ANGLOVAAL MINING
AVMIN

ANGLOVAAL MINING LIMITED
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25 March 2004

The Office of International Corporate Finance
Securities and Exchange Commission
450 Fifth Street NW
Mail Stop 3-2
Washington DC 20549
United States of America

82-4519



SUPPL

Dear Sirs

INTERIM RESULTS DECEMBER 2003

We enclose a copy of the above announcement dated 23 March 2004 published in the press today.

PROCESSED
MAR 30 2004
THOMSON FINANCIAL

Yours faithfully
For and on behalf of
Anglovaal Mining Limited

RH Phillips
Group Company Secretary

dlw 3/30

ANGLOVAAL MINING

AVMIN

overview

- Headline earnings* down 27% to R77 million
- Net cash flow from operating activities up 464% to R237 million following the disposal of Chambishi
- Nkomati, now 100% owned, delivers strong operational performance
- Net gearing reduced to 11%
- US$ borrowings fully repaid by 31 August 2003

*before unrealised non-hedge derivatives

unaudited group interim results for the half-year ended 31 December 2003

balance sheet

Audited Year ended 30 June 2003 Rm		Unaudited Half-year ended 31 December 2003 Rm	Unaudited Half-year ended 31 December 2002 Rm	% change
	ASSETS			
	Non-current assets			
4 786	Tangible assets	4 857	5 627	
6	Intangible assets	6	7	
12	Deferred tax assets	10	38	
45	Environmental rehabilitation trust funds	45	64	
215	Investments	167	215	
5 064		5 085	5 951	(15)
	Current assets			
896	Inventories	1 030	1 148	
936	Trade and other receivables	831	986	
–	Taxation	21	–	
265	Deposits and cash	219	905	
2 097		2 101	3 039	(31)
7 161	**Total assets**	7 186	8 990	(20)
	EQUITY AND LIABILITIES			
	Capital and reserves			
6	Ordinary share capital	6	6	
79	Share premium	122	69	
218	Reserves	171	164	
2 208	Retained earnings	2 207	2 531	
	Shareholders' interest in capital and reserves	2 506	2 790	
2 451	Minority interest	2 402	2 134	
4 962	**Total shareholders' interest**	4 908	4 924	–
	Non-current liabilities			
–	Long-term borrowings	–	1 367	
519	Deferred tax liabilities	542	524	
153	Long-term provisions	156	219	
103	Non-hedge derivatives	286	–	
775		984	2 110	53
	Current liabilities			
521	Trade and other payables	468	523	
39	Provisions	40	60	
42	Taxation	42	68	
–	Derivative instruments	–	3	
822	Overdrafts and short-term borrowings	744	1 302	
1 424		1 294	1 956	34
7 161	**Total equity and liabilities**	7 186	8 990	20

income statement

4 896	**Revenue**	2 004	2 340	(14)
(3 882)	Cost of sales	(1 681)	(1 828)	8
1 014	**Gross profit**	323	512	(37)
424	Other operating income	23	234	
(814)	Other operating expenses	(167)	(354)	
624		179	392	(54)
(103)	Unrealised loss on non-hedge derivatives	(184)	–	
521	**(Loss)/Profit from operations**	(5)	392	(101)
83	Income from investments	12	47	
(180)	Finance costs	(38)	(113)	
424	**(Loss)/Profit before taxation and exceptional items**	(31)	326	(110)
(388)	Exceptional items	4	13	
(649)	– Loss on disposal of discontinued operations	–	–	
261	– Other exceptional items	4	13	
36	**(Loss)/Profit before taxation**	(27)	339	(108)
(147)	Taxation	(49)	(128)	
(111)	**(Loss)/Profit after tax**	(76)	211	(136)
(80)	Minority interest	75	(93)	
(191)	**(Loss)/Earnings**	(1)	118	(101)
	Additional information:			
	Headline earnings before unrealised			
241	**non-hedge derivatives**	77	105	(27)
	Headline earnings per share before unrealised			
215	**non-hedge derivatives (cents)**	67	93	(28)
197	Headline (loss)/earnings	(1)	105	(100)
176	Headline (loss)/earnings per share (cents)	(1)	93	(101)
(170)	**Basic attributable (loss)/earnings** per share (cents)	(1)	106	(100)
(169)	**Fully diluted attributable (loss)/earnings** per share (cents)	(1)	104	(100)
112 602	**Number of shares in issue at end of** year (thousands)	114 128	112 225	
112 046	**Weighted average number of shares in** issue (thousands)	113 713	111 783	2
2 511	Shareholders interest	2 506	2 790	(10)
2 230	Net asset value per share (cents)	2 196	2 486	(12)

statement of changes in equity

Total	Rm	Share capital and premium	Foreign currency translation	Revaluation surplus	Other	Retained earnings
	Half-year ended 31 December 2003					
2 511	**Balance at 30 June 2003**	85	–	181	37	2 208
(47)	**Revaluation of listed investments**	–	–	(47)	–	–
(1)	Loss	–	–	–	–	(1)
43	Share options exercised	43	–	–	–	–
2 506	**Balance at 31 December 2003**	128	–	134	37	2 207
	Half-year ended 31 December 2002					
2 579	**Balance at 30 June 2002**	68	(42)	141	11	2 401
118	Earnings	–	–	–	–	118
32	**Foreign currency translation** reserve	–	32	–	–	–
40	Revaluation of listed investments	–	–	40	–	–
7	Share options exercised	7	–	–	–	–
(10)	**Allocation to minority** shareholders	–	(24)	–	–	14
24	**Unrealised gain on currency** derivative contracts	–	–	–	24	–
–	Other	–	–	–	2	(2)
2 790	**Balance at 31 December 2002**	75	(34)	181	37	2 531
	Year ended 30 June 2003					
2 579	**Balance at 30 June 2002**	68	(42)	141	11	2 401
(191)	Loss	–	–	–	–	(191)
39	Revaluation of listed investments	–	–	39	–	–
24	Translation of foreign subsidiary	–	24	–	–	–
18	**Realisation of reserve on disposal** of Chambishi	–	18	–	–	–
26	Reversal of derivative instruments	–	–	–	26	–
17	Share options exercised	17	–	–	–	–
–	**Transfer to insurance contingency** reserve	–	–	–	2	(2)
(1)	Other	–	–	1	(2)	–
2 511	**Balance at 30 June 2003**	85	–	181	37	2 208

cash flow statement

Audited Year ended 30 June 2003 Rm		Unaudited Half-year ended 31 December 2003 Rm	Unaudited Half-year ended 31 December 2002 Rm	% change
	CASH FLOW FROM OPERATING ACTIVITIES			
5 009	Cash receipts from customers	2 128	2 399	
(4 160)	Cash paid to suppliers and employees	(1 812)	(2 201)	
849	**Cash generated from operations**	316	198	60
80	Interest received	12	46	
(180)	Interest paid	(38)	(113)	
3	Dividends received	–	1	
(21)	Dividends paid	(9)	(12)	
(101)	Taxation paid	(44)	(78)	
630	**Net cash inflow from operating activities**	237	42	464
	CASH FLOW FROM INVESTING ACTIVITIES			
(420)	Additions to fixed assets to maintain operations	(250)	(199)	
(132)	Additions to fixed assets to expand operations	(49)	(58)	
(67)	Net cash effect on sale of Chambishi	–	–	
252	Net proceeds from sale of ETC mine	–	–	
8	Proceeds on disposal of fixed assets	13		
–	Proceeds on disposal of investments	–	13	
564	Proceeds on dilution of interest in investment in subsidiaries	–	–	
205	**Net cash (outflow)/inflow from investing activities**	(286)	(244)	(17)
	CASH FLOW FROM FINANCING ACTIVITIES			
17	Increase in shareholder funding	43	7	514
11	Funding received from minority shareholders	37	8	362
–	Long-term borrowings raised		348	
(901)	Long-term borrowings repaid		(62)	
(476)	(Decrease)/increase in short-term borrowings	(77)	27	(385)
(1 349)	**Net cash inflow/(outflow) from financing activities**	3	328	(99)
(514)	**Net (decrease)/increase in cash and cash equivalents**	(46)	126	
779	Cash and cash equivalents at beginning of period	265	779	
265	**Cash and cash equivalents at end of period**	219	905	(76)
758	**Cash generated from operations: per share (cents)**	278	177	57

notes to financial statements

	HEADLINE EARNINGS			
(191)	(Loss)/Earnings per income statement	(1)	118	
–	– Surplus on disposal of mine properties – ETC mine	(4)	–	
	– Surplus on disposal of investments and mineral rights		(13)	
(261)				
649	– Loss on sale of Chambishi			
197		(5)	105	
4	– Taxation	4	–	
(4)	– Minority interest	–	–	
197	Headline earnings/(loss)	(1)	105	
103	Add non-hedge derivatives	184	–	
(59)	Less minority interest	(106)	–	
241	**Headline earning before unrealised non-hedge derivatives**	77	105	
	EXCEPTIONAL ITEMS			
–	Surplus on disposal of mine properties – ETC mine	4	–	
241	Surplus on disposal of Avgold Limited shares	–	–	
20	Surplus on disposal – other	–	13	
(649)	Loss on sale of Chambishi	–	–	
(388)	Exceptional items per income statement	4	13	
4	Taxation	(4)		
(4)	Minority interest	–		
(388)	Net exceptional items	–	13	

basis of preparation and accounting policies

The financial information for the half-year ended 31 December 2003 has been prepared adopting the same accounting policies used in the most recent annual financial statements which are in accordance with South African Statements of Generally Accepted Accounting Practice and International Financial Reporting Standards. The accounting policies are consistent with the year ended 30 June 2003.

These condensed financial statements are prepared in accordance with AC 127 – interim reporting, and are prepared on the historical cost basis as adjusted for financial instruments and investment properties. These are accounted for on the fair value, or amortised cost basis.

primary segmental information

Total	Rm	Precious metals	Ferrous metals	Nickel	Corporate and other
	Half-year ended 31 December 2003				
	Revenue				
2 004	External revenue	447	1 333	224	–
(1 681)	Cost of sales	(385)	(1 195)	(101)	–
(1)	**Contribution to earnings**	(58)	34	77	(54)
(1)	**Contribution to headline earnings**	(58)	34	77	(54)
77	**Contribution to headline earnings before unrealised non-hedge derivatives**	20	34	77	(54)
7 186	Consolidated total assets	2 644	3 867	250	425
2 278	Consolidated total liabilities	423	1 592	54	209
299	Capital expenditure	86	208	5	–
216	Amortisation and depreciation	127	81	8	–

commentary

strategic transformation update

Following a review of the strategic direction and future structure of Avmin, an announcement was made on 13 November 2003 which will result in the creation of the largest black controlled mining company in South Africa after a series of transactions between Avmin, African Rainbow Minerals & Exploration Investments (Proprietary) Limited and Harmony Gold Mining Company Limited ("Harmony").

On 23 March 2004 a circular containing details of the transactions and revised listing particulars was posted to shareholders. Subject to the requisite shareholder, regulatory and other approvals Avmin will change its name to African Rainbow Minerals Limited and the board, management and strategy will be reconstituted to reflect the new ethos of the Company.

group results

A major determinant of the financial performance during the six months was the rand/US dollar exchange rate, which averaged US$/R7,13 compared to the corresponding 2002 period's US$/R10,10. This represents a 29 per cent strengthening of the average exchange rate between the two periods. The stronger rand has affected Avmin's results in two ways, firstly by lowering revenue and income earned by Group operations, and secondly by lowering earnings as a result of a significant unrealised charge to the income statement from non-hedge derivatives resulting from the conversion of rand gold hedges to US$ gold hedges by Avgold. Shareholders were informed that the value of the rand would negatively affect results in the trading update issued on 27 November 2003.

The Group's revenue declined by 14 per cent to R2,0 billion (2002: R2,3 billion). Costs of production were, however, well contained during the period. Headline earnings before unrealised non-hedge derivatives weakened by 28 per cent to 67 cents per share (93 cents per share). Taking into account the AC133 adjustment of R184 million (Nil) a headline loss of R1 million was recorded.

A net cash flow from operating activities of R237 million (R42 million) was recorded for the period. This increase was primarily as a result of reduced cash demands relating to Chambishi and increased cash distribution from Nkomati. Outflows from investing activities were dominated by the continued heavy capital expenditure in ferrous metals, and totalled R299 million (R257 million). There was a net decrease in cash and cash equivalents of R46 million to R219 million at 31 December 2003.

The Group's net debt-to-total-equity ratio showed another significant improvement, declining to 11 per cent (36 per cent) when comparing the periods ended 31 December 2003 and 2002, whereas the ratio remained constant at 11 per cent as at 30 June and 31 December 2003.

Operationally, Avgold Limited's ("Avgold's") Target gold mine continues to perform well and during the six months exceeded its planned pro-rated annual production levels of 175 000 ounces of gold.

Shortly after the end of the half-year, Avmin acquired the remaining 25 per cent of the Nkomati joint venture from Anglo Operations Limited, a subsidiary of Anglo American plc. This acquisition provides Avmin with the strategic flexibility required to advance plans currently being considered for a significant expansion of Nkomati. A strong operational performance and robust US$ nickel price saw the mine's contribution to earnings increase from R57 million to R77 million.

safety, health and sustainable development

Management is pleased to announce that operations showed a significant decrease in reportable incidents compared to the previous corresponding period.

Avmin continues to proactively manage the Group's HIV/AIDS exposure by ongoing monitoring and management of the impact the pandemic may have on its businesses.

ferrous metals

Despite increased sales volumes for all products, earnings were substantially lower than the corresponding period of the previous year as cautioned in the trading update issued on 13 November 2003.

Assmang's products are priced principally in US dollars and the period under review has seen a significant strengthening of the rand with the average exchange rate realised on the group's export proceeds being R6,98 to the US dollar against R10,02 in the equivalent previous period. In the competitive markets in which the group's products trade, and like most other resource companies in South Africa at present, a change of this extent seriously affects profitability and was sufficient to completely negate the higher unit prices achieved in US dollars for ferro-alloys and the strong volume sales performances achieved in the group's products as summarised in the table below.

Assmang product sales:

Six months to:		31 December 2003	31 December 2002	% change
Manganese ore	(tons)	662 867	409 443	62
Iron ore	(tons)	2 693 824	2 259 433	10
Manganese alloys	(tons)	100 489	96 908	4
Charge chrome	(tons)	126 860	103 641	22

Assmang's revenue for the half-year ended 31 December 2003 declined by 1,4 per cent to R1 332,7 million (R1 351,2 million). Attributable earnings decreased by 97,0 per cent to R4,1 million (R137,7 million), equivalent to R1,15 per share (R38,75 per share). The tax charge for the period of R14,9 million is high in relation to profit before tax due to changes for the State's share of profit on the manganese mining operations and Secondary Tax on Companies.

Assmang continued its significant capital programme, spending R208,1 million (R139,6 million) during the period under review, of which R77,0 million was spent on its new shaft complex at the Nchwaning manganese mine. Production from this shaft is expected to commence during May 2004 and capital expenditure will be substantially completed by December 2004 thereby providing ore reserves for more than 20 years. The cost of the new shaft complex is estimated at R690 million. Planned production levels from the existing and new Nchwaning shaft complex will be adequate to satisfy customer demand taking account of rail and harbour logistical constraints.

Current enhancement projects include the completion of the Nchwaning shaft complex, the construction of an underground mine at Dwarsrivier Chrome Mine to replace the existing opencast mine and the development of additional reserves at the iron ore division.

Demand for the group's products remains buoyant and tonnages over the balance of the financial year are expected to approximate those of the period under review. US dollar prices for the group's products are also expected to be higher which, given a stable rand/US dollar exchange rate, could cause earnings to increase in the second half. Shareholders are however reminded that earnings performance will continue to be largely dependant upon the rand/US dollar exchange rate and, to a lesser extent, upon cost savings achieved by the operating divisions.

gold

Avgold's comparative results for the half-year ended 31 December 2002 include ETC. The sale of ETC in May 2003 combined with the lower average rand/ US dollar exchange rate of R7,13 (R10,12) resulted in a decrease in revenue to R446,9 million (R502,4 million).

Gold sold decreased marginally to 5 986kg (6 009kg), while the yield increased significantly to 11,08g/t (8,13g/t) as a result of higher gold grades mined from areas identified as part of the redesigned mining plan – based on rock mechanics design criteria. These grades (11,08 g/t) will reduce in future in line with this mining plan. Cash costs decreased 25 per cent to R43 461/kg (R57 951/kg). The increase in operating profit to R56,8 million (R49,6 million), despite the lower revenue, reflects the efficiencies of the mechanised mining methods employed at Target. Capital expenditure increased marginally to R47,9 million (R46,5 million).

Avgold operating results:

Six months to:		31 December 2003	31 December 2002*	% change
Gold sold	Kg	5 986	6 009	–
Cash costs	R/kg	43 461	57 951	(25)
	US$/oz	190	178	7
Yield	g/t	11,08	8,13	36

*Includes ETC

Following the announcement on 13 November 2003 regarding Avmin's proposed sale of its stake in Avgold to Harmony, a joint team has been formed to refine plans for the exploitation of the northern Free State resources.

nickel

Avmin has acquired the 25 per cent of Nkomati that it did not already own from Anglo Operations Limited for R260 million with effect from 1 February 2004. The transaction values Nkomati at just over R1 billion and will be value enhancing, allowing for improved cash flow into Avmin.

Operationally, Nkomati recorded another strong performance for the half year to 31 December 2003. Ore treated increased 21 per cent to 169 000 tons (140 000 tons), producing 28 700 tons (28 900 tons) of concentrates with average grades of 10,0 per cent (10,2 per cent) for nickel and 6,0 per cent (6,5 per cent) for copper.

Nkomati sales volumes:

Six months to:		31 December 2003	31 December 2002	% change
Nickel	(tons)	2 440	2 620	(7)
Copper	(tons)	1 590	1 670	(5)
Cobalt	(tons)	28	33	(15)
PGMs	(ounces)	19 800	19 040	4

Excluding nickel, other metals contributed 24 per cent of the mine's total revenue. The mine remains cost competitive with a nickel production cost, net of by-product credits, of US$1,15/lb, while the average nickel price over the period amounted to US$4,94/lb (US$3,16/lb).

platinum

The Two Rivers project team, currently assessing the viability of a new platinum group metals venture in a partnership between Avmin and Impala Platinum Holdings Limited, has been given board approval to proceed with small-scale trial mining. Full project release is conditional on the outcome of the current programme and the outlook of the rand.

dividends

In light of the Company's financial performance, the board does not consider it appropriate to declare a dividend for the six months ended 31 December 2003.

future prospects

Demand for the Group's products is at present strong and is expected to remain so. However, volatility of the Rand/US dollar exchange rate will affect the results significantly.

directorate changes

Mr PC Pienaar, a non-executive director, resigned from the board on 4 February 2004.

R P Menell
Chairman

J C Steenkamp
Chief Executive Officer

Johannesburg
23 March 2004

directorate

Executive directors: R P Menell *(chairman)*, J C Steenkamp *(chief executive officer)*, D N Campbell • **Non-executive directors:** D E Jowell, K W Maxwell, J R McAlpine, PT Mosuepe, D N Murray, M Z Nkosi, Z B Swanepoel • **Group company secretary:** R H Phillips • **Anglovaal Mining Limited ("Avmin" or the "Company").**
Registration Number 1933/004590/06, incorporated in the Republic of South Africa. JSE Securities Exchange, South Africa • **Share codes: AIN** • **ISIN: ZAE000017141 and London Stock Exchange: AGM** • **Registered Office:** 56 Main Street, Johannesburg 2001, PO Box 62379, Marshalltown 2107, South Africa
For further information: Ebrahim Takolia, General Manager Investor Relations, Tel: (+27 11) 634 8333, e-mail ebrahim@avmin.co.za.

visit our investor relations site: **www.avmin.co.za**

ANGLOVAAL MINING
AVMIN

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25 March 2004

The Office of International Corporate Finance
Securities and Exchange Commission
450 Fifth Street NW
Mail Stop 3-2
Washington DC 20549
United States of America

Dear Sirs

SALIENT DATES IN RESPECT OF THE CHANGE OF NAME

We enclose a copy of the above announcement dated 24 March 2004 published in the press today.

Yours faithfully
For and on behalf of
Anglovaal Mining Limited

RH Phillips
Group Company Secretary

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ANGLOVAAL MINING

AVMIN

Anglovaal Mining Limited

(Incorporated in the Republic of South Africa)
(Registration number 1933/004580/06)
Share code: AIN ISIN: ZAE000017141
("Avmin")

SALIENT DATES IN RESPECT OF THE CHANGE OF NAME

Shareholders of Avmin are referred to the detailed joint cautionary announcement dated 13 November 2003 regarding a range of indivisible transactions involving Avmin, Harmony Gold Mining Company Limited and African Rainbow Minerals & Exploration Investments (Proprietary) Limited.

In this announcement shareholders were advised that it is the intention of Avmin to change its name to African Rainbow Minerals Limited. The salient dates for the implementation of the transactions including the change in name and an increase in the authorised share capital of Avmin are set out below:

	2004
Circular and notice of general meeting posted to Avmin shareholders	Tuesday, 23 March
Last date for receipt of forms of proxy for the general meeting by not later than 10:00 (South African time)	Tuesday, 13 April
General meeting to be held at 10:00 (South African time)	Thursday, 15 April
Results of general meeting released on the Stock Exchange News Service ("SENS") and the London Stock Exchange plc	Thursday, 15 April
Results of general meeting published in the South African press	Friday, 16 April
Last day to trade under the old name "Anglovaal Mining Limited"	Thursday, 22 April
Name change effected and commencement of trade under the new name "African Rainbow Minerals Limited"	Friday, 23 April
Record date for the change of name	Friday, 30 April
New shares listed on the JSE Securities Exchange, South Africa	Monday, 3 May
New share certificates reflecting the change of name posted by registered post or first class post in the United Kingdom to Avmin shareholders who have surrendered their documents of title on or before the close of business on the record date (see note 3)	Monday, 3 May
Dematerialised shareholders' safe custody accounts updated with the new name by their Central Securities Depository Participant or broker	Monday, 3 May

Notes:

1. All times shown in this announcement are South African times.
2. These dates and times are subject to amendment. Any amendments to the dates and times will be announced on the SENS, released on the London Stock Exchange plc and published in the South African press.
3. Avmin shareholders who surrender their existing documents of title after the record date, will have their new share certificates mailed within five business days of receipt thereof by the transfer secretaries, by registered post or first class post in the United Kingdom, at the risk of the shareholder concerned.

Johannesburg
24 March 2004

Financial adviser and sponsor to Avmin

Deutsche Securities
Member of the Deutsche Bank Group

INCE

THIS CIRCULAR IS IMPORTANT AND REQUIRES

If you are in any doubt as to the action you should ...anker, broker, sponsor, legal adviser, accountant or other

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Action required

1. If you have disposed of all of your shares in Ang... proxy (blue) and surrender (pink), should be han... whom the disposal was effected. ...together with the attached forms of ...such shares, or the broker, banker, or other agent through
2. If you hold certificated Avmin shares or hold dematerialised Avmin shares in your **own name** and are unable to attend the general meeting of Avmin shareholders, which is to be held at the registered office of Avmin, 56 Main Street, Johannesburg at 10:00 (South African time) on 15 April 2004 ("the general meeting") and wish to be represented thereat, you must complete and return the attached form of proxy (blue) in accordance with the instructions therein, and lodge it with the transfer secretaries of Avmin, whose details are contained on page 1, to be received by not later than 10:00 (South African time) on 13 April 2004.
3. If you do not hold your dematerialised Avmin shares in your own name, you must timeously provide your CSDP or broker with your voting instructions in terms of the custody agreement entered into with your CSDP or broker. If you wish to attend the general meeting in person, then you will need to request your CSDP or broker to provide you with the necessary authority to attend and vote your shares.
4. If you are a certificated shareholder and the special resolution relating to the change of name of Avmin is approved by Avmin shareholders, you must complete the attached form of surrender (pink) and send it, together with your documents of title, to reach the transfer secretaries before the close of business on 30 April 2004.

ANGLOVAAL ● MINING

AVMIN

Anglovaal Mining Limited

(Incorporated in the Republic of South Africa)
(Registration number 1933/004580/06)
Share code: AIN
ISIN: ZAE000017141
("Avmin" or "the Company")

CIRCULAR TO AVMIN SHAREHOLDERS

relating to

- **the disposal, in terms of section 228 of the Companies Act, 1973 (Act 61 of 1973), as amended, by Avmin of its entire shareholding in Avgold Limited ("Avgold") to Harmony Gold Mining Company Limited ("Harmony");**
- **the acquisition by Avmin from African Rainbow Minerals & Exploration Investments (Proprietary) Limited ("ARMI"), of its 13,6% shareholding in Harmony, its 100,0% shareholding in African Rainbow Minerals Platinum (Proprietary) Limited ("ARM Platinum") (which has a 41,5% effective interest in the Modikwa Joint Venture) and loans totalling approximately R509 million owed to ARMI by ARM Mining Consortium Limited;**
- **the acquisition by Avmin through what will be its wholly-owned subsidiary, ARM Platinum, of the Kalplats platinum discovery and associated mineral rights from Kalahari Goldridge Mining Company Limited;**
- **the combination of Harmony's shareholding in Avmin with ARMI's shareholding in Avmin, through a voting agreement;**
- **a change in control of Avmin and waiver by Avmin shareholders of the requirement for a mandatory offer;**
- **a change of Avmin's name to African Rainbow Minerals Limited; and**
- **an increase in the authorised share capital of Avmin;**

and incorporating

- **a notice of general meeting of Avmin shareholders;**
- **a form of proxy (to be completed by certificated shareholders and dematerialised shareholders with "own name" registration only);**
- **a form of surrender (to be completed by certificated shareholders only); and**
- **the revised listing particulars of Avmin (to be renamed African Rainbow Minerals Limited).**

Date of issue: 23 March 2004

This circular is only available in English. Copies may be obtained from the registered office of Avmin, the United Kingdom secretaries, the financial adviser and sponsor whose addresses are set out in the "Corporate information" section of this circular, as well as from all other broking members of the JSE Securities Exchange, South Africa.

Financial adviser and sponsor

Deutsche Securities
Member of the Deutsche Bank Group

Independent adviser

Investec
Corporate Finance
Investec Bank Limited
(Registration number 1969/004763/06)

Reporting accountants to Avmin

ERNST & YOUNG

Attorneys

DENEYS | REITZ
ATTORNEYS

Deneys Reitz Inc.
1984/003385/21

Technical adviser

SRK Consulting
Engineers and Scientists

Steffen, Robertson and Kirsten (South Africa) (Pty) Ltd
(Registration number 1995/012890/07)

Reporting accountants to ARMI

PRICEWATERHOUSECOOPERS

PricewaterhouseCoopers Inc
Chartered Accountants (SA)
Registered Accountants and Auditors
(Registration no 1998/012055/21)

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United Kingdom secretaries

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RICK MENELL
CHAIRMAN



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23 March 2004

TO OUR SHAREHOLDERS

Attached is a comprehensive circular which outlines a series of transactions that will change fundamentally the nature of our Company and achieve the clear objectives that we set ourselves in September 2003:

- To establish Avmin as a fully-empowered mining company under the new Mining Charter, thus opening up new and exciting growth opportunities in South Africa and elsewhere in Africa, and
- To build a stronger and larger financial base that will enable Avmin to support new mining investments, in particular our large in-house projects such as the Nkomati nickel expansion.

The circular provides thorough independent reviews of the valuation basis for the transactions. These support the unanimous recommendation by the Avmin Board to our shareholders to vote for all the key decisions necessary to achieve our objectives, namely:

- The purchase of Harmony shares and the Modikwa mine interest from African Rainbow Minerals & Exploration Investments (ARMI),
- The sale of Avgold to Harmony for Harmony shares,
- The purchase of Kalplats from Harmony, and
- Permission for ARMI, or Patrice Motsepe's group, to control 62% of the Company without making a bid to buy out minorities.

I wholeheartedly join in that recommendation because this opens up the best road for growth and the creation of new value for shareholders, employees and for South Africa.

In summary, the transactions involve buying from the Patrice Motsepe group its 13,6% shareholding in Harmony Gold and its 41,5% interest in the Modikwa platinum mine. Avmin will pay the consideration of over R4 billion using 87,75 million Avmin shares, indicating a price of R50,00 per share, which is a healthy premium over our current and historical market share price.

At the same time we propose to sell our 42% interest in Avgold to Harmony for Harmony shares, at the ratio of one Harmony share for each 10 Avgold shares. This gives a value of over R10,00 per share for our Avgold holding, which we regard as a very acceptable price at which to broaden our gold investment into a much larger and stronger gold mining company. Our Board believes that the terms of the exchange fully recognise the value of our Target gold mine and the potential of its large undeveloped gold resources.

ANGLOVAAL MINING LIMITED: REG NO 1933/004580/06 . INCORPORATED IN THE REPUBLIC OF SOUTH AFRICA
DIRECTORS: RP MENELL (CHAIRMAN) . JC STEENKAMP (CHIEF EXECUTIVE OFFICER) . DN CAMPBELL . DE JOWELL . KW MAXWELL . JR MCALPINE . PT MOTSEPE . DN MURRAY . DR MZ NKOSI
ZB SWANEPOEL

A smaller part of the transaction is for Avmin to purchase Harmony's Kalplats platinum prospect for two million Avmin shares, providing longer-term potential to our platinum portfolio, which will also include 41,5% of Modikwa platinum mine, 55% of the Two Rivers platinum project and 100% of the Nkomati nickel-platinum mine. Modikwa is a newly capitalised mine with a very large undeveloped platinum group metals resource.

As a result of these linked transactions, Patrice Motsepe will be appointed Avmin's Chairman and his group will become the controlling shareholder of Avmin, with a direct equity holding of 42%, and a pooled interest under Motsepe control of 62%, which includes the residual 20% shareholding held by Harmony. In turn, the transactions result in Avmin becoming the largest shareholder of Harmony with a 22% interest. This will dilute to 20% once, and pending Avgold shareholder approval, we achieve the proposed scheme of arrangement to merge Avgold with Harmony, but we will remain a key component of Harmony's achievement of empowerment to meet fully Mining Charter requirements. This requires that we retain a shareholding of at least 15% in the enlarged Harmony.

We believe that control of Avmin by the Motsepe group achieves our first objective. Therefore, I, together with the Avmin Board, recommend that shareholders vote to allow this change of control without the requirement for the Motsepe group to make a bid to buy all Avmin shares. We have been presented with a unique chance to benefit together from the opportunities that will undoubtedly be available to the largest fully-empowered and diversified South African mining company.

Avmin will nearly double in size through our acquisitions of Harmony shares and the Modikwa interest, and Avmin will benefit from a balanced portfolio of assets in terms of commodity diversification, as well as operating entities and new projects.

Furthermore, we will no longer need to support Avgold's funding for growth, since Harmony is fully capable of funding its growth opportunities, including Target, without our assistance. Therefore we can now focus the financing power of a much larger balance sheet on developing nickel, platinum and ferrous metal projects within the group, and making appropriate acquisitions in chosen sectors. Our second objective will therefore be met.

We are committed to embracing the positive changes in our nation as we build an inclusive democracy. We aim to lead the way as a progressive, profitable and fast-growing South African mining company. It is in the interests of all stakeholders that we be recognised and rewarded for adapting successfully to a challenging environment for mining investment.

As a symbol of this will to adapt and change we have decided, together with our prospective new controlling shareholder, to change the name of our Company to African Rainbow Minerals Ltd, or ARM. Clearly this is a sadness for those of us with long associations with a proud name. But it is a strong demonstration of our wish to be an important part of South Africa's future. The ARM name already represents a magnificent new South African mining success story, and we are proud to present it as the flag for our bigger and better enterprise.



RICK MENELL
Chairman and shareholder

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SALIENT DATES AND TIMES

	2004
Circular and notice of general meeting posted to Avmin shareholders	Tuesday, 23 March
Last date for receipt of forms of proxy for the general meeting by not later than 10:00 *(South African time)*	*Tuesday, 13 April*
General meeting to be held at 10:00 (South African time)	Thursday, 15 April
Results of general meeting released on SENS and the LSE	Thursday, 15 April
Results of general meeting published in the South African press	Friday, 16 April
Last day to trade under the old name "Anglovaal Mining Limited"	Thursday, 22 April
Name change effected and commencement of trade under the new name "African Rainbow Minerals Limited"	Friday, 23 April
Record date for the change of name	Friday, 30 April
New shares listed on the JSE	Monday, 3 May
New share certificates reflecting the change of name posted by registered post or first class post in the United Kingdom to Avmin shareholders who have surrendered their documents of title on or before the close of business on the record date (see note 5)	Monday, 3 May
Dematerialised shareholders' safe custody accounts updated with the new name by their CSDP or broker	Monday, 3 May

Notes:

1. The definitions commencing on page 5 apply to these salient dates and times.
2. All times shown in this circular are South African times.
3. These dates and times are subject to amendment. Any amendments to the dates and times will be announced on SENS, released on the LSE and published in the South African press.
4. Avmin shareholders who surrender their existing documents of title after the record date, will have their new share certificates mailed within five business days of receipt thereof by the transfer secretaries, by registered post or first class post in the United Kingdom, at the risk of the shareholder concerned.

DEFINITIONS

Throughout this circular and the annexures hereto, including the notice of general meeting, the forms of proxy and surrender and the revised listing particulars, unless otherwise indicated, the words in the first column have the meanings stated opposite them in the second column, words in the singular include the plural, words importing one gender include the other genders and references to a person include references to a juristic person and associations of persons and *vice versa*.

"Act"	the Companies Act, 1973 (Act 61 of 1973), as amended;
"Anglo American Platinum"	Anglo American Platinum Corporation Limited (registration number 1946/022452/06), a public company incorporated in South Africa;
"ARM Consortium"	ARM Mining Consortium Limited (registration number 2001/001997/06), a public company incorporated in South Africa, which has a 50,0% interest in the Modikwa Joint Venture;
"ARM Consortium Debt"	ARMI's right in and to the debt owed by ARM Consortium to ARMI for the shareholder loans made by ARMI to ARM Consortium from time to time and which at 31 December 2003 amounted to R549 218 403;
"the ARM Control Structure"	the structure in terms of which ARMI and Harmony agree the basis on which Harmony's shares in Avmin will be voted by ARMI;
"ARMgold"	African Rainbow Minerals Gold Limited (registration number 1997/015869/06), a public company incorporated in South Africa and merged with Harmony with effect from 22 September 2003;
"ARMI"	African Rainbow Minerals & Exploration Investments (Proprietary) Limited (registration number 1997/020158/07), a private company incorporated in South Africa;
"ARMI Group"	ARMI, ARM Platinum and ARM Consortium;
"ARM Platinum"	African Rainbow Minerals Platinum (Proprietary) Limited (registration number 1999/018332/07), a private company incorporated in South Africa, which holds 83% of the issued shares in ARM Consortium;
"ARM Platinum Group"	ARM Platinum and ARM Consortium;
"the ARM voting agreement"	the agreement between ARMI, Harmony and Clidet No.454 (Proprietary) Limited, dated 16 February 2004, governing the terms and conditions of the ARM Control Structure;
"Assmang"	Assmang Limited (registration number 1935/007343/06), a public company incorporated in South Africa and a subsidiary of Avmin;
"Avgold"	Avgold Limited (registration number 1990/007025/06), incorporated in South Africa and listed on the JSE, the Euronext Brussels, in the form of International Depository Receipts, and the New York Stock Exchange, Inc. in the form of American Depository Receipts;
"the Avgold Share Exchange"	the exchange between Avmin and Harmony, whereby Avmin exchanges its 286 305 263 Avgold shares for 28 630 526 new Harmony shares in terms of the Avgold share exchange agreement;
"the Avgold share exchange agreement"	the share exchange agreement between Avmin and Harmony, dated 16 February 2004, governing the terms and conditions of the Avgold Share Exchange;
"Avgold shares"	ordinary shares of one cent each in the ordinary share capital of Avgold;

"Avmin" or "the Company"	Anglovaal Mining Limited (registration number 1933/004580/06), a public company listed on the JSE and the LSE and to be renamed African Rainbow Minerals Limited ("ARM");
"the Avmin Acquisitions"	the acquisition by Avmin of ARMI's holding of 35 002 396 Harmony shares, ARMI's holding of all the issued shares in ARM Platinum, which has a 41,5% effective interest in the Modikwa Joint Venture and the ARM Consortium Debt;
"the Avmin acquisitions agreement"	the acquisition and disposal agreement between ARMI and Avmin, dated 16 February 2004 and as amended by an addendum dated 15 March 2004, governing the terms and conditions of the Avmin Acquisitions;
"Avmin Group"	Avmin and its subsidiaries;
"Avmin shareholders"	holders of Avmin shares;
"Avmin shares"	ordinary shares of five cents each in the ordinary share capital of Avmin;
"business day"	any day other than a Saturday, Sunday or official public holiday in South Africa;
"certificated shareholders"	shareholders who hold shares, represented by a share certificate, which have not been surrendered for dematerialisation in terms of the requirements of STRATE;
"this circular"	this document, comprising a circular to Avmin shareholders and all the annexures and attachments hereto, including a notice of general meeting and the revised listing particulars of Avmin;
"Code"	Securities Regulation Code on Take-overs and Mergers and Rules of the SRP;
"common monetary area"	South Africa, the Republic of Namibia and the Kingdoms of Lesotho and Swaziland;
"Competition Authorities"	the authorities established in terms of the Competitions Act, 1998 (Act 89 of 1998), as amended;
"CSDP"	Central Securities Depository Participant;
"dematerialisation"	the process whereby documents of title to shares in a tangible form are dematerialised into electronic records for purposes of STRATE;
"dematerialised shareholder"	shareholders who hold shares which have been dematerialised in terms of the requirements of STRATE;
"documents of title"	share certificates and/or certified transfer deeds and/or balance receipts or any other acceptable documents of title to shares;
"general meeting"	the general meeting of Avmin shareholders to be held at 10:00 (South African time) on 15 April 2004, at the registered office of Avmin;
"Harmony"	Harmony Gold Mining Company Limited (registration number 1950/038232/06), incorporated in South Africa and listed on the JSE, the LSE, Euronext Paris, is quoted on Euronext Brussels, in the form of International Depository Receipts, the New York Stock Exchange, Inc. in the form of American Depository Receipts and has an over-the-counter facility in Berlin;
"Harmony Group"	Harmony and its subsidiaries;
"Harmony shares"	ordinary shares of 50 cents each in the ordinary share capital of Harmony;
"JIBAR"	Johannesburg Interbank Agreed Rate;
"JSE"	JSE Securities Exchange, South Africa;

"Kalgold"	Kalahari Goldridge Mining Company Limited (registration number 1982/002818/06), a public company incorporated in South Africa;
"Kalplats"	a platinum exploration project of Kalgold, which comprises certain platinum discovery and associated mineral rights;
"the Kalplats Acquisition"	the acquisition by Avmin through what will be its wholly-owned subsidiary, ARM Platinum, from Kalgold of Kalplats;
"the Kalplats acquisition agreement"	the notarial sale agreement between Kalgold, Harmony, ARM Platinum and Avmin, dated 16 February 2004, governing the terms and conditions of the Kalplats Acquisition;
"last practicable date"	the last practicable date prior to the finalisation of this circular, being 27 February 2004;
"LSE"	London Stock Exchange plc;
"the Modikwa Joint Venture"	a joint venture between ARM Consortium and Rustenburg Platinum in respect of the Modikwa Platinum Mine;
"Nkomati"	a division of Avmin which through the Nkomati nickel mine produces nickel, copper, cobalt and PGMs by-products;
"PGM"	platinum group metals;
"Rustenburg Platinum"	Rustenburg Platinum Mines Limited (registration number 1931/003380/06), a public company incorporated in South Africa which is a wholly-owned subsidiary of Anglo American Platinum;
"scheme of arrangement"	a scheme of arrangement in terms of section 311 of the Act, proposed by Harmony between Avgold and its members, by means of which the requirement for Harmony to make a mandatory offer to Avgold minority shareholders (to acquire their remaining approximately 46,4% of the issued shares in Avgold) would be effectively fulfilled;
"SENS"	the Securities Exchange News Service of the JSE;
"South Africa"	the Republic of South Africa;
"SRK"	Steffen, Robertson and Kirsten (South Africa) (Proprietary) Limited (registration number 1995/012890/07), a private company incorporated in South Africa;
"SRP"	the Securities Regulation Panel, established in terms of section 440B of the Act;
"STC"	Secondary Tax on Companies, levied in terms of the Income Tax Act, 1962 (Act 58 of 1962), as amended;
"STRATE"	STRATE Limited (registration number 1998/022242/06), a clearing and settlement system for share transactions to be settled and the transfer of ownership to be recorded electronically by a registered central securities depository;
"the Transaction"	collectively, the Avgold Share Exchange, the Avmin Acquisitions, the Kalplats Acquisition, the ARM Control Structure and the waiver by Avmin shareholders of the requirement for a mandatory offer;
"transfer secretaries"	Computershare Limited (registration number 2000/006082/06) in South Africa and Capita IRG plc (registration number 2605568), trading as Capita Registrars, acting as the Company's United Kingdom share registrars; and
"Two Rivers"	Two Rivers Platinum (Proprietary) Limited (registration number 2001/007354/07), a private company incorporated in South Africa, which is a subsidiary of Avmin.

ANGLOVAAL ● MINING

Anglovaal Mining Limited

(Incorporated in the Republic of South Africa)
(Registration number 1933/004580/06)
Share code: AIN
ISIN: ZAE000017141

Directors

R P Menell *(Chairman)*
J C Steenkamp *(Chief executive officer)*
D N Campbell
D E Jowell*
K W Maxwell*
J R McAlpine*
P T Motsepe*
D N Murray*
M Z Nkosi*
Z B Swanepoel*

*Non-executive

CIRCULAR TO AVMIN SHAREHOLDERS

1. INTRODUCTION

Avmin shareholders are referred to the joint Avmin, ARMI and Harmony announcements dated 13 November 2003, 19 December 2003 and 17 February 2004, regarding the Transaction.

The purpose of this circular is to provide Avmin shareholders with information regarding the Transaction, the change of name of Avmin and the increase in authorised share capital of Avmin to enable Avmin shareholders to consider and, if deemed fit, approve the ordinary and special resolutions contained in the notice of general meeting.

2. RATIONALE AND PROPOSED NEW STRUCTURE

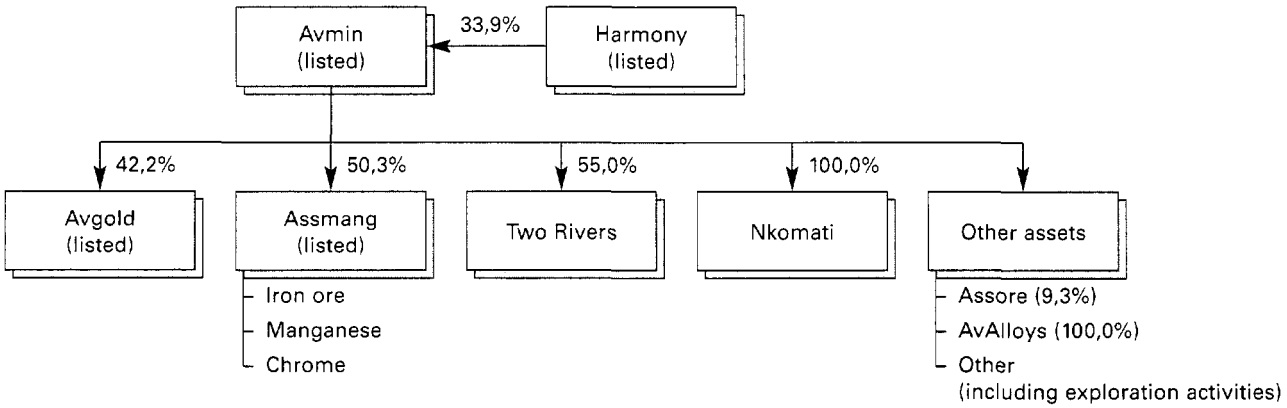
The Avmin board of directors has completed its review of the strategic direction and future structure of the Avmin Group referred to at the time of announcing Avmin's provisional results on 11 September 2003. The two key objectives of the review were to:

- establish Avmin as a fully empowered company, utilising the Avmin Group's resources to become a preferred partner-of-choice for new South African mining ventures;
- build a stronger financial base for Avmin to support new mining investments, in particular its large in-house projects, such as the Nkomati nickel mine expansion.

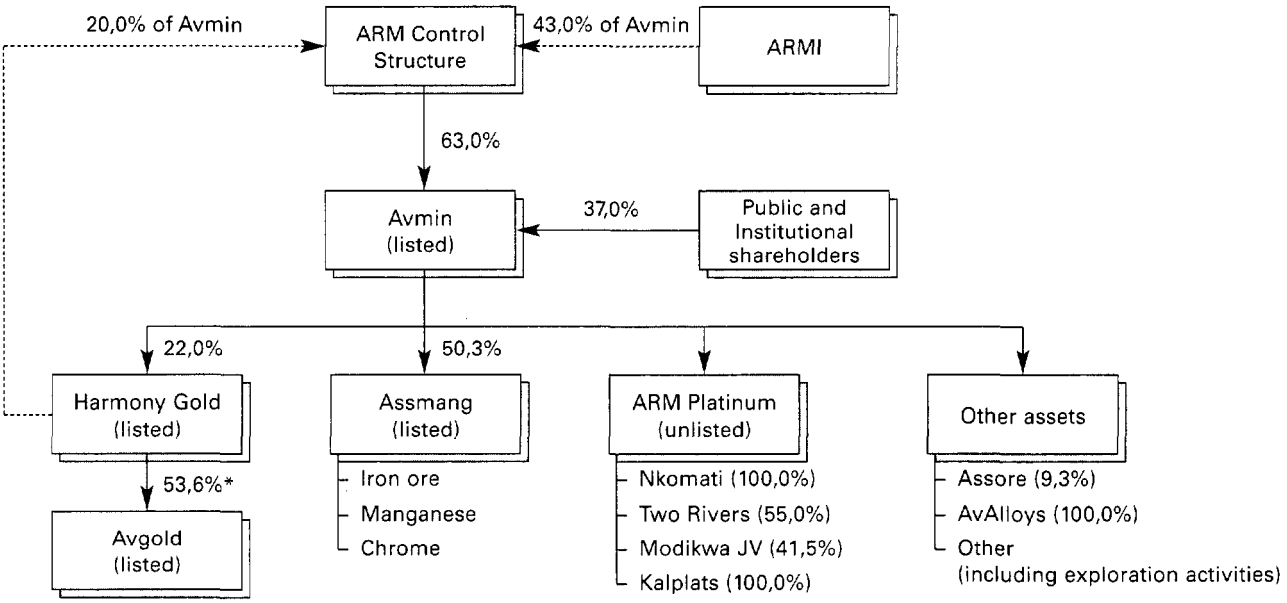
The Transaction will result in ARMI becoming the effective controlling shareholder of a larger, diversified and empowered Avmin, with significant holdings in gold, PGMs, nickel and ferrous metal assets. As a consequence, Avmin will be well-positioned to secure adequate funding for its existing projects and to participate in further growth opportunities that the South African mining sector offers, taking advantage of its black economic empowerment controlled status.

The Transaction is indivisible and no component part of the Transaction may proceed and be implemented except in conjunction with all the other component parts.

The current Avmin Group structure is as follows:



The Avmin Group structure, post the Transaction, will be as follows:



*Pre the mandatory offer to Avgold minority shareholders.

Gold asset portfolio

Avmin's gold assets will comprise a holding of 22,0% in Harmony which, in turn, will include a 53,6% holding in Avgold (comprising approximately 42,2% from Avmin plus Harmony's current holding of approximately 11,4%, but prior to any scheme of arrangement being proposed by Harmony to the Avgold minority shareholders), consolidating Harmony's position as the fifth largest gold producer globally with 4,3 million ounces of production per annum with approximately 470 million resource ounces.

Harmony has over the past three years upgraded its production base with a range of quality enhancing acquisitions. Furthermore, Harmony is currently developing five mines that should result in Harmony's underground recovery grade improving by some 13,0% over the next four years. The acquisition of 286 305 263 shares in Avgold, which operates the Target gold mine, is expected to further enhance the overall quality of Harmony's production base.

Platinum Group Metals (PGM) portfolio

The Avmin PGM portfolio will comprise assets that have the potential of achieving significant attributable production from the 41,5% effective interest in the Modikwa Joint Venture, the 55,0% holding in Two Rivers and the 100,0% interest in Kalplats. Also forming part of Avmin's PGM portfolio is the Nkomati nickel mine, that produces significant PGM by-products and is considering an expansion project.

Ferrous metals asset portfolio

Avmin's ferrous metals asset portfolio comprises the iron ore, manganese and chrome businesses held through its existing 50,3% holding in Assmang.

Assmang's product sales for the year to 30 June 2003 were:

Metric tons	'000
Iron ore	5 263
Manganese ore (excluding deliveries to the Cato Ridge alloy operation)	1 171
Manganese alloys	206
Charge chrome	244
Chrome ore (excluding deliveries to Machadodorp alloy operation)	20

3. PROSPECTS FOR THE NEW AVMIN GROUP

The prospects for the new Avmin Group are set out in paragraph 2 of the revised listing particulars.

4. THE AVGOLD SHARE EXCHANGE

4.1 Information on Avgold

4.1.1 Background and nature of business

Avgold was incorporated in South Africa on 23 November 1990. Avgold has its primary listing on the JSE with listings on Euronext Brussels in the form of International Depository Receipts and the New York Stock Exchange, Inc. in the form of American Depositary Receipts. The business of Avgold is to explore for, develop and operate gold mines. Following the sale of the ETC division, situated in the Mpumalanga province, on 15 June 2003, Avgold's assets now comprise the Target gold mine situated in the Free State province, which it operates, and a significant unexploited resource north of Target.

4.1.2 Historical financial information

The following publicly available financial information on Avgold is set out in Annexure 1 and Annexure 2:

- audited income statements, cash flow statements and statements of changes in equity for the three financial years ended 30 June 2001, 2002 and 2003 and the unaudited interim results for 31 December 2003;
- audited balance sheets at 30 June 2001, 2002 and 2003 and unaudited balance sheet at 31 December 2003;
- accounting policies; and
- notes to the financial statements.

A competent person's report containing information on the mining assets of Harmony including Avgold is set out in Appendix 5 to the revised listing particulars.

4.1.3 Material loans

The loans raised from a syndicate of banks to fund the completion of the Target gold mine were repaid in full on 30 June 2003. This was achieved by utilising existing cash resources, which included the proceeds from the sale of ETC. The balance of the funds were sourced by drawing down on a R200 million unsecured general term banking facility concluded with Standard Corporate and Merchant Bank.

4.1.4 Material contracts

Save for the Avgold share exchange agreement and the agreement in respect of the sale of ETC to Barberton Mines Limited on 15 June 2003, Avgold has not entered into any material contracts, other than in the ordinary course of business, during the two-year period immediately preceding the date of this circular.

The loans that were repaid on 30 June 2003 were secured in part by rand gold hedges. On repayment of this loan, the rand gold hedge book was restructured into dollar gold commodity hedges by the purchase of rand/dollar forward exchange contracts.

4.1.5 Material changes

There have been no material changes in the financial or trading position of Avgold, other than as disclosed in this circular, between the date of the last unaudited interim results of Avgold, being 31 December 2003, and the date of this circular.

4.1.6 Litigation statement

There are no legal or arbitration proceedings that are pending or threatened of which Avgold is aware which may have, or have had during the 12-month period preceding the date of this circular, a material effect on the financial position of Avgold.

4.2 Terms of the Avgold Share Exchange

4.2.1 Terms and consideration

In terms of the Avgold share exchange agreement, Avmin will, subject to the suspensive conditions set out in paragraph 4.2.4 below, exchange its entire holding of 286 305 263 ordinary shares in Avgold for 28 630 526 new Harmony shares, with effect from the closing date. This represents a ratio of one Harmony share for every 10 Avgold shares. The value attributable to the new Harmony shares is R2 893 687 263.

4.2.2 Closing date

The date on which all the matters required to be completed in terms of the closing clause are duly completed, which date is expected to be not later than 30 April 2004.

4.2.3 Warranties

In terms of the Avgold share exchange agreement, Avmin has given to Harmony limited warranties as to ownership and title and Harmony has given to Avmin limited warranties as to its ability to allot and issue (the new Harmony) shares, which are normal in a transaction of this nature.

4.2.4 Suspensive conditions

The Avgold Share Exchange is subject to:

- the Avmin acquisitions agreement, the Kalplats acquisition agreement and the ARM voting agreement becoming unconditional;
- the passing of the resolutions set out in the attached notice of general meeting (to enable the terms and conditions of the Avgold share exchange agreement to be put into effect);
- the approval of the Competition Authorities; and
- the approval of contractual third parties to the proposed change of control of Avgold.

5. THE AVMIN ACQUISITIONS

5.1 Information on Harmony

5.1.1 Background and nature of business

Harmony was incorporated in South Africa on 25 August 1950. The primary listing of Harmony's shares is on the JSE. The Harmony shares are also listed on the LSE and Euronext Paris and is quoted on Euronext Brussels, in the form of International Depository Receipts, and the NewYork Stock Exchange, Inc. in the form of American Depository Receipts and has an over-the-counter facility in Berlin. Harmony's registered address is Remaining Extent of Portion 3 of the farm Harmony 222, Private Road, Glen Harmony, Virginia, Free State province.

Harmony is a gold miner and producer with an international diversified portfolio of gold mining projects in South Africa, Australia and Papua New Guinea. Harmony adopts focused operational and management philosophies throughout the organisation. Its growth strategy is focused on building a leading international gold mining company through acquisitions, organic growth and focused exploration. The bulk of its assets are located in the Witwatersrand basin of South Africa. The deep level gold mines located in this basin include those in the Free State province, the Evander gold mine in the Mpumalanga province, the Randfontein and Elandskraal mines on the West Rand goldfields in the Gauteng province and the Orkney operations in the North West province. In May 2003, Harmony and ARMgold, through a joint venture company, acquired 38 789 761 Avmin shares and in July 2003, Harmony acquired 77 540 830 Avgold shares.

Harmony's international operations are held under Harmony Gold (Australia) (Proprietary) Limited and comprise the wholly-owned New Hampton Goldfields Limited and Hill 50 Limited, a 31,8% interest in the Bendigo Mining NL operation and an 87,0% shareholding in Abelle Limited.

5.1.2 Historical financial information

The following publicly available financial information on Harmony is set out in Annexure 6 and Annexure 7:

- audited income statements, cash flow statements and statements of changes in equity for the three financial years ended 30 June 2001, 2002 and 2003 and unaudited quarterly results for 31 December 2003;
- audited balance sheets at 30 June 2001, 2002 and 2003 and unaudited balance sheet at 31 December 2003;
- accounting policies; and
- notes to the financial statements.

Pro forma financial statements for the Harmony/ARMgold merged entity and a reporting accountants' report are set out in Annexure 8 and Annexure 9, respectively.

A competent person's report containing information on the mining assets of Harmony including Avgold, is set out in Appendix 5 to the revised listing particulars.

5.1.3 Harmony share price history

A table setting out the price history of Harmony shares on the JSE has been included in Annexure 19.

5.1.4 Material loans

The details of material loans to the Harmony Group are reflected in Annexure 10.

5.1.5 Material contracts

Save for the merger agreement, dated 22 July 2003, entered into between Harmony, ARMgold and ARMI, whereby the parties undertook to merge their gold producing assets, the agreements relating to the acquisitions and disposals of companies, businesses and properties set out in Annexure 11 and the agreements referred to in this circular, Harmony has not entered into any material contracts, other than in the ordinary course of business, during the two-year period immediately preceding the date of this circular.

5.1.6 Material changes

The details of material changes in the financial or trading position of Harmony are reflected in Annexure 12.

5.1.7 Litigation statement

Save as below, there are no legal or arbitration proceedings that are pending or threatened of which Harmony is aware that may have, or have had during the 12-month period preceding the date of this circular, a material effect on the financial position of Harmony.

Pending legal proceedings as disclosed by Harmony:

- a claim instituted by Wadethru Security Company (Proprietary) Limited (in liquidation) against Harmony in respect of alleged damages arising out of Harmony's termination of a sale of business agreement in relation to Brand No.2 shaft.

5.2 Information on ARM Platinum

5.2.1 Background and nature of business

ARM Platinum was incorporated on 23 August 1999 and holds 83,0% of the issued share capital of ARM Consortium. ARM Consortium holds a 50,0% interest in the Modikwa Joint Venture.

All of the Avmin Group's PGM and nickel assets are to be housed within ARM Platinum, comprising 100,0% of Nkomati, 55,0% of the issued share capital of Two Rivers and 100,0% of Kalplats.

5.2.2 Historical financial information

The following financial information relating to ARM Platinum is set out in Annexure 3:

- audited income statements, cash flow statements and statements of changes in equity for the financial years ended 31 December 2000, 31 December 2001 and the 18 months ended 30 June 2003;
- audited balance sheets at 31 December 2000, 31 December 2001 and 30 June 2003;
- accounting policies; and
- notes to the financial statements.

A reporting accountants' report on the historical financial information of ARM Platinum is set out in Annexure 4.

Technical information relating to the ARM Platinum asset comprising the Modikwa Joint Venture is contained in the Avmin (to be renamed "ARM") competent person's report set out in Appendix 4 to the revised listing particulars.

5.2.3 Material loans

The details of material loans to ARM Platinum and its subsidiaries are reflected in Annexure 5.

5.2.4 Material contracts

ARM Platinum has not entered into any material contracts, other than in the ordinary course of business, from the date it was formed on 23 August 1999 to the last practicable date.

5.2.5 Material changes

There have been no material changes in the financial or trading position of ARM Platinum, other than as disclosed in this circular, between the date of the last audited financial statements of ARM Platinum, being 30 June 2003, and the last practicable date.

5.2.6 Litigation statement

There are no legal or arbitration proceedings that are pending or threatened of which ARM Platinum is aware that may have, or have had during the 12-month period preceding the date of this circular, a material effect on the financial position of ARM Platinum.

5.3 Information on the ARM Consortium Debt

The ARM Consortium Debt consists of funds advanced by ARMI to ARM Consortium between 2001 and December 2003 which, on 31 December 2003 amounted to R509 218 403.

These funds were advanced to ARM Consortium to fund debt servicing requirements and its capital and operating expenditure commitments in respect of the Modikwa Joint Venture.

The loan is unsecured and has no fixed terms of repayment. At 31 December 2003, R7,6 million carried interest at a floating rate linked to prime. At 31 December 2003, this rate was 7,0% nominal annual compounded and capitalised monthly in arrears. At 31 December 2003 R501,7 million was interest free. The Company also assumed ARMI's liability to repay a R40 million bridging loan to Nedbank Limited through its Capital Markets division.

5.4 Information on the Modikwa Joint Venture

5.4.1 Background and nature of the joint venture

The Modikwa Joint Venture is an unincorporated joint venture between Rustenburg Platinum (50,0%) and ARM Consortium (50,0%) in respect of the mining and operation of the Modikwa Platinum Mine. The mine is situated on the Eastern Limb of the Bushveld Complex and has a total in situ PGM (4E) resource base of approximately 62,2 million ounces. Development of the Modikwa Platinum Mine began in March 2001 and the first stoping took place in March 2002. The mine's concentrator, including a natural fines circuit, has the capacity to treat 240 000 tonnes of ore per month. ARM Consortium sells its 50,0% undivided share of the metal in concentrate form to Rustenburg Platinum.

ARM Consortium is held by ARM Platinum (83,0%), Matimatjatji Community Company (an association incorporated under section 21 of the Act) (5,0%) and Mampudima Community Company (an association incorporated under section 21 of the Act) (12,0%). ARMI holds an indirect shareholding (through ARM Platinum) in ARM Consortium, giving it a 41,5% effective interest in the Modikwa Joint Venture. Rustenburg Platinum and ARM Consortium jointly hold a Section 9 Minerals Act mining licence, which is valid until 2025.

Technical information relating to the Modikwa Platinum Mine is contained in the Avmin (to be renamed "ARM") competent person's report set out in Appendix 4 to the revised listing particulars.

5.5 Terms of the Avmin Acquisitions

5.5.1 Terms and consideration

In terms of the Avmin acquisitions agreement, Avmin will, subject to the suspensive conditions set out in paragraph 5.5.4 below, acquire from ARMI:

- its holding of 35 002 396 Harmony shares;
- its holding of all the issued shares in ARM Platinum, which has a 41,5% effective interest in the Modikwa Joint Venture; and
- the ARM Consortium Debt.

The consideration payable for the purchase of the Harmony shares and the ARM Consortium Debt is R4 046 910 550, allocated as to R3 537 692 147 for the Harmony shares and R509 218 403 for the ARM Consortium Debt. In terms of a separate transaction, ARMI has agreed to subscribe for 80 938 211 new Avmin shares at a subscription price of R50,00 per new Avmin share. The shares in ARM Platinum are being exchanged for 6 812 206 new Avmin shares. ARMI has agreed to subscribe for the 6 812 206 new Avmin shares for a consideration comprising the shares in ARM Platinum.

5.5.2 Closing date

The date on which all the matters required to be completed in terms of the closing clause are duly completed, which date is expected to be not later than 30 April 2004.

5.5.3 Warranties

ARMI has given to Avmin reasonably comprehensive warranties and Avmin has given to ARMI limited warranties as to its ability to allot and issue (the new Avmin shares), which are normal in a transaction of this nature. ARMI has made specific disclosures against the warranties given by it and has also provided a limited list of disclosure documents, the contents of which are deemed to be disclosures against those warranties.

5.5.4 Suspensive conditions

The Avmin acquisitions agreement is subject to:

- the ARM voting agreement, the Avgold share exchange agreement and the Kalplats acquisition agreement becoming unconditional;
- the passing of the resolutions set out in the attached notice of general meeting (approving the Avmin Acquisitions, the waiver by the minority shareholders of Avmin of the mandatory offer referred to in paragraph 10 below, the Avgold Share Exchange and the Kalplats Acquisition);
- the approval of contractual third parties to the proposed change of effective interest in the Modikwa Joint Venture and the proposed assignment of finance agreements entered into in connection with the Modikwa Joint Venture;
- the approval of the Competition Authorities; and
- the approval of a contractual third party to the proposed assignment of a further loan agreement entered into in connection with the Modikwa Joint Venture.

6. THE KALPLATS ACQUISITION

6.1 Background and nature of business of Kalplats

Kalplats was discovered by Harmony on the Kraaipan Greenstone Belt. A pre-feasibility study has been completed, aimed at open pit mining and underground mining may be possible at the end of the economic pit life. When potential underground resources are taken into account, the combined inferred and indicated mineral resource for Kalplats is estimated at 2,9 million ounces.

Technical information relating to Kalplats is contained in the Avmin (to be renamed "ARM") competent person's report set out in Appendix 4 to the revised listing particulars.

6.2 Terms of the Kalplats Acquisition

6.2.1 Terms and consideration

In terms of the Kalplats acquisition agreement, Avmin through what will be its wholly-owned subsidiary, ARM Platinum will, subject to the suspensive conditions set out in paragraph 6.2.4 below, acquire the Kalplats platinum discovery and associated mineral rights from Kalgold for a consideration based on the weighted average traded price of an Avmin share for the seven trading day period prior to the closing date, but subject to a maximum of R100 000 000. The loan account in the books of Kalgold (in the name of ARM Platinum, arising from such acquisition) will be sold to Avmin. In terms of a separate transaction, Kalgold has agreed to be issued with a renounceable letter of allocation conferring rights to subscribe for 2 000 000 new Avmin shares. It is Kalgold's intention to renounce these rights in favour of Harmony and it is Harmony's intention to take-up these rights.

6.2.2 Closing date

The date on which all the matters required to be completed in terms of the closing clause are duly completed, which date is expected to be not later than 30 April 2004.

6.2.3 Warranties

Harmony has given to Avmin limited warranties as to ownership, title and other specific issues. ARM Platinum and Avmin have given to Kalgold and Harmony limited warranties as to ARM Platinum's value added tax registration and Avmin's ability to allot and issue (the new Avmin shares), which are normal in a transaction of this nature.

6.2.4 Suspensive conditions

The Kalplats Acquisition is subject to:

- the ARM voting agreement, the Avmin acquisitions agreement and the Avgold share exchange agreement becoming unconditional; and
- the approval of the Competition Authorities.

7. THE ARM CONTROL STRUCTURE

7.1 Terms of the ARM Control Structure

In terms of the ARM voting agreement, ARMI and Harmony have, subject to the suspensive conditions set out in paragraph 7.2 below, agreed the basis on which Harmony's entire holding of 40 789 761 Avmin shares (approximately 22,0% of Avmin post the Transaction), will be voted by ARMI. A summary of the terms of the ARM Control Structure is set out in Annexure 20.

7.2 Suspensive conditions

The ARM control structure is subject to:

- the Avmin acquisitions agreement becoming unconditional; and
- the due allotment and issue to ARMI of the new Avmin shares to be acquired by it in accordance with the terms of such agreement.

8. AUTHORITY IN TERMS OF SECTION 221 OF THE ACT

The directors of Avmin have no general authority to allot or issue any of the unissued share capital of Avmin. Accordingly, the directors require the approval of the Avmin shareholders in general meeting in terms of section 221 of the Act to allot and issue an additional 89 750 417 Avmin shares to fulfil contractual obligations in terms of the Avmin acquisitions agreement and the Kalplats acquisition agreement.

9. PRO FORMA FINANCIAL INFORMATION

9.1 Pro forma financial effects of the Transaction

The following table sets out, for illustrative purposes only, the pro forma financial effects of the Transaction per ordinary share of Avmin based on the audited annual financial statements of Avmin for the financial year ended 30 June 2003:

	Before the Transaction[1] (cents per share)	Adjustments before the Transaction[2] (cents per share)	After the Transaction[3] (cents per share)	Change (%)
Net asset value	4 407	4 407	4 987	13,2
Net tangible asset value	4 401	4 401	4 984	13,2
Earnings	(170)	194	1 171	503,6
Headline earnings	176	175	291	66,3
Weighted average number of shares	112 046 000	112 046 000	201 796 417	
Number of shares issued	112 601 980	112 601 980	202 352 397	

Notes:

1. The "Before the Transaction" financial information has been extracted, without adjustment, from the Avmin published audited results for the year ended 30 June 2003.
2. The "Adjustments before the Transaction" include adjusting for the sale of Chambishi Metals plc ("Chambishi") and the placement of 90 000 000 Avgold shares in April 2003, on the assumption that both were effective 1 July 2002 for earnings effects and 30 June 2003 for net asset value effects.
3. The "After the Transaction" financial information is based on the following:
   - for earnings and headline earnings per share, the Transaction was effective 1 July 2002;
   - for net asset and net tangible asset value per share, the Transaction was effective 30 June 2003;
   - adjusting for the sale of Chambishi on the assumption that the Chambishi disposal was effective 1 July 2002 for earnings effects and 30 June 2003 for net asset value effects;
   - Avmin disposed of 90 000 000 Avgold shares, with effect from 1 July 2002 for earnings effects and 30 June 2003 for net asset value effects;
   - Avmin acquired ARMI's 41,5% effective interest in the Modikwa Joint Venture with effect 1 July 2002 for earnings effects and 30 June 2003 for net asset value effects;
   - Avmin acquired Kalplats with effect 1 July 2002 for earnings effects and 30 June 2003 for net asset value effects;
   - Avmin acquired 28 630 526 Harmony shares for its disposal of 286 305 263 shares in Avgold with effect 1 July 2002 for earnings effects and 30 June 2003 for net asset value effects; and
   - adjustments have been made to Modikwa's financial statements to comply with International Financial Reporting Standards and accounting policies.

Avmin has purchased 25,0% of Nkomati from Anglo Operations Limited with effect from 1 February 2004 and now holds 100,0% of Nkomati. This transaction was not taken into account in the compilation of the pro forma financial information. Nkomati is therefore still included as a 75,0% interest in the pro forma financial information.

The reporting accountants' report on the financial effects is set out in Annexure 14.

9.2 Pro forma financial information of Avmin

Pro forma financial information of Avmin pursuant to the Transaction is set out in Annexure 13.

The reporting accountants' report on the pro forma financial statements of and effects on Avmin is set out in Annexure 14.

10. CHANGE IN CONTROL AND WAIVER OF MANDATORY OFFER

Pursuant to the successful implementation of the Avmin Acquisitions, ARMI will hold in excess of 35,0% of the issued shares in Avmin and as a result an affected transaction will have occurred in terms of the Code. Furthermore, due to the ARM Control Structure, ARMI will be entitled to exercise approximately 63,0% of the voting rights of Avmin.

In terms of the Code, ARMI would have been required to make a mandatory offer to the minority shareholders of Avmin to acquire their shareholding in Avmin on the same basis. However, the SRP has provided both ARMI and Avmin with confirmation that it will allow ARMI to dispense with the requirement to extend a mandatory offer to Avmin minority shareholders, provided a simple majority of the Avmin shareholders in general meeting, excluding Harmony and ARMI, waive the requirement for a mandatory offer. Accordingly, it is a suspensive condition to the Avmin Acquisitions that shareholders of Avmin, excluding Harmony and ARMI, pass the required ordinary resolution (set out in the attached notice of general meeting) waiving the requirement for a mandatory offer by ARMI.

11. AFFECTED TRANSACTIONS

The Avgold Share Exchange and Avmin Acquisitions constitute affected transactions in terms of the Code. As a consequence and in terms of the Code, the board of Avmin has appointed Investec Bank Limited to advise the shareholders of Avmin as to whether the terms of the transactions are fair and reasonable. A report on the Transaction is set out in Annexure 17.

12. AVGOLD SCHEME OF ARRANGEMENT

Pursuant to the Avgold Share Exchange, Harmony will hold in excess of 35,0% of the issued shares in Avgold. In terms of the Code, Harmony will be required to extend a mandatory offer to the minority shareholders of Avgold to acquire their remaining shares in Avgold. That requirement would be effectively fulfilled by Harmony proposing the scheme of arrangement. Harmony will provide further detail of the proposed scheme of arrangement in a separate circular to Avgold shareholders, to be posted on or about 1 April 2004.

In the event that the scheme of arrangement does not become operative for any reason whatsoever, Harmony has undertaken to make an offer in accordance with rule 8.1 of the Code, to the minority shareholders of Avgold. Before any such offer is made, it is the intention of Harmony that any such offer will be first registered under the US Securities Act of 1933, as amended, and the laws of any other jurisdiction where such registration is required.

13. CHANGE OF NAME

It is proposed that, subject to the passing and registration of the required special resolution (set out in the attached notice of general meeting) and conditional on the successful implementation of the Transaction, the name of Avmin be changed to "African Rainbow Minerals Limited". This name has been reserved with the Registrar of Companies. The change of name will be effective on the JSE and LSE with effect from the commencement of trade on Friday, 23 April 2004 under the abbreviated name "ARM" in the Resources: "Mining – Other Mineral Extractors and Mines" sector of the JSE list. On the LSE, the Company is listed on the International Bulletin Board Securities segment. Avmin shareholders should note that Avmin will move from the Resources: "Mining – Mining Finance" sector of the JSE list to the Resources: "Mining – Other Mineral Extractors and Mines" sector with effect from 23 March 2004.

Following the approval of the change of name of the Company at the general meeting, certificated shareholders must complete the attached form of surrender (pink) and, together with their documents of title, deliver them to the transfer office of the Company. **Dematerialised shareholders do not need to do anything with regard to the name change as their shareholding will be automatically updated by their CSDP or broker.**

Share certificates reflecting the new name of the Company will be posted on or about Monday, 3 May 2004 by registered mail or first class post in the United Kingdom to certificated shareholders, at their own risk, who have surrendered their documents of title by the record date, or within five business days of receipt of the existing document of title.

If any existing documents of title have been lost or destroyed and the certificated shareholder provides evidence to this effect to the satisfaction of the directors, then Avmin may dispense with the surrender of such documents of title against provision of acceptable indemnity.

Receipts will not be issued for the surrender of existing documents of title. Lodging agents who require special transaction receipts are requested to prepare such receipts and submit them for stamping together with the documents of the title lodged.

14. RELATED PARTY TRANSACTIONS

The Harmony Group holds approximately 33,9% of the issued shares in Avmin. As a consequence of that shareholding Harmony is a related party in respect of the Avgold Share Exchange and the Kalplats Acquisition, in terms of the JSE Listings Requirements. Accordingly, Harmony may not vote its shares in Avmin on the shareholder resolutions to approve the Avgold Share Exchange or the Kalplats Acquisition. As a further consequence of the related party status of Harmony and in terms of the JSE Listings Requirements, the board of Avmin has appointed Investec Bank Limited to advise the shareholders of Avmin as to whether the terms of the Avgold Share Exchange and the Kalplats Acquisition are fair and reasonable. An independent adviser's fair and reasonable opinions on the Avgold Share Exchange and the Kalplats Acquisition are set out in Annexures 15 and 16, respectively.

15. SUSPENSIVE CONDITIONS

The Transaction is subject to the following suspensive conditions:

- the fulfilment of the suspensive conditions for the Avgold Share Exchange set out in paragraph 4.2.4;
- the fulfilment of the suspensive conditions for the Avmin Acquisitions set out in paragraph 5.5.4;
- the fulfilment of the suspensive conditions for the Kalplats Acquisition set out in paragraph 6.2.4;
- the fulfilment of the suspensive conditions for the ARM Control Structure set out in paragraph 7.2;
- the passing of the required ordinary resolution by the Avmin shareholders, excluding Harmony and ARMI, waiving the requirement for a mandatory offer by ARMI, referred to in paragraph 10; and
- the granting of all requisite regulatory approvals.

16. INCREASE IN AUTHORISED SHARE CAPITAL

The directors propose an increase in the Company's authorised ordinary share capital in order to ensure that sufficient unissued capital is available for the allotment and issue of shares for potential future acquisitions and funding transactions by Avmin.

The special resolution which is required to effect the increase in authorised share capital provides for the creation of 200 000 000 new ordinary shares of 5 cents each, which will rank *pari passu* in all respects with the existing ordinary shares in the Company's share capital.

The special resolution will become effective on the date of registration thereof by the Registrar of Companies.

At the last practicable date, but before implementation of the Transaction, the Company's authorised and issued share capital is as follows:

	R'm
Authorised	
300 000 000 ordinary shares of 5 cents each	15
Issued	
114 375 956 ordinary shares of 5 cents each	6
Share premium	79
	85

As part of the implementation of the Transaction, Avmin will issue an additional 89 750 417 shares increasing its issued share capital post the Transaction to 204 126 373 shares.

After the increase in authorised share capital and the implementation of the Transaction, the Company's authorised and issued share capital will be as follows:

	R'm
Authorised	
500 000 000 ordinary shares of 5 cents each	25
Issued	
204 126 373 ordinary shares of 5 cents each	10
Share premium	4 562
	4 572

17. GENERAL MEETING

A general meeting of Avmin shareholders will be held at 10:00 (South African time) on Thursday, 15 April 2004 for the purpose of approving and implementing the Transaction, the change of name of Avmin and the increase in the authorised share capital of Avmin. A notice convening this general meeting is attached to and forms part of this circular.

A form of proxy (blue) for use at the general meeting by certificated shareholders and own name dematerialised shareholders is attached to this circular. Certificated shareholders and own name dematerialised shareholders who are unable to attend the general meeting and who wish to be represented thereat, are requested to complete the form of proxy in accordance with the instructions printed thereon and return it to the transfer secretaries.

Dematerialised shareholders, other than own name dematerialised shareholders, who wish to attend the general meeting or to vote by way of proxy, must request their CSDP or broker to furnish them with the necessary authority to attend the general meeting or to be represented thereat by proxy. This must be done in terms of the custody agreement between the shareholders and their CSDP or broker.

18. EXCHANGE CONTROL REGULATIONS

In the case of Avmin's certificated shareholders on the South African register whose registered addresses are outside the common monetary area or where the share certificates are restrictively endorsed in terms of the South African Exchange Control Regulations, the following will apply:

Non-residents who are emigrants from the common monetary area

Certificated shares bearing the new name will be restrictively endorsed "non-resident" in terms of the South African Exchange Control Regulations and will be sent to the shareholder's authorised dealer in foreign exchange in South Africa controlling his blocked assets.

All other non-residents

Certificated shares bearing the new name will be restrictively endorsed "non-resident" in terms of the South African Exchange Control Regulations.

With regard to Avmin's dematerialised shareholders whose registered addresses are outside the common monetary area, their shareholdings are annotated in the Company's relevant sub-register and statements will be restrictively endorsed in terms of those regulations.

19. INFORMATION ON AVMIN

19.1 *Incorporation, history and nature of business*

Information on the incorporation and nature of business of Avmin is set out in paragraph 1 of the revised listing particulars.

19.2 Avmin's interest in Harmony

On the last practicable date, Avmin held no shares in Harmony, either directly or indirectly. Avmin has not dealt in Harmony shares during the six months prior to the finalisation of this circular.

19.3 Avmin's interest in ARMI

On the last practicable date, Avmin held no shares in ARMI, either directly or indirectly. Avmin has not dealt in ARMI shares during the six months prior to the finalisation of this circular.

20. MAJOR SHAREHOLDERS

On the last practicable date, the following shareholders held more than 5,0% of the issued ordinary share capital of Avmin:

Name of shareholder	Number of shares held	Percentage shareholding
Harmony	38 789 761	33,9
Allan Gray Limited (for and on behalf of its clients)	33 628 595	29,4
Old Mutual Life Assurance Company Limited	12 082 521	10,6
Stanlib Limited	7 117 221	6,2
	91 618 098	80,1

Avmin has no controlling shareholder.

21. SHARE CAPITAL

Information on Avmin's share capital is set out in paragraph 16 and 4.2 of the revised listing particulars.

