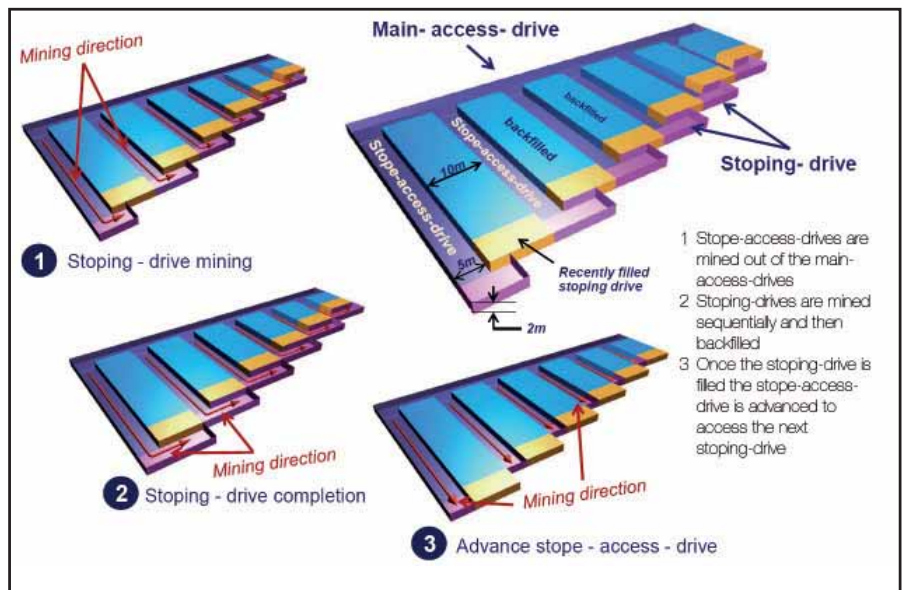
The VCR will be mined by a low profile mechanised mining method, whereas the Upper Elsburgs will be mined by a variety of mining methods ranging from mechanised drift-and-fill or modified drift-and-bench to longhole stoping. Ore is drilled with trackless twin boom, blasted and taken by Load-Haul-Dumpers (LHDs) to internal ore passes for transport to hoisting shafts.

At South Deep, the main target horizon is predominantly in the Upper Elsburg Massives zone. In order to extract this ground at depths, which range from 2,500 to 3,500 m below surface (currently on average at a depth of 2,693 m below surface), the in situ rock stresses need to be reduced from 80 mpa to between 30 and 40 mpa. This enables the mining of large excavations at close proximity.

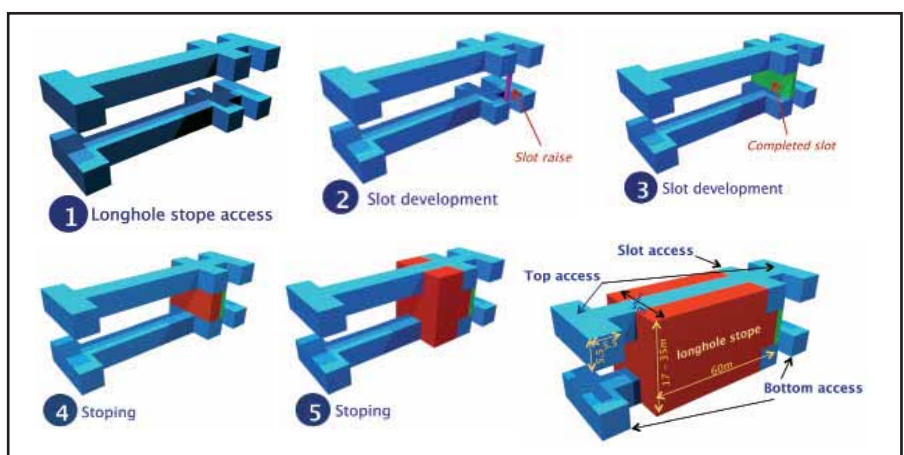
To achieve this, the main target horizon needs to be de-stressed by mining a 2 m slice through the package in an optimal position to ensure a de-stressed window of 50 to 60 m above or below the associated stope. Historically, this was done through conventional mining techniques, but due to low face advances achieved, de-stress mining is now also done using mechanised mining techniques. Backfill is an integral part of the mining method, and is essential to promote both local and regional stability.

The Upper Elsburg Massives are the main target horizon and the extraction thereof will be done with the aid of mechanised mining equipment after completion of the de-stress mining. Various mining methods are adopted and are applied in terms of the thickness of the reef target as well as in terms of the payability of the reef. These mining methods in the various projects of the mine can be summarised as follows:

### • De-stress mining:

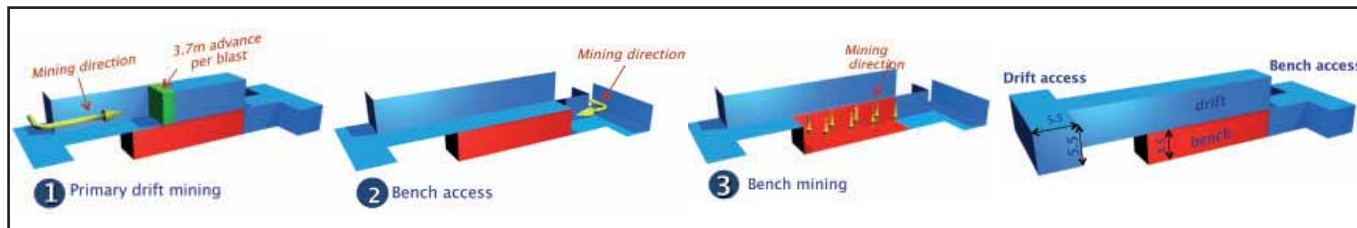


- Trackless longhole bulk mining is planned to take place in the thickest portion of the massive orebody (>10 m mining cut), :
  - Top and bottom accesses are mined to access the longhole stope;
  - A slot raise is excavated to create a free breaking face between the top and bottom access and then mined to the width of the longhole stope ( $\pm 15$  m);
  - Rings are then drilled either from the top or bottom access for blasting;
  - A ring typically extracts about 2 m of the length of the longhole stope and three rings are typically blasted at a time, delivering approximately 4,000 t (with a 20 m stope height); and
  - After cleaning, further rings are blasted until the entire stope has been mined. The void will be backfilled after all the ore has been removed.





- The modified drift and bench mining method will be applied where the reef is not as thick (more than 5 m but less than 10 m mining cut).



- Drift and fill mining methodology will be carried out further west towards to outcrop of the Upper Elsburgs package against the VCR, due to the lower mining heights.

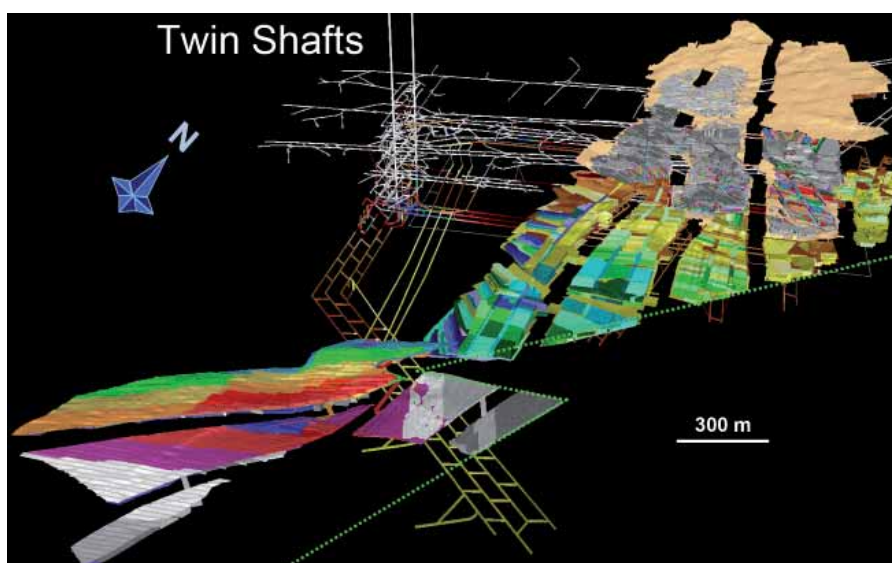
### Mine planning and scheduling

Mine design and scheduling at South Deep is done in Mine 2-4D and Earthworks Project Scheduler (EPS) software, on a Datamine platform. All designs are based on three dimensional resource models.