A table setting out the price history of Avmin shares on the JSE has been included in Annexure 18.

22. INFORMATION RELATING TO DIRECTORS

22.1 Directors

The full names, current functions and addresses of the directors of Avmin are set out below:

Name	Function	Address
Richard Peter Menell	Executive director, chairman	56 Main Street, Johannesburg
Jan Christiaan Steenkamp	Executive director, chief executive officer	56 Main Street, Johannesburg
Douglas Neil Campbell	Executive director, chief financial officer	56 Main Street, Johannesburg
Donn Edward Jowell	Non-executive director	72 Grayston Drive, Sandown, Sandton
Kennedy William Maxwell	Non-executive director	102A Hyde Park, corner Jan Smuts Avenue, Johannesburg
James Roy McAlpine	Non-executive director	Suite 115, Killarney Mall, Killarney
Patrice Tlhopane Motsepe	Non-executive director	ARM House, 29 Impala Road Chislehurston, Sandton
David Neale Murray	Non-executive director	56 Main Street, Johannesburg
Dr Morley Zebulon Nkosi	Non-executive director	4 Nerine Place, Kleve Hills Park Bryanston
Zacharias Bernardus Swanepoel	Non-executive director	4 The High Street, Melrose Arch Melrose North

All directors are South African.

22.2 Directors' emoluments

The remuneration of directors for the year ended 30 June 2003 was as follows:

All figures in R'000	Board and committee fees	Salary	Bonuses and performance-related payments#	Pension scheme contributions	Severance package	Exercise of share options gains	Total 2003	Total 2002
Executive directors								
R P Menell	168	2 289	436	237	–	–	**3 130**	9 845
D N Murray ++	73	2 096	473	207	2 733	–	**5 582**	2 949
J C Steenkamp +	14	170	–	22	–	453	**659**	–
D N Campbell +	14	175	–	16	–	–	**205**	–
B M Menell	–	–	–	–	–	–	–	607
Total executive directors	269	4 730	909	482	2 733	453	**9 576**	13 401

All figures in R'000	Board and committee fees	Salary	Bonuses and performance-related payments#	Pension scheme contributions	Severance package	Exercise of share options gains	Total 2003	Total 2002
Non-executive directors								
D D Barber* †	64						**64**	11
P M Baum* †	60						**60**	11
B E Davison* †	65						**65**	11
B Frank †	64						**64**	52
D E Jowell	81						**81**	61
N Livnat †	21						**21**	38
Dr T V Maphai †	–						**–**	35
K W Maxwell	131						**131**	402
J R McAlpine	77						**77**	63
B M Menell †	50						**50**	1 240
P T Motsepe*	7						**7**	–
Dr M Z Nkosi	90						**90**	71
R Oron †	13						**13**	63
P C Pienaar* †	14						**14**	–
Z B Swanepoel*	10						**10**	–
Total non-executive directors	747						**747**	2 058
Total	1 016	4 730	909	482	2 733	453	**10 323**	15 459

Notes:

\+ Messrs J C Steenkamp and D N Campbell were appointed directors on 12 May 2003.

++ Mr D N Murray retired as chief executive officer on 30 June 2003.

* Acted in a representative capacity; fees paid to the shareholder represented.

\# Bonuses and performance-related payments made to directors. These payments are considered, individually for each executive director, by the Remuneration Committee and are weighted in a 70:30 ratio as to Company performance: individual performance, respectively. Payment was only made against individual performance as the threshold for Company performance was not attained.

† Resigned as directors.

22.3 Directors' interests in Avmin shares

22.3.1 Details of Avmin shares held by the directors

The direct and indirect beneficial interests of the directors of the Company in the issued shares of the Company on the last practicable date were as follows:

Ordinary shares	Beneficial	Non-beneficial	%
Direct interests:			
Executive directors	–	–	–
Non-executive director			
K W Maxwell	5 355	–	*
Indirect interests:			
Executive directors:			
R P Menell	263 149	–	0,23
D N Campbell	500	–	*
Total	269 004	–	0,23

*Indicates ownership of less than 1%.

The directors of Avmin have not dealt in Avmin shares during the six months prior to the finalisation of this circular.

22.3.2 Details of share options held by the directors

Options are to subscribe for ordinary shares of five cents each in the issued share capital of the Company. All options will vest following the change of control.

The following options were held on the last practicable date:

	Avmin	Avmin	Avmin	Avgold
Executive directors	R P Menell	J C Steenkamp	D N Campbell	D N Campbell
Granted at	**1 July 2002**	**12 May 2003**	**12 May 2003**	**12 May 2003**
Number	385 131	327 529	196 266	628 893
Average exercise price per option	R21,63*	R32,87*	R35,51	R2,90
Granted during the 2003 financial year				
Number	184 185	Nil	Nil	Nil
Strike price per option	36,00	Nil	Nil	Nil
Exercised during the 2003 financial year				
Number	Nil	11 914	Nil	71 250
Average exercise price per option	Nil	R0,71	Nil	R9,02
Granted at	**19 August 2003**	**5 August 2003**	**19 August 2003**	
Number	37 010	93 562	88 904	
Strike price per option	38,00	39,50	38,00	
Held at 27 February 2004				
Number	606 326	409 177	285 170	557 643
Average exercise price per option	R26,99*	R34,39*	R36,29	R2,90
Latest expiry date	20 September 2010	20 September 2010	20 September 2010	26 August 2007

* The average exercise price per share inclusive of options granted to option holders to compensate for the reduction in share price following the special distribution of R27.00 per share in July 2000.

22.4 Directors' interests in Harmony shares

22.4.1 The interests of Avmin directors in Harmony shares are reflected in the table below:

Director	Direct Beneficial	Direct Non-beneficial	Indirect Beneficial	Indirect Non-beneficial	Percentage of Harmony shares
J R Alpine	20 000	–	–	–	0,0
P T Motsepe (through various Motsepe family trusts)	–	–	–	35 002 396	13,6

22.4.2 The following directors of Avmin have had dealings in Harmony shares during the six months prior to this circular:

Director	Date	Transaction type	Number of shares	Price Rand	Total value Rand
P T Motsepe (through various Motsepe family trusts)	22/09/2003	Share for share exchange between Harmony and ARMgold	35 002 396	113,39	3 968 921 682

22.5 Directors' interests in ARMI shares

22.5.1 On the last practicable date, none of the Avmin directors have interests in ARMI shares.

22.5.2 None of the Avmin directors had any dealings in ARMI shares during the six months prior to the finalisation of this circular.

22.6 Directors' interests in transactions

None of the directors had any interest, direct or indirect, in any transaction during the current or immediately preceding financial year or in an earlier year which remain in any respect outstanding or unperformed.

22.7 Directors' service contracts

Messrs Menell, Steenkamp and Campbell have contracts of employment in their capacities as chairman, chief executive officer and chief financial officer, which stipulate notice periods of one, two and one years, respectively. No contracts have been entered into in respect of these persons assuming the roles of directors and the only emoluments accruing to them in respect of their seats on the board are the common fees approved by shareholders in general meeting. Mr D N Murray has a consulting contract with the Company terminating on 30 June 2004.

23. THE INTERESTS OF HARMONY AND ITS DIRECTORS

23.1 On the last practicable date, Harmony held 38 789 761 shares in Avmin. Harmony has not dealt in Avmin shares during the six months prior to the finalisation of this circular.

23.2 On the last practicable date, the directors of Harmony held the following interests in Harmony shares and options:

23.2.1 The interests of Harmony directors in Harmony shares are reflected in the table below:

Director	Direct Beneficial	Direct Non-beneficial	Indirect Beneficial	Indirect Non-beneficial	Percentage of Harmony shares
P T Motsepe (through various Motsepe family trusts)	–	–	–	35 002 396	13,6
M King	33 333	–	–	–	*
Lord Renwick of Clifton KCMG	–	–	5 105	–	*
T S A Grobicki	–	–	30 000	–	*
A J Wilkens	–	–	984 301	–	*
P Taljaard	-	–	591 701	–	*

*Indicates ownership of less than 1%.

23.2.2 The interests of Harmony directors in Harmony options are reflected in the table below:

Director	Number of options	Percentage of total options in issue	Issue date	Issue price Rand	Expiry date
Z B Swanepoel	128 800	0,60	20/11/2001	49,60	20/11/2011
T S A Grobicki	20 000	0,50	21/09/1999	22,90	21/09/2010
	87 400		20/11/2001	49,60	20/11/2011
F Dippenaar	36 700	0,18	20/11/2001	49,60	20/11/2011
F Abbott	73 400	0,35	20/11/2001	49,60	20/11/2011

23.3 On the last practicable date, none of the Harmony directors had interests in Avmin shares.

23.4 The following directors of Harmony had dealings in Harmony shares during the six months prior to the finalisation of this circular:

Director	Date	Transaction type	Number of shares	Price Rand	Total value Rand
P T Motsepe (through various Motsepe family trusts)	22 September 2003	Share for share exchange between Harmony and ARMgold	35 002 396	113,39	3 968 921 682
A J Wilkens	22 September 2003	Share for share exchange between Harmony and ARMgold	984 301	113,39	111 610 117
P J Taljaard	22 September 2003	Share for share exchange between Harmony and ARMgold	591 701	113,39	67 092 976
Z B Swanepoel	8 September 2003	Options	13 350	114,00	1 521 900
F Dippenaar	19 December 2003	Options	56 700	102,70	5 823 096
T S A Grobicki	20 May 2003 to 22 May 2003	Options	161 600	102,70	16 600 125

23.5 None of the Harmony directors had any dealings in Avmin shares during the six months prior to the finalisation of this circular.

24. THE INTERESTS OF ARMI AND ITS DIRECTORS

24.1 On the last practicable date ARMI held no shares in Avmin.

24.2 On the last practicable date, the directors of ARMI held the following interests in ARMI shares:

24.2.1 The interests of ARMI directors in ARMI shares are reflected in the table below:

Director	Direct Beneficial	Direct Non-beneficial	Indirect Beneficial	Indirect Non-beneficial	Percentage of ARMI shares
P T Motsepe (through various Motsepe family trusts)				1 000	100

24.3 On the last practicable date, none of the ARMI directors had interests in Avmin shares.

24.4 None of the ARMI directors had any dealings in ARMI or Avmin shares during the six months prior to the finalisation of this circular.

25. SPECIAL ARRANGEMENTS

- No arrangements, undertakings or agreements have been concluded between Avmin, Harmony, ARMI or any party acting in concert with any of them in relation to the Transaction, save as disclosed elsewhere in this circular (see paragraph 27.1).
- No arrangements, undertakings or agreements (including any compensation arrangements) which have any connection with, or dependence on the Transaction exist between Avmin, Harmony, ARMI or any concert party and any director of Avmin or any person who was a director of Avmin during the 12 months prior to the Transaction or any holder of Avmin shares or any person who was a holder of Avmin shares within a period of 12 months prior to the offer, save for the Transaction being indivisible.

26. LITIGATION STATEMENT

Save as set out below, there are no legal or arbitration proceedings that are pending or threatened of which Avmin is aware which may have, or have had during the 12-month period preceding the date of issue of this circular, a material effect on the financial position of Avmin.

Avmin has a contingent liability for the amount of tax relating to the Anglovaal Limited loan stock redemption premium that the South African Revenue Service disallowed in 1998. The potential 1998 liability for tax is R107 million plus interest and penalties. This matter is currently on appeal.

Avmin has the right to direct the conduct of a claim which Chambishi Metals plc ("Chambishi") has against Bateman Projects Limited and/or certain of its subsidiaries ("Bateman") based on breach/es of the contract/s entered into between Bateman and Chambishi for the design, erection and construction of a certain furnace plant at Chambishi, Zambia. Avmin is solely responsible for the conduct of such proceedings and has indemnified Chambishi against any costs or damage which Chambishi may sustain by reason of the conduct of such proceedings and/or any awards or orders made against Chambishi pursuant thereto. Chambishi is obliged to account for and pay to Avmin any awards or orders made in favour of Chambishi, pursuant to such proceedings. This matter is currently the subject of arbitration proceedings.

27. UNDERTAKINGS, OPINIONS AND RECOMMENDATIONS

27.1 Avmin has received an irrevocable undertaking from Allan Gray Limited to recommend that its clients vote in favour of the resolutions to implement the Transaction which are to be proposed at the general meeting of Avmin shareholders.

27.2 Excluding Messrs P T Motsepe and Z B Swanepoel, who due to their respective associations with ARMI and Harmony consider it inappropriate for them to pass an opinion, the board of directors of Avmin are of the opinion that the terms and conditions of the Transaction are fair and reasonable and that the implementation thereof will be to the long-term benefit of Avmin shareholders. Accordingly, excluding Messrs P T Motsepe and Z B Swanepoel, the board recommends that Avmin shareholders vote in favour of the ordinary and special resolutions to be proposed at the general meeting.

27.3 Investec Bank Limited has advised the board that it has considered the terms of the Avgold Share Exchange, the Kalplats Acquisition and the Transaction and has concluded that the terms and conditions are fair and reasonable to Avmin shareholders.

27.4 The directors, insofar as they are entitled, intend to vote in favour of the ordinary and special resolutions to be proposed at the general meeting.

28. DIRECTORS' RESPONSIBILITY STATEMENT

The current directors of Avmin, whose names appear in paragraph 22.1, collectively and individually, accept full responsibility for the accuracy of the information on Avmin given in this circular, and certify that, to the best of their knowledge and belief, there are no other facts relating to Avmin the omission of which would make any statement in this circular false or misleading and that they have made all reasonable inquiries to ascertain such facts.

29. CONSENTS

The financial adviser and sponsor, attorneys, technical adviser, reporting accountants, independent adviser and transfer secretaries have consented in writing to act in the capacities stated and to their names being stated in this circular and have not withdrawn their consents prior to the publication of this circular.

The reporting accountants, the independent adviser and the technical adviser, have consented in writing and have not withdrawn their consents to the issue of this circular, with their reports in the form and context in which they are included.

30. COSTS

The estimated costs to Avmin of implementing the Transaction is approximately R31 million, which includes:

- R20,0 million to Deutsche Securities (SA) (Proprietary) Limited as financial adviser and transactional sponsor to Avmin;
- R1,1 million to Deutsche Bank AG London as financial sponsor regarding United Kingdom listing requirements;
- R0,8 million to Deneys Reitz Attorneys as attorneys to Avmin;
- R5,0 million to Investec Corporate Finance, a division of Investec Bank Limited, as independent advisers to the Avmin board of directors;
- R0,4 million to Ernst & Young as reporting accountants to Avmin;

- R0,1 million to KPMG for taxation advice to Avmin;
- R0,5 million for United Kingdom lawyers regarding United Kingdom listing requirements;
- R0,1 million for Competition Commission filing fees;
- R0,5 million to SRK for competent persons' reports in respect of Avmin;
- R1,5 million in posting and printing of this circular (including costs for various shareholder notices);
- R0,4 million in JSE documentation and listing fees; and
- R0,7 million for LSE listing fees.

31. DOCUMENTS AVAILABLE FOR INSPECTION

The following documents, or copies thereof, will be available for inspection by Avmin shareholders from the date of posting of this circular to the day prior to the date of the general meeting, during normal business hours on business days, at the registered office of Avmin and the office of the United Kingdom secretaries:

31.1 the memorandum and articles of association of Avmin;

31.2 the Avgold share exchange agreement;

31.3 the Avmin acquisitions agreement and the addendum thereto;

31.4 the Kalplats acquisition agreement;

31.5 the ARM voting agreement;

31.6 the audited financial statements of Avgold for the three financial years ended 30 June 2001, 2002 and 2003 and the unaudited interim results at 31 December 2003;

31.7 the audited financial statements of Harmony for the three financial years ended 30 June 2001, 2002 and 2003 and the unaudited interim results at 31 December 2003;

31.8 the audited financial statements of ARM Platinum for the financial years ended 31 December 2000 and 2001 and for the 18 months ended 30 June 2003;

31.9 the audited financial statements of Avmin for the three financial years ended 30 June 2001, 2002 and 2003;

31.10 the reporting accountants' reports on the historical financial information of ARM Platinum as reproduced in Annexure 4;

31.11 the reporting accountants' report on the pro forma financial statements and effects of Avmin as reproduced in Annexure 14;

31.12 the letters from the independent financial adviser to the board of directors of Avmin regarding the Avgold Share Exchange, the Kalplats Acquisition and the Transaction, the texts of which are contained in Annexures 15, 16 and 17, respectively;

31.13 the competent persons' reports on Avmin and Harmony including Avgold, the texts of which are contained in Appendices 4 and 5, respectively, to the revised listing particulars;

31.14 copies of directors' service contracts;

31.15 this circular and the revised listing particulars signed by the group company secretary on behalf of the directors;

31.16 consent letters of the financial adviser and sponsor, attorneys, technical adviser, reporting accountants, independent adviser and transfer secretaries to Avmin; and

31.17 the irrevocable undertaking from Allan Gray Limited.

By order of the board

R H Phillips
Group Company Secretary

Johannesburg
23 March 2004

HISTORICAL FINANCIAL INFORMATION OF AVGOLD

The salient financial information set out below has been extracted without adjustment from the audited annual financial statements of Avgold for the three financial years ended 30 June 2003.

FINANCIAL INFORMATION FOR THE YEARS ENDED 30 JUNE 2003, 2002 AND 2001

1. INCOME STATEMENTS

	Notes	2003 R'000	2002 R'000	2001 R'000
Revenue	1 and 2	**999 480**	363 802	217 864
Costs and expenses		**889 560**	346 468	189 614
– operating		**673 344**	265 137	163 394
– amortisation and depreciation		**186 900**	57 389	19 737
– retrenchments		**–**	4 747	165
– general and administration		**29 316**	19 195	5 981
– exploration		**–**	–	337
Operating profit	3	**109 920**	17 334	28 250
Investment income	4	**12 987**	2 147	10 654
Finance cost	5	**57 946**	8 419	–
Foreign exchange gain	6	**66 745**	30 335	–
Unrealised non-hedge derivatives	7	**(102 715)**	–	–
Income before exceptional item		**28 991**	41 397	38 904
Exceptional item	8	**7 085**	–	–
Income before taxation		**36 076**	41 397	38 904
Taxation	9	**9 207**	5 000	–
Net earnings for year		**26 869**	36 397	38 904
Additional information:				
Net earnings for year excluding unrealised non-hedge derivatives		**129 584**	36 397	38 904
Headline earnings		**25 385**	36 397	38 904
Headline earnings before unrealised non-hedge derivatives		**128 100**	36 397	38 904
Earnings per share (cents)	10	**4,0**	5,4	6,5
Headline earnings per share (cents)		**3,8**	5,4	6,5
Headline earnings per share before unrealised non-hedged derivatives (cents)		**19,0**	5,4	6,5
Weighted number of shares in issue (million)		**674,0**	670,2	595,4
Reconciliation of earnings and headline earnings				
Earnings per income statement		**26 869**	36 397	38 904
Exceptional items: Profit on sale of ETC		**(7 085)**	–	–
Recoupments tax on sale of ETC		**5 601**	–	–
Headline earnings		**25 385**	36 397	38 904

2. BALANCE SHEETS

	Notes	2003 R'000	2002 R'000	2001 R'000
ASSETS				
Non-current assets		**2 569 795**	2 931 207	2 551 085
Property, plant and equipment	11	**2 543 841**	2 883 336	2 506 592
Investments	12	**25 954**	47 871	44 493
Current assets		**84 382**	208 742	137 021
Inventories	13	**46 407**	44 761	33 247
Trade and other receivables		**37 214**	55 171	47 867
Deposits and cash		**761**	108 810	55 907
Total assets		**2 654 177**	3 139 949	2 688 106
EQUITY AND LIABILITIES				
Capital and reserves				
Share capital		**6 765**	6 729	6 658
Share premium		**2 219 900**	2 206 385	2 183 589
Retained income/(Accumulated loss)		**43 827**	16 958	(19 439)
Total shareholders' equity*		**2 270 492**	2 230 072	2 170 808
Non-current liabilities		**144 639**	630 105	378 594
Long-term loans	14	**–**	548 072	302 453
Non-hedge derivatives	7	**102 715**	–	–
Long-term provisions	15	**41 924**	82 033	76 141
Current liabilities		**239 046**	279 772	138 704
Trade and other payables	16	**104 126**	153 343	134 044
Overdrafts and short-term borrowings	17	**134 920**	126 429	4 660
Total equity and liabilities		**2 654 177**	3 139 949	2 688 106

* A statement of shareholders' equity appears on page 30.

3. CASH FLOW STATEMENTS

	Notes	2003 R'000	2002 R'000	2001 R'000
Cash generated from/(utilised by) operations				
Operating profit		**109 920**	17 334	28 250
Non-cash items and adjustments				
Provisions		**(5 546)**	7 788	8 078
Profit on sale of property, plant and equipment		**(1 519)**	(3 709)	–
Amortisation and depreciation		**186 900**	57 389	19 737
		289 755	78 802	56 065
Net withdrawals from/(payments to) environmental trust fund		**3 925**	(4 151)	(3 161)
Retrenchment payments		**–**	(5 873)	(6 587)
Investment income		**12 987**	2 147	10 654
Finance charges		**(57 946)**	(8 419)	–
Taxation		**–**	–	(2 910)
		248 722	62 506	54 061
Cash provided by/(reinvested in) working capital				
Inventories		**(18 351)**	(11 514)	(4 179)
Trade and other receivables		**13 578**	(7 303)	6 476
Trade and other payables		**(30 390)**	10 155	(1 355)
Net cash generated from operating activities		**213 558**	53 844	55 003
Cash utilised in investment activities				
Property, plant and equipment acquired	18	**(124 364)**	(345 645)	(599 051)
Investments acquired		**(483)**	(1 124)	853
Proceeds on disposal of property, plant and equipment		**3 558**	9 240	1 199
Proceeds on sale of ETC mine	8	**251 817**	–	–
		130 528	(337 529)	(596 999)
Cash provided by financing activities				
Net increase in shareholders' funding		**13 551**	22 868	498 200
(Decrease)/Increase in long-term loans	19	**(376 189)**	191 952	300 000
(Decrease)/Increase in overdrafts and short-term borrowings	20	**(77 658)**	121 768	(201 829)
		(440 296)	336 588	596 371
(Decrease)/Increase in cash and cash equivalents		**(96 210)**	52 903	54 375
Cash and cash equivalents at beginning of year		**108 810**	55 907	1 532
Translation adjustment		**(11 839)**	–	–
Cash and cash equivalents at end of year		**761**	108 810	55 907

4. STATEMENT OF CHANGES IN EQUITY

	Ordinary share capital and premium R'000	Retained income R'000	Total 2003 R'000	Total 2002 R'000	Total 2001 R'000
Changes in shareholders' equity					
Balance at beginning of year	2 213 114	16 958	**2 230 072**	2 170 808	1 633 704
Shares allotted – rights issue	–	–	**–**	–	500 355
Share options exercised	13 584	–	**13 584**	22 867	6 507
Expenses written-off against share premium	(33)	–	**(33)**	–	(8 662)
Net earnings for year	–	26 869	**26 869**	36 397	38 904
Balance at end of year	2 226 665	43 827	**2 270 492**	2 230 072	2 170 808

Details of shares

	2003	2002	2001
Share capital and premium			
Authorised			
1 000 000 000 ordinary shares of one cent each (2002: 1 000 000 000 ordinary shares of one cent each; 2001: 1 000 000 000 ordinary shares of one cent each)	**10 000**	10 000	10 000
Issued			
676 453 556 ordinary shares of one cent each (2002: 672 943 402 ordinary shares of one cent each; 2001: 665 784 171 ordinary shares of one cent each)	**6 765**	6 729	6 658
Share premium	**2 219 900**	2 206 385	2 183 589
	2 226 665	2 213 114	2 190 247

The unissued shares of 323 546 444 (2002: 327 056 598, 2001: 334 215 829), of which 33 822 678 (2002: 33 647 170, 2001: 33 289 209) shares are specifically reserved for purposes of the share incentive scheme, are under the control of the directors.

ACCOUNTING POLICIES

The annual financial statements are prepared in accordance with the historical cost convention, except for financial instruments, which are accounted for at fair value, and in accordance with South African Statements of Generally Accepted Accounting Practice and the requirements of the Companies Act. The principal accounting policies, set out below, have been consistently applied, except those relating to financial instruments following the implementation of AC 133: "Financial Instruments: Recognition and Measurement" from 1 July 2002.

Revenue recognition

Revenue comprises the rand amount received and receivable in respect of the supply of metals mined. Revenue is recognised when the risks and rewards of ownership transfer.

Other revenues earned are recognised on the following bases:

- interest income: as it accrues; and
- dividend income from industry-related investments: when received.

Borrowing costs

Borrowing costs that are directly attributable to the acquisition or construction of mining assets that require a substantial period of time to prepare for their intended use, are capitalised.

Borrowing costs are expensed from the time that mining production becomes commercially viable.

Deferred taxation

Deferred taxation is provided using the balance sheet liability method on all temporary differences between the carrying amounts for financial reporting purposes and the amounts used for taxation purposes, except for differences relating to the initial recognition of assets which affect neither accounting nor taxable profit.

The tax value of losses and unredeemed capital expenditure expected to be available for utilisation against future taxable income are set-off against the deferred tax liability. Deferred tax assets are recognised only when it is probable that the related tax benefit will be realised.

Deferred tax is calculated at the mining cost formula rate. The effect on deferred tax of any changes in tax rates is charged to the income statement.

Exploration and development

Exploration costs are expensed as incurred. When it has been established that a mineral property has development potential and following a positive detailed economic evaluation, further development, exploration and other expenditure prior to the commencement of commercial production is capitalised.

Ongoing development expenditure on existing mines is expensed as incurred. Major development and exploration expenditure incurred to expose the ore, increase production or extend the life of an existing mine is capitalised.

Financial instruments

Financial instruments recognised on the balance sheet include cash and cash equivalents, non-hedge forward exchange contracts, investments, trade receivables, trade creditors and borrowings. Initial recognition is at cost. Subsequent recognition is at fair value. The recognition methods adopted are disclosed in the individual policy statements associated with each item.

Non-hedge derivatives

Non-hedge forward exchange contracts are mark-to-market at financial reporting dates and changes in their fair values are included in the income statement. Gains or losses on contracts maturing between reporting dates are recognised in revenue.

Hedging

Avgold enters into hedging transactions on a portion of its planned gold production to ensure a degree of certainty on future gold sales prices and to provide a guaranteed minimum cash flow for known major capital expenditures and debt servicing.

Gains and losses on derivative instruments that effectively establish the prices for future production are recognised in revenue when the related production is delivered. In the event of early settlement of hedging contracts, gains and losses are taken to revenue at the date of settlement. Any potential loss on hedge positions below the current cost of production is recognised in the period in which it arises.

Property, plant and equipment

Mining assets are recorded at cost of acquisition less sales, recoupments and amounts written-off. Interest on borrowings, specifically to finance the establishment of mining assets, are capitalised until commercial levels of production are achieved.

Depreciation and amortisation is provided over the useful life of mine assets from the time that mining production becomes commercially viable, as follows:

- where orebodies are well defined, assets are amortised using the units of production method based on the estimated proved and probable ore reserves;
- where orebodies are not well defined, the straight-line method is used based on the estimated life of each mine, limited to 25 years; and
- other assets are depreciated to estimated net realisable values using the straight-line method over their expected useful lives.

Land and mineral rights prior to production are not depreciated.

Impairment

The recoverability of the long-term assets is reviewed by management on a continuous basis, based on estimates of future net cash flows. These estimates are subject to risks and uncertainties including future metal prices and exchange rates. It is therefore possible that changes could occur which may affect the recoverability of the long-term assets. Where the estimated recoverability is less than net book value, the impairment is charged against income to reduce the carrying value of the asset.

Investments

Unlisted investments are stated at cost less amounts written-off where there has been a permanent diminution in value. Environmental trust fund investments are stated at cost. Annual payments are made to the environmental trust fund in accordance with statutory requirements.

Cash and cash equivalents

For the purposes of the cash flow statement, cash and cash equivalents comprise cash in hand and deposits held with banks.

Foreign currencies

Foreign currency transactions are recorded at the exchange rate ruling at the transaction date. Assets and liabilities designated in foreign currencies are translated at exchange rates ruling at the balance sheet date. Both realised and unrealised gains and losses arising from exchange differences are recognised in operating results.

Inventories

Gold inventory is carried at the lower of weighted average cost and net realisable value and includes work-in-progress at the earliest stage of production when reliable estimates of quantities and costs are capable of being made, including the breaking of ore in the stopes.

By-products are carried at the lower of the estimated variable cost associated with their production and net realisable value.

Consumables and stores are carried at weighted average cost with due allowance for obsolete and slow-moving items.

Trade receivables

Trade receivables are carried at anticipated realisable value. An estimate is made for doubtful receivables based on a review of all outstanding amounts at year-end. Bad debts are written-off during the year in which they are identified.

Provisions

Provisions are recognised when Avgold has a present legal or constructive obligation as a result of past events where it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation, and a reliable estimate of the amount of the obligation can be made.

Employee post-retirement obligations

Avgold participates in defined contribution retirement plans for employees. The pension plans are funded by payments from the employees and by Avgoldand charged to income as incurred. The assets of the different plans are held by independently managed trust funds. These funds are governed by the Pension Funds Act, 1956, as amended. Certain employees and retired employees are entitled to post-retirement medical benefits. The estimated cost of these benefits is charged to income based on actuarial valuations made every three years.

Environmental rehabilitation

The estimated cost of final rehabilitation, comprising liabilities for decommissioning and restoration, is based on current legal requirements, existing technology and costs and is reassessed annually.

Decommissioning costs

The estimated cost of future decommissioning obligations at the end of the operating life of the mines is included in long-term provisions. These estimated costs are reviewed regularly and adjusted for legal, technological and environmental circumstances that affect the estimates of the decommissioning obligations.

Restoration costs

The estimated cost of restoration at the end of the operating life of the mines is included in long-term provisions. Cost estimates are not reduced by the potential proceeds from the sale of assets.

Expenditure on ongoing rehabilitation is charged to the income statement as incurred.

Comparative figures

Where necessary, comparative figures have been adjusted to conform with changes in presentation in the current year.

NOTES TO THE ANNUAL FINANCIAL STATEMENTS

1. REVENUE

	2003 R'000	2002 R'000	2001 R'000
Gold sales	**998 217**	362 709	217 647
By-products	**1 263**	1 093	217
	999 480	363 802	217 864

2. GOLD HEDGING

Avgold entered into US dollar gold and rand gold forward sales contracts as a result of the financing of the Target mine. These contracts are not recognised on the balance sheet as financial assets and liabilities. The revenue is recognised when the related production is delivered. Avgold purchased rand/US dollar forward exchange contracts ("FEC's") to convert the rand gold forward sales contracts into dollar gold commodity hedges. The negative mark-to-market value of these non-hedge FEC's of R103 million are included in the income statement (refer note 7). At 30 June 2003 the total hedge book had a negative mark-to-market value of R192 million. This was calculated at a gold price of US$346,15/oz and an exchange rate of US$1,00: R7,51.

The hedge book at 30 June 2003, after the restructuring, is as follows:

		2004	2005	2006	2007
Net dollar forward sales contracts					
Quantity sold	kg	9 162	9 137	4 403	–
	oz	294 579	293 762	141 545	–
	US$/oz	313	316	323	–

Avgold does not use derivative instruments for speculative purposes. All forward sales contacts are unmargined.

3. OPERATING PROFIT

	2003 R'000	2002 R'000	2001 R'000
Operating profit is stated after:			
Auditors' remuneration			
– audit fees	**820**	899	809
Directors' emoluments			
– executive directors	**6 184**	5 128	3 307
– non-executive directors	**327**	334	126
Operating lease expenditure			
– buildings/equipment	**1 856**	160	187
Amortisation and depreciation	**186 900**	57 389	19 737
Profit on sale of property, plant and equipment	**1 519**	3 709	–

	2003 R'000	2002 R'000	2001 R'000
4. INVESTMENT INCOME			
Interest received	**11 996**	1 973	1 104
Dividends received	**966**	–	207
Surplus on realisation in Rand Refinery Limited	**–**	–	5 029
Other	**25**	174	4 314
	12 987	2 147	10 654
5. FINANCE COST			
Interest paid	**57 946**	47 801	7 741
Capitalised to pre-mining assets	**–**	(39 382)	(7 741)
	57 946	8 419	–
6. FOREIGN EXCHANGE GAIN			
Realised foreign exchange gain	**66 745**	–	–
Unrealised foreign exchange gain	**–**	30 335	–
	66 745	30 335	–

Foreign exchange gains are recorded on the translation and repayment of the US dollar denominated loans raised to fund the completion of Target.

7. UNREALISED NON-HEDGE DERIVATIVES			
Forward exchange contracts			
– Cost	**–**	–	–
– Fair value adjustment at year-end – unrealised	**102 715**	–	–

Forward exchange contracts entered into to convert rand gold hedges are fair valued in terms of AC 133 based upon the year-end rand/US dollar exchange rate of US$1,00: R7,51.

8. EXCEPTIONAL ITEM			
The profit realised on the sale of ETC mine is calculated as follows:			
Assets	**314 479**	–	–
– property, plant and equipment	**274 920**	–	–
– investments	**18 475**	–	–
– inventories	**16 705**	–	–
– receivables	**4 379**	–	–
Liabilities	**69 747**	–	–
– long-term provisions	**34 563**	–	–
– trade and other payables	**28 034**	–	–
– overdrafts and short-term borrowings	**7 150**	–	–
Net assets at date of sale	**244 732**	–	–
Gross cash received on sale	**255 000**	–	–
Less: Attributable expenses	**3 183**	–	–
Net cash received on sale	**251 817**	–	–
Net profit on sale	**7 085**	–	–

Attributable expenses include legal and professional fees, bonuses to employees and other administrative costs.

	2003 R'000	2002 R'000	2001 R'000
9. TAXATION			
9.1 Non-mining tax	**3 603**	–	–
The South African normal tax rate of 30 per cent (2002: 30 per cent) is applied on the non-mining taxable income which consists primarily of interest received.			
9.2 Mining tax			
Income from gold mining is taxable at a rate determined by the following formula:			
y = 37 – 185/x where y is the calculated percentage tax rate and x is the ratio of taxable income from mining to total revenue from mining expressed as a percentage. Taxable income is determined after the deduction of mining capital expenditure.			
Estimated mining recoupments tax attributable to the sale of Hartebeestfontein mine	–	5 000	–
Estimated mining recoupments tax attributable to the sale of ETC mine	**5 601**	–	–
Estimated unredeemed capital expenditure carried forward for deduction from future mining taxable income amounts to	**3 578 100**	3 280 200	2 449 000
To date of commencement of commercial production the only temporary difference arising on Target relates to the Section 36(11)(c) allowance on the unredeemed capital expenditure. This deductible temporary difference amounts to R1,3 billion. A deferred tax asset was not recognised due to the fact that the above temporary difference does not affect either accounting profit or taxable profit on initial recognition of the assets.			
9.3 Secondary Taxation on Companies ("STC")			
Avgold did not elect to be exempt from the payment of STC. Currently, the applicable rate for STC is 12,5 per cent of dividends paid.			
9.4 Tax assessments			
Avgold has not been assessed since 1996. All returns of income, including June 2001, have been submitted.			
The 2002 return has been finalised and will be submitted shortly.			
The tax authorities have allocated specific resources to ensure that the outstanding assessments are brought up to date.			
10. EARNINGS PER SHARE			
Earnings per share are calculated by dividing the net income attributable to shareholders by the weighted number of ordinary shares in issue during the year.			
Net income attributable to shareholders	**26 869**	36 397	38 904
Weighted average number of ordinary shares in issue (millions)	**674,0**	670,2	595,4
Earnings per share (cents)	**4,0**	5,4	6,5

11. PROPERTY, PLANT AND EQUIPMENT

	Mine development R'000	Plant and machinery R'000	Mineral rights R'000	Mine properties R'000	Pre-mining costs capitalised R'000	Furniture and equipment R'000	2003 R'000	2002 R'000	2001 R'000
Cost									
Opening balance	1 772 049	732 065	142 824	31 367	307 602	82 966	**3 068 873**	2 635 880	2 042 708
Additions	50 730	48 344	–	1 277	12 246	11 767	**124 364**	439 664	604 216
Disposals	481	403	–	1 828	–	–	**2 712**	6 671	11 044
Sold with ETC mine	300 016	104 101	131	4 186	–	8 018	**416 452**	–	–
Reclassification	187 506	(30 040)	(706)	(421)	(150 980)	(5 359)	–	–	–
	1 709 788	645 865	141 987	26 209	168 868	81 356	**2 774 073**	3 068 873	2 635 880
Amortisation and depreciation									
Opening balance	126 891	43 388	53	5 316	1 904	7 985	**185 537**	129 288	119 395
Charge for year	109 342	57 510	49	1 549	9 719	8 731	**186 900**	57 389	19 737
Disposals	178	53	–	442	–	–	**673**	1 140	9 844
Sold with ETC mine	99 557	35 503	50	200	–	6 222	**141 532**	–	–
Reclassification	10 070	2 668	(52)	(14)	(11 623)	(1 049)	–	–	–
	146 568	68 010	–	6 209	–	9 445	**230 232**	185 537	129 288
Net book value at 30 June 2003	1 563 220	577 855	141 987	20 000	168 868	71 911	**2 543 841**	2 883 336	2 506 592

* A register of land and buildings is available for inspection at the registered office.

– R311 million (2002: R283 million, 2001: R2 159 million), capitalised in respect of properties which have not yet commenced production, are included in mineral rights and pre-mining costs capitalised.

	2003 R'000	2002 R'000	2001 R'000
12. INVESTMENTS			
Unlisted mining industry investments – cost	**2 374**	1 891	767
Environmental trust fund			
The balance in the environmental trust fund is as follows:			
Balance at beginning of year	**45 980**	43 726	38 668
Contributions	**2 889**	2 923	954
Interest earned	**5 458**	4 822	4 104
Payments made for work completed	**(12 272)**	(5 491)	–
Sold with ETC mine	**(18 475)**	–	–
Balance at end of year	**23 580**	45 980	43 726
Total investments	**25 954**	47 871	44 493
12.1 Directors' valuation of unlisted mining industry investments	**4 471**	3 926	2 690
12.2 The environmental trust fund is recognised separately from the related liability on the balance sheet.			
13. INVENTORIES			
At cost:			
Gold in process	**25 435**	29 362	21 523
Consumable stores	**20 972**	15 399	11 724
	46 407	44 761	33 247
14. LONG-TERM LOANS			
Secured syndicated loan to fund Target completion			
– rand loans	**–**	250 242	150 000
Long-term loan	**–**	300 290	150 000
Short-term portion	**–**	(50 048)	–
– US dollar loan expressed in rand	**–**	297 830	152 453
Long-term loan	**–**	357 396	152 453
Short-term portion	**–**	(59 566)	–
	–	548 072	302 453
15. LONG-TERM PROVISIONS			
Long-term provisions consist of the following:			
15.1 Environmental rehabilitation obligation			
Provision for decommissioning:			
Gross liability at beginning of year	**30 253**	34 299	32 055
Revision in estimate	**–**	(4 312)	–
Sold with ETC mine	**(8 014)**	–	–
Net provision for year	**(5 499)**	266	2 244
Gross liability at end of year	**16 740**	30 253	34 299
Provision for restoration:			
Gross liability at beginning of year	**46 162**	36 224	27 897
Sold with ETC mine	**(24 304)**	–	–
Additional obligation recognised	**–**	4 312	–
Payments made	**(4 975)**	(1 702)	–
Net provision for year	**4 917**	7 328	8 327
Gross liability at end of year	**21 800**	46 162	36 224
Total environmental rehabilitation obligation	**38 540**	76 415	70 523

The provisions are based on management's best estimates of the cost of all known obligations. It is, however, reasonable to expect that changes will occur in rehabilitation costs as a result of changes in regulations or cost estimates. Cost estimates are not reduced by potential proceeds from the sale of assets or from future revenue from the clean up of gold plants in view of the uncertainty in estimating those proceeds. Environmental liabilities not directly relating to rehabilitation are expensed as incurred.

	2003 R'000	2002 R'000	2001 R'000
15.2 Post-retirement medical benefits			
Balance at beginning of year	**5 618**	5 618	5 618
Sold with ETC mine	**(2 234)**	–	–
Balance at end of year	**3 384**	5 618	5 618

Avgold has obligations to provide specific post-retirement medical benefits to certain of its employees and pensioners.

The liability is assessed periodically by an independent actuarial survey which uses assumptions consistent with those adopted in determining pension costs and, in addition, includes long-term estimates of the increases in medical costs at appropriate discount rates.

15.3 Retrenchment			
Balance at beginning of year	–	–	7 183
Payments made during the year	–	–	(6 422)
Re-allocation to short-term provisions	–	–	(761)
Balance at end of year	–	–	–

16. TRADE AND OTHER PAYABLES

Trade payables	**53 934**	87 990	95 797
Accruals	**6 517**	15 915	17 126
Taxation payable	**14 207**	5 000	–
Other payables	**29 468**	44 438	21 121
	104 126	153 343	134 044

17. OVERDRAFTS AND SHORT-TERM BORROWINGS

Overdrafts	**604**	1 404	–
Short-term borrowings	**134 316**	15 411	4 660
Current portion of long-term borrowings			
Foreign	–	59 566	–
Local	–	50 048	–
	134 920	126 429	4 660

18. PROPERTY, PLANT AND EQUIPMENT ACQUIRED

Opening balance	**2 883 336**	2 506 592	1 923 313
Non-cash flow movements			
Depreciation	**(186 900)**	(57 389)	(19 737)
Interest accrued	–	10 017	2 453
Foreign exchange losses capitalised	–	84 002	2 711
Property, plant and equipment sold	**(2 039)**	(5 531)	(1 199)
Assets sold with ETC mine	**(274 920)**	–	–
Closing balance	**(2 543 841)**	(2 883 336)	(2 506 592)
Property, plant and equipment acquired	**(124 364)**	(345 645)	(599 051)

	2003 R'000	2002 R'000	2001 R'000
19. (DECREASE)/INCREASE IN LONG-TERM LOANS			
Opening balance	**(548 072)**	(302 453)	
Non-cash flow movements			
Foreign exchange loss capitalised	**–**	(84 002)	
Foreign exchange gain	**59 891**	30 335	
Transferred to short-term loans	**111 992**	–	
Closing balance	**–**	548 072	300 000
Increase in long-term loans	**(376 189)**	191 952	300 000
20. (DECREASE)/INCREASE IN OVERDRAFTS AND SHORT-TERM BORROWINGS			
Opening balance	**(126 428)**	(4 660)	(206 489)
Liabilities sold with ETC business	**7 150**	–	–
Transferred from long-term borrowings	**(111 992)**	–	–
Translation adjustments and foreign exchange gains	**18 693**	–	–
Closing balance	**134 919**	126 428	4 660
(Decrease)/Increase in overdrafts and short-term borrowings during year	**(77 658)**	121 768	(201 829)
21. COMMITMENTS AND CONTINGENT LIABILITIES			
21.1 Capital expenditure authorised by the directors			
Contracted for – Target	**12 666**	22 242	139 527
– Other	**–**	3 249	891
Not contracted for – Target	**30 940**	–	171 791
– Other	**–**	16 520	20 065
	43 606	42 011	332 274
Capital commitments will be funded from cash generated by operations.			
21.2 Contingent liabilities			
Arising from an agreement with LTA Process Engineering whereunder Avgold is liable for the erection costs of a tailings dam, should a dump reclamation project at ETC be cancelled	**–**	518	1 543
22. RETIREMENT FUNDS			
Avgold participates in two retirement funds for its employees. These funds are defined contribution funds and are governed by the Pension Funds Act, 1956, as amended. Contributions paid for retirement benefits are charged to the income statement as they are incurred	**13 985**	4 793	3 167
23. RELATED PARTY TRANSACTIONS			
Related party transactions occurred at arm's length.			
The only significant related transaction is: Avmin – provision of services	**2 273**	2 862	1 056

INTERIM FINANCIAL INFORMATION OF AVGOLD

UNAUDITED FINANCIAL RESULTS FOR THE QUARTER AND HALF-YEAR ENDED 31 DECEMBER 2003

1. INCOME STATEMENTS

R'000	Unaudited Quarter ended Dec 2003	Dec 2002*	Sept 2003	Unaudited Half-year ended Dec 2003	Dec 2002*	Audited Year ended June 2003*
Revenue	**202 717**	241 635	244 190	**446 907**	502 363	999 480
Gold revenue	**202 389**	241 170	243 933	**446 322**	501 708	998 217
By-products	**328**	465	257	**585**	655	1 263
Costs and expenses	**193 839**	225 230	201 300	**395 139**	452 784	889 560
Gold operating	**132 486**	176 053	127 360	**259 846**	348 663	673 344
Amortisation	**58 768**	42 918	68 343	**127 111**	92 030	186 900
Administration and general	**2 585**	6 259	5 597	**8 182**	12 091	29 316
Operating profit	**8 878**	16 405	42 890	**51 768**	49 579	109 920
Investment income	**284**	3 469	572	**856**	6 582	12 987
Finance cost	**972**	14 991	2 902	**3 874**	29 128	57 946
Foreign exchange gain	**–**	62 573	–	**–**	52 075	66 745
Unrealised non-hedge derivatives	**(59 785)**	–	(123 730)	**(183 515)**	–	(102 715)
Income/(Loss) before exceptional item	**(51 595)**	67 456	(83 170)	**(134 765)**	79 108	28 991
Exceptional items	**–**	–	4 661	**4 661**	–	7 085
Income/(Loss) before taxation	**(51 595)**	67 456	(78 509)	**(130 104)**	79 108	36 076
Taxation	**–**	–	3 750	**3 750**	–	9 207
Net earnings/(loss) for period	**(51 595)**	67 456	(82 259)	**(133 854)**	79 108	26 869
Additional information:						
Net earnings for period excluding unrealised non-hedge derivatives	**8 190**	67 456	41 471	**49 661**	79 108	129 584
Headline earnings/(loss)	**(51 395)**	67 456	(83 170)	**(134 765)**	79 108	25 385
Headline earnings before unrealised non-hedge derivatives	**8 190**	67 456	40 560	**48 750**	79 108	128 100
Headline earnings/(loss) per share (cents)	**(8)**	10	(12)	**(20)**	12	4
Headline earnings per share before unrealised non-hedge derivatives (cents)	**1**	10	6	**7**	12	19
Earnings/(Loss) per share (cents)	**(8)**	10	(12)	**(20)**	12	4
Weighted number of shares in issue (million)	**679**	674	677	**678**	674	674
Reconciliation of earnings and headline earnings:						
Net earnings/(loss) per income statement	**(51 595)**	67 456	(82 259)	**(133 854)**	79 108	26 869
Exceptional items: Profit on sale of ETC mine	**–**	–	(4 661)	**(4 661)**	–	(7 085)
Recoupments tax on sale of ETC mine			3 750	**3 750**	–	5 601
	(51 595)	67 456	(83 170)	**(134 765)**	79 108	25 385

* Comparative figures for December 2002 include ETC. The year ended 30 June 2003 figures include ETC to 15 June 2003.

2. BALANCE SHEETS

R'000	Unaudited 31 December 2003	Audited 30 June 2003*
ASSETS		
Non-current assets	**2 480 241**	2 569 795
Property, plant and equipment	**2 454 841**	2 543 841
Investments	**25 400**	25 954
Current assets	**94 205**	84 382
Inventories	**46 280**	46 407
Trade and other receivables	**47 003**	37 214
Deposits and cash	**922**	761
Total assets	**2 574 446**	2 654 177
EQUITY AND LIABILITIES		
Capital and reserves		
Share capital	**6 801**	6 765
Share premium	**2 236 766**	2 219 900
Retained income/(Accumulated loss)	**(90 027)**	43 827
Total shareholders' equity	**2 153 540**	2 270 492
Non-current liabilities	**324 770**	144 639
Non-hedge derivatives	**286 230**	102 715
Long-term provisions	**38 540**	41 924
Current liabilities	**96 136**	239 046
Trade and other payables	**92 549**	104 126
Short-term borrowings	**3 587**	134 920
Total equity and liabilities	**2 574 446**	2 654 177

* Comparative figures for December 2002 include ETC. The year ended 30 June 2003 figures include ETC to 15 June 2003.

3. CASH FLOW STATEMENTS

R'000	Unaudited Half-year ended Dec 2003	Unaudited Half-year ended Dec 2002*	Audited Year ended June 2003*
Cash generated from/(utilised by) operations			
Operating profit	**51 768**	49 579	109 920
Non-cash items and adjustments:			
Amortisation and depreciation	**127 111**	92 030	186 900
Provisions	**(2 908)**	(808)	(5 546)
Profit on sale of property, plant and equipment	**–**	–	(1 519)
	175 971	140 801	289 755
Net withdrawal from/(payments to) environmental trust fund	**–**	–	3 925
Investment income	**938**	6 582	12 987
Finance charges	**(3 874)**	(29 128)	(57 946)
	173 035	118 255	248 721
Cash provided by/(reinvested in) working capital			
Inventories	**127**	(10 740)	(18 351)
Trade and other payables	**(15 327)**	(34 457)	(30 390)
Trade and other receivables	**(9 789)**	1 043	13 578
Net cash generated from operating activities	**148 046**	74 101	213 558
Cash utilised in investment activities:			
Property, plant and equipment acquired	**(50 050)**	58 584	(124 364)
Investments acquired	**(2)**	–	(483)
Property, plant and equipment sold	**16 598**	1 777	3 558
Proceeds on sale of ETC mine	**–**	–	251 817
	(33 454)	(56 807)	130 528
Cash provided by financing activities			
Net increase in shareholders' funding	**16 902**	7 910	13 551
Leased assets	**–**	(691)	(1 434)
Decrease in long-term loans	**–**	–	(376 189)
(Decrease)/Increase in overdrafts and short-term borrowings	**(131 333)**	3 776	(76 224)
	(114 431)	10 995	(440 296)
Increase/(Decrease) in cash balances	**161**	28 289	(96 210)
Cash and cash equivalents at beginning of period	**761**	108 810	108 810
Translation adjustment	**–**	(3 712)	(11 839)
Cash and cash equivalents at end of period	**922**	133 387	761

* Comparative figures for December 2002 include ETC. The year ended 30 June 2003 figures include ETC to 15 June 2003.

4. STATEMENT OF SHAREHOLDERS' EQUITY

R'000	Ordinary share capital and premium	Retained income/ (Accumulated loss)	Unaudited Half-year ended Dec 2003	Unaudited Half-year ended Dec 2002	Audited Year ended June 2003
Changes in shareholders' equity					
Balance at beginning of period	2 226 665	43 827	**2 270 492**	2 230 072	2 230 072
Share options exercised	16 932		**16 932**	7 936	13 584
Derivative instruments	(30)		**(30)**	–	–
Expenses written-off against share premium	–		–	(26)	(33)
Transfer to equity reserves	–		–	(3 301)	–
Net earnings/(loss) for period	–	(133 854)	**(133 854)**	79 108	26 869
Balance at end of period	2 243 567	(90 027)	**2 153 540**	2 313 789	2 270 492

* Comparative figures for December 2002 include ETC. The year ended 30 June 2003 figures include ETC to 15 June 2003.

Hedging

At 31 December 2003, Avgold's hedge book represented 72 per cent of forecast gold production to June 2006 and had a mark-to-market value of a negative R394 million. This was calculated at a gold price of US$414,82/oz and an exchange rate of US$1,00:ZAR6,65. This mark-to-market valuation is inclusive of a negative R286 million pertaining to the rand/US$ forward exchange contracts utilised to convert the rand gold hedges into dollar gold hedges. The fair value adjustment on these FEC's has been included in the income statement. The hedges are unmargined and Avgold is maintaining its policy of not using derivatives instruments for speculative purposes.

Earnings are significantly distorted as a result and do not present an accurate economic picture of Avgold's results during the reporting period.

Subsequent changes to exchange rates will result in adjustments to the income statement thereby creating further variability in earnings.

Borrowings

Net borrowings reduced significantly during the quarter to R3 million (R46 million) following continuing positive cash flows from Target.

Prospects

We remain confident about achieving our production objective of 350 000 oz for the year to 30 June 2004 and are committed to maintain the critical path and optimise the orebody extraction. We are fully focused on achieving cost efficiencies and will minimise our cash costs. Earnings will, however, continue to be affected by future fluctuations in the rand/US$ exchange rate.

Dividend policy

The dividend policy will be reviewed pending the outcome of the Harmony offer.

Accounting policies

The accounting policies used are in accordance with South African Statements of Generally Accepted Accounting Practice and are consistent with those applied in the previous financial year.

HISTORICAL FINANCIAL INFORMATION OF ARM PLATINUM

CONSOLIDATED INCOME STATEMENTS

for the 18 months ended 30 June 2003 and for the years ended 31 December 2001 and 31 December 2000

	Notes	**18 months 30 June 2003 R'000**	12 months 31 Dec 2001 R'000	12 months 31 Dec 2000 R'000
Revenue	2	**210 538**	–	–
Cost of sales	3	**271 677**	9 205	–
Loss from metals mined		**(61 139)**	(9 205)	–
Corporate, administrative and other expenses		**5 839**	–	–
Loss from operations		**(66 978)**	(9 205)	–
Realised gains on financial instruments		**51 806**	–	–
Unrealised gain from fair value valuation of financial asset		**86 376**	–	–
Net finance cost	4	**(110 861)**	–	–
Loss before taxation	5	**(39 657)**	(9 205)	–
Taxation	6	**–**	–	–
Net loss attributable to ordinary shareholders		**(39 657)**	(9 205)	–
(Losses) per share (cents)		**(3 965 600)**	(920 500)	
Diluted (losses) per share (cents)		**(3 965 600)**	(920 500)	
Headline (losses) per share (cents)		**(3 965 600)**	(920 500)	
Dividends per share (cents)		**–**	–	

CONSOLIDATED BALANCE SHEETS

	Notes	At 30 June 2003 R'000	At 31 Dec 2001 R'000	At 31 Dec 2000 R'000
ASSETS				
Non-current assets				
Property, plant and equipment	7	**1 112 984**	–	–
Investments	8	**–**	499 154	–
Restricted cash	12	**75 774**	–	–
Total non-current assets		**1 188 758**	499 154	–
Current assets				
Financial assets	9	**106 105**	–	–
Inventories	10	**141**	–	–
Accounts receivable	11	**92 030**	–	–
Cash and cash equivalents	12	**21 451**	1	1
Total current assets		**219 727**	1	1
Total assets		**1 408 485**	499 155	1
EQUITY AND LIABILITIES				
Shareholders' equity				
Ordinary share capital	13	**1**	1	1
Accumulated losses		**(48 862)**	(9 205)	–
Total shareholders' equity		**(48 861)**	(9 204)	1
Non-current liabilities				
Borrowings	14	**1 197 782**	508 359	–
Provision for environmental rehabilitation	15	**2 498**	–	–
Total non-current liabilities		**1 200 280**	508 359	–
Current liabilities				
Accounts payable and accruals	16	**148 349**	–	–
Short-term portion of borrowings	**15**	**108 117**	–	–
Bank overdraft	**12**	**600**	–	–
Total current liabilities		**257 066**	–	–
Total equity and liabilities		**1 408 485**	499 155	1
Net asset value per share (cents)		**(4 866 000)**	(940 500)	–
Tangible net asset value per share (cents)		**(4 866 000)**	(940 500)	–

CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY

for the 18 months ended 30 June 2003 and for the years ended 31 December 2001 and 31 December 2000

	Ordinary shares R'000	Share premium R'000	Accumulated loss R'000	Total R'000
Balance at 1 January 2000	–	–	–	–
Shares issued	**1**	–	–	**1**
Net loss attributable to ordinary shareholders	–	–	–	–
Balance at 31 December 2000	**1**	–	–	**1**
Shares issued	–	–	–	–
Net loss attributable to ordinary shareholders	–	–	**(9 205)**	**(9 205)**
Balance at 31 December 2001	**1**	–	**(9 205)**	**(9 204)**
Shares issued	–	–	–	–
Net loss attributable to ordinary shareholders	–	–	**(39 657)**	**(39 657)**
Balance at 30 June 2003	**1**	–	**(48 862)**	**(48 861)**

CONSOLIDATED CASH FLOW STATEMENTS

for the 18 months ended 30 June 2003 and for the years ended 31 December 2001 and 31 December 2000

	Notes	**18 months 30 June 2003 R'000**	12 months 31 Dec 2001 R'000	12 months 31 Dec 2000 R'000
Cash flow from operations				
Cash received from customers		**170 314**	–	–
Less: Payments made to suppliers and employees		**(100 142)**	(9 205)	–
Cash generated from operations	19	**70 172**	(9 205)	–
Net finance cost		**(110 861)**	–	–
Net cash provided by operations		**(40 689)**	(9 205)	–
Cash flow from investing activities				
Additions to property, plant and equipment		**(1 159 382)**	–	–
Decrease/(Increase) in investments		**499 154**	(499 154)	–
Net cash utilised in investing activities		**(660 228)**	(499 154)	–
Cash flow from financing activities				
Movement in borrowings		**747 541**	508 359	–
Preference shares issued by ARM Consortium		**50 000**	–	–
Ordinary shares issued		–	–	1
Net cash generated by financing activities		**797 541**	508 359	1
Net increase in cash and cash equivalents		**96 624**	–	1
Cash and cash equivalents – beginning of period		**1**	1	–
Cash and cash equivalents – end of period	12	**96 625**	1	1

NOTES

1. ACCOUNTING POLICIES

1.1 Basis of preparation

The consolidated financial statements are prepared in accordance with and comply with South African Statements of Generally Accepted Accounting Practice and International Financial Reporting Standards. The consolidated financial statements are prepared under the historical cost convention as modified by the revaluation of certain investments.

1.2 Consolidation

The ARM Platinum Group financial statements incorporate the financial statements of ARM Platinum, its subsidiaries and its proportionate interest in joint ventures. Subsidiary undertakings, which are those companies in which the ARM Platinum Group, directly or indirectly, has an interest of more than one-half of the voting rights, or otherwise has power to exercise control over the operations, are consolidated. Subsidiaries are consolidated from the date on which effective control is transferred to the ARM Platinum Group and are no longer consolidated from the date control ceases. A joint venture is an entity in which the ARM Platinum Group holds a long-term interest and which is jointly controlled by the ARM Platinum Group and one or more other venturers under a contractual arrangement. The ARM Platinum Group's interest in a jointly controlled entity is accounted for by proportionate consolidation from the date on which joint effective control is transferred to the ARM Platinum Group and is no longer consolidated from the date on which joint control ceases. Under this method, the ARM Platinum Group includes its share of the joint venture's income and expenditure, assets and liabilities and cash flows on the relevant components of the financial statements.

All inter-company transactions, balances and unrealised surpluses and deficits on transactions between ARM Platinum Group companies have been eliminated. Where necessary, accounting policies for subsidiaries have been changed to ensure consistency with policies adopted by ARM Platinum.

1.3 Use of estimates

The preparation of the financial statements, in conformity with South African Statements of Generally Accepted Accounting Practice and International Financial Reporting Standards, requires the ARM Platinum Group's management to make estimates and assumptions that effect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Significant estimates used by management include the valuation and amortisation of long life assets as well as estimates of exposure and liabilities with regard to rehabilitation costs, employee benefit liabilities and taxation. Actual results could differ from those estimates.

1.4 Foreign currency

The South African rand is the measurement currency of the ARM Platinum Group, which reflects the economic substance of the underlying events and circumstances. Foreign currency transactions are recorded at the spot rate of exchange on the transaction date. Monetary assets and liabilities denominated in foreign currencies are translated at rates of exchange ruling at the reporting date. Foreign exchange gains or losses arising from foreign exchange transactions are included in the determination of net profit. Monetary items of these operations are translated using the closing rate of exchange. Non-monetary items are translated at the rate of exchange at the historical transaction date. Income and expense items are translated at the weighted average rate of exchange for the reporting period. All translation gains or losses are included in the determination of net profit.

1.5 Cash and cash equivalents

Cash and cash equivalents consist of cash, cash deposits with banks and money-market instruments. The carrying amount of cash, cash deposits with banks and money-market instruments, approximates their fair value.

1.6 Investments

Unlisted investments:

Unlisted investments are reflected at fair value, or cost, where fair value cannot reliably be measured. If the directors are of the opinion that there has been a permanent diminution in the value of these investments, they are written-down and recognised as an expense in the period in which the diminution is recognised.

1.7 Inventories

Stores and materials consist of consumable stores and are valued at average cost. Obsolete and redundant items are written-off to operating costs.

1.8 Receivables

Accounts receivable are stated at the gross invoice value, adjusted for payments received and an allowance for doubtful debts where considered appropriate. Bad debts are written-off when identified.

1.9 Accounts payable

Accounts payable are initially recorded at cost, and subsequently carried at cost, less payments made. Settlement discounts are recognised in net profit when they are granted.

1.10 Leases

A finance lease transfers substantially all the risks and rewards of ownership of an asset to the ARM Platinum Group. Assets subject to finance leases (leases that transfers substantially all the risks and rewards of ownership of an asset) are capitalised as property, plant and equipment at fair value of the leased asset at inception of the lease, with the related lease obligation recognised at the same amount. Capitalised leased assets are depreciated over their estimated useful lives. Finance lease payments are allocated between finance cost and capital repayment, using the effective interest rate method. Operating lease rentals are charged against operating profit on a straight-line basis over the lease term.

1.11 Property, plant and equipment

(a) Mining assets

Mine development costs are capitalised to capital work-in-progress and transferred to mining property, plant and equipment when the mining venture reaches commercial production. Capitalised mine development costs include expenditure incurred to develop new mining operations, to define further mineralisation in existing ore bodies, to expand the capacity of the mine and to maintain production. Costs include interest capitalised during the construction period, where financed by borrowings and the present value of future decommissioning costs. Items of mining property, plant and equipment are amortised on a straight-line basis, over the lesser of 25 years, or their expected useful lives, to estimated residual values. Amortisation is first charged on mining ventures from the date on which the mining ventures reach commercial production quantities.

(b) Non-mining assets

Non-mining assets are stated at historical cost less accumulated depreciation. Depreciation is charged on the straight-line basis over the useful lives of these assets at the following annual rates: plant and equipment: 10% to 25%; motor vehicles: 25%; office furniture and equipment: 10% to 50%. Land is not depreciated, as it has infinite life.

(c) Impairment

An impairment review of mining and non-mining assets is carried out annually, by comparing the carrying amount of assets to their recoverable amounts when impairment indicators exist in relation to a cash generating unit. Recoverable amount is the higher of value in use or net selling price. Value in use of mining assets is determined by applying a discount rate to the anticipated pre-tax cash flows over the remaining life of the asset. The discount rate used is the Venture's weighted average cost of capital as determined by the capital asset pricing model.

The recoverable amounts of non-mining assets are determined by reference to market values.

A previously recognised impairment loss is reversed if the recoverable amount increases as a result of a change in the estimates used to determine the recoverable amount. This reversal is recognised in the income statement and is limited to the carrying amount that would have been determined, net of amortisation, had no impairment loss been recognised in prior years.

Where the recoverable amount is less than the carrying amount, the impairment, when identified, is charged against net profit to reduce the carrying amount of the affected assets to their recoverable amounts. The revised carrying amounts are amortised on a systematic basis over the remaining useful lives of such affected assets.

1.12 Exploration costs

Exploration cost is expensed when incurred, except when the expenditure is incurred on specific properties which have indicated the presence of a mineral resource with the potential of being developed into a mine. In such case, the capitalised exploration expenditure is amortised over the shorter of the useful life of the constructed mining asset, or 25 years.

1.13 Environmental rehabilitation

Estimated long-term environmental obligations, comprising pollution control, rehabilitation and mine closure, are based on the Venture's environmental management plans, in compliance with current technology, environmental and regulatory requirements.

(a) Decommissioning costs

The discounted amount of estimated decommissioning costs that embody future economic benefits is capitalised as property, plant and equipment when commercial production is reached and concomitant provisions are raised. These estimates are reviewed annually and discounted using a pre-tax risk-free rate that reflects current market assessments of the time value of money. The increase in decommissioning provisions, due to the passage of time, is charged to net investment income. Decommissioning assets are amortised on a straight-line basis over the lesser of 25 years or the expected benefit period.

(b) Restoration costs

Changes in the discounted amount of estimated restoration costs are charged to income during the period in which such changes occur. Estimated restoration costs are reviewed annually and discounted using a pre-tax risk-free rate that reflects current market assessments of the time value of money. The increase in restoration provisions, due to the passage of time, is charged to net investment income.

(c) Ongoing rehabilitation costs

Expenditure on ongoing rehabilitation costs is recognised as an expense when incurred.

(d) Modikwa Joint Venture Rehabilitation Trust Fund

ARM Consortium annually contributes to the Modikwa Joint Venture Rehabilitation Trust Fund, which was created to fund the estimated cost of pollution control, rehabilitation and mine closure at the end of the life of the mine. Contributions are determined on the basis of the estimated environmental obligation over the life of the mine. Contributions made are reflected as a non-current monetary asset. Income earned on monies paid to the Trust is accounted for as net investment income.

1.14 Provisions

A provision is recognised when there is a legal or constructive obligation as a result of a past event for which it is probable that an outflow of economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation.

1.15 Deferred taxation

ARM Platinum follows the comprehensive liability method of accounting for deferred tax using the balance sheet approach. Under this method, deferred income and mining taxes are recognised for the tax consequences of temporary differences, by applying expected tax rates to the differences between the tax base of certain assets or liabilities and its balance sheet carrying amount. Deferred tax is charged to the income statement, except to the extent that it relates to a transaction that is recognised directly in equity, or a business combination that is an acquisition. The effect on deferred tax of any change in tax rates is recognised in the income statement, except to the extent that it relates to items previously charged or credited directly to equity.

The principal temporary differences arise from amortisation and depreciation on property, plant and equipment, provisions, post-retirement benefits and tax losses are carried forward. Deferred tax assets relating to the carry forward of unused tax losses are recognised to the extent that it is probable that future taxable profit will be available against which the unused tax losses can be utilised.

1.16 Pension plans and other employee

(a) Short-term employee benefits

Remuneration to employees in respect of services rendered during a reporting period is recognised as an expense in that reporting period. Accruals are made for accumulated leave.

(b) Termination benefits

Termination benefits are charged against income when the ARM Platinum Group is demonstrably committed to terminating the employment of an employee or group of employees before their normal retirement date.

(c) Post-employment benefits

Defined contribution plans: Retirement, provident and pension funds

Contributions to defined contribution plans in respect of services rendered during a reporting period are recognised as an expense in that period.

1.17 Revenue recognition

(a) Revenue

Revenue from the sale of metals is recognised when the risk and rewards of ownership are transferred to the buyer. Gross sales revenue represents the invoiced amounts for all metals supplied to customers. Gross sales revenue excludes value-added tax.

(b) Interest income

Interest is recognised on a time proportion basis which takes into account the effective yield on the asset over the period it is expected to be held.

1.18 Derivative instruments

Financial assets are initially measured at cost, including transaction costs, when the ARM Platinum Group becomes party to contractual arrangements.The subsequent measurements are dealt with in line with AC 133: "Financial Instruments: Recognition and Measurement", as stated below:

- commodity-based ("normal purchase or normal sale") contracts that meets the requirements of AC 133 are recognised in earnings when they are settled by physical delivery;
- where the conditions in AC 133 for special hedge accounting are met, the derivative is recognised in the balance sheet as either a financial asset or financial liability and is recorded at fair value. When the ARM Platinum Group enters into cash flow hedges, the effective portion of the fair value gains or losses is recognised in equity until the underlying transaction occurs, when the gains or losses are recognised in earnings in the measurement of the asset or liability.The effective portion of fair value gains and losses is recorded in earnings in the period to which they relate; and
- all other derivative instruments are subsequently measured at their estimated fair value, with the changes in estimated fair value at each reporting date being reported in the income statement in the period to which they relate.

The estimated fair values of derivative instruments are determined at discrete points in time, based on the relevant market information. These estimates are calculated with reference to the market rates using industry standard valuation techniques.

	30 June 2003 R'000	31 Dec 2001 R'000	31 Dec 2000 R'000
2. REVENUE			
PGM sales	**210 538**	–	–
3. COST OF SALES			
Cash operating costs include mine production, transport and plant costs. These costs, analysed by nature, consist of the following:			
Labour	**73 872**	–	–
Stores	**70 601**	–	–
Utilities	**15 412**	–	–
Sundries	**36 163**	9 205	–
Contractors	**23 994**	–	–
Exploration	**5 095**	–	–
Prospecting	**142**	–	–
Cash operating costs	**225 279**	9 205	–
Amortisation and depreciation	**46 398**	–	–
Cost of sales	**271 677**	9 205	–
4. NET FINANCE COST			
Interest paid			
Banking institutions	**103 752**	3 840	–
Preference shares	**9 458**	–	–
Time value adjustment on rehabilitation provision	**119**	–	–
ARMI	**3 086**	–	–
	116 415	3 840	–
Interest received			
Banking institutions	**(5 554)**	–	–
Other	**–**	(3 840)	–
Net finance cost	**110 861**	–	–
5. LOSS BEFORE TAXATION			
Loss from operations before taxation include the following:			
Auditors' remuneration	**246**	20	–
– audit fees	**246**	20	–
– other services	**–**	–	–
Directors' remuneration	–	–	–
Amortisation and depreciation	**46 398**	–	–
– Mining assets	**42 764**	–	–
– Environmental rehabilitation asset	**35**	–	–
– Vehicles	**35**	–	–
– Computer equipment	**2 334**	–	–
– Furniture and fittings	**1 230**	–	–
Net realised foreign currency losses	**12**	–	–

	30 June 2003 R'000	31 Dec 2001 R'000	31 Dec 2000 R'000

6. TAXATION

No taxation has been charged to the income statement as ARM Platinum has not earned any taxable income during the periods.

No deferred tax asset has been raised for unused tax losses and unredeemed capital expenditure due to the fact that the ARM Platinum Group has not made any taxable profit to date.

7. PROPERTY, PLANT AND EQUIPMENT

Mining assets	**935 675**	–	–
Cost	**978 439**	–	–
Accumulated amortisation	**(42 764)**	–	–
Capital work-in-progress	**154 036**	–	–
Cost	**154 036**	–	–
Accumulated amortisation	**–**	–	–
Environmental rehabilitation asset	**2 086**	–	–
Cost	**2 121**	–	–
Accumulated amortisation	**(35)**	–	–
Vehicles	**155**	–	–
Cost	**190**	–	–
Accumulated amortisation	**(35)**	–	–
Computer equipment	**10 130**	–	–
Cost	**12 464**	–	–
Accumulated amortisation	**(2 334)**	–	–
Furniture and fittings	**10 902**	–	–
Cost	**12 131**	–	–
Accumulated amortisation	**(1 230)**	–	–
Net book value at end of period	**1 112 984**	–	–
Net book value at beginning of period	**–**	–	–
Additions	**1 159 382**	–	–
Mining assets	**978 439**	–	–
Capital work-in-progress	**154 036**	–	–
Environmental rehabilitation asset	**2 121**	–	–
Vehicles	**190**	–	–
Computer equipment	**12 464**	–	–
Furniture and fittings	**12 131**	–	–
Amortisation/Depreciation charge	**(46 398)**	–	–
Mining assets	**(42 764)**	–	–
Capital work-in-progress	**–**	–	–
Environmental rehabilitation asset	**(35)**	–	–
Vehicles	**(35)**	–	–
Computer equipment	**(2 334)**	–	–
Furniture and fittings	**(1 230)**	–	–
Net book value at end of period	**1 112 984**	–	–

	30 June 2003 R'000	31 Dec 2001 R'000	31 Dec 2000 R'000
All the ARM Platinum Group's assets have been pledged, and is in the process of registering a general notarial bond to the value of R1 billion over all the mineral rights, mining title, rights or authorisations, and is in the process of registering a general notarial bond over all the movable assets and over the plant and certain specified moveable assets of not less than R1 billion, as security for loans granted to ARM Consortium as detailed in the note on borrowings.			
8. INVESTMENTS			
Unlisted investments			
8.1 Investment in Modikwa Platinum Mine (Pty) Limited			
50 ordinary shares of R2,00 each (Directors' valuation: R2,00)	–	–	–
The shares have been pledged as security for loans granted to ARM Consortium as detailed in the note on borrowings.			
8.2 Investment in Modikwa Mine Personnel Services (Pty) Limited			
50 ordinary shares of R1,00 each (Directors' valuation: R1,00)	–	–	–
The shares have been pledged as security for loans granted to ARM Consortium as detailed in the note on borrowings.			
Other investments and loans			
8.3 BoE Bank Limited	–	161 202	–
This investment carried interest at a floating rate which, at 31 December 2001, equated to 9,794% on an investment of R50 000 000, and 8,75% on an investment of R110 000 000. During the period under review, this investment was recalled to finance a portion of the Modikwa Joint Venture.			
8.4 Loan: Rustenburg Platinum Mines (Pty) Limited	–	327 740	–
This loan represented funds advanced to Rustenburg Platinum to fund half of the development costs of the Modikwa Platinum Mine joint venture. The loan was repaid after the effective date of the joint venture agreement. The funds received were used to redeem the borrowings from BoE Bank Limited.			
8.5 Loan: Various Community Upliftment and Development Companies	–	10 212	–
The loans to various companies were unsecured, interest free and are not subject to any fixed repayment terms. The ARM Platinum Group facilitated the formation of two Community Upliftment Section 21 companies, which were registered as shareholders in ARM Consortium, as well as a number of Development Companies to participate in the tenders, orders and contracts issued by the Modikwa Platinum Mine during the construction phase, focusing mainly on building and construction, accommodation and catering as well as concrete works; and to facilitate the sourcing of labour from the local community thereby exposing them to job opportunities in the mine as well as in various construction companies. The loans were granted to these companies to fund their start-up costs and the running of the operations. During the 18 months ended 30 June 2003 these loans were transferred from ARM Platinum to ARMI (refer note 14.5).			
	–	499 154	–

	30 June 2003 R'000	31 Dec 2001 R'000	31 Dec 2000 R'000
9. FINANCIAL ASSETS			
Put options	**106 105**	–	–

Due to the volatility in the rand/dollar exchange rate, the ARM Platinum Group hedged 12 months of the initial years' production (1 January 2003 to 31 December 2003) of PGM concentrate.

A total premium of R31,1 million was paid on the hedging contract. The options as per the contract are exercised on a monthly basis.

At 30 June 2003, the outstanding options were as follows:

Maturity Date	Volume US$	Strike price Rand	Premium R'000
29/07/2003	3 120 000	12,319	2 519
27/08/2003	3 420 000	12,378	2 800
26/09/2003	3 700 000	12,437	3 088
29/10/2003	4 310 000	12,496	3 666
25/11/2003	4 360 000	12,556	3 753
29/12/2003	4 440 000	12,616	3 904
			19 729

At 30 June 2003 the above outstanding options had a fair value of R106,1 million.

The benefits resulting from the options have been pledged as security for loans granted to ARM Consortium as detailed in a note under the heading of borrowings.

	30 June 2003 R'000	31 Dec 2001 R'000	31 Dec 2000 R'000
10. INVENTORIES			
Stores and materials	**141**	–	–
11. ACCOUNTS RECEIVABLE			
Value-added tax	**8 386**	–	–
Trade receivables	**78 169**	–	–
Payroll debtors	**10**	–	–
Other	**5 465**	–	–
	92 030	–	–
12. CASH AND CASH EQUIVALENTS			
Cash and cash equivalents	**21 451**	1	1
Bank overdraft	**(600)**	–	–
Restricted cash balance – debt service reserve	**75 774**	–	–
Total cash and cash equivalents as per the cash flow statement	**96 625**	1	1

The restricted cash consists of funds placed on bank deposit, in terms of ARM Consortium's loan agreements, to cover future capital expenditure.

The cash and cash equivalents have been pledged as security for loans granted to ARM Consortium as detailed in a note under the heading of borrowings.

	30 June 2003 R'000	31 Dec 2001 R'000	31 Dec 2000 R'000
13. SHARE CAPITAL			
Share capital			
Authorised			
1 000 ordinary shares of R1,00 each	**1**	1	1

	Number of ordinary shares	Ordinary shares R'000	Share premium R'000	Total R'000
Issued				
At 31 December 2000				
Ordinary shares issued of R1,00 each	**1 000**	1	–	1
At 31 December 2001				
Ordinary shares issued of R1,00 each	**1 000**	1	–	1
At 30 June 2003				
Ordinary shares issued of R1,00 each	**1 000**	1	–	1

	30 June 2003 R'000	31 Dec 2001 R'000	31 Dec 2000 R'000
14. BORROWINGS			
14.1 Preference shares issued by ARM Consortium	**59 457**	–	–
Balance at beginning of period	–	–	–
Shares issued	**500**	–	–
Share premium	**49 500**		
Preference dividends accrued	**9 457**	–	–

On 10 July 2002, ARM Consortium issued 50 000 000 cumulative, redeemable, convertible preference shares with a par value of R0,01 per share, at R1,00 per share. The preference shares are redeemable after a period of 10 years from the date of issue. The preference shares can be redeemed at the option of ARM Consortium at any time after one year from the date of issue. The preference shares will become redeemable earlier than 10 years if the ARM Platinum Group is in breach of certain obligations in terms of its other borrowings. The preference shares are convertible into ordinary shares at any time after a period of three years from the date of issue, at the option of the preference shareholder. The existing shareholders of ARM Consortium have the option to take up the converted shares at an agreed price within a period of 90 days from conversion. The first dividend, covering the period from date of issue until 30 June 2004, is payable on 30 June 2004, subject to the contractual arrangements of the subordination agreement. Thereafter, the dividend is payable six monthly in arrears.

	30 June 2003 R'000	31 Dec 2001 R'000	31 Dec 2000 R'000
Bank borrowings			
14.2 Senior debt facilities	**463 754**	–	–
Balance at beginning of period	–	–	–
Funds advanced	**504 000**	–	–
Interest	**79 089**	–	–
Payments made	**(42 043)**	–	–
Short-term portion	**(77 292)**	–	–

The senior debt facilities are secured and carried interest at 15,99% nominal annual rate compounded on a monthly basis during the 18-month period. The interest rate comprises a fixed and variable component. Repayments are made in bi-annual instalments, starting on 30 June 2003 and ending on 30 June 2010.

14.3 Junior debt facilities	**128 205**	–	–
Balance at beginning of period	–	–	–
Funds advanced	**138 716**	–	–
Interest	**23 234**	–	–
Payments made	**(12 378)**	–	–
Short-term portion	**(21 367)**	–	–

The junior debt facilities are secured and carry interest at a fixed rate plus a portion of the profits. During the 18-month period the facility carried interest at a 16,99% nominal annual rate compounded on a monthly basis. Repayments are made in bi-annual instalments, starting on 30 June 2003 and ending on 30 June 2010.

14.4 Standby debt facilities	**50 000**	–	–
Balance at beginning of period	–	–	–
Funds advanced	**49 938**	–	–
Interest	**1 194**	–	–
Payments made	**(1 132)**	–	–
Short-term portion	–	–	–

The standby debt facilities are secured and carry interest at variable rates plus a portion of the profits. During the 18-month period R12,3 million of the standby facility carried interest at a 16,74% nominal annual rate compounded on a monthly basis and the remaining balance of R37,7 million carried interest at a 14,24% nominal annual rate compounded on a monthly basis. Interest repayments are made in bi-annual instalments, starting on 30 June 2003 and ending on 30 June 2010 and capital repayments are envisaged to commence on 31 December 2004 in 12 equal bi-annual instalments.

Securities for the above loans:

Guarantees issued by ARM Platinum

ARM Platinum, together with ARMI and ARM Consortium, act as co-guarantor and sponsor to support ARM Consortium to secure funding, through a consortium of financiers ("the Lenders"), for the funding of the acquisition and development of the Modikwa Platinum Mine, which is 50% owned by ARM Consortium and 50% by Rustenburg Platinum. ARM Platinum issued certain guarantees and pledged certain assets in favour of the Lenders as set out in notes 14.2 to 14.4 above, on behalf of ARM Consortium. The details are:

- ARM Platinum pledged, ceded, transferred and made over all its rights, title and interest in, and to, claims, now and in the future, against ARM Consortium, whether in equity, ordinary shares, the right to subscribe for further equity, any benefits, dividends, interest and privileges attracting thereto, or loans, benefits from any bonds, pledges, encumbrances and other securities held by ARM Platinum in respect of such claims,

and all bills of exchange, promissory notes and negotiable instruments of any description owned or held in respect of such claims. These will remain in force until such time as all the secured obligations outstanding to the Lenders have been fully and finally discharged;

- ARM Platinum guaranteed the prompt and full repayment of all ARM Consortiums obligations to the Lenders and undertook, on first demand, to pay the Lenders all amounts due by ARM Consortium;
- ARM Platinum shall subscribe or lend R150 million in equity to ARM Consortium;
- ARM Platinum, for as long as ARM Consortium is indebted to the Lenders:
  - will not accept, directly or indirectly, payment of their claims, of whatsoever nature, from ARM Consortium, except for claims arising under the ARM Consultancy Agreement;
  - subordinated, for the benefit of the Lenders, all its loans and claims against ARM Consortium;
  - will not dispose of, alienate, encumber, cede, assign or make over its claims against ARM Consortium without the prior written consent of the Lenders;
- ARM Platinum shall procure that the shareholders of ARM Consortium shall subscribe, or lend, further equity to ARM Consortium to contribute to the joint venture with Rustenburg Platinum, its share of any unfunded costs;
- the shareholders of ARM Platinum may only dispose of shares in ARM Platinum with the prior written consent of the Lenders provided the shareholders do not lose control of ARM Platinum;
- ARM Platinum warrants that it will hold at least 60% shareholding in ARM Consortium for a period of five years from March 2002; and
- should the shareholders of ARM Platinum wish to list the shares of ARM Platinum on a stock exchange, written consent must be obtained from the Lenders.

Guarantees issued by ARM Consortium

ARM Consortium, together with ARMI and ARM Platinum, acts as co-guarantor and co-sponsor to secure funding for the acquisition and development of the Modikwa Platinum Mine, through a consortium of financiers ("the Lenders") and issued guarantees and pledged assets in favour of the Lenders.

The details are:

- ARM Consortium is in the process to register a collateral mortgage bond to the value of R1 billion over all the mineral rights, mining title, rights or authorisation;
- ARM Consortium shall not make or pay any distribution, save for certain contractual exclusions;
- ARM Consortium pledged and ceded:
  - all its assets, including its bank accounts and reserves;
  - its 50% stake in the Modikwa Platinum Mine Joint Venture with Rustenburg Platinum Mines Limited;
  - all its contracts, permits, Government approvals and insurance proceeds;
  - all its rights against ARMI and ARM Platinum to require them to subscribe for equity or to make loans;
  - all its project accounts; and
  - its shares held in Modikwa Platinum Mine (Pty) Limited (formerly Rustenburg Pharmaceuticals (Pty) Limited) and in Modikwa Personnel Services (Pty) Limited (formerly Maandagshoek Mining Services (Pty) Limited);
- ARM Consortium is in the process of registering a general notarial bond over all its moveable assets and over the plant and certain specified moveable assets of not less than R1 billion;
- ARM Consortium, for as long as it is indebted to the Lenders:
  - will not make payment, directly or indirectly, of the claims, of whatsoever nature, that ARMI and ARM Platinum may have or may have in the future, against ARM Consortium, except for claims arising under the ARM Consultancy Agreement;
  - subordinated, for the benefit of the Lenders, all its loans and claims from ARMI and ARM Platinum;
  - will not dispose of, alienate, encumber, cede, assign or make over any claims against ARM Platinum without the prior written consent of the Lenders; and
  - should the shareholders of ARM Consortium wish to list the shares of ARM Consortium on a stock exchange, written consent must be obtained from the Lenders.

Guarantees issued by ARMI

ARMI, together with ARM Platinum and ARM Consortium, acts as co-guarantor and co-sponsor to secure funding for the acquisition and development of the Modikwa Platinum Mine, through a consortium of financiers ("the Lenders") and issued guarantees and pledged certain assets in favour of the Lenders.

The details are:

- ARMI pledged, ceded, transferred and made over all its rights, title and interest in, and to, claims, now and in the future, against ARM Consortium, whether in equity, ordinary shares, the right to subscribe for further equity, any benefits, dividends, interest and privileges attracting thereto, or loans, benefits from any bonds, pledges, encumbrances and other securities held by ARMI in respect of such claims, and all bills of exchange, promissory notes and negotiable instruments of any description owned or held in respect of such claim. These will remain in force until such time as all secured obligations outstanding to the Lenders, have been fully and finally discharged;
- ARMI, for so long as ARM Consortium is indebted to the Lenders:
  - will not accept, directly or indirectly, payment of their claims, of whatsoever nature, from ARM Consortium, except for claims arising under the ARM Consultancy Agreement;
  - subordinated, for the benefit of the Lenders, all its loans and claims against ARM Consortium; and
  - will not to dispose of, alienate, encumber, cede, assign or make over its claims against ARM Consortium without the prior written consent of the Lenders;
- ARMI, shall procure that the shareholders of ARM Consortium shall subscribe, or lend, further equity to ARM Consortium to contribute to the joint venture with Rustenburg Platinum, its share of any unfunded costs;
- the shareholders of the ARMI may only dispose of shares in ARMI with the prior written consent of the Lenders, provided the controlling shareholders do not loose control of the company; and
- should the shareholders of ARMI wish to list the shares of ARMI on a stock exchange, written consent must be obtained from the Lenders.

	30 June 2003 R'000	31 Dec 2001 R'000	31 Dec 2000 R'000
14.5 Loan: ARMI	**505 823**	180 619	–
Balance at beginning of period	**180 619**	–	–
Funds advanced	**335 416**	180 619	–
Loan transferred – refer note 8.5	**(10 212)**	–	–
Payments made	**–**	–	–
Short-term portion	**–**	–	–

The loan is unsecured and has no fixed terms of repayment of the R505,8 million, R75,7 million carries interest at a floating rate linked to prime. At 30 June 2003, this rate was 11%. The remaining balance of R430,1 million of this loan is interest free.

14.6 Loan: BoE Bank Limited	**–**	327 740	–
Balance at beginning of period	**327 740**	–	–
Funds advanced	**–**	323 900	–
Interest	**–**	3 840	–
Payments made	**(327 740)**	–	–
Costs	**–**	–	–

The loan carried interest at a floating rate, which equated to 10,5835% on 31 December 2001. The loan has been repaid.

Total long-term borrowings	**1 197 782**	508 359	–
Total short-term borrowings	**108 117**	–	–
Total borrowings	**1 305 899**	508 359	–

	30 June 2003 R'000	31 Dec 2001 R'000	31 Dec 2000 R'000
14.7 Future debt repayments			
In the next 12 months	**108 117**	–	–
Between 1 and 2 years	**106 993**	327 740	–
Between 2 and 5 years	**320 979**	–	–
Over 5 years	**769 810**	180 619	–
Total borrowings	**1 305 899**	508 359	–

The loans that are repayable within 12 months will be funded from internally generated funds or from further borrowings.

The loans arose from the purchase of assets.

15. ENVIRONMENTAL REHABILITATION

Provision raised for future rehabilitation			
Balance beginning of period	–	–	–
Time value adjustment	**119**	–	–
Charged to the income statement	**2 379**	–	–
Balance end of period	**2 498**	–	–

16. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

Trade payables	**3 320**	–	–
Accruals	**34 059**	–	–
Payroll creditors	**3 179**	–	–
Other payables	**107 791**	–	–
	148 349	–	–

17. EMPLOYMENT BENEFIT PLANS

Pension and Provident Funds: The ARM Platinum Group contributes to several pension and provident funds governed by the Pension Funds Act, 1956. The pension funds are multi-employer industry plans. The ARM Platinum Group's liability is limited to its annually determined contributions.

The provident funds are funded on the "money accumulative basis" with the members' and employer's contributions having been fixed in the constitution of funds.

Substantially, all of the ARM Platinum Group's employees are covered by the abovementioned retirement benefit plans.

18. FINANCIAL INSTRUMENTS

The ARM Platinum Group is exposed to market risks including credit, foreign currency, commodity price, interest rate and liquidity risk associated with underlying assets, liabilities and anticipated transactions. Based on periodic evaluation of these exposures, the ARM Platinum Group may enter into derivative financial instruments to manage these exposures. The ARM Platinum Group does not hold or issue derivative financial instruments for trading or speculative purposes.

Commodity price sensitivity

As a general rule, the ARM Platinum Group sells its PGM concentrate at market prices and normally does not enter into forward sales, derivatives or other hedging arrangements to establish a price in advance for the sale of its future production.

Foreign currency sensitivity

In the ordinary course of business, the ARM Platinum Group enters into transactions denominated in foreign currency (primarily US dollars). As a result, the ARM Platinum Group is subject to translation exposure from fluctuations in foreign currency exchange rates. The ARM Platinum Group does not generally hedge its exposure

to foreign currency exchange rates. During the18 months ended 30 June 2003 the ARM Platinum Group purchased certain put options to hedge against foreign exchange movements relating to the estimated sales of PGM concentrates for the period 1 January 2003 to 31 December 2003 (refer to note 9 for further details).

Concentration of credit risk

Financial instruments, which potentially subject the ARM Platinum Group to significant concentrations of credit risk, consist principally of cash and cash equivalents, short-term investments and various derivative financial instruments. The ARM Platinum Group's financial instruments do not represent a concentration of credit risk as the ARM Platinum Group deals and maintains cash and cash equivalents and derivative financial instruments with a variety of well-established financial institutions of high quality and credit standing. The ARM Platinum Group's debtors and loans are regularly monitored and assessed.

Interest rates and liquidity risk

Fluctuations in interest rates impacts on the value of the short-term cash investments and financing activities, giving rise to interest rate risk. The ARM Platinum Group generally does not undertake any specific actions to cover its exposure to interest rate risk.

In the ordinary course of business, the ARM Platinum Group receives cash from its operations and it is required to fund working capital and capital expenditure requirements. The cash is managed to ensure surplus funds are invested to provide sufficient liquidity at minimum risk.

Fair value

The fair value of financial instruments is defined as the amount at which the instrument could be exchanged in a current transaction between willing parties. The carrying amount of receivables, accounts payables and cash and cash equivalents are a reasonable estimates of their fair values because of the short-term maturity investments. The investments in the environmental trust fund approximates fair values as the funds are invested in short-term maturity investments. The investments are carried at market value. Long-term loans approximate fair value as they are subject to market-based rates.

	18 months 30 June 2003 R'000	12 months 31 Dec 2001 R'000	12 months 31 Dec 2000 R'000
19. CASH GENERATED FROM OPERATIONS			
Reconciliation of profit before taxation to cash generated from operations:			
Loss before taxation	**(39 657)**	(9 205)	–
Adjusted for:			
Interest received	**(5 554)**	(3 840)	–
Interest paid	**116 415**	3 840	–
Unrealised gains from fair valuation of financial assets	**(86 376)**	–	–
Depreciation and amortisation	**46 398**	–	–
Net change in provision for environmental rehabilitation	**2 498**	–	–
Effect of changes in operating working capital items:			
Receivables	**(92 030)**	–	–
Financial assets	**(19 729)**	–	–
Inventories	**(141)**	–	–
Accounts payable and accrued liabilities	**148 349**	–	–
Cash generated by operations	**70 172**	(9 205)	–

	18 months 30 June 2003 R'000	12 months 31 Dec 2001 R'000	12 months 31 Dec 2000 R'000
20. COMMITMENTS AND CONTINGENCIES			
Capital expenditure commitments			
Contracts for capital expenditure	–	–	–
Authorised by the directors but not contracted for	**47 648**	787 140	–
	47 648	787 140	–

21. POST-BALANCE SHEET EVENTS

During November 2003, ARMI, ARM Platinum's holding company, entered into an agreement with Avmin, in terms of which, *inter alia,* ARMI will sell/exchange its shares in ARM Platinum and the loan receivable by ARMI from ARM Consortium to Avmin, whereafter ARM Platinum will become a wholly-owned subsidiary of Avmin.

ARM Consortium is in the process of issuing and allotting another 93 ordinary shares to its existing shareholders in the same ratio as held before the new shares were issued.

REPORTING ACCOUNTANTS' REPORT ON THE HISTORICAL FINANCIAL INFORMATION OF ARM PLATINUM

The Directors
Anglovaal Mining Limited
56 Main Street
Johannesburg
2001

1 March 2004

Dear Sirs

REPORT OF THE INDEPENDENT REPORTING ACCOUNTANTS ON THE HISTORICAL FINANCIAL INFORMATION OF AFRICAN RAINBOW MINERALS PLATINUM (PROPRIETARY) LIMITED ("ARM PLATINUM")

INTRODUCTION

The directors of Anglovaal Mining Limited ("Avmin") are proposing to acquire from African Rainbow Minerals & Exploration Investments (Proprietary) Limited ("ARMI"), its direct 13,6% shareholding in Harmony Gold Mining Company Limited, its 100% shareholding in ARM Platinum which has a 41,5% effective interest in the Modikwa Joint Venture and loans owed to it by ARM Mining Consortium Limited (collectively, "the Avmin Acquisitions").

At your request and for the purposes of the circular to Avmin shareholders to be dated on or about 19 March 2004 ("the circular"), we present our report on the financial information presented in the Report of Historical Financial Information of ARM Platinum, included as Annexure 3 to the circular, in compliance with the Listings Requirements of the JSE Securities Exchange, South Africa.

RESPONSIBILITY

The compilation, contents and presentation of the circular are the responsibility of the directors of Avmin. The compilation, contents and presentation of the Report of Historical Financial Information are the responsibility of the directors of ARM Platinum. Our responsibility is to express an opinion on the historical financial information relating to the businesses included in the circular.

SCOPE

Scope of the audit opinion

We conducted our audit in accordance with Statements of South African Auditing Standards. These standards require that we plan and perform the audit to obtain reasonable assurance that the historical financial information for the years ended 31 December 2000, 31 December 2001 and for the 18-month period ended 30 June 2003 is free of material misstatement.

An audit includes:

- examining, on a test basis, evidence supporting the amounts and disclosures of the abovementioned historical financial information;
- assessing the accounting principles used and significant estimates made by management; and
- evaluating the overall historical financial information presentation.

OPINION

In our opinion, the historical financial information of ARM Platinum for the years ended 31 December 2000, 31 December 2001 and for the 18-month period ended 30 June 2003 fairly presents, in all material respects, for the purposes of the circular, the financial position of the businesses at the abovementioned date and the results of its operations and cash flows for the period then ended in accordance with South African Statements of Generally Accepted Accounting Practice.

Yours faithfully

PRICEWATERHOUSECOOPERS INC
Chartered Accountants (SA)
Registered Accountants and Auditors

Sunninghill

SCHEDULE OF MATERIAL LOANS TO ARM PLATINUM

Schedule of material loans to ARM Consortium (83% owned subsidiary of ARM Platinum)

	Notes	At 30 June 2003 R'000	At 31 December 2001 R'000
1. Preference shares issued by ARM Consortium to the Industrial Development Corporation of South Africa Limited	1		
Shares issued		**500**	–
Share premium		**49 500**	–
Preference dividends accrued		**9 457**	–
Total value of preference shares		**59 457**	–
2. Senior debt facilities to ARM Consortium	2		
Funds advanced		**504 000**	–
Interest		**79 089**	–
Payments made		**(42 043)**	–
Less: Short-term portion		**(77 292)**	–
Total		**463 754**	–
of which owed to:			
Nedbank Corporate Capital Markets		**184 961**	–
ABSA Corporate & Merchant Bank		**93 176**	–
Citibank		**93 602**	–
Industrial Development Corporation of South Africa Limited		**92 015**	–
3. Junior debt facilities to ARM Consortium	3		
Funds advanced		**138 716**	–
Interest		**23 234**	–
Payments made		**(12 378)**	–
Less: Short-term portion		**(21 367)**	–
Total		**128 205**	–
Of which owed to:			
Nedbank Corporate Capital Markets		**58 011**	–
ABSA Corporate & Merchant Bank		**26 068**	–
Citibank		**25 641**	–
Industrial Development Corporation of South Africa Limited		**18 485**	–
4. Standby debt facilities to ARM Consortium	4		
Funds advanced		**49 938**	–
Interest		**1 194**	–
Payments made		**(1 132)**	–
Less: Short-term portion		**–**	–
Total		**50 000**	–
of which owed to:			
Nedbank Corporate Capital Markets		**19 500**	–
ABSA Corporate & Merchant Bank		**10 500**	–
Citibank		**10 000**	–
Industrial Development Corporation of South Africa Limited		**10 000**	–

	Notes	At 30 June 2003 R'000	At 31 December 2001 R'000
5. Loan: BoE Bank Limited to ARM Consortium	5		
Funds advanced		–	323 900
Interest		–	3 840
Payments made		**(327 740)**	–
Total		–	327 740
6. Loan: ARMI	6		
Balance at beginning of period		**180 619**	–
Funds advanced		**335 416**	180 619
Loan transferred (refer note 8.5 in Annexure 3)		**(10 212)**	–
Payments made		–	–
Short-term portion		–	–
Total		**505 823**	**180 619**
Total secured long-term borrowings		**691 959**	**327 740**
Total long-term borrowings		**1 197 782**	**508 359**

Notes:

1. On 19 July 2002, ARM Consortium issued 50 000 000 cumulative, redeemable, convertible preference shares with a par value of R0,01 per share, at R1,00 per share. The preference shares are redeemable after a period of 10 years from the date of issue. The preference shares can be redeemed at the option of ARM Consortium at any time after one year from the date of issue. The preference shares will become redeemable earlier than 10 years if ARM Consortium is in breach of certain obligations in terms of its other borrowings. The preference shares are convertible into ordinary shares at any time after a period of three years from the date of issue, at the option of the preference shareholder. The existing shareholders of ARM Consortium have the option to take up the converted shares at an agreed price within a period of 90 days from conversion. The first dividend, covering the period from date of issue until 30 June 2004, is payable on 30 June 2004, subject to contractual arrangements of the subordination agreement. Thereafter, the dividend is payable six-monthly in arrears.
2. The senior debt facilities are secured and carried interest at a 15,99% nominal annual rate compounded on a monthly basis during the 18-month period. The interest rate comprises a fixed and variable component. Repayments are made in bi-annual instalments, starting on 30 June 2003 and ending on 30 June 2010.
3. The junior debt facilities are secured and carry interest at a fixed rate plus a portion of the profits. During the 18-month period the facility carried interest at a 16,99% nominal annual rate compounded on a monthly basis. Repayments are made in bi-annual instalments, starting on 30 June 2003 and ending on 30 June 2010.
4. The standby debt facilities are secured and carry interest at variable rates plus a portion of the profits. During the 18-month period R12,3 million of the standby facility carried interest at 16,74% nominal annual rate compounded on a monthly basis and the remaining balance of R37,7 million carried interest at a 14,24% nominal annual rate compounded on a monthly basis. Interest repayments are made in bi-annual instalments, starting on 30 June 2003 and ending on 30 June 2010 and capital repayments are envisaged to commence on 31 December 2004 in 12 equal bi-annual instalments.
5. The loan carried interest at a floating rate, which equated to 10,5835% on 31 December 2001. The loan has been repaid.
6. The loan is unsecured and has no fixed terms of repayment of the R505,8 million, R75,7 million carries interest at a floating rate linked to prime. At 30 June 2003, this rate was 11%. The remaining balance of R436,1 million of this loan is interest free.

Securities for the above loans:

Guarantees issued by ARM Platinum

Details of securities granted by ARMI, ARM Platinum and ARM Consortium in respect of the above facilities are disclosed in note 14 to the historical consolidated financial statements of ARM Platinum (Annexure 3).

HISTORICAL FINANCIAL INFORMATION OF HARMONY

The salient information set out below has been extracted without adjustments from the audited Harmony financial statements for the years ended 30 June 2003, 30 June 2002 and 30 June 2001:

1. INCOME STATEMENTS

	Notes	**2003 R'm**	2002 R'm	2001 R'm
Revenue		**8 995**	7 806	4 495
Cash operating costs	2	**(6 621)**	(5 215)	(3 822)
Cash operating profit		**2 374**	2 591	673
Interest and dividends		**273**	138	45
Other (expenses)/income – net	4	**(173)**	94	81
Employment termination and restructuring costs	5	**(47)**	(83)	(36)
Corporate, administration and other expenditure		**(72)**	(78)	(19)
Exploration expenditure		**(75)**	(61)	(27)
Marketing and new business expenditure		**(72)**	(89)	(38)
(Loss)/Profit on sale of listed investments	6	**(54)**	46	(11)
Interest paid		**(321)**	(230)	(114)
Cash profit		**1 833**	2 328	554
Depreciation and amortisation		**(582)**	(308)	(237)
(Provision)/Reversal of provision for rehabilitation costs		**(5)**	(20)	52
Gain on financial instruments		**440**	48	58
(Loss)/Profit on mark-to-market of listed investments	7	**(9)**	595	–
Impairment of assets	8	**(812)**	(362)	(215)
Income from associates	15	**57**	–	–
Provision for former employees' post-retirement benefits		**(5)**	(2)	17
Income before tax	3	**917**	2 279	229
Taxation expense	9	**(274)**	(583)	(111)
Net income before minority interests		**643**	1 696	118
Minority interests	10	**(4)**	(16)	(3)
Net income		**639**	1 680	115
Basic earnings per share (cents)	11	**359**	1 094	112
Fully diluted earnings per share (cents)	11	**359**	1 017	108
Basic headline earnings per share (cents)	11	**661**	1 316	254
Fully diluted headline earnings per share (cents)	11	**660**	1 223	246
Interim dividends per share (cents)	12	**125**	75	50
Proposed final dividends per share (cents)	12	**150**	425	70
Total dividends per share (cents)	12	**275**	500	120

2. BALANCE SHEETS

	Notes	2003 R'm	2002 R'm	2001 R'm
ASSETS				
Non-current assets				
Property, plant and equipment	13	**9 969**	9 433	5 424
Investments	14	**868**	1 778	572
Investment in associates	15	**1 398**	291	–
Investments in subsidiaries	15	**–**	–	–
Deferred taxation asset	9	**37**	243	–
Deferred financial asset	23	**1**	49	–
Total non-current assets		**12 273**	11 794	5 996
Current assets				
Inventories	17	**454**	448	300
Receivables	18	**771**	685	799
Cash and cash equivalents		**1 687**	1 441	1 159
Total current assets		**2 912**	2 574	2 258
Total assets		**15 185**	14 368	8 254
EQUITY AND LIABILITIES				
Share capital and reserves				
Share capital	19	**92**	85	72
Share premium	19	**6 782**	5 462	3 727
Options issued		**–**	–	69
Fair value and other reserves	21	**(242)**	88	54
Retained earnings		**1 996**	2 328	672
Total shareholders' equity		**8 628**	7 963	4 594
Minority interest				
Minority interest	10	**120**	–	2
Total minority interest		**120**	–	2
Non-current liabilities				
Long-term borrowings	22	**2 415**	1 771	1 212
Preference shares		**–**	–	6
Deferred taxation liabilities	9	**1 571**	1 013	368
Deferred financial liabilities	23	**284**	1 020	397
Provision for environmental rehabilitation	24	**624**	711	427
Provision for post-retirement benefits	25	**9**	9	8
Total non-current liabilities		**4 903**	4 524	2 418
Current liabilities				
Accounts payable and accrued liabilities	26	**1 376**	1 648	1 083
Income and mining taxes		**150**	228	50
Shareholders for dividends		**8**	5	107
Total current liabilities		**1 534**	1 881	1 240
Total equity and liabilities		**15 185**	14 368	8 254
Net asset value		**8 628**	7 963	4 594
Net tangible asset value		**8 628**	7 963	4 594

3. CASH FLOW STATEMENTS

	Notes	2003 R'm	2002 R'm	2001 R'm
Cash flow from operations				
Cash generated from operations	30	**1 767**	2 436	473
Interest received		**270**	125	45
Dividends received		**3**	13	–
Interest paid		**(321)**	(230)	(114)
Income and mining taxes paid		**(402)**	(88)	(30)
Net cash provided by operations		**1 317**	2 256	374
Cash flow from investing activities				
Net increase in amounts invested in environmental trusts		**(34)**	(61)	(6)
Cash held by subsidiaries on acquisition		**79**	154	–
Restricted cash		**–**	–	50
Cash paid for New Hampton Mines	31	**–**	–	(229)
Cash paid for Elandskraal Mines	31	**–**	(210)	(1 053)
Cash paid for Free Gold Mines	31	**–**	(900)	–
Cash paid for Hill 50 Mines	31	**–**	(1 419)	–
Cash paid for St. Helena Mines	31	**(60)**	–	–
Cash paid for Abelle Mines	31	**(769)**	–	–
Cash paid for Clidet 454 (Pty) Limited	31	**–**	–	–
Investment in Bendigo Mining NL	15	**–**	(292)	–
Investment in Highland Gold acquired	15	**(68)**	(188)	–
Loan repaid by minority interest party		**–**	90	–
Cash cost to close out hedge positions		**(74)**	(250)	–
Proceeds on disposal of listed investments		**876**	158	105
Increase in other investments		**(20)**	(156)	(64)
Proceeds on disposal of mining assets		**56**	34	87
Additions to property, plant and equipment		**(991)**	(733)	(422)
Net cash utilised in investing activities		**(1 005)**	(3 773)	(1 532)
Cash flow from financing activities				
Long-term borrowings raised – net		**(477)**	335	468
Preference shares issued		**–**	–	6
Ordinary shares issued		**1 322**	1 622	1 435
Shares issue expenses		**(47)**	(42)	–
Dividends paid		**(968)**	(221)	(120)
Net cash (utilised in)/generated by financing activities		**(170)**	1 694	1 789
Foreign currency translation adjustments		**104**	105	–
Net increase in cash and cash equivalents		**246**	282	631
Cash and equivalents – 1 July		**1 441**	1 159	528
Cash and equivalents – 30 June		**1 687**	1 441	1 159

4. CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY

	Number of ordinary shares issued	Number of options issued	Share capital R'm	Share premium R'm	Harmony listed options issued R'm	Retained earnings R'm	Fair value and other reserves R'm	Total R'm
Notes			**19**	**19**	**20**		**21**	
Balance – 30 June 2000	97 310 435	7 579 900	49	2 021	69	752	(16)	2 875
Net income	–	–	–	–	–	115	–	115
Change in accounting policy	–	–	–	–	–	(43)	–	(43)
Dividends declared	–	–	–	–	–	(152)	–	(152)
Issue of shares								
– Public offerings	31 784 200	–	16	1 324	–	–	–	1 340
– IDC/Simane offering	10 736 682	–	5	381	–	–	–	386
– Private offering	568 774	–	–	23	–	–	–	23
– Share trust	2 000 000	–	1	34	–	–	–	35
Exercise of employee share options	2 153 200	–	1	52	–	–	–	53
Share issue expenses	–	–	–	(108)	–	–	–	(108)
Issue of warrants	–	9 027 500	–	–	–	–	–	–
Reversal of mark-to-market sue to sale of Western Areas Limited shares	–	–	–	–	–	–	28	28
Foreign exchange translation reserve	–	–	–	–	–	–	(20)	(20)
Mark-to-market of listed and other investments	–	–	–	–	–	–	80	80
Mark-to-market of hedging instruments	–	–	–	–	–	–	(18)	(18)
Balance – 30 June 2001	**144 553 291**	**16 607 400**	**72**	**3 727**	**69**	**672**	**54**	**4 594**
Net income	–	–	–	–	–	1 680	–	1 680
Dividends declared	–	–	–	–	–	(119)	–	(119)
Issue of shares								
– Public offerings	222 300	–	–	8	–	–	–	8
– International private placement	8 500 000	–	4	1 139	–	–	–	1 143
Exercise of employee share options	3 998 800	–	2	132	–	–	–	134
Conversion of preference shares	10 958 904	–	6	455	–	–	–	461
Share issue expenses	–	–	–	(42)	–	–	–	(42)
Conversion of warrants	1 014 054	(1 014 054)	1	43	–	–	–	44
Listed options expired	–	(7 579 900)	–	–	(69)	95	(26)	–
Foreign exchange translation	–	–	–	–	–	–	83	83
Mark-to-market of listed and other investments	–	–	–	–	–	–	(87)	(87)
Mark-to-market of hedging instruments	–	–	–	–	–	–	64	64
Balance – 30 June 2002	**169 247 349**	**8 013 446**	**85**	**5 462**	**–**	**2 328**	**88**	**7 963**
Net income	–	–	–	–	–	639	–	639
Dividends declared	–	–	–	–	–	(971)	–	(971)
Issue of shares								
– Public offerings	8 000 000	–	3	1 059	–	–	–	1 062
– Correction of Randfontein offer	114 750	–	–	4	–	–	–	4
Exercise of employee share options	1 846 600	–	1	64	–	–	–	65
Share issue expenses	–	–	–	(47)	–	–	–	(47)
Conversion of warrants	5 645 416	(5 645 416)	3	240	–	–	–	243
Foreign exchange translation	–	–	–	–	–	–	(325)	(325)
Mark-to-market of listed and other investments	–	–	–	–	–	–	41	41
Mark-to-market of hedging instruments	–	–	–	–	–	–	(46)	(46)
Balance – 30 June 2003	**184 854 115**	**2 368 030**	**92**	**6 782**	**–**	**1 996**	**(242)**	**8 628**

1. ACCOUNTING POLICIES

BASIS OF PREPARATION

The annual financial statements are prepared on the historical cost basis, except for certain financial instruments and equity accounted investments, which are carried at fair value. The accounting policies as set out below have been consistently applied, and comply with the accounting standards issued by the International Financial Reporting Standards Board, South African Statements of Generally Accepted Accounting Practice and the South African Companies Act.

USE OF ESTIMATES

The preparation of the financial statements in conformity with South African Statements of Generally Accepted Accounting Practice and International Financial Reporting Standards requires Harmony's management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Significant estimates used by management include the valuation and amortisation of mining assets and investment in associates, the valuation of other investments, as well as estimates of exposure and liabilities with regard to rehabilitation costs, employee benefit liabilities, taxation and hedging and financial derivatives. Actual results could differ from those estimates.

HARMONY GROUP ACCOUNTING

The consolidated financial information includes the financial statements of Harmony, its subsidiaries, its proportionate interest in joint ventures and its interests in associates.

Subsidiaries

Which are those entities (including special purpose entities) in which the Harmony Group has an interest of more than one-half of the voting rights or otherwise has power to govern the financial and operating policies, are consolidated. Subsidiaries are consolidated from the date control is acquired and is no longer consolidated when control ceases. The purchase method of accounting is used to account for the acquisition of subsidiaries. The cost of an acquisition is measured as the fair value of the assets given up, shares issued or liabilities undertaken at the date of acquisition plus costs directly attributable to the acquisition.

Inter-company transactions, balances and unrealised gains on transactions between Harmony Group companies are eliminated. Unrealised losses are also eliminated unless cost cannot be recovered. Where necessary, accounting policies of subsidiaries have been changed to ensure consistency with the policies adopted by the Harmony Group.

Investments in associates

An associate is an entity, other than a subsidiary, in which the Harmony Group has a material long-term interest and in respect of which the Harmony Group exercises significant influence over operational and financial policies, normally owning between 20% and 50% of the voting equity, but which it does not control.

Investments in associates are accounted for by using the equity method of accounting based on the most recent audited financial statements or unaudited interim financial statements. Equity accounting involves recognising in the income statement the Harmony Group's share of the associate's profit or loss for the period. The Harmony Group's interest in the associate is carried in the balance sheet at an amount that reflects the cost of the investment, the share of post-acquisition earnings and other movement in reserves. The carrying value of an associate is reviewed on a regular basis and, if an impairment in the carrying value has occurred, it is written-off in the period in which such permanent impairment is identified. Unrealised gains on transactions between the Harmony Group and its associates are eliminated to the extent of the Harmony Group's interest in the associates.

Unrealised losses are also eliminated unless the transaction provides evidence of an impairment of the assets transferred. The Harmony Group's investment in associates includes goodwill on acquisition, net of accumulated depreciation. When the Harmony Group's share of losses in an associate equals or exceeds its interest in the associate, the Harmony Group does not recognise further losses, unless the Harmony Group has incurred obligations or made payments on behalf of the associates.

Investment in joint ventures

A joint venture is an entity in which the Harmony Group holds a long-term interest and which is jointly controlled by the Harmony Group and one or more venturers under a contractual arrangement. The Harmony Group's interest in jointly controlled entities is accounted for by proportionate consolidation. Under this method the

Harmony Group includes its share of the joint venture's individual income and expenses, assets and liabilities and cash flows on a line-by-line basis with similar items in the Harmony Group's financial statements. The Harmony Group recognises the portion of gains or losses on the sale of assets by the Harmony Group to the joint venture that is attributable to the other venturers.

The Harmony Group does not recognise its share of profits or losses from the joint venture that result from the purchase of assets by the Harmony Group from the joint venture until it resells the assets to an independent party. However, if a loss on the transaction provides evidence of a reduction in the net realisable value of current assets or an impairment loss, the loss is recognised immediately.

Goodwill

Represents the excess of the cost of an acquisition over the fair value of the Harmony Group's share of the net assets of the acquired subsidiary, associate, joint venture or business at the date of acquisition. Goodwill on acquisition of subsidiaries, joint venture and businesses is included in intangible assets. Goodwill on acquisition of associates is included in investments in associates.

Goodwill is amortised using the straight-line method over the estimated life of the underlying asset. Management determines the estimated useful life of goodwill based on its evaluation of the respective companies at the time of the acquisition, considering factors such as potential growth and other factors inherent in the acquired companies.

At each balance sheet date the Harmony Group assesses whether there is any indication of impairment. If such indications exist, an analysis is performed to assess whether the carrying amount of goodwill is fully recoverable. A write-down is made if the carrying amount exceeds the recoverable amount.

The gain or loss on disposal of an entity includes the carrying amount of goodwill relating to the entity sold.

FOREIGN CURRENCIES

Foreign entities

For self sustaining foreign entities, assets and liabilities are translated using the closing rates at year-end, and income statements and cash flows are translated at the average rates for the year. Differences arising on translation are taken directly to shareholders' equity, until the foreign entity is sold or otherwise disposed of, when the translation differences are recognised in the income statement as part of the gain or loss on sale.

Goodwill and fair value adjustments arising on the acquisition of the foreign entities are treated as assets and liabilities of the foreign entity and translated at the closing rate.

Foreign currency transactions

The South African Rand is the functional currency of the Harmony Group. Transactions in foreign currencies are converted at the rates of exchange ruling at the date of these transactions. Monetary assets and liabilities denominated in foreign currencies are translated at rates of exchange ruling at balance sheet date. Gains and losses and costs associated with foreign currency transactions are recognised in the income statement in the period to which they relate. These transactions are included in the determination of other income – net.

Convenience translations

The consolidated income statement and the consolidated balance sheet have been expressed in United States dollars for information purposes.

For this purpose, the consolidated income statement was translated at the average rate for the year and the consolidated balance sheet at the exchange rate ruling at the balance sheet date.

FINANCIAL INSTRUMENTS

Financial instruments are initially measured at cost, including transaction costs. Subsequent to initial recognition these instruments are measured as set out below. Financial instruments carried on the balance sheet include cash and bank balances, money market instruments, investments, receivables, trade creditors and borrowings.

CASH AND CASH EQUIVALENTS

Cash and cash equivalents are defined as cash on hand, deposits held at call with banks and short-term highly liquid investments with insignificant interest rate risk and original maturities of three months or less. Cash and cash equivalents are measured at fair value, based on the relevant exchange rates at balance sheet date.

INVESTMENTS

Listed investments

Investments in listed companies, other than investments in subsidiaries, joint ventures and associates, are carried at market value. Market value is calculated by reference to stock exchange quoted selling prices at the close of business on the balance sheet date. Changes in the carrying amount of strategic investments are credited to shareholders' equity. Movement in the carrying amount of trading securities are charged to the income statement. On disposal of an investment, the difference between the net disposal proceeds and the carrying amount is charged to the income statement. On disposal of strategic investments, amounts in the revaluation and other reserves relating to that security are transferred to the income statement.

Unlisted investments

Unlisted investments are reflected at fair value, or cost where fair value cannot reliably be measured. Fair value is based on directors' valuation. If the directors are of the opinion that that there has been a permanent impairment in the value of these investments, they are written-down and recognised as an expense in the period in which the impairment is recognised. Changes in the carrying amount of strategic investments are credited to shareholders' equity.

INVENTORIES

Inventories which include gold in process and supplies, are stated at the lower of cost or net realisable value after appropriate allowances for redundant and slow-moving items.

Stores and materials consist of consumable stores and are valued at average cost after appropriate provision for redundant and slow-moving items.

Bullion on hand and gold in process represent production on hand after the smelting process for the Harmony Group's underground operations, predominantly located in South Africa. Due to the different nature of the Harmony Group's open pit operations, predominantly located in Australia, gold in process represents either production in broken ore form or production from the time of placement on heap leach pads. It is valued using the weighted average cost method. Cost includes average production costs at the relevant stage of production.

The Harmony Group assesses the gold content of broken ore or ore placed on heap leach pads by reference to the historical recovery factor obtained for the type of broken ore and ore added to the heap leach pad.

Net realisable value is the estimated selling price in the ordinary course of business less the estimated cost of completion and the estimated cost necessary to make the sale.

RECEIVABLES

Accounts receivable are stated at the gross invoice value adjusted for payments received less impairment of these receivables, where appropriate, to reflect the fair value of the anticipated realisable value. Bad debts are written-off during the period in which they are identified.

ACCOUNTS PAYABLE

Accounts payable are stated at cost adjusted for payments made to reflect the value of the anticipated economic outflow of resources.

HEDGING

All derivative financial instruments are recognised on the balance sheet at their fair value, unless they meet the criteria for normal purchase, normal sales exemption. On the date a derivative contract is entered into, the Harmony Group designates for accounting purposes as either:

(a) a hedge of the fair value of a recognised asset or liability (fair value hedge);

(b) a hedge of a forecasted transaction (cash flow hedge);

(c) a hedge of a net investment in a foreign entity; or

(d) a derivative to be marked-to-market.

Certain derivative transactions, however while providing effective economic hedges under the Harmony Group's risk management policies, do not qualify for hedge accounting.

Changes in the fair value of a derivative that is highly effective, and that is designated and qualifies as a fair value hedge, are recorded in the income statement, along with the change in fair value of the hedged asset or liability that is attributable to the hedged risk.

Changes in the fair value of a derivative that is highly effective, and that is designated and qualifies as a cash flow hedge, are recognised directly in equity. Amounts deferred in equity are included in the income statement in the same period during which the hedged firm commitment or forecasted transaction affects net profit or loss.

Hedges of net investment in foreign entities are accounted for similarly to cash flow hedges.

Recognition of derivatives which meet the criteria for the normal purchases, normal sales exemption under the Accounting Standards are not recognised until settlement. Under these contracts the Harmony Group must physically deliver a specified quantity of gold at a future date at a specified price and to the contracted counterparty.

Changes in the fair value of derivatives which are not designated as hedges, and do not qualify for hedge accounting are recognised in the income statement.

BORROWINGS

Borrowings are recognised at amortised cost, comprising original debt less principal payments and amortisations, using the effective yield method.

EXPLORATION COSTS

Exploration costs are expensed as incurred. When a decision is taken that a mining property is capable of commercial production, all further pre-production expenditure, including evaluation costs, are capitalised. Costs related to property acquisitions and mineral and surface rights are capitalised. Where the directors consider that there is little likelihood of the properties or rights being exploited or the value of the exploration rights have diminished below cost, a write-down is effected against exploration expenditure.

PROPERTY, PLANT AND EQUIPMENT

Mining assets

Mining assets including mine development costs and mine plant facilities are initially recorded at cost, whereafter it is recorded at cost less accumulated amortisation and impairment. Costs include pre-production expenditure incurred in the development of the mine and the present value of future decommissioning costs. Interest on borrowings to specifically finance the establishment of mining assets is capitalised until commercial levels of production are achieved. Development costs incurred to evaluate and develop new orebodies, to define mineralisation in existing orebodies to establish or expand productive capacity are capitalised. Mine development costs in the ordinary course of business to maintain production are expensed as incurred. Initial development and pre-production costs relating to a new orebody are capitalised until the orebody achieves commercial levels of production at which time the costs are amortised as set out below.

Stripping costs incurred during the production phase to remove waste ore are deferred and charged to operating costs on the basis of the average life of mine stripping ratio. The average stripping ratio is calculated as the number of tonnes waste material removed per tonne of ore mined. The average life of mine ratio is revised annually in the light of additional knowledge and change in estimates. The cost of "excess stripping" is capitalised as mine development costs when the actual stripping ratio exceeds the average life of mine stripping ratio.

Mining operations placed on care and maintenance

The net assets of operations placed on care and maintenance are written-down to net realisable value. Expenditure on the care and maintenance of these operations is charged against income, as incurred.

Non-mining fixed assets

Land is shown at cost and not depreciated. Buildings and other non-mining fixed assets are shown at cost less accumulated depreciation.

Depreciation and amortisation of mining assets

Depreciation and amortisation of mineral property interests, mineral and surface rights, mine development costs and mine plant facilities are computed principally by the units of production method based on estimated proved and probable reserves. Proved and probable ore reserves reflect estimated quantities of economically recoverable reserves which can be recovered in future from known mineral deposits. Amortisation is first charged on mining ventures from the date on which the mining ventures reach commercial production quantities.

Depreciation and amortisation of non-mining fixed assets: Other non-mining fixed assets are depreciated on a straight-line basis over their estimated useful lives, as follows:

- Vehicles at 20,00% per year;
- Computer equipment at 33,33% per year;
- Computer software at 50,00% per year; and
- Furniture and equipment at 16,67% per year.

Impairment

The recoverability of the carrying value of the long-term assets of the Harmony Group, which include development costs are annually compared to the recoverable amount of the assets, or whenever events or changes in circumstances indicate that the net book value may not be recoverable. The recoverable amount is the higher of value in use and net selling price.

In assessing the value in use, the expected future cash flows from the asset is determined by applying a discount rate to the anticipated pre-tax future cash flows. The discount rate used is the Harmony Group's weighted average cost of capital as determined by the capital asset pricing model. An impairment is recognised in the income statement whenever the carrying amount of the asset exceeds its recoverable amount, to the extent that the carrying amount exceeds the asset's recoverable amount. The revised carrying amount is amortised in line with Harmony Group accounting policies.

A previously recognised impairment loss is reversed if the recoverable amount increases as a result of a change in the estimates used to determine the recoverable amount. This reversal is recognised in the income statement and is limited to the carrying amount that would have been determined, net of depreciation, had no impairment loss been recognised in prior years.

The estimates of future discounted cash flows are subject to risks and uncertainties, including the future gold price and exchange rates.

It is therefore reasonably possible that changes could occur which may affect the recoverability of mining assets.

ENVIRONMENTAL OBLIGATIONS

Estimated long-term environmental obligations, comprising pollution control, rehabilitation and mine closure, are based on the Harmony Group's environmental management plans in compliance with current technological, environmental and regulatory requirements.

The net present value of future rehabilitation cost estimates are recognised and provided for in full in the financial statements. The estimates are reviewed annually and are discounted using rates that reflect the time value of money.

Annual changes in the provision consist of finance cost relating to the change in the present value of the provision and inflationary increases in the provision estimate, as well as changes in estimates. The present value of environmental disturbances created are capitalised to mining assets against an increase in the rehabilitation provision. The rehabilitation asset is amortised as noted in the Harmony Group's accounting policy. Rehabilitation projects undertaken included in the estimates are charged to the provision as incurred. The cost of ongoing current programmes to prevent and control pollution is charged against income as incurred.

ENVIRONMENTAL TRUST FUNDS

Annual contributions are made to the Harmony Group's trust funds, created in accordance with statutory requirements, to fund the estimated cost of pollution control, rehabilitation and mine closure at the end of the life of the Harmony Group's mines. Contributions are determined on the basis of the estimated environmental obligation over the life of the mine. Income earned on monies paid to environmental trust funds is accounted for as investment income. The funds contributed to the trusts plus growth in the trust funds are included under investments on the balance sheet.

PROVISIONS

Provisions are recognised when the Harmony Group has a present legal or constructive obligation as a result of past events, where it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation, and a reliable estimate of the amount of the obligation can be made.

DEFERRED TAXATION

The Harmony Group follows the comprehensive liability method of accounting for deferred tax using the balance sheet approach. Under this method deferred income and mining taxes are recognised for the tax consequences of temporary differences by applying expected tax rates to the differences between the tax base of certain assets

or liabilities and its balance sheet carrying amount. Deferred tax is charged to the income statement, except to the extent that it relates to a transaction that is recognised directly in equity, or a business combination that is an acquisition. The effect on deferred tax of any changes in tax rates is recognised in the income statement, except to the extent that it relates to items previously charged or credited directly to equity.

The principal temporary differences arise from amortisation and depreciation on property, plant and equipment, provisions, post-retirement benefits, tax losses and/or unutilised capital allowances carried forward. Deferred tax assets relating to the carry forward of unutilised tax losses and/or unutilised capital allowances are recognised to the extent that it is probable that future taxable profit will be available against which the unused tax losses and/or unutilised capital allowances can be utilised.

PENSION PLANS AND OTHER EMPLOYEE BENEFITS

Pension plans

Pension plans are funded through annual contributions. The Harmony Group's contributions to the defined contribution pension plans are charged to the income statement in the year to which they relate. The Harmony Group's liability is limited to its annually determined contributions.

Medical plans

The Harmony Group provides medical cover to current employees and certain retirees through multiple funds. The medical accounting costs for the defined benefit plan are assessed using the projected unit credit method. The healthcare obligation is measured as the present value of the estimated future cash outflows using market yields consistent with the term and risks of the obligation. Actuarial gains and losses as a result of these valuations are recognised in the income statement at revaluation date. No contributions are made for employees retiring after 30 June 1996. A liability for retirees and their dependants prior to this date is accrued in full, based on actuarial valuations prepared every three years.

Equity compensation benefits

The Harmony Group grants share options to certain employees under an employee share plan. Costs incurred in administering the scheme are expensed as incurred. No compensation cost is recognised in these financial statements for options or shares granted to employees from employee share plans.

REVENUE RECOGNITION

Revenue

Revenue represents gold sales and is recognised when the risks and rewards of ownership has passed to the buyer with delivery from the refinery. Sales revenue excludes value-added tax but includes the net profit and losses arising from financial derivatives that meet the definition of normal sale to the extent that they relate to that metal and have been matched at the date of the financial statements.

Interest income

Interest is recognised on a time proportion basis, taking into account the principal outstanding and the effective rate over the period to maturity, when it is determined that such income will accrue to the Harmony Group.

Dividend income

Dividend income is recognised when the shareholder's right to receive payment is established at the last date of registration.

DIVIDENDS DECLARED

Dividends proposed and the related transactions thereon are recognised when declared by the board of directors. The dividends paid therefore relate to those declared in the current financial year. Dividends are payable in South African rand.

Dividends declared which are payable to foreign shareholders are subject to approval by the South African Reserve Bank in terms of South African foreign exchange control regulations. In practice, dividends are freely transferable to foreign shareholders.

SEGMENTAL REPORTING

The primary reporting format of the Harmony Group is by business segment. As there is only one business segment, being mining, extraction and production of gold, the relevant disclosures have been given in the financial statements. The secondary reporting format is by geographical analysis by origin. The accounting policies of the segments are the same as those described in the other accounting policy notes.

COMPARATIVES

Where necessary comparative figures have been adjusted to conform with changes in presentation in the current year.

The 2001 comparative figures have been restated in accordance with the published financial statements for the year ended 30 June 2002 so as to permit comparison.

	2003 R'm	2002 R'm	2001 R'm
2. CASH OPERATING COSTS			
Cash operating costs include mine production, transport and refinery costs, general and administrative costs, movement in inventories and ore stockpiles as well as transfers to and from deferred stripping. These costs, analysed by nature, consist of the following:			
Labour costs, including contractors	**3 515**	2 458	2 388
Stores and materials	**1 597**	1 101	912
Water and electricity	**762**	475	457
Hospital costs	**89**	73	–
Changes in inventory	**2**	(23)	(68)
Other	**656**	1 131	133
	6 621	5 215	3 822
3. INCOME BEFORE TAX			
The following have been included in income before tax:			
Professional fees	**27**	32	18
Auditors' remuneration	**5**	5	2
Fees – current year	**4**	2	1
Fees – other services	**1**	3	1
4. OTHER (EXPENSES)/INCOME – NET			
Profit on sale of property, plant and equipment	**39**	21	80
Foreign exchange (losses)/gains	**(192)**	99	9
Other expenditure – net	**(20)**	(26)	(8)
	(173)	94	81
5. EMPLOYMENT TERMINATION AND RESTRUCTURING COSTS			
Free State	**14**	16	–
Randfontein and Elandskraal	**17**	36	34
Evander	**11**	2	1
Kalgold	**–**	–	1
Australian operations	**5**	32	–
Bissett mine	**–**	(3)	–
	47	83	36

The continued process of restructuring at the Free State, Randfontein, Elandskraal and Evander operations as a result of the declining rand per kilogram gold price, has resulted in excess labour, which could not be

accommodated on other shafts, becoming redundant. In May 2003 Harmony announced that the Big Bell Gold Operations had exhausted all economically viable resources at prevailing or immediately forseeable Australian dollar gold prices and would cease production in July 2003. A provision was raised to cover the estimated cost of terminating the employment of 57 employees.

During the year ended 30 June 2002, the closure of Virginia No.2 shaft and Harmony No.4 shaft in the Free State resulted in certain excess labour, which could not be accommodated on other shafts, becoming surplus and made redundant. Elandskraal continued the process of restructuring, which was started in the 2001 year, which led to certain positions becoming redundant. The acquisition of Hill 50 in Australia resulted in the merger of the New Hampton and Hill 50 operations, which led to certain restructuring and employment termination costs being incurred. The Bissett mine was placed on care and maintenance on 30 June 2001 due to the mining operations being uneconomic at gold prices at that time. As restructuring has been completed, over-provisions on restructuring have been reversed.

During the year ended 30 June 2001, due to the closure of Randfontein No.4 Shaft and the restructuring of Elandskraal certain restructuring costs were incurred which included the termination of service of certain production employees.

	2003 R'm	2002 R'm	2001 R'm
6. (LOSS)/PROFIT ON SALE OF LISTED INVESTMENTS			
(Loss)/Profit on sale of listed investments	**(54)**	46	(11)

During the 2003 financial year the Placer Dome shares, acquired at a total cost of R244 million, were disposed of. This investment was previously marked-to-market by R595 million, resulting in a loss of R54 million on disposal.

As part of the initial public offering of ARMgold Limited, Harmony subscribed to 2 860 000 shares at R38,67 per share. These shares were disposed of during the year ended 30 June 2002.

With the acquisition of Randfontein Estates Limited, Harmony acquired 4 944 948 shares in Western Areas Limited. These shares were disposed of at a loss of R11 million in the 2001 financial year.

	2003 R'm	2002 R'm	2001 R'm
7. (LOSS)/PROFIT ON MARK-TO-MARKET OF LISTED INVESTMENTS			
Mark-to-market of shares in listed companies	–	595	–
Mark-to-market of options in listed companies	**(9)**	–	–
(Loss)/profit on mark-to-market of listed investments	**(9)**	595	–

With the purchase of Harmony's 31,8% interest in Bendigo Mining NL, Harmony has also been granted options to acquire 360 million shares in Bendigo any time before 31 December 2003 at Australian $0,30 per share. These options were valued at R3 million at 30 June 2003, resulting in a loss on the mark-to-market of these options of R9 million.

On 30 June 2002, a gain was recorded on the mark-to-market of listed investments of R595 million. These shares, which were purchased at Australian $1,29 per share, were revalued at Australian $3,93 per share at year-end.

	2003 R'm	2002 R'm	2001 R'm
8. (IMPAIRMENT)/REVERSAL OF IMPAIRMENT OF ASSETS			
Free State operations	–	63	(43)
Randfontein operations	–	12	(12)
Evander operations	–	–	(11)
Bissett operations	–	–	(149)
Australian operations	**(812)**	(437)	–
	(812)	(362)	(215)

The Australian operations have reduced their reserve base from 2,3 million ounces in 2002 to 1,5 million ounces due to the current strength of the Australian dollar compared to the US dollar. This has resulted in a significant impairment to the carrying value of these assets in Harmony's balance sheet.

The higher rand gold price at the end of June 2002, had resulted in significantly more economically mineable reserves being available at some of the other shafts, which has extended the life of several shafts and made them more profitable. Therefore some of the impairments of prior years have been reversed during the 2002 financial year.

Harmony completed the redevelopment programme at New Hampton's Big Bell underground mine during the year ended 30 June 2002. Production indicated however that the grade was significantly less than expected. Therefore it had been deemed prudent to reduce the grade estimates for future production, which gave rise to a severe cut in the underground reserves at this mine. This resulted in a significant impairment to the carrying value of this asset in Harmony's balance sheet.

Due to the depletion of economically mineable reserves, certain shafts at Randfontein, Evander and the Free State were closed and the remaining net book value written-off during the 2001 financial year.

The Bissett mine was placed on care and maintenance at 30 June 2001 due to the mining operations being uneconomic at gold prices at that time. The write-down of the prior year reflected the excess of the book value of long-term and other assets over the estimated salvage values of those assets.

The recoverable amount for the impairment calculation was determined at the cash-generating unit level (the shaft) and represents the value in use. Discount rates of 11,5% for the South African operations and 10,0% for the Australian operations were used in the calculations of the recoverable amount.

	2003 R'm	2002 R'm	2001 R'm
9. TAXATION EXPENSE			
South African taxation			
Mining tax	**(158)**	(198)	(63)
Non-mining tax	**(26)**	(62)	–
Deferred tax	**(292)**	(223)	(48)
Foreign taxation			
Current tax	**(155)**	(5)	–
Prior year adjustment	**45**	–	–
Deferred tax – normal	**98**	(95)	–
Deferred tax – impairment of assets	**214**	–	–
Total taxation expense	**(274)**	(583)	(111)
Mining tax on mining income is determined on a formula basis which takes into account the profit and revenue from mining operations during the year. Non-mining income is taxed at a standard rate. Mining and non-mining income of Australian operations are taxed at a standard tax rate. Deferred tax is provided at the estimated expected future mining tax rate for temporary differences. Major items causing the Harmony's income tax provision to differ from the mining statutory tax rate of 46% (2002: 46%, 2001: 46%) were:			
Tax on net income at statutory mining tax rate	**(422)**	(1 041)	(26)
Valuation allowance raised against deferred tax assets	**16**	53	(75)
Non-taxable income/(additional deductions)	**58**	(50)	(4)
Rate adjustment to reflect estimated effective mining tax rate	**(85)**	324	–
South African mining formula tax rate adjustment	**94**	98	–
Difference between non-mining tax rate and mining statutory rate on non-mining income	**65**	33	(6)
Income and mining tax expense	**(274)**	(583)	(111)
Effective income and mining tax rate	**30%**	26%	48%

	2003 R'm	2002 R'm	2001 R'm
Deferred income and mining tax liabilities and assets on the balance sheet at 30 June 2003, 30 June 2002 and 30 June 2001 relate to the following:			
Deferred income and mining tax liabilities			
Depreciation and amortisation	**1 337**	1 257	653
Product inventory not taxed	**31**	33	35
Other – mainly Australian operations	**650**	198	30
Gross deferred income and mining tax liability	**2 018**	1 488	718
Net deferred income and mining tax assets	**(484)**	(718)	(350)
Deferred financial liability	**(5)**	(238)	(55)
Unredeemed capital expenditure	**(273)**	(416)	(250)
Provisions, including rehabilitation accruals	**(151)**	(34)	(98)
Tax losses	**(55)**	(30)	(15)
Valuation allowance	–	–	68
	1 534	770	368
The Harmony Group's net deferred tax liability is made up as follows:			
Deferred tax assets	**(37)**	(243)	–
Deferred tax liabilities	**1 571**	1 013	368
	1 534	770	368
The movement in the net deferred tax liability recognised in the balance sheet is as follows:			
At beginning of year	**770**	368	
Acquired through the purchase of subsidiaries and businesses and the finalisation of purchase prices of subsidiaries and businesses	**702**	94	
Total charge per income statement	**(20)**	318	
Foreign currency translation adjustments	**82**	(10)	
At end of year	**1 534**	770	368

At 30 June 2003 the Harmony Group has unredeemed capital expenditure of R1 450 million (2002: R1 573 million, 2001: R1 046 million) and tax losses carried forward of R64 million (2002: R93 million, 2001: R53 million) available for deduction against future mining income. These future deductions are utilisable against mining income generated only from the Harmony Group's current mining operations and does not expire unless the Harmony Group ceases to trade for a period longer than one year.

10. MINORITY INTERESTS

Harmony initiated a take-over of Abelle Limited on 26 February 2003. The offer closed on 30 April 2003. At 30 June 2003 Harmony held a controlling interest of 87%, with three members appointed to the board of Abelle on 5 May 2003. The remaining 13% shareholders are treated as a minority interest since this date.

With effect from 1 April 2002, Harmony re-acquired the 10% participation interest in the Elandskraal mine that it had sold to a subsidiary of Khuma Bathong, a Black Economic Empowerment Company (BEE). This has allowed Khuma Bathong to realise its investment and pursue other opportunities in the South African mining industry. The aggregate consideration paid by Harmony to Khuma Bathong was R210 million. This was netted-off against the remaining R91 million due to Harmony under its original loan of 24 April 2001 to Khuma Bathong. This 10% participation interest in Elandskraal had been disposed of in the 2001 financial year and minority interest had been separately accounted for during the year ended 30 June 2002.

11. EARNINGS PER SHARE

	2003 R'm	2002 R'm	2001 R'm
Basic earnings per share			
Basic earnings per share is calculated by dividing the net income attributable to shareholders by the weighted number of ordinary shares in issue during the year.			
Net income attributable to shareholders	**639**	1 680	115
Weighted average number of ordinary shares in issue	**177 954 245**	153 509 862	102 997 239
Basic earnings per share (cents)	**359**	1 094	112
Fully diluted earnings per share			
For the diluted earnings per share, the weighted average number of ordinary shares in issue is adjusted to assume conversion of all share options granted and warrants in issue. The average number of options used in the calculation of diluted earnings per share is calculated by taking the average number of ordinary options allocated in terms of the share option scheme multiplied by the weighted average option price divided by the average price of the ordinary shares on the JSE.			
Weighted average number of ordinary shares in issue	**177 954 245**	153 509 862	102 997 239
Adjustments for share options	**(1 212 837)**	7 346 070	3 348 123
Adjustments for warrants in issue	**1 570 214**	4 361 156	–
Weighted average number of ordinary shares for fully diluted earnings per share	**178 311 622**	165 217 088	106 345 362
Fully diluted earnings per share (cents)	**359**	1 017	108
Headline earnings per share			
The calculation of headline earnings per share is based on the basic earnings per share calculation adjusted for the following items:			
Net income attributable to shareholders	**639**	1 680	115
Profit on sale of assets	**(61)**	(21)	(80)
Net impairment of assets	**598**	362	215
Other	–	–	11
Headline earnings	**1 176**	2 021	261
Basic headline earnings per share (cents)	**661**	1 316	254
Fully diluted headline earnings per share (cents)	**660**	1 223	246

12. DIVIDENDS PER SHARE

Interim dividend No.76 of 125 cents per share (2002: dividend No.74 of 75 cents, 2001: Dividend No.72 of 50 cents)	**230**	119	51
Final dividend 2002: No.75 of 425 cents per share (2001: No.73 of 70 cents per share)	**741**	–	101
	971	119	152
The dividends proposed are as follows:			
Dividends proposed			
Final dividend No.77 proposed of 150 cents per share (2002: Dividend No.75 proposed of 425 cents, 2001: nil)	**291**	741	–
Dividend cover based on total declared and proposed (times)			
Based on attributable income	**1.2**	2.0	0.8
Based on headline earnings	**2.3**	2.4	1.7

The final dividend in respect of the 2003 financial year was approved on 1 August 2003. These financial statements do not reflect the final dividend proposed. It will be accounted for in the 2004 financial year.

The final dividend in respect of the 2002 financial year was approved on 2 August 2002. The 2002 financial statements did not reflect the final dividend proposed. It was accounted for in the 2003 financial year.

	2003 R'm	2002 R'm	2001 R'm
13. PROPERTY, PLANT AND EQUIPMENT			
Mining properties, mine development costs and mine plant facilities	**9 831**	9 285	5 273
Other non-mining assets	**138**	148	151
	9 969	9 433	5 424
Mining properties, mine development costs and mine plant facilities			
Cost at beginning of year	**14 387**	8 771	6 614
Acquired through the purchase of subsidiaries	**1 394**	3 843	1 751
Acquired through the purchase of businesses	**72**	–	–
Additions	**857**	735	411
Disposals	**(20)**	(22)	(5)
Foreign currency translation adjustments	**(540)**	1 060	–
	16 150	14 387	8 771
Accumulated depreciation and amortisation at beginning of year	**5 102**	3 498	2 972
Acquired through the purchase of subsidiaries	–	515	93
Impairment of fixed assets	**812**	355	202
Disposals	**(6)**	(8)	(2)
Foreign currency translation adjustments	**(158)**	447	–
Charge for the period	**569**	295	233
	6 319	5 102	3 498
Net book value	**9 831**	9 285	5 273
Other non-mining assets			
Cost at beginning of year	**193**	189	177
Additions	**1**	6	12
Disposals	**(3)**	(3)	–
Foreign currency translation adjustments	**(1)**	1	–
	190	193	189
Accumulated depreciation and amortisation at beginning of year	**45**	38	33
Disposals	–	(3)	–
Foreign currency translation adjustments	**(1)**	2	–
Charge for the period	**8**	8	5
	52	45	38
Net book value	**138**	148	151
Total net book value	**9 969**	9 433	5 424

Other non-mining assets consist of mineral subscription and participation rights, freehold land, computer equipment and motor vehicles.

		2003 R'm	2002 R'm	2001 R'm
14. INVESTMENTS				
Listed investments				
Investment in Placer Dome Asia Pacific Limited	(a)	–	988	320
Investment in High River Gold Mines Limited	(b)	**164**	–	–
Investment in Midas Resources Limited	(c)	**5**	–	–
Total listed investments		**169**	988	320
Other investments				
Investment in Highland Gold Limited	(d)	–	188	–
Unlisted investments and loans	(e)	**41**	26	23
Amounts contributed to environmental trust funds	(f)	**606**	487	193
Loan to Harmony Share Trust	(g)	**52**	89	36
		699	790	252
Total investments		**868**	1 778	572

Notes:

(a) The investment consisted of 43 350 992 shares in Aurion Gold Limited (previously Goldfields Australia Limited) valued at R22,78 per share. The shares are listed on the Australian Stock Exchange Limited. The market value of these shares at the close of business on 30 June 2002 by reference to stock exchange quoted prices and closing exchange rates was R988 million. On 29 July 2002, this investment was disposed of to Placer Dome Asia Pacific Limited for a total consideration of R764 million. R83 million was paid in cash and R681 million by way of exchange for shares in Placer Dome. This investment was subsequently disposed of at a total loss of R54 million. No dividends were received during the year from Placer Dome (2002: R11 million).

(b) On 22 November 2002, Harmony purchased 17 074 861 shares in High River Gold Mines Limited for R141 million. High River Gold Mines Limited is a company subject to the laws of Ontario, Canada, that is listed on the Toronto Stock Exchange and holds gold mining assets in Russia, Canada and West Africa. This 21% investment was acquired at a discount of 16% (US$0,85 cents per share) from the 30-day weighted average share price for the 30-day period prior to the execution of the agreement with Jipangu, a Japanese investment house. Share issues subsequent to acquisition has effectively diluted Harmony's shareholding to 16%. The market value of the investment was R164 million on 30 June 2003, resulting in an increase of R23 million since acquisition, which is reflected as equity reserves. Refer to note 21 for more details.

(c) In February 2003 Aurora Gold WA (Proprietary) Limited, a subsidiary of Abelle Limited, sold its Lake Carey tenements to Midas Resources Limited. The consideration received was A$ 3 million plus 10 000 000 ordinary shares, fully paid, issued at A$ 0,20 per share. At 30 June 2003 the market value of the shares in Midas Resources was R5 million (A$ 0,10 per share). Midas Resources Limited is a gold exploration company, which is listed on the Australian Stock Exchange Limited.

(d) Harmony acquired a strategic 32,5% shareholding in Highland Gold Limited on 31 May 2002 for US$18 million. Highland Gold Limited is a Jersey-based company which holds Russian gold assets, comprising a producing gold mine together with projects and potential projects at various stages of development. The investment has been accounted for as an investment in an associate in July 2002, when Harmony appointed a director on the board of Highland Gold Limited.

(e) Unlisted investments comprise various industry-related investments and loans, which have been valued by the directors. The directors of Harmony perform independent valuations of the investments on an annual basis to ensure that no permanent impairment in the value of the investments has occurred. No dividends were received from these investments during the current financial year (2002: R2 million).

(f) The environmental trust funds are irrevocable trusts under the Harmony Group's control. The monies in the trusts are invested primarily in interest bearing short-term and other investments and approximate their fair value. These investments provide for the estimated cost of rehabilitation during and at the end of the life of the Harmony Group's mines. Income earned on monies paid to the trusts is accounted for as investment income. The funds contributed to the trusts are included under held to maturity investments. These investments are restricted in use and may only be used to fund the Harmony Group's approved rehabilitation costs.

(g) A loan of R52 million (2002: R89 million) was made to the Harmony Share Trust to acquire 1 382 842 shares (2002: 2 716 600 shares) for employees participating in the Harmony Share Option Scheme. Refer to note 28 for details on the share option scheme.

15. INVESTMENTS IN ASSOCIATES AND SUBSIDIARIES

Listed investments in associates

		2003 R'm	2002 R'm	2001 R'm
Opening carrying amount	(a)	**291**	–	–
Shares acquired at cost	(b) and (c)	**1 102**	306	–
Mark-to-market of listed options		**(9)**	–	–
Share of results after tax		**57**	(14)	–
		1 441	292	–
Exchange differences		**(43)**	(1)	–
Closing carrying amount		**1 398**	291	–

(a) At 30 June 2003 the Harmony Group held 294 222 437 shares in Bendigo Mining NL, a company incorporated in Australia. The investment represents 31,8% interest in a single project gold company, listed on the Australian Stock Exchange Limited. Harmony is developing virgin underground orebodies which have been proved to exist beneath old workings which made up this gold field, which closed in the early 1950's after 100 years of continuous production. During the year ended 30 June 2002, all pre-production costs were capitalised. The market value of this investment as determined by closing prices on the Australian Stock Exchange Limited at the close of business and closing exchange rates amounted to R276 million (2002: R503 million). Harmony has also been granted options to acquire 360 million shares in Bendigo any time before 31 December 2003 at Australian $0,30 per share. Included in the income statement is an amount of R9 million relating to a loss on the mark-to-market of these listed options. Refer to note 7 for more details.

The Harmony Group's interest of 31,8% in the summarised balance sheet of Bendigo Mining NL is as follows:

	2003 R'm	2002 R'm	2001 R'm
Capital and reserves	**36**	79	–
Non-current liabilities	**3**	2	–
	39	81	–
Fixed assets	**8**	6	–
Net current assets	**31**	75	–
	39	81	–

(b) Harmony acquired a strategic shareholding of 32 500 000 shares in Highland Gold Limited on 31 May 2002, for R188 million. On listing on the Alternative Investment Market of the LSE in December 2002, Highland Gold issued additional shares. This diluted Harmony's initial investment of 32,5% to 31,7% after an additional 2 511 947 shares were purchased for R68 million. Highland Gold is a Jersey-based company which holds Russian gold assets, comprising a producing gold mine together with projects and potential projects at various stages of development. Highland Gold's financial year ended at 31 December 2002. For the remainder of the Harmony Group's accounting period, unaudited management accounts were used to compile the Harmony Group's results. The market value of this investment as determined by closing prices on the Alternative Investment Market of the LSE at the close of business and closing exchange rates amounted to R963 million.

The Harmony Group's interest of 31,7% in the summarised balance sheet of Highland Gold at 30 June 2003 is as follows:

	2003 R'm	2002 R'm	2001 R'm
Capital and reserves	**229**	–	–
Non-current liabilities	**38**	–	–
	267	–	–
Fixed assets	**126**	–	–
Other non-current assets	**41**	–	–
Net current assets	**100**	–	–
	267	–	–

(c) The Harmony Group has acquired a 17,25% interest in Avmin through its 50% interest in a joint venture with ARMgold Limited, Clidet 454 (Proprietary) Limited (refer to note 16(b). The joint venture company purchased 27 786 362 shares in Avmin from Anglo American plc for R1 209 million on 8 May 2003 and a further 11 003 399 shares for R478 million on 14 May 2003, giving a combined interest of 34,5% in the issued share capital of Avmin. Avmin is listed on the JSE and has interests in operating gold, manganese, iron, chrome, platinum, and nickel mines in South Africa, as well as cobalt and copper mines in Zambia. At 30 June 2003, Clidet's 34,5% investment in Avmin was valued at R1 552 million by reference to the stock exchange quoted price of R40,00 per share.

The Harmony Group's interest of 17,25% in the summarised balance sheet of Avmin is as follows:

	2003 R'm	2002 R'm	2001 R'm
Capital and reserves	**1 038**	–	–
Non-current liabilities	**232**	–	–
	1 270	–	–
Fixed assets	**1 133**	–	–
Other non-current assets	**46**	–	–
Net current assets	**91**	–	–
	1 270	–	–

Unlisted investments in subsidiaries

Shares at fair value (refer Annexure A page 103).

Loans to subsidiaries (refer Annexure A page 103).

16. INTEREST IN JOINT VENTURES

(a) Interest in ARMgold/Harmony Freegold Joint Venture Company (Pty) Limited

The Harmony Group has a 50% interest in a joint venture with ARMgold Limited, the ARMgold/Harmony Freegold Joint Venture Company (Proprietary) Limited, which operates as a gold mining company in the Welkom area of the Free State goldfields. The joint venture company purchased the Free Gold and Joel assets from AngloGold Limited for R2 881 million and took operational control of these assets on 3 January 2002. The following amounts represent the Harmony Group's share of the assets and liabilities and revenue and expenses of the joint venture and are included in the consolidated balance sheet and income statement and cash flow statement:

	2003 R'm	2002 R'm	2001 R'm
Property, plant and equipment	**1 415**	1 079	–
Investments	**278**	229	–
Current assets	**390**	571	–
	2 083	1 879	–
Non-current interest bearing borrowings	**164**	517	–
Non-current inter-Harmony Group borrowings	**719**	907	–
Deferred income and mining taxes	**312**	(213)	–
Provision for environmental rehabilitation	**160**	200	–
Provision for post-retirement benefits	**1**	1	–
Current liabilities	**145**	181	–
	1 501	1 593	–
Net assets	**582**	286	–

16. INTEREST IN JOINT VENTURES *(continued)*

	2003 R'm	2002 R'm	2001 R'm
Income	**1 861**	938	–
Expenses	**(1 401)**	(516)	–
Profit before tax	**460**	422	–
Taxation	**(164)**	(136)	–
Profit after tax	**296**	286	–
Operating cash flows	**556**	525	–
Investing cash flows	**(105)**	(922)	–
Financing cash flows	**(687)**	900	–
Total cash flows	**(236)**	503	–
Proportionate interest in joint venture commitments	**426**	14	–

There are no contingencies relating to the Harmony Group's interest in the joint venture. The number of employees in the joint venture was 17 146 (2002: 13 734) at year-end.

(b) Interest in Clidet 454 (Pty) Limited

The Harmony Group has a 50% interest in a joint venture with ARMgold Limited, Clidet 454 (Proprietary) Limited. The joint venture company purchased a 24,7% interest in Anglovaal Mining Limited from Anglo American plc for R1 209 million on 8 May 2003 and a 9,8% interest for R478 million on 14 May 2003. The following amounts represent the Harmony Group's share of the assets and liabilities and revenue and expenses of the joint venture and are included in the consolidated balance sheet and income statement and cash flow statement:

	2003 R'm	2002 R'm	2001 R'm
Investment in associate	**867**	–	–
Non-current inter-Harmony Group borrowings	**846**	–	–
Net assets	**21**	–	–
Equity accounted income	**21**	–	–
Operating cash flows	–	–	–
Investing cash flows	**(846)**	–	–
Financing cash flows	**846**	–	–
Total cash flows	–	–	–
Proportionate interest in joint venture commitments	–	–	–

There are no contingencies relating to the Harmony Group's interest in the joint venture.

17. INVENTORIES

Gold in-process and bullion on hand	**278**	286	195
Stores and materials at average cost	**176**	162	105
	454	448	300

Harmony's and Elandskraal's gold in-process and bullion on hand are valued at net realisable value to the amount of R75 million and R20 million, respectively. All the other operations' gold in-process are valued at cost.

	2003 R'm	2002 R'm	2001 R'm
18. RECEIVABLES			
Value-added tax	**68**	92	103
Trade receivables	**147**	103	70
Amount owning relating to share issue	**–**	–	292
Interest and other	**556**	490	334
	771	685	799
19. SHARE CAPITAL AND SHARE PREMIUM			
Share capital			
Authorised			
250 000 000 (2002: 250 000 000, 2001: 250 000 000) ordinary shares of 50 cents each			
10 958 904 (2002: 10 958 904, 2001: 10 958 904) redeemable convertible preference shares of 50 cents each			
Issued			
184 854 115 (2002: 169 247 349, 2001: 144 553 291) ordinary shares of 50 cents each			
Ordinary shares of 50 cents each at 1 July 2002	**85**	72	49
Issued in terms of the share option scheme	**1**	2	2
Issued for cash	**3**	4	21
Conversion of preference shares	**–**	6	–
Warrants converted	**3**	1	–
Balance at 30 June 2003	**92**	85	72
Share premium	**6 782**	5 462	3 727

The unissued shares are under the control of the directors until the forthcoming annual general meeting. Note 28 set out details in respect of the share option scheme.

Harmony has a general authority to purchase its shares up to a maximum of 20% of the issued share capital in any one financial year. This is in terms of the annual general meeting of shareholders on 15 November 2002. The general authority is subject to the Listings Requirements of the JSE and the Companies Act, 1973, as amended.

20. HARMONY LISTED OPTIONS AND WARRANTS			
For the acquisition of Vermeulenskraal Noord, 1 125 000 warrants were issued at a fair value of R10,00 per warrant on 3 December 1996	–	–	11
For the acquisition of Lydenburg Exploration Limited, 6 418 855 warrants were issued at a fair value of R8,89 per warrant during the period January through March 1997	–	–	58
For obtaining the credit facility from NM Rothschild 36 045 warrants were issued at fair value of R5,70 per warrant on 6 June 1998	–	–	–
	–	–	69

In terms of a transaction dated 29 June 2001, 27 082 500 ordinary shares and 9 027 500 options to purchase 9 027 500 additional ordinary shares were issued. Ordinary shares were purchased in integral multiples of three and investors received one option for every three shares purchased. Each option entitled its holder to purchase, on any business day on or before 28 June 2003, one ordinary share at R43,00. At 30 June 2003, 6 659 470 (2002: 1 013 554) options were exercised, leaving a balance of 2 368 030 (2002: 8 013 946) options that will be issued in the 2004 financial year. These warrants were traded on the JSE.