Due to the depth of the orebody, mining of de-stress horizons has to be scheduled such that sufficient reserves are made available for massive mining extraction. Large mechanised targets are then sequentially scheduled for extraction within the de-stress envelopes. Backfill scheduling is also incorporated in the extraction sequence, both for the de-stress and the massive horizons.

All designs and schedules are completed in consultation with production and all technical personnel, to ensure safe and efficient layouts and plans. Production efficiencies are based on past experience and production models describing activities for the different fleet combinations.

Mineral Reserve development will continue to be a key performance indicator in F2010 and



Current Mine redesigned and Phase 1 designed – isometric view.

will be accelerated further in appropriate areas. The following table details the development advanced for the last 12 months to June 2009. A total of 7.1 km was developed with 4.3 km driven on-reef.

Category	Elsburg
Advanced (m)	7,152
On-reef (m)	4,262
Average reef grade (g/t)	5.9

### Projects

Several capital intensive projects are ongoing to facilitate the buildup to full production by December 2014. Capital expenditure of R8,4 billion is being invested from now through to July 2014 to build the mine to full production (330 ktpm reef and ~ 750 koz pa).

The following projects are on the critical path in the buildup:

- **Ventilation Shaft Deepening:** The installation of a brattice wall from surface to 94 level has been completed. The equipping of the shaft to 100A level commenced in July 2009 and will be complete by December 2010. This will be followed by the sinking, lining and equipping of the remaining 240 m from 100A level to shaft bottom. A new Rock Winder to enable the Ventilation Shaft to hoist 195 ktpm will be complete by

December 2011 and the shaft is planned to be commissioned by July 2012.

- **New Mine Development:** This is to develop the mine on 100, 105, 110 and 110A levels to ensure access and logistics (ore transport and ventilation, etc.) to the working areas north and south of the Wrench Fault.
- **Ventilation and Refrigeration:** Three additional refrigeration plants on 94 level are planned to be commissioned by January 2010, to provide cool air to the current workings and the new mine development. This includes new BAC (bulk air cooling) facilities on 95 and 100 levels. An Ice Plant will be built on surface to further enhance the mine cooling facilities during 2013. All return airways are required to be complete by 2014.
- **Shaft Bottom Infrastructure:** 4 Vertical

silo facilities (9m diameter and 56 m long) are to be established for surge capacity by July 2012 in addition to 3 settler dams with pumping facilities.

- **Backfill:** A new FPT (Full Plant Tailings) backfill plant is to be erected at South Shaft with a pipe distribution network of 24 pipes down South Shaft to the workings. This will replace the current CCT (classified cyclone tailings plant).
- **South Shaft:** The hoisting capacity at this shaft has been reduced to 60 ktpm – this allows for the refurbishment of the pump columns and backfill pipes, for the planned buildup to full production.
- **Metallurgical:** A new tailing storage facility is to be established by July 2011 and the gold plant is planned to be upgraded to 330 ktpm from the current 220 ktpm.

## Mineral Processing

The milling circuit includes a Semi Autogenous Grinding (SAG) Mill for primary milling and secondary milling conducted in an overflow Ball Mill, with classification done using a cluster of cyclones. The recovery of free gold is achieved using two Knelson concentrators, with the concentrate being tabled using a Gemini table in the smelt-house.

The cyclone overflow is thickened before the slurry reports to the leach circuit. The leach circuit has six mechanically agitated tanks each with a 3,000 m<sup>3</sup> volume.

Gold dissolution is achieved with the use of cyanide with lime being added to ensure protective alkalinity. South Deep has an eight stage carousel type Carbon in Pulp circuit with 200 m<sup>3</sup> tanks for gold absorption using carbon. Carbon stripping is achieved using the

AARL elution system and carbon regeneration is carried out in a rotary kiln at a rate of 500 kg/hr. Gold recovery from solution is by electro-winning using the Kemix Sludge Reactors, followed by drying and then smelting in an induction furnace to produce gold bullion. Concentrates from the Gemini Table are

calcined and smelted in the induction furnace. Both mill and cyanide bars are then marked appropriately and dispatched to Rand Refinery via helicopter. Installed processing capacity is 220 ktpm with modular expansion to 330 ktpm planned in the original design. The additional capacity is required during F2013.