Options were also exercisable at a price of R60,00, at which time they could have been converted into ordinary shares of Harmony, on or before 31 July 2001. None of the options were exercised and they lapsed during the 2002 financial year.

21. FAIR VALUE AND OTHER RESERVES

	2003 R'm	2002 R'm	2001 R'm
Foreign exchange translation reserve	**(261)**	64	(19)
Mark-to-market of listed investments	**41**	–	86
Mark-to-market of financial instruments	–	46	(18)
Other	**(22)**	(22)	5
	(242)	88	54

The balance of the foreign exchange translation reserve represents the cumulative translation effect of the Harmony's off-shore operations.

On 22 November 2002, Harmony purchased 17,1 million shares in High River Gold Mines Limited, a Toronto-listed company, for a total consideration of R141 million. The market value of the investment at 30 June 2003 was R164 million, resulting in an increase of R23 million since acquisition. On 3 June 2003 Abelle Limited completed the acquisition of the remaining 50% of the Morobe Gold Project from CDC Financial Services Limited and Kula Fund Limited. In consideration Abelle paid US$10 million cash plus 12 million issued options, expiring on 30 June 2007 and exercisable at A$1,00 per option. At 30 June 2003, the options were valued at R18 million.

The mark-to-market of listed investments consisted of listed shares in AurionGold held by Harmony as a strategic interest in 2001. Subsequently this investment was reclassified as a trading security, from a strategic investment, to reflect a change in Harmony's intentions regarding this investment from a strategic long-term investment to a non-core investment. This resulted in movements in the share price being reflected against earnings instead of equity for the 2002 year.

The mark-to-market of financial instruments at 30 June 2002, related to the currency hedge taken out in Harmony and to the movement in the derivative instruments of Randfontein which qualified for the hedge accounting in 2001. Refer to note 29 for details on financial instruments.

The different categories of fair value and other reserves are made up as follows:

	2003 R'm	2002 R'm	2001 R'm
Foreign exchange translation reserve			
At beginning of year	**64**	(19)	•
Current year's foreign exchange movement	**(325)**	83	•
At end of year	**(261)**	64	(19)
Mark-to-market of listed investments			
At beginning of year	–	86	•
Reclassification of mark-to-market on Aurion Gold	–	(86)	•
Mark-to-market of Abelle's options	**18**	–	•
Mark-to-market of High River Gold investment	**23**	–	•
At end of year	**41**	–	(86)
Mark-to-market of financial instruments			
At beginning of year	**46**	(18)	•
Mark-to-market of currency hedge	**(46)**	64	•
At end of year	–	46	(18)
Other reserves			
At beginning of year	**(22)**	4	•
Listed options expired	–	(26)	•
At end of year	**(22)**	(22)	5

		2003 R'm	2002 R'm	2001 R'm
22. BORROWINGS				
Long-term borrowings				
Unsecured				
Senior unsecured fixed rate bonds	(a)	**1 200**	1 200	1 200
Fair value adjustment		**(30)**	(21)	9
Less: Amortised discount and bond issue costs		**(15)**	(20)	(25)
Total unsecured long-term borrowings		**1 155**	1 159	1 184
Secured				
BAE Systems plc	(b)	**68**	36	28
Less: Short-term portion		**(68)**	–	–
		–	36	28
BOE loan	(c)	**375**	500	–
Less: Short-term portion		**(125)**	(125)	–
		250	375	–
AngloGold Limited	(d)	**161**	517	–
Less: Short-term portion		**–**	(316)	–
		161	201	–
Gold Fields Limited	(e)	**4**	–	–
Less: Short-term portion		**(1)**	–	–
		3	–	–
Nedbank	(f)	**850**	–	–
Less: Amortised issue costs		**(4)**	–	–
		846	–	–
Total secured long-term borrowings		**1 260**	612	28
Total long-term borrowings		**2 415**	1 771	1 212

(a) On 16 June 2001, Harmony launched and priced an issue of senior unsecured fixed rate bonds in an aggregate principal amount of R1 200 million, with semi-annual interest payable at a rate of 13% per annum. These bonds will be repayable on 14 June 2006, subject to early redemption at Harmony's option. The bonds are listed on the Bond Exchange of South Africa. The bonds were issued to settle existing debt and fund the purchase of Elandskraal and New Hampton. As long as the bonds are outstanding, Harmony will not permit encumbrances on its present or future assets or revenues to secure indebtedness for borrowed money, without securing the outstanding bonds equally and ratably with such indebtedness, except for certain specified permitted encumbrances. Including in the amortisation charge as per the income statement is R5 million (2002: R5 million) for amortisation of the bond issue costs.

(b) The loan from BAE Systems plc is a US dollar denominated term loan of R68 million ($9,0 million) (2002: R36 million ($3,5 million)) for financing the design, development and construction of a facility for the manufacture and sale of value added gold products at Harmony's premises in the Free State. The loan is secured by a notarial covering bond over certain gold proceeds and other assets and is repayable in full on 30 April 2004. The loan bears interest at Libor plus 2% which is accrued daily from the drawdown date and interest is repayable on a quarterly basis.

(c) On 18 April 2002, Harmony entered into a term loan facility of R500 million with BOE Bank Limited for the purpose of partially funding Harmony's acquisition of shares in the ARMgold/Harmony Freegold Joint Venture Company (Proprietary) Limited and loans made by Harmony to the Free Gold company in connection with the acquisition of mining assets. The facility is collateralised by a pledge of Harmony's shares in the Freegold Joint Venture Company and is guaranteed by Randfontein, Evander, Kalgold and Lydenburg Exploration Limited. The loan is repayable in full on 23 April 2006 by way of eight semi-annual capital instalments which are due beginning 23 October 2002. The loan bears interest at a rate equal to the JIBAR rate for deposits in rand plus 1,5% plus specified costs, which is accrued daily from the drawdown date and is payable quarterly in arrears commencing 23 July 2002.

The following restrictive covenants apply:

(i) a consolidated net worth must be more than R4 600 million;

(ii) the total debt to EBITDA ratio not to exceed 1,5; and

(iii) EBITDA to total debt service ratio should not be less than 3,5.

(d) On 24 December 2001, Free Gold entered into an agreement with AngloGold Limited to purchase its Free Gold assets for R2 881 million. R1 800 million was payable on 1 January 2002 at the call rate from this date until the 10th business day after the date of fulfilment of the last of the conditions precedent. R400 million is payable on 1 January 2005 at no interest charge. The balance of the consideration was payable five business days before AngloGold was obliged to pay recoupment tax, Capital Gains Tax and any other income tax on the disposal of the assets at no interest charge. Harmony's 50% portion of the outstanding loan balance at 30 June 2003 was R161 million (2002: R517 million), which was proportionately consolidated.

(e) On 1 July 2002, Free Gold entered into an agreement with St Helena Gold Mines Limited, a fully owned subsidiary of Gold Fields Limited, to purchase its St Helena assets for R129 million. R120 million was payable on 29 October 2002, being the effective date after the fulfilment of all the conditions precedent. The balance of R9 million is payable by way of a 1% royalty on turnover, monthly in arrears, for a period of 48 months, commencing on the 10th of the month following the effective date. Harmony's 50% portion of the outstanding loan balance at 30 June 2003 was R4 million, which was proportionately consolidated.

(f) On 8 May 2003, Harmony Gold entered into a term loan agreement with Nedbank Limited for R850 million. The purpose of this term loan agreement was to fund the acquisition of 17,25% of Avmin. This term loan was paid out in two tranches, the first tranche of R611 million was paid on 8 May 2003 and the second tranche of R239 million was paid on 13 May 2003. The loan is secured with guarantees provided by Evander Gold Mines Limited, Randfontein Estates Limited, Kalahari Goldridge Mining Company Limited and Lydenburg Exploration Limited and is repayable in full on 8 November 2004. The loan bears interest at the 3-month JIBAR rate, plus a margin of 1,5% as well as stamp duties, liquid and reserving costs all converted to a nacq (nominal annual compounded quarterly in arrears) rate. Interest is repayable on a quarterly basis. Including in the amortisation charge as per the income statement is R0,5 million (2002: R nil) for amortisation of the loan costs.

Other borrowings

The level of the Harmony's borrowing powers, as determined by its articles of association, is such that, taking into account the obligations at 30 June 2003, Harmony will have unrestricted access to loan financing for its reasonably foreseeable requirements. At year-end, total borrowings amounted to R2 609 million (2002: R2 212 million).

23. DEFERRED FINANCIAL LIABILITY

	2003 R'm	2002 R'm	2001 R'm
Mark-to-market of speculative financial instruments at year-end	**283**	84	390
Amount owing on close out of derivatives	**–**	–	22
Mark-to-market of hedging financial instruments at year-end	**–**	887	(15)
	283	971	397
The Harmony Group's net financial liability is made up as follows:			
Deferred financial assets	**(1)**	(49)	–
Deferred financial liabilities	**284**	1 020	397
	283	971	397

During this financial year, a significant portion of the inherited hedge books of both New Hampton and Hill 50, were closed out at a cost of R69 million (US$8 million). The outstanding contracts are now treated as speculative and the mark-to-market movement will be reflected in the income statement.

During the previous financial year, the inherited Randfontein hedge book, which had been treated as speculative, was closed out at a cost of R135 million after tax. The hedge contracts of both New Hampton and Hill 50 were restructured towards the end of the 2002 financial year, to normal purchase, normal sale agreements by which Harmony was obliged to physically deliver specified quantities of gold at future dates, subject to the pricing arrangements described below. Due to the closure of the hedge agreements as mentioned above, these contracts are now treated as speculative.

Refer to note 29 for more details on the outstanding financial instruments.

24. PROVISION FOR ENVIRONMENTAL REHABILITATION

	2003 R'm	2002 R'm	2001 R'm
Provision raised for future rehabilitation			
Opening balance	**711**	427	356
Acquisition of subsidiaries	**30**	264	123
Finalisation of purchase price of subsidiary	**(66)**	–	–
(Reversal of provision)/Charge to income statement	**(25)**	20	(52)
Exchange differences	**(26)**	–	–
Closing balance	**624**	711	427

While the ultimate amount of rehabilitation costs to be incurred in the future is uncertain, the Harmony Group has estimated that based on current environmental and regulatory requirements, the total cost for the mines, in current monetary terms, will be R969 million (2002: R1 085 million, 2001: R655 million).

Included in the charge to the income statement is an amount of R51 million (2002: R40 million) relating to the time value of money.

The movements in the investments in the Harmony Group Environmental Trust Funds, were as follows:

	2003 R'm	2002 R'm	2001 R'm
Opening balance	**487**	193	124
Transferred from other trust funds	**17**	222	55
Interest accrued	**69**	23	13
Contributions made	**36**	50	3
Reimbursement of costs incurred	**(3)**	(1)	(2)
Closing balance	**606**	487	193
Ultimate estimated rehabilitation cost	**969**	1085	655
Amounts invested in environmental trust funds	**(606)**	(487)	(193)
Future net obligations	**363**	598	462

The Harmony Group intends to finance the ultimate rehabilitation costs from the money invested with the environmental trust funds, ongoing contributions, as well as the proceeds on sale of assets and gold from plant clean-up at the time of mine closure.

25. POST-RETIREMENT BENEFITS

(a) Pension and provident funds

The Harmony Group contributes to several pension and provident funds governed by the Pension Funds Act, 1956, for the employees of its South African subsidiaries. The pension funds are multi-employer industry plans. The Harmony Group's liability is limited to its annually determined contributions.

The provident funds are funded on the "money accumulative basis" with the member's and employer's contributions having been fixed in the constitution of the funds.

The Australian group companies make contributions to each employee's Superannuation (pension) fund in accordance with the Superannuation Guarantee Scheme ("SGS"). The SGS is a Federal Government initiative enforced by law which compels employers to make regular payments to regulated funds providing for each employee on their retirement. The Superannuation Guarantee Contributions were set at a minimum of 9% of gross salary and wages for the 2003 year (2002: 8%).

Substantially all the Harmony Group's employees are covered by the abovementioned retirement benefit plans. Funds contributed by the Harmony Group for fiscal 2003 amounted to R187 million (2002: R191 million, 2001: R123 million).

(b) Post-retirement benefits, other than pensions

Skilled workers in South Africa participate in the Minemed medical scheme, as well as other medical schemes. The Harmony Group contributes to these schemes on behalf of current employees and retired employees who retired prior to 31 December 1996 (Minemed medical scheme). The annual contributions for these retired employees are fixed.

The Harmony Group's contributions to these schemes on behalf of current employees amounted to R40 million, for both 2003 and 2002 and R31 million for 2001.

No post-retirement benefits are available to other workers. No liability exists for employees who were members of these schemes who retired after the date noted above. The medical schemes pay certain medical expenses for both current and retired employees and their dependents. Current and retired employees pay an annual fixed contribution to these schemes.

An updated actuarial valuation was carried out during the 2002 fiscal year on the Minemed medical scheme following the last actuarial valuation in fiscal 2000.

Assumptions used to determine the liability relating to the Minemed medical scheme included investment returns of 12%, no increases in employer subsidies (in terms of the agreement) and mortality rates according to the South African "a mf" tables and a medical inflation rate of 0% to 7%.

The provision for former employees' post-retirement benefits comprise medical benefits for former employees who retired. The amounts were based on an actuarial valuation conducted during the year ended 30 June 2002.

	2003 R'm	2002 R'm	2001 R'm
The amounts recognised in the balance sheet are as follows:			
Present value of unfunded obligation	**9**	9	8
The amounts recognised in the income statement are as follows:			
Interest cost	**–**	2	3
Additional liability raised – Elandskraal	**–**	1	–
Benefits paid	**5**	3	–
Net actuarial gains	**–**	(5)	(20)
	5	1	(17)
The movement in the liability recognised in the balance sheet is as follows:			
At beginning of year	**9**	8	25
Total expenses/(income)	**–**	1	(17)
At end of year	**9**	9	8

	2003	2002	2001
The principal actuarial assumptions used for accounting purposes were:			
Discount rate	**4% – 12%**	4% – 12%	
Assumed medical subsidy inflation	**0% – 7%**	0% – 7%	

26. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

Trade payables	**410**	263	220
Short-term portion of long-term borrowings	**194**	441	–
Short-term borrowings	**17**	36	78
Payroll and leave liabilities	**374**	408	253
Accruals	**298**	325	–
Other liabilities	**83**	175	532
	1 376	1 648	1 083

Leave liability

Employee entitlements to annual leave are recognised on an ongoing basis. A provision is made for the estimated liability for annual leave as a result of services rendered by employees up to the balance sheet date. The movement in the liability recognised in the balance sheet is as follows:

At beginning of year	**138**	100	
Acquired through the purchase of subsidiaries	**1**	18	
Acquired through the purchase of businesses	**3**	–	
Benefits paid	**(156)**	(119)	
Total expenses per income statement	**150**	139	
At end of year	**136**	138	100

27. EMPLOYEE BENEFITS

	2003	2002	2001
Number of permanent employees			
Harmony Free State	**12 317**	12 644	14 671
Evander	**6 770**	7 384	6 909
Kalgold	**229**	222	229
Randfontein	**7 154**	7 455	9 700
Elandskraal	**6 611**	7 559	7 200
Australian Operations	**255**	309	169
Bissett	**6**	6	208
Exploration	**12**	20	13
	33 354	35 599	39 099
Freegold Joint Venture (50%)	**8 573**	6 867	–
Total	**41 927**	42 466	39 099

	2003 R'm	2002 R'm	2001 R'm
Aggregate earnings			
The aggregate earnings of employees including directors were:			
Salaries and wages and other benefits	**2 502**	1 780	1 667
Retirement benefit costs	**187**	191	123
Medical aid contributions	**40**	40	31
	2 729	2 011	1 821

The aggregate earnings for the 2003 financial year include the earnings of Free Gold and Hill 50 for the full 12-month period. The earnings of the 2002 financial year only included the earnings of Free Gold for six months and Hill 50 for three months.

28. SHARE OPTION SCHEMES

Harmony has an Employee Share Option Scheme ("Harmony Share Option Scheme") hereunder referred to as the HSOS scheme under which certain qualifying employees may be granted options to purchase shares in Harmony's authorised but unissued ordinary shares. Of the total of 8 000 000 ordinary shares under the specific authority of the directors in terms of the Harmony (2001) Share Option Scheme, 7 528 100 shares have been offered to participants leaving a balance of 471 900. In addition a total of 1 065 400 shares were still outstanding under the Harmony (1994) Share Option Scheme. In terms of the rules of the HSOS scheme, the exercise price of the options granted is equal to fair market value of the shares at the date of the grant.

Options currently expire no later than 10 years from the grant date and annually from the grant date, a third of the total options granted are exercisable. Proceeds received by Harmony from the exercise are credited to share capital and share premium.

Share option activity was as follows:

	Number of share options granted	Average exercise price per share (Rand)
Balance as at 30 June 2000	6 899 000	–
Share options granted during the year	1 728 400	–
Share options exercised during the year	(2 835 700)	20,89
Balance as at 30 June 2001	5 791 700	–
Share options granted during the year	5 968 200	–
Share options exercised during the year	(2 682 900)	26,88
Balance as at 30 June 2002	9 077 000	–
Share options granted during the year	1 311 000	–
Share options lapsed	(461 800)	
Share options exercised during the year	(2 243 300)	37,04
Balance as at 30 June 2003	7 682 900	–

The number of shares held by the Harmony ShareTrust at year end amounted to 1 219 500 (2002: 2 185 200, 2001: 1 158 000).

The following table summarises the status of share options outstanding at 30 June 2003:

Grant date	*Number of options*	*Option price (Rand)*
2 December 1997	13 750	11,70
21 September 1999	146 100	22,90
23 February 1999	7 000	25,75
15 November 2000	334 000	27,20
13 January 2000	248 050	35,40
24 April 2001	316 500	36,50
20 November 2001	5 276 500	49,60
2 February 2002	30 000	93,00
27 March 2003	1 311 000	91,60
	7 682 900	

29. DERIVATIVE FINANCIAL INSTRUMENTS AND FAIR VALUE AND CREDIT RISK OF FINANCIAL INSTRUMENTS

Harmony is exposed to market risks, including credit risk, foreign currency, commodity price, interest rate and liquidity risk associated with underlying assets, liabilities and anticipated transactions. Following periodic evaluation of these exposures, Harmony may enter into derivative financial instruments to manage these exposures. Harmony does not issue derivative financial instruments for trading or speculative purposes.

Commodity price sensitivity

As a general rule, Harmony sells its gold production at market prices. Harmony, generally, does not enter into forward sales, derivatives or other hedging arrangements to establish a price in advance for the sale of its future gold production. A significant proportion of Randfontein Estate's, New Hampton's and Hill 50's production was, however, already hedged when they were acquired by Harmony.

During this financial year, a significant portion of the inherited hedge books of both New Hampton and Hill 50, were closed out at a cost of R69 million (US$8 million). The outstanding contracts are now treated as speculative and the marked-to-market movement will be reflected in the income statement.

During the previous financial year, the inherited Randfontein hedge book, which had been treated as speculative, was closed out at a cost of R250 million (US$22 million). The contracts of both New Hampton and Hill 50 were restructured towards the end of the 2002 financial year, to normal purchase, normal sale agreements by which Harmony was obliged to physically deliver specified quantities of gold at future dates, subject to the pricing arrangements described below. Due to the closure of the hedge agreements as mentioned above, these contracts are now treated as speculative.

Maturity schedule of the Harmony Group's commodity contracts by type at 30 June 2003

	30 June 2004	30 June 2005	30 June 2006	30 June 2007	30 June 2008	30 June 2009	Total
Forward sales agreements							
Ounces	100 000	175 000	108 000	147 000	100 000	100 000	730 000
A$/ounce	513	513	510	515	518	518	514
Calls contracts sold							
Ounces	95 000	130 000	40 000	–	–	–	265 000
A$/ounce	540	512	552	–	–	–	528
	195 000	305 000	148 000	147 000	100 000	100 000	995 000

These contracts are classified as speculative and the marked-to-market movement is reflected in the income statement.

The mark-to-market of these contracts was a negative value of R254 million (US$34 million) at 30 June 2003. These values were based on a gold price of US$346 (A$514) per ounce, exchange rates of US$/R7,51 and A$/US$0.67 and prevailing market interest rates at the time. These valuations were provided by independent risk and treasury management experts.

Maturity schedule of the 26% direct and indirect interest in the commodity contracts of Avgold at 30 June 2003

	30 June 2004	30 June 2005	30 June 2006	Total
Forward sales agreements				
Ounces	76 591	76 378	36 802	189 771
US$/ounce	313	316	323	316

After the merger with ARMgold, the Harmony Group will have 26% direct and indirect interest in Avgold, including the 11,5% interest acquired directly by Harmony on 15 July 2003. The mark-to-market of Harmony's interest in these contracts was a negative value of R50 million (US$7 million).

Maturity schedule of the Harmony Group's commodity contracts by type at 30 June 2002

	30 June 2003	30 June 2004	30 June 2005	30 June 2006	30 June 2007	30 June 2008	30 June 2009	Total
Forward sales agreements								
Ounces	425 792	229 000	205 000	187 500	125 000	100 000	100 000	1 372 292
A$/ounce	514	522	524	523	514	518	518	519
Calls contracts sold								
Ounces	62 425	175 500	130 000	40 000	–	–	–	407 925
A$/ounce	545	544	512	552	–	–	–	535
Put contracts bought								
Ounces	33 000	–	–	–	–	–	–	33 000
A$/ounce	500	–	–	–	–	–	–	500
	521 217	404 500	335 000	227 500	125 000	100 000	100 000	1 813 217

The contracts were treated as normal purchase, normal sales contracts.

The mark-to-market of these contracts was a negative value of R913 million (US$88 million) at 30 June 2002. These values were based on a gold price of US$316 (A$557) per ounce, exchange rates of US$/R10,39 and US$/A$0,57 and prevailing market interest rates and volatilities at the time. These valuations were provided by independent risk and treasury management experts.

Maturity schedule of the Harmony Group's commodity contracts by type at 30 June 2001

	30 June 2002	30 June 2003	30 June 2004	30 June 2005	30 June 2006	Total
South Africa						
Forward sales						
Ounces	–	–	12 500	37 500	–	50 000
$/oz	–	–	284	284	–	284
Puts purchases						
Ounces	750 000	–	–	–	–	750 000
R/oz	1 990	–	–	–	–	1 990
Forward purchases						
Ounces	(350 000)	–	–	–	–	(350 000)
$/oz	309	–	–	–	–	309
Calls sold						
Ounces	–	27 006	163 526	200 079	59 714	450 325
$/oz	–	279	296	299	300	297
	400 000	27 006	176 026	237 579	59 714	900 325
Australia						
Forward sales						
Ounces	177 304	206 000	9 000	–	–	392 304
A$/oz	498	514	539	–	–	507
Puts purchases						
Ounces	–	25 500	227 500	220 000	90 000	563 000
A$/oz	–	523	500	498	500	500
Calls sold						
Ounces	245 000	97 206	175 500	–	–	517 706
A$/oz	500	523	526	–	–	513
Calls purchased						
Ounces	(100 000)	–	–	–	–	(100 000)
A$/oz	500	–	–	–	–	500
	322 304	328 706	412 000	220 000	90 000	1 373 101
Total	722 304	355 712	588 026	457 579	149 714	2 273 335

All the above contracts where accounted for as speculative. The mark-to-market of the above contracts was a negative R314 million at 30 June 2001, based on independent valuations provided by Standard Risk and Treasury Management (Proprietary) Limited.

Foreign currency sensitivity

In the ordinary course of business, Harmony enters into transactions denominated in foreign currency (primarily US dollars). In addition, the Harmony Group has investments and liabilities in Canadian, Australian and US dollars. As a result Harmony is subject to transaction and translation exposure from fluctuations in foreign currency exchange rates. Harmony does not generally hedge its exposure to foreign currency exchange rates, however during the 2002 financial year, Harmony entered into monthly forward sales agreements amounting to US$180 million, of which US$90 million matured in the previous financial year and US$90 million matured over the period July 2002 to December 2002, at an average exchange rate of R/US$11.76. These contracts were entered into to preserve the revenue streams for the Free State operations.

These contracts were accounted for as cash flow hedges and were recorded in each period in reserves and subsequently reclassified to revenue on the contract expiry date. The marked-to-market value of these forward sales agreements on 30 June 2003 was R nil, as all the agreements matured before year-end.

The marked-to-market value of the transactions making up the positions on 30 June 2002 was a positive R47 million (US$5 million), the valuation was based on an exchange rates of US$/R10,42 and the prevailing interest rates and volatilities at the time.

Concentration of credit risk

Financial instruments, which subject Harmony to significant concentrations of credit risk, consist predominantly of cash and cash equivalents, short-term investments and various derivative financial instruments. The Harmony Group's financial instruments do not represent a concentration of credit risk as the Harmony Group deals with and maintains cash and cash equivalents, short-term investments and derivative financial instruments with a variety of well-established financial institutions of high-quality and credit standing. The credit exposure to any one counterparty is managed by setting exposure limits, which are reviewed regularly. The Harmony Group's debtors and loans are regularly monitored and assessed. An adequate level of provision is maintained.

Interest rates and liquidity risk

Fluctuations in interest rates and gold lease rates impact on the value of short-term cash and financing activities.

Gold lease rates

Harmony generally does not undertake any specific actions to cover its exposure to gold lease rates in respect of its lease rate swaps. Through its acquisitions of New Hampton and Hill 50, Harmony holds certain gold lease rate swaps, which are listed below:

	2003	2004	2005	2006	2007	2008	2009
Ounces	1 399 000	770 000	585 000	400 000	225 000	125 000	25 000
Lease rate received (%)	0,86	1,03	1,04	1,04	1,05	1,05	1,05

The above instruments are all treated as speculative. The mark-to-market of the above contracts was a positive R1million (US$120 000) at 30 June 2003, based on valuations provided by independent treasury and risk management experts.

Interest rate swaps

The Harmony Group has interest rate swap agreements to convert R600 million of its R1,2 billion fixed rate bond to variable rate debt. The interest rate swap runs over the term of the bond and comprises two separate tranches:

(a) R400 million: receive interest at a fixed rate of 13% and pay floating at JIBAR (reset quarterly) plus a spread of 1,8%.

(b) R200 million: receive interest at a fixed rate of 13% and pay floating at JIBAR (reset quarterly) plus a spread of 2,2%.

These transactions which mature in June 2006 are designated as fair value hedges. The marked-to-market value of the transactions was a negative R30 million (US$4 million) at 30 June 2003.

Surplus funds

In the ordinary course of business, the Harmony Group receives cash from its operations and is required to fund its working capital and capital expenditure requirements. The cash is managed to ensure that surplus funds are invested to provide sufficient liquidity at the minimum risk.

Fair value

The fair value of the financial instrument is defined as the amount at which the instrument could be exchanged in a current transaction between willing parties. The carrying amount of the receivables, all accounts payable, cash and cash equivalents are a reasonable estimate of the fair values thereof, because of the short-term maturity of such instruments. The investments in the environmental trust funds approximates fair values as the funds are invested in short-term maturity investments. Listed investments (including those in the environmental trust fund) are carried at market value. Long-term loans, other than the bond, approximates fair value as they are subject to market-based rates. The carrying value of the bond approximates its market value at 30 June 2003.

30. CASH GENERATED FROM OPERATIONS

	2003 R'm	2002 R'm	2001 R'm
Reconciliation of profit before taxation to cash generated from operations			
Income before taxation	**917**	2 279	229
Adjustments for:			
Interest received	**(270)**	(125)	(45)
Dividends received	**(3)**	(13)	–
Interest paid	**321**	230	114
Loss/(Profit) on sale of other assets and listed investments	**54**	(46)	7
Profit on sale of mining assets	**(39)**	(21)	(80)
Depreciation and amortisation	**582**	308	237
Impairment of assets	**812**	362	215
Gain on financial instruments	**(440)**	(46)	(140)
Mark-to-market of listed investments	**9**	(595)	–
Net (decrease)/increase in provision for environmental rehabilitation	**(25)**	20	(52)
Net decrease/(increase) in provision for former employees' post-retirement benefits	**–**	2	(17)
Income from associates	**(57)**	–	–
Other non-cash transactions	**(63)**	(4)	(2)
Effect of changes in operating working capital items:			
Receivables	**(81)**	127	(274)
Inventories	**4**	(93)	(82)
Accounts payable and accrued liabilities	**46**	51	363
Cash generated by operations	**1 767**	2 436	473

31. ADDITIONAL CASH FLOW INFORMATION

The income and mining taxes paid in the statement of cash flow represents actual cash paid.

(a) Non-cash items

Excluded from the statements of consolidated cash flows are the following:

(i) *for the years ended June 2003:*

the minorities' share in the profits of Abelle.

(ii) *for the years ended June 2002 and June 2001:*

the minorities' share in the profits of Elandskraal.

(b) Acquisitions of subsidiaries/businesses

(i) *for the year ended June 2003:*

(a) With effect from 29 October 2002, the Harmony Group acquired a 50% interest in the assets of St. Helena Mines, through its 50% shareholding in the ARMgold/Harmony Freegold Joint Venture Company (Proprietary) Limited, from St Helena Gold Mines Limited, a fully-owned subsidiary of Gold Fields Limited.The aggregate fair value of the assets acquired and liabilities assumed were as follows:

	2003 R'm
Inventories	**1**
Property, plant and equipment	**72**
Environmental trust fund	**17**
Long-term liabilities	**(5)**
Deferred tax	**(5)**
Provision for environmental rehabilitation	**(20)**
Total purchase price	**60**
Paid for by cash	**(60)**

(b) With effect from 1 May 2003, Harmony had acquired a majority shareholding in Abelle Limited and during the period to 30 June 2003 increased its shareholding such that, at 30 June 2003, Harmony had acquired 87% of the issued share capital of Abelle Limited. The aggregate fair value of the assets acquired and liabilities assumed were as follows:

	2003 R'm
Inventories	**9**
Accounts receivable	**4**
Investments	**5**
Property, plant and equipment	**1 124**
Accounts payable and accrued liabilities	**(17)**
Provision for environmental rehabilitation	**(10)**
Deferred tax	**(316)**
Minority interest	**(109)**
Total purchase price	**690**
Paid for by cash	**(769)**
Cash and cash equivalents at acquisition	**(79)**

(c) With effect from 8 May 2003, Harmony had acquired a 50% shareholding in the Clidet 454 (Proprietary) Limited Joint Venture. The aggregate fair value of the assets acquired and the liabilities assumed were as follows:

	2003 R'm
Investment in associate	**846**
Total purchase price	**846**
Paid for by way of borrowings	**(846)**

(ii) *for the year ended June 2002:*

(a) With effect from 3 January 2002, Harmony had acquired a 50% shareholding in the ARMgold/Harmony Freegold Joint Venture Company (Proprietary) Limited. The aggregate fair value of the assets acquired and the liabilities assumed were as follows:

	2002 R'm
Environmental Trust Fund	**222**
Property, plant and equipment	**1 090**
Accounts payable and accrued liabilities	**(53)**
Long-term liabilities	**(190)**
Deferred tax	**347**
Total purchase price	**1 416**
Paid for by way of borrowings	**(516)**
Paid for by cash	**(900)**
Cash and cash equivalents at acquisition	**–**

(b) With effect from 1 April 2002, Harmony acquired the remaining 10% interest in Elandskraal from Khuma Bathong. The fair value of assets acquired were as follows:

	2002 R'm
Property, plant and equipment	110
Net minority interest in Elandskraal	100
Total purchase price	210
Paid for by cash	(210)

(c) With effect from 1 April 2002, Harmony acquired the entire share capital of Hill 50 Gold NL and its subsidiaries. The aggregate fair value of the assets acquired and the liabilities assumed were as follows:

	2002 R'm
Inventories	54
Accounts receivable	29
Investments	
Property, plant and equipment	2 754
Accounts payable and accrued liabilities	(134)
Long-term liabilities	(52)
Deferred financial liability	(944)
Deferred tax	(442)
Total purchase price	1 265
Paid for by cash	(1 419)
Cash and cash equivalents at acquisition	(154)

(iii) *for the year ended June 2001:*

(a) With effect from 9 April 2001, Harmony acquired Elandsrand and Deelkraal mines from AngloGold. The aggregate fair value of the assets required and liabilities assumed were:

	2001 R'm
Property, plant and equipment	1 053
Investments	55
Long-term liabilities	(55)
Total purchase price	1 053
Paid for by cash	(1 053)

(b) With effect from 1 April 2001, Harmony had acquired a majority shareholding in New Hampton and during the period to 30 June 2001 increased its shareholding such that at 30 June 2001, Harmony had acquired 100% of the issued share capital of New Hampton. The aggregate fair value of the assets acquired and liabilities assumed were:

	2001 R'm
Inventories	44
Accounts receivable	18
Investments	26
Property, plant and equipment	610
Accounts payable and accrued liabilities	(149)
Long term liabilities	(320)
Total purchase price	229
Paid for by cash	(229)

(c) Disposal of subsidiaries/businesses

(i) *for the year ended June 2001:*

(a) With effect from 24 April 2001, Harmony disposed of a 10% interest in Elandskraal to Khuma Bathong. The book value of assets and liabilities disposed of were:

	2001 R'm
Property, plant and equipment	**107**
Inventories	**7**
Total purchase price	**114**
Paid for by cash	**(114)**

32. COMMITMENTS AND CONTINGENCIES

	2003 R'm	2002 R'm	2001 R'm
Capital expenditure commitments			
Contracts for capital expenditure	**34**	33	123
Authorised by the directors but not contracted for	**2 156**	267	199
	2 190	300	322

This expenditure will be financed from existing cash resources.

Contingent liabilities

Guarantees and suretyships	**15**	5	
Environmental guarantees	**75**	82	
	90	87	

33. RELATED PARTY TRANSACTIONS

Ms T A Mokhobo, a non-executive director of Harmony, is the chairman of Simane Investments (Proprietary) Limited ("Simane") and, as such, has an interest in all transactions between Harmony and Simane, including the subscription agreement under which Harmony shares were issued to Simane in January and February 2002, prior to Ms Mokhobo's appointment as a director of Harmony.

Mr A R Flemming and Lord Renwick of Clifton KCMG each owns, directly and indirectly, shares in Highland Gold. As such, each of them has an interest in Harmony's investment in Highland Gold.

None of the directors or major shareholders of Harmony or, to the knowledge of Harmony, their families, had any interest, direct or indirect, in any transaction concluded in the 2003 and 2002 financial years, or in any proposed transaction that has affected or will materially affect Harmony or its investment interests or subsidiaries, other than stated above.

None of the directors or members of senior management of Harmony or any associate of such director or member of senior management is currently or has been at any time during the past two financial years indebted to Harmony.

34. SUBSEQUENT EVENTS AFTER BALANCE SHEET DATE

(a) On 15 July 2003, Harmony announced the acquisition of 11,5% or 77 540 830 shares in Avgold Limited from Anglo South Africa Capital (Proprietary) Limited for a consideration of R7,91 per Avgold share. The acquisition is subject to the fulfilment of suspensive conditions including the unconditional approval of the board of Anglo American plc. The consideration will be discharged by the issue of a renounceable letter of allocation to Anglo South Africa Capital representing the rights to 6 960 964 new Harmony shares, comprising 3,8% of the issued share capital of Harmony.

(b) On 2 May 2003, Harmony and ARMgold Limited announced details on a proposed merger of their operations. The transaction will be effected by the issue of two Harmony shares for every three ARMgold shares held. Approximately 63,67 million Harmony shares will be issued. The ratio was calculated with reference to the 30-day volume weighted average traded price of Harmony and ARMgold shares prior to the final negotiation of the terms of the merger. In addition, ARMgold will pay a special dividend of R6,00 per ARMgold share prior to the implementation of the merger. The transaction will be treated as a take-over by Harmony for accounting purposes and is planned to be completed on 23 September 2003 with the final Court approval of the scheme of arrangements.

(c) Randfontein Estates Limited, a wholly-owned subsidiary of Harmony, entered into an agreement with Africa Vanguard Resources (Proprietary) Limited on 21 January 2003, in terms of which Randfontein sold 26% of its mineral rights in respect of the Doornkop Mining Area to Africa Vanguard for a purchase consideration of R250 million. Randfontein and Africa Vanguard also entered into a joint venture agreement on the same day, in terms of which they agreed to jointly conduct a mining operation in respect of the Doornkop Mining Area. The agreements were subject to the fulfilment of certain conditions precedent, the last of which was fulfilled on 12 August 2003. The agreements were implemented and the purchase price paid on 15 August 2003.

35. GEOGRAPHICAL AND SEGMENT INFORMATION

The primary reporting format of Harmony is by business segment. As there is only one business segment, being mining, extraction and production of gold, the relevant disclosures have been given in the financial statements. The secondary reporting format is by geographical analysis by origin. The accounting policies of the segments are the same as those described in the accounting policy notes.

The results of Abelle have been included from 1 May 2003.

Segmental information includes the results of operations of the Freegold Joint Venture and Hill 50 from date of acquisition with effect from 3 January 2002 and 1 April 2002, respectively. The results of operations of Elandskraal and New Hampton were included from date of acquisition with effect from 1 March 2000 and 1 April 2001, respectively. Gold operations are internally reported based on the following geographic areas: Free State, Evander, Kalgold, Randfontein, Elandskraal, New Hampton, Hill 50, Abelle and Free Gold. The Free State, Randfontein, Kalgold, Evander, Elandskraal and Free Gold are specific gold producing regions within South Africa. New Hampton, Hill 50 and Abelle mines are located primarily in Western Australia. Harmony also has exploration interests in Southern Africa and Australia which are included in Other. Selling, administrative, general charges and corporate costs are allocated between segments based on the size of activities based on production results.

Charges and corporate costs are allocated between segments based on the size of activities based on production results.

The segmental split on a geographical basis

Year ended 30 June 2003

	Free State (South Africa) R'm	Evander (South Africa) R'm	Kalgold (South Africa) R'm	Randfontein (South Africa) R'm	Elandskraal (South Africa) R'm	FreeGold JV (South Africa) R'm	New Hampton (Australia) R'm	Hill 50 (Australia) R'm	Abelle (Australia) R'm	Other R'm	Total R'm
Profit and loss											
Revenue	1 882	1 067	224	1 476	1 104	1 732	434	1 044	32	–	8 995
Production costs	(1 518)	(795)	(151)	(952)	(917)	(1 063)	(376)	(828)	(21)	–	(6 621)
Cash operating profit	364	272	73	524	187	669	58	216	11	–	2 374
Non-cash items											
– Depreciation and amortisation	(98)	(41)	(12)	(64)	(34)	(70)	(46)	(214)	–	(3)	(582)
– Impairment	–	–	–	–	–	–	(162)	(650)	–	–	(812)
– Mark-to-market of listed investments	–	–	–	–	–	–	–	–	–	(9)	(9)
– Financial instruments	–	–	–	–	–	–	76	364	–	–	440
Profit/(Loss) before tax	141	210	53	440	(20)	610	(78)	(507)	2	66	917
Taxation (expense)/ benefit	(21)	(52)	(9)	(150)	(77)	(164)	124	118	6	(49)	(274)
Net profit/ (loss) for the period before minority interest	120	158	44	290	(97)	446	46	(389)	8	17	643
Kilograms gold (*)	19 009	11 203	2 320	15 300	11 403	17 969	4 138	11 355	359	–	93 056
Tonnes milled (*) ('000)	5 338	2 127	1 084	4 873	2 989	4 681	1 945	5 144	58	–	28 239

	Free State (South Africa) R'm	Evander (South Africa) R'm	Kalgold (South Africa) R'm	Randfontein (South Africa) R'm	Elandskraal (South Africa) R'm	FreeGold JV (South Africa) R'm	New Hampton (Australia) R'm	Hill 50 (Australia) R'm	Abelle (Australia) R'm	Other R'm	Total R'm
Capital expenditure	127	99	70	37	141	341	8	275	1 152	2	2 252
Total assets	6 101	1 117	423	2 165	351	1 381	(23)	461	520	2 689	15 185
Total liabilities	3 334	294	25	557	187	782	2	730	498	147	6 556

* Production statistics are unaudited.

Year ended 30 June 2002

	Free State (South Africa) R'm	Evander (South Africa) R'm	Kalgold (South Africa) R'm	Randfontein (South Africa) R'm	Elandskraal (South Africa) R'm	FreeGold JV (South Africa) R'm	New Hampton (Australia) R'm	Hill 50 (Australia) R'm	(*) Other R'm	Total R'm
Profit and loss										
Revenue	1 829	1 191	179	1 628	1 365	918	493	185	18	7 806
Cash operating costs	(1 351)	(723)	(130)	(1 013)	(950)	(431)	(474)	(134)	(9)	(5 215)
Cash operating profit	478	468	49	615	415	487	19	51	9	2 591
Non-cash items										
– Depreciation and amortisation	(82)	(26)	(11)	(53)	(36)	(30)	(25)	(44)	(1)	(308)
– Impairment	63	–	–	12	–	–	(437)	–	–	(362)
– Mark-to-market of listed investments	–	–	–	–	–	–	–	–	595	595
– Financial instruments	10	–	–	(121)	–	–	46	113	–	48
Operating profit/(loss) before tax	513	441	36	355	291	422	(380)	126	475	2 279
Taxation expense	(75)	(150)	43	(140)	(15)	(136)	–	(5)	(105)	(583)
Net profit/(loss) for the period before minority interest	438	291	79	215	276	286	(380)	121	370	1 696
Kilogram gold (**)	19 034	12 920	1 934	17 469	14 807	8 681	5 957	1 912	257	82 971
Tonnes milled(**) ('000)	4 536	2 352	961	4 799	3 279	2 186	3 833	949	39	22 934
Capital expenditure	95	98	25	15	247	32	233	–	(10)	735
Total assets	5 801	1 222	332	2 233	393	981	1 488	1 496	130	14 076
Total liabilities	2 443	372	(23)	504	133	608	656	1 373	47	6 113

* The Bissett mine in Canada was placed on care and maintenance at the end of the 2001 financial year and clean-up results amounting to R18 million revenue (257 kg) and R9 million production costs were reflected under "Other" for 2002.

** Production statistics are unaudited.

Year ended 30 June 2001

	Free State (South Africa) R'm	Evander (South Africa) R'm	Kalgold (South Africa) R'm	Randfontein (South Africa) R'm	Elandskraal (South Africa) R'm	New Hampton (Australia) R'm	Bissett (Canada) R'm	Other R'm	Total R'm
Profit and loss									
Revenue	1 431	952	103	1 479	283	137	108	2	4 495
Cash operating costs	(1 385)	(693)	(98)	(1 205)	(195)	(135)	(111)	–	(3 822)
Cash operating profit	46	259	5	274	88	2	(3)	2	673
Non-cash items									
– Depreciation and amortisation	(90)	(15)	(17)	(53)	(26)	(10)	(25)	(1)	(237)
– Impairment	(43)	(11)	–	(12)	–	–	(149)	–	(215)
– Mark-to-market of financial instruments	–	–	–	43	–	15	–	–	58
Operating profit/(loss) before tax	(135)	282	(12)	219	37	(1)	(187)	26	229
Taxation (expense)/benefit	8	(76)	–	(31)	(16)	–	–	4	(111)
Net profit/(loss) for the period before minority interest	127	206	(12)	188	21	(1)	(187)	30	118
Kilogram gold (*)	21 346	14 251	1 535	22 500	3 822	1 731	1 378	–	66 563
Tonnes milled (*) ('000)	5 289	2 481	959	6 285	706	1 088	266	–	17 074
Capital expenditure	120	69	33	53	62	18	49	20	424
Total assets	2 234	876	172	2 175	1 216	1 033	66	482	8 254
Total liabilities	2 035	286	30	697	159	248	23	182	3 660

* Production statistics are unaudited.

ANNEXURE A: STATEMENT OF SUBSIDIARY COMPANIES

Company and description		Issued share capital R'000	Effective group interest 2003 %	2002 %	2001 %	Cost of investment by holding company 2003 R'm	2002 R'm	2001 R'm	Loans from/(to) holding company 2003 R'm	2002 R'm	2001 R'm
DIRECT SUBSIDIARIES:											
Dormant companies:											
Harmony Gold (Management Services) (Pty) Ltd	(a)	1	100	100	100	–	–	–	–	–	–
Virginia Salvage (Pty) Ltd	(a)	2	90	90	90	–	–	–	–	–	–
Unisel Gold Mines Ltd	(a)	23 136	100	100	100	89	89	89	(92)	(92)	(92)
Exploration company:											
Lydenburg Exploration Ltd	(a)	42 792	100	100	100	204	204	204	(29)	(42)	(7)
Gold mining companies:											
Evander Gold Mines Ltd	(a)	39 272	100	100	100	545	545	545	(162)	(320)	(62)
Harmony Gold Canada Inc.	(b)	25 000	100	100	100	28	28	28	16	10	22
Randfontein Estates Ltd	(a)	19 882	100	100	100	1 311	1 307	915	672	496	1 363
Investment holding companies:											
Harmony Gold Australia (Pty) Ltd	(c)	2 630 398	100	100	100	2 630	771	–	245	1 843	551
West Rand Consolidated Ltd	(a)	17 967	100	100	100	321	321	321	18	5	26
Marketing companies:											
Authentic Beverage (Pty) Ltd	(a)	#	100	100	–	–	–	–	–	–	–
Harmony Gold (Marketing) (Pty) Ltd	(a)	#	100	100	100	–	–	2	53	46	–
Harmony Precious Metal Services SAS	(d)	62	60	60	60	–	–	–	79	76	108
Property holding companies:											
La Riviera (Pty) Ltd	(a)	#	100	100	100	–	–	–	–	–	–
INDIRECT SUBSIDIARIES:											
Dormant companies:											
Arai Liki Offshore (Pty) Ltd	(c)	293	87	–	–	–	–	–	–	–	–
Bracken Mines Ltd	(a)	#	100	100	100	–	–	–	–	–	–
Garden Gully (Pty) Ltd	(c)	#	100	100	100	–	–	–	–	–	–
Garnkirk (Pty) Ltd	(c)	#	100	100	100	–	–	–	–	–	–
Jubilee Minerals (Pty) Ltd	(c)	2	100	100	–	–	–	–	–	–	–
Leslie Gold Mines Ltd	(a)	#	100	100	100	–	–	–	–	–	–
Muro Baru (Pty) Ltd	(c)	#	87	–	–	–	–	–	–	–	–
NHG Investments (Pty) Ltd	(c)	#	100	100	100	–	–	–	–	–	–
Selcast Nickel (Pty) Ltd	(c)	#	100	100	100	–	–	–	–	–	–
Swaziland Gold (Pty) Ltd	(e)	#	100	100	100	–	–	–	–	–	
Winkelhaak Mines Ltd	(a)	#	100	100	100	–	–	–	–	–	–
Exploration company:											
Harmony Gold (Exploration) (Pty) Ltd	(a)	10	100	100	100	–	–	–	–	–	3
Gold mining companies:											
Abelle Ltd	(c)	488 062	87	–	–	–	–	–	–	–	–
Big Bell Gold Operations (Pty) Ltd	(c)	#	100	100	100	–	–	–	–	–	–
Buffalo Creek Mines (Pty) Ltd	(c)	#	100	100	–	–	–	–	–	–	–
Harmony Gold Operations Ltd	(c)	405 054	100	100	–	–	–	–	–	–	–
Kalahari Goldridge Mining Company Ltd	(a)	1 275	100	100	100	–	–	–	–	–	8
Mt Magnet Gold NL	(c)	79 710	100	100	–	–	–	–	–	–	–
New Hampton Goldfields Ltd	(c)	196 248	100	100	100	–	–	–	–	–	–
South Kal Mines (Pty) Ltd	(c)	6	100	100	–	–	–	–	–	–	–

Company and description		Issued share capital R'000	Effective group interest 2003 %	2002 %	2001 %	Cost of investment by holding company 2003 R'm	2002 R'm	2001 R'm	Loans from/(to) (to) holding company 2003 R'm	2002 R'm	2001 R'm
Investment holding companies:											
Aurora Gold Ltd	(c)	685 006	87	–	–	–	–	–	–	–	–
Aurora Gold Australia (Pty) Ltd	(c)	58	87	–	–	–	–	–	–	–	–
Aurora Gold Finance Ltd	(c)	#	87	–	–	–	–	–	–	–	–
Aurora Gold Services (Pty) Ltd	(c)	#	87	–	–	–	–	–	–	–	–
Aurora Gold (WA) (Pty) Ltd	(c)	163 115	87	–	–	–	–	–	–	–	–
Aurora Gold (PNG) (Pty) Ltd	(c)	#	87	–	–	–	–	–	–	–	–
Aurora Gold (Wafi) (Pty) Ltd	(c)	#	87	–	–	–	–	–	–	–	–
Aurora Gold Administration (Pty) Ltd	(c)	293	87	–	–	–	–	–	–	–	–
Evander Stone Holdings (Pty) Ltd	(a)	#	100	100	100	–	–	–	–	–	–
Harmony Gold (Isle of Man) Ltd	(f)	550	100	100	100	–	–	–	–	–	–
Harmony Gold Investments (Pty) Ltd	(c)	#	100	100	–	–	–	–	–	–	–
Harmony Gold Securities (Pty) Ltd	(c)	#	100	100	–	–	–	–	–	–	–
Harmony Gold WA (Pty) Ltd	(c)	#	100	100	–	–	–	–	–	–	–
Harmony Victoria (Pty) Ltd	(c)	#	100	100	–	–	–	–	–	–	–
Potchefstroom Gold Areas Ltd	(a)	8 407	100	100	100	–	–	–	–	–	–
Vadessa (Pty) Ltd	(c)	#	100	100	–	–	–	–	–	–	–
Marketing company:											
Harmony Precision Casting (Pty) Ltd	(a)	357	70	70	–	–	–	–	–	–	12
Mineral right holding companies:											
Australian Ores & Minerals (Pty) Ltd	(c)	8 766	87	–	–	–	–	–	–	–	–
Carr Boyd Minerals (Pty) Ltd	(c)	402 414	87	–	–	–	–	–	–	–	–
Cogent (Pty) Ltd	(a)	#	100	100	100	–	–	–	–	–	–
Hampton Gold Mining Areas Ltd	(g)	299 680	100	100	100	–	–	–	–	–	–
KwaZulu Gold Mining Company (Pty) Ltd	(a)	#	100	100	100	–	–	–	–	–	–
Morobe Consolidated Goldfields Ltd	(h)	#	87	–	–	–	–	–	–	–	–
Portions 1 and 3 Wildebeesfontein (Pty) Ltd	(a)	2	100	100	100	–	–	–	–	–	–
Potchefstroom Gold Holdings (Pty) Ltd	(a)	2	100	100	100	–	–	–	–	–	–
Remaining Extent and Portion 15 Wildebeesfontein (Pty) Ltd	(a)	1	90	90	90	–	–	–	–	–	–
The Kunana Mining Company (Pty) Ltd	(a)	#	100	100	100	–	–	–	–	–	–
Trodex Platinum (Pty) Ltd	(a)	4	100	100	100	–	–	–	–	–	–
Venda Gold Mining Company (Pty) Ltd	(a)	#	100	100	100	–	–	–	–	–	–
Wafi Mining Ltd	(h)	#	87	–	–	–	–	–	–	–	–
Property holding companies:											
Evander Township Ltd	(a)	1 340	100	100	100	–	–	–	–	–	–
Evander Township Development Ltd	(a)	3	100	100	100	–	–	–	–	–	–
Quarrytown Ltd	(a)	#	100	100	100	–	–	–	–	–	–
Salt Holdings Ltd	(a)	60	100	100	100	–	–	–	–	–	–
JOINT VENTURE COMPANIES – DIRECT:											
Gold mining company:											
ARMgold/Harmony Freegold Joint Venture Company (Pty) Ltd	(a)	20	50	50	50	17	17	–	719	915	–
Investment holding company:											
Clidet 454 (Pty) Ltd	(a)	#	50	–	–	1	–	–	846	–	–
JOINT VENTURE COMPANY – INDIRECT:											
Dormant company:											
Jeanette Gold Mines Ltd	(a)	#	50	50	50	–	–	–	–	–	–

The Harmony Group's interest in jointly controlled entities is accounted for by proportionate consolidation. Under this method the Harmony Group includes its share of the joint venture's individual income and expenses, assets and liabilities in the relevant components of the financial statements on a line-by-line basis.

Company and description		Issued share capital R'000	Effective group interest 2003 %	2002 %	2001 %	Cost of investment by holding company 2003 R'm	2002 R'm	2001 R'm	Loans from/(to) (to) holding company 2003 R'm	2002 R'm	2001 R'm
ASSOCIATE COMPANY – DIRECT:											
Gold mining company:											
Highland Gold Limited	(i)	1 432	32	33	–	–	–	–	–	–	–
ASSOCIATE COMPANIES – INDIRECT:											
Gold mining company:											
Bendigo Mining NL	(c)	708 067	32	32	32	–	–	–	–	–	–
Investment holding company:											
Anglovaal Mining Ltd	(a)	5 630	17	–	–	–	–	–	–	–	–
Total						5 146	3 282	2 104	2 365	2 937	1 929
Total investments									7 511	6 219	4 033

# Indicates issued share capital of less than R1 000.

(a) Incorporated in South Africa.

(b) Incorporated in the Yukon Territory, Canada.

(c) Incorporated in Australia.

(d) Incorporated in France.

(e) Incorporated in Swaziland.

(f) Incorporated in the Isle of Man.

(g) Incorporated in the United Kingdom.

(h) Incorporated in the Papua New Guinea.

(i) incorporated in Jersey, USA.

Investments in associates are accounted for by using the equity method of accounting. Equity accounting involves recognising in the income statement the Harmony Group's share of the associates' profit or loss for the period. The Harmony Group's interest in the associate is carried on the balance sheet at an amount that reflects the cost of the investment, the share of post-acquisition earnings and other movement in the reserves.

The above investments are valued by the directors at book value.

The interest of Harmony in the aggregate amount of the after tax losses of its subsidiaries, joint venture companies and associates is R229 million (2002: profits of R1 159 million, 2001: profits of R242 million).

INTERIM RESULTS OF HARMONY

1. TOTAL OPERATIONS FINANCIAL RESULTS

(Rand/Metric) (unaudited)

		Quarter ended 31 December 2003 (including ARMgold)	Quarter ended 30 September 2003 (excluding ARMgold)	Six months ended 31 December 2002	Six months ended 31 December 2003
Ore milled	t'000	**8 183**	6 854	13 941	**15 039**
Gold produced	kg	**29 294**	22 725	48 852	**52 019**
Gold price received	R/kg	**85 139**	86 258	103 362	**85 623**
Cash operating costs	R/kg	**75 888**	76 693	68 302	**76 241**
		R million	**R million**	**R million**	**R million**
Gold sales		**2 494**	1 960	5 049	**4 484**
Cash operating costs		**2 223**	1 743	3 337	**3 966**
Cash operating profit		**271**	217	1 713	**488**
Income from associates		**(34)**	(7)	–	**(41)**
Amortisation		**(246)**	(142)	(271)	**(388)**
Profit on sale of Highland & High River		**522**	–	–	**522**
Profit on sale of Aurion Gold shares		**–**	–	469	**–**
Mark to market of financial instruments		**11**	(172)	77	**(161)**
Rehabilitation cost provision		**(18)**	(10)	(21)	**(28)**
Employment termination costs		**(20)**	(12)	(27)	**(32)**
Other income net		**65**	70	101	**135**
Minority Interest		**(6)**	–	–	**(16)**
Interest paid		**(107)**	(55)	(119)	**(162)**
Corporate, marketing and new business expenditure		**(43)**	(31)	(58)	**(74)**
Exploration expenditure		**(35)**	(14)	(57)	**(49)**
Foreign exchange losses		**(50)**	(31)	–	**(81)**
Mark-to-market of listed investments		**–**	–	(506)	–
Profit before taxation		**310**	(187)	1 301	**123**
South African normal taxation					
– Current tax		**(84)**	(18)	(245)	**(102)**
– Deferred tax		**10**	86	(173)	**96**
Net earnings		**236**	(119)	883	**117**
Earnings per share (cents)*					
– Basic earnings		**92**	(62)	509	**50**
– Headline earnings		**(66)**	(67)	500	**(129)**
– Fully diluted earnings**		**92**	(62)	500	**51**
Dividends per share (cents)					
– Proposed interim		**40**	–	125	40

Prepared in accordance with International Financial Reporting Standards.

* Calculated on weighted number of shares in issue at quarter end December 2003: 257,9 million (September 2003: 192,3 million) calculated on the weighted number of shares in issue at the 6 months ended December 2003: 231,7 million (December 2002: 173,5 million).

** Calculated on weighted average number of diluted shares in issue at quarter end December 2003: 256,5 million (September 2003: 190,9 million). Calculated on the weighted number of diluted shares in issue at 6 months ended December 2003: 230,3 million (December 2002: 176,5 million).

Reconciliation of headline earnings:

Net earnings	**236**	(119)	883	**117**
Adjustments:				
Profit on sale of assets	**(3)**	(9)	(16)	**(12)**
Profit on sale of Highland & High River – net of tax	**(444)**	–	–	**(444)**
Amortisation on goodwill	**41**		–	**42**
Headline earnings	**(170)**	(128)	867	**(298)**

2. ABRIDGED BALANCE SHEETS

(unaudited)

	At 31 December 2003 R'm	At 30 September 2003 R'm	At 31 December 2002 R'm
EMPLOYMENT OF CAPITAL			
Mining assets after amortisation	**14 911**	14 729	8 945
Intangible assets	**2 803**	2 843	–
Investments	**1 098**	1 260	1 409
Investments in associates	**2 564**	2 896	–
Short-term investments – Placer Dome	**–**	–	723
Net current liabilities excluding cash	**(924)**	(1 300)	(431)
Cash	**2 888**	2 561	1 439
Total assets	**23 340**	22 989	12 085
CAPITAL EMPLOYED			
Shareholders' equity	**16 251**	15 937	7 863
Loans	**2 863**	2 881	2 009
Long-term provisions	**860**	840	698
Minority interest	**155**	139	–
Unrealised hedging loss	**432**	450	736
Deferred tax	**2 779**	2 742	779
Total equity and liabilities	**23 340**	22 989	12 085

Basis of accounting

The unaudited results for the quarter have been prepared on the International Financial Reporting Standards ("IFRS") basis. These consolidated quarterly statements are prepared in accordance with IFRS 34: "Interim Financial Reporting". The accounting policies are consistent with those applied in the previous financial year.

Issued share capital: 258,4 million ordinary shares of 50 cents each (September 2003: 257,9 million shares) (December 2002: 174,6 million).

3. CONDENSED STATEMENTS OF CHANGES IN SHAREHOLDERS' EQUITY

(unaudited)

	At 31 December 2003 R'm	At 30 September 2003 R'm
Balance at beginning of financial year	**8 628**	7 963
Currency translation adjustment and other	**–**	(455)
Issue of share capital	**7 798**	213
Net earnings	**117**	883
Dividends paid	**(292)**	(741)
Balance at end of December	**16 251**	7 863

Prepared in accordance with International Financial Reporting Standards.

4. ABRIDGED CASH FLOW STATEMENTS

(unaudited)

	Six months ended 31 Dec 2003 R'm	Six months ended 31 Dec 2002 R'm
Cash flow from operating activities	**133**	1 251
Cash utilised in investing activities	**1 350**	(618)
Cash utilised in financing activities	**(282)**	(635)
Increase/(Decrease) in cash and equivalents	**1 201**	(2)
Opening cash and equivalents	**1 687**	1 441
Closing cash and equivalents	**2 888**	1 439

Prepared in accordance with International Financial Reporting Standards.

Hedging

Maturity schedule of the Harmony Group's commodity contracts by type at 31 December 2003:

	30 June 2005	30 June 2006	30 June 2007	30 June 2008	30 June 2009	Total
Forward sales agreements						
Ounces	175 000	108 000	147 000	100 000	100 000	630 000
A$/ounce	513	510	515	518	518	514.27
Calls contracts sold						
Ounces	127 100	40 000	–	–	–	167 100
A$/ounce	513	552	–	–	–	522
	302 100	148 000	147 000	100 000	100 000	797 100

These contracts are classified as speculative and the mark-to-market movement is reflected in the income statement.

During the quarter 62 900 ounces of the hedge books were closed out at a cost of R5 million (US$1 million). The mark-to-market of the remaining contracts was a negative R380 million (US$57 million) at 31 December 2003. These values were based on a gold price of US$414 (A$552) per ounce, exchange rates of US$/R6.70 and A$/US$0.75 and prevailing market interest rates at the time. These valuations were provided by independent risk and treasury management experts.

Gold lease rates

Harmony holds certain gold lease rate swaps which were acquired through its acquisitions of New Hampton and Hill 50. These instruments are all treated as speculative. The mark-to-market of the above contracts was a negative R10 million (US$1,5 million) at 31 December 2003, based on valuations provided by independent treasury and risk management experts.

Interest rate swaps

The Harmony Group has interest rate swap agreements to convert R600 million of its R1,2 billion fixed rate bond to variable rate debt. The interest rate swap runs over the term of the bond, interest is received at a fixed rate of 13% and Harmony pays floating rate based on JIBAR plus a spread raging from 1,8% to 2,2%.

These transactions which mature in June 2006 are designated as fair value hedges. The mark-to-market value of the transactions was a negative R42 million (US$6 million) at 31 December 2003, based on the prevailing interest rates and volatilities at the time.

Dividend

A dividend No.78 of 40 cents per ordinary share being the interim dividend for the six-month period ended 31 December 2003, has been declared payable on 8 March 2004 to those registered shareholders in the books of Harmony at the close of business on 5 March 2004.

PRO FORMA FINANCIAL STATEMENTS OF THE HARMONY/ARMGOLD MERGED ENTITY

The unaudited pro forma balance sheet of Harmony at 30 June 2003 and income statement for the year then ended, are set out below and have been prepared to demonstrate the effect of the merger between Harmony and ARMgold. The unaudited pro forma balance sheet and income statement have been prepared for illustrative purposes only and, because of their nature, may not give an accurate overview of Harmony's financial position at 30 June 2003.

INCOME STATEMENTS

R'm	Old Harmony Group Note 2	Old ARMgold Group Note 3	Adjustments Note 4	New Harmony After merger
Revenue	8 995	3 146		12 141
Cash operating costs	(6 621)	(2 043)		(8 664)
Cash operating profit	2 374	1 103		3 477
Interest and dividends	273	373		646
Other (expenses)/income – net	(173)	44		(129)
Employment termination and restructuring costs	(47)	–		(47)
Corporate, administration and other expenditure	(72)	(42)		(114)
Exploration expenditure	(75)	–		(75)
Marketing and new business expenditure	(72)	–		(72)
Loss on sale of listed investments	(54)	–		(54)
Interest paid	(321)	(189)	(79)	(589)
Cash profit	1 833	1 289	(79)	3 043
Depreciation and amortisation	(582)	(125)	(358)	(1 065)
Provision for rehabilitation costs	(5)	(16)		(21)
Gain on financial instruments	440	–		440
Loss on mark-to-market of listed investments	(9)	–		(9)
Impairment of assets	(812)	–		(812)
Income from associates	57	21		78
Provision former employees' post-retirement benefits	(5)	–		(5)
Income before tax	917	1 169	(437)	1 649
Taxation expense	(274)	(371)	87	(558)
Net income before minority interests	643	798	(350)	1 091
Minority interests	(4)	–		(4)
Net income	639	798	(350)	1 087
Basic earnings per share (cents)	359			450
Basic headline earnings per share (cents)	661			733
Weighted average issued shares ('000) (note 5)	177 954			241 621

Notes:

1. The pro forma income statement has been prepared on the assumption that the merger between Harmony and ARMgold was effective 1 July 2002.
2. Extracted from Harmony's published annual financial reports for the year ended 30 June 2003.
3. Extracted from ARMgold's management accounts for the 12 months to 30 June 2003 used in preparing the annual financial reports for the 18-month period ended 30 June 2003.
4. Represents the payment of a special dividend to ARMgold shareholders as a condition of the merger, consolidation fair value adjustments and transaction costs as a result of the merger.
5. Weighted average number of Harmony shares in issue during the period and number of Harmony shares issued in consideration for the merger.

BALANCE SHEETS

R'm	Old Harmony Group Note 2	Old ARMgold Group Note 3	Adjustments Note 4	New Harmony after merger
ASSETS				
Non-current assets	12 273	2 768	6 216	21 257
Tangible assets	9 969	1 511	3 371	14 851
Intangible assets	38	–	2 845	2 883
Investments	2 266	1 257		3 523
Current assets	2 912	1 385	(603)	3 694
Inventories	454	28		482
Trade and other receivables	771	199		970
Cash and cash equivalents	1 687	1 158	(603)	2 242
Total assets	15 185	4 153	5 613	24 951
EQUITY AND LIABILITIES				
Ordinary shareholders' interest	8 628	2 421	4 602	15 651
Outside shareholders' interest	120	–		120
Total shareholders' interest	8 748	2 421	4 602	15 771
Long-term borrowings	2 415	461		2 876
Deferred taxation	1 571	325	1 011	2 907
Deferred financial liabilities	284	–		284
Long-term provisions	633	212		845
Current liabilities	1 534	734		2 268
Trade and other payables	1 376	386		1 762
Taxation	150	348		498
Shareholders for dividends	8	–		8
Total equity and liabilities	15 185	4 153	5 613	24 951
Net asset value per share (cents)	4 732			6 346
Net tangible asset value per share (cents)	4 712			5 186
Shares in issue ('000) (note 5)	184 854			248 521

Notes:

1. The pro forma balance sheet has been prepared on the assumption that the merger between Harmony and ARMgold was effective 30 June 2003.
2. Extracted from Harmony's published annual financial reports for the year ended 30 June 2003.
3. Extracted from ARMgold's annual financial reports for the period ended 30 June 2003.
4. Represents the payment of a special dividend to ARMgold shareholders as a condition of the merger, consolidation fair value adjustments and transaction costs relating to the merger.
5. Number of Harmony shares in issue at 30 June 2003 and number of Harmony shares issued in consideration for the merger.

REPORTING ACCOUNTANTS' REPORT ON THE PRO FORMA FINANCIAL STATEMENTS OF THE HARMONY/ARMGOLD MERGED ENTITY

The Directors
Anglovaal Mining Limited
56 Main Street
Johannesburg
2001

1 March 2004

Dear Sirs

INDEPENDENT REPORTING ACCOUNTANTS' REPORT ON THE UNAUDITED PRO FORMA FINANCIAL INFORMATION OF HARMONY GOLD MINING COMPANY LIMITED ("HARMONY")

INTRODUCTION

The directors of Anglovaal Mining Limited ("Avmin") are proposing to acquire from African Rainbow Minerals & Exploration Investments (Proprietary) Limited ("ARMI"), its direct 13,6% shareholding in Harmony, its 100% shareholding in African Rainbow Minerals Platinum (Proprietary) Limited, which has a 41,5% effective interest in the Modikwa Joint Venture and loans owed to it by ARM Mining Consortium Limited (collectively, "the Avmin Acquisitions").

We report on the unaudited pro forma balance sheet and income statement of the Harmony/ARMgold merged entity, included as Annexure 8 ("the Harmony pro forma financial information"), respectively, to the circular to shareholders, to be dated on or about 19 March 2004.

The unaudited pro forma financial information has been prepared for illustrative purposes only and to provide information as to the effect of the merger between Harmony and African Rainbow Minerals Gold Limited on the consolidated financial position and on the earnings and net asset value of Harmony. Because of its nature, the unaudited pro forma financial information may not give a fair reflection of Harmony's financial position or the effect of the income going forward.

At your request, and for purposes of the Avmin Acquisitions, we present our report on the pro forma financial information of Harmony in compliance with the Listings Requirements of the JSE Securities Exchange, South Africa.

RESPONSIBILITIES

The directors of Avmin and Harmony are solely responsible for the preparation of the pro forma financial information to which this independent reporting accountants' report relates, and for the financial statements and financial information from which it has been prepared.

It is our responsibility to form an opinion on the unaudited pro forma financial information and to report our opinion to you. We do not accept any responsibility for any reports previously given by us on any financial information used in the compilation of the pro forma financial information, beyond that owed to those to whom those reports were addressed at their dates of issue.

BASIS OF OPINION

Our work, which did not involve any independent examination of any of the underlying financial information, consisted primarily of comparing the unadjusted financial information to the audited financial statements of Harmony, considering the evidence supporting the adjustments to the unaudited pro forma financial information, recalculating the amounts based on the information obtained and discussing the pro forma financial information with the directors of Avmin and Harmony.

Because the above procedures do not constitute an audit or a review in accordance with Statements of South African Auditing Standards, we do not express any assurance on the fair presentation of the unaudited pro forma financial information.

Had we performed additional procedures or had we performed an audit or review of the financial statements in accordance with Statements of South African Auditing Standards, other matters might have come to our attention that would have been reported to you.

OPINION

In our opinion:

- the unaudited pro forma financial information has been properly compiled on the basis stated;
- such basis is consistent with the accounting policies of Harmony; and
- the adjustments are appropriate for the purposes of the unaudited pro forma financial information as disclosed.

Yours faithfully

PRICEWATERHOUSECOOPERS INC.
Chartered Accountants (SA)
Registered Accountants and Auditors

Sunninghill

SCHEDULE OF MATERIAL LOANS TO THE HARMONY GROUP

		At 30 June 2003 R'million	At 30 June 2002 R'million
Unsecured			
Senior unsecured fixed rate bonds	(a)	**1 200**	1 200
Fair value adjustment		**(30)**	(21)
Less: Amortised discount and bond issue costs		**(15)**	(20)
Total unsecured long-term borrowings		**1 154**	1 159
Secured			
BAE Systems Plc	(b)	**68**	36
Less: Short-term portion		**(68)**	–
		–	36
BOE loan	(c)	**375**	500
Less: Short-term portion		**(125)**	(125)
		250	375
AngloGold Limited	(d)	**161**	517
Less: Short-term portion		**–**	(316)
		161	201
Gold Fields Limited	(e)	**4**	–
Less: Short-term portion		**(1)**	–
		3	–
Nedbank	(f)	**850**	–
Less: Amortised issue costs		**(4)**	–
		846	–
Total secured long-term borrowings		**1 260**	612
Total long-term borrowings		**2 415**	1 771

(a) On 16 June 2001, Harmony launched and priced an issue of senior unsecured fixed rate bonds in an aggregate principal amount of R1 200 million, with semi-annual interest payable at a rate of 13% per annum. These bonds will be repayable on 14 June 2006, subject to early redemption at Harmony's option. The bonds are listed on the Bond Exchange of South Africa. The bonds were issued to settle existing debt and fund the purchase of Elandskraal and New Hampton. As long as the bonds are outstanding, Harmony will not permit encumbrances on its present or future assets or revenues to secure indebtedness for borrowed money, without securing the outstanding bonds equally and ratably with such indebtedness, except for certain specified permitted encumbrances. Including in the amortisation charge as per the income statement is R5 million (2002: R5 million) for amortisation of the bond issue costs.

(b) The loan from BAE Systems Plc is a US dollar denominated term loan of R68 million ($9,0 million) (2002: R36 million ($3,5 million)) for financing the design, development and construction of a facility for the manufacture and sale of value-added gold products at Harmony's premises in the Free State. The loan is secured by a notarial covering bond over certain gold proceeds and other assets and is repayable in full on 30 April 2004. The loan bears interest at Libor plus 2% which is accrued daily from the drawdown date and interest is repayable on a quarterly basis.

(c) On 18 April 2002 Harmony entered into a term loan facility of R500 million with BOE Bank Limited for the purpose of partially funding Harmony's acquisition of shares in the ARMgold/Harmony Free Gold Joint Venture Company (Proprietary) Limited and loans made by Harmony to the Free Gold company in connection with the acquisition of mining assets. The facility is collateralised by a pledge of Harmony's shares in the Free Gold Joint Venture Company and is guaranteed by Randfontein, Evander, Kalgold and Lydenburg Exploration Limited. The loan is repayable in full on 23 April 2006 by way of eight semi-annual capital instalments which are due beginning 23 October 2002.

The loan bears interest at a rate equal to the JIBAR rate for deposits in Rand plus 1,5% plus specified costs, which is accrued daily from the drawdown date and is payable quarterly in arrears commencing 23 July 2002.

The following restrictive covenants apply:

(i) a consolidated net worth must be more than R4 600 million;

(ii) the total debt to earnings before interest, tax, depreciation and amortisation ("EBITDA") ratio not to exceed 1,5; and

(iii) EBITDA to total debt service ratio should not be less than 3,5.

(d) On 24 December 2001 FreeGold entered into an agreement with AngloGold Limited to purchase its FreeGold assets for R2 881 million. R1 800 million was payable on 1 January 2002 at the call rate from this date until the 10th business day after the date of fulfilment of the last of the conditions precedent. R400 million is payable on 1 January 2005 at no interest charge. The balance of the consideration was payable five business days before AngloGold was obliged to pay recoupment tax, Capital Gains Tax and any other income tax on the disposal of the assets at no interest charge. Harmony's 50% portion of the outstanding loan balance at 30 June 2003 was R161 million (2002: R517 million), which was proportionately consolidated.

(e) On 1 July 2002 Freegold entered into an agreement with St Helena Gold Mines Limited, a fully-owned subsidiary of Gold Fields Limited, to purchase its St. Helena assets for R129 million. R120 million was payable on 29 October 2002, being the effective date after the fulfilment of all the conditions precedent. The balance of R9 million is payable by way of a 1% royalty on turnover, monthly in arrears, for a period of 48 months, commencing on the 10th of the month following the effective date. Harmony's 50% portion of the outstanding loan balance at 30 June 2003 was R4 million, which was proportionately consolidated.

(f) On 8 May 2003 Harmony Gold entered into a term loan agreement with Nedbank Limited for R850 million. The purpose of this term loan agreement was to fund the acquisition of 17,25% of Avmin. This term loan was paid in two tranches, the first tranche of R611 million was paid on 8 May 2003 and the second tranche of R239 million was paid on 13 May 2003. The loan is secured with guarantees provided by Evander Gold Mines Limited, Randfontein Estates Limited, Kalahari Goldridge Mining Company Limited and Lydenburg Exploration Limited and is repayable in full on 8 November 2004. The loan bears interest at the 3-month JIBAR rate, plus a margin of 1,5% as well as stamp duties, liquid and reserving costs all converted to a nacq (nominal amount compounded quarterly) rate. Interest is repayable on a quarterly basis. Including in the amortisation charge as per the income statement is R0,5 million (2002: R nil) for amortisation of the loan costs.

ACQUISITIONS AND DISPOSALS OF COMPANIES, BUSINESSES AND PROPERTIES BY HARMONY

LOCAL ACQUISITIONS AND DISPOSALS

1. In financial year ended 30 June 2000, Harmony acquired 100% of the outstanding ordinary share capital and 96,5% of the warrants to purchase ordinary shares of Randfontein Estates Limited, or Randfontein, a South African gold producer. Randfontein sold 491 905 ounces of gold in the year ended 30 June 2003, which were included in Harmony's gold sales for fiscal 2003.
2. On 9 April 2001, Harmony completed the purchase of the assets and liabilities of the Elandskraal mines from AngloGold Limited, or AngloGold, a South African gold mining company. The Elandskraal mines sold 366 614 ounces of gold in fiscal 2003, which were included in Harmony's gold sales in fiscal 2003.
3. On 23 April 2002, the ARMGold/Harmony Freegold Joint Venture Company (Proprietary) Limited, or Free Gold, completed the acquisition of the Joel, Tshepong, Matjhabeng and Bambanani mines, associated infrastructure and other mineral rights in the Free State Province of South Africa, or the Free Gold assets, from AngloGold. The shares of Free Gold are owned equally by Harmony and ARMgold. During Harmony's fiscal 2003, sales from the Free Gold assets amounted to 1 155 428 ounces of gold and Harmony's interest in these sales totalled 577 714 ounces (referred to as "attributable ounces").
4. On 24 May 2002 Free Gold announced that it had reached an agreement in principle with Gold Fields Limited to acquire the assets of St. Helena gold mine for a gross sale consideration of R120 million plus royalty payments. The acquisition of the assets, continues the consolidation of the Free State goldfields.
5. In terms of an agreement reached on 22 April 2003, Harmony jointly with ARMgold, acquired a 34,5% shareholding in Avmin for an aggregate consideration of R1,7 billion.
6. With effect from 21 July 2003, Harmony acquired an 11,5% shareholding in Avgold Limited in exchange for the issue of 6 960 964 new Harmony shares.
7. On 7 November 2003, Harmony announced that it had sold its Kalgold operations to The Afrikander Lease Limited ("Aflease") for a consideration of R275 million excluding Kalplats. In terms of the agreement, Aflease will pay Harmony an amount of R137,5 million in cash, with the remaining R137,5 million being funded by the issue of 25 700 935 new Aflease shares to Harmony. This transaction has not yet been implemented.

OFFSHORE ACQUISITIONS AND DISPOSALS

1. In Australia, Harmony acquired New Hampton Goldfields Limited, or New Hampton, with effect from 1 April 2001, and Hill 50 Limited, or Hill 50, with effect from 1 April 2002. Harmony closed its offer for all of the shares of New Hampton on 12 July 2001, and subsequently completed a compulsory acquisition of the remaining shares and options under the Rules of the Australian Stock Exchange Limited. Harmony closed its offer for all of the shares and listed options of Hill 50 on 3 May 2002 and subsequently completed a compulsory acquisition of the remaining shares and options under the rules of the Australian Stock Exchange Limited. In an effort to increase efficiency and reduce corporate expenditures, in the quarter ended 30 June 2002 Harmony integrated New Hampton's Jubilee operations with Hill 50's New Celebration operations to form the South Kalgoorlie operations and combined the corporate offices of New Hampton and Hill 50 in Perth. With effect from 1 April 2002, Harmony reports the New Hampton and Hill 50's operating results together with an "Australian operations" segment, which is further segmented into the Big Bell operations, the Mt. Magnet operations and the South Kalgoorlie operations (consisting of the Jubilee and New Celebration operations). The total ounces included in Harmony's gold sales for fiscal 2003 was 498 120 ounces.
2. In December 2001, Harmony acquired a 31,8% equity interest in Bendigo Mining NL or Bendigo, a single project Australian gold mining development company.
3. In June 2002, Harmony acquired a 32,5% equity interest in Highland Gold Mining Limited, or Highland Gold, a privately held company organised under the laws of Jersey, Channel Islands that holds Russian gold mining assets and mineral rights. On 14 October 2003, Harmony announced that it had sold its shareholding in Highland Gold Mining Limited in a placing arranged by City Capital Corporation Limited in London. The price of £2,05 per share achieved in the placing valued the shareholding at approximately R830 million.
4. In May and June 2002, Harmony acquired a 21% equity interest in High River Gold Mines Limited, or High River, a company organised under the laws of Ontario, Canada that is listed on the Toronto Stock Exchange and holds gold mining assets in Russia, Canada and West Africa. On 17 October 2003, Harmony announced that it had sold 17 074 861 common shares of High River Gold in a placing arranged by BMO Nesbitt Burns. The price achieved was C$1,75 per share. Harmony realised an amount of US$22,5 million.

5. On 26 February 2003 Harmony agreed to subscribe for new shares and announced its intention to make a public take-over offer for Australian-listed producer Abelle Limited, or Abelle. Harmony currently owns 84% of the shares in Abelle.

6. On 2 December 2003, Harmony announced its intention to sell Bissett to San Gold Resources for C$7.5 million. The terms of the letter of intent stated that there would be a 90-day option and due-diligence period. During this period, three payments of C$50 000 will be made at intervals of 2, 30 and 60 days. At the end of the three-month period, San Gold can complete the transaction by paying Harmony C$3.5 million in cash and C$4 million, either in cash or by an issue of San Gold shares.

SCHEDULE OF MATERIAL CHANGES TO HARMONY

Between the date of the last audited financial statements of Harmony, being 30 June 2003, and the date of this circular, the following material changes in the financial or trading position of Harmony have occurred:

1. On 14 October 2003, Harmony announced that it had sold its 31,7% shareholding in Highland Gold Mining Limited in a placing arranged by City Capital Corporation Limited in London. The price of £2,05 per share achieved in the placing valued the shareholding at approximately R830 million.
2. On 17 October 2003, Harmony announced that it had sold 17 074 861 common shares of High River Gold. The price of achieved was C$1,75 per share. Harmony realised an amount of US$22,5 million.
3. On 7 November 2003, Harmony announced that it had sold its Kalgold operations to The Afrikander Lease Limited ("Aflease") for a consideration of R275 million excluding Kalplats. In terms of the agreement, Aflease will pay Harmony an amount of R137,5 million in cash, with the remaining R137,5 million being funded by the issue of 25 700 935 new Aflease shares to Harmony. This transaction has not yet been implemented.
4. On 2 December 2003, Harmony announced its intention to sell Bissett to San Gold Resources for C$7.5 million. The terms of the letter of intent stated that there would be a 90-day option and due-diligence period. During this period, three payments of C$50 000 will be made at intervals of 2, 30 and 60 days. At the end of the three-month period, San Gold can complete the transaction by paying Harmony C$3.5 million in cash and C$4 million, either in cash or by an issue of San Gold shares.

PRO FORMA FINANCIAL STATEMENTS OF AVMIN

Bases on which the unaudited consolidated pro forma income statement and balance sheet showing the effects of the transaction has been compiled:

1. The unaudited consolidated pro forma financial information of Avmin prepared in order to show the effects of the transaction assuming the transaction took place on 1 July 2002 for purposes of the income statement and on 30 June 2003 for purposes of the balance sheet. This information is provided for illustrative purposes only and may not give a true picture of the financial position of Avmin because of the nature of the pro forma information.

2. The pro forma financial information has been prepared based on Avmin's understanding of the differences between Modikwa's and Avmin's accounting policies. The Avmin directors intend undertaking a detailed review of the accounting policies to be applied by the combined Avmin Group.

3. The pro forma consolidated income statement and balance sheet have been compiled as follows:
   - the historical consolidated income statement of Avmin for the year ended 30 June 2003 and the historical consolidated balance sheet at 30 June 2003, each prepared in accordance with International Financial Reporting Standards;
   - unaudited extracts by ARMI management from the balance sheet of ARMI at 30 June 2003 to reflect the financial position of Modikwa Joint Venture;
   - unaudited extracts by ARMI management from the income statement of ARMI for the year ended 30 June 2003 to reflect the financial results of Modikwa Joint Venture;
   - adjustments of the Modikwa Joint Venture information to comply with Avmin's accounting policies;
   - the historical income statement of Avgold for the year ended 30 June 2003 and balance sheet of Avgold at 30 June 2003 as adjusted and consolidated into Avmin's consolidated financial statements for 30 June 2003;
   - assuming Avmin would be in a position to exercise significant influence over Harmony, and would equity account Harmony's earnings;
   - an estimated R45 million transaction costs have been taken into account; and
   - a share price of R50,00 per Avmin share, R101,07 per Harmony share and an implied share Avgold share price of R10,11 has been used.

4. The adjustments relating to the transaction, made in the pro formas, are referenced to a brief comment on their nature.

4.1 Balance sheet

4.1.1 The investment in Avgold is sold and a profit on disposal on Avmin Group level is shown. As a result Avmin deconsolidates Avgold. The value of the Avmin shares issued to acquire Kalplats is netted-off against the Avgold sale as they are related.

4.1.2 The purchase price for Modikwa Joint Venture is allocated to the fair value of assets. The assets are "grossed-up" for deferred tax and a minority interest is created. Previously unrecognised deferred tax assets are now recognised.

4.1.3 Modikwa Joint Venture's financial statements are converted to comply with International Financial Reporting Standards and Avmin accounting policies, resulting in the following adjustments: put options were revalued resulting in an increase in financial assets of R86 million, and a deferred tax liability on that amount. The preference shares were reclassified as debt.

4.1.4 Harmony as an associate is brought onto the balance sheet.

4.2 Income statement

4.2.1 Avmin made a loss on the disposal of their Chambishi operation, and a profit on selling a portion of their Avgold investment, which are large, exceptional transactions. These are removed for purposes of these pro formas.

4.2.2 Avgold is sold, deconsolidated and a profit on disposal on Avmin Group level is shown. The purchase price of Kalplats is allocated against this profit as the deals are related.

4.2.3 Deferred tax credit is accounted for on the estimated tax loss of Modikwa Joint Venture and the minority's 17% portion of the loss in Modikwa Joint Venture, net of tax, is accounted for.

4.2.4 Modikwa Joint Venture's financial statements are converted to comply with International Financial Reporting Standards and Avmin accounting policies, resulting in the following adjustments: revaluation of put options resulted in a profit of R73 million, on which deferred tax was calculated then amortisation of mining assets increased by R5 million. The preference share dividends are shown as interest cost. The minority portion of 17% is accounted for.

4.2.5 Harmony is equity accounted by bringing in 22,27% of their earnings.

BALANCE SHEET

R'm	Avmin Audited – 30 June 2003	Deconsol-idation of Avgold	Disposal of Avgold	Modikwa	Purchase price adjustment	IFRS* adjustments	Harmony	Pro forma
Notes		**4.1.1**	**4.1.1**		**4.1.2**	**4.1.3**	**4.1.4**	
Tangible fixed assets	4,786	(2,507)	1,118	716	1,834	4,113		
Intangible fixed assets	6	–	6					
Investments in associates	2,894	–	3,538	6,432				
Deferred taxation	12	1	1	13				
Environmental rehabilitation trust funds	45	(24)	–	21				
Non-current financial assets	76	76	76					
Other Investments	215	912	(912)	–	215			
Non-current assets	**5,064**	**(1,619)**	**1,982**	**1,195**	**716**	**–**	**3,538**	**10,876**
Inventories	896	(46)	–	850				
Trade and other receivables	936	(36)	92	92	992			
Financial assets	20	86	106	106				
Deposits and cash	265	(1)	21	(45)	(24)	240		
Current assets	**2,097**	**(83)**	–	**133**	**(45)**	**86**	–	**2,188**
Total assets	**7,161**	**(1,702)**	**1,982**	**1,328**	**671**	**86**	**3,538**	**13,064**
Ordinary share capital	6	1	1	4	11			
Preference share capital	–	–						
Share premium	79	100	849	849	3,534	4,562		
Reserves	218	–	218					
Retained earnings	2,208	(10)	1,882	376	(436)	60	4,080	
Shareholders' interest in capital and reserves	2,511	(10)	1,982	376	414	60	3,538	8,871
Minority interest	2,451	(1,310)	79	79	1,220			
Total shareholders' interest	4,962	(1,320)	1,982	376	493	60	3,538	10,091
Long-term borrowings	692	692	692					
Deferred taxation	519	178	26	204	723			
Long-term provisions	153	(42)	2	2	113			
Non-current financial liabilities	103	(103)	–	–				
Non-current liabilities	775	(145)	–	694	178	26	–	1,528
Trade and other payables	521	(81)	158	158	598			
Short-term provisions	39	(7)	–	32				
Taxation	42	(14)	–	28				
Shareholders for dividend	–	–						
Overdrafts and short-term borrowings	822	(135)	100	100	787			
Current liabilities	1,424	(237)	–	258	–	–	–	1,445
Total equity and liabilities	**7,161**	**(1,702)**	**1,982**	**1,328**	**671**	**86**	**3,538**	**13,064**
Closing shares in issue (millions)	113	202						
Net asset value (millions)	4,962	10,091						
Net tangible net asset value (millions)	4,956	10,085						
Net asset value per share (cents)	4,407	4,987						
Net tangible asset value per share (cents)	4,401	4,984						

* International Financial Reporting Standards.

INCOME STATEMENT

R'm	**Avmin Audited – 30 June 2003**	Significant transactions Sale of Chambishi and Avgold	**Total – after adjusting for significant transactions**	Deconsol-idation of Avgold	Disposal of Avgold	Modikwa	Purchase price adjustments	IFRS adjustments	Harmony	**Pro forma**
Notes		**4.2.1**		**4.2.2**	**4.2.2**		**4.2.3**	**4.2.4**	**4.2.5**	
Revenue	**4,896**		4,896	(999)		262				**4,159**
Cost of sales	**3,882**		3,882	(860)		267		5		**3,294**
Gross profit	**1,014**		1,014	(139)		(5)		(5))		**865**
Other operating income	**424**		424	(67)				73		**430**
Other operating expenses	**917**		917	(130)		2				**789**
Profit from operations	**521**		521	(76)		(7)		68		**506**
Income from investments	**83**		83	(13)						**70**
Finance costs	**180**		180	(58)		111				**233**
Profit before exceptional items	**424**		424	(31)		(118)		68		**343**
Exceptional items – income/(expense)	**(388)**	409	21	(7)	1,873					**1,887**
Income from associates									334	**334**
Profit before taxation	**36**	409	445	(38)	1,873	(118)		68	334	**2,564**
Taxation	**147**	1	148	(9)			(35)	20		**124**
Net profit	**(111)**	408	297	(29)	1,873	(118)	35	48	334	**2,440**
Minority Interest	**80**		80	2			(14)	8		**76**
Earnings	**(191)**	408	217	(31)	1,873	(118)	49	40	334	**2,364**
Weighted average number of shares (in millions) – for earnings per share	112		112							202
Weighted average number of shares (in millions) – for diluted earnings per share	113		113							203
Earnings (millions)	(191)		217							2,364
Headline earnings (millions)	197		196							588
Earnings per share (cents)	(170)		194							1,171
Headline earnings per share (cents)	176		175							291
Diluted earnings per share (cents)	(169)		192							1,166
Diluted headline earnings per share (cents)	174		174							290

REPORTING ACCOUNTANTS' REPORT ON THE PRO FORMA FINANCIAL STATEMENTS OF AND EFFECTS ON AVMIN

The Directors
Anglovaal Mining Limited
56 Main Street
Johannesburg
2001

1 March 2004

Gentlemen

REPORTING ACCOUNTANTS' REPORT ON THE UNAUDITED PRO FORMA FINANCIAL STATEMENTS OF ANGLOVAAL MINING LIMITED ("AVMIN")

INTRODUCTION

Avmin is proposing to enter into the following transaction:

- the disposal of its approximately 42,2% interest in Avgold Limited ("Avgold") to Harmony Gold Mining Company Limited ("Harmony") in exchange for new Harmony shares in the ratio of 1 Harmony share for every 10 Avgold shares;
- the purchase, through ARM Platinum, of the Kalplats platinum discovery project from Harmony and the issue of 2 million new Avmin shares; and
- the purchase of a 13,6% interest in Harmony, all the shares in African Rainbow Minerals Platinum (Proprietary) Limited ("ARM Platinum") which has a 41,5% effective interest in Modikwa Joint Venture and loans totalling approximately R549 million owed to African Rainbow Minerals & Exploration Investments (Proprietary) Limited ("ARMI") by ARM Mining Consortium Limited, from ARMI and the issue of 87,7 million new Avmin shares.

We report on the unaudited pro forma financial statements set out in Annexure 13 to the circular to Avmin shareholders, to be dated on or about 19 March 2004.

The unaudited pro forma financial statements for the year ended 30 June 2003 have been prepared for illustrative purposes only to provide information about how the transaction would have impacted on the financial position and results of Avmin. Because of their nature, the unaudited pro forma financial statements may not give a fair reflection of Avmin's financial position after the transaction nor the effect on future earnings.

RESPONSIBILITIES

The directors of Avmin are solely responsible for the preparation of the unaudited pro forma financial statements to which this independent reporting accountants' report relates, and for the financial statements and financial information from which it has been prepared.

It is our responsibility to form an opinion on the unaudited pro forma financial statements and to report our opinion to you. We do not accept any responsibility for any reports previously given by us on any financial information used in the compilation of the unaudited pro forma financial information, beyond that owed to those to whom those reports were addressed at their dates of issue.

BASIS OF OPINION

Our work, which did not involve any independent examination of any of the underlying financial information, consisted primarily of agreeing the unadjusted financial information to published financial statements of Avmin, considering the evidence supporting the adjustments to the unaudited pro forma financial information, recalculating the amounts based on the information obtained and discussing the unaudited pro forma financial information with the directors of Avmin.

Because the above procedures do not constitute either an audit or a review made in accordance with Statements of South African Auditing Standards, we do not express any assurance on the fair presentation of the unaudited pro forma financial statements.

Had we performed additional procedures or had we performed an audit or review of the financial statements in accordance with Statements of South African Auditing Standards, other matters might have come to our attention that would have been reported to you.

OPINION

In our opinion:

- the unaudited pro forma financial statements has been properly compiled on the basis stated;
- the financial information is consistent with Avmin's accounting policies; and
- all adjustments made are appropriate for the purpose of the pro forma financial statements in terms of the JSE Securities Exchange, South Africa Listings Requirements.

Yours faithfully

ERNST & YOUNG
Chartered Accountants (SA)
Registered Accountants and Auditors

INDEPENDENT ADVISER'S FAIR AND REASONABLE OPINION ON THE AVGOLD SHARE EXCHANGE

The Board of Directors
Anglovaal Mining Limited
56 Main Street
Johannesburg
2001
South Africa

3 March 2004

Dear Sirs

INDEPENDENT FAIR AND REASONABLE OPINION ON THE DISPOSAL BY ANGLOVAAL MINING LIMITED ("AVMIN") OF IT'S APPROXIMATE 42,2% SHAREHOLDING IN AVGOLD LIMITED ("AVGOLD") TO HARMONY GOLD MINING COMPANY LIMITED ("HARMONY") ("THE DISPOSAL") IN TERMS OF SECTION 10 OF THE LISTING REQUIREMENTS OF THE JSE SECURITIES EXCHANGE, SOUTH AFRICA

INTRODUCTION

Investec Corporate Finance, a division of Investec Bank Limited ("Investec"), has been appointed to advise shareholders of Avmin, other than Harmony ("the Avmin minority shareholders") as to whether the terms and conditions of the Disposal are fair and reasonable.

In terms of the Disposal, Avmin will receive one new Harmony ordinary share in exchange for every ten ordinary shares held by Avmin in the share capital of Avgold ("the exchange ratio").

Full details of the Disposal are contained in the circular to be posted to Avmin shareholders on or about 19 March 2004 ("the Avmin circular").

PROCEDURE

In arriving at our opinion set forth herein, we have:

- reviewed the terms of the Disposal;
- reviewed available financial and other publicly available information relating to Avgold and Harmony;
- evaluated the life of mine ("LOM") plans of Avgold and Harmony as it relates to reserves, resources and the deliverability of the LOM plans;
- completed a relative valuation between Avgold and Harmony in order to evaluate the exchange ratio applicable to the Disposal. This process involved the review of detailed financial models prepared by the relevant companies and their respective management teams and stress tested the material assumptions applied in the financial models which included, inter alia, the production, cost and economic parameters used;
- undertook an operational onsite review of Avgold's Target operation and held technical discussions with management of Avgold to review the input data to the financial model;
- reviewed current development projects undertaken by Avgold and Harmony;
- assessed the long term potential of Avgold and Harmony as it relates to resources not included in the current LOM plans;
- evaluated the relative risks associated with Avgold and Harmony;
- analysed the share price performance of Avgold and Harmony over relevant periods for comparison purposes against the exchange ratio of the Disposal;
- reviewed the circumstances and history of the Disposal in discussions with management and given due consideration to all relevant factors having a bearing on the Disposal;
- considered the rationale and potential benefits of the Disposal, including the further consolidation of the Free State gold fields by Harmony; and
- considered the general economic, market and other conditions impacting on Avgold and Harmony, and in particular the requirements of the Mining Charter.

OPINION

In forming our opinion we have assumed and relied upon the accuracy and completeness of the information provided and the representations made to us by Avmin, whether in writing or obtained through discussions with the management of Avmin or their representatives (the "Information"). We disclaim responsibility and liability for any errors, omissions or inaccuracies contained in the Information.

Our opinion is based on the economic, financial, market and other conditions prevailing as at 13 November 2003, the date on which the detailed cautionary announcement was made to Avmin shareholders. Subsequent developments may affect this opinion, which we are under no obligation to update, revise or re-affirm. Based upon and subject to the contents of this letter, in our opinion the terms and conditions of the Disposal are fair and reasonable to the Avmin minority shareholders.

RELEVANT INFORMATION ABOUT INVESTEC

Investec may hold shares in Avmin, Avgold and Harmony from time to time, which investments would be held in the ordinary course of Investec's asset management, private client portfolio and securities activities. Other than such equity interests, Investec has no equity interest, direct or indirect, beneficial or non-beneficial in Avmin, Avgold and Harmony.

Investec have acted as independent financial advisor to the board of directors of Avmin in providing this opinion and will receive a fee for our services, payment of which is in no way linked to a successful outcome to the Disposal.

CONCLUSION

Our opinion does not constitute a recommendation to any Avmin minority shareholder as to how such shareholder should vote on the Disposal. We are not expressing any opinion herein as to the price at which the Avmin shares will trade following the announcement or the conclusion of the Disposal.

An individual shareholders decision may be influenced by such shareholders' particular circumstances and accordingly a shareholder should consult an independent advisor if in any doubt as to the merits or otherwise of the Disposal.

Investec hereby consents to the inclusion of this letter and references to this opinion in the Avmin circular in the form and context in which it appears.

Yours faithfully

Glynn Burger

INVESTEC BANK LIMITED
CORPORATE FINANCE

Dennis Tucker, Pr.Eng.

INVESTEC BANK LIMITED
CORPORATE FINANCE

INDEPENDENT ADVISER'S FAIR AND REASONABLE OPINION ON THE KALPLATS ACQUISITION

The Board of Directors
Anglovaal Mining Limited
56 Main Street
Johannesburg
2001
South Africa

3 March 2004

Dear Sirs

INDEPENDENT FAIR AND REASONABLE OPINION ON THE ACQUISITION BY ANGLOVAAL MINING LIMITED ("AVMIN") THROUGH WHAT WILL BE ITS WHOLLY OWNED SUBSIDIARY, AFRICAN RAINBOW MINERALS PLATINUM (PROPRIETARY) LIMITED ("ARM PLATINUM") OF THE KALPLATS PLATINUM DISCOVERY AND ASSOCIATED MINERAL RIGHTS ("KALPLATS PROJECT") FROM KALAHARI GOLDRIDGE MINING COMPANY LIMITED ("KALGOLD") ("THE ACQUISITION") IN TERMS OF SECTION 10 OF THE LISTING REQUIREMENTS OF THE JSE SECURITIES EXCHANGE, SOUTH AFRICA

INTRODUCTION

Investec Corporate Finance, a division of Investec Bank Limited ("Investec"), has been appointed to advise shareholders of Avmin other than Harmony ("the Avmin minority shareholders") as to whether the terms and conditions of the Acquisition are fair and reasonable.

In terms of the Acquisition, Avmin will acquire through what will be its wholly-owned subsidiary, ARM Platinum, the Kalplats project from Kalgold for a consideration based on the weighted average traded price of an Avmin share for the seven trading day period prior to the closing date in terms of the Acquisition, but subject to a maximum of R100 000 000("the consideration"). The loan account in the books of Kalgold (in the name of ARM Platinum, arising from such acquisition) will be sold to Avmin and, in terms of a separate transaction, Kalgold has agreed to be issued with a renounceable letter of allocation conferring rights to subscribe for 2 million new Avmin ordinary shares.

Full details of the Acquisition are contained in the circular to be posted to Avmin shareholders on or about 19 March 2004 ("the Avmin circular").

PROCEDURE

In arriving at our opinion set forth herein, we have:

- reviewed the terms of the Acquisition;
- analysed the share price performance of Avmin over a reasonable period;
- reviewed the pre-feasibility study documentation pertaining to the Kalplats project;
- reviewed available financial and other publicly available information relating to the Kalplats project;
- completed a valuation of the Kalplats project in order to evaluate the consideration for the Acquisition. This process involved the review of financial models and stress testing the material assumptions applied in the financial models which included, inter alia, the production, cost and economic parameters used;
- constructed a option pricing matrix on the mineral resource of the Kalplats project;
- evaluated comparative transactions on the value applied to per unit of reserve and resource; and
- reviewed the circumstances and history of the Acquisition in discussions with management and given due consideration to all relevant factors having a bearing on the Acquisition, including the long term nature of this investment.

OPINION

In forming our opinion we have assumed and relied upon the accuracy and completeness of the information provided and the representations made to us by Avmin, whether in writing or obtained through discussions with the management of Avmin or their representatives (the "Information"). We disclaim responsibility and liability for any errors, omissions or inaccuracies contained in the Information.

Our opinion is based on the economic, financial, market and other conditions prevailing as at 13 November 2003, the date on which the detailed cautionary announcement was made to Avmin shareholders. Subsequent developments may affect this opinion, which we are under no obligation to update, revise or re-affirm. Based upon and subject to the contents of this letter, in our opinion the terms and conditions of the Acquisition are fair and reasonable to the Avmin minority shareholders.

RELEVANT INFORMATION ABOUT INVESTEC

Investec may hold shares in Avmin and Harmony from time to time, which investments would be held in the ordinary course of Investec's asset management, private client portfolio and securities activities. Other than such equity interests, Investec has no equity interest, direct or indirect, beneficial or non-beneficial in Avmin and Harmony.

Investec have acted as independent financial advisor to the board of directors of Avmin in providing this opinion and will receive a fee for our services, payment of which is in no way linked to a successful outcome to the Acquisition.

CONCLUSION

Our opinion does not constitute a recommendation to any Avmin minority shareholder as to how such shareholder should vote on the Acquisition. We are not expressing any opinion herein as to the price at which the Avmin shares will trade following the announcement or the conclusion of the Acquisition.

An individual shareholders decision may be influenced by such shareholders' particular circumstances and accordingly a shareholder should consult an independent advisor if in any doubt as to the merits or otherwise of the Acquisition.

Investec hereby consents to the inclusion of this letter and references to this opinion in the Avmin circular in the form and context in which it appears.

Yours faithfully

Glynn Burger

INVESTEC BANK LIMITED
CORPORATE FINANCE

Dennis Tucker, Pr.Eng.

INVESTEC BANK LIMITED
CORPORATE FINANCE

INDEPENDENT ADVISER'S FAIR AND REASONABLE OPINION ON THE TRANSACTION

The Board of Directors
Anglovaal Mining Limited
56 Main Street
Johannesburg
2001

12 March 2004

Dear Sirs

INTRODUCTION

Investec Corporate Finance, a division of Investec Bank Limited ("Investec") has been engaged by the Board of Directors, Anglovaal Mining Limited ("Avmin") to provide an opinion in terms of Rule 3.1 of the Securities Regulation Code on Take-overs and Mergers and the Rules of the Securities Regulation Panel ("the Code") to the Board of Directors of Avmin in respect of whether the proposed indivisible transactions set out below are fair and reasonable to the shareholders of Avmin as African Rainbow Minerals and Exploration Investments (Proprietary) Limited ("ARMI") would have triggered an "affected transaction" as defined in terms of the Code.

Avmin is proposing to enter into the following indivisible transactions:

- The disposal of its approximately 42,2% interest in Avgold Limited ("Avgold") to Harmony Gold Mining Company Limited ("Harmony") in exchange for new Harmony shares in the ratio of 1 Harmony share for every 10 Avgold shares;
- The purchase through African Rainbow Minerals Platinum (Proprietary) Limited ("ARM Platinum") of the Kalplats platinum discovery project ("Kalplats project") from Harmony and the issue of 2 million new Avmin shares; and
- The purchase from ARMI of a 13,6% interest in Harmony, all the shares in ARM Platinum which will have a 41,5% effective interest in the Modikwa Joint Venture and loans totalling approximately R549 million ("Modikwa Joint Venture") owed to ARMI by ARM Mining Consortium Limited, and the issue of 87.7 million new Avmin shares

(collectively defined as "the proposed transaction").

DEFINITION OF FAIR AND REASONABLE

A transaction is generally considered to be fair and reasonable if it is transacted at a value, which is equal to or greater than the fair value of such shares/assets. Fairness is primarily based on quantitative issues, whilst reasonableness includes qualitative considerations surrounding the transaction.

This fair and reasonable opinion does not purport to cater for individual shareholder positions but rather the general body of shareholders.

Full details of the proposed transaction are contained in the circular to be posted to Avmin shareholders on or about 23 March 2004 ("the Avmin circular").

PROCEDURES

Investec, in arriving at our opinion set forth herein, have:

- Reviewed the terms of the proposed transaction;
- Reviewed available financial and other publicly available information relating to Avmin and its major subsidiaries ("Avmin Group"), Avgold, Modikwa Joint Venture, Kalplats project and Harmony;
- Evaluated the life of mine ("LOM") plans and reviewed the competent person's report of the major subsidiaries of the Avmin Group, Modikwa Joint Venture, Avgold and Harmony as it relates to reserves, resources and the deliverability of the LOM plans;
- Completed a relative valuation of the applicable assets and shares in order to evaluate the exchange ratio applicable to the proposed transaction. This process involved the review of detailed financial models prepared by the relevant companies and their management teams;

- Stress tested the material assumptions applied in the financial models which included, inter alia, the production, cost and economic parameters used;
- Undertook a mine visit to review Avgold's Target operation and held technical discussions with management of Avgold to review the input data to the financial model;
- Undertook mine visits to review Modikwa Joint Venture, Nkomati, Two Rivers Platinum (Proprietary) Limited's mine and Assmang Limited's major operation at Nchwaneng;
- Reviewed current development and exploration projects undertaken by the Avmin Group, Avgold and Harmony;
- Assessed the long term potential of Modikwa Joint Venture, Avgold and Harmony and relevant Avmin Group subsidiaries as it relates to resources not included in the current LOM plans;
- Evaluated the relative risks associated with Avmin Group, Avgold, Modikwa Joint Venture and Harmony and Kalplats project;
- Analysed the relative share price performance of Avmin, Avgold and Harmony over relevant periods for comparison purposes against the exchange ratios used in the proposed transaction;
- Evaluated recent transactions completed on certain of the assets or shares;
- Reviewed the circumstances and history of the proposed transaction in discussions with management and given due consideration to all relevant factors having a bearing on the proposed transaction;
- Considered the rationale and potential benefits of the proposed transaction, including the further consolidation of the Free State gold fields by Harmony;
- Considered the general economic, market and other conditions impacting on the Avmin Group, Avgold and Harmony, and in particular the requirements of the Mining Charter;
- Reviewed the pre-feasibility study documentation pertaining to the Kalplats project;
- Constructed an option pricing matrix on the mineral resource of the Kalplats project; and
- Evaluated comparative transactions on the value applied to per unit of reserve and resource.

OPINION

Our opinion is based on information available to us and prevailing economic, regulatory, fiscal, market and other conditions at the date of this letter, which may change due to unforeseen circumstances. Subsequent developments may affect our opinion, which we are under no obligation to update, revise or re-affirm. In addition to the above, our opinion is contingent on the current and anticipated performance of the relevant assets, which may differ from the actual performance achieved by such assets in the future.

In reaching our opinion, we have assumed and relied upon the accuracy and completeness of information in the public domain and information prepared by Avmin management, which has been provided to us. We have not audited, or confirmed the accuracy or completeness of any information, whether publicly available or furnished to us, concerning the Avmin Group, Avgold, Modikwa Joint Venture, Kalplats project and Harmony including, without limitation, any financial information, forecasts or projections considered in connection with rendering our opinion. We have evaluated only the information which we consider central to determining the fairness and reasonableness of the proposed transaction to the Avmin shareholders by considering whether or not it is reasonable in the light of surrounding circumstances relating to Avmin of which we are aware and, on this basis, we are of the view that the information is reasonable.

We have assumed that all material Government, regulatory and other approvals and consents required in connection with the proposed transaction have or will be obtained.

This opinion is addressed solely to, and for the sole use and benefit of, the Board of Directors of Avmin in connection with its consideration of the fairness and reasonableness of the proposed transaction to the Avmin shareholders. The assessment of whether or not Avmin and its shareholders should proceed with the proposed transaction is a decision that can only be taken by Avmin and its shareholders. Furthermore, an individual shareholder should consult an independent advisor if it is in any doubt as to the merits or otherwise of the proposed transaction.

This opinion does not contain any legal, tax or accounting advice and such matters have not been considered, except and insofar as set out above, in reaching the opinion given in this letter and Investec assumes no responsibility or liability in respect of advice in relation to such matters. This opinion may not be reproduced, disclosed or referred to or used for any other purpose without the express written consent of Investec.

Our opinion is based on the economic, financial, market and other conditions prevailing as at 5 March 2004, the last practicable date prior to the Board of Directors approval of the Avmin circular. Subsequent developments may affect this opinion, which we are under no obligation to update, revise or re-affirm. Based upon and subject to the contents of this letter, in our opinion the terms and conditions of the proposed transaction are fair and reasonable to the Avmin shareholders.

VALUATION AND OTHER CONSIDERATIONS

In arriving at an opinion, Investec considered, in addition to the work referred to above, other market and industry factors, which include, inter alia:

- Current regulatory and legislative uncertainty in the South African mining industry;
- The Avmin share price used in the proposed transaction which is at a premium to the average share price prior to the cautionary announcement dated 13 November 2003;
- The existing Avmin shareholding structure and the future cross holding with Harmony;
- In Investec's view, the number of Avmin shares issued in terms of the proposed transaction falls within a ten percent range below the maximum acceptable number of new Avmin shares that could be issued;
- Holding companies traditionally trade at a discount to their underlying value;
- Avmin would be the largest Black Economic Empowerment ("BEE") controlled mining house in South Africa;
- Avmin has limited debt and equity raising capacity which should now be enhanced;
- Avmin's largest asset is the reasonably illiquid gold producer, Avgold and afterwards will be the investment in liquid Harmony shares; and
- Avmin will increase their gold exposure to a producer which is more highly geared to the gold price but with a wider spread of resource than its existing investment in Avgold.

RELEVANT INFORMATION ABOUT INVESTEC

Investec may hold shares in Avmin, Avgold and Harmony from time to time, which investments would be held in the ordinary course of Investec's asset management, private client portfolio and securities activities. Other than such equity interests, Investec has no equity interest, direct or indirect, beneficial or non-beneficial in Avmin, Avgold and Harmony.

Investec has acted as independent financial advisor to the Board of Directors of Avmin in providing this opinion and will receive a fee for our services, payment of which is no way linked to a successful outcome to the proposed transaction.

CONCLUSION

Our opinion does not constitute a recommendation to any Avmin shareholder as to how such shareholder should vote on the proposed transaction. We are not expressing any opinion herein as to the price at which the Avmin shares will trade following the announcement or the conclusion of the proposed transaction.

Investec hereby consents to the inclusion of this letter and references to this opinion in the Avmin circular in the form and context in which it appears.

Yours faithfully,

Andy Leith

INVESTEC BANK LIMITED
CORPORATE FINANCE

Dennis Tucker, Pr.Eng

INVESTEC BANK LIMITED
CORPORATE FINANCE

Additional information on key value driver assumptions

Exchange rate	– Risk to the valuations are that the rand remains stronger against the US Dollar than we forecast and the Dollar gold price may be weaker than our forecast.
Legislative uncertainty	– Pending and recent legislation/regulations (listed below) may result in increased regulation in order to improve BEE ownership of mineral rights – Mining Charter – Royalty Bill – Minerals and Petroleum Resources Development Act (Minerals Act)
Black economic empowerment (BEE)	– A large mining group effectively controlled by BEE shareholders is likely to benefit under the Mining Charter and future projects.

TRADING HISTORY OF AVMIN SHARES

The high, low and closing prices of Avmin shares on the JSE and the volumes traded on the JSE, since 1 January 2001, were as follows:

	High (cents)	Low (cents)	Close (cents)	Volume
Quarterly				
March 2001	3 650	2 290	3 350	5 401 181
June 2001	4 200	3 250	3 950	4 686 731
September 2001	4 280	3 200	3 415	4 699 951
December 2001	4 080	3 250	3 605	6 403 634
March 2002	4 000	3 100	3 995	32 250 281
June 2002	4 200	3 500	3 701	8 169 671
September 2002	4 225	3 580	3 700	5 369 928
December 2002	4 150	3 550	3 950	5 521 807
March 2003	5 100	3 300	3 550	7 715 744
June 2003	4 050	2 900	4 000	20 686 067
September 2003	4 650	3 700	4 225	9 644 618
December 2003	4 600	3 900	4 210	9 156 638
Monthly				
January 2003	5 100	3 950	4 200	2 034 609
February 2003	4 300	3 900	3 955	4 843 288
March 2003	4 000	3 300	3 550	837 849
April 2003	3 912	2 900	3 200	515 742
May 2003	4 000	3 325	3 995	16 485 531
June 2003	4 050	3 940	4 000	3 865 064
July 2003	4 050	3 700	3 945	3 265 785
August 2003	4 503	3 798	4 503	2 945 095
September 2003	4 650	4 150	4 225	3 433 738
October 2003	4 460	4 199	4 360	3 596 069
November 2003	4 600	3 900	4 100	3 189 349
December 2003	4 300	4 000	4 210	2 371 220
January 2004	4 800	4 210	4 550	3 791 404
February 2004	4 700	4 276	4 300	719 074
Daily				
2 February 2004	4 600	4 550	4 550	58 199
3 February 2004	4 650	4 550	4 625	63 491
4 February 2004	4 651	4 630	4 651	4 800
5 February 2004	4 700	4 650	4 650	5 000
6 February 2004	4 650	4 649	4 650	256 781
9 February 2004	4 700	4 650	4 650	23 637
10 February 2004	4 650	4 621	4 625	18 272
11 February 2004	4 625	4 575	4 575	327
12 February 2004	4 605	4 580	4 605	444
13 February 2004	4 600	4 550	4 600	4 071
16 February 2004	4 625	4 600	4 625	97 728
17 February 2004	4 600	4 600	4 600	17 449
18 February 2004	4 630	4 600	4 600	49 292
19 February 2004	4 600	4 600	4 600	14 368
20 February 2004	4 601	4 600	4 600	8 468
23 February 2004	4 550	4 500	4 550	8 856
24 February 2004	4 550	4 500	4 500	30 758
25 February 2004	4 300	4 550	4 300	3 233
26 February 2004	4 300	4 276	4 300	200
27 February 2004	4 350	4 300	4 300	53 700
1 March 2004	4 400	4 400	4 400	200
2 March 2004	4 525	4 401	4 525	34 393
3 March 2004	4 601	4 600	4 601	44 157
4 March 2004	4 700	4 601	4 601	12 952
5 March 2004	4 651	4 601	4 651	49 942

TRADING HISTORY OF HARMONY SHARES

The high, low and closing prices of Harmony shares on the JSE and the volumes traded on the JSE, since 1 January 2001, were as follows:

	High (cents)	Low (cents)	Close (cents)	Volume
Quarterly				
March 2001	4 700	3 080	3 860	12 254 756
June 2001	5 100	3 615	4 690	20 690 449
September 2001	4 920	3 850	4 900	22 217 718
December 2001	9 900	4 800	7 850	38 280 991
March 2002	13 360	7 000	12 740	59 093 052
June 2002	18 730	11 000	14 200	86 643 890
September 2002	18 150	10 350	16 700	78 034 135
December 2002	16 520	11 550	14 700	61 230 817
March 2003	15 620	8 650	9 760	68 846 490
June 2003	11 750	7 100	9 850	102 654 014
September 2003	11 800	8 370	9 950	89 630 043
December 2003	10 975	9 220	10 850	62 632 935
Monthly				
January 2003	15 620	13 100	13 100	24 945 829
February 2003	13 600	10 540	11 050	23 470 805
March 2003	11 390	8 650	9 760	20 429 856
April 2003	9 850	7 100	7 700	19 952 328
May 2003	11 070	7 900	10 539	62 449 097
June 2003	11 750	9 600	9 850	20 252 589
July 2003	10 480	8 370	9 239	39 201 794
August 2003	10 750	8 800	10 445	20 769 767
September 2003	11 800	9 715	9 950	29 658 482
October 2003	10 975	9 220	10 600	25 092 309
November 2003	10 580	9 302	10 120	15 400 296
December 2003	10 950	9 300	10 850	22 140 330
January 2004	12 260	10 450	10 901	17 153 140
February 2004	11 500	10 000	10 000	13 682 655
Daily				
2 February 2004	11 000	10 767	10 802	855 374
3 February 2004	11 077	10 725	10 901	1 033 298
4 February 2004	11 120	10 831	10 939	638 663
5 February 2004	10 900	10 555	10 621	553 800
6 February 2004	11 100	10 602	11 025	545 360
9 February 2004	11 425	11 096	11 212	701 154
10 February 2004	11 500	11 300	11 420	509 014
11 February 2004	11 320	11 021	11 240	562 365
12 February 2004	11 400	11 150	11 225	520 471
13 February 2004	11 139	11 030	11 130	510 528
16 February 2004	11 120	10 925	11 100	177 165
17 February 2004	11 300	11 110	11 270	851 910
18 February 2004	11 350	11 200	11 275	1 686 630
19 February 2004	11 188	10 850	11 000	1 180 489
20 February 2004	10 849	10 659	10 690	979 408
23 February 2004	10 650	10 450	10 489	606 525
24 February 2004	10 500	10 250	10 339	678 736
25 February 2004	10 340	10 000	10 000	1 091 765
26 February 2004	10 100	9 750	9 851	1 662 072
27 February 2004	10 130	9 900	10 130	671 824
1 March 2004	10 440	10 025	10 320	641 131
2 March 2004	10 320	10 001	10 264	1 155 452
3 March 2004	10 400	10 240	10 335	524 914
4 March 2004	10 550	10 370	10 450	716 925
5 March 2004	10 639	10 490	10 500	1 268 318

SUMMARY OF THE TERMS OF THE ARM CONTROL STRUCTURE

With effect from the effective date in terms of the ARM voting agreement (being the closing date in terms of the Avmin acquisitions agreement) until the earlier of:

- the expiry of three years from that date; or
- the date when all of the old order rights (as defined in the Mineral and Petroleum Resources Development Act, 2002) held by Harmony, its subsidiaries and associated companies (as specified in the ARM voting agreement) are converted into appropriate new order rights (as defined in the Mineral and Petroleum Resources Development Act, 2002) ("the lock-up period"),

ARMI has the power and authority to exercise all of the voting rights attaching to Harmony's Avmin shares (excluding the right to vote on any special resolution, ordinary resolution in terms of section 228 of the Act, resolution to approve a scheme of arrangement in terms of section 311 of the Act or other resolution which, if approved, would result in a disposal of Harmony's Avmin shares) and to appoint itself as proxy in respect thereof at general and other meetings of Avmin.

Harmony's Avmin shares (which will be held either through Clidet No.454 (Proprietary) Limited ("Clidet") or directly) may not during the lock-up period be transferred or, subject to an existing pledge and certain conditions, encumbered, by Clidet or Harmony. In order to ensure that ARMI continues to own (directly or indirectly), together with Harmony's Avmin shares, that number of Avmin shares which constitute more than 50,0% of Avmin's issued share capital, ARMI may not during the lock-up period transfer any of its Avmin shares which are required to make up that number and will during the lock-up period ensure that more than 50,0% of its own issued share capital is owned and controlled by Historically Disadvantaged South Africans (as contemplated in The Mining Charter).

At the end of the lock-up period and for a period of five years thereafter ARMI has a right of first refusal to purchase all of Harmony's Avmin shares then owned by Clidet or Harmony ("the remaining shares"). If Clidet or Harmony wishes to transfer any of the remaining shares to any person other than ARMI, in a transaction on the JSE, it shall first offer to sell the remaining shares in question to ARMI in accordance with the provisions of the ARM voting agreement. If Clidet or Harmony wishes to sell any of the remaining shares otherwise than under a third party transaction in accordance with such provisions, it shall first offer to sell the shares in question to ARMI in accordance with the provisions of the ARM voting agreement.

ANGLOVAAL ● MINING

Anglovaal Mining Limited

(Incorporated in the Republic of South Africa)
(Registration number 1933/004580/06)
Share code: AIN
ISIN: ZAE000017141
("Avmin" or "the Company")

NOTICE OF GENERAL MEETING

Notice is hereby given that a general meeting of ordinary shareholders will be held on the Ground Floor at the registered office of Avmin, 56 Main Street, Johannesburg on Thursday, 15 April 2004 at 10:00 (South African time), for the purpose of considering and, if deemed fit, passing, with or without modification, passing the following ordinary and special resolutions:

RESOLUTIONS

1. **Ordinary resolution number 1**

   "**RESOLVED THAT** all resolutions set out in this notice of general meeting, save for this ordinary resolution number 1, are subject to the fulfilment of the suspensive conditions set out in paragraphs 4.2.4, 5.5.4, 6.2.4, 7.2 and 15 of the circular to which this notice of general meeting is attached and forms part, and the failure to pass any ordinary resolution set out in this notice of general meeting shall cause all other ordinary and both special resolutions to fail, notwithstanding being passed by the requisite majority. For the avoidance of doubt, the failure to pass either special resolution set out in this notice of general meeting shall not cause any ordinary or the other special resolution to fail."

2. **Ordinary resolution number 2**

   "**RESOLVED THAT**, subject to ordinary resolution number 1 being passed and subject to this ordinary resolution number 2 being passed as an ordinary resolution and also by a simple majority of members of the Company, other than Harmony Gold Mining Company Limited ("Harmony"), its subsidiaries, associates and nominees present or represented at the general meeting, the agreement between the Company and Harmony, dated 16 February 2004, in terms of which the Company exchanges its entire shareholding in Avgold Limited ("Avgold") for 28 630 526 new Harmony shares, be and it is hereby ratified and approved, in terms of section 228 of the Companies Act".

3. **Ordinary resolution number 3**

   "**RESOLVED THAT**, subject to ordinary resolution number 1 being passed, the agreement between African Rainbow Minerals & Exploration Investments (Proprietary) Limited ("ARMI") and the Company, dated 16 February 2004 and as amended by an addendum dated 15 March 2004, in terms of which the Company acquires ARMI's shareholding in Harmony and ARMI's right in and to the debt owed by ARM Mining Consortium Limited ("ARM Consortium") to ARMI for R4 046 910 550, ARMI subscribes for 80 938 211 new Avmin shares and ARMI exchanges its holding of all the issued shares in African Rainbow Minerals Platinum (Proprietary) Limited ("ARM Platinum"), which has a 41,5% effective interest in the joint venture between ARM Consortium and Rustenburg Platinum Mines Limited in respect of the Modikwa platinum mine, for 6 812 206 new Avmin shares, be and it is hereby ratified and approved."

4. **Ordinary resolution number 4**

   "**RESOLVED THAT**, subject to ordinary resolution number 1 being passed and subject to this ordinary resolution number 4 being passed as an ordinary resolution and also by a simple majority of members of the Company, other than Harmony, its subsidiaries, associates and nominees present or represented at the general meeting, the agreement between Kalahari Goldridge Mining Company Limited ("Kalgold"), Harmony, ARM Platinum and the Company, dated 16 February 2004, in terms of which the Company through what will be its wholly-owned subsidiary, ARM Platinum, acquires the Kalplats platinum discovery and associated mineral rights from Kalgold and Kalgold agrees to be issued with a renounceable letter of allocation conferring rights to subscribe for 2 000 000 new Avmin shares, be and it is hereby ratified and approved."

5. **Ordinary resolution number 5**

"**RESOLVED THAT**, subject to ordinary resolution number 1 being passed and subject to this ordinary resolution number 5 being passed as an ordinary resolution and also by a simple majority of members of the Company, other than Harmony, ARMI and their respective subsidiaries, associates and nominees present or represented at the general meeting, the making of a mandatory offer by ARMI to all the shareholders of the Company to acquire their shares pursuant to the successful implementation of the agreement which forms the subject of ordinary resolution number 3, in terms of the Securities Regulation Code on Take-overs and Mergers be and it is hereby waived and dispensed with."

6. **Ordinary resolution number 6**

"**RESOLVED THAT**, subject to ordinary resolution number 1 being passed, 89 750 417 ordinary shares in the authorised but unissued share capital of the Company be and they are hereby placed under the control of the directors of the Company, in terms of section 221 of the Companies Act, with specific authority to them to allot and issue:

6.1 87 750 417 of such shares to ARMI, pursuant to ARMI's agreement to subscribe for 80 938 211 of such shares and to fulfil the Company's obligation to exchange 6 812 206 of such shares for all the issued shares in ARM Platinum, all in terms of the Avmin acquisitions agreement; and

6.2 2 000 000 of such shares to Kalgold, or the entity to which Kalgold may renounce its rights to subscribe for such shares, pursuant to Kalgold's agreement to be issued with a renounceable letter of allocation conferring rights to subscribe for such shares, in terms of the Kalplats acquisition agreement."

7. **Special resolution number 1**

"**RESOLVED THAT**, subject to ordinary resolutions numbers 1, 2, 3, 4, 5 and 6 being passed, the name of the Company be and it is hereby changed to "African Rainbow Minerals Limited" and that the memorandum and articles of association of the Company be and they are hereby amended accordingly."

8. **Special resolution number 2**

"**RESOLVED THAT**, subject to ordinary resolution number 1 being passed, the authorised share capital of the Company be and it is hereby increased from R15 000 000 consisting of 300 000 000 ordinary shares of five cents each to R25 000 000 consisting of 500 000 000 ordinary shares of five cents each, by the creation of a further 200 000 000 ordinary shares of five cents each ranking *pari passu* in every respect with the existing ordinary shares of five cents each, and that the memorandum of association of the Company be and it is hereby amended accordingly."

9. **Ordinary resolution number 7**

"**RESOLVED THAT**, subject to ordinary resolution number 1 being passed, the directors of the Company be and they are hereby authorised to do all such things and sign all such documents and take all such actions as they may consider necessary to implement ordinary resolutions numbers 1, 2, 3, 4, 5 and 6 and special resolutions numbers 1 and 2."

The reason for special resolution number 1 is to change the name of the Company to reflect the change in controlling shareholding of the Company. The effect of special resolution number 1 is to amend the Company's memorandum and articles of association accordingly.

The reason for special resolution number 2 is to increase the authorised share capital of the Company to ensure that sufficient unissued capital is available for the allotment and issue of shares for potential future acquisitions and funding transactions by the Company. The effect of special resolution number 2 is to amend the Company's memorandum of association accordingly.

VOTING AND PROXIES

Each shareholder of the Company who is registered as such and who, being an individual, is present in person or by proxy or which, being a company, is represented, at the general meeting is entitled to one vote on a show of hands. The person so appointed need not be a member of the Company.

On a poll, each shareholder present in person or by proxy or represented shall have one vote for every share held by such shareholder.

Certificated shareholders/Dematerialised shareholders with own name registrations

Shareholders who have not yet dematerialised their shares or who have dematerialised their shares with own name registration ("entitled shareholders") may appoint one or more proxies to attend, speak and vote or abstain from voting in such shareholders' stead. The person so appointed need not be a member of the Company. A form of proxy (blue) is attached for the use of those entitled shareholders who wish to be so represented. Such entitled shareholders should complete the attached form of proxy in accordance with the instructions contained therein and return it to the **registered office** of the Company, namely 56 Main Street, Johannesburg, 2001, South Africa (PO Box 62379, Marshalltown, 2107) or the **transfer secretaries**, Computershare Limited, Investor Services Division, 7th Floor, 70 Marshall Street, Johannesburg, 2001, South Africa (PO Box 61051, Marshalltown, 2107, South Africa) or the **United Kingdom share registrars**, Capita Registrars, The Registry, 34 Beckenham Road, Beckenham, Kent, BR3 4TU, United Kingdom, to be received by 10:00 (South African time) on 13 April 2004.

Dematerialised shareholders

Shareholders who have dematerialised their shares (other than those with own name registrations) should provide their Central Securities Depository Participant ("CSDP") or broker with their voting instructions in terms of the custody agreement entered into with the relevant CSDP or broker. Should such shareholders wish to attend the general meeting to be held on Thursday, 15 April 2004 or send a proxy to represent them at the general meeting, they should inform their CSDP or broker timeously and request their CSDP or broker to issue them with the necessary authorisation to attend.

By order of the board

R H Phillips
Group Company Secretary

Johannesburg
23 March 2004

Registered office

Anglovaal Mining Limited
56 Main Street
Johannesburg, 2001
(PO Box 62379, Marshalltown, 2107)
South Africa

Transfer secretaries

Computershare Limited
Investor Services Division
7th Floor, 70 Marshall Street
Johannesburg, 2001
(PO Box 61051, Marshalltown, 2107)
(Telefax (+27 11) 370 5390)

United Kingdom share registrars

Capita Registrars
The Registry
34 Beckenham Road
Beckenham
Kent BR3 4TU
United Kingdom
(Telefax +44 1 020 8639 2342)

ANGLOVAAL ● MINING

AVMIN

Anglovaal Mining Limited

(Incorporated in the Republic of South Africa)
(Registration number 1933/004580/06)
Share code: AIN
ISIN: ZAE000017141
("the Company")

FORM OF PROXY

Shareholders who have dematerialised their shares (other than those with own name registrations) should provide their Central Securities Depository Participant (CSDP) or broker with their voting instructions in terms of the custody agreement entered into with their relevant CSDP or broker. Should such shareholders wish to attend the general meeting of Avmin to be held on Thursday, 15 April 2004 or send a proxy to represent them at the general meeting, they should inform their CSDP or broker timeously and request their CSDP or broker to issue them with the necessary authorisation to attend.

FOR COMPLETION BY ORDINARY SHAREHOLDERS WHO HAVE NOT YET DEMATERIALISED THEIR SHARES OR WHO HAVE DEMATERIALISED THEIR SHARES WITH OWN NAME REGISTRATION

Shareholders who have not yet dematerialised their shares or who have dematerialised their shares with own name registration ("entitled shareholders") may appoint one or more proxies to attend, speak and vote or to abstain from voting in such shareholder's stead. The person so appointed need not be a member of the Company. This form of proxy is for the use of those entitled members who wish to be so represented. Such entitled shareholders should complete this form of proxy in accordance with the instructions contained herein and return it to the **registered office** of the Company or the **transfer secretaries** or the **United Kingdom share registrars** of the Company, to be received by the time and date stipulated herein.

If you are unable to attend the general meeting of ordinary shareholders convened for Thursday, 15 April 2004 at 10:00 ("general meeting"), you should complete and return this form of proxy as soon as possible, but in any event to be received by not later than 10:00 (South African time) on 13 April 2004.

I/We _____ (NAME IN BLOCK LETTERS)

of _____ (address)

being the holder of _____ shares in the issued share capital of the Company, do hereby appoint:

1. _____ or failing him/her,

2. _____ or failing him/her,

3. the chairman of the Company or failing him/her,

the chairman of the general meeting, as my/our proxy to vote for me/us and on my/our behalf at the general meeting and at any adjournment thereof and in particular in respect of the following ordinary and special resolutions:

	Number of votes for	Number of votes against	Number of votes being abstained
Ordinary resolution number 1			
Ordinary resolution number 2			
Ordinary resolution number 3			
Ordinary resolution number 4			
Ordinary resolution number 5			
Ordinary resolution number 6			
Special resolution number 1			
Special resolution number 2			
Ordinary resolution number 7			

Number of shares

Unless this section is completed for a lesser number, the Company is authorised to insert in the said section the total number of shares registered in my/our name(s) one business day before the meeting.

Signed at _____ on _____ 2004

Signature _____

Assisted by (where applicable) _____

Please read the notes on the reverse side hereof.

Notes:

1. The completion and lodging of this form of proxy will not preclude the entitled shareholder who grants this proxy from attending the general meeting and speaking and voting in person thereat to the exclusion of any proxy appointed in terms hereof should he/she wish to do so.
2. Every member present in person or represented by proxy and entitled to vote shall, on a show of hands, have only one vote and upon a poll every member shall have a vote for every ordinary share held.
3. You may insert the name of any person(s) whom you wish to appoint as your proxy in the blank space(s) provided for that purpose. The person whose name appears first on this form of proxy and who is present at the general meeting will be entitled to act as proxy to the exclusion of those whose names follow.
4. When there are joint holders of shares, only that holder whose name appears first in the register need sign this form of proxy.
5. If this form of proxy is signed under the authority of a power of attorney or on behalf of a company or any other juristic person, then it must be accompanied by such power of attorney or a certified copy of the relevant enabling resolution or other authority of such company or other juristic person, unless proof of such authority has been recorded by the Company.
6. If the entitled shareholder does not indicate in the appropriate place on the face hereof how he/she wishes to vote in respect of a resolution, his/her proxy shall be entitled to vote as he/she deems fit in respect of that resolution.
7. A deletion of any printed matter and the completion of any blank spaces need not be signed or initialled. Any alteration must be signed, not initialled.
8. The chairman of the general meeting may, in the chairman's absolute discretion, reject any form of proxy which is completed, other than in accordance with these instructions and notes.
9. Forms of proxy, powers of attorney or any other authority appointing a proxy shall be deposited at the **registered office** of the Company, 56 Main Street, Johannesburg, 2001 South Africa (or posted to PO Box 62379, Marshalltown, 2107, South Africa), or at the **transfer secretaries**, Computershare Limited, Investor Services Division, 70 Marshall Street, Johannesburg, 2001 South Africa (or posted to PO Box 61051, Marshalltown, 2107, South Africa) or telefaxed to (+27 11) 370 5390 or the **United Kingdom share registrars** of the Company, Capita Registrars, The Registry, 34 Beckenham Road, Beckenham, Kent, BR3 4TU, United Kingdom, or telefaxed to +44 1 020 8639 2342 so as to be received not later than 10:00 (South African time) on 13 April 2004 (in respect of the general meeting) or 48 hours, excluding Saturdays, Sundays and South African public holidays, before the time appointed for the holding of any adjourned meeting.
10. No form of proxy shall be valid after the expiration of six months from the date when it was signed, except at an adjourned meeting in cases where the meeting was originally held within six months from the aforesaid date.

ANGLOVAAL ● MINING

Anglovaal Mining Limited

(Incorporated in the Republic of South Africa)
(Registration number 1933/004580/06)
Share code: AIN
ISIN: ZAE000017141
("Avmin" or "the Company")

FORM OF SURRENDER

OF DOCUMENTS OF TITLE FOR USE BY ALL ORDINARY SHAREHOLDERS WHO HAVE NOT YET DEMATERIALISED THEIR DOCUMENTS OF TITLE

Instructions:

1. **Part A must be completed by all Avmin shareholders who have not yet dematerialised their share certificates or other documents of title. Dematerialised shareholders must not complete this form of surrender as the appropriate action will be taken by their Central Securities Depository Participant or broker.**
2. **If this form of surrender is returned with the relevant documents of title, it will be treated as a conditional surrender which is made subject to shareholders approving, the ordinary and special resolutions to be considered at the general meeting of ordinary shareholders convened for Thursday, 15 April 2004 at 10:00 (South African time) ("general meeting"). In the event of such resolutions not being approved and registered for any reason whatsoever, the transfer secretaries or the United Kingdom share registrars will, within five business days after either the date upon which it becomes known that the ordinary and special resolutions have not been approved and registered or after receipt of the surrendered documents of title, whichever is the later return, by registered mail or first class post for the United Kingdom registered shareholders, the documents of title to the ordinary shareholders concerned, at their risk.**
3. **Part B must be completed by all emigrants from and non-residents of the common monetary area, comprising the Republics of South Africa and Namibia and the Kingdoms of Lesotho and Swaziland ("common monetary area"), who are recorded in the Avmin South African share register and who have not yet dematerialised their documents of title.**
4. **A separate form of surrender is required for each ordinary shareholder.**

Notes:

1. Persons who have acquired shares in Avmin after the date of posting of the circular to which this form of surrender is attached and of which it forms part, can obtain copies of the form of surrender and the circular from Computershare Limited, 70 Marshall Street, Johannesburg, 2001 (PO Box 61051, Marshalltown, 2107 South Africa) or the United Kingdom share registrars, Capita Registrars, The Registry, 34 Beckenham Road, Beckenham, Kent, BR3 4TU, United Kingdom.
2. New share certificates will not be sent or transferred to ordinary shareholders unless and until this form of surrender and the documents of title in respect of the relevant ordinary shares have been surrendered to the transfer secretaries.

PART A – All Avmin certificated shareholders who return this form must complete Part A of this form of surrender.

Surname or Name of corporate body

First names (in full)

Title (Mr, Mrs, Miss, Ms, etc.)

Postal address to which new share certificates should be sent (if different from the address recorded in the register)

Postal code

Telephone number, including area code

In terms of the circular to which this form is attached and of which it forms part, I/we surrender and enclose the undermentioned documents of title to Avmin shares, conditional upon the proposals being passed at the general meeting of shareholders to be held on 15 April 2004.

Documents of title

Certificate number(s)	Number of Avmin ordinary shares covered by each certificate
Total	

PART B – To be completed by all emigrants from and non-residents of the common monetary area who are recorded on the South African register (see note 2 below).

Nominated authorised dealer in the case of a shareholder who is an emigrant from or non-resident of the common monetary area:

Name of authorised dealer

Address

Account number

Signature of Avmin shareholder	Stamp and address of agent lodging this form (if any)
Assisted by me if applicable	
(State full name and capacity)	
Date 2004	
Telephone number (Home) ( )	
Telephone number (Work) ( )	

General notes:

1. No receipts will be issued for documents of title lodged, unless specifically requested. In compliance with the requirements of the JSE Securities Exchange, South Africa ("JSE"), lodging agents will be requested to prepare special transaction receipts, if required. Signatories may be called upon for evidence of their authority or capacity to sign this form.
2. Shareholders who are emigrants from or non-residents of the common monetary area, whose addresses recorded in the South African register as outside the common monetary area and whose documents of title have been restrictively endorsed under the South African Exchange Control Regulations should nominate an authorised dealer in Part B of this form of surrender as required in terms of the circular to which this form of surrender is attached and of which it forms part. Failing such nomination, any certificate due to such a shareholder will be retained in trust by the transfer secretaries pending instructions from the shareholder concerned. The Avmin shareholder concerned shall be responsible for any costs associated with the operation of such trust account.
3. Non-resident shareholders whose documents of title have not been restrictively endorsed should submit said document to the transfer secretaries or United Kingdom share registrars on whose register their names are recorded as shareholders.
4. Any alteration to this form of surrender must be signed in full and not initialled.
5. If this form of surrender is signed under a power of attorney, then such power of attorney (or a notarially certified copy thereof) must be sent with this form for noting (unless it has already been noted by Avmin).
6. Where the shareholder is a company or a close corporation, unless it has already been registered with Avmin or the transfer secretaries, a certified copy of the directors' or members' resolution authorising the signing of this form of surrender must be submitted if so requested by Avmin.
7. Note 5 above does not apply in the event of this form bearing the stamp of a broking member of the JSE.
8. Where there are joint holders of any Avmin ordinary shares, only that holder whose name stands first in the register in respect of such Avmin shares need sign this form of surrender.

African Rainbow Minerals Limited

(formerly "Anglovaal Mining Limited")
(Incorporated in the Republic of South Africa)
(Registration number 1933/004580/06)
Share code: ARI
ISIN: ZAE0000540045
("ARM" or "the Company")

REVISED LISTING PARTICULARS

Issued in terms of the Listings Requirements of the JSE Securities Exchange, South Africa

The Company will henceforth be referred to as African Rainbow Minerals Limited ("ARM").

These revised listing particulars have been prepared on the assumption that the ordinary and special resolutions proposed in the notice of general meeting of ARM shareholders in the accompanying circular to ARM shareholders, to which these revised listing particulars are attached, will be duly passed at the general meeting of ARM shareholders to be held at 10:00 (South African time) on 15 April 2004 at the registered office of ARM, 56 Main Street, Johannesburg, and that the Transaction, the change of name and increase in authorised share capital detailed in the circular have been implemented.

These revised listing particulars are not an invitation to the public to subscribe for shares in ARM but are issued in compliance with the Listings Requirements of the JSE Securities Exchange, South Africa because ARM will, as a result of the Avmin Acquisitions and the Kalplats Acquisition, be allotting and issuing more than 30% of its present issued share capital. ARM has an authorised share capital of 500 000 000 ordinary shares with 204 126 373 ordinary shares in issue.

All of the directors of Avmin, whose names are given in paragraph 22.1 of the accompanying circular, collectively and individually, accept full responsibility for the accuracy of the information given and certify that, to the best of their knowledge and belief, there are no other material facts, the omission of which would make any statement in these revised listing particulars false or misleading and that they have made all reasonable enquiries to ascertain such material facts.

The financial adviser and sponsor, attorneys, technical adviser, reporting accountants, independent adviser and transfer secretaries have consented in writing to act in the capacities stated and to their names being stated in these revised listing particulars and have not withdrawn their consents prior to the publication of these revised listing particulars.

Financial adviser and sponsor

Deutsche Securities
Member of the Deutsche Bank Group

Technical adviser

SRK Consulting
Engineers and Scientists

Steffen, Robertson and Kirsten (South Africa) (Pty) Ltd
(Registration number 1995/012890/07)

Attorneys

DENEYS REITZ
ATTORNEYS

Deneys Reitz Inc.
1984/003385/21

Reporting accountants to Avmin

ERNST & YOUNG

Date of issue: 23 March 2004

CORPORATE INFORMATION

For details of ARM's address and incorporation, the company secretary, names and addresses of the financial adviser and sponsor, attorneys, independent adviser, technical adviser, reporting accountants and transfer secretaries refer to the inside front cover of the accompanying circular.

DEFINITIONS

The definitions commencing on page 5 of the accompanying circular also apply to these revised listing particulars and the appendices hereto. References to "Avmin" and "Anglovaal Mining Limited" in the accompanying circular should be read as being references to "ARM" and "African Rainbow Minerals Limited," respectively, in these revised listing particulars.

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African Rainbow Minerals Limited

(formerly "Anglovaal Mining Limited")
(Incorporated in the Republic of South Africa)
(Registration number 1933/004580/06)
Share code: ARI
ISIN: ZAE000054045

REVISED LISTING PARTICULARS

1. INCORPORATION, HISTORY AND NATURE OF BUSINESS

ARM was incorporated in South Africa on 1 June 1933 as Anglo-Transvaal Consolidated Investment Company Limited. It listed on the JSE on 22 August 1933 and on the LSE on 17 January 1947. It ultimately changed its name to Anglovaal Mining Limited on 2 December 1998.

The business of ARM and its subsidiaries and associates is to explore, develop, operate and hold interests in the mining and minerals industry. The operational focus is in the following areas: gold, ferrous metals, nickel and PGMs.

Gold

ARM's gold assets will comprise an approximately 22,0% shareholding in Harmony, which, in turn, will have a 53,6% shareholding in Avgold (pre any scheme of arrangement proposed by Harmony between Avgold and the Avgold minority shareholders) which operates the Target gold mine in the Free State province. This consolidates Harmony's position as the fifth largest gold producer globally with 4,3 million ounces of production per annum and with approximately 470 million resource ounces. Harmony has an internationally diversified portfolio of gold mining projects in South Africa, Australia and Papua New Guinea. The bulk of its assets are located in the Witwatersrand basin of South Africa. The deep level gold mines located in this basin include those in the Free State province, the Evander gold mine in Mpumalanga province, the Randfontein and Elandskraal mines of the West Rand gold fields in Gauteng province and the Orkney operations in the North West province. A scheme of arrangement is to be proposed by Harmony to acquire the balance of the issued shares in Avgold (held by the Avgold minority shareholders).

Harmony's international operations are held under Harmony Gold (Australia) (Proprietary) Limited and comprise the wholly-owned New Hampton Goldfields Limited and the Hill 50 Limited assets, a 31,8% interest in the Bendigo Mining NL operation and an 87,0% shareholding in Abelle Limited.

Ferrous metals

Assmang, 50,3% owned by ARM, operates in three divisions – manganese, iron ore and chrome. Its manganese ore and iron ore mining operations, Nchwaning and Beeshoek, respectively, are located in the Northern Cape province. Manganese alloys are produced at the smelting and refining facilities, Cato Ridge works, in KwaZulu-Natal province. Chrome ore is mined at the Dwarsrivier mine in Mpumalanga and chrome alloys are produced at the nearby Machadodorp works.

Platinum Group Metals

The ARM PGM portfolio comprises assets that have the potential to achieve significant attributable production levels in future years. This includes the 41,5% effective interest in the Modikwa Joint Venture and a 55,0% interest in Two Rivers. Both these PGM interests are situated on the eastern limb of the Bushveld Complex in the Steelpoort area of the Mpumalanga province. ARM also owns the Kalplats platinum discovery and associated mineral rights in the North West province. Also forming part of ARM's PGM portfolio is 100,0% of Nkomati mine in the Machadodorp area of the Mpumalanga province, which produces significant PGM by-products and is considering undertaking an expansion project.

Other assets and activities

AvAlloys, a division of ARM, is currently in the project-building phase and will shortly produce nickel-based superalloys for use in a variety of high-performance applications. The new plant, to be commissioned at an estimated cost of R110 million, is located at Pelindaba between Johannesburg and Pretoria. AvAlloys has secured a strategic alliance with a major aerospace engine manufacturer.

ARM's geological exploration strategy focuses on opportunities that will progress to the development phase within the next five years. Work continues in order to identify opportunities that are in keeping with a proven track record of successfully developing modern operations. ARM is active in Namibia where a new gold discovery has been made at Otjikoto. ARM is also exploring, mainly for base metals and zinc, in the Republic of Zambia. ARM's business development team in Zambia has also secured attractive exploration positions in the Democratic Republic of the Congo. Discussions are underway to assess various strategic possibilities regarding the ARM Group's current and future exploration activities.

2. PROSPECTS FOR THE NEW GROUP

ARM's empowerment credentials and substantial balance sheet will enable the Company to exploit opportunities arising from the rapid changes currently underway in the South African mining industry. ARM will use the Company's South African assets as a platform to build a competitive diversified African mining company.

ARM has assets with strong operating efficiencies, including low-cost and high margin operations in key commodity sectors. Harmony is the fifth largest gold producer in the world. Assmang is a leading player in the manganese market and has significant iron ore assets, Nkomati mine is South Africa's only primary nickel producer, Two Rivers, Modikwa and Kalplats together represent significant opportunities in PGMs. ARM has a focus on downstream beneficiation in manganese and chrome alloys and nickel-based superalloys, as well as gold refining through its interest in Harmony.

Ultimately, the success of ARM depends on the Company's ability to deliver shareholder value. To this end, the board will ensure that the Company is managed in accordance with international best practice. This includes contributing to the economic development, social well-being and environmental protection of the areas where the Company operates.

3. INFORMATION ON DIRECTORS

3.1 Directors

The full names, nationalities, current functions and addresses of the directors of ARM are set out in paragraph 22.1 of the accompanying circular and details of the new board appointees is set out below. Pursuant to the Transaction, Patrice Motsepe has been appointed chairman and Rick Menell has been appointed deputy chairman of the board and the board of directors have been reconstituted as appropriate.

Further details on the directors of ARM are as follows:

All members of the board of directors are South African.

Executive director

Patrice Tlhopane Motsepe *(42), Chairman and interim chief executive officer (BA (Legal), LLB)*

Appointed to the board in 2003.

Founder and former executive chairman of ARMgold, which merged with Harmony in 2003, Patrice is now Harmony's non-executive chairman. In 2002 he was voted South Africa's Entrepreneur of the year. In the same year, he was voted by the chief executive officer's of the top 100 companies in South Africa as South Africa's Business Leader of the year. Patrice was a partner specialising in mining and business law at Bowman Gilfillan Inc, a leading South African law firm. In 1994, he founded Future Mining (Proprietary) Limited which grew rapidly to become a competitive contract mining company. In 1997 he founded African Rainbow Minerals (Proprietary) Limited which, as ARMgold, was successfully listed on the JSE in 2002. In 2001, he founded ARM Platinum and ARM Consortium which entered into a 50/50 joint venture with Anglo American Platinum Corporation Limited for the establishment of a new platinum mine. He is currently the president of the first non-racial, united business organisation in South Africa, namely Business Unity South Africa (BUSA), which is the "voice of business" in South Africa, as well as president of the first non-racial, united organisation representing the various chambers of commerce and industry in South Africa, namely Chambers of Commerce and Industry South Africa (CHAMSA).

Non-executive directors

Richard Peter Menell *(48), Deputy chairman (MA, MSc)*

Appointed to the board in 1994, elected chief executive officer in 1999 and became chairman during 2002. He has relinquished his role as executive chairman to become non-executive deputy chairman working with ARM.

Trained as a geologist, Rick has been a merchant banker with JP Morgan in NewYork and Melbourne. He also worked as an executive director of Delta Gold in Australia. He joined the Company in February 1992 as assistant financial manager, mines. He was later appointed manager, finance and administration (mines) and then general manager, corporate services. Appointed managing director of Avmin Limited in 1996, he became chief executive officer in 1999 and executive chairman in 2002. In 1999 he was elected president of The Chamber of Mines of South Africa in which role he served for two years. He is also chairman of The South African Tourism Board, a director of The Standard Bank Group Limited, Telkom Limited and Mutual & Federal Insurance Company Limited and a trustee of the National Business Trust.

Frank Abbott *(48), (BCom, CA(SA), MBL)*

Address: Randfontein Office Park, Corner Main Reef Road and Ward Avenue, Randfontein.

Appointed to the board in 2004.

Frank Abbott joined the Rand Mines/Barlow Rand group in 1981, where he obtained broad financial management experience at operational level. He was appointed as financial controller to the newly formed Randgold in 1992 and was promoted to financial director of that group in October 1994. Until 1997, he was also a director of the gold mining companies Blyvooruitzicht, Buffelsfontein, Durban Roodepoort Deep and East Rand Property Mines and a non-executive director of Harmony, culminating in his appointment as financial director of Harmony in the same year.

Zacharias Bernardus Swanepoel *(42), (BSc (Min Eng), BCom (Hons))*

Appointed to the board in 2003.

Bernard Swanepoel has led the team responsible for Harmony's transformation from a lease bound, ailing mining operation to a growth company. He started his career in gold mining at Grootvlei mine in 1983 and subsequently worked at various Gengold Limited operations, culminating in his appointment as a director of Beatrix Mines Limited in 1993. He joined Randgold and Exploration Company Limited in 1995 as managing director of Harmony and has been the driving force in making Harmony the fifth largest independent gold producer in the world.

Independent non-executive directors

Dr Mmapussiso Manana Maabiele Mary Bakane-Tuoane *(55), (PhD, BA, MA)*

Address: 8 Killarney Avenue, Mafikeng.

Appointed to the board in 2004.

Dr Bakane-Tuoane has extensive experience in the economic disciplines as lecturer and professor at the University of Fort Hare, Eastern Cape. She has held various senior management positions in the public service and currently holds the post of director general in the North-West Provincial Government. Dr Bakane-Tuoane was appointed to the Advisory board of the African Economic Research Consortium, Nairobi, Kenya, in 2000.

Michael Wallace King *(66), (CA(SA), FCA)*

Address: 21 Killarney Road, Sandton.

Appointed to the board in 2004.

Michael King served articles with Deloitte, Plender, Griffiths, Annan & Co. (now Deloitte) and qualified as a Chartered Accountant (SA). He later became a Fellow of The Institute of Chartered Accountants in England and Wales (FCA). He joined Anglo American Corporation of South Africa as a manager in the finance division. In 1979, he became director of Anglo American Corporation and in 1980 an executive director and head of its finance division. In 1997, he was appointed executive deputy chairman of Anglo American Corporation. He was the executive vice-chairman of Anglo American plc, appointed in May 1999, until his retirement in May 2001.

Alexander Komape Maditsi *(42), (B.Proc, LLB, LLM)*
Address: 9 Junction Avenue, Parktown.

Appointed to the board in 2004.

Alex Maditsi is employed by the Coca-Cola Company as a legal director. He is also chairman of the Coca-Cola Canners of Southern Africa (Proprietary) Limited and a director of Waveside (Proprietary) Limited and Coca-Cola Southern and East Africa (Proprietary) Limited. Prior to his joining Coca-Cola, Mr Maditsi was the legal director for Global Business Connections in Detroit, Michigan, USA and also spent time at The Ford Motor Company in the USA, practising as an attorney. He is a Fullbright Scholar and a Member of the Harvard LLM Association.

***Peter Johannes Manda** (46) (BJuris, LLB, LLM)*

Address: 2D Spa Street, Buccleuch, Johannesburg.

Appointed to the board in 2004.

Peter Manda is currently the chief executive officer of the Diplomacy, Intelligence, Defence and Trade Education and Training Authority. Prior to this Mr Manda was a director of the National Paralegal Institute and Dean of the Faculty of Law at the University of the North West.

***James Roy McAlpine** (62) (BSc, CA (Scotland))*

Appointed to the board in 1998.

Roy McAlpine joined Liberty Life in 1969 and retired as an executive director in 1998 in order to diversify his interests. He is a former chairman of the Association of Unit Trusts of South Africa and currently serves on the boards of a number of listed companies.

***Dr Patrick Sibusiso Sibisi** (48) (BSc (Hons), PhD)*

Address: The House, CSIR, Meiring Naude Road, Pretoria.

Appointed to the board in 2004.

Dr Sibusiso's working career commenced in 1983 in the software development industry with MEDC Limited, Cambridge, England. His career developed to that of Systems Engineer at IBM (SA), lecturer and senior lecturer (Wits) and deputy vice-chancellor for research (University of Cape Town). He spent 1988 as a Fullbright Fellow at the California Institute of Technology where he collaborated with eminent researchers in computerised chemistry and the development of associated medical diagnosis tools. In 1989, he accepted a research position at Cambridge where he consolidated his academic research in mathematical modelling and computational simulations to environmental, geophysical and technical problems to develop solutions. This evolved to the formation of a start-up company dedicated to providing consulting services to Glaxo Welcome, Fisons, Shell and Mobil. He entered the corporate world in 1997 as executive director of Plessey (SA). As chairperson of the National Advisory Council on Innovations, he is involved in making recommendations on research and innovation policy to the Government.

***Dr Rejoice Vakashile Simelane** (51), (BCom, MCom, PhD)*

Address: 9 Willow Run Road, Centurion.

Appointed to the board in 2004.

Dr Simelane's career commenced as a lecturer at the University of Swaziland where she lectured from 1978 to 1997. She then joined the Department of Trade and Industry as a macro-economist and later joined the National Treasury as a macro-economist before joining the Premier's Office in the Mpumalanga province as an economic adviser.

***Max Vuyisile Sisulu** (58), (MPA, MSc)*

Address: Denel Building, Jochemus Street, Erasmuskloof, Pretoria.

Appointed to the board in 2004.

Max Sisulu is the deputy chief executive officer at Denel, a post he has held since November 1998. From 2001 to 2003 he was the chairperson of the South African Aerospace, Maritime and Defence Industries. He is also a council member of the Human Sciences Council. From 1977 to 1981 Max served as the ANC representative in Hungary. In January 1995 he was elected to the National Executive Committee and National Working Committee of the ANC. From 1986, he helped establish the ANC economics department and was instrumental in developing the ANC's economic policy. In 1990 he spearheaded the drafting of the ANC's first policy statement on the environment. From 1992 to 1993 Mr Sisulu completed a masters degree in public administration at the Kennedy School of Government at Harvard University in the United States. In September 1993 he took up a post of director of the National Institute of Economic Policy until he became a Member of Parliament in 1994.

Management

Patrice Motsepe, as interim chief executive, leads the executive management team of the Group: Jan Steenkamp and André Wilkens have assumed responsibility for ARM's ferrous metals and platinum/nickel divisions, respectively, while Bernard Swanepoel remains the chief executive officer at Harmony. These individuals, together with Frank Abbott, Ferdi Dippenaar and Rick Menell, form ARM's strategic committee, which is responsible for recommending strategy to the ARM board and executing approved strategic plans.