CIP processing plant

## Sustainable Development

Gold Fields has embraced Sustainable Development as a business imperative, which is reflected in its Vision, Values and Strategy. Through this, Gold Fields has introduced structures that encourage a networked interface between disciplines like Safety, Health, Environmental Engineering, Natural Environment, Risk, Stakeholder Engagement, Legal and Communication. This approach has allowed Gold Fields to capitalize on synergies and to avoid duplication. In this regard, several Key Performance Indicators (KPIs) are monitored and utilized to make informed business decisions.

In terms of community involvement, South Deep supports (i) local schools and an orphanage through provision of a feeding scheme and by paying the salaries in some cases, (ii) community centres by providing a house for abused women and children, and (iii) the community at large through different HIV/Aids prevention programmes.

South Deep's environmental initiatives are focused on reducing the impact that the mine may have on the receiving environment through concurrent rehabilitation and responsible water management. Water management is a high priority. All potential sources of pollution like the water discharges are monitored and sampled on a regular basis.

The lost time frequency rate for the period 1 July 2008 to 30 June 2009 was 5.78 and a fatality injury frequency rate of 0.00 per million man-hours worked.

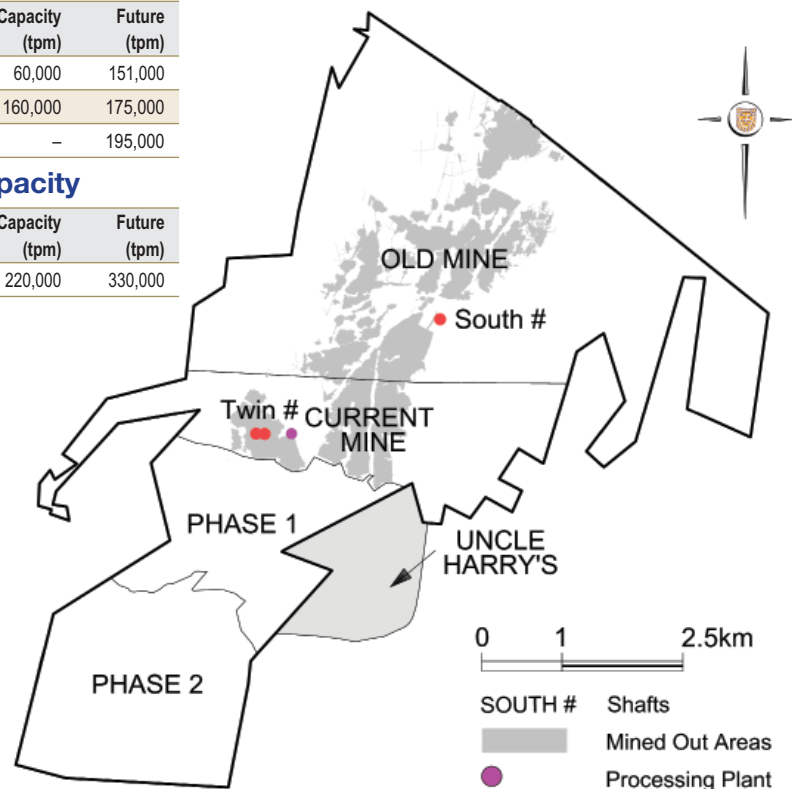
The fall of ground prevention campaign has reduced such incidents but highlighted the future need to remain every vigilant and to focus on slip and fall, and material handling risks.

### Hoisting capacity

Shaft	Capacity (tpm)	Future (tpm)
South	60,000	151,000
Main	160,000	175,000
Vent	-	195,000

### Plant capacity

Plant	Capacity (tpm)	Future (tpm)
1	220,000	330,000



### Mineral Reserves per mining area

Mining Area	Proved			Probable		
	Tons (Mt)	Grade (g/t)	Gold (koz)	Tons (Mt)	Grade (g/t)	Gold (koz)
Above infrastructure	15.2	5.9	2,906	67.6	6.6	14,265
Below infrastructure	-	-	-	66.6	5.8	12,315
Surface stockpiles	-	-	-	-	-	-
<b>Total</b>	<b>15.2</b>	<b>5.9</b>	<b>2,906</b>	<b>134.3</b>	<b>6.2</b>	<b>26,580</b>