3.2 Appointment and remuneration of directors

Extracts from the articles of association concerning directors are set out in Appendix 1.

In view of the significant change in the composition of the board of directors to that of Avmin, any comparison of the directors' remuneration earned during the year to 30 June 2003 is not appropriate.

Directors' annual fees remain the same namely, R100 000 for the chairman and R60 000 for members and meeting attendance fees of R7 000 and R4 200 per meeting, respectively. Attendance fees pertaining to board committee chairmen range between R10 500 and R7 200 and for committee members R6 500 to R4 400 per meeting.

There is expected to be no increase in the remuneration of any of the existing directors as a consequence of the Transaction.

All the directors have confirmed in terms of Schedule 21 of the JSE Listings Requirements that they have not been:

- disqualified by any court from acting as a director of a company or from acting in the management or conduct of the affairs of any company or been the subject of any public criticisms by statutory or regulatory authorities (including recognised professional bodies);
- convicted of an offence resulting from dishonesty, fraud or embezzlement or any offence under legislation relating to the Act;
- adjudged bankrupt or entered into any voluntary creditors' liquidation or been sequestrated in any jurisdiction or been a director of any company at the time or within the 12 months preceding any of the following events taking place: receiverships, compulsory liquidations, creditors voluntary liquidations, administrations, company voluntary arrangements or any composition or arrangement with creditors generally or any class of creditors; or
- barred from entry into any profession or occupation.

3.3 Directors' interests in ARM shares

3.3.1 *Details of ARM shares held by the directors at 30 June 2003*

Information relating to the direct and indirect beneficial and non-beneficial interests of the directors is set out in paragraph 22.3 of the accompanying circular.

There has been no change in the interests of the directors as set out above, between 30 June 2003 and the last practicable date prior to the finalisation of these listing particulars.

There will be no significant change in the directors' shareholdings in ARM as a result of the Transaction. However, Mr PT Motsepe has the ability (through his influence over the Motsepe family trusts, which own and control all of the shares in ARMI), to vote and exercise the rights attaching to the shares in ARMI which, pursuant to the Transaction:

- acquires a significant shareholding in ARM; and
- subject to the terms and conditions of the ARM Control Structure, acquires the right to vote the further ARM shares held indirectly or directly by Harmony.

Consequently, as a result of the Transaction, he effectively acquires:

- the ability to vote and exercise the rights attaching to a significant number (approximately 43%) of the ARM shares; and
- subject to the terms and conditions of the ARM Control Structure, the right to vote a further significant number (approximately 20%) of the ARM shares.

3.3.2 *Details of the share options held by directors at the last practicable date*

Information relating to the share options held by the directors is set out in paragraph 22.3.2 of the accompanying circular.

3.4 Directors' interests in transactions

None of the directors had any interest, direct or indirect, in any transaction during the current or immediately preceding financial year or in an earlier year which remain in any respect outstanding or unperformed.

4. SHARE CAPITAL AND MAJOR SHAREHOLDERS

4.1 Share issues, consolidation and sub-division of shares

The details of issues and offers of shares by companies in the ARM Group during the three years preceding the date of issue of these revised listing particulars are set out in Appendix 2.

There has been no sub-division or consolidation of shares during the three years preceding the date of issue of these revised listing particulars.

4.2 Authorised and issued share capital

The authorised and issued share capital of ARM, before the last practicable date and after giving effect to the Transaction and the increase in authorised share capital, is set out below:

	R million
Before the Transaction and increase in authorised share capital	
Authorised	
300 000 000 ordinary shares of five cents each	15
Issued	
114 375 956 ordinary shares of five cents each	6
After the Transaction and increase in authorised share capital	
Authorised	
500 000 000 ordinary shares of five cents each	25
Issued	
204 126 373 ordinary shares of five cents each	10

4.3 Rights attaching to shares

All the ARM shares in issue are of the same class and rank *pari passu* with each other and are fully paid. Accordingly, no share has any special right to any dividends, capital or profits of the Company.

In accordance with the Company's articles of association, at any general meeting every member present in person or by proxy (or, if a body corporate, duly represented by an authorised representative) and entitled to vote shall have, on a show of hands, one vote and, on a poll, one vote for every ARM share held.

All or any of the rights and privileges attached to any class of shares, including the voting rights, may be modified or varied by agreement between the Company and any person purporting to contract on behalf of that class, provided that such agreement is either:

- authorised or ratified in writing by the holders of at least three-fourths of the number of issued shares of that class;
- confirmed by resolution passed at a separate general meeting of the holders of the shares of that class, to which the provisions of section 199 of the Act shall apply.

4.4 Dividends

The Company in general meeting or the directors may, from time to time, declare a dividend to be paid to the members in proportion to the number of ARM shares held by them. Dividends shall be declared payable to members registered as such on a date (the record date) which is 15 trading days (or such other number of trading days as may accord from time to time with JSE Listings Requirements) after the date of declaration of the dividend.

Unclaimed dividends may be invested or otherwise made use of by the directors for the benefit of the Company until claimed. Unclaimed amounts due as a result of any acquisition of shares or debentures or from any other cause (excluding unclaimed dividends) shall be held in trust until lawfully claimed. Dividends unclaimed for three years from the due date for payment thereof may be forfeited for the benefit of the Company.

The current policy adopted by the directors is to declare a single dividend annually with at least four times earnings cover. No dividend was declared for the financial year ended 30 June 2003.

4.5 Major shareholders

The major shareholders of ARM at the last practicable date prior to the finalisation of these revised listing particulars, are detailed in paragraph 20 of the accompanying circular. Pursuant to the Transaction, in terms of the ARM voting agreement, ARMI will control approximately 63,0% of the voting rights of ARM.

4.6 ARM share price history

A table setting out the price history of ARM shares on the JSE has been included in Annexure 16 to the accompanying circular.

5. FINANCIAL INFORMATION

5.1 Financial information relating to ARM

5.1.1 The following publicly available financial information on ARM is set out in Appendix 3:

- audited income statements, cash flow statements and statements of changes in equity for the three financial years ended 30 June 2001, 2002 and 2003;
- audited balance sheets at 30 June 2001, 2002 and 2003;
- accounting policies; and
- notes to financial statements.

5.1.2 A competent person's report on the mining assets of ARM is set out in Appendix 4.

5.1.3 The pro forma financial statements of ARM are set out in Annexure 13 to the accompanying circular.

5.1.4 A reporting accountants' report on the pro forma financial statements and effects of ARM is set out in Annexure 14 to the accompanying circular.

5.2 Material changes

A trading update and cautionary announcement was released on 27 November 2003.

5.3 Adequacy of working capital

The directors are of the opinion that the working capital available to the ARM Group, as reconstituted by the Transaction, is sufficient for its present requirements, that is for 12 months from the date of issue of these revised listing particulars.

5.4 Borrowings and material loans

The borrowing powers of ARM exercisable by the directors of ARM are set out in Appendix 1.

The borrowing powers of ARM have not been exceeded in the last three years.

The Company has entered into loans agreements with ABSA Bank Limited and FirstRand Bank Limited to fund the development of a plant at AvAlloys and the acquisition of Anglo Operations Limited's 25,0% interest in a joint venture in respect of the Nkomati nickel mine thereby securing a 100,0% interest in the mine. The respective amounts borrowed were R120 million and R260 million. Annexure 5 to the accompanying circular sets out the detail of the loans to ARM Platinum. In terms of the Avmin acquisitions agreement, the Company has also assumed ARMI's liability to repay a R40 million bridging loan to Nedbank Limited through its Capital Markets division.

The Company has no other borrowings at present.

5.5 Material inter-company finance

Once the transaction has been implemented, the ARM Consortium Debt will be owed to the Company. These loans are unsecured and comprise three components. At 31 December 2003 there was an interest free portion amounting to R501 666 646. The second component comprises a loan amounting to R7 551 757 which carries interest at a floating rate linked to prime. At 31 December 2003 this rate was 7,0% nominal annual compounded and capitalised monthly in arrears. The third component comprises a loan of R40 000 000 which carries interest at a floating rate linked to JIBAR, plus 2,0%. At 31 December 2003 this rate was 10,189%, nominal annual compounded and capitalised monthly in arrears. There are no fixed terms for the repayment of any of the above loans.

5.6 Contingent liabilities and capital commitments

Details of contingent liabilities and capital commitments of the ARM Group are reflected in Appendix 6.

5.7 Material loans by the ARM Group

Save for the inter-company finance, there are no material loans made by the ARM Group at the date of issue of these revised listing particulars.

6. GENERAL

6.1 Acquisitions and disposals of property

Details of the acquisitions and disposals of companies, businesses and properties by ARM over the past three years are set out in Appendix 7.

6.2 Information on subsidiaries

The names, dates, places of incorporation and registration numbers and the issued or stated capital of ARM's subsidiaries are reflected in Appendix 8.

6.3 Principal immovable property owned or leased

Details of the ARM Group's principal immovable properties owned or leased are set out in Appendix 9.

6.4 Material contracts

Save for the Chambishi Metals plc sale agreement, the previous Avgold sale agreement the Nkomati nickel mine acquisition agreement, the Avgold share exchange agreement, the Avmin acquisitions agreement and the Kalplats acquisition agreement, ARM has not entered into any contract, other than in the ordinary course of business, within the two years immediately preceding the date of issue of these revised listing particulars, which is or may be material to ARM. In addition, ARM has not entered into any contract which contains provisions, in terms of which there are any obligations or entitlements, which are material to ARM. Further details of the Group's acquisitions and disposals during the last three years are reflected in Appendix 7.

The ARM Group is not subject to any management or royalty agreements, other than the Chambishi Metals plc sale agreement referred to above.

6.5 Litigation

Save as set out below, there are no legal or arbitration proceedings that are pending or threatened of which ARM is aware which may have, or have had during the 12-month period preceding the date of issue of these revised listing particulars, a material effect on the financial position of the ARM Group.

ARM has a contingent liability for the amount of tax relating to the Anglovaal Limited loan stock redemption premium that the South African Revenue Service disallowed in 1998. The potential 1998 liability for tax is R107 million plus interest and penalties. This matter is currently on appeal.

ARM has the right to direct the conduct of a claim which Chambishi Metals plc ("Chambishi") has against Bateman Projects Limited and/or certain of its subsidiaries ("Bateman") based on breach/es of the contract/s entered into between Bateman and Chambishi for the design, erection and construction of a certain furnace plant at Chambishi, Zambia. ARM is solely responsible for the conduct of such proceedings and has indemnified Chambishi against any costs or damage which Chambishi may sustain by reason of the conduct of such proceedings and/or any awards or orders made against Chambishi pursuant thereto. Chambishi is obliged to account for and pay to ARM any awards or orders made in favour of Chambishi, pursuant to such proceedings. This matter is currently the subject of arbitration proceedings.

6.6 Corporate Governance

The directors of ARM will continue to implement, apply and comply with all the principles of good corporate governance as contained in the King Report on Corporate Governance in South Africa 2002 and the JSE Listings Requirements guidelines. The board of directors of ARM will maintain a sound system of internal control to safeguard shareholders' interests and the Company's and the ARM Group's assets. ARM and its directors are fully committed to good corporate governance and to the principles of openness, integrity and accountability in dealing with shareholders and other stakeholders.

Details of ARM's Corporate Governance commitments are set out in Appendix 10.

6.7 Consents

The financial adviser and sponsor, transfer secretaries, the reporting accountants, attorneys, the technical adviser and independent adviser have consented in writing to act in the capacities stated and to their names appearing in these revised listing particulars and have not withdrawn their consents prior to the publication of these revised listing particulars.

The reporting accountants and the technical adviser have consented in writing and have not withdrawn their consents to the issue of these revised listing particulars, with their reports in the form and context in which they are included.

6.8 Directors' responsibility statement

The directors whose names appear in paragraph 22.1 of the accompanying circular, collectively and individually, accept full responsibility for the accuracy of the information given, insofar as it relates to ARM, and certify that to the best of their knowledge and belief there are no other facts the omission of which would make any statement in these revised listing particulars false or misleading and that they have made all reasonable enquiries to ascertain such facts.

6.9 Documents available for inspection

Details on the documents available for inspection are set out in paragraph 31 of the accompanying circular.

By order of the board

R H Phillips
Group Company Secretary

Johannesburg
23 March 2004

EXTRACTS FROM THE ARTICLES OF ASSOCIATION RELATING TO THE DIRECTORS OF ARM

APPOINTMENT, QUALIFICATION, REMUNERATION OF DIRECTORS AND BORROWING POWERS OF THE COMPANY AS THEY MAY BE EXERCISED BY THE DIRECTORS

REMUNERATION

66. (b) The directors shall be entitled to such remuneration as a director of the Company by ordinary resolution in general meeting may from time to time determine, except that any director holding office for less than a year shall only be entitled to such remuneration in proportion to the period during which he has held office during the year.

67. Any director who serves on any executive or other committee or who devotes special attention to the business of the Company or who goes or resides outside South Africa for any purposes of the Company, or who otherwise performs services which, in the opinion of the directors, are outside the scope of the ordinary duties of a director, may be paid such extra remuneration, in addition to the remuneration to which he may be entitled as a director, as the directors may determine. The directors shall also be paid all their travelling and other expenses properly and necessarily expended by them in and about the business of the Company and in attending meetings of the directors or of committees of the directors or of the Company.

69. A director may hold any other office or position, including any executive office or position under Article 89, with the Company (except that of auditor) in conjunction with his office of director for such period and on such remuneration terms (in addition to the remuneration to which he may be entitled as a director) and otherwise as a disinterested quorum of the directors may determine.

70. A director of the Company may be or become a director or other officer of, or otherwise interested in, any company promoted by the Company or in which the Company may be interested as shareholder or otherwise and (except insofar as otherwise decided by the directors), he shall not be accountable for any remuneration or other benefits received by him as a director or officer of or from his interest in such other company.

71. Any director may act by himself or through his firm in a professional capacity for the Company (otherwise than as auditor) and he or his firm shall be entitled to remuneration for professional services as if he were not a director.

DISCLOSURE OF INTERESTS

72. A director who is in any way whether directly or indirectly interested in a contract or arrangement or proposed contract or arrangement with the Company, shall declare the nature of his interest in accordance with sections 234, 235, 237 and 238 of the Act.

73. Subject to Article 74, no director or intending director shall be disqualified by his office from contracting with the Company either with regard to his tenure of any other office under or position with the Company or in any company promoted by the Company or in which the Company is interested or in respect of professional services rendered or to be rendered by such director or as vendor, purchaser or in any other manner whatever, nor shall any such contract or arrangement entered into by or on behalf of the Company in which any director is in any way interested be liable to be avoided, nor shall any director so contracting or being so interested be liable to account to the Company for any profit realised by any such appointment, contract or arrangement by reason of such director holding the office or of the fiduciary relationship thereby established.

74. (a) A director shall not vote nor be counted in the quorum and if he shall do so his vote shall not be counted on any resolution for his own appointment to any other office under or position with the Company or in respect of any contract or arrangement in which he is interested, but this prohibition shall not apply to:

    (i) any arrangement for giving to any director any security or indemnity in respect of money lent by him to or obligations undertaken by him for the benefit of the Company, or

    (ii) any arrangement for the giving by the Company of any security to a third party in respect of a debt or obligation of the Company which the director has himself guaranteed or secured; or

    (iii) any contract by a director to subscribe for or underwrite shares or debentures of the Company; or

(iv) any contract or arrangement with a company in which he is interested by reason only of being a director, officer, creditor or member of such company,

provided that these prohibitions may at any time be suspended or relaxed to any extent either generally, or in respect of any particular contract or arrangement, by the Company in general meeting.

(b) Where proposals are under consideration concerning the appointment (including fixing or varying the terms of appointment) of two or more directors to offices or employments with the Company or any company in which the Company is interested, such proposals may be divided and considered in relation to each director separately and in such cases each of the directors concerned shall be entitled to vote (and be counted in the quorum) in respect of each resolution except that concerning his own appointment.

(c) If any question shall arise at any meeting as to the entitlement of any directors to vote and such question is not resolved by his voluntarily agreeing to abstain from voting, such question shall be referred to the chairman of the meeting and his ruling in relation to any other director shall be final and conclusive, except in a case where the nature or extent of the interests of the director concerned have not been fairly disclosed.

RETIREMENT OF DIRECTORS IN ROTATION AND APPOINTMENT OF DIRECTORS

77. Subject to Article 90 at every Annual General Meeting one-third of the directors for the time being or if their number is not a multiple of three, then the number nearest to but not less than one-third shall retire from office. The directors so to retire at every Annual General Meeting shall be those who have been longest in office since their last election, but as between persons who become or were last elected directors on the same day, those to retire shall (unless they otherwise agree among themselves) be determined by lot; provided that, notwithstanding anything herein contained, if at the date of any Annual General Meeting any director shall have held office for a period of three years since his last election or appointment, he shall retire at such meeting either as one of the directors to retire in pursuance of the aforegoing or additionally thereto. The length of time a director has been in office shall be computed from his last election, appointment or date upon which he was deemed re-elected. A director retiring at a meeting shall retain office until the close or adjournment of the meeting.

78. Retiring directors shall be eligible for re-election but no person, other than a director retiring at the meeting, shall, unless recommended by the directors, be eligible for election to the office of a director at any General Meeting unless not more than thirteen but at least six clear days before the day appointed for the meeting, there shall have been left at the office or any branch or other office outside South Africa, a notice in writing by some member duly qualified to be present and vote at the meeting for which such notice is given of his intention to propose such person for election and also notice in writing signed by the person to be proposed of his willingness to be elected (so that the period of days shall not include the day on which the notices are left at the office or the day appointed for the meeting). In this article reference to notice in writing shall include the use of electronic communication, subject to any terms and conditions decided on by the directors.

79. Subject to Article 78, the Company at the meeting at which a director retires in manner aforesaid, may fill the vacated office by electing a person thereto and in default the retiring director, if willing to continue to act, shall be deemed to have been re-elected, unless at such meeting it is expressly resolved not to fill such vacated office, or unless a resolution for the re-election of such director shall have been put to the meeting and lost.

80. The Company may in general meeting (but subject to the provisions of Article 78) elect any person to be a director, either to fill a casual vacancy or as an additional director, but so that the total number of directors shall not exceed at any time any maximum number fixed in accordance with these articles. The Company in general meeting may also from time to time increase or reduce the number of directors and may also determine in what rotation such increased or reduced number is to go out of office.

81. The validity of the appointment of any director shall not be affected by a failure to comply with section 211(3) of the Act.

EXECUTIVE DIRECTORS

89. The directors may from time to time appoint one or more of their body to be Chief Executive Officer, Chief Operating Officer, Executive Director (with or without specific designation) Senior Vice President, Vice President or General Manager of the Company or to other executive office with the Company as the directors shall think fit, and may from time to time remove or dismiss him or them from office and appoint another or others in his or their place or places.

90. Subject to any provisions either in these articles or in the contract under which he is appointed any director appointed to any position or executive office pursuant to Article 89 shall not, while he continues to hold that position or office under a contract for a term of years (which provides for him to be exempted from retirement by rotation during such term of years) be subject to retirement by rotation during the currency of such contract and he shall not, in such case, be taken into account in determining the rotation of retirement of directors but he shall be subject to the same removal terms as the other directors of the Company and, if he ceases to hold office as director, his appointment to such position or executive office shall *ipso facto* and immediately be terminated but without prejudice to any claims or damages which may accrue under any such contract in respect of such termination: Provided that the directors shall not appoint any director to any position or executive office under a contract as aforesaid which provides for him to be so exempted, if at the time of such appointment under such contract the effect of such exemption would be to cause one-half or more of the directors to be exempt from retirement by rotation.

91. The directors may from time to time entrust to and confer upon a director appointed to any position or executive office under Article 89 such of the powers exercisable under these articles by the directors as they think fit, and may confer such powers for such time, and to be exercised for such objects and purposes and upon such terms and conditions and with such restrictions, as they think expedient, and they may confer such powers either collaterally with or to the exclusion of and in substitution for all or any of the powers of the directors in that behalf, and may from time to time revoke, withdraw, alter or vary all or any of such powers.

FILLING OF CASUAL VACANCY OR ADDING TO EXISTING BOARD POWERS

84. Without prejudice to the powers of the Company in general meeting in pursuance of any of the provisions of these articles to appoint any person to be a director, the directors shall have power at any time and from time to time to appoint any person to be a director, either to fill a casual vacancy or as an addition to the existing board, but so that the total number of directors shall not at any time exceed any maximum number fixed by or in accordance with these articles. Any director so appointed shall hold office only until the next following Annual General Meeting and shall then be eligible for re-election but shall not be taken into account in determining the directors who are to retire by rotation at such meeting.

BORROWING POWERS

85. (a) The Company may create and issue secured or unsecured debentures and subject to the listings requirements of any Stock Exchange on which the shares of any holding company of the Company are listed or quoted and to any regulations from time to time made by the Company in general meeting, the directors may raise or borrow from time to time for the purposes of the Company or secure the payment of such sums as they think fit and may secure the repayment or payment of any such sums by bond, mortgage or charge upon all or any of the property or assets of the Company or by the issue of debentures or otherwise as they may think fit, and may make such regulations regarding the transfer of debentures, the issuing of certificates therefor (subject always to Article 13) and all such other matters incidental to debentures as they may think fit, Provided that no special privileges as to allotment of shares in the Company, attending and voting at general meetings, appointment of directors or otherwise, shall be given to the holders of debentures of the Company, save with the sanction of the Company in general meeting.

(b) The Company may issue guarantees in order to secure obligations and loans, including but not limited to loans to subsidiaries.

ISSUE OF SHARES

No offer has been made for the subscription of ordinary shares during the three years preceding the last practicable date, other than those allotted and issued in accordance with the authority granted by shareholders in respect of the Anglovaal Mining Share Incentive Scheme (the "Scheme") and the compulsory conversion of convertible preference shares:

Year ended	To whom issued	Shares allotted	Average price (cents)
30 June 2001	Participants of the Scheme	1 008 149	89
	Compulsory conversion preference shares*	1 486 674	295
30 June 2002	Participants of the Scheme	1 338 834	449
30 June 2003	Participants of the Scheme	1 158 328	1 512
27 February 2004 (8 months ended)	Participants of the Scheme	1 773 976	2 922

* Compulsory convertible preference shares (Preference Shares).

The conversion of 646 380 preference shares, with a nominal value of 678 cents each, occurred on 30 June 2001 in the ratio of 1:2,3 ordinary shares.

HISTORICAL FINANCIAL INFORMATION OF ARM

1. BALANCE SHEETS

At 30 June	Notes	2003 R'm	2002 R'm	2001 R'm
ASSETS				
Non-current assets				
Tangible assets	2	**4 786**	5 686	5 987
Intangible assets	2	**6**	7	9
Deferred tax assets	10	**12**	38	47
Environmental rehabilitation trust funds	3	**45**	64	59
Investments	4	**215**	176	1 186
		5 064	5 971	7 288
Current assets				
Inventories	6	**896**	976	722
Trade and other receivables		**936**	1 060	664
Deposits and cash		**265**	779	439
		2 097	2 815	1 825
Total assets		**7 161**	8 786	9 113
EQUITY AND LIABILITIES				
Capital and reserves				
Ordinary share capital	7	**6**	6	6
Share premium	7	**79**	62	56
Reserves		**218**	110	679
Retained earnings		**2 208**	2 401	3 267
Shareholders' interest in capital and in reserves		**2 511**	2 579	4 008
Minority interest	8	**2 451**	2 012	1 483
Total shareholders' interest		**4 962**	4 591	5 491
Non-current liabilities				
Long-term borrowings	9	**–**	1 181	921
Deferred tax liabilities	10	**519**	493	360
Long-term provisions	11	**153**	215	196
Non-hedge derivatives	12	**103**	–	–
		775	1 889	1 477
Current liabilities				
Trade and other payables	13	**521**	637	387
Provisions	14	**39**	62	116
Taxation		**42**	45	77
Derivative instruments		**–**	47	11
Overdrafts and short-term borrowings	15	**822**	1 515	1 554
		1 424	2 306	2 145
Total equity and liabilities		**7 161**	8 786	9 113

2. INCOME STATEMENTS

For the years ended 30 June	Notes	2003 R'm	2002 R'm	2001 R'm
Revenue	16	**4 896**	4 047	2 806
Cost of sales		**(3 882)**	(2 985)	(2 083)
Gross profit		**1 014**	1 062	723
Other operating income		**424**	215	211
Other operating expenses		**(814)**	(478)	(338)
Unrealised non-hedge derivatives		**(103)**	–	–
Profit from operations	17	**521**	799	596
Income from investments	18	**83**	55	108
Finance costs		**(180)**	(160)	(132)
Profit before taxation and exceptional items		**424**	694	572
Exceptional items	19	**(388)**	(1 084)	–
– Loss on disposal of discontinued operations		**(649)**	–	–
– Other exceptional items		**261**	(1 084)	–
Profit/(Loss) before taxation		**36**	(390)	572
Taxation	21	**(147)**	(313)	(167)
Loss after taxation		**(111)**	(703)	405
Minority interest		**(80)**	(163)	(124)
(Loss)/Earnings		**(191)**	(866)	281
Additional information				
Headline earnings before unrealised non-hedge derivatives	22	**241**	204	281
Headline earnings per share before unrealised non-hedge derivatives (cents)		**215**	184	259
Headline earnings	22	**197**	204	281
Headline earnings per share (cents)	23	**176**	184	259
Basic attributable (loss)/earnings per share (cents)	23	**(170)**	(780)	259
Fully diluted attributable (loss)/earnings per share (cents)	23	**(169)**	(771)	251
Fully diluted headline earnings per share (cents)	23	**174**	182	251
Number of shares in issue at end of year (thousands)		**112 602**	111 444	110 105
Weighted average number of shares in issue (thousands)		**112 046**	110 977	108 379
Weighted average number of shares used in calculating fully diluted earnings per share (thousands)	23	**112 967**	112 367	112 073

3. STATEMENTS OF CHANGE IN EQUITY

For the years ended 30 June	Notes	Share capital and premium R'm	Foreign currency translation R'm	Revaluation surplus R'm	Other R'm	Retained earnings R'm	Total R'm
Group							
Balance at 30 June 2000		60	6	3	47	2 971	3 087
Earnings		–	–	–	–	281	281
Revaluation of listed investments		–	–	635	–	–	635
Share options exercised		2	–	–	–	–	2
Re-allocation of reserves		–	–	–	(12)	12	–
Other		–	–	–	–	3	3
Balance at 30 June 2001		62	6	638	35	3 267	4 008
Loss		–	–	–	–	(866)	(866)
Revaluation of listed investments		–	–	65	–	–	65
Disposal of listed investments		–	–	(562)	–	–	(562)
Translation of foreign subsidiary		–	(48)	–	–	–	(48)
Unrealised loss on currency derivative contract		–	–	–	(26)	–	(26)
Share options exercised	7	6	–	–	–	–	6
Other		–	–	–	2	–	2
Balance at 30 June 2002		68	(42)	141	11	2 401	2 579
Loss		–	–	–	–	(191)	(191)
Revaluation of listed investments		–	–	39	–	–	39
Translation of foreign subsidiary		–	24	–	–	–	24
Realisation of reserve on disposal of Chambishi Metals plc		–	18	–	–	–	18
Reversal of derivative instruments		–	–	–	26	–	26
Share options exercised	7	17	–	–	–	–	17
Transfer to insurance contingency reserve		–	–	–	2	(2)	–
Other		–	–	1	(2)	–	(1)
Balance at 30 June 2003		85	–	181	37	2 208	2 511

4. CASH FLOW STATEMENTS

For the years ended 30 June	Notes	2003 R'm	2002 R'm	2001 R'm
CASH FLOW FROM OPERATING ACTIVITIES				
Cash receipts from customers		**5 009**	3 823	2 967
Cash paid to suppliers and employees		**(4 160)**	(3 204)	(2 441)
Cash generated from operations	24	**849**	619	526
Interest received		**80**	55	106
Finance costs		**(180)**	(160)	(132)
Dividends received		**3**	2	2
Dividends paid	25	**(21)**	(23)	(1 222)
Capital distribution		**–**	–	(1 697)
Taxation paid	26	**(101)**	(197)	(237)
Net cash inflow/(outflow) from operating activities		**630**	296	(2 654)
CASH FLOW FROM INVESTING ACTIVITIES				
Additions to fixed assets to maintain operations		**(420)**	(122)	(291)
Additions to fixed assets to expand operations		**(132)**	(1 101)	(1 793)
Proceeds from sale of joint venture and subsidiaries	27	**–**	–	6
Proceeds on disposal of fixed assets		**8**	6	2
Proceeds on disposal of investments		**–**	1 007	12
Increase in investment loans and receivables		**–**	–	4
Net proceeds from sale of ETC mine	27	**252**	–	–
Net cash effect on sale of Chambishi	27	**(67)**	–	–
Proceeds on dilution of interest in investment in subsidiaries		**564**	139	–
Other investments acquired		**–**	–	(497)
Net cash inflow/(outflow) from investing activities		**205**	(71)	(2 557)
CASH FLOW FROM FINANCING ACTIVITIES				
Increase in shareholder funding		**17**	6	–
Funding received from minority shareholders		**11**	264	182
Long-term borrowings raised		**–**	314	726
Long-term borrowings repaid		**(901)**	(153)	(4)
Decrease in short-term borrowings		**(476)**	(316)	599
Decrease in treasury liabilities		**–**	–	(13)
Net cash (outflow)/inflow from financing activities		**(1 349)**	115	1 490
Net (decrease)/increase in cash and cash equivalents		**(514)**	340	(3 721)
Cash and cash equivalents at beginning of year		**779**	439	4 160
Cash and cash equivalents at end of year		**265**	779	439
Cash generated from operations per share (cents)		**758**	558	485

ACCOUNTING POLICIES

The consolidated financial statements are prepared in accordance with and comply with South African Statements of Generally Accepted Accounting Practice and International Financial Reporting Standards.

The principal accounting policies as set out below have been consistently applied.

BASIS OF CONSOLIDATION AND GOODWILL

Joint ventures

Joint ventures are contractual agreements whereby the Group has joint control over the financial and operating policy decisions of the enterprise. The Group's attributable share of the assets, liabilities, income and expenses of such jointly controlled entities is proportionately consolidated on a line-by-line basis in the Group financial statements.

The post-acquisition results of joint ventures are adjusted where necessary to take account of the effects of fair value from the effective date of acquisition to date of disposal.

Subsidiary companies

Investments in subsidiaries are accounted for at cost less impairments.

The results of subsidiaries are consolidated from the dates of effective control up to the dates effective control ceases.

The post-acquisition results of subsidiaries are adjusted for the effects of fair value adjustments at acquisition, unrealised profits and goodwill adjustments.

Goodwill

Goodwill represents the excess of the cost of the investment over the fair value attributable to the net assets acquired. Goodwill is included in the total amount of intangible assets and is amortised on the straight-line basis over estimated useful life to a maximum of 20 years.

Any excess of the value attributable to the net assets acquired over the cost of the investment acquired is treated as negative goodwill. Where negative goodwill is considered to represent future losses and expenses it is amortised to the income statement as the losses and expenses are incurred. To the extent that negative goodwill does not relate to future expected losses and expenses, the amount of negative goodwill, not exceeding the fair values of acquired identifiable non-monetary assets, is recognised systematically over the estimated useful life of the depreciable non-monetary assets and any excess over fair value is recognised in income immediately.

Inter-company transactions and balances

Consolidation principles relating to the elimination of inter-company transactions and balances and adjustments for unrealised inter-company profits are applied in all intra-Group dealings, whether it be transactions with subsidiaries, associated companies or joint ventures.

BORROWING COSTS

Borrowing costs that are directly attributable to the acquisition, construction or development of a qualifying asset that requires a substantial period of time to be prepared for its intended use are capitalised. Borrowing costs, on these assets, are expensed from the time that production becomes commercially viable.

DEFERRED TAXATION

Deferred tax liabilities and assets are recognised in respect of temporary differences between the book value and tax base of balance sheet items, including items with a tax base but no book value. The resulting net deferred tax assets or net deferred tax liabilities are recognised on the balance sheet.

Deferred tax is not recognised when the transaction involves the initial recognition of an asset or liability that is not subject to a business combination and at the time of the transaction affects neither accounting nor taxable profit. Deferred tax assets are not recognised on negative goodwill and no deferred tax liability is recognised on goodwill for which amortisation is not deductible for tax purposes. Deferred tax assets are recognised to the extent that it is probable that taxable profit will be available against which the deductible temporary difference can be utilised.

Deferred tax is calculated at the applicable rate for mining and non-mining taxes. In the case of mining taxes for gold mines, deferred tax is calculated at the mining cost formula rate that is expected to apply to the period when the asset is realised or the liability is settled.

SECONDARY TAXATION ON COMPANIES

Secondary Tax on Companies ("STC") is recognised on the declaration date of all dividends and is included in the taxation expense in the income statement.

ENVIRONMENTAL REHABILITATION OBLIGATION

The estimated cost of final rehabilitation, comprising liabilities for decommissioning and restoration, is based on current legal requirements and existing technology and is re-assessed annually. Cost estimates are not reduced by the potential proceeds from the sale of assets.

Decommissioning

The present value of estimated future decommissioning obligations at the end of the operating life of an operation is included in long-term provisions. The unwinding of the obligation is included in the income statement. The related decommissioning asset is recognised in fixed assets.

Restoration

The present value of the estimated cost of restoration is included in long-term provisions. This estimate is revised annually and any movement is charged against income.

Expenditure on ongoing rehabilitation is charged to the income statement as incurred.

Environmental rehabilitation trust funds

Annual payments are made to rehabilitation trust funds in accordance with statutory requirements. The trust funds are recognised separately from the related liability on the balance sheet.

EXPLORATION EXPENDITURE

Exploration expenditure comprises expenditure incurred and advances made in respect of exploratory ventures for mining activities.

The costs of exploration programmes are expensed in the year in which they are incurred, except for expenditure on specific properties which have indicated the presence of a mineral resource with the potential of being developed into a mine, in which case the expenditures are capitalised and amortised in the same way as detailed in the accounting policy for tangible assets – mine development and decommissioning below. Where it is subsequently found that no potential exists to develop a mine, the capitalised costs are written-off in full.

FINANCIAL INSTRUMENTS

Financial instruments recognised on the balance sheet include cash and cash equivalents, investments, trade receivables, trade creditors, foreign exchange contracts and borrowings. Initial recognition is at cost when the Group becomes party to their contractual arrangements. Subsequent recognition is at fair value or at amortised cost. The recognition methods adopted are disclosed in the individual policy statements associated with each item. At each balance sheet date an assessment is made whether any financial assets are impaired. In the case of any impairment the asset is written-down to the income statement.

Derivative instruments

Gains and losses on derivative instruments that effectively establish the prices for future production are recognised in revenue when the related production is delivered. In the event of early settlement of hedging contracts, gains and losses are brought into revenue at the date of settlement. Any potential loss on hedge positions below the current cost of production is recognised in the period in which it arises. These are accounted for as "normal purchase/normal sales transactions".

Forward exchange contracts are valued at the balance sheet date using the forward rate available at the balance sheet date for the remaining maturity period of the forward contract. Any gain or loss from valuing the contract against the contracted rate is recognised in the income statement unless the contract qualifies for special hedge accounting. A corresponding forward exchange asset or liability is recognised.

On settlement of a forward exchange contract, any gain or loss is recognised in the income statement.

Where the Group enters into cash flow hedges that qualify for special hedge accounting the effective portion of fair value gains and losses is recognised in equity. The ineffective portion is expensed in the income statement. When the underlying transaction occurs the gains and losses are recognised in earnings.

Investments

Investments, other than investments in subsidiaries, associates and joint ventures, are considered to be available for sale financial assets and are reflected at fair value. Increases and decreases in fair values of available for sale investments are reflected in the revaluation reserve. On disposal of an investment, the balance in the revaluation reserve is recognised in the income statement.

Where regulated markets exist, fair values are determined with reference to the stock exchange quoted selling prices at the close of business on the balance sheet date. Where a reliable fair value cannot be determined, investments are carried at cost.

Receivables

Receivables are subsequently valued at amortised cost.

Set-off

If a legally enforceable right exists to set-off recognised amounts of financial assets and liabilities and the Group intends to settle on a net basis or to realise the asset and settle the liability simultaneously, all related financial effects are netted.

FIXED ASSETS

Impairment of assets

The carrying value of assets is reviewed at each balance sheet date to assess whether there is any indication of impairment. If any such indication exists, the recoverable amount of the asset is estimated. Where the carrying value exceeds the estimated recoverable amount such assets are written-down to their recoverable amount. If the circumstances leading to the impairment no longer exist, the appropriate portion of the impairment loss previously recognised is written-back.

Intangible assets

Intangible assets are reflected at cost and are amortised on a straight-line basis over the anticipated useful lives of the assets to a maximum of 20 years.

Research and development

Expenditure on research projects (or on the research phase of an internal project) is recognised as an expense when it is incurred.

When the development phase of a project demonstrates that it is probable that future economic benefits will be generated, the related expenditure is recognised as an asset if:

- the technical feasibility of completing the asset demonstrates that it will be available for use or sale;
- there is an intention to complete the asset, and use or sell it;
- there is an ability to use or sell the asset;
- there are adequate technical, financial and other resources available to complete the development, and to use or sell the asset; and
- the expenditure attributable to the asset can be measured reliably.

Tangible assets

Tangible assets, other than land and buildings, are stated at cost less accumulated depreciation.

Land and buildings

Land and buildings, other than mine properties, are valued at market value. Buildings are depreciated on a straight-line basis over their estimated useful lives to an estimated residual value, if such value is significant. The annual depreciation rates used vary between two and five per cent.

Land and buildings are valued by external valuers at periodic intervals of not more than five years. Surpluses on revaluation are recognised in equity in a revaluation reserve. Any subsequent impairment is adjusted against the revaluation surplus to the extent of the available surplus and thereafter charged against operating profit. New acquisitions and additions to existing land and buildings are reflected at cost until the next periodic revaluation.

Mine development and decommissioning

Costs to develop new ore bodies, to define further mineralisation in existing ore bodies and to expand the capacity of a mine, or its current production, as well as the decommissioning thereof, are capitalised. Development costs to maintain production are expensed as incurred.

Mine development and decommissioning assets are amortised using the units-of-production method based on estimated proved and probable ore reserves. Proved and probable ore reserves reflect estimated quantities of economically recoverable reserves which can be recovered in future from known mineral deposits. These reserves are re-assessed annually. The maximum period of amortisation using this method is 25 years. Where the reserves are not determinable due to their scattered nature, the straight-line method of depreciation is applied based on the estimated life of the mine, to a maximum of 25 years.

Mineral rights

Mineral rights that are being depleted are amortised over their estimated useful lives using the units-of-production method based on proved and probable ore reserves. Where the reserves are not determinable, due to their scattered nature, the straight-line method is applied. The maximum rate of depletion of any mineral right is 25 years. Mineral rights that are not being depleted are not amortised. Mineral rights that have no commercial value are written-off in full.

The excess purchase price over the fair value paid for mineral rights is recognised as being an amount paid for the acquisition of ore reserves. This amount is capitalised and amortised over the period during which future economic benefits are expected to be obtained from these mineral rights, to a maximum of 25 years.

Plant and machinery

Mining plant and machinery is amortised using the lesser of its estimated useful life or the units-of-production method based on estimated proved and probable ore reserves. Where ore reserves are not determinable, because of their scattered nature, the straight-line method of depreciation is applied. Non-mining plant and machinery is depreciated over its useful life. The maximum life of any single item is 25 years.

Other

Mine properties (including houses, schools and administration blocks), motor vehicles and furniture and equipment are depreciated on the straight-line basis over their expected useful lives, to estimated residual values. The residual value is the amount expected to be obtained for the asset at the end of its useful life, after deducting expected costs of disposal.

The annual depreciation rates generally used in the Group are:

Furniture and equipment	10 to 33 per cent
Mine properties	4 to 7 per cent
Motor vehicles	20 per cent
Mine development plant and machinery, and mineral rights	4 to 25 per cent

FOREIGN CURRENCY TRANSLATIONS

Foreign entities

Financial statements of foreign subsidiaries that are classified as foreign entities are translated into South African rand using the exchange rates applicable at the reporting date, as follows:

- assets and liabilities at rates of exchange ruling at the balance sheet date;
- income and expenditure at the weighted average rate of exchange for the year;
- cash flow items at the weighted average rate of exchange for the year, except where the date of cash flow for significant transactions can be identified, in which case the cash flows are translated at the rate of exchange ruling at the date of the cash flow;
- fair value adjustments of the foreign entity are translated at the closing rate;
- goodwill is considered to relate to the reporting entity and is translated at the rate at the date of acquisition; and
- differences arising on translation are classified as equity until the investment is disposed of.

Foreign currency transactions and balances

Transactions in foreign currencies are converted to South African rand at the rate of exchange ruling at the date that the transaction is recorded.

Foreign denominated monetary assets and liabilities (including those linked to a forward exchange contract) are stated in South African rand using the exchange rate ruling at the balance sheet date, with the resulting exchange differences being recognised in the income statement. Exchange differences on foreign loans that are naturally hedged by an investment in a foreign entity are taken directly to equity to the extent that the loan is not greater than the investment.

INVENTORIES

Inventories are valued at the lower of cost and estimated net realisable value with due allowances being made for obsolete and slow-moving items. Cost is determined using the following bases:

- consumables and maintenance spares are valued at average cost;
- finished products are valued at weighted average cost including an appropriate portion of direct overhead costs;
- work-in-process is valued at weighted average cost;
- raw materials are valued at weighted average cost, and
- by-products are valued at the estimated variable cost associated with their production.

LEASED ASSETS

Leases of fixed and tangible assets where the Group assumes substantially all the risks and rewards of ownership are classified as finance leases. Assets subject to finance lease agreements are capitalised at their cash cost equivalent and the corresponding liability to the lessor is raised. Lease payments are allocated using the effective interest rate method to determine the lease finance cost which is charged against operating profit and the capital repayment which reduces the liability to the lessor. These assets are depreciated on the same basis as the fixed assets owned by the Group.

Leases, under which the lessor effectively retains the risks and rewards of ownership, are classified as operating leases, with lease payments charged against operating profit in equal instalments over the period of the lease.

EMPLOYEE BENEFITS

Costs related to defined contribution retirement plans are expensed as incurred.

The Group has certain unfunded liabilities in respect of post-retirement medical healthcare benefits. The entitlement to these benefits is dependent upon the employee remaining in service until retirement age. The actuarially determined costs of providing these benefits are charged to income immediately.

SHARE OPTIONS

Share options are accounted for at the strike price when the option is exercised and the shares are issued.

PROVISIONS

Provisions are recognised when the following conditions have been met:

- a present legal or constructive obligation, to transfer economic benefits as a result of past events exists; and
- a reasonable estimate of the obligation can be made.

A present obligation is considered to exist when there is no realistic alternative but to make the transfer of economic benefits. The amount recognised as a provision is the best estimate at the balance sheet date of the expenditure required to settle the obligation. Only expenditure related to the purpose for which the provision is raised is charged against the provision.

REVENUE RECOGNITION

Revenue is recognised when the risks and rewards of ownership have been transferred and when the economic benefits associated with a transaction flow to the Group and the amount of revenue can be measured reliably.

Dividends

Dividends are accounted for on the last day of registration for listed investments and when declared in respect of unlisted investments.

Mining products

Revenue from the sale of mining and related products is recognised when the significant risks and rewards of ownership of the goods have passed to the buyer.

Interest

Interest is recognised on a time : proportion basis that takes account of the effective yield on the asset and an appropriate accrual is made at each accounting reference date.

Toll treatment

Revenue from toll treatment contracts is recognised following the treatment of mining concentrates belonging to third parties. The revenue is based on the final metal recoveries from concentrates at the agreed contract rates.

DEFINITIONS

Cash and cash equivalents

Cash and cash equivalents include cash on hand and call deposits as well as short-term, highly liquid investments that are readily convertible to known amounts of cash and are subject to an insignificant risk of changes in value. Overdrafts are excluded from cash and cash equivalents.

Basic earnings per share

Earnings divided by the weighted average number of shares in issue.

Headline earnings per share

Headline earnings comprise earnings for the year, adjusted for profits, losses and capital items of such a nature and size that separate disclosure is required in accordance with the requirements of Circular 7 of 2002. Adjustments against earnings take account of attributable taxation and minority interests. The adjusted earnings figure is divided by the weighted average number of shares in issue to arrive at headline earnings per share.

Fully diluted earnings per share

Fully diluted earnings comprise earnings as used in calculating basic earnings per share. The earnings figure is divided by the weighted average number of ordinary shares, adjusted for any financial instruments or other contracts that may entitle the holder thereof to ordinary shares, to arrive at fully diluted earnings per share. Fully diluted headline earnings per share is calculated on the same basis as fully diluted earnings per share.

Cash generated from operations per share

Cash generated from operations divided by the weighted average number of shares in issue during the year.

NOTES TO THE FINANCIAL STATEMENTS

1. BASIS OF PREPARATION

The annual financial statements are prepared on the historical cost basis, except for certain fair value adjustments on financial instruments and revaluation of land and buildings.

2. TANGIBLE AND INTANGIBLE ASSETS

R'm	Mine development assets	Decom-missioning assets	Plant and machinery	Land and buildings	Mineral rights	Other	Total tangible assets	Intangible assets
Group								
Cost –								
Balance at 30 June 2000	2 127	40	1 599	125	323	275	4 489	(24)
Additions	781	–	1 224	16	–	62	2 083	1
Reclassifications	–	2	(8)	4	–	–	(2)	2
Disposals	–	–	(14)	–	–	(3)	(17)	–
Disposal of joint venture	(2)	–	(10)	–	(1)	–	(13)	–
Realignment of currencies	–	6	152	–	–	–	158	–
Sale of Hartebeestfontein mine	5	–	–	–	5	–	10	–
Decommissioning asset recognised	–	(13)	–	–	–	–	(13)	–
Balance at 30 June 2001	2 911	35	2 943	145	327	334	6 695	(21)
Additions	480	–	594	81	1	64	1 220	3
Reclassifications	(576)	–	503	–	–	76	3	(3)
Disposals	(2)	–	(2)	–	–	(6)	(10)	–
Realignment of currencies	–	6	481	5	–	7	499	–
Balance at 30 June 2002	2 813	41	4 519	231	328	475	8 407	(21)
Additions	251	–	171	12	–	118	552	–
Reclassifications	37	–	(41)	–	(1)	5	–	–
Disposals	(1)	–	(2)	–	–	(3)	(6)	–
Disposal of Chambishi	–	(22)	(1 931)	(18)	–	(32)	(2 003)	–
Disposal of ETC mine	(300)	–	(104)	–	–	(12)	(416)	–
Realignment of currencies	–	(8)	(712)	(7)	–	(8)	(735)	–
Balance at 30 June 2003	2 800	11	1 900	218	327	543	5 799	(21)
Accumulated amortisation and depreciation								
Balance at 30 June 2000	121	6	269	23	4	142	565	(16)
Reclassification	–	–	2	–	–	(2)	–	–
Charge for year	49	3	78	3	1	31	165	(14)
Disposals	–	–	(13)	–	–	(4)	(17)	–
Disposal of joint venture	(3)	–	(9)	–	1	–	(13)	–
Realignment of currencies	–	–	8	–	–	–	8	–
Balance at 30 June 2001	167	9	335	26	4	167	708	(30)
Charge for year	64	2	126	5	3	38	238	2
Disposals	–	–	(2)	–	–	(2)	(4)	–
Impairment of assets	–	–	1 966	6	–	1	1 973	–
Realignment of currencies	–	–	(194)	–	–	–	(194)	–
Balance at 30 June 2002	231	11	2 231	37	7	204	2 721	(28)
Reclassification	(2)	–	3	–	–	(1)	–	–
Charge for year	151	2	165	7	2	59	386	1
Disposals	–	–	–	–	–	(1)	(1)	–
Disposal of Chambishi	–	(6)	(1 407)	(5)	–	(13)	(1 431)	–
Disposal of ETC mine	(100)	–	(36)	–	–	(6)	(142)	–
Realignment of currencies	–	(2)	(504)	(10)	–	(4)	(520)	–
Balance at 30 June 2003	280	5	452	29	9	238	1 013	(27)
Carrying value at 30 June 2001	2 744	26	2 608	119	323	167	5 987	9
Carrying value at 30 June 2002	2 582	30	2 288	194	321	271	5 686	7
Carrying value at 30 June 2003	2 520	6	1 448	189	318	305	4 786	6

Borrowing costs

Borrowing costs amounting to R6 million were capitalised in respect of the year to 30 June 2003 (2002: R85 million, 2001: R94 million).

Capital work-in-progress

Included in the above is R nil (2002: R629 million, 2001: R3 393 million) of assets relating to projects in progress from which no revenue is currently derived.

Leased assets

Included in plant and machinery are leased assets with a book value of R nil (2002: R3 million, 2001: R5 million).

Other assets

Included in other assets are vehicles and equipment held under finance lease R nil (2002: R1 million, 2001: R1 million), mine properties R91 million (2002: R79 million, 2001: R71 million), furniture, equipment and vehicles R213 million (2002: R191 million, 2001: R95 million).

Intangible assets

Intangible assets consist of patents, trademarks and fully amortised negative goodwill.

3. ENVIRONMENTAL REHABILITATION TRUST FUNDS

	2003 R'm	2002 R'm	2001 R'm
Total environmental rehabilitation obligation (note 11)	**87**	130	115
Less: Amounts in trust funds	**45**	64	59
Net liability	**42**	66	56
The funds in the trusts are as follows:			
Balance at beginning of year	**64**	59	51
Sale of ETC mine	**(19)**	–	–
Contributions	**5**	4	2
Less: Work completed	**(12)**	(6)	(1)
Interest earned	**7**	7	5
Other movements	–	–	2
	45	64	59

4. INVESTMENTS

Listed – other investments			
Original cost	**34**	31	546
Revaluation surplus	**178**	138	635
Closing carrying amount	**212**	169	1 181
Total – listed investments	**212**	169	1 181
Market value of listed investments	**212**	169	1 181
Unlisted – subsidiary companies			
Book value			
Loans*			
Unlisted – other	**3**	7	5
Total unlisted	**3**	7	5
Total carrying amount of investments	**215**	176	1 186
Directors' valuation of unlisted investments – subsidiaries and other	**3**	36	8

*These loans are interest free with no fixed terms of repayment.

5. JOINT VENTURES

	2003 R'm	2002 R'm	2001 R'm
The proportionate shares of the following joint ventures have been incorporated into the Group results:			
– a 75 per cent share in the Nkomati mine; and – a 50 per cent share in Cato Ridge Alloys (Proprietary) Limited.			
The aggregate amounts of joint ventures proportionately consolidated in the financial statements are:			
Income statements			
Revenue	**525**	424	377
Profit for year after taxation	**123**	122	132
Balance sheets			
Non-current assets	**145**	155	125
Current assets	**185**	239	174
Non-current liabilities – non-interest bearing	**28**	33	29
Current liabilities	**86**	173	104
Cash flow statements			
Net cash inflow from operating activities	**230**	115	50
Net cash outflow from investing activities	**(31)**	(23)	(22)
Net cash outflow from financing activities	**(21)**	(57)	(51)
Commitments and contingent liabilities			
Commitments	**3**	12	3
Contingent liabilities	**7**	–	–

6. INVENTORIES

Consumable stores	**83**	150	105
Raw material	**426**	372	321
Work-in-progress	**43**	80	35
Finished goods	**344**	374	261
	896	976	722

7. SHARE CAPITAL AND PREMIUM

Share capital			
Authorised			
300 000 000 (2002: 196 668 737, 2001: 196 668 737) ordinary shares of 5 cents each	**15**	10	10
Nil (2002: 646 380, 2001: 646 380) compulsorily convertible preference shares of 678 cents each	**–**	4	4
	15	14	14
Issued			
112 601 980 (2002: 111 443 652, 2001: 110 104 818) ordinary shares of 5 cents each	**6**	6	6
Share premium	**79**	62	56
– Balance at beginning of year	**62**	56	51
– Premium on shares issued	**17**	6	5
Total issued share capital and premium	**85**	68	62

8. MINORITY INTEREST

	2003 R'm	2002 R'm	2001 R'm
Balance at beginning of year	**2 012**	1 483	1 185
Transfer from income statement	**80**	163	124
Dividends paid to minorities	**(21)**	(23)	(13)
New subsidiary acquired	**–**	45	–
Change in minority control of subsidiary (Avgold)	**328**	114	182
Minority shareholders' loan:			
Two Rivers Platinum (Proprietary) Limited*	**11**	218	–
Realisation of unrealised loss on currency derivative contract	**21**	(21)	–
Realignment of currencies	**20**	33	5
Balance at year end	**2 451**	2 012	1 483

*The minority shareholder's contribution to this project has been classified as a minority shareholder's interest including that portion presently classified as shareholders' loans. A final decision on the composition of these contributions between equity and loans has still to be made and will only be finalised when the project feasibility is finalised and approved.

9. LONG-TERM BORROWINGS*

SA rand long-term borrowings			
Secured loans:			
Secured by bonds, pledges and charges over certain immovable property, certain movable corporeal assets, rights, hedging receivables and certain bank accounts. Interest was calculated at 2,25 per cent above JIBAR. The loan was to be repaid in 12 equal quarterly instalments commencing on 31 March 2003	–	300	150
Fixed term loan of five years that terminated on 11 June 2002. The loan bears interest at a nominal rate of 15,96 per cent, repayable in ten equal six-monthly instalments of R14 million commencing on 11 December 1997 with a final instalment on 11 June 2002	–	–	23
Unsecured loans:			
Finance lease	–	1	2
Total borrowings	–	301	175
Less: Repayable within one year included in short-term borrowings	–	50	23
Total SA rand long-term borrowings	–	251	152
US dollar long-term borrowings			
Secured loans:			
– Loans of US$ nil (2002: US$64 million, 2001: US$67 million) at a fixed interest rate of 6,75 per cent and repayable in semi-annual instalments over five years, commencing six months after final draw down, March 2002. The loan was secured with a pledge of shares and cash	–	656	540
– Loans of US$ nil (2002: US$16 million, 2001: US$20 million) at an interest rate of 2 per cent above LIBOR. This loan was repayable in 10 bi-annual instalments that commenced during September 2003	–	164	162
– Loan of US$ nil (2002: US$35 million, 2001: US$19 million) secured by bonds, pledges and charges over certain immovable property, certain movable corporeal assets, rights, hedging receivables and certain bank accounts. Interest was calculated at 2,25 per cent above LIBOR. The loan was repayable in twelve equal quarterly instalments commencing on 31 March 2003	–	357	152
	–	1 177	854

	2003 R'm	2002 R'm	2001 R'm
Unsecured loan:			
Unsecured loan of US$ nil (2002: US$0.2 million, 2001: US$0.5 million). This loan accrued interest at 6.50 per cent with a final instalment of US$0.2 million during the year ending 30 June 2003	–	2	4
Total	–	1 179	858
Less: Repayable within one year included in short-term borrowings	–	249	89
Total US dollar long-term borrowings	–	930	769
Total borrowings at end of year	–	1 480	1 033
Less: Repayable within one year included in short-term borrowings	–	299	112
Total borrowings at end of year	–	1 181	921
Made up as follows:			
– Assmang Limited	–	1	3
– Avgold Limited	–	548	302
– Chambishi	–	632	616
	–	1 181	921

*These loans have been repaid at year-end

10. DEFERRED TAXATION

Deferred tax assets			
Valuation of inventories	**3**	–	1
Provisions	**4**	–	12
Assessed loss	**5**	38	34
Deferred tax assets	**12**	38	47
Deferred tax liabilities			
Tangible assets	**438**	389	283
Valuation of inventories	**–**	(3)	–
Provisions	**(10)**	(13)	(3)
State share of profit at 10,125 per cent	**47**	37	29
Liabilities for healthcare benefits	**(21)**	(20)	(19)
Foreign exchange profit deferred	**–**	48	9
Other	**65**	55	61
Net deferred tax liabilities	**519**	493	360
Reconciliation of opening and closing balance			
Opening deferred tax liability	**493**	360	289
Opening deferred tax asset	**(38)**	(47)	(22)

	2003 R'm	2002 R'm	2001 R'm
Net deferred tax liability – opening balance	**455**	313	267
Temporary differences from:	**52**	142	46
– Tangible assets	**49**	116	270
– Assessed losses	**9**	(4)	(240)
– Valuation of inventories	**–**	(2)	–
– Provisions	**(1)**	(10)	(2)
– Healthcare benefits	**(1)**	–	(3)
– State share of profit	**10**	9	9
– Write-off of deferred tax asset	**24**	–	–
– Foreign exchange profit	**(48)**	39	9
– Other	**10**	(6)	3
– Closing deferred tax liability	**519**	493	360
– Closing deferred tax asset	**(12)**	(38)	(47)
Net deferred tax liability – closing balance	**507**	455	313

Deferred tax balances are shown net of deferred tax assets and deferred tax liabilities where a legal right to offset at settlement exists.

11. LONG-TERM PROVISIONS

Environmental rehabilitation obligation			
Provision for decommissioning:			
Balance at beginning of year	**72**	68	71
Sale of ETC mine	**(8)**	–	–
Payments made	**(7)**	(4)	–
Provision for year	**3**	6	4
Re-alignment of currencies	**(8)**	6	6
Other movements	**–**	(4)	(13)
Balance at end of year	**52**	72	68
Provision for restoration			
Balance at beginning of year	**58**	47	38
Sale of ETC mine	**(24)**	–	–
Payments made	**(5)**	(2)	(1)
Provision for year	**6**	7	8
Additional obligation recognised	**–**	6	2
Balance at end of year	**35**	58	47
Total environmental rehabilitation obligation	**87**	130	115
Post-retirement healthcare benefits			
Balance at beginning of year	**85**	81	71
Sale of ETC mine	**(2)**	–	–
Sale of Chambishi	**(22)**	–	–
Provision for year	**5**	4	10
Balance at end of year	**66**	85	81
Total long-term provisions at end of year	**153**	215	196

	2003 R'm	2002 R'm	2001 R'm
12. NON-HEDGE DERIVATIVES			
Forward exchange contracts			
– Cost	–	–	–
– Fair value adjustment at year-end – unrealised	**103**	–	–
Forward exchange contracts entered into to convert rand gold hedges are fair valued based upon the year-end rand/US dollar exchange rate of US$1 = R7,51. Refer to note 30.			
13. TRADE AND OTHER PAYABLES			
Trade payables	**280**	540	314
Other payables	**241**	97	73
Total trade and other payables	**521**	637	387
14. SHORT-TERM PROVISIONS			
Balance at beginning of year	**62**	116	105
Sale of ETC mine	**(10)**	–	–
Sale of Chambishi	**(5)**	–	–
Provision for year	**29**	38	40
Payments made during year	**(35)**	(93)	(24)
Re-alignment of currencies	**(2)**	1	–
Transfers to payables	**–**	–	(6)
Transfers from long-term provisions	**–**	–	1
Balance at end of year	**39**	62	116
Made up as follows:			
– Debt suretyship	**–**	7	58
– Leave-pay and bonus provisions	**39**	55	56
– Long service awards	**–**	–	2
Total short-term provisions	**39**	62	116
15. OVERDRAFTS AND SHORT-TERM BORROWINGS			
Overdrafts	**–**	31	235
Short-term borrowings	**822**	1 185	1 207
– Foreign	**163**	595	598
– Local	**659**	590	609
Current portion of long-term borrowings	**–**	299	112
	822	1 515	1 554
Overdrafts and short-term borrowings are made up as follows:			
– Anglovaal Air (Proprietary) Limited	**–**	–	23
– Anglovaal Mining Limited	**163**	595	501
– Assmang Limited	**524**	577	910
– Avgold Limited	**135**	126	5
– Chambishi	**–**	217	115
	822	1 515	1 554

	2003 R'm	2002 R'm	2001 R'm
16. REVENUE			
Revenue comprises:			
– Mining and related products	**4 715**	3 771	2 615
– By-products	**32**	34	24
– Toll treatment and other services	**149**	242	167
Mining and related revenue	**4 896**	4 047	2 806
Made up as follows:			
– Local revenue	**1 484**	622	686
– Export revenue	**3 412**	3 425	2 120
	4 896	4 047	2 806
Revenue between companies within the Group, including revenue at arm's length, is eliminated on consolidation.			
17. PROFIT FROM OPERATIONS			
Profit from operations includes:			
Foreign exchange gains/(losses)	**(65)**	60	63
Remuneration for management advisory services	**–**	1	1
Remuneration for technical advisory services	**7**	7	31
Surplus on disposal of tangible assets	**–**	1	1
Surplus on disposal of investments	**261**	540	9
Amortisation and depreciation			
– land and buildings	**7**	5	3
– mine development and decommissioning assets	**153**	66	52
– mineral rights	**2**	3	1
– intangible assets	**1**	2	(14)
– plant and machinery	**165**	126	78
– other	**59**	38	31
Auditors' remuneration – audit fees	**4**	4	3
– other services	**1**	1	–
Exploration expenditure	**36**	56	64
Inventory write down	**11**	–	7
Movement in provisions – long term	**14**	16	22
– short term	**29**	38	40
Share transfer, secretarial and financial services	**2**	5	7
Employee costs – salaries and wages	**757**	584	475
– defined contribution plans – pension	**45**	28	27
– healthcare	**42**	21	15
– termination costs	**35**	–	–
18. INCOME FROM INVESTMENTS			
Dividend income			
– other – listed	**2**	1	2
– other – unlisted	**1**	1	–
Interest received			
– other	**80**	53	106
	83	55	108

	2003 R'm	2002 R'm	2001 R'm
19. EXCEPTIONAL ITEMS			
Surplus on disposal of Iscor Limited investment	–	343	–
Surplus on disposal of Kumba Resources Limited options	–	75	–
Surplus on disposal of Avgold Limited shares	**241**	48	–
Surplus on disposal of ETC mine	**7**	–	–
Surplus on disposal of other investments	**9**	–	–
Surplus on disposal of Assore Limited shares	–	74	–
Surplus on disposal of mineral rights	**4**	–	–
Provision for guarantee	–	(5)	–
Loss on disposal of Chambishi	**(649)**	–	–
Impairment of assets and bad debt write-off – Chambishi	–	(1 619)	–
Exceptional items per income statement	**(388)**	(1 084)	–
Taxation	**(4)**	(52)	–
Minority interest	**4**	66	–
Net exceptional items	**(388)**	(1 070)	–
20. DIRECTORS' EMOLUMENTS			
Refer to paragraph 22.2 of the accompanying circular.			
21. TAXATION			
South African normal taxation			
– current year	**91**	119	104
– prior year	**(2)**	11	2
– current year benefit of prior year unrecognised tax loss	**(37)**	–	–
State share of profits	**25**	37	12
Deferred taxation			
– temporary differences	**25**	142	46
– write-off of deferred tax asset	**24**	–	–
Secondary Tax on Companies	**5**	4	3
Capital Gains Tax	**16**	–	–
	147	313	167
Dealt with as follows:			
Attributable to profit before exceptional items	**143**	261	167
Attributable to exceptional items (note 19)	**4**	52	–
	147	313	167
Reconciliation of rate of taxation:	**%**	**%**	**%**
Standard rate of company taxation	**30**	30	30
Adjusted for:			
– Disallowed expenditure	**544**	(136)	4
– Exempt income	**(238)**	35	(2)
– Effect of mining taxes	**76**	(8)	3
– Capital Gains Tax	**42**	–	–
– Secondary Tax on Companies	**15**	(2)	–
– Tax losses not raised as deferred tax assets	**(118)**	(4)	(2)
– Prior year tax underprovided	**(7)**	(3)	–
– Write-off of deferred tax assets	**67**	–	–
– Other	**(3)**	8	(4)
	408	(80)	29
The estimated losses which are available for the reduction of future taxable income	**19**	2 689	719
The estimated unredeemed capital expenditure available for deduction against future mining income	**4 078**	3 740	2 572

The Group had unused credits in respect of Secondary Tax on Companies of R74 million at 30 June 2003 (2002: R49 million, 2001: R24 million).

The latest tax assessment for the Company relates to the year ended June 2000 and is dated 19 July 2001. The assessment for 1999 has not yet been received. All returns, to June 2002, have been submitted.

	2003 R'm	2002 R'm	2001 R'm
22. HEADLINE EARNINGS			
Earnings per income statement	**(191)**	(866)	281
– Impairment of assets and bad debtors write-off – Chambishi	**–**	1 619	
– Surplus on disposal of investments and mineral rights	**(261)**	(540)	
– Loss on sale of Chambishi	**649**	–	
– Provisions for guarantee on disposal on investment	**–**	5	
	197	218	281
– Taxation	**4**	52	
– Minority interest	**(4)**	(66)	
Headline earnings	**197**	204	281
Reconciliation of earnings to headline earnings before unrealised non-hedge derivatives			
Loss per income statement	**(191)**	(866)	
Adjust for	**44**	–	
– Unrealised non-hedge derivatives	**103**	–	
– Minority effect	**(59)**	–	
Loss before unrealised non-hedge derivatives	**(147)**	(866)	
Adjust for:			
– Net effect of exceptional items – refer above	**388**	1 084	
– Net effect of taxation and minority interest – refer above	**–**	(14)	
Headline earnings before unrealised non-hedge derivatives	**241**	204	281

23. EARNINGS PER SHARE

The calculation of basic earnings per share is based on a loss of R191 million (2002: R866 million – loss, 2001: R281 million – profit) and a weighted average of 112 046 (2002: 110 977, 2001: 108 379) thousand shares in issue during the year.

The calculation of headline earnings per share is based on headline earnings of R197 million (2002: R204 million, 2001: R281 million) and a weighted average of 112 046 (2002: 110 977, 2001: 108 379) thousand shares in issue during the year.

The calculation of headline earnings per share before unrealised non-hedge derivatives is based on headline earnings before unrealised non-hedge derivatives of R241 million (2002: R204 million, 2001: R281 million) and a weighted average of 112 046 (2002: 110 977, 2001: 108 379) thousand shares in issue during the year.

The calculation of fully diluted earnings per share is based on a loss of R191 million (2002: R866 million – loss, 2001: R281 million – profit) and a weighted average of 112 967 (2002: 112 367, 2001: 112 073) thousand shares, calculated as follows:

	2003	2002	2001
Weighted average number of shares used in calculating basic earnings per share (thousands)	**112 046**	110 977	108 379
Potential ordinary shares due to share options granted (thousands)	**921**	1 390	3 694
Weighted average number of shares used in calculating fully diluted earnings per share (thousands)	**112 967**	112 367	112 073

The calculation of fully diluted headline earnings per share is based on earnings of R197 million (2002: R204 million, 2001: R281 million) and a weighted average of 112 967 (2002: 112 367, 2001: 112 073) thousand shares.

	2003 R'm	2002 R'm	2001 R'm
24. RECONCILIATION OF NET PROFIT BEFORE TAX TO CASH GENERATED FROM OPERATIONS			
Net income before tax, finance cost and investment income	**133**	(284)	596
Adjusted for	**734**	1 348	84
– Amortisation and depreciation of fixed assets	**386**	240	151
– Long and short-term provisions	**44**	21	62
– Impairment of fixed assets – Chambishi	**–**	2 019	–
– Surplus on disposal of fixed assets	**(4)**	–	(1)
– Surplus on disposal of investments	**(261)**	(540)	(9)
– Inventory write-down to net realisable value	**–**	–	7
– Unrealised foreign exchange – gain	**(179)**	(40)	(39)
– Foreign exchange profit Chambishi – debtors' book	**–**	(400)	–
– Payment to trust funds	**(12)**	(5)	(2)
– Unrealised loss on non-hedge derivatives	**103**	–	–
– Loss on sale of Chambishi	**649**	–	–
– Other non-cash flow items	**8**	53	(85)
Operating cash flow before working capital changes	**867**	1 064	680
Increase in inventories	**(168)**	(224)	(122)
(Increase)/Decrease in receivables	**(48)**	(346)	34
Increase/(Decrease) in payables	**198**	125	(66)
Cash generated from operations	**849**	619	526
25. DIVIDENDS PAID			
Balance at beginning of year	**–**	–	1 208
Dividends to minorities	**21**	23	13
Other movements	**–**	–	1
Dividends paid	**21**	23	1 222
26. TAXATION PAID			
Balance at beginning of year – net	45	77	191
Prior year tax underprovided	(2)	11	2
Current taxation as per income statements	95	156	119
Other movements	5	(2)	2
Balance at end of year	(42)	(45)	(77)
Taxation paid	101	197	237

	ETC mine R'm	Chambishi R'm	2003 R'm	2002 R'm	2001 R'm
27. PROCEEDS FROM DISPOSAL OF OPERATION AND SUBSIDIARY					
During the year the Company disposed of its holdings in Chambishi and the ETC gold mine (2001: Lannex Joint Venture in Lavino (Proprietary) Limited)					
The following assets and liabilities were disposed of:					
Fixed assets	274	572	**846**	–	2
Investments	20	–	**20**	–	–
Inventories	17	164	**181**	–	–
Trade and other receivables	4	126	**130**	–	1
Long-term borrowings	–	(20)	**(20)**	–	–
Trade and other payables and provisions	(63)	(211)	**(274)**	–	(2)
Overdrafts and short-term borrowings	(7)	–	**(7)**	–	–
Cash and cash equivalents	–	17	**17**	–	–
Break cost on early settlement of loan	–	50	**50**	–	–
Net assets	245	698	**943**	–	1
Profit/(Loss) on disposal	7	(649)	**(642)**	–	5
Net proceeds on disposal	252	49	**301**	–	6
Gross proceeds	255	49	**304**	–	6
Less: Related expenses	3	–	**3**	–	–
Less: Proceeds on disposal outstanding	–	49	**49**	–	–
Less: Cash and cash equivalents	–	17	**17**	–	–
Less: Break cost on early settlement of loan	–	50	**50**	–	–
Cash flow on disposal	252	(67)	**185**	–	6

28. DISCONTINUED OPERATIONS

On 14 June 2003 ARM publicly announced the decision of its board of directors that an agreement of sale was signed, subject to conditions precedent, to dispose of Chambishi Metals plc and Chambishi Marketing (Proprietary) Limited ("Chambishi").

The Group cobalt/copper segment results comprises Chambishi recoveries from its own dump resource and toll treatment.

These results are included up to 17 July 2003 when the disposal took place, as discontinuing operations in the consolidated income statement. The results for the period 1 July 2003 to 17 July 2003 were not material to the Group.

	2003 R'm	2002 R'm	2001 R'm
Attributable net cash flows			
Operating	**(107)**	(54)	–
Financing	**102**	477	–
Investing	**(28)**	(361)	–
Net cash (outflow)/inflow	**(33)**	62	–
Discontinued operations included in income statement			
Revenue	**614**	548	–
Cost of sales	**(574)**	(561)	–
Other operating income	**32**	2	–
Other operating expenses	**(111)**	(145)	–
Loss from operations	**(39)**	(156)	–
Income from investments	**–**		
Finance costs	**(47)**	(73)	–
Exceptional items	**(50)**	(2 019)	–
Taxation	**(24)**	–	–
Minority interest	**20**	73	–
Earnings	**(140)**	(2 175)	–

29. SEGMENTAL INFORMATION

Business segments

For management purposes, the Company is organised into four major operating divisions. These are: precious metals, copper/cobalt, nickel and ferrous metals.

The Group's products predominantly reflect the risks and rewards of trading and the operating divisions are therefore identified as the primary reporting segments.

	Precious metals R'm	Cobalt/ Copper R'm	Nickel R'm	Ferrous metals R'm	Corporate and other R'm	Total R'm
Primary segmental information						
Year to 30 June 2003:						
Revenue						
External revenue	1 000	614	377	2 905	–	4 896
Cost of sales	(863)	(574)	(198)	(2 247)	–	(3 882)
Other operating income	67	32	19	13	293	424
Other operating expenses	(130)	(116)	(48)	(281)	(342)	(917)
Re-allocated corporate expenditure	–	5	(1)	49	(53)	–
Segment result	74	(39)	149	439	(102)	521
Income from investments	14	–	3	1	65	83
Finance cost	(58)	(47)	–	(57)	(18)	(180)
Exceptional items	7	(50)	–	–	(345)	(388)
Taxation	(10)	(24)	(44)	(130)	61	(147)
Minority interest	1	20	–	(101)	–	(80)
Contribution to earnings	28	(140)	108	152	(339)	(191)
Contribution to headline earnings	26	(95)	108	152	6	197
Other information						
Consolidated total operating assets	2 540	–	227	3 451	619	6 837
Intangibles and mineral rights	143	–	–	176	5	324
Consolidated total assets	2 683	–	227	3 627	624	7 161
Consolidated total liabilities	385	–	54	1 338	422	2 199
Capital expenditure	154	29	30	338	1	552
Amortisation and depreciation	187	39	18	142	1	387
Primary segmental information						
Year to 30 June 2002:						
Revenue						
External revenue	364	548	326	2 809	–	4 047
Cost of sales	(335)	(561)	(167)	(1 922)	–	(2 985)
Other operating income	31	2	31	45	106	215
Other operating expenses	(11)	(130)	(27)	(174)	(136)	(478)
Re-allocated corporate expenditure	–	(15)	7	47	(39)	–
Segment result	49	(156)	170	805	(69)	799
Income from investments	3	–	2	4	46	55
Finance cost	(8)	(73)	–	(72)	(7)	(160)
Exceptional items	(2)	(2 019)	–	–	937	(1 084)
Taxation	(5)	–	(50)	(247)	(11)	(313)
Minority interest	(16)	73	–	(220)	–	(163)
Contribution to earnings	21	(2 175)	122	270	896	(866)
Contribution to headline earnings	21	(221)	122	270	12	204
Other information						
Consolidated total operating assets	2 997	1 282	250	3 158	771	8 458
Intangibles and mineral rights	141	–	–	181	6	328
Consolidated total assets	3 138	1 282	250	3 339	777	8 786
Consolidated total liabilities	959	1 148	69	1 211	808	4 195
Capital expenditure	466	362	22	372	1	1 223
Amortisation and depreciation	57	49	12	117	5	240

	Precious metals R'm	Cobalt/ Copper R'm	Nickel R'm	Ferrous metals R'm	Corporate and other R'm	Total R'm
Primary segmental information						
Year to 30 June 2001:						
Revenue						
External revenue	218	326	327	1 926	9	2 806
Cost of sales	(181)	(353)	(140)	(1 402)	(7)	(2 083)
Other operating income	9	–	6	2	194	211
Other operating expenses	7	(54)	(10)	(112)	(169)	(338)
Re-allocated corporate expenditure	–	(8)	–	39	(31)	–
Segment result	53	(89)	183	453	(4)	596
Income from investments	1	2	4	2	99	108
Finance cost	–	(12)	–	(68)	(52)	(132)
Taxation	–	29	(57)	(119)	(20)	(167)
Minority interest	(15)	6	–	(115)	–	(124)
Contribution to earnings	39	(64)	130	153	23	281
Contribution to headline earnings	39	(64)	130	153	23	281
Other information						
Consolidated total operating assets	2 545	2 080	206	2 405	1 546	8 782
Intangibles and mineral rights	143	–	–	184	5	332
Consolidated total assets	2 688	2 080	206	2 589	1 551	9 114
Consolidated total liabilities	517	1 704	58	1 400	(56)	3 623
Capital expenditure	600	834	21	626	3	2 084
Depreciation	4	31	22	90	4	151

Geographical segments

The Group operates in two principal geographical areas namely South Africa and Zambia. Chambishi in Zambia is the only significant operation outside South Africa and is reported in the cobalt/copper business segment.

Assets by geographical area in which the assets are located, are as follows:

	2003 R'm	2002 R'm	2001 R'm
Secondary segmental information			
Total assets			
– South Africa	**6 996**	7 232	6 820
– Zambia	**–**	1 139	2 080
– Europe	**84**	57	95
– USA	**81**	331	118
– Middle East	**–**	27	–
	7 161	8 786	9 113
Revenue by geographical area			
– South Africa	**1 780**	622	659
– Zambia	**145**	244	221
– Europe	**799**	1 290	611
– Japan and China	**1 067**	1 150	841
– USA	**571**	511	333
– Other	**534**	230	141
	4 896	4 047	2 806
Capital expenditure			
– South Africa	**523**	861	1 250
– Zambia	**29**	362	834
	552	1 223	2 084

30. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT

The Group is exposed to certain financial risks in the normal course of its operations. To manage these risks, a Treasury Risk Management Committee monitors transactions involving financial instruments. Both recognised and unrecognised financial instruments are disclosed below.

The Group does not acquire, hold or issue derivative instruments for trading purposes. All derivative type transactions are entered into as hedges of underlying cash flows resulting from actual production.

The following risks occur and are managed through the policies adopted below:

Currency risk

The commodity market is predominantly priced in US dollars which exposes the Group's cash flows to foreign exchange currency risks.

	Foreign currency amount	Year-end exchange rate R/US$
Financial assets		
Foreign currency denominated items included in receivables at 30 June 2003	US$ 72m	7,51
Foreign currency denominated items included in receivables at 30 June 2003	Euro 9m	8,49
Foreign currency denominated items included in receivables at 30 June 2002	US$ 79m	10,25
Foreign currency denominated items included in receivables at 30 June 2001	US$ 57m	8,08
Financial liabilities		
United States dollar		
Foreign currency denominated items included in payables at 30 June 2003	US $4	7,51
Foreign currency denominated items included in payables at 30 June 2002	US $3	10,25
Foreign currency denominated items included in payables at 30 June 2001	US $10	8,08

For foreign currency denominated items included in long and short-term borrowings refer to interest rate risk note further below.

Derivative instruments used to hedge the position of the Group against these risks include forward sale and purchase contracts as well as forward exchange contracts.

	Principal at year-end US$m	Principal at year-end R'm	Average rate for maturity period R/US$	Maturity date
Forward exchange contracts for the conversion of rand gold hedges into dollar gold commodity hedges at 30 June 2003	198	1 762	8,90	31 July 2003 to 31 December 2005
Forward exchange contracts for precious metal revenue at 30 June 2002	24	209	8,74	31 July 2002 to 30 June 2003
Forward exchange contracts for Ferrous Metals debtors at 30 June 2001	20	151	7,55	10 July 2001 to 20 August 2001

Liquidity risk management

The Group's executives meet regularly to review long- and mid-term plans as well as short-term forecasts of cash flow. Funding requirements are met by arranging banking facilities and/or structuring finance as applicable. All funding and related structures are approved by the board of directors.

Credit risk

Credit risk arises from possible defaults on payments by business partners or bank counterparties. The Group minimises credit risk by evaluating counterparties before concluding transactions in order to ensure the credit worthiness of such counterparties. Cash is only deposited with institutions which have exceptional credit rankings with the amounts distributed appropriately among these institutions to minimise credit risk through diversification.

Treasury risk management

The Group's treasury operation is a division of Anglovaal Mining Limited. The purpose of the division is to co-ordinate the short-term cash requirements in the South African domestic money market. The treasury operation makes available to all Group companies its bulk finance benefits at, or better than market-related rates.

The treasury function is outsourced to AndisaTreasury Solutions ("Andisa"), a specialist in the management of third party treasury operations.

A Treasury Committee, consisting of senior managers in the Company and representatives from Andisa, meets on a regular basis to analyse currency and interest rate exposures as well as future funding requirements within the Group. The committee reviews the treasury operation's dealings to ensure compliance with Group policies and exposure limits as directed by the board of directors and Audit Committee.

Equity instruments

Equity instruments only comprise ordinary shares. All of the compulsorily convertible preference shares that were in issue were converted into ordinary shares at 30 June 2001 and the authorised share capital for this class of shares was cancelled by special resolution passed on 8 November 2002.

Commodity price risk

Commodity price risk arises from the possible adverse effect of fluctuations in commodity prices on current and future earnings. Other than gold hedges, see below, no other commodities are hedged.

Nkomati has a price sharing agreement with a refinery in terms of which a percentage of various metal prices above a pre-determined level are paid to the refiner.

Gold price and currency risk

Under the terms of the term loan facility to develop the Target mine, Avgold was required to hedge a significant portion of the anticipated gold production to December 2005. During June 2003 the rand gold hedge book was restructured in terms of the company's hedging policy into dollar gold commodity hedges. As a result, Avgold is protected against a fall in the US dollar gold price below the hedge levels and participates in upside potential when the rand weakens against the dollar. If the gold price continues to trade at levels higher than the hedge price, Avgold will be prevented from participating in the higher gold price on the portion of production that is hedged. These are accounted for as "normal sale/normal purchase" agreements.

Avgold purchased rand/US dollar forward exchange contracts ("FEC's") to convert the rand gold hedges into dollar gold hedges. At 30 June 2003 the hedge book had a negative mark-to-market value of R192 million. This was calculated at a gold price of US$346,15/oz and an exchange rate of US$1:R7,51. The FEC's had a negative mark-to-market value of R103 million (part of the overall negative of R192 million).

The unmargined hedge book at 30 June 2003, after the restructuring, was as follows:

Years ending 30 June		2004	2005	2006
Dollar forward sales contracts				
Quantity sold	kg	9 162	9 137	4 403
	oz	294 579	293 762	141 545
	US$/oz	313	316	323

Interest rate risk

Fluctuations in interest rates give rise to interest rate risks through the impact these fluctuations have on the value of short-term cash investments and financing activities.

Hedging of interest rates may be undertaken to ensure that fluctuations in interest rates do not have an unexpected impact on the cash flows or value of assets and liabilities.

Cash is managed to ensure that surplus funds are invested in a manner to achieve maximum returns while minimising risks.

This is achieved through the activities of Andisa assisting the Group in managing cash flow needs.

Significant exposures to interest rate risk were as follows:

	Foreign currency amount US$m	Book value at year-end R'm	Repricing date	Maturity date	Effective interest rate
Financial assets					
Year ended 30 June 2003:					
Cash – call and current account		84			11,00%–13,35%
– South African Reserve Bank deposit	9	69			Dollar overnight
– fixed deposits		112		Various dates in Nov 2003	11,85%–13,35%
Total financial assets	9	265			
Year ended 30 June 2002					
Cash – call and current accounts		210		overnight call deposit	11,00%–11,35%
– fixed deposits		569		Various dates in July 2002	11,35%–11,80%
Total financial assets		779			
Year ended 30 June 2001:					
Cash		419		Overnight	9,35%
Fixed term		20		call deposit	8,75%
		439		25/06/2001	
Financial liabilities					
Year ended 30 June 2003:					
Short-term financial liabilities					
– Rand Merchant Bank (Dublin)	7	49	31/07/2003	31/07/2003	LIBOR +1,25%
– NedcorTrade Securities (Mauritius) Limited	15	114	31/07/2003	31/08/2004	LIBOR + 1,35%
Total foreign financial liabilities	22	163			
Short-term financial liabilities					
Financial institutions		659	30/06/2003	30/06/2003	Linked to money market
Total local liabilities		659			
Total financial liabilities	22	822			
Financial liabilities					
Year ended 30 June 2002:					
Foreign financial liabilities					
Long-term financial liabilities					
– Rand Merchant Bank	64	656	Fixed to maturity	31/03/2007	6,75%
– Industrial Development Corporation	16	164	Fixed to maturity	30/09/2006	LIBOR + 2%
– Syndicated loan	35	357	Fixed to maturity	31/12/2005	LIBOR + 2,25%
– Other	1	2			
	116	1 179			
Short-term financial liabilities					
– ABSA (Isle of Man)	9	92	28/02/2002	30/08/2002	LIBOR 0,8%
– Citibank Johannesburg	10	103	03/06/2002	04/12/2002	LIBOR 1,70%
– Rand Merchant Bank (Dublin)	6	66	28/06/2002	31/01/2002	LIBOR 1,25%
– NedcorTrade Securities (Mauritius) Limited	23	231	28/06/2002	31/07/2002	LIBOR 1,05%
– NedcorTrade Securities (Mauritius) Limited	10	103	28/06/2002	31/07/2003	LIBOR 1,25%
	58	595			
Total foreign financial liabilities	174	1 774			
Local financial liabilities					
Long-term financial liabilities					
– Syndicated loan		300	17/08/2001	31/12/2005	JIBAR +2,25%
– Various	1				
Short-term financial liabilities					
Financial institutions		621			Linked to money market
Total local liabilities		922			
Total financial liabilities	174	2 696			

	Foreign currency amount US$m	Book value at year-end R'm	Repricing date	Maturity date	Effective interest rate
Financial liabilities					
Year ended 30 June 2001					
Foreign financial liabilities					
Long-term financial liabilities					
– Rand Merchant Bank	67	540	Fixed to maturity	31/03/2007	6,75%
– Industrial Development Corporation	20	162	Fixed to maturity	30/09/2006	LIBOR + 2%
– Syndicated loan	19	152	Fixed to maturity	31/03/2006	LIBOR + 2,25%
– Other	1	4			
	107	858			
Short-term financial liabilities					
– ABSA (Isle of Man) Limited	10	81	31/08/2001	31/10/2001	4,80%
– Investment Bank (Mauritius) Limited	10	81	05/09/2001	30/09/2001	4,95%
– First National Bank Limited	7	57	28/09/2001	29/06/2001	4,71%
– NedcorTrade Securities (Mauritius) Limited	25	201	31/07/2001	31/07/2001	6,43%
– NedcorTrade Securities (Mauritius) Limited	10	81	25/10/2001	25/10/2001	5,33%
– Financial institutions	9	75	30/06/2001	current	linked to LIBOR
– Other	3	22	30/06/2001	31/07/2001	5,76%
	74	598			
Total foreign financial liabilities	181	1 456			
Local financial liabilities					
Long-term financial liabilities					
– Syndicated loan	–	150	17/08/2001	31/03/2006	JIBAR +2,25%
– Financial institutions	–	23	30/06/2000	30/06/2002	15,96%
– Various	–	2			
	–	175			
Short-term financial liabilities					
Financial institutions	–	844	30/06/2001	30/06/2001	Linked to money market
Total local financial liabilities	–	1 019			
Total financial liabilities – 30 June 2001	181	2 475			

	2003 R'm	2002 R'm	2001 R'm
31. COMMITMENTS AND CONTINGENT LIABILITIES			
Commitments			
Commitments in respect of capital expenditure:			
Approved by directors			
– contracted for	**129**	229	272
– not contracted for	**271**	588	988
Total commitments	**400**	817	1 260

Contingent liabilities

The Company has a contingent liability for the amount of tax relating to the Anglovaal Limited loan stock redemption premium that the South African Revenue Service disallowed in 1998. The potential 1998 liability for tax is R107 million at a tax rate of 35 per cent, plus interest. This matter is currently under appeal.

A back-to-back guarantee was issued by ARM to Assore Limited ("Assore") in respect of guarantees issued to bankers by Assore to secure a short-term export finance agreement facility of R180 million (2002: R180 million and 2001: R180 million). Short-term export finance loans negotiated in terms of the above facility in the ordinary course of business at 30 June 2003 were Nil (2002: R13 million and 2001: R75 million).

ARM has provided an irrevocable and unconditional guarantee to Copperbelt Energy Corporation plc ("CEC") and the Development Bank of Southern Africa Limited ("DBSA") for the due and punctual payment by Chambishi of the capital charge component of the power supply assets installed and owned by CEC for which financing was obtained by CEC from DBSA. The total outstanding capital charge obligation at June 2003 amounted to US$ nil (2002: US$11,1 million and 2001: US$11,5 million) and will reduce over 10 years ending June 2012 as capital charge payments are made by Chambishi. This guarantee is in the process of being replaced by the next owners of Chambishi.

32. RETIREMENT PLANS

The Group has made provision for pension plans and provident funds substantially covering all employees. These are composed of defined contribution pension plans, which are governed by the Pension Funds Act, 1956, and defined contribution provident funds administered by employee organisations within the industries in which members are employed. The contributions paid by Group companies for retirement benefits are charged to the income statement as they are incurred.

The benefits provided by the defined contribution plans are determined by accumulated contributions and returns on investment.

Periodic reviews of the plans are carried out by independent actuaries at regular intervals.

Members contribute between 5,0 per cent and 7,5 per cent and employers between 6,2 per cent and 18,12 per cent of pensionable salaries to the funds.

33. POST-RETIREMENT HEALTHCARE BENEFITS

The Group has obligations to fund a portion of certain pensioners' and retiring employees' medical aid contributions based on the cost of benefits. The anticipated liabilities arising from these obligations have been actuarially determined using the project unit credit method, and a corresponding liability has been raised, the detail of which is reflected in note 11 of this appendix.

The liability is assessed periodically by an independent actuarial survey. This survey uses the following principal actuarial assumptions:

- a discount rate of 12 per cent, based on high quality corporate bonds; and
- an increase in healthcare costs at a rate of 8,74 per cent.

The provisions raised in respect of post-retirement healthcare benefits amounted to R66 million (2002: R85 million, 2001: R81 million) at the end of the year. Of this amount, R5 million (2002: R4 million, 2001: R10 million) was charged against income in the current year (refer to note 11).

The liabilities raised based on present values of the post-retirement benefit, have been recognised in full. The last actuarial valuation was conducted in 2001 and the subsequent valuation will be conducted in 2004. The liability for post-retirement healthcare benefits is not funded. At retirement, certain members are given the choice to have an actuarially determined amount paid into their pension fund, to cover the expected cost of the post-retirement health cover. Alternatively, the Company will continue to fund the portion of the retiring employee's medical aid contributions.

34. RELATED PARTY TRANSACTIONS

Related party transactions can exist between subsidiaries and the holding company, fellow subsidiaries, associated companies, joint ventures and key management personnel. A report on investments in subsidiaries, associated companies and joint ventures, that indicates the relationship and degree of control exercised by the Company, contained in Appendix 8.

Transactions between the holding company, its subsidiaries, associated companies and joint ventures relate to fees, dividends, rents and interest and are regarded as intra-Group transactions and eliminated on consolidation.

Fees relating to specific capital projects are not eliminated as the underlying costs are capitalised to capital work-in-progress.

These transactions are concluded at arm's length and under terms and conditions that are no less favourable than those arranged with third parties. The volume of these transactions is insignificant in relation to the operating transactions of the Company and are concluded to effect internal policies and practices of the Company. There were no material outstanding balances at the end of the year, as transactions with the Group companies are eliminated on consolidation.

Transactions with directors relate to fees and share options and are disclosed in note 20 above.

	2003 R'm	2002 R'm	2001 R'm
Assmang Limited			
– Provision of services	**5**	7	14
– Dividends	**–**	–	–
Chambishi Metals plc			
– Provision of services	**1**	14	16
– Interest	**–**	–	–
Nkomati Joint Venture			
– Provision of services	**1**	1	1

AN INDEPENDENT COMPETENT PERSONS' REPORT ON THE PLATINUM GROUP METALS ASSETS OF AVMIN, ARMI AND HARMONY

Prepared for:

ANGLOVAAL MINING LIMITED

AND

AFRICAN RAINBOW MINERALS & EXPLORATION INVESTMENTS (PROPRIETARY) LIMITED

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AN INDEPENDENT COMPETENT PERSONS' REPORT ON THE PLATINUM GROUP METALS ASSETS OF AVMIN, ARMI AND HARMONY

CPR March, 2004

1. INTRODUCTION

1.1 Background

Steffen, Robertson and Kirsten (South Africa) (Pty) Limited ("SRK") is a subsidiary of the international group holding company, SRK Global Limited (the "SRK Group"). SRK has been commissioned by the directors of Anglovaal Mining Limited ("Avmin"), African Rainbow Minerals & Exploration Investments (Proprietary) Limited ("ARMI"), and Harmony Gold Mining Company Limited ("Harmony") (collectively referred to hereinafter as the "Companies") to prepare an independent Competent Person's Report ("CPR") on the Platinum Group Metals ("PGM") assets (the "PGM Assets") of the Companies.

The PGM Assets currently comprise:

- Avmin:
  - a 100% interest in the Nkomati Mine located in Mpumulanga Province,
  - a 55% interest in the Two Rivers Project located in Mpumulanga Province;
- ARMI:
  - a 100% interest in African Rainbow Minerals Platinum (Pty) Limited ("ARM Platinum") which holds a 83% equity interest in ARM Mining Consortium Limited ("ARM Consortium) which in turn holds a 50% interest in Modikwa Mine located in Limpopo Province.
  - a loan of ZAR509m to ARM Consortium; and
- Harmony:
  - a 100% interest in the Kalplats Project, located in North-West Province.

SRK has been informed by the Companies advisors that the Companies have reached agreement in principle regarding a range of indivisible transactions (the "Transactions"), as defined:

- Avmin will dispose of its entire 42.2% interest in Avgold Limited ("Avgold") to Harmony, the consideration for which will be discharged by the issue of new Harmony shares ("the Avgold Share Disposal");
- Avmin will acquire from ARMI:
  - ARMI's entire 13.6% interest in Harmony,
  - ARMI's 41.5% effective interest in the Modikwa Joint Venture,
  - the consideration for which will be discharged by the issue of new Avmin shares to ARMI or its nominee (collectively referred to as the "Avmin Acquisitions");
- Avmin will acquire the Kalplats Project and associated mineral rights from Harmony, the consideration for which will be discharged by the issue of new Avmin shares (the "Kalplats Acquisition"); and
- Harmony will merge its remaining shares in Avmin with the Avmin shares controlled by ARMI, post the above transactions, either through a sale transaction or a voting pool arrangement ("the ARM Control Structure").

Detailed rationale and other supporting information for the Transactions are included in the body of the circulars and are not repeated herein.

1.2 Structure of the CPR

For reporting purposes SRK notes that the valuations of the PGM Assets have been grouped in accordance with the following Tax Entities, herein referred to as (the "Tax Entities") and that all entries (including text, tables and other data) are quoted assuming 100% ownership and not on an attributable basis according to the respective shareholdings:

- the tax entity within which Nkomati Mine operates ("Nkomati Tax Entity");
- the tax entity within which Modikwa Mine operates ("Modikwa Tax Entity"); and
- the tax entity within which Two Rivers Project operates ("Two Rivers Tax Entity").

In respect of the Nkomati Tax Entity the valuation has been based on the current short life operations, as to date no definitive decision has been made in respect of executing the Nkomati Expansion Project. Technical detail in this regard is therefore focused on the base case scenario (Nkomati Base Case) in support of the corresponding valuation. The Nkomati Expansion Project (Section 2.0) incorporates a Feasibility Study, which has recently been completed, and accordingly Mineral Reserves have been estimated. As this is considered a material aspect in relation to the valuation of Avmin, both Mineral Reserves and the valuation results are also included in this CPR. These are supported by appropriate technical detail taking due consideration that the Nkomati Expansion Project has not been formally approved by the board and that the base case valuation is founded on the Nkomati Base Case.

In respect of the Kalplats Project and other exploration properties, no Mineral Reserves are presented and accordingly references are limited to technical disclosure requirements. Further, dispensation in respect of disclosure on the Companies' interests in certain listed and unlisted assets has been granted by the JSE Securities Exchange South Africa ("JSE") . Consequently no information is provided in respect of the following assets: Avmin's 50.3% interests in Assmang Limited; Avmin's 9.3% interest in Assore Limited; and Avmin's 100% interest in Avmin Alloys.

On completion of the Transactions, the PGM Assets will form an unlisted platinum focused division of Avmin, and accordingly technical disclosure is grouped on a discipline basis.

In accordance with the listing requirements of the JSE and the SAMREC Code, this CPR has been prepared under the direction of the Competent Person (the "CP") which assumes overall professional responsibility for the document (Section 1.4). The CPR however is published by SRK, the commissioned entity, and accordingly SRK assumes responsibility for the views expressed herein. Consequently with respect to all references to the CP and SRK: 'all references to SRK mean the CP and vice-versa'.

1.3 Valuation Date and Base Technical Information

The PGM Assets have been valued based on cashflow projections commencing 1 January 2004, which are dependent upon the following:

- Technical information as generated by the companies in accordance with their annual planning process defined as the Base Information Date ("BID"): Avmin – July 2003; ARM Platinum – January 2003; Harmony – July 2003; and
- Adjustments to all technical information to reflect depletion, historical performance and any additional material information provided from the respective BIDs to 31 December 2003.

The LoM plans and associated Mineral Reserve statements for the PGM Assets have been derived using the commodity prices as presented in Table 1.1.

Table 1.1 PGM Assets: commodity prices used to derive Mineral Reserves

Commodity Prices	Units	Nkomati Mine	Modikwa Mine	Two Rivers Project
Platinum	(US$/oz)	589	680	610
Palladium	(US$/oz)	190	180	228
Rhodium	(US$/oz)	585	470	634
Gold	(US$/oz)	375	370	328
Ruthenium	(US$/oz)	n/a	29	29
Iridium	(US$/oz)	n/a	122	122
Nickel	(US$/lb)	3.80	4.12	4.12
Copper	(USc/lb)	79.50	83.00	83.00
Cobalt	(US$/lb)	8.04	8.04	8.04
Exchange Rate	(US$:ZAR)	8.00	8.00	8.25
Platinum	(ZAR/kg)	151,494	174,900	161,799
Palladium	(ZAR/kg)	48,869	46,297	60,476
Rhodium	(ZAR/kg)	150,465	120,887	168,164
Gold	(ZAR/kg)	96,452	95,166	87,000
Ruthenium	(ZAR/kg)	n/a	7,459	7,692
Iridium	(ZAR/kg)	n/a	31,379	32,360
Nickel	(ZAR/t)	67,021	72,664	74,935
Copper	(ZAR/t)	14,021	14,639	15,096
Cobalt	(ZAR/t)	138,330	138,330	138,330

1.4 Verification, Validation and Reliance

The valuation as reported herein is dependent upon technical, financial and legal input. The technical information as provided to and taken in good faith by SRK has not been independently verified by means of re-calculation. SRK has however:

- Conducted a comprehensive review and assessment of all material technical issues likely to influence the future performance of the PGM Assets, which included the following:
  - inspection visits to underground operations, processing facilities, surface structures and associated infrastructure at Nkomati Mine and Modikwa Mine during November 2003,
  - a review of the feasibility study documentation with respect to the Two Rivers Project and the Nkomati Expansion Project,
  - discussion and enquiry following access to key personnel based at the PGM Assets and head office,
  - a review and, where considered appropriate by SRK, modification of the Companies' estimates and their classification of Mineral Resources and Mineral Reserves,
  - a review of the Companies' plans and supporting documentation and, where considered appropriate by SRK, modification of the Companies' Life-of-Mine ("LoM") plans and the associated Technical Economic Parameters ("TEPs"), including assumptions regarding future operating costs, capital expenditures and commodity production of the PGM Assets,
  - an examination of historical information and results made available by the Companies in respect of the PGM Assets in support of, in particular, the forecasts contained in the LoM plans and one-year budgets; and
- Satisfied itself that such information is both appropriate and valid for the valuation as reported herein. SRK considers that with respect to all material technical-economic matters it has undertaken all necessary investigations to ensure SAMREC compliance, both in terms of level of investigation and level of disclosure.

SRK's approach in undertaking a review of the Mineral Resource and Mineral Reserve estimates and classifications is detailed in Section 4 of this CPR. In summary, SRK has generated Mineral Resource and Mineral Reserve statements based on a review of the LoM plans and the methodologies applied for estimation and classification of Mineral Resources and Mineral Reserves.

Where fundamental base data has been provided (LoM plans, capital expenditures, operating budgets, etc.) for the purposes of review, SRK recognises the JSE Listing Requirements of 12.3(e) and accordingly states that SRK has performed all necessary validation and verification procedures deemed appropriate in order to place an appropriate level of reliance on such information.

SRK provides assurances to the directors of the Companies that the TEPs, including production profiles, operating expenditures and capital expenditures, of the PGM Assets as provided to SRK by the Companies and reviewed and modified where appropriate by SRK are reasonable, given the information currently available.

1.4.1 Technical Reliance

SRK places reliance on the Companies CPs that all technical information provided to SRK at the time of writing is both valid and accurate for the purpose of compiling this CPR.

The information with respect to Mineral Resources and Mineral Reserves as stated by the Companies has been prepared under the direction of the following individuals:

- **Avmin:** Dr. F. Camisani-Calzolari, PrSciNat (SACNASP), FSAIMM, MAuIMM, FGSSA, CRIRSCO (Combined Reserve International Report Standards Committee of CMMI). Dr. Camisani-Calzolari has over 30 years experience in the mining industry and was responsible for Mineral Resource and Mineral Reserve reporting at Avmin for a number of years until recently, and is currently retained as a consultant to Avmin on a part time basis;
- **ARM Platinum:** Mr. Brian Smith, IMSSA, SAIMM, Plato. Mr. Smith is responsible for Mineral Reserve and Mineral Resource reporting at Modikwa Mine and has 17 years experience in the mining industry; and
- **Harmony:** Mr. Graham Briggs, Pr. Sci. Nat, BSc (Hons) Geology. Mr. Briggs is responsible for ore reserve management, organic growth and capital projects on the executive committee of Harmony. He has 29 years experience in the gold mining industry and is a registered geological scientist.

1.4.2 *Financial Reliance (the Companies)*

In consideration of all financial aspects relating to the valuation of the PGM Assets and the summary equity valuation of the Companies, SRK has placed reliance on the Financial Officers of the Companies that the following information for the Tax Entities and the Companies is accurate as at 1 January 2004:

- Unredeemed capital balances;
- Assessed losses;
- Opening balances for debtors, creditors and stores;
- Working capital and taxation logic;
- Values ascribed to interests in unlisted and listed entities; and
- Balance sheet items, specifically cash on hand, debt and mark to market value of derivative instruments (currency and commodity hedges).

The information with respect to the above financial data as defined by the Companies has been prepared under the direction of the following individuals:

- Avmin: Mr. Doug Campbell, CA (SA). Mr. Campbell is the chief financial officer for Avmin and has 20 years experience in financial management, 5 years of which has been in the mining industry;
- ARM Platinum: Mr. Pieter Taljaard, B Com, B Iur, Chartered Management Accountant and Higher Diploma in Tax Law. Mr Taljaard is a Director for ARM Platinum and has 34 years experience, 26 years of which has been within the mining industry;
- Harmony: Mr. Frank Abbott, BCom, CA(SA). Mr. Abbott is the chief financial officer for Harmony and has 22 years experience in financial management, all of which has been within the mining industry.

1.4.3 *Financial Reliance – Deutsche Bank (South Africa)*

In generating the valuation of the PGM Assets, SRK has relied upon the commodity price and macro economic forecasts as included in Table 1.2 below, which have been generated by Deutsche Bank (South Africa). In respect of compliance with 12.3(e) of the Listing Requirements of the JSE, SRK has secured the JSE's dispensation from providing details of the individuals responsible for the generation of the information as presented in Table 1.2.

Table 1.2 Base Case Macro-Economic Parameters

Parameter	Units	2004	2005	2006	2007	2008
Nominal Commodity Prices						
Platinum	(US$/oz)	698	606	536	515	520
	(ZAR/kg)	175,042	175,597	172,924	176,608	187,578
Palladium	(US$/oz)	227	298	357	381	385
	(ZAR/kg)	56,926	86,335	115,283	130,690	138,807
Rhodium	(US$/oz)	570	833	1,250	1,546	1,561
	(ZAR/kg)	142,942	241,446	403,490	529,825	562,733
Gold	(US$/oz)	366	386	390	394	398
	(ZAR/kg)	91,659	111,797	125,823	134,929	143,309
Ruthenium	(US$/oz)	30	32	32	32	33
	(ZAR/kg)	7,464	9,152	10,300	11,045	11,731
Iridium	(US$/oz)	83	87	88	89	90
	(ZAR/kg)	20,747	25,281	28,452	30,512	32,407
Nickel	(US$/lb)	3.79	3.59	3.63	3.66	3.70
	(ZAR/t)	65,130	71,332	80,281	86,091	91,438
Copper	(USc/lb)	82	95	96	97	98
	(ZAR/t)	14,058	18,866	21,233	22,770	24,184
Cobalt	(US$/lb)	8.04	8.13	8.21	8.29	8.37
	(ZAR/t)	138,330	161,435	181,688	194,837	206,939
Macro-Economics						
RSA CPI	(%)	2.55%	4.10%	4.77%	4.50%	4.50%
US CPI	(%)	1.38%	1.03%	1.00%	1.00%	1.00%
Exchange Rates – Nominal – Non-PPP	(US$:ZAR)	7.80	9.01	10.04	10.66	11.21

Taking cognisance of the volatile nature of both the commodity prices and the exchange rate between the United States Dollar ("US$") and the South African Rand ("ZAR"), SRK presents sensitivities on revenue ranging between –30% and + 30% to these macro-economic projections as discussed in the risks and opportunities in Section 12 of this CPR.

1.4.4 Legal Reliance

In consideration of all legal aspects relating to the valuation of the PGM Assets, SRK has placed reliance on the following representatives of the Companies that the following legal aspects are correct as at 1 January 2004. References included below relate to the Listing Requirements of the JSE.

- In respect of 12.8(e) and 12.10(g) that "a statement by the directors of any legal proceedings that may have an influence on the rights to explore for minerals, or an appropriate negative statement" has been included in the body of the various circulars relating to the Transactions;
- In respect of 12.10(e) that the legal ownership and of all mineral and surface rights has been verified; and
- In respect of 12.14(a)(xii) that no significant legal issue exists which would affect the "likely viability of a project and/or on the estimation and classification of the Mineral Reserves" and Mineral Resources as reported herein.

The information with respect to the above legal data as defined by the Companies has been prepared under the direction of the following individuals:

- Avmin: Mr. Pieter Coetzee, B.Proc. Mr. Coetzee is the general manager legal services for Avmin and has 24 years' experience in law with 18 years experience in the mining industry;
- ARM Platinum: Mr. Dan Simelane, BA, LLB, LLM, H Dip Tax. Mr Simelane has 8 years legal experience and acted as legal advisor to Avmin Limited and the Swaziland Electricity Board; and
- Harmony: Mr. Mike Wasserfall, B.Com (Hons) LLM. Mr. Wasserfall is a legal advisor to Harmony and has 20 years experience all of which in the mining industry. In respect of Mineral Rights, Mining Authorisation and other such rights Mr. Wasserfall was assisted by Mr. George Edward Warren De Wit. Mr. Warren de Wit is the Group Surveyor for Harmony and has 24 years experience in the mining industry.

1.5 Valuation Techniques

The summary equity valuation for the Companies is based on a sum of the parts approach comprising net asset values ("NAV") for the PGM Assets and supplemental information as provided by the Companies (Balance sheet items and interests in listed and unlisted companies).

The NAV for the PGM Assets have been derived using discounted cashflow ("DCF") techniques applied on a post-tax pre finance basis for the individual Tax Entities. These are based on the various LoM plans and where appropriate are subdivided into valuations based on Mineral Reserves alone and Mineral Reserves and Mineral Resources where such LoM plans have been generated.

In respect of non-LoM Mineral Resources, these have not been valued separately and commentary is limited to technical disclosure requirements in accordance with the Listing Requirements of the JSE.

The post-tax pre-finance cash flows from each Tax Entity have been developed on the basis of the commodity price and macro-economic projections as presented in Table 1.2. For each tax entity SRK have developed Financial Models ("FM"), the results of which are reported in Section 13.0 of this CPR. The FMs are based on: annual cashflow projections ending 30 June; and TEPs stated in 1 January 2004 money terms. As the valuation date is 1 January 2004, the cashflow projection for Year 1 includes projections for 6 months only.

At the time of writing no indication of the sensitivity of the Mineral Reserve or LoM plans to commodity prices were available. Variances in commodity prices exist between that used to derive Mineral Reserves the current spot market prices and that used for the financial valuation. The impacts on the individual valuation is considered limited as, either grade is not significantly variable across the deposits (Modikwa Mine and Two Rivers Project) or due to finite life (Nkomati Mine Base Case). Further, as the generation of LoM plans is constrained by the annual planning process and planning periods (different year end), SRK has based its review on the latest available information as presented by the Companies.

1.5.1 JSE Compliance

This CPR principally comprises a technical-economic appraisal of the PGM Assets and has been prepared in compliance with the Listings Requirements of the JSE, specifically Sections 12.3, 12.8, 12.9 and 12.14. In addition to the PGM Assets, technical information on a number of exploration properties has also been included.

A copy of this CPR will be included in the Revised Listing Particulars to be dispatched to Avmin's shareholders.

In compliance with 12.6, Table 1.3 below presents a cross-reference between the Listing Requirements and the primary sections as included in this CPR.

Table 1.3 JSE Compliance cross reference

CPR Section	Listing Requirements
1.	12.3(a), 12.3(b), 12.3(c), 12.3(e); 12.6, 12.8(a), 12.9(a), 12.9(b), 12.9(c), 12.9(d),12.9(e), 12.9(f); 12.11(a), 12.11(b) 12.14(a) – (viii), (xi), (xii), (xvi), (xvii), (xviii); 12.14(b) – (iv), (xvii)
2.	12.10(d), 12.10(g), 12.10 (h) – (i), (ii), (iii); 12.10(i), 12.10(j) 12.11(a), 12.11(b) 12.14(a) – (ix), (x), (xii), (xvii)
3.	12.10(a) – (xi); 12.10(b) – (i); 12.10(d)
4,	12.10(a), – (i), (ii), (iii), (iv), (v), (vi), (vii), (viii), (ix), (x), (xii), (xiii), (xv), (xvi) 12.10(b) – (ii), (iii), (iv); 12.10(b) – (vi) – (1), (2), (3), (4), (5), (6), (7), (8), (9); 12.10(d); 12.10(f) – (i), (ii) 12.14(a) – (ii), (iii), (iv), (xii), (xiv), (xv); 12.14(b) – (ii)
5.	12.10(b) – (v); 12.10(d) 12.14(a) – (iv), (x), (xii)
6.	12.10(b) – (v) 12.14(a) – (v), (vi), (vii), (x), (xii); 12.14(b) – (iii)
7.	12.14(a) – (xii)
8.	12.14(a) – (viii), (xx) 12.14(b) (vi)
9.	12.14(a) – (xii)
10.	12.14(a) – (xii)
11	12.10(c), 12.14(a) – (i), (viii), (xii)
12.	12.14(a) – (viii), (xx) 12.14(b) – (v), (vi)
13.	12.10(b) – (v); 12.14(a) – (xx)
	12.14(b) – (i), (iii), (iv), (vi), (viii), (ix), (xi), (xiv), (xv), (xvi), (xvii)
14.	12.14(a) – (ii), (xiii), (xviii), (xix), 12.14(b) – (vi), (x), (xii), (xiii), (xvi), (xviii)
Glossary	12.10(k)

In respect of specific compliance items SRK notes the following:

- 12.10(e) – (i), (ii): A detailed list of the companies' mineral and surface rights will be made available at the corporate offices of each of the respective companies. Dispensation has been granted in this regard from inclusion in the CPR for practical purposes of volume;
- 12.8(e); 12.10(g): A detailed statement of all legal proceedings which may have an influence on the rights to explore for minerals or an appropriate negative statement has been included in the body of the circulars; and
- 12.14(a) (xvi): The Companies are in effect mature operating companies with a track record of operating history and accordingly other than brief summaries of Directors as included in the body of the circular and the Revised Listing Particulars, details relating to the qualifications and experience of key technical staff have been excluded from this CPR. Dispensation has been granted in this regard from inclusion in the CPR for practical purposes of volume;

– 12.5: The current mining operations currently produce concentrates, which are subsequently toll treated third party facilities. The specific contractual terms (technical and financial) are confidential to the contracting parties, both of which are specifically prohibited from dissemination/publication external to the contracting parties. In order to derive the valuation of the PGM Assets, SRK has reviewed the supporting documentation and ensured that the specific terms are appropriately included in the FMs. In recognition of the legally confidential nature of the contracts SRK has secured dispensation from the JSE from publication of the technical details of the toll-treatment contracts.

1.6 Warranties and limitations

SRK's opinion is effective 1 January 2004 and is based on information provided by the Companies throughout the course of SRK's investigations, which in turn reflect various technical-economic conditions prevailing at the time of writing. These conditions can change significantly over relatively short periods of time and as such the information and opinions contained in this report may be subject to change.

In this CPR, SRK provides assurances to the directors of the Companies that the TEPs, including production profiles, operating expenditures and capital expenditures, of the PGM Assets as provided to SRK by the Companies and reviewed and where appropriate modified by SRK are reasonable, given the information currently available.

The achievability of LoM plans, budgets and forecasts are neither warranted nor guaranteed by SRK. The forecasts as presented and discussed herein have been proposed by the Companies' management and cannot be assured; they are necessarily based on economic assumptions, many of which are beyond the control of the Companies. Future cash flows and profits derived from such forecasts are inherently uncertain and actual results may be significantly more or less favourable.

This report includes technical information, which requires subsequent calculations to derive subtotals, totals and weighted averages. Such calculations may involve a degree of rounding and consequently introduce an error. Where such errors occur, SRK does not consider them to be material.

1.6.1 Disclaimers and Cautionary Statements for US Investors

In considering the following statements SRK notes that the term "Mineral Reserve" for all practical purposes is synonymous with the term "Ore Reserve".

The United States Securities and Exchange Commission (the "SEC") permits mining companies, in their filings with the SEC, to disclose only those mineral deposits that a company can economically and legally extract or produce from. Certain terms are used in this report, such as "resources", that the SEC guidelines strictly prohibit companies from including in filings.

Mineral Reserve estimates are based on many factors, including, in this case, data with respect to drilling and sampling. Mineral Reserves are derived from estimates of future technical factors, future production costs, future capital expenditure, future product prices and the exchange rate between the ZAR and the US$. The Mineral Reserve estimates contained in this report should not be interpreted as assurances of the economic life of the PGM Assets or the future profitability of operations. As Mineral Reserves are only estimates based on the factors and assumptions described herein, future Mineral Reserve estimates may need to be revised. For example, if production costs increase or product prices decrease, a portion of the current Mineral Resources, from which the Mineral Reserves are derived, may become uneconomical to recover and would therefore result in lower estimated Mineral Reserves.

The LoM plans, the TEPs and the FMs include forward-looking statements in compliance with the JSE Listings Requirements. These forward-looking statements are necessarily estimates and involve a number of risks and uncertainties that could cause actual results to differ materially.

1.7 Qualifications of Consultant

The SRK Group comprises 500 staff, offering expertise in a wide range of resource engineering disciplines. The SRK Group's independence is ensured by the fact that it holds no equity in any project. This permits the SRK Group to provide its clients with conflict-free and objective recommendations on crucial judgment issues. The SRK Group has a demonstrated track record in undertaking independent assessments of resources and reserves, project evaluations and audits, CPRs and independent feasibility evaluations to bankable standards on behalf of exploration and mining companies and financial institutions worldwide. The SRK Group has also worked with a large number of major international mining companies and their projects, providing mining industry consultancy service inputs. SRK also has specific experience in commissions of this nature.

This CPR has been prepared based on a technical and economic review by a team of 20 consultants sourced from the SRK Group's offices in South Africa and the United Kingdom over a two-month period. These consultants are specialists in the fields of geology, resource and reserve estimation and classification, underground and open pit mining, rock engineering, metallurgical processing, hydrogeology and hydrology, tailings management, infrastructure, environmental management and mineral economics.

Neither SRK nor any of its employees and associates employed in the preparation of this report has any significant beneficial interest in the Companies or in the assets of the Companies. SRK will be paid a fee for this work in accordance with normal professional consulting practice.

The individuals who have provided input to this CPR, who are listed below, have extensive experience in the mining industry and are members in good standing of appropriate professional institutions.

- Andrew Macdonald, C. Eng, MIMM, MBL, MSc;
- Andrew Pooley, Pr. Eng, MSAIMM, AMIMM, B.Eng (Mining);
- Andrew Smithen, Pr. Eng., MBL, MSAICE, MSAIAE, MSAIMM, MSc;
- Awie Swart, MSAIMM, MSANIRE, COM Adv. Rock Eng. Cert. B.Eng.;
- Carel Roode, Pr. Eng., BSc. (Hons), B. Comm., MSAIMM, MMMA;
- Derek Walters, MSc (Eng), GDE, MVSA;
- Fiona Cessford, C. Biol, Pr. Sci. Nat., MSc;
- Fred Harvey, B. Eng, SANIRE, SAIMM;
- Iestyn Humphreys, IMMM, AIME, PhD;
- Johann Boschoff, Pr. Eng, MSAICE, ECSA, M. Eng;
- Kenneth Owen, FSAIMM, MAMMSA, MSc Eng;
- Lee Barnes, C.Eng, MIMMM, MSc;
- Louie Human, COM Adv. Rock Eng. Cert., NHD (Geology);
- Mark Wanless, BSc (Hons);
- Michael Harley, Pr. Sci Nat. (SACNASP), MSAIMM, MAusIMM, PhD;
- Oskar Steffen, Pr. Eng. (ECSA)., MSAIMM, PhD;
- Pepe Moreno, Pr. Eng., BSc;
- Roger Dixon, Pr. Eng, FSAIMM, BSc (Mining);
- Victor Hills, Pr.Eng., MSAIMM, B.Eng.;
- Wally Waldeck, Pr. Eng (ECSA) , MSAIMM, BSc (Mining), MBA; and
- William Schoeman, Pr. Eng, MSAIME, BSc.Eng (Mech).

In compliance with Section 12.3 of the JSE Listing Requirements and the SAMREC Code, the following should be noted:

- The Competent Person with overall responsibility for the compilation of this CPR is Dr. O. K. H. Steffen, Pr. Eng (ECSA) who is an employee of SRK. Dr. Steffen is a mining engineer with 37 years' experience in the mining industry and has supervised numerous due-diligence reviews and various technical studies in South Africa and internationally during the past five years. Dr. Steffen also assumes responsibility for reporting of Mineral Reserves as included in this CPR; and
- The Competent Person with overall responsibility for Mineral Resources in this CPR is Dr. Michael Harley Pr. Sci Nat (SACNASP) who is an employee of SRK. Dr. Harley is a mining geologist with 14 years' experience in the mining industry and has been responsible for the reporting of Mineral Resources on various properties in South Africa and internationally during the past five-years.

1.8 Valuation Summary

The summary equity valuation for the Companies is presented in section 14 of this CPR, specifically Table 14.1 for Avmin, Table 14.2 for ARM Platinum and Table 14.3 for Harmony. In respect of Harmony and specifically the Kalplats Project, no DCF valuation is included and reference is made to the various circulars which details the terms of the disposal of Kalplats by Harmony.

2. THE PGM ASSETS

2.1 Introduction

This section gives a brief overview of the Companies and their respective PGM Assets including, location, historical company development, property description, and historical results. Specifically, where reference is made to legal compliance within the regulatory environment in which the Companies operate, SRK has placed reliance on the individuals as named in Section 1.4.4.

Figure 2.1 presents the overall company structure on completion of the Transaction.

2.2 The Companies and Operating Structures

2.2.1 Avmin

Avmin is a public company listed is on the JSE with a secondary listing on the London Stock Exchange Limited ("LSE").

Through subsidiaries or various agreements the company manages and operates mining assets comprising operating and developing underground and open pit operations in the ferrous, precious and base metals sector, located in the Republic of South Africa.

Avmin's company ownership comprises holdings in direct subsidiaries, indirect subsidiaries, direct and indirect joint venture companies and indirect associate companies. These comprise dormant companies, exploration companies, mining companies, and investment holding companies, management service companies, marketing companies, beneficiation companies, mineral rights holding companies and property holding companies.

Avmin's operating structure principally comprises of three reporting entities:

- Ferrous Metals Division which comprises a 50.3% interest in Assmang Limited, a listed company which operates iron ore mining operations, Beeshoek Mine, manganese ore mining operations, Nchwaning Mine, chrome mining operations, Dwarsrivier Mine and a chrome alloy and manganese alloy smelting and refining facilities;
- Precious Metals Division which manages:
  - a 42.2% interest in Avgold Limited, a listed company which operates the Target gold mine; and
  - a 55% interest in Two Rivers Platinum (Pty) Limited ("Two Rivers") comprising the Two Rivers Project with Impala Platinum Holdings Limited ("Implats") holding the remaining 45%; and
- Base Metals Division, which manages a 100% interest in the Nkomati Mine.

Avmin's principal executive offices are located at 56 Main Street, Johannesburg, Gauteng Province, Republic of South Africa.

2.2.2 ARMI

ARMI is an unlisted private company incorporated in the Republic of South Africa. Its principal assets are:

- a 13.6% interest in Harmony; and
- an effective interest of 41.5% in Modikwa Mine held via a 100% interest in ARM Platinum which holds an 83% interest in ARM Consortium which in turn has a 50% interest in the unincorporated Joint Venture (the "Modikwa Joint Venture") between Anglo American Platinum (Pty) Limited ("Anglo Platinum") and ARM Consortium.

2.2.3 Harmony

Harmony is a public company listed is on the JSE with secondary listings on the LSE, the Paris Bourse, and IDRs traded on the Brussels Bourse and an American Depository Shares ("ADS") programme on the New York Stock Exchange ("NYSE").

Harmony, through wholly owned subsidiaries or joint venture agreements, manages and operates Business Units, comprising operating and developing underground, open pit mining and surface reclamation operations in three countries. In addition, Harmony's exploration programme, targeting gold and Platinum Group Elements ("PGEs"), extends its country presence (through direct and indirect subsidiaries) into a total of five countries.

Harmony's company ownership comprises holdings in direct subsidiaries, indirect subsidiaries, direct and indirect joint venture companies and indirect associate companies. These comprise dormant companies, exploration companies, gold mining companies, and investment holding companies, management service companies, marketing companies, beneficiation companies, mineral rights holding companies and property holding companies.

Harmony's operating structure principally comprises two reporting entities represented by South African Operations and International Operations. South African Operations are sub-divided into nine reporting entities: Free Gold Operations, Harmony Free State Operations, Welkom Operations, West Wits Operations (including Randfontein, Elandsrand and Deelkraal), Evander Operations, Orkney Operations and Kalgold Operations. The International Operations are subdivided into two operations namely the Australian Operations and Canadian Operations.

Harmony's principal executive offices are located at 4 High Street, First Floor, Melrose Arch, Melrose North 2196, Johannesburg, Gauteng Province, Republic of South Africa.

Harmony's core business is gold mining whose activities include the exploration, development and operation of gold mines, including direct interests in the marketing of gold and indirect interests in the manufacturing and retailing of gold jewellery.

2.3 Overview of the PGM Assets

A tabulation of Mining Authorisations, Mineral Rights and Surface Rights relating to the PGM Assets, Exploration Properties and other land holding positions will be made available at the respective Companies head offices.

2.3.1 Nkomati Mine

Nkomati Mine is situated in Mpumalanga Province, Republic of South Africa, some 300km east of Johannesburg. Located at latitude 25° 40'S and longitude 30° 30'E, the site is accessed via the national highway N4 between Johannesburg and Machadadorp, via a provincial road R341 and the R351 tarred road (Figure 2.2).

Exploration in the area (Table 2.1) dates from the early 1930s, followed by a period of consolidation of mineral rights and technical evaluation prior to the discovery of massive sulphides in 1990, a feasibility study in 1995 and development of commercial mining operations during January 1997.

Mining operations comprise a mechanised underground mining operation which feeds a concentrator for production of two types of concentrate (High Grade concentrate and Bulk Concentrates) both containing PGEs, nickel, copper and cobalt. Final products are transported to various third parties for toll treatment.

Table 2.2 gives the salient operating statistics and Table 2.3 gives the historical and forecast operating statistics for Nkomati Mine from 1 July 2000 through to 30 June 2004 inclusive. 2004 is sub-divided into two periods: 6 months to 31 December 2003 and a six-month forecast to June 2004. To date Nkomati Mine has treated 1.6Mt of rock grading 2.24%Ni to produce 292kt of concentrates grading 9.71%Ni.

Table 2.1 Nkomati Mine: historical development

Date	Activity
1929	Discovery of Uitkomst by Wagner.
1939	Eastern Transvaal Consolidated Mines Limited ("ETC") purchases mineral rights on the Slaaihoek farm.
1970	Dr. Coetzee recognizes potential for magmatic ore deposit on Uitkomst farm 541JT.
1972	Joint Venture Between Anglo American Corporation Limited ("AAC") and International Nickel Company ("INCO") formed.
1975	Preliminary investigations by ETC on the Slaaihoek farm 540JT.
1977	AAC acquires mineral rights on Uitkomst farm 541JT.
1980	INCO disposes of interest in AAC-INCO JV.
1987–1992	Exploration and Evaluation Period on Uitkomst Farm.
1988	Mineralisation investigated at Slaaihoek Farm.
1990	Discovery of massive sulphides.
1993	Formation of Nico Joint Venture between Middle Witwatersrand (Western Areas) Limited and ETC.
1993–1994	Exploration and evaluation of massive sulphide potential.
1995	Establishment of the Nkomati Joint Venture between Anglo Operations Limited and the Nico Joint Venture.
1995	Feasibility Study to investigate the viability of mining massive sulphides underground.
1997	Establishment of the AAC-Avmin Joint Venture and development of the Nkomati Mine.
1999	Ongoing evaluation and feasibility study work to assess expansion potential.
2004	Acquisition of the remaining 25% interest of Anglo Operations Limited in Nkomati Mine for a consideration of ZAR260m.

Table 2.2 Nkomati Mine: salient operating statistics

Production Unit	Operating Capacity (ktpm)	2004 Throughput (ktpm)	Life (years)	Classification
Main Shaft	39	24	4.0	short-life
Nkomati Concentrator	30	22	4.1	short-life

Table 2.3 Nkomati Mine: salient historical and forecast operating statistics

Statistic	Units	2000	2001	2002	2003	2004[1]	2004[2]
Production							
Tonnes Milled[3]	(kt)	238	281	254	277	156	135
Grade	(%Ni)	2.30%	1.91%	2.20%	2.50%	2.28%	2.13%
Concentrate	(t)	41,240	41,385	46,576	55,345	28,718	21,707
	(%Ni)	10.66%	10.47%	9.33%	9.96%	10.00%	10.35%
Metal	(t)	4,396	4,333	4,346	5,512	2,872	2,246
Sales							
Concentrate	(t)	39,396	41,032	46,010	54,869	27,219	22,793
	(%Ni)	10.5%	9.8%	8.4%	8.89%	10.54%	9.79%
Productivity							
TEC	(No.)	220	222	233	243	243	243
Milling	(t/TEC/month)	90	105	91	95	107	92
Nickel Production	(t/TEC/month)	1.7	1.6	1.6	1.9	1.0	1.5
Health and Safety							
Fatalities	(No.)	0	0	0	0	0	0
Fatality Rate	(per mmhrs)	0	0	0	0	0	0
LTIFR	(per mmhrs)	32.21	11.25	9.74	2.10	8.65	0
Expenditures							
Cash operating costs[4]	(ZARm)	83.1	95.3	91.3	124.5	70.4	55.7
Cash operating costs[5]	(ZARm)	63.7	90.7	129.1	138.2	63.6	51.2
Capital Expenditure	(ZARm)	16.8	25.6	29.2	39.6	6.6	1.9
Efficiencies							
Cash operating costs[4]	(ZAR/t)	350	339	359	449	450	413
	(ZAR/tNi)	20,169	23,691	23,513	25,535	24,516	24,947
Cash operating costs[5]	(ZAR/t)	618	663	867	947	856	793
	(ZAR/tNi)	35,613	46,243	56,763	53,882	46,669	47,889
Capital Expenditure	(ZAR/t)	71	91	115	143	42	14
	(ZAR/tNi)	4,070	6,358	7,509	8,130	2,304	858

[1] *6 months actuals to 31 December 2003.*

[2] 6 months forecast to 30 June 2004.

[3] Note that tonnes milled in the above table is net of hand sorting which removes 10% of the mined tonnage at a grade of 0.1%Ni.

[4] On mine cash costs.

[5] Off mine cash costs.

Since 1999, Avmin has initiated a series of Feasibility Studies which investigated a number of potential operating scenarios. These studies ranged from the continuation of current underground mining operations at 25ktpm to a large-scale project capital intensive expansion (ZAR2.3bn) to treat 375ktpm and on-site production of refined metal by development of an Activox Refinery. Mining operations at this level would be sourced from open pit mining at a maximum ore mining rate of 375ktpm and underground mining at 35ktpm operating over a 16 year life. In addition various intermediate options have also been assessed.

The Feasibility study dated September 2002 is currently being updated to account for the results of: additional infill drilling; latest metallurgical testwork results; alternative production capacities and process routes; and capital cost revisions. It is anticipated that this evaluation process will be complete during the third quarter of 2004, with a recommendation to be made to the Avmin Board soon thereafter. As at 1 January 2004, Avmin had not publicly published a SAMREC compliant Mineral Reserve statement for the Nkomati Expansion Project. This CPR presents a SAMREC compliant Mineral

Resource and Mineral Reserve statement as published (and reviewed by SRK) in the completed Feasibility Study for the Nkomati Expansion Project in addition to the valuation results from the FMs. To date, no specific funding sources have been agreed and accordingly cashflows are presented on a post-tax pre-finance basis. SRK has been informed that the 2004 Annual Report will include an updated version of the Mineral Resource and Mineral Reserve statement as included in this CPR.

2.3.2 Modikwa Mine

Modikwa Mine is situated on the boundary between the Limpopo Province and Mpumalanga Province, Republic of South Africa, some 350km north-east of Johannesburg. Located at latitude 26°24'S and longitude 27°41'E Modikwa Mine is accessed locally via the main R37 road between Polokwanwe and Burgersfort (Figure 2.3).

Exploration in the area (Table 2.4) dates back to the mid 1920's, with extensive drilling programmes undertaken between 1970 and 1980 with completion of a Feasibility Study targeting the exploitation of the UG2 during the late 1990s. During 1998, negotiations with various empowerment companies commenced leading to the formation of the Modikwa Joint Venture in 2000. Mine construction commenced during late 2000 and operations are currently in a ramp-up phase with capital expenditures to 31 December 2003 totalling ZAR2.1bn.

Mining operations currently access the UG2 via two primary declines from surface with mining via a fleet of mechanized equipment. Run-of-Mine ("RoM") tonnage is processed at the Modikwa Concentrator to produce PGE rich concentrate, which in turn is transported to Anglo Platinum's Polokwane smelting and refining facilities.

Table 2.5 gives the salient operating statistics and Table 2.6 gives the historical and forecast operating statistics for Modikwa Mine from 1 July 2001 through to 30 June 2004 inclusive. 2004 is sub-divided into two periods: 6 months to 31 December 2003 and a six-month forecast to June 2004. To date Modikwa Mine has milled 3.40Mt of rock grading 3.02(4Eg/t) to produce 69kt of concentrates grading 124(4Eg/t).

Table 2.4 Modikwa Mine: historical development

Date	Activity
1920's	Discovery of the Merensky Reef on the farm Maandagshoek. Trenching and adits excavated on the Merensky Reef and UG2.
1960's	Diamond drilling in the area to determine basic characteristics.
Late 1970s	Further excavations undertaken.
Late 1980s	Extensive drilling programmes in the area to determine focus of further work, Merensky or UG2.
Late 1990s	Completion of a Feasibility Study on the exploitation of the UG2.
1998	Empowerment negotiations commence.
2000	Heads of Agreement signed between Anglo Platinum and ARM Consortium for the JV.
Late 2000	Commence sinking of south decline shaft system.
2002	Commencement of commercial mining operations.

Table 2.5 Modikwa Mine: salient operating statistics

Production Unit	Operating Capacity (ktpm)	2004 Throughput (ktpm)	Life (years)	Classification
North Decline	130	122	6.5	Medium-Life
South Decline	130	123	6.5	Medium-Life
Mid Decline	29	16	2.0	short-life
Onverwacht Hill Adits	30	31	1.0	short-life
Modikwa Concentrator	240	226	6.5	Medium-Life

Table 2.6 Modikwa Mine: salient historical and forecast operating statistics

Statistic	Units	2002	2003	2004[1]	2004[2]
Production					
Tonnes Milled	(kt)	0	2,082	1,315	1,356
Grade	(4Eg/t)	0.00	2.72	3.49	4.65
Development	(m)	9,196	35,710	18,914	21,347
Area	(m^2)	0	149,583	169,944	272,766
Concentrate	(t)	0	40,339	29,123	33,900
	(4Eg/t)	0	118	132	162
Sales					
Concentrate	(t)	0	40,339	25,701	32,205
	(4Eg/t)	0	118	132	162
Productivity					
TEC	(No.)	1,980	2,074	4,285	4,178
Mining	(m^2/TEC/month)	0	12	7	11
	(mm/TEC/month)	387	2,870	733	852
Milling	(t/TEC/month)	0	167	51	54
4E Production	(4Eg/TEC/month)	0.0	381.1	131.9	208.6
Health and Safety					
Fatalities	(No.)	1	2	1	0
Fatality Rate	(per mmhrs)	0.03	0.04	0.02	0.00
LTIFR	(per mmhrs)	0.48	0.54	0.71	0.00
Expenditures					
Cash operating costs[3]	(ZARm)	0.0	444.6	440.8	435.9
Capital Expenditure	(ZARm)	1,118.8	799.5	147.7	16.6
Efficiencies					
Cash operating costs[3]	(ZAR/t)	0	214	335	321
	(ZAR/4Ekg)	0	93,757	129,992	83,358
Capital Expenditure	(ZAR/t)	0	384	112	12
	(ZAR/4Ekg)	0	168,609	43,557	3,175

[1] 6 months actuals to 31 December 2003.

[2] 6 months forecast to 30 June 2004.

[3] *On-mine cash costs only.*

2.3.3 Two Rivers Project

The Two Rivers Project is situated in Mpumalanga Province, Republic of South Africa, some 65km northwest of Lydenburg. Located at latitude 24°50'S and longitude 30°10'E, the complex is accessed via a tarred road linking the R555 at Kennedy's Vale to the R37 Lydenburg (Figure 2.4). The nearest railhead is situated at the town of Steelpoort some 30km to the northeast of the Two Rivers Project.

A perennial watercourse known as the Klein Dwars Rivier traverses the property in a wide valley. The western side of the valley forms a north-south trending range of rugged hills, which rise approximately 500m above the valley floor. On the eastern side of the valley the topography is less extreme and the alluvial soils have been irrigated and commercial crops were cultivated. Power will be made available from the Eskom 132/33kV Uchoba sub-station located on the property. Further, two Eskom transmission lines (275kV and 400kV) also traverse the property,

Exploration, development and production history in the area dates from the early 1920s. During 1929 Lydenburg Platinum Areas Limited commenced mining activity however no detailed records are available. Following acquisition by Gold Fields Mining and Development Limited ("GFMD"), exploration activity re-commenced in 1987 and by 1996 included exploration results from trenching, near surface adits, two diamond-drilling programmes (1987 and 1996) and a ground magnetic survey

(1996). The primary focus of this work as undertaken by GFMD was to establish the potential of the Merensky Reef, specifically the open pit potential of the shallow PGE bearing oxide material. By 1998, GFMD concluded that the grades of the oxide and Merensky Reef zones were insufficient to meet GFMDs corporate needs.

Following its acquisition in September 1998, Assmang undertook significant exploration including aeromagnetic surveys, diamond drilling, assay sampling, metallurgical test work and resource estimation. The primary focus of this work was the identification of potential chrome resources, specifically the UG2 Chromitite.

Table 2.7 Two Rivers Project: historical development

Date	Activity
1920s	Exploration activity in the immediate vicinity of Dwars Rivier Farm.
1929	First mining activity by Lydenburg Platinum Areas Limited.
1987–1989	GFMD undertakes first exploration phase targeting both chrome and PGE bearing orebodies.
1996–1997	GFMD undertakes second exploration phase targeting shallow open pit oxide MR .
1988	Assmang acquires 100% of the mineral and surface rights on the Farm Dwars Rivier No. 372 KT, for a consideration of ZAR163m.
1998	Assmang commences exploration activity (aeromagnetic survey) targeting UG2 orebodies.
1999	Assmang commences diamond-drilling programme to delineate SAMREC compliant Mineral Resources.
2000	Assmang announced its intention to explore the disposal of the DwarsRivier PGM rights.
2001	Assmang conditionally announces the disposal of the DwarsRivier PGE rights to Two Rivers Platinum (Pty) Limited for a cash consideration of ZAR551m.
2002	Avmin complete Feasibility Study for underground mining operations and production of concentrates for toll treatment.
2003	Avmin update Feasibility Study to include additional tonnages mined from open pit operations.

Table 2.8 Two Rivers Project: salient operating statistics

Production Unit	Operating Capacity (ktpm)	2004 Throughput (ktpm)	Life (years)	Classification
Underground	185	2	19.7	long-life
Open pit	40	1	3.4	short-life
Two Rivers Concentrator	225	0	18.7	long-life

Following its acquisition in December 2001, Avmin undertook a detailed Feasibility Study targeting the development of an underground mining operation exploiting the UG2, which was completed during the latter part of 2002. The Feasibility Study excluded exploitation of the Merensky Reef situated on the property, which is currently the focus of further work.

During 2003 the feasibility scope was reviewed to account for the strengthening of the US$:ZAR exchange rate and resulted in the following adjustments: an increase in planned underground production from 175ktpm to 185ktpm; the addition of up to 40ktpm of open pit feed which on depletion will be replaced by some 25ktpm of underground ore mined from the high-wall of the depleted open pit operation.

Various agreements have been concluded between Avmin and Impala in respect of future operation of the Two Rivers Project: including a shareholders agreement; management agreement; sale and transfer agreement; concentrate treatment agreement for PGEs Purchase; and Base Metals Tolling Agreement.

The Feasibility Study was presented to both the Avmin and Impala Boards in October 2003. This projected commencement of substantive site construction during November 2003 with full production achieved during December 2005 at an overall capital expenditure requirement of ZAR1.4bn. Whilst formal approval was not granted risk capital amounting to some ZAR47m was approved to proceed with design work and the establishment of critical path infrastructure. As at 1 January 2004 the following had been completed:

- Plant relocation and fauna capture programme to mitigate against the effects of the proposed development;
- Plant and infrastructure design had advanced to 25% of final design;
- Critical civil earthworks focussed on the Klein Dwarsrivier Bridge, the plant to portal road and the portal boxcut with approved work scheduled for completion at the end of the third quarter of 2004; and
- Some 100m of reef strike development form the bulk sample shaft.

Further, the Environmental Management and Program Report ("EMPR"), the Mining Licence and the Water Use Licence applications were all approved during this period. During the second quarter of 2003 a EMPR addendum to include the open pit was submitted to the authorities and approval is anticipated during 2004.

Owing to continued appreciation of the ZAR against the US$, further Risk Capital was approved to conduct trial mining (ZAR48.7m) and to secure a housing development site in Lydenburg (ZAR5.2m). As at 1 January 2004 total capital expenditures (exclusive of the purchase consideration of ZAR551m paid in December 2001) amounted to some ZAR90.5m.

Full project release is anticipated during June 2004 and is conditional upon the outcome of the current trial mining programme and the projected forecasts for the ZAR.

2.3.4 Kalplats Project

The Kalplats Project is situated some 90km southwest of Mafikeng in North West Province, South Africa, some 340km west of Johannesburg (Figure 2.5). The project is located some 40km to the west of the Kalgold Operation and accessed via the local R49 road between Mafikeng and Vryburg.

The Kalplats Project is a PGE prospect that was discovered during gold prospecting in the Kraaipan greenstone belt in 2000. Mineralisation is contained in some seven separate ore zones with strike lengths between 500m and 1,000m and widths of some 15m to 45m. Exploration has been completed and comprised a combination of Rotary Air Blast ("RAB"), Reverse Circulation ("RC") and Diamond Drilling ("DD") and a pre-feasibility study was completed in July 2002.

The pre-feasibility study concluded that the future viability of commissioning a mining operation at Kalplats depended on selectively mining the higher-grade reef zones. A Feasibility Study was commissioned in 2003 and work included the excavation of a 500t bulk sample for metallurgical testing of anticipated flotation recoveries and concentrate grades. Total expenditures to date amount to some ZAR40m with approximately some ZAR17.0m still required to complete the feasibility study.

Further work completed during 2003, has focussed on assessing the viability of both an open pit and underground mining operation. Given the high capital expenditures required, low in-situ grades and prevailing US$:ZAR exchange rate, further development is unlikely in the near term.

2.3.5 Exploration Properties

The Companies hold various interests in mineral rights and exploration properties, however in respect of the Transaction only Avmin has interests in such assets which may currently be defined as significant exploration properties, whereby Mineral Resources have been delineated. ARM Platinum has no significant holdings external to the Modikwa Mine and Harmony's PGM interests are reflected in the Kalplats Project.

In addition to the above Avmin has various interests in mineral rights and subsidiary companies situated in South Africa, Namibia, Zambia and the Democratic Republic of Congo. These are held either through directly owned subsidiary companies and/or Joint Venture Agreements with third parties.

- **South Africa:** The land holding position amounts to some 220,056Ha covering rights to gold, coal, base metals and diamonds. Avmin's current strategy in respect of these rights is to actively seek joint ventures. SRK note that there are no Mineral Resources associated with these properties;

- **Namibia**: The Otjikoto Project is located in the Otavi Region, northern central Namibia between the towns of Otijwarongo and Otavi. Exploration history in the area dates from 1995, when Avmin considered the area to be prospective for base metals. Following an airborne survey completed in 1997 drilling of shallow percussion holes and diamond drilling indicated the presence of significant gold mineralisation. During 1998 the Otavi joint venture between Avmin and Rio Algom Limited was formed to further explore the occurrence. By 2001 the potential for a shallow open pit resource was established, and Rio Algom Limited had elected to withdraw from the joint venture. Further exploration work by Avmin has resulted in the delineation of Mineral Resources which is discussed further in Section 4.0 of this CPR.

The project is covered by an Exclusive Prospecting Licence (EPL 2410) and is held by Avdale Namibia (Proprietary) Limited, a wholly owned subsidiary of Avmin.

Avmin has subsequently continued exploration and scoping at Otjikoto, and intends to continue to full Feasibility Study should this be justified by the results of the 2003 work programme;

- **Zambia**: The properties of most significance in Zambia are:
  - The **Konkola North Project** is an asset of Konnoco (Zambia) Limited ("Konnoco") which is governed by the Konkola North Agreement (6th March 1997). Parties to this agreement include Zambia Consolidated Copper Mine Limited ("ZCCM"), the Government of the Republic of Zambia ("GRZ") and Avmin. In consideration of the purchase of the Konkola North Property, Konnoco has agreed to prepare a Feasibility Study which will outline a "Mine Development Programme" in consideration of the purchase price. In the event that mine development proceeds, ZCCM can elect to acquire an equity interest in Konnoco of either 15% (with 5% carried) or 20% (with 5% carried) of the share capital of Konnoco in issue.

    The current large scale mining license ("LML") LML20 is valid for 23 years. As at 30 June 2003; total expenditure incurred on the property was US$12.7m.

    Work completed to date includes a drilling and evaluation programme, metallurgical test-work, geotechnical investigations, mine scheduling, planning and design which culminated in the publication of various pre-feasibility and technical reports targeting the development of an underground mining operation. A Mineral Resource statement has been compiled which is detailed in Section 4.0 of this CPR.
  - The **Mwambashi Project** is an asset of Avmin (Zambia) Limited ("Azam") which is a wholly owned subsidiary of Avmin. Azam has entered into a joint venture agreement (the "Copperbelt Joint-Venture") with Korea Zinc Company Limited ("Korea Zinc"), whereby Korea Zinc is entitled to earn a participating interest of 30% in project areas belonging to Azam. The projects are currently covered by five large scale prospecting licences which are valid for 2 years from 1 July 2003. As at 30 June 2003 total expenditures incurred was US$11.6m of which US$8.1m was attributable to Avmin.

    The Mwambashi Project is targeting the exploitation of open pit (copper oxide) and underground (copper sulphide) deposits and work completed to date includes exploration drilling, resource estimation, mine planning, bench-scale metallurgical testwork, geotechnical investigations and infrastructure assessments. A Mineral Resource statement has been compiled for the Mwmabashi Project and various exploration properties which is detailed in Section 4.0 of this CPR;
- **Democratic Republic of Congo ("DRC")**: Avmin's interests in the DRC are held via AVCO s.p.r.l, however the company owns no title at present and accordingly no value has been ascribed by the company.

2.4 Mining Authorisations and Mining Leases

SRK has not reviewed the various agreements relating to mineral rights, authorisations and leases from a legal perspective and has consequently relied on advice by the Companies to the effect that the Companies are entitled to mine all material falling within their respective mineral rights and/or mining rights and that all the necessary statutory mining authorisations are in place.

Details relating to EMPR status as required by section 39(1) of the Minerals Act are also included in Section 11.0 of this CPR.

In respect of the PGM Assets, SRK note that the period for registration of land claims was closed during 2000, and the process of Gazetting is dependent upon a process of investigation and consideration by the appropriate regulatory authority. SRK have been informed that since 1 July 2003 no further land claims against the assets have been gazetted.

2.4.1 *South African Law: Current Status*

Ownership of mineral rights and statutory mining rights in South Africa may be affected through Common law or by statute. Under Common law, mineral rights vest with the owner of the land. Common law recognises the principal that mineral rights may be severed from title to land, rendering it possible for the surface rights, the rights to precious metals and the rights to base minerals to be owned by different persons.

Earlier mining legislation, which has since been repealed, granted, by way of mining leases, statutory rights to mine for precious metals. Despite the repeal of this earlier legislation, mining leases continue to be valid under the terms of the Minerals Act (Act 50 of 1991) (the "Act"). Registration of title to mineral rights ensures that real rights are constituted in and to the minerals concerned. Upon registration, those rights (either common law mineral rights or statutory mining rights) become effective against third parties. Registered title may be obtained in a number of ways. For example, where mineral right ownership has been separated from land ownership, registered title to the common law mineral rights is obtained by the registration of such ownership in the Deeds Registry Office. Alternatively, where a person has acquired statutory mining rights pursuant to a mining lease, registered title to the statutory mining rights is effected after receipt of the necessary consent from the Minister of Minerals and Energy and by registration of those rights in the Mining Titles Office.

The Act currently governs prospecting and mining activities in South Africa. The Act provides that statutory mining rights supersede common law mineral rights. Thus, pursuant to the Act, the holders of statutory mining rights are deemed to be the common law holders of the mineral rights.

2.4.2 *South African Law: The Minerals and Petroleum Resources Development Act*

The Minerals and Petroleum Resources Development Act (Act 28 of 2002) was promulgated by the South African Parliament during July 2002 as the Minerals Act (the "Minerals Act"). The Minerals Act sets out to "make provision for the equitable access and sustainable development of the nation's mineral and petroleum resources" by bringing the country's mining law up to internationally accepted standards. It is also expected to provide many opportunities for recognised empowerment exploration and mining companies.

The legislation will enforce the "use it or lose it" principle of mineral exploration and development. In platinum, in particular, it unlocks stagnant areas currently owned by private owners of mineral rights unwilling or unable to bring them to account and by mining companies wishing to hold reserves and resources for the next 30 years and longer. Government's view is that in order to redress the wrongs of the past, it needs to promote industry to provide employment and to generate revenue for the country-wide Reconstruction and Development Initiative.

The Minerals Act seeks to address the issue of Historically Disadvantaged South Africans ("HDSA") ownership. The South African government's Mining Charter embodies the policy of facilitating the transfer of ownership within the South African mining industry to HDSA within the next 10 years. All stakeholders have agreed a target of 26% empowerment status to be achieved in a transparent manner and at fair market value.

The Mining Charter also aspires to achieve employment equity and targets of at least 40% HDSA participation in management within five-years, with 10% being participation by women.

2.4.3 *South African Law: Prospecting Permits*

Prospecting is governed by the Act and is defined as "intentionally searching for any mineral by means which disturb the surface of the earth, including the portion under the sea or under other water or of any tailings, by means of excavation or drilling necessary for that purpose".

Section 5(2) states that no person may prospect or mine without the necessary authorisations. This requirement departs from the common law principles governing ownership of minerals and restricts the right of owners to prospect and exploit mineral resources that fall within their ownership. It is a requirement that the applicant for a prospecting permit be the holder of the mineral right or has acquired the written consent of the mineral right holder to prospect for his own account. The prospector may not remove or dispose of any mineral found during prospecting operations unless the Director of Mineral Development has given permission for such removal. Under the Act the Director of Mineral Development has the power to issue prospecting permits. A prospecting application must be submitted and be accompanied by proof of right to the minerals, details about the manner in which the applicant intends to prospect and rehabilitate disturbances of the surface which may be caused by the intended prospecting operations and particulars concerning the applicants' ability to make the necessary provision to rehabilitate disturbances of the surface which may be caused by the intended prospecting operations.

The details of the manner in which the applicant intends to rehabilitate disturbances of the surface are to be submitted in the form of an environmental management programme ("EMP") for approval by the Director of Minerals Development. Such approval is in addition to the approval of the prospecting permit and no prospecting operation may commence without approval of the EMP.

A prospecting permit is issued for a period of 12 months but may be granted for longer should it be so determined by the Director of Minerals Development and can be renewed. The Act restricts and prohibits prospecting on certain lands including National Parks, townships or urban areas, land comprising public roads, a railway or cemetery and land that has been reserved for public purposes.

2.4.4 South African Law: Mining Authorisations

Under the Act, no person or mining entity may mine for minerals without being granted a mining authorisation, either temporary or permanent. Prior to granting a mining authorisation, two requirements must be fulfilled. Firstly, the mining entity must either be the registered holder of the mineral rights or have obtained the written consent of the registered holder of the mineral rights to mine the minerals concerned, for its own account. Secondly, the Department of Minerals and Energy must be satisfied with the scale, manner and duration of the intended mining operations and must approve an EMPR.

The Act provides for two forms of permanent mining authorisations namely, mining permits and mining licences. A mining permit is issued where the minerals occur in limited quantities or will be mined on a limited scale and on a temporary basis. A mining licence is issued where the minerals occur in more than limited quantities or will be mined on a larger than limited scale and for a period longer than two years.

The Act allows a temporary mining authorisation to be issued either to ensure the continuation of existing operations or to accommodate circumstances where approval of an EMPR is outstanding. Temporary mining authorisations are generally issued for limited periods but are renewable until the EMPR has been approved.

2.4.5 South African Law: The Royalty Bill

On 10 March 2003, the Royalty Bill, was released for public comment.The Royalty Bill is currently being revised and the date of release of the revised version is unknown.

The Royalty Bill proposes to impose a 2%, 3%, 4% and 8% revenue-based royalty on the South African base metals, gold, platinum and diamond sectors respectively, payable to the South African Government. Under the terms of the Royalty Bill released for comment, the royalty is to take effect when companies convert to New Order Mining Rights in accordance with the Minerals Act, although the Minister has indicated that the royalty is not expected to take effect until the transitional period for the conversion of mining rights under the Minerals Act expires. If adopted, the Royalty Bill may have an impact on the operating results (technical) and will have a negative impact on the financial performance and hence valuation of the PGM Assets.

2.4.6 Namibian Mining Legislation

Current Namibian Law concerning the ownership of mineral rights is governed by the Minerals (Prospecting and Mining) Act of 1992 where all mineral rights vest in the state.

In 1999, the Government promulgated the new Diamond Act, which was implemented on 1 April 2000. New Mine Health and Safety Regulations are awaiting promulgation, and the Minerals (Prospecting and Mining) Act of 1992 is under review in the context of a published minerals policy intended to facilitate and encourage the private sector to evaluate and develop mineral resources.

Several types of mining and prospecting licences exist, including non exclusive prospecting licences, reconnaissance licences, exclusive prospecting licences, mineral deposit retention licences and mining licences.

In order to undertake either, exploration or exploitation, a prospecting license and on completion of a feasibility study a mining license is granted by the state. This is also dependent upon qualification of certain abilities of the company, including mining, financial and technical capabilities, rehabilitation programmes and payment of royalties.

Prior to certain licences being issued, applicants are required to complete an environmental contract with the Department of Environment and Tourism. Environmental impact assessments must be made with respect to air pollution, dust generation, water supply, drainage/waste water disposal, land disturbance and protection of fauna and flora.

In terms of the legislation, a royalty tax is payable on the sale of minerals, at a rate of between 0% and 5%. The determination of this rate for any particular mine is negotiable.

2.4.7 Zambian Mining Legislation

In Zambia all rights of ownership in searching for and mining minerals, are vested in the State. No person may prospect for minerals or carry on mining operations except under the authority of a mining right granted under the Mines and Minerals Act (1995) (the "1995 Act").

A framework for responsible development has also been created through publication of the Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations, 1997 (the "1997 Act").

The right to explore or produce minerals is authorised by a licence granted under the 1995 Act. Besides a reconnaissance permit, which is issued for a maximum of three months and is non-renewable there are three categories of mining investments which have been identified in the new mining policy, namely Prospecting Licences, Retention Licences and Special Mining Licences.

In addition to the above all land in Zambia is ultimately vested in the President and all surface rights at the Mining Assets are therefore covered by several leases over the townships, surface facilities and mining licence areas. Such leases may vary in their term and generally range up to 99 years and are renewable at the request of the holder.

The Environmental Council of Zambia ("ECZ") issues permits for the discharge of effluents and waste water (Statutory Instrument No. 72 of 1993), air pollution control (Statutory Instrument No. 141 of 1996), and the transportation of wastes and waste disposal sites (Statutory Instrument No. 71 of 1993). The Ministry of Mines, through The Mining (Mineral Resources Extraction) Regulations (Statutory Instrument No. 119 of 1994), charges operators for the emission of sulphur dioxide gases in excess of 30% of the contained sulphur which is not fixed in the processes. The Water Rights are issued by the Water Development Board and require renewal every five years.

For the purposes of protecting and encouraging large-scale investments in the mining sector in Zambia, and in relation to the grant of a large-scale mining licence, mining companies generally enter into development agreements with the State. These agreements contain provisions binding on the State and deal with large-scale mining operations, the financing thereof, fiscal stability, human resource and other matters, and the circumstances or manner in which the minister or director may exercise any power of or discretion under the Act.

In terms of the Mineral Royalty Tax Act, royalties are payable upon the sale of minerals, at a rate of three percent in the case of base and precious metals, and industrial minerals.

2.4.8 Democratic Republic of Congo Mining Legislation

In the DRC all deposits of mineral substances are owned by the State. No person may explore for minerals or carry on mining operations except under the authority of an exploration certificate or exploitation licence granted under the Mining Code of 11 July 2002. The State is obliged to undertake regulatory duties within specified time limits. These regulatory arrangements are generally similar to those that may be found in other countries with a significant mining sector, and include technical, environmental and other requirements.

In terms of the Mining Code, a royalty tax is payable on the sale of minerals, at the rate of 0.5% for iron ore ferrous metals, 2% for non-ferrous metals and 2.5% for precious metals.

2.4.9 Nkomati Mine: current status

At Nkomati Mine mineral rights and surface rights cover a significant portion of Slaaihoek 540JT and Uitkomst 541JT. All mineral rights are currently held by Avmin. Surface rights are held by forestry and paper groups Sappi and Mondi. Table 2.8 gives the current distribution between the two farms.

Table 2.9 Nkomati Mine: land holding positions

Area	Existing Mining Authorization (Ha)	Mineral Rights (Ha)
Slaaihoek 540JT	1,746	1746,1
Uitkomst 541JT	3,199	3,199
Total	4,945	3,199

In respect of the Nkomati Expansion Project the EMPR and Mining Authorisation have been approved by the relevant regulatory authorities.