## Mineral Resources and Mineral Reserves

Gold Fields' South Deep 30 June 2008 attributable Mineral Resources and Mineral Reserves were primarily based on the pre-acquisition figures as declared for December 2005. These were audited by an Independent Review Panel of consultants for the Barrick Gold—Western Areas Joint Venture between Barrick Gold South Africa (Pty) Limited (formerly, Placer Dome South Africa Proprietary Limited) and Western Areas Limited for Old Mine, Phase 1 and Phase 2, but updated by Gold Fields to 30 June 2008 for mining depletions. Gold Fields has, however, remodelled, re-evaluated, designed and scheduled the upper Elsburg Reefs in current Mine (87 to 110 level) in accordance with Gold Fields standards and procedures. The 30 June 2009 Mineral Resources and Mineral Reserves are based on new resource estimation and mine design work completed over the past 12 months, which has resulted in approximately 50% of reserved ounces having been remodelled and designed (previously 12%). The remaining Mineral Resources and Mineral Reserves are as previously reported at 30 June 2008 (i.e. acquisition figures).

## Mineral Resources

Mineral Resources are reported as in-situ, on an inclusive basis. As at 30 June 2009, the total Mineral Resource estimate at the South Deep Gold Mine, using a gold price of R285 000/kg, was as follows:

Mineral Resource Classification	Mill Tons (Mt)			Grade (g/t)			Gold ('000 oz)		
	June 2009	June 2008	Dec 2006	June 2009	June 2008	Dec 2006	June 2009	June 2008	Dec 2006
Underground									
Measured	41.6	33.8	28.6	7.4	8.1	8.3	9,890	8,821	7,631
Indicated (AI)	125.9	151.6	167.4	8.7	7.4	7.5	35,038	36,249	40,254
Total above infrastructure	167.5	185.4	196.0	8.3	7.6	7.6	44,928	45,070	47,885
Indicated (BI)	92.6	92.6	92.6	6.3	6.3	6.3	18,898	18,898	18,898
<b>Total Underground</b>	<b>260.1</b>	<b>278.0</b>	<b>288.7</b>	<b>7.6</b>	<b>7.2</b>	<b>7.2</b>	<b>63,826</b>	<b>63,968</b>	<b>66,783</b>

Uncle Harry's* Mineral Resource Classification	Mill Tons (Mt)			Grade (g/t)			Gold ('000 oz)		
	June 2009	June 2008	Dec 2006	June 2009	June 2008	Dec 2006	June 2009	June 2008	Dec 2006
Underground									
Inferred	78.0	59.8	–	5.8	8.6	–	14,566	16,504	–
<b>Total Uncle Harry's</b>	<b>78.0</b>	<b>59.8</b>	<b>–</b>	<b>5.8</b>	<b>8.6</b>	<b>–</b>	<b>14,566</b>	<b>16,504</b>	<b>–</b>

Note: AI = Above Infrastructure, BI = Below Infrastructure

\* Gold Fields own an attributable 74% thereof, with the balance being held by Peotona.

The Mineral Resource estimate for underground uranium and the gold and uranium in the Tailings Storage Facility (TSF), are included for the first time and the figures are as follows:

Mineral Resource Classification (Uranium)	Tons (Mt)			Grade (kg/t)			Uranium (Mlbs)		
	June 2009	June 2008	Dec 2007	June 2009	June 2008	Dec 2007	June 2009	June 2008	Dec 2007
Underground									
Inferred	71.6	–	–	0.073	–	–	11.58	–	–
Total Underground	71.6	–	–	0.073	–	–	11.58	–	–
Surface									
Measured TSF's	53.4	–	–	0.074	–	–	8.73	–	–
Total Surface TSF's	53.4	–	–	0.074	–	–	8.73	–	–
<b>Total</b>	<b>125.0</b>	<b>–</b>	<b>–</b>	<b>0.074</b>	<b>–</b>	<b>–</b>	<b>20.31</b>	<b>–</b>	<b>–</b>

Mineral Resource Classification (Gold)	Tons (Mt)			Grade (kg/t)			Gold ('000 oz)		
	June 2009	June 2008	Dec 2007	June 2009	June 2008	Dec 2007	June 2009	June 2008	Dec 2007
Surface									
Measured TSF's	53.4	–	–	0.2	–	–	0.399	–	–
<b>Total Surface TSF's</b>	<b>53.4</b>	<b>–</b>	<b>–</b>	<b>0.2</b>	<b>–</b>	<b>–</b>	<b>0.399</b>	<b>–</b>	<b>–</b>

## Modifying factors

- The Measured and Indicated Mineral Resources are inclusive of those Mineral Resources modified to produce Mineral Reserves.
- Unless otherwise stated, all Mineral Resources and Mineral Reserves are quoted as 100% and are not attributable with respect to ownership.
- All Mineral Reserves are quoted in terms of Run-of-Mine (RoM) grades and tonnage as delivered to the metallurgical processing facilities and are therefore fully diluted.
- Mineral Reserve statements include only Measured and Indicated Mineral Resources, modified to produce Mineral Reserves and contained in the Life of Mine (LoM) plan.
- Mineral Resources and Mineral Reserves undergo both internal and external audits either during the year, yearly or bi-annually, and any issues identified are rectified usually during the current reporting cycle, though it does sometimes occur that more comprehensive work requires more time for adequate completion.

Modifying Factors		
Mineral Resource Gold Price	US\$/oz	1,000
	ZAR/kg	285,000
Exchange Rate	R:US\$	8.95:1
Mineral Resource cut-off	cm.g/t	3.0
Mineral Reserve Gold Price	US\$/oz	800
	ZAR/kg	230,000
Mineral Reserve cut-off	cm.g/t	4.0
Mine Call Factor	%	100
Plant Recovery	%	97.2

## Mineral Reserves

Mineral Reserve estimation at South Deep is based on development of an appropriately detailed and engineered LoM plan, which accounts for all necessary access development and stope designs. All design and scheduling work is undertaken within mine planning software.

As at 30 June 2009, the total Mineral Reserve estimate at the South Deep Gold Mine, using a gold price of R230 000/kg was as follows:

Mineral Reserve Classification	Mill Tons (Mt)			Head Grade (g/t)			Gold ('000 oz)		
	June 2009	June 2008	Dec 2006	June 2009	June 2008	Dec 2006	June 2009	June 2008	Dec 2006
Underground									
Proved <sup>#</sup>	15.2	14.6	11.7	5.9	6.4	7.3	2,906	3,000	2,751
Probable (A) <sup>#</sup>	67.6	68.5	77.3	6.6	6.3	6.2	14,265	13,812	15,517
Total (A)	82.8	83.1	89.0	6.5	6.3	6.4	17,171	16,812	18,268
Probable (B) <sup>#</sup>	66.6	66.6	66.6	5.8	5.8	5.8	12,315	12,315	12,315
Total underground	149.4	149.7	155.5	6.1	6.1	6.1	29,486	29,127	30,582
Surface stockpiles									
Probable	0	0	0	–	–	–	0	0	0
Total surface stockpiles	0	0	0	–	–	–	0	0	0
<b>Grand Total</b>	<b>149.4</b>	<b>149.7</b>	<b>155.5</b>	<b>6.1</b>	<b>6.1</b>	<b>6.1</b>	<b>29,486</b>	<b>29,127</b>	<b>30,582</b>

Note: AI = Above Infrastructure, BI = Below Infrastructure

<sup>#</sup>Approximately 94% of Proved Mineral Reserves and Probable Mineral Reserves (A) are re-estimated and designed. The remaining Proved and Probable Mineral Reserves (A) and of Probable Mineral Reserves (B) are as per acquisition model.

## Regulatory Codes

### SAMREC

This Technical Statement has been prepared in Compliance with the South Africa Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves (2007 SAMREC Code).

### JSE

This Technical Statement has been prepared in compliance with the listing requirements of the JSE Securities Exchange, South Africa (JSE), specifically Section 12 – Issue 11.

### Sarbanes-Oxley Act

The Mineral Resource and Mineral Reserve is underpinned by an adequate Mineral Resource Management process and protocol to ensure adequate corporate governance in respect of the intent of the Sarbanes-Oxley Act.

### Environmental

South Deep has an environmental management team who are supported by specialist assistance from the South Africa regional office in Johannesburg. The systems, procedures, training etc. are at international best practice levels. Gold Fields has produced a Sustainability Report in 2009 and intends reporting annually in accordance with the Global Reporting Initiative.



Simba drill rig – drilling bench holes 95 3West



Simba drill rig – drilling longhole stope 95 1West



## Competent Persons

### M Cameron: Manager Mine Planning and Resource Management

BSc (Geology) and MSc AIG (Australian Institute of Geoscientists) Full Member Number 3373. Mr Cameron has 16 years experience in underground mechanized mining across a range of mineral commodities. He is responsible for the overall correctness, standard and compliance of this declaration.

### R Pillaye: Chief Geologist

BSc (Hons) SACNAS 400247/08. Mr Pillaye has 18 years experience in the mining industry of which one year has been at South Deep Mine. He is responsible for production geology at South Deep.

### P Obermeyer: Chief Resource Geologist

BSc (Hons) Geology, SACNAS 400144/06. Mr Obermeyer has 13 years experience in the mining industry of which all have been at South Deep Mine. He is responsible for resource evaluation at South Deep.

### A Miller: Chief Surveyor

ND (Mine Survey), Mine Survey Certificate of Competency, PLATO (Registration number: PMS 0191) Mr Miller has 29 years experience in the mining industry of which one year has been at South Deep Mine. He is responsible for surveying, reporting and historical modifying factors for South Deep.

### D Siebert: MRM Planning

ND Mine Surveying, Mine Survey Certificate of Competency, PLATO (Registration number: MS 0098). Mr Siebert has 33 years experience in the mining industry of which five years have been at South Deep Mine. He is responsible for the short-term mine planning and scheduling on South Deep.

## Key Technical Staff

Post	Incumbent	Qualifications	Years	Key responsibilities
Vice President and Head of Operations	Stuart Allan	BSc (Hons) Mechanical Engineering Engineers Certificate of Competency	26	Overall strategic direction, leadership and management
Senior Manager Operations	Andy Brown	First Class Diploma in Mining, GDE Mining, MSc Engineering (Mining), Mine Managers Certificate of Competency, Mine Surveyors Certificate of Competency	35	Full operational management
Senior Manager Projects	Ken Matthyssen	BSc (Mining Geology), GDE (Mining Engineering), BSc (Hons) Mining Engineering	29	Capital projects
Senior Financial Manager	Giel Bezuidenhout	BCom Accounting, CIS, MBA	23	Financial reporting, compliance
Human Resources Manager	Ncedisa Maqoma	Bachelor of Arts (Rhodes)	2	Human resources management
Metallurgy Manager	Stephen Joseph	NHD Extractive Metallurgy	21	Metallurgical management
Mineral Resources Manager	Micheil Cameron	BSc (Geology) and MSc	16	Mine Planning, Mineral Resources & Mineral Reserves and compilation of CPR
Engineering Manager	Clive Moses	NHD Electrical Engineering, Government Certificate of Competency Electrical Engineering	22	Engineering, logistics, infrastructure and management.





# South Deep History at a Glance



## Disclaimer

### Forward looking statements

Certain statements in this document constitute "forward looking statements" within the meaning of Section 27A of the US Securities Act of 1933 and Section 21E of the US Securities Exchange Act of 1934.

Such forward looking statements involve known and unknown risks, uncertainties and other important factors that could cause the actual results, performance or achievements of the company to be materially different from the future results, performance or achievements expressed or implied by such forward looking statements. Such risks, uncertainties and other important factors include among others: economic, business and political conditions in South Africa, Ghana, Australia, Peru and elsewhere; the ability to achieve anticipated efficiencies and other cost savings in connection with past and future acquisitions, exploration and development activities; decreases in the market price of gold or copper; hazards associated with underground and surface gold mining; labour disruptions; availability terms and deployment of capital or credit; changes in government regulations, particularly environmental regulations; and new legislation affecting mining and mineral rights; changes in exchange rates; currency devaluations; inflation and other macro-economic factors, industrial action, temporary stoppages of mines for safety reasons; and the impact of the Aids crisis in South Africa. These forward looking statements speak only as of the date of this document. 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 document or to reflect the occurrence of unanticipated events.