2.4.10 Modikwa Joint Venture: current status

At Modikwa Mine all mineral rights are held in the name of Rustenburg Platinum Mines Limited ("RPM") a wholly owned division of Anglo Platinum. Table 2.10 gives the salient details of the Mining Authorisations and Mineral Rights, which extends over a strike length of 24.8km and 4km down dip. A Section 9 Mining Licence (ML 9/2002) is currently held over portions of the Farms stated in Table 2.9 below and is stated as valid until 17 December 2025 or economic exhaustion, whichever occurs first. Surface rights over the Hendriksplaats and Onverwacht Farms are held by Modikwa Platinum Mine (Pty) Limited with the remainder (other than for Winterveld which belongs to Samancor) being state owned.

Table 2.10 Modikwa Joint Venture: land holding positions

Area	Existing Mining Authorization (Ha)	Mineral Rights (Ha)
Overwacht 292KT	3,139	3,139
Portion 1 & RE Winterveld 293KT	3,859	3,859
Driekop 253KT	3,382	3,382
Maandagshoek 254KT	4,255	4,255
Hendriksplaats 281KT	2,910	2,910
Total	17,545	17,545

2.4.11 Two Rivers Project: Current Status

As part of the sale and purchase agreement between Assmang and Two Rivers, the mineral rights acquired by Two Rivers relate only to the PGM rights and are restricted to the Merensky Reef and the UG2 on various portions of the entire Dwars Rivier 372KT Farm. Table 2.11 below states the current position in respect of the Two Rivers Project. Two Rivers also hold surface Rights of some 1,593Ha over the Dwars River 372KT Farm.

Table 2.11 Two Rivers Project: land holding positions

Area	Existing Mining Authorization (Ha)	Mineral Rights (Ha)
Dwars Rivier 372KT	3,472	3,472

SRK has been informed that 11 land claims are lodged on the farm Dwars Rivier 372KT, but as at 1 July 2003 have not to date been gazetted. As a contingent measure, Avmin have included some ZAR3.2m in the overall capital estimate. During March 2003 both the EMPR and Mining Licence were approved. Following recent amendments to the project, an open pit addendum was submitted for approval.

2.4.12 Kalplats Project: Current Status

At the Kalplats Project the mineral leases cover some 3,810Ha over portions of 4 farms located in North West Province. Beneficial interests in these are held 90% by Harmony and 10% by Anglo American. To date no detailed investigations in respect of EMPR requirements have been undertaken and as such await a positive outcome of the current scope of work.

Figure 2.1 PGM Assets: Company structure on completion of the Transaction

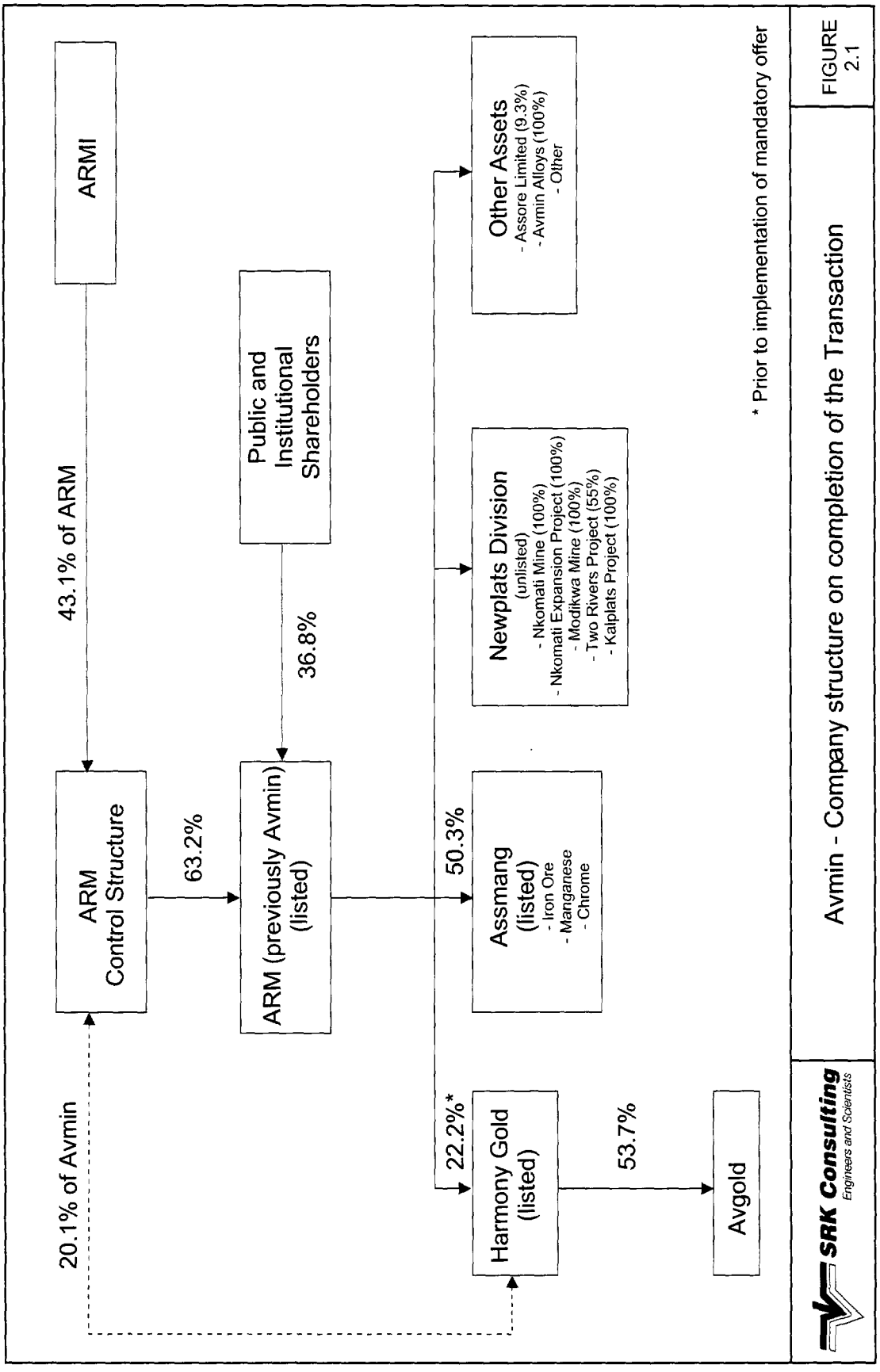


Figure 2.2 PGM Assets: Location of Nkomati Mine

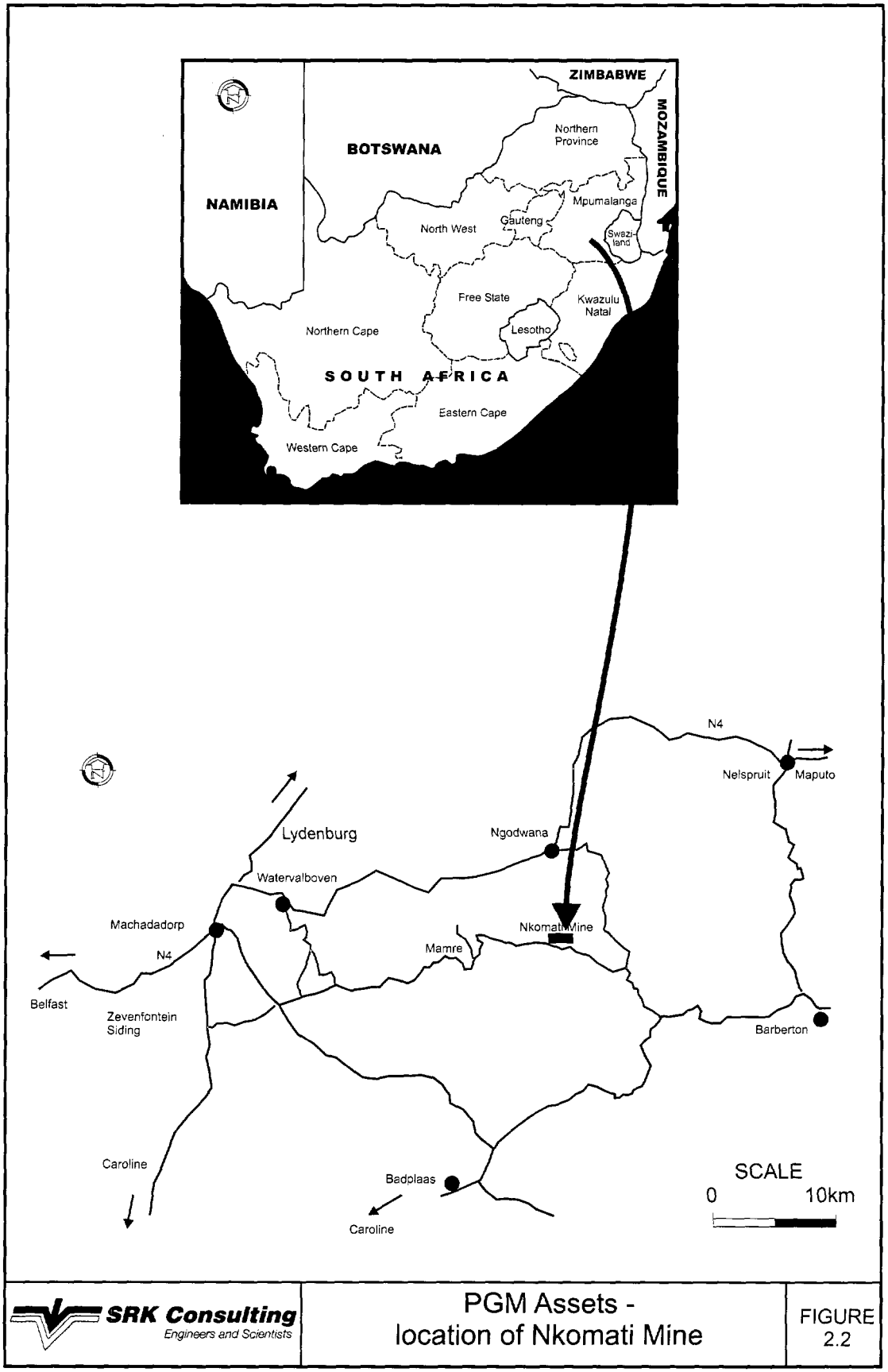


Figure 2.3 PGM Assets: location of Modikwa Mine

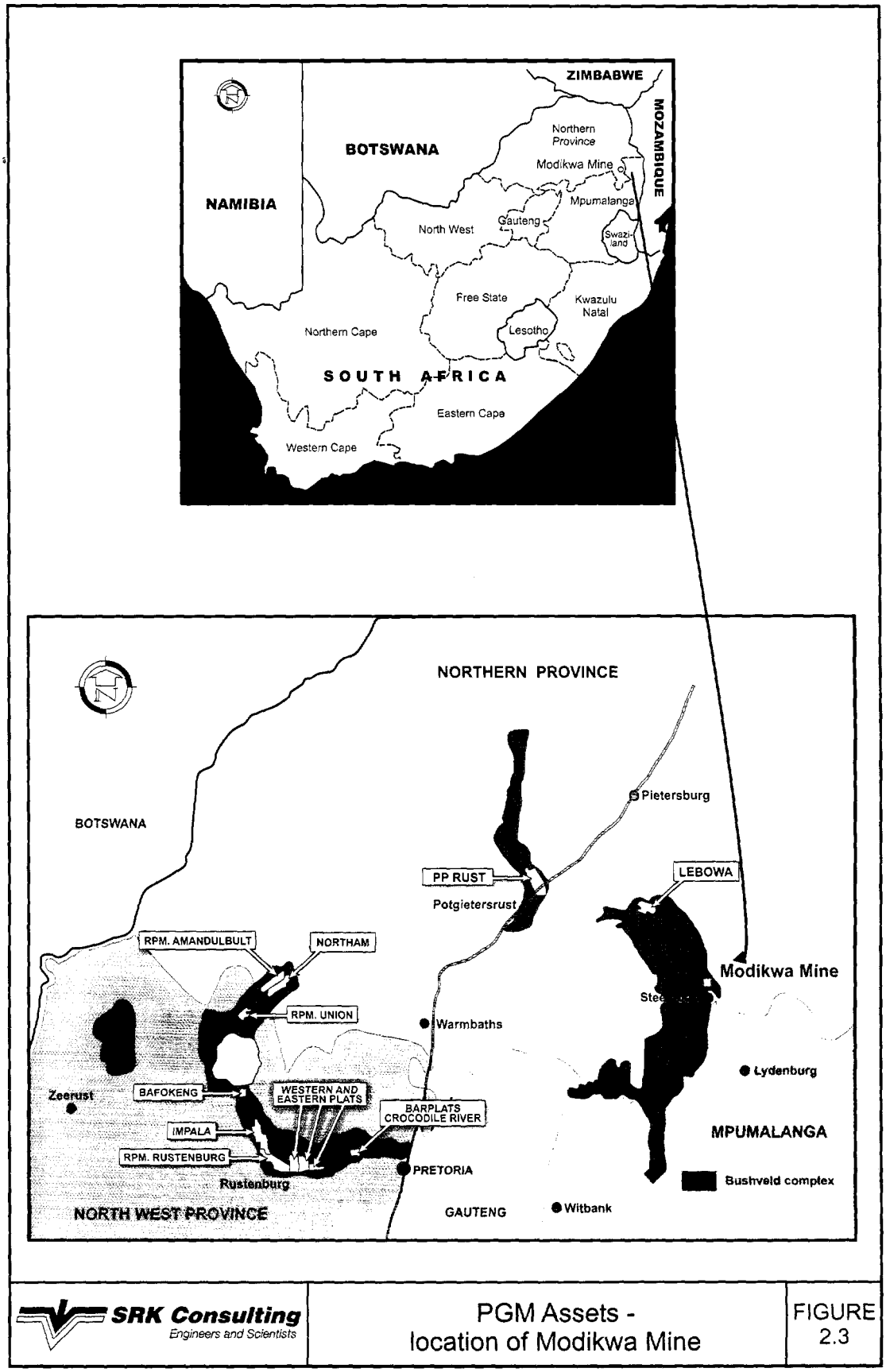


Figure 2.4 PGM Assets: location of Two Rivers Project

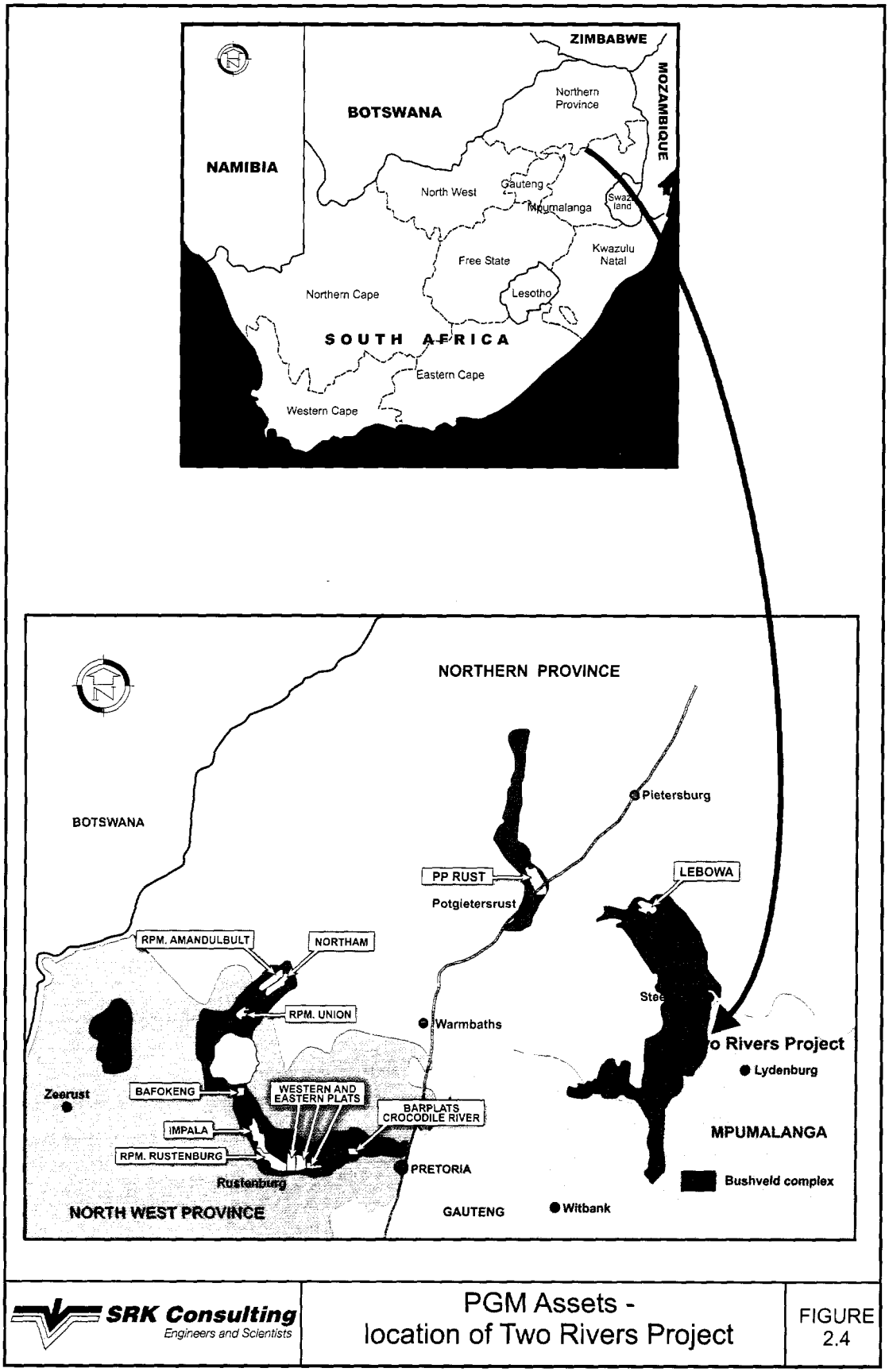
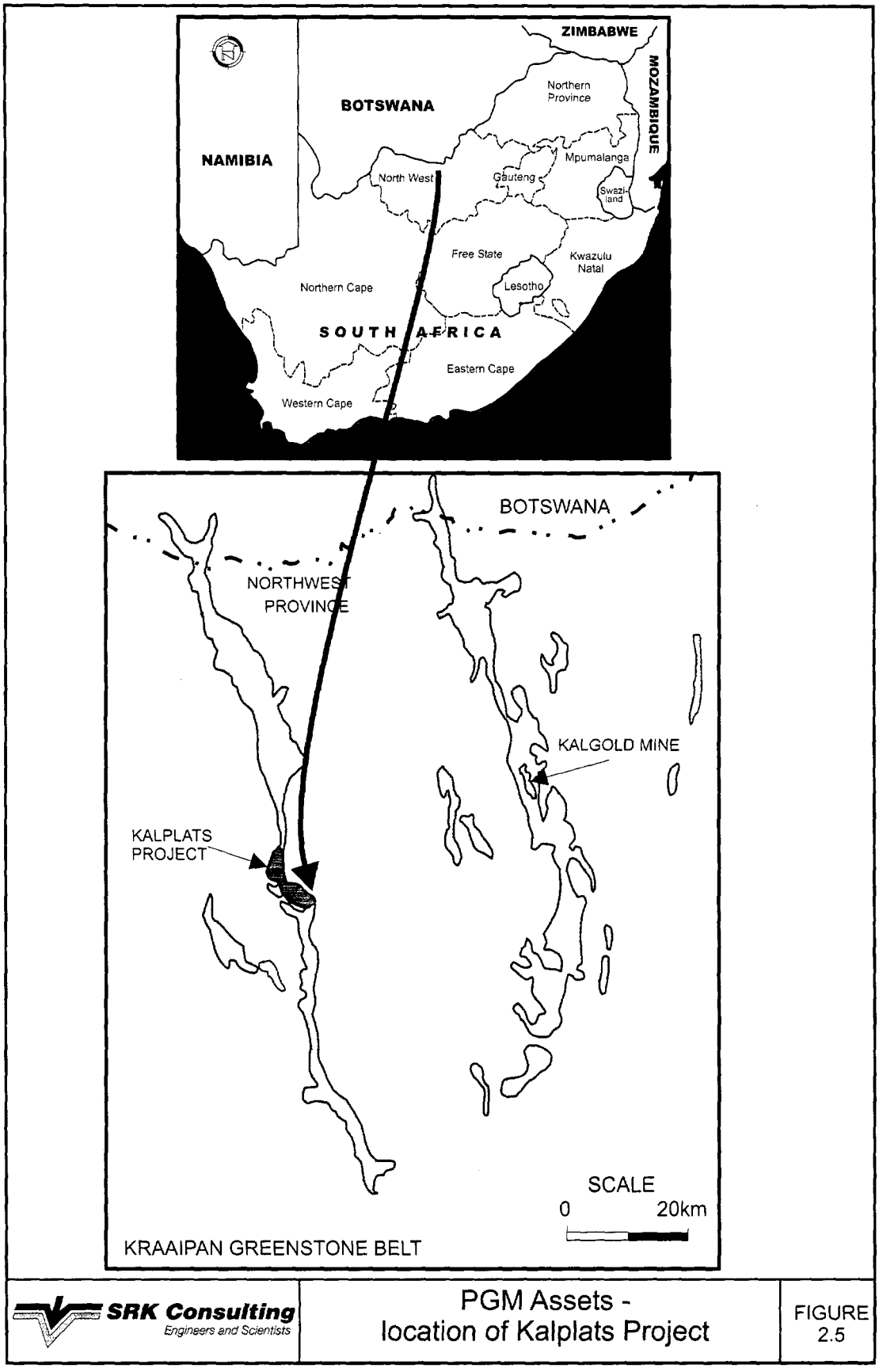


Figure 2.5 PGM Assets: location of the Kalplats Project



3. GEOLOGY

3.1 Introduction

This section describes the geology of the PGM Assets and Exploration Properties ("EPs"). The nature and geometry of the orebodies being or planned to be mined, their structural complexity and the variability of grades is also discussed.

3.2 The Bushveld Complex

Hans Merensky and his co-workers discovered PGEs on the farm Maandagshoek, north of Steelpoort in 1924, within a unit that was to be later referred to as the Merensky Reef. The Merensky Reef and the underlying UG2 are hosted within the Bushveld Complex ("BC"). The BC contains some 85% of all known PGE resources and is the source of over half of current world PGE production. The PGE-bearing Merensky and UG2 horizons are well known for their grade and extreme lateral continuity. The PGEs of commercial interest are: platinum ("Pt"), palladium ("Pd"), rhodium ("Rh"), ruthenium ("Ru") and iridium ("Ir"). Associated metals within these two horizons include gold ("Au"), nickel ("Ni"), copper ("Cu") and cobalt ("Co"). The chromite within the UG2 is low-grade but can be sold to ferrochrome producers depending on the prevailing market conditions. Figure 3.1 presents a geological plan of the BC.

3.2.1 Geology of the Bushveld Complex

The BC consists of a massive ultramafic-mafic layered intrusion, or more likely a series of interconnected intrusions, and a suite of associated granitoid rocks intrusive into the early Proterozoic Transvaal Sequence, within the north central Kaapvaal Craton. The ultramafic-mafic layered rocks occur in three main complexes or limbs, namely the Western, Eastern and Northern Limbs. The Modikwa Mine and Two Rivers Project are situated within the Eastern Limb of the BC.

The Eastern and Western Limbs of the BC describe a broad ellipse when viewed in plan; the major axis trends east-west and is approximately 370km in length. The minor axes are approximately 200km in length with a north-south trend. The igneous layering in the ultramafic-mafic rocks of the Eastern Limb dips westward towards the centre of the complex.

Within the Eastern Limb, two major north-easterly trending fault systems known as the Steelpoort Fault (in the south) and the Wonderkop Fault (in the north) disrupt the otherwise regular layering and dips of the igneous lithologies. Dolerite dykes occur throughout the Eastern Limb, most of these features trend to the northeast and are of Karoo age.

The true thickness of the ultramafic-mafic layered rocks in the Eastern Limb typically varies from 7,000m to 12,000m. The ultramafic-mafic layered rocks overlie metasediments of the Transvaal Sequence and show broadly conformable relationships with the underlying strata. The magmatic layering of the ultramafic-mafic rocks is remarkably persistent and can be correlated over much of the Eastern Limb. Recent research suggests that, rather than being a single body, the BC is made up of several overlapping lopolith-shaped intrusions. The general dip of the igneous layering is shallow and towards the centre of the complex.

The ultramafic-mafic rocks of the BC are collectively known as the Rustenburg Layered Suite ("RLS") and have been subdivided, from base to top, into five zones, known as the Marginal, Lower, Critical, Main and Upper Zones. The Marginal Zone is highly variable in thickness whilst the Lower Zone is restricted to isolated trough-like bodies located around the base of the RLS. The Main and Upper Zones are laterally more persistent and these zones comprise more than 60% by volume of the RLS. The continuity of the Critical Zone is intermediate between that of the Lower Zone and Main and Upper Zones. The Critical Zone is the host to all chromium and PGE mineralisation within the BC; consequently it is described in more detail in the following section.

3.2.2 The Critical Zone

The igneous layering within the Critical Zone is remarkably uniform over much of the BC, with individual layers traceable for tens to hundreds of kilometres. This zone is estimated to be a total 1,400m thick in the Eastern Limb. It may be subdivided into lower and upper sections and is made up of cyclic units consisting of chromitite, pyroxenite, norite and anorthosite. Cycles in the Lower Critical Zone are entirely ultramafic in character. Cycles in the Upper Critical Zone comprise ultramafic lithologies and also norite-anorthosite, indicative of a complex geological origin. The Merensky Reef and UG2 both occur within the Upper Critical Zone.

Chromitite layers occur throughout the Critical Zone, usually, but not always, at the base of crystallisation cycles. The chromitite layers have been classified into lower, middle and upper groups, with the lower group occurring in the Lower Critical Zone and the upper group in the Upper Critical Zone. The middle group chromitite layers straddle the boundary between lower and upper divisions of the Critical Zone. The chromitite layers are named according to their location within the layered succession, with numbers commencing from the bottom up, with the lowermost group being named LG1, followed by LG2, LG3, etc., progressing to MG1, MG2 etc. and then on to UG1, UG2, UG3. The thickness of these chromitite layers ranges from several millimetres to several metres and named chromitite layers may comprise multiple layers of chromitite separated by intercalated silicate rocks. The thickest chromitite layers, specifically the LG6 and MG1, are mined for their chromite content.

All of the chromitite layers in the BC contain anomalous concentrations of PGEs, with a general increase in PGE content upward in the sequence. The Merensky Reef, occurs above the UG chromitites, close to the top of the Upper Critical Zone. The Merensky Reef typically includes two or more, thin chromitite layers, but is profoundly different from the UG2 in that PGEs also occur within sulphide-bearing orthopyroxenite typically between the two-chromitite layers.

Generally on the Eastern limb of the BC, the Merensky Reef is far less distinctive compared to the equivalent reef that is developed on the Western Limb. On the Eastern Limb, the mineralisation is hosted within the Merensky pyroxenite and relatively narrow (2mm to 5mm) chromitite layers within this otherwise uniform lithology form the only mining contacts that visually define the position of the orebody. The UG2 is a wide chromite seam and as a result of its high density and grade contains a higher mass of PGEs per unit area mined. The UG2 is therefore generally the preferred mining target on the Eastern Limb.

3.3 The Uitkomst Complex

The Uitkomst Complex is a layered, mafic-ultramafic body intruded into the basal sediments of the Transvaal Sequence, which is thought to be early Bushveld age. The complex crops out for approximately 9km on the farms Vaalkop, Slaaihoek and Uitkomst in a broad valley in the Mpumalanga escarpment region.

The complex is a long linear cigar shaped body with a keel-like feature at the base. The base and top of the body are concordant with the Transvaal sediments which dip at 4° to the northwest. Due to erosion, the lowermost units of the complex are exposed on Vaalkop, while successively higher units are exposed to the west on Uitkomst and Slaaihoek. The complex plunges below the escarpment on Slaaihoek where drilling has indicated down-dip extent of at least a further 4km.

Numerous barren diabase sills and a smaller number of dykes intrude the complex. The sills range in thickness from a few centimetres to 70m. The combined thickness of diabase sills is approximately 120m compared to the total thickness of the complex of approximately 670m. Experience from the current Nkomati Mine indicates that sills can end abruptly irrespective of thickness. The interpreted geometry of the sills is therefore expected to change significantly with further drillhole information, however this should not impact on the overall resource tonnage. Notwithstanding this, some sills do appear to be very continuous between current borehole intersections. The dykes tend to be thinner and much less continuous than the sills.

The Uitkomst Complex is divided lithologically into the Main Group and the Basal Group. The Basal Group comprises, from base to top, the Basal Gabbro Unit ("GAB"), the Lower Pyroxenite Unit ("LrPXT") and the Chromititic Peridotite Unit ("PCR"). Overlying the Basal Group is the Main Group comprising (again from base to top) the Massive Chromitite Unit ("MCHR"), the Peridotite Unit ("PRD"), the Upper Pyroxenite Unit ("UPXT") and finally the Norite / Gabbro Unit ("NRT"). The archaean granites within the footwall lithologies of the Uitkomst Complex also contain lenticular bodies of massive sulphide, which are currently exploited at Nkomati Mine.

Figure 3.2 gives a geological plan of the Uitkomst Complex. Figure 3.3 gives a schematic cross section of the Uitkomst Complex.

3.4 Deposit Geology

3.4.1 Nkomati Mine

Four zones of sulphide mineralisation have been defined within the Uitkomst Complex as described below. The LrPXT hosts the Main Mineralised Zone ("MMZ") and is a heterogeneous unit with abundant xenoliths mostly derived from the Malmani Subgroup. In addition to pristine igneous rocks, there are a number of hybrid rock types representing various stages of magmatic assimilation of the sedimentary host rocks. As well as occupying the lower part of the keel of the complex, the LrPXT sometimes undercuts the sedimentary sidewalls. Rock types present include pyroxenite, amphibolite and wehrlite. The wehrlite often contains abundant, net textured sulphide mineralisation and represents the high-grade component of the MMZ.

The MMZ is defined as any nickel-bearing sulphide mineralisation contained within the LrPXT and is best developed within the central part of the keel, although it also occurs on the fringes where the LrPXT undercuts the Malmani dolomite. In some areas the MMZ consists of almost the entire thickness of the LrPXT but elsewhere the mineralisation may be confined to one or more relatively narrow (8m) bands. The MMZ is broadly continuous over approximately 8km and comprises a number of ore types including net textured, blebby and disseminated sulphides as well as minor massive and semi-massive sulphide bands and lenses. Pyrrhotite is by far the most abundant sulphide mineral (85% of sulphides) within the MMZ with pentlandite, chalcopyrite and pyrite also present.

The Chromititic Peridotite Mineralised Zone ("PCMZ") is hosted by the talcose and highly altered PCR. The contact of the PCR with the underlying LrPXT is gradational and is often recognisable only by the first appearance of thin chromitite bands or lenses. The PCR is largely confined to the keel of the Uitkomst Complex although there are areas where the unit is developed on the flanks. The PCR is extensively altered to talc-rich assemblages and is often sheared into talc schist bands.

The PCMZ consists of areas of significant sulphide mineralisation within the PCR. The PCMZ is much less continuous and generally lower-grade than the MMZ. As with the MMZ pyrrhotite, pentlandite and chalcopyrite are the dominant sulphide minerals with minor quantities of pyrite also present.

The GAB, which hosts the Basal Mineralised Zone ("BMZ"), forms the base of the Uitkomst Complex. The mineralisation is generally thin and erratically developed and is only considered to be potentially economic where it is well developed and contiguous with the MMZ. The BMZ is more copper rich than the MMZ.

The Massive Sulphide Body ("MSB"), which is currently exploited at Nkomati Mine is comprised of three broadly lenticular bodies (named Lens 1, 2, and 3) of predominantly massive sulphide, separated by dolomite / quartzite, diabase and granite. Lens 1 covers an area of approximately 400m by 250m with a maximum thickness of 20m. Outside of the lenses additional mineralisation termed 'stringer ore' is found, which by definition is less continuous and generally thinner than the lenses. The massive sulphide is composed mainly of pyrrhotite, with pentlandite, chalcopyrite, pyrite, and magnetite together with a range of PGE-bearing minerals. Stratigraphically, the massive sulphide is situated in the footwall lithologies to the Uitkomst Complex. Lens 1 is the focus of the current underground operation and contains all of the MSB Mineral Resources at Nkomati Mine. Lens 2 has been almost completely mined out, whilst the smaller Lens 3, although currently being mined, is much less well defined.

In addition, the complex contains chromite mineralisation within the Massive Chromite ("MCHR") and Semi-Massive Chromitite ("SMCHR"), which is hosted by the PCR. The MCHR is developed as one or more layers of chromitite at the transition between the PCR and the PRD. The thickness of the MCHR ranges from 0m to 6m and where present, it is frequently bounded by schistose, ductile shear zones. None of the primary minerals are preserved and only minor amounts of finely disseminated sulphides are present. Fine chromite grains form semi-massive chromitite within the PCR.

The Uitkomst chromitite is relatively low-grade (up to 30%Cr_2O_3) compared to Bushveld chromitite mineralisation (38%Cr_2O_3 to 45%Cr_2O_3) and has a relatively high Cr:Fe ratio (1.6 to 2.1). Within the weathered zone, the silicates and sulphides have been largely oxidised and replaced by clay minerals and limonitic hydroxides, while the chromite remains largely unaffected. It is estimated that approximately 80% of the massive chromitite and 45% of the semi-massive chromitite units have been affected by weathering to varying degrees.

3.4.2 Modikwa Mine

The igneous layering at Modikwa Mine is north-northwest striking with an average dip of approximately 10°. The Steelpoort Fault occurs near the southern boundary of the mine and is likely to increase the structural complexity in this area. Although the Merensky Reef is developed all Mineral Resources delineated to date at Modikwa Mine comprise of UG2.

The UG2 at Modikwa Mine occurs as a chromitite layer with an average thickness of approximately 60cm however three leader chromitite layers also occur above the main chromitite. Gentle undulations of the UG2 with amplitudes of less than 2m are pervasively developed across the mine area. In places the UG2 is potholed, and in these potholes the UG2 cuts down into the footwall stratigraphy and within the pothole, the chromitite layer is either thin or not developed at all. Potholes are most prevalent within the North Shaft area, where oval shaped pothole features have been exposed by mining. The largest of these features has a surface area of approximately 50,000m^2. Potholes occur as a variety of sizes and the spatial distribution of these features appears to be random within the North Shaft area.

Potholes are less abundant within the South Shaft area, however a zone of disturbed reef, referred to as the 'South Shaft Gap' has been identified between the number 2 and number 3 dykes within the South Shaft area. These dykes strike approximately north-south and the disturbed area between them is characterised by numerous predominantly sub-vertical small-scale (1m to 3m) and fewer larger scale (up to 10m) brittle faults that disrupt the UG2.

The northern side of the Onverwacht Hill area is characterised by the presence of several large ultramafic pegmatoid intrusions that disrupt and locally replace the UG2. These intrusions are large plug-like bodies, although locally sheet-like intrusions may be present as well. The Onverwacht Hill area is structurally complex with abrupt strike and dip changes indicated by surface drilling intersections.

A number of north-northeast striking dykes occur across the mine area, although these cause little or no vertical displacement of the UG2. Where displacements occur they are generally less than 5m. Thickness of the dykes varies and can reach up to 30m. The major faults on the property have a similar orientation to the major dykes. Less prominent, and generally thinner are a set of dykes that have a generally west-northwest orientation.

Figure 3.4a, Figure 3.4b and Figure 3.4c gives geological plans for the Modikwa Mine (South Shaft), Modikwa Mine (North Shaft) and Modikwa Mine (Onverwacht Hill) respectively. Figure 3.5 gives the stratographic column of the Modikwa Mine.

3.4.3 Two Rivers Project

The current Mineral Reserve at the Two Rivers Project is based solely on the UG2, although Mineral Resources have also been delineated on the Merensky Reef. The UG2 crops out in the Klein Dwarsrivier valley over a north-south strike length of 7.5km, dipping to the west at between 7° and 10°. The extreme topography results in the UG2 occurring at a depth of 935m on the western boundary. Generally the stratigraphic thickness between the Merensky Reef and UG2 decreases from south to north. The Merensky Reef itself is generally thinner in the centre of the project area, with localised thicker zones in the southern area.

The UG2 is characterised by numerous internal facies variations although a consistent feature is the presence of a chromitite layer or layers, together with a footwall pegmatoidal pyroxenite/harzburgite and a hangingwall pyroxenite. The pegmatoidal pyroxenite (FW1 Unit) averages 1m in thickness and typically includes chromitite lenses and blebs that are sporadically mineralised with PGEs. The following reef facies have been defined for the UG2 at the Two Rivers Project:

- "Normal" UG2 with an average thickness of 120cm, This is overlain by up to three chromitite 'leader' layers collectively termed the UG2A chromitite layers;
- "Split reef" in the southern, west-central and north-eastern parts, characterised by a pyroxenite or norite lens up to 6m thick which is developed within the UG2 and typically results in a lower chromitite layer that is thicker than the upper chromitite layer; and
- A second pyroxenite/norite lens situated approximately one third from the base of the UG2 ("southern facies"); this facies has been intersected in 7 drill holes in the extreme south-western area.

The Merensky Reef is underlain by anorthosite, consisting of layers of mottled and spotted anorthosite, ranging between 20m and 30m in thickness. The Merensky Reef itself consists mainly of orthopyroxene, and lesser amounts of plagioclase and clinopyroxene. Thin chromitite layers, usually 1mm to 4mm thick, generally occur near the upper and lower contacts of the reef.

The UG2 is characteristically bottom loaded with peak PGE values occurring in the basal 10cm sample. A second, but generally lower order PGE peak occurs towards the middle of the reef and an overall decrease in PGE content is observed from the bottom of the UG2 layer to the top. The position of the two PGE peaks differs depending on the thickness of the lower/middle/upper chromitite splits. The relative proportion of Pt generally increases upwards in the reef, whereas the proportion of PGEs accounted for by Pd is more variable.

In the Merensky Reef the base metal and PGE mineralisation is generally concentrated within the pyroxenite and close to the chromitite stringers. Generally there are two peaks in the PGE values near the upper and basal contacts, but where the pyroxenite layer thickens to 3m a third peak can occur and in some instances, mineralisation may extend into the footwall anorthosite. Four reef facies have been defined based on the distribution of PGE mineralisation within the pyroxenite layer and the geological setting of the Merensky pyroxenite layer. The facies boundaries are expected to be gradational, rather than sharp. PGE mineralisation within the footwall anorthosite is associated with finely disseminated sulphides, but is discontinuous, and has not been included in the Mineral Resource.

10km to the northwest of the Two Rivers Project is the Steelpoort lineament and splays from this regional structure include a north-south trending fault with a 30m downthrow to the east and approximately 150m dextral strike slip movement and a conjugate fault set oriented east-northeast and north-northwest. These are crosscut by later dextral dip-slip faults, most obviously the Klein Dwarsrivier Fault. Fine to medium grained dolerite dykes with an average thickness of less than 10m occur over the project area. Some of the dyke orientations are aligned with the major fault directions.

Transgressive bodies of iron-rich replacement pegmatoid are present at the Two Rivers Project and may disrupt the morphology and mineralisation within the UG2 where they crosscut it. Although these bodies form magnetic anomalies, they may be difficult to interpret from the aeromagnetic data due to the presence of a north-northeast trending set of strongly magnetic dykes. An east-west trending series of pegmatoidal bodies is recognised in the north central part of the project area where surface exposures of anorthosite show selective replacement by pegmatoidal clinopyroxenite.

The exploration drilling at the Two Rivers Project indicates that approximately 8% of the UG2 is potholed. Exploration drilling however is generally considered to be a poor indicator of actual potholing as, in general, the proportion of drillholes that intersect potholes is considered to understate the true pothole abundance. This may be a function of pothole abundance and the average size of potholes relative to the drillhole spacing. The present assumption is that the pothole incidence on the Eastern Limb will not be dissimilar to that encountered in the Western Limb, where the mine-wide potholed ground averages between 10% and 15%.

Figure 3.6 gives the geological plan of the Two Rivers Project. Figure 3.7 gives a sectional view of the Two Rivers Project.

3.4.4 Kalplats Project

The Kalplats Project is located in the Kraaipan greenstone belt with the PGE mineralisation hosted within the Stella layered intrusion, which is thought to be 3,000Ma years old. The magnetite-rich gabbroic rocks are thought to have undergone magmatic segregation resulting in the layered assemblage observed today. Seven deposits (Crater, Orion, Vela, Sirius, Crux, Serpens North and Serpens South) each with a strike extent of 500m to 1,000m have been identified along a total southeast strike length of 12km. The intrusion dips at 80° to the west with PGE mineralisation occurring in a 35m to 40m wide zone within the 1km to 1.5km lateral extent of the intrusion. Several additional prospects have also been identified through limited open hole / RC drilling or where geochemical aircore overburden drilling has indicated the possible presence of underlying mineralisation.

Three subparallel reef packages have been recognised based on grades, Pt:Pd ratios and the presence or absence of Au and Cu. The highest grade of these is termed the Main Reef, which occurs furthest to the east with a total thickness of 20m. The Mid Reef and LG Reef lie approximately 20m to the west of the Main Reef and are 10m to 15m thick each. Further discrete reefs can be identified within these further subdividing higher-grade portions of the packages. The main economic minerals are sperrylite, kotulskite and stibiopalladinite.

The uppermost 25m to 35m of bedrock is generally highly weathered, the rock forming a clayey saprolite that disintegrates completely if exposed. Locally the weathering extends to depths of up to 50m due to the presence of faults, dykes and joints.

The area is structurally complex and thrust imbrication of the mineralised layers has resulted in duplication of reef-packages in some zones but has caused significant disruption and reef-loss in others. Felsic granitoids have, locally, introduced unmineralised units into the reef zones. In addition to layering sub-parallel thrusting, younger sub-vertically dipping north-north-easterly striking shear zones also disrupt the mineralised reef packages. Barren diabase dykes are commonly associated with these shears with typical widths of 0.5m to 3m. Predominantly dextral displacements along these north-northeast trending structures have resulted in the displacement of the reef packages for hundreds of metres (separating the deposits) or in smaller increments of 2m to 100m that locally disrupt reef continuity within an individual deposit.

Figure 3.8 gives a geological plan of the Kalplats Project. Figure 3.9 gives a geological section of the Kalplats Project.

3.4.5 Exploration Properties – Otjikoto Project

The Otjikoto Project occurs within the northern zone of the Damaran Orogen, approximately 1km to the northwest of the lower contact of the "Main Marble Marker" of the Karibib Formation. The "Main Marble Marker" is folded in an open, synformal structure immediately to the east of the deposit. Kuiseb Formation calcareous siltstones occupy the core of the synform. The mineralisation occurs as a shallow-dipping, sheeted vein system hosted within a package of marbles, albitites and biotite schists of the Karibib Formation.

The individual veins range from 1cm to 10cm in width and contain pyrrhotite, magnetite, pyrite and free gold. Many of the auriferous veins are also associated with garnet and amphibole. The intense albitisation observed in certain lithologies reflects a critical ground preparation event, changing the rheology of the original pelitic and carbonate-bearing lithologies. This subsequently controlled the brittle propagation of the sheeted vein system during deformation. Within the schist and marbles only minor vein development has been observed, probably because of the ductile nature of these units.

A marble unit which is referred to as the "Footwall Marble" is developed consistently across the deposit. Above this is a package of mineralised sheeted veins approximately 30m to 40 m thick, with an average dip of 25°, which is developed along a strike of approximately 1.5km and is referred to as the 'OTC Zone'. Based on vein density and grade distribution this package has been subdivided into an upper and lower zone. The lower zone is developed over the entire deposit, while the upper zone extent appears to be more limited.

3.4.6 Exploration Properties – Konkola North

The Zambian Copperbelt lies at the southeast end of the 800km long Lufilian Arc. The geology of the southeast flank of the Lufilian Arc comprises a series of basins and domes formed by a combination of Lufilian tectonics and the buttressing effect of the pre-existing basement geomorphology. The rocks of the Katanga Sequence, the host to the Cu-Co mineralisation, are draped around the domes ('basement highs') and infill the basins. Economic mineralisation at Konkola North is confined to the dark-grey siltstone within the Ore Shale 1 Member of the Nchanga Formation. The depositional environment of the Nchanga Formation reflects short-lived transgressive and regressive cycles, resulting in abrupt facies changes with inter-bedded and inter-fingering units.

The true thickness of the Ore Shale 1 Member varies 3m to 12m. The mineralisation is transgressive at a low angle and the orezone is not defined by a geological hangingwall and footwall. Mineralisation occurs as finely disseminated sulphide grains, as coarser grains along bedding planes and cleavage, in thin veinlets and in lenticles and stringers. The host to the mineralisation is a dark-grey. Mineralisation is continuous between the south limb and the east limb of the deposit and the mineralisation presently mined at the Konkola Division Mine. The deposit occurs at a depth of 50m to 800m below surface with a dip of 0° to 40°. The thickness of the deposit increases towards the south where it averages 12m.

A graben structure has been interpreted down-dip of the southern part of the east limb deposit. In this graben, the Ore Shale 1 Member was not intersected. Other, smaller, faults have been logged in the borehole core in the Konkola North area. These faults do not displace the Ore Shale 1 Member, but leaching and alteration of the Cu sulphides is common.

3.4.7 Exploration Properties – Mwambashi Project

The Mwambashi Project lies on the western edge of the Chambishi basin to the west of the Kafue Anticline. This basin hosts a number of past and present copper producing mines. The Lower Roan Formation lies unconformably upon the granite basement. The Roan Group sediments dip approximately 35° towards the northeast along the edge of the Chambishi basin in the vicinity of the mineralised bodies. At the base of the succession, Kafufya Member pinch-outs occur against basement highs to the north and at depth to the east, forming the edges of the mineralised zones. Sub-vertical shearing and faulting in the boreholes indicates that the topography of the basement highs is modified by syn-sedimentary growth-faults.

The orebody is wedge shaped being up to 30m thick in the shallower portions and tapering down to less than 1m at depth. The orebody has a strike extent of 500m and extends down dip for approximately 250m, with an average thickness of 15m. Orebody dips range from 25° in the south to 35° in the north. Most of the copper mineralisation occurs as medium to coarse grained stratiform disseminated mineralisation in the argillaceous quartzites and conglomerates of the Kafufya Member. Veins host a minor component of the mineralisation, in the form of fracture-fill veinlets at the base of the orebody.

Weathering has resulted in a vertical mineral zonation consisting of entirely leached, refractory, oxide, mixed supergene/oxide, supergene and sulphide mineralisation. The primary sulphide portion (chalcocite, bornite, carrolite) of the mineralisation is often rimmed by a secondary 0.2m to 1m zone of chalcocite corresponding to the upper and lower surfaces of the orebody. The complex mineral zonation at Mwambashi is a result of faulting, leaching, weathering and underground water movements. The effects of these processes are more pronounced at Mwambashi because the host rock to the mineralisation is highly porous.

Figure 3.1 PGM Assets: surface geology of the Bushveld Complex including locations of platinum and chrome mines

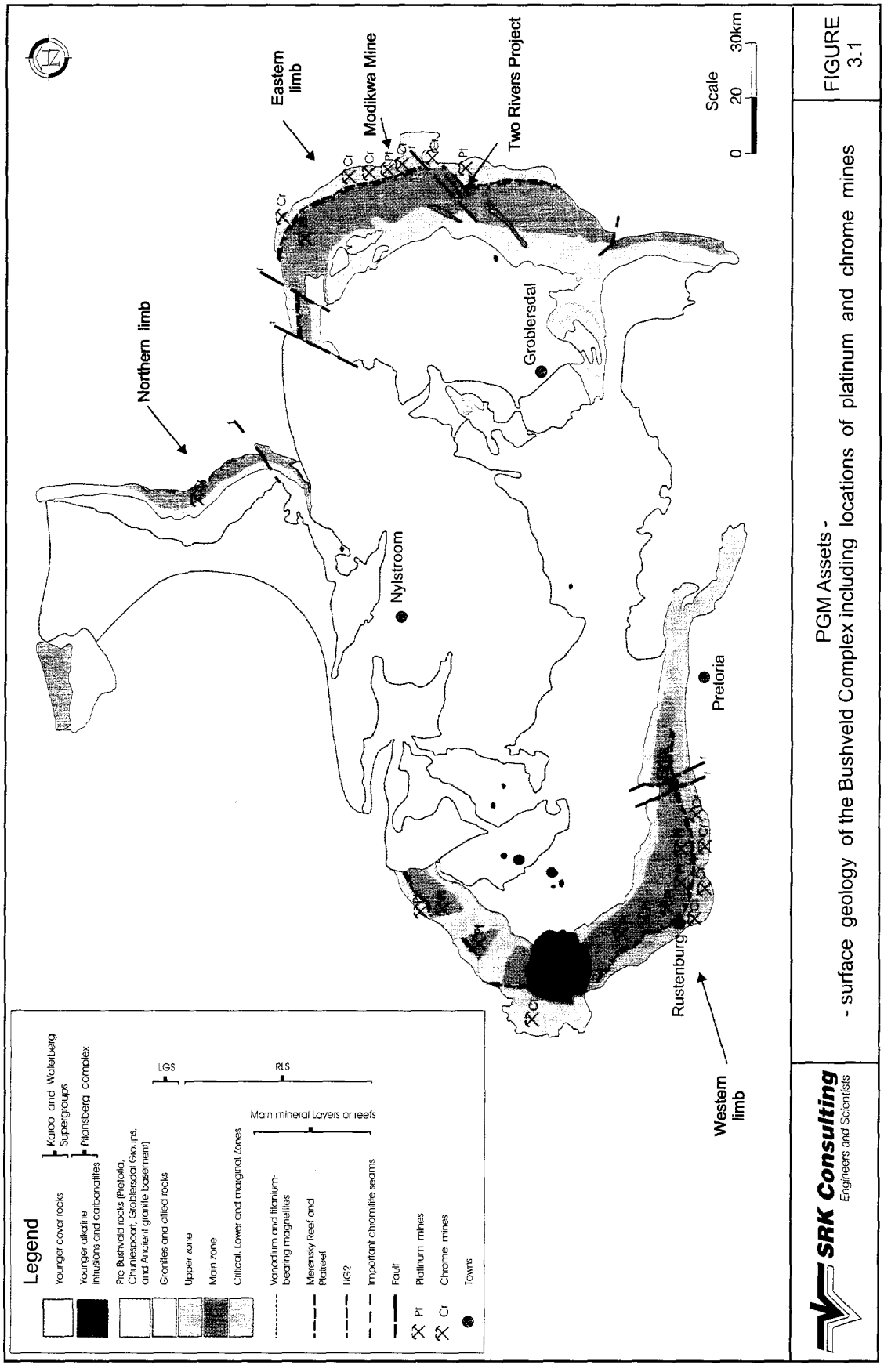


Figure 3.2 PGM Assets: geological plan of the Uitkomst Complex (Not to scale)

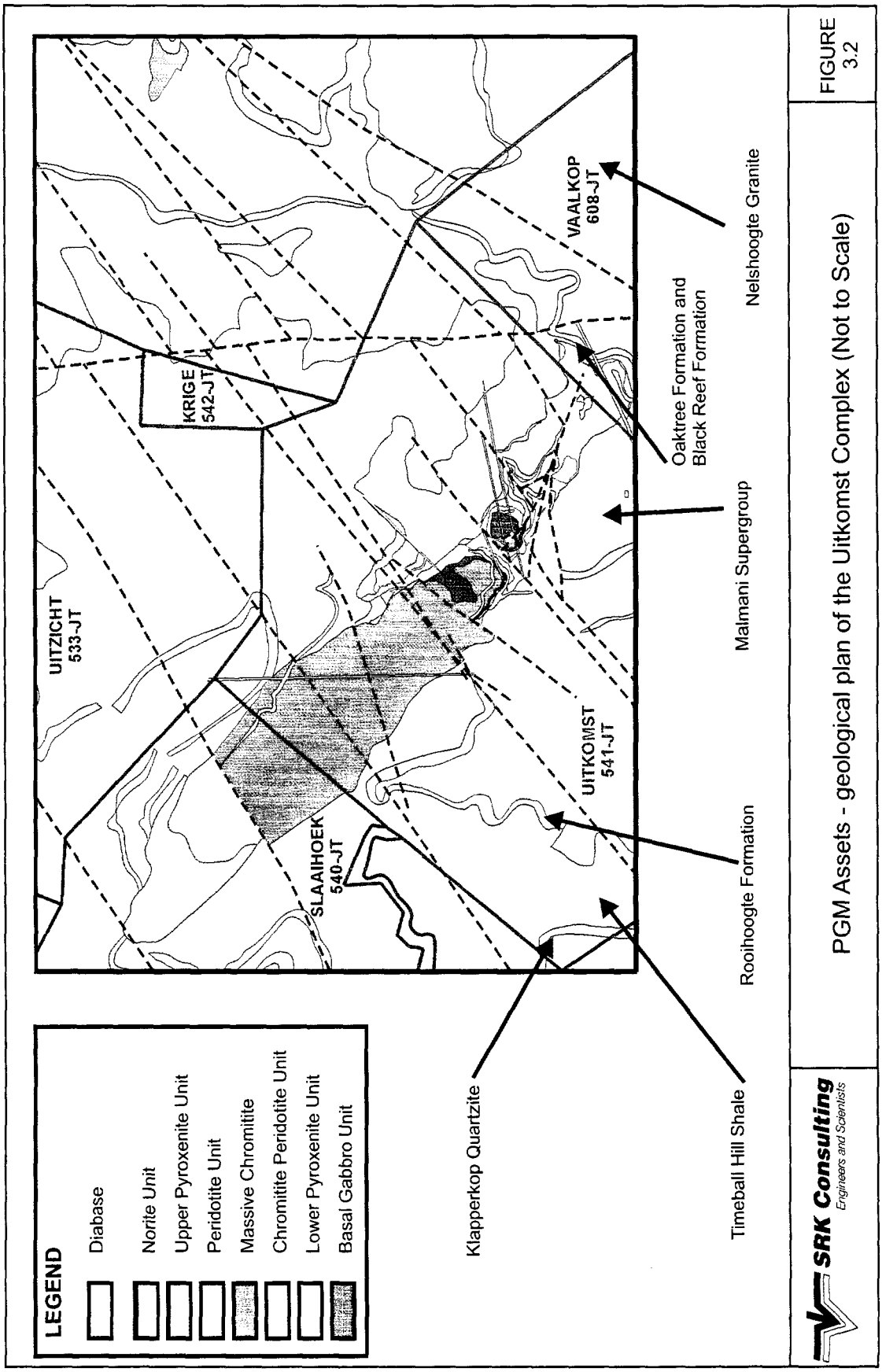


Figure 3.3 PGM Assets: schematic cross section of the Uitkomst Complex (not to scale)

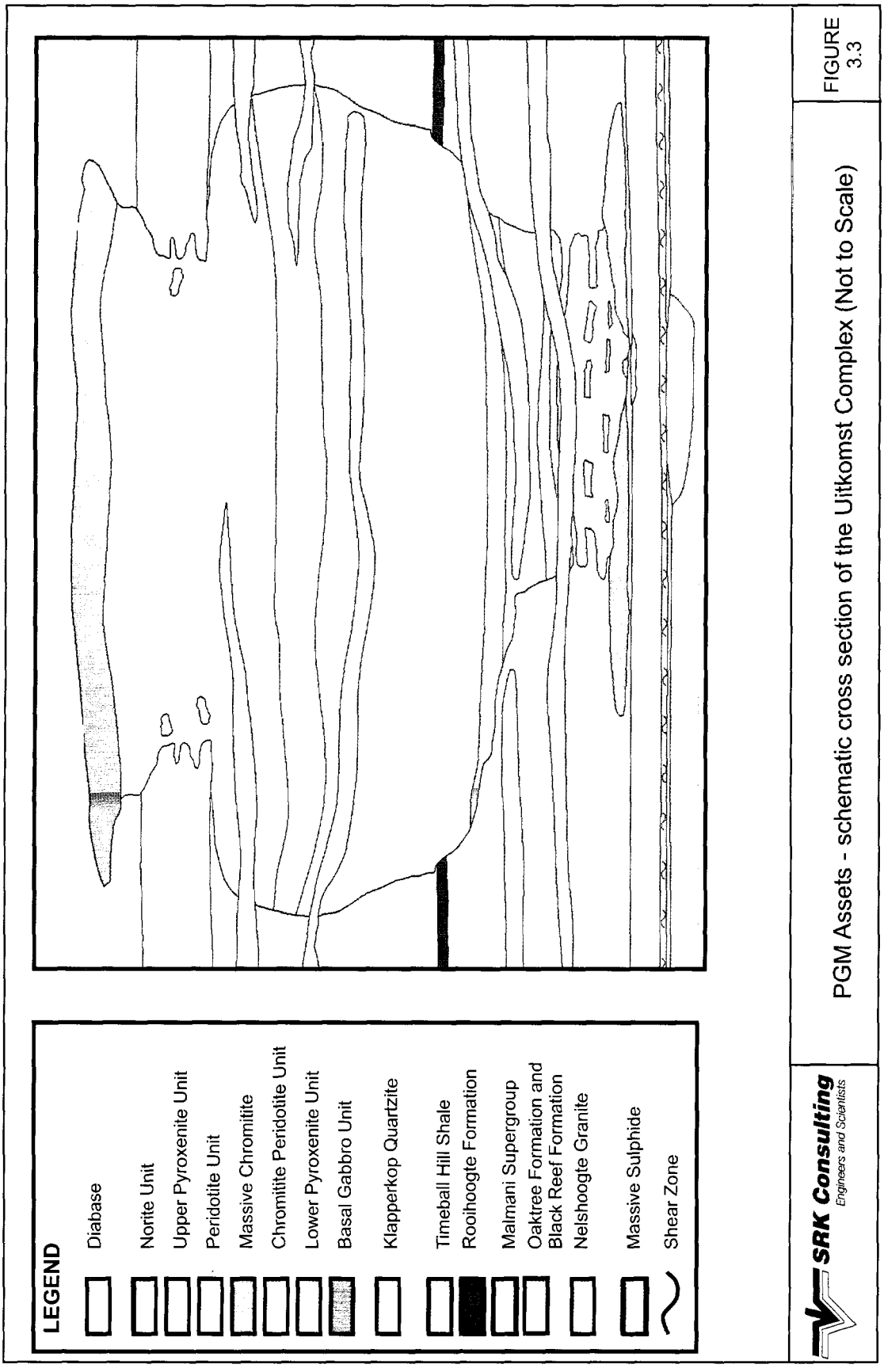


Figure 3.4a PGM Assets: geological plan of the Modikwa Mine (South Shaft)

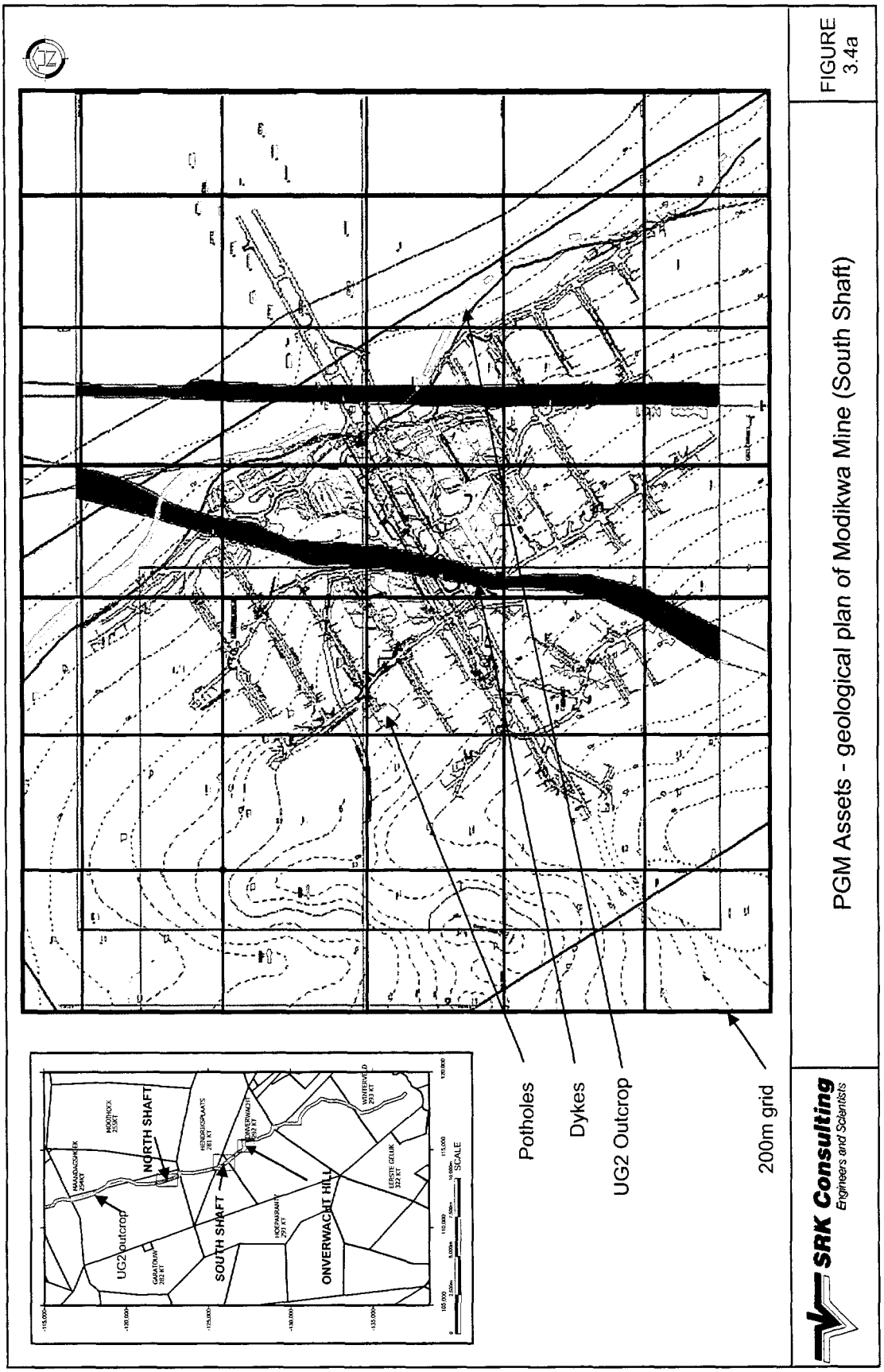


Figure 3.4b PGM Assets: geological plan of the Modikwa Mine (North Shaft)

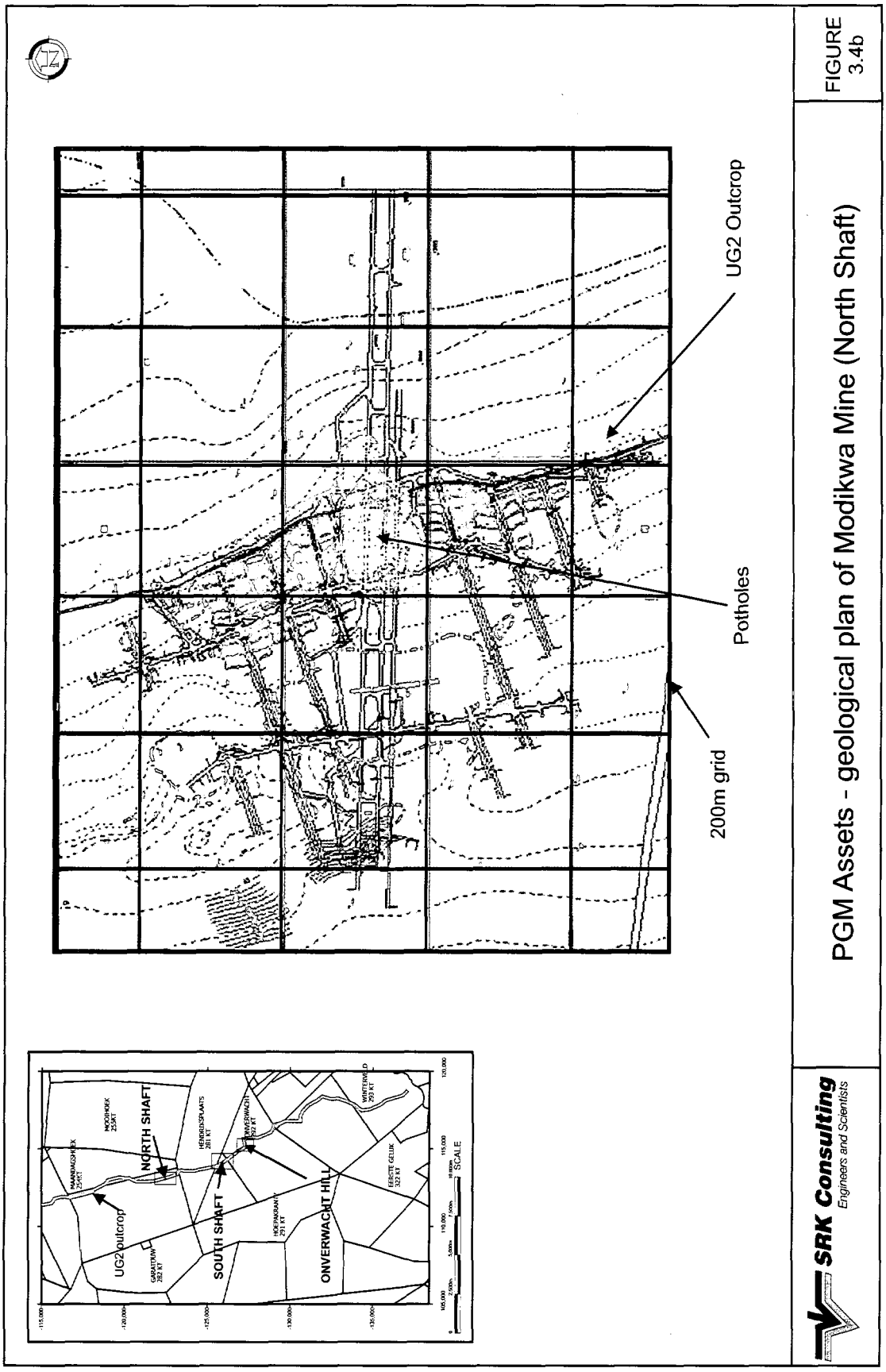


Figure 3.4c PGM Assets: geological plan of the Modikwa Mine (Onverwacht Shaft)

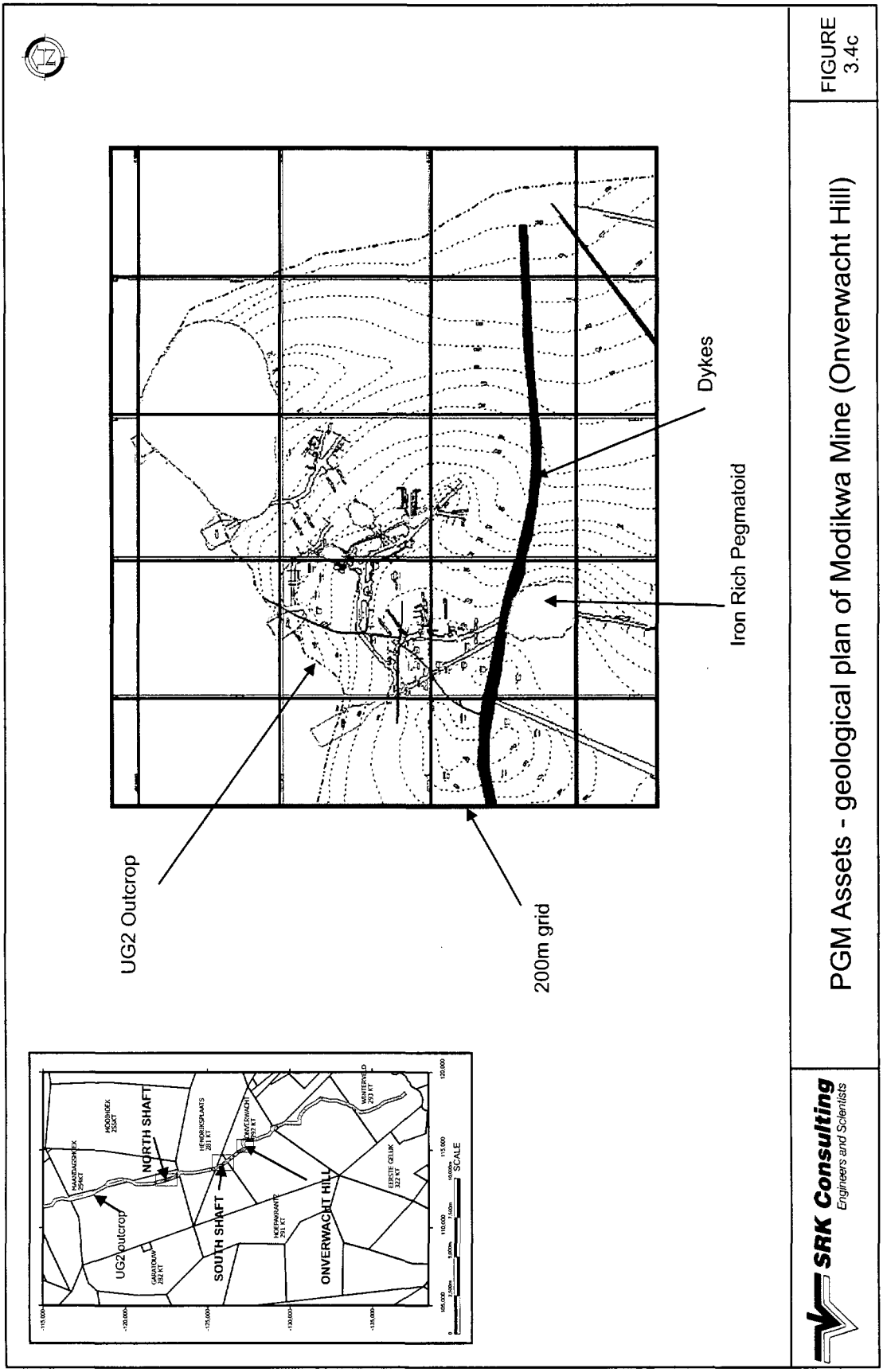


Figure 3.5 PGM Assets: stratographic column of the Modikwa Mine

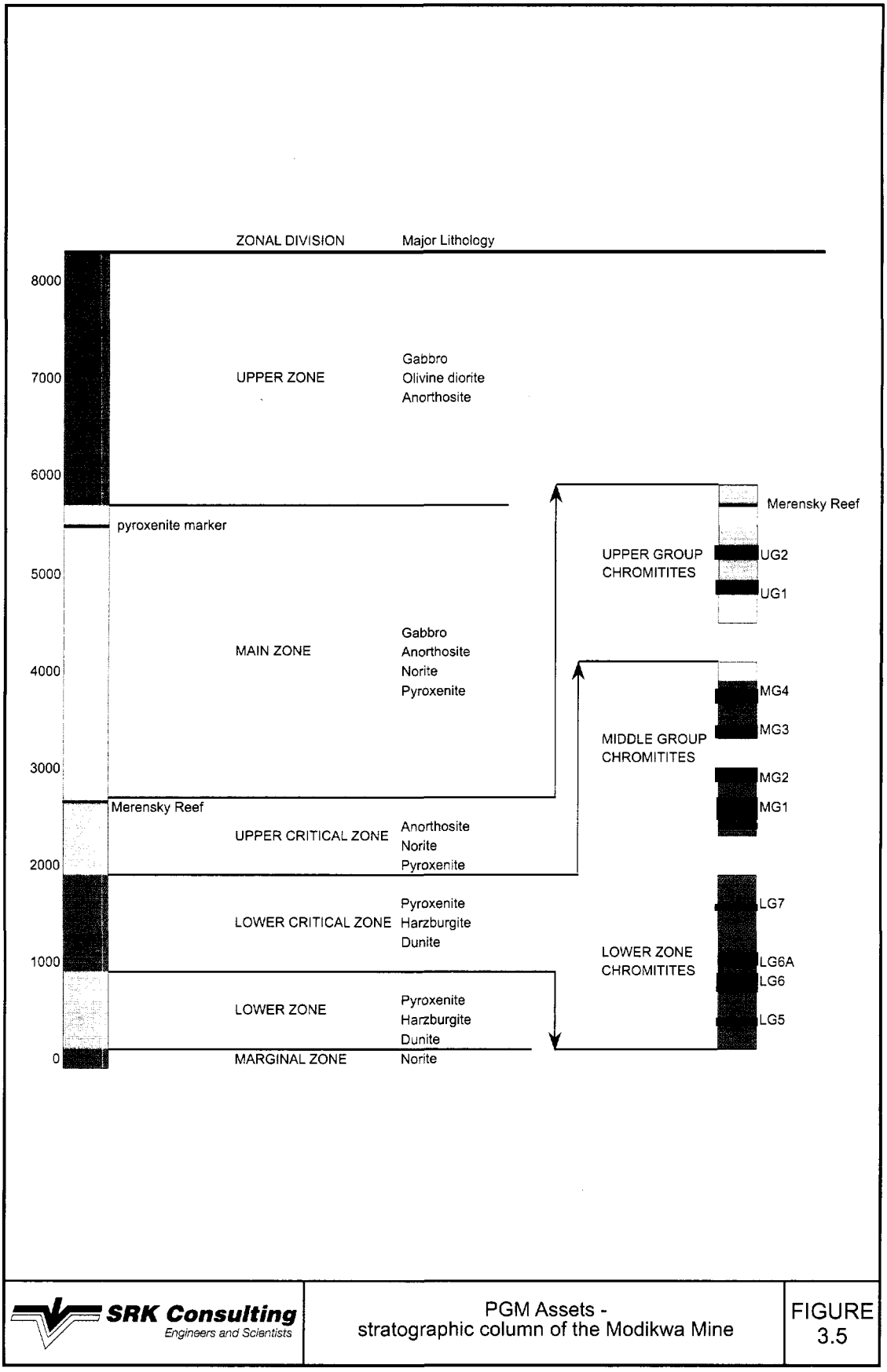


Figure 3.6 PGM Assets: geological plan of the Two Rivers Project

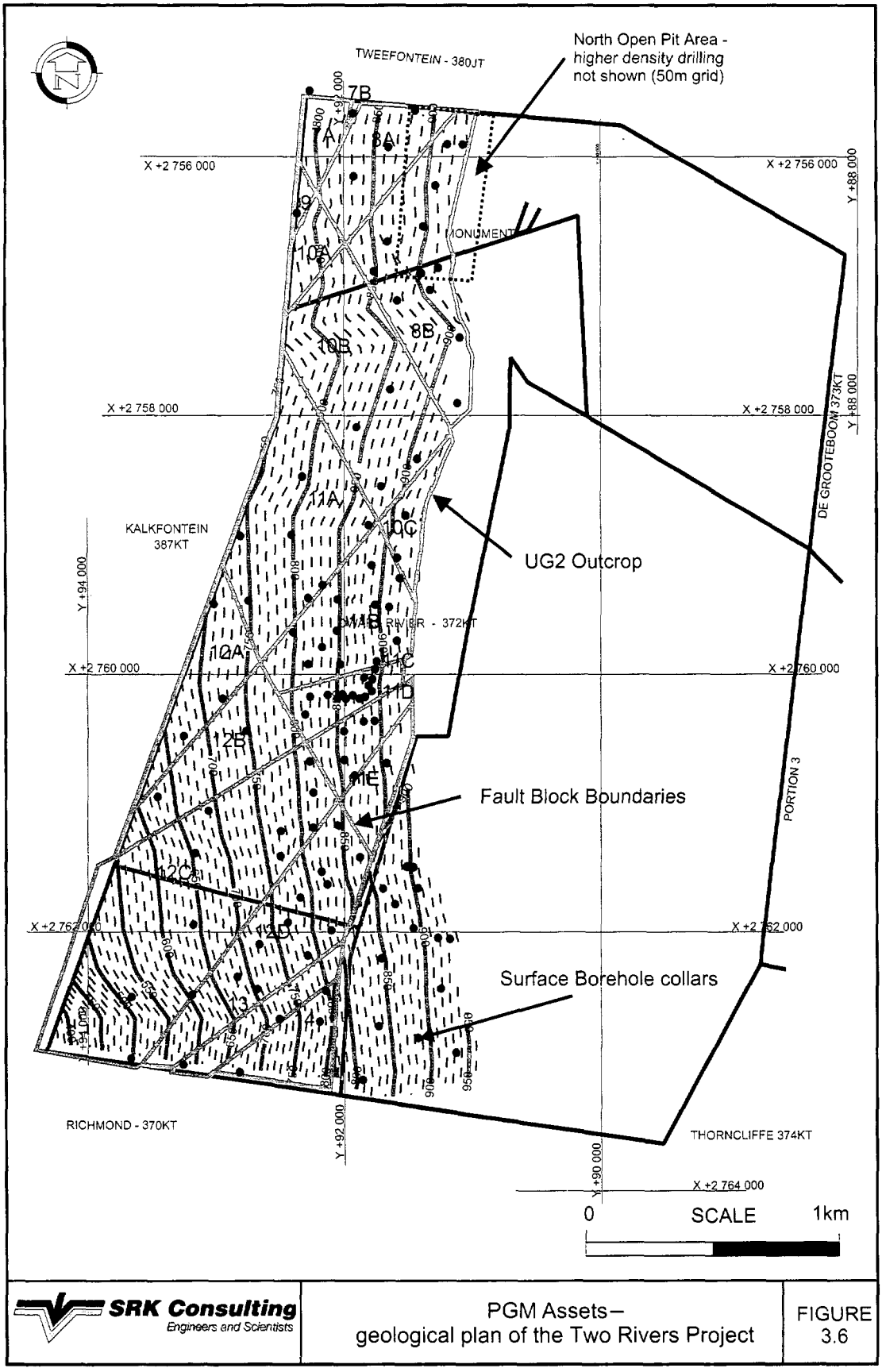


Figure 3.7 PGM Assets: sectional view of the Two Rivers Project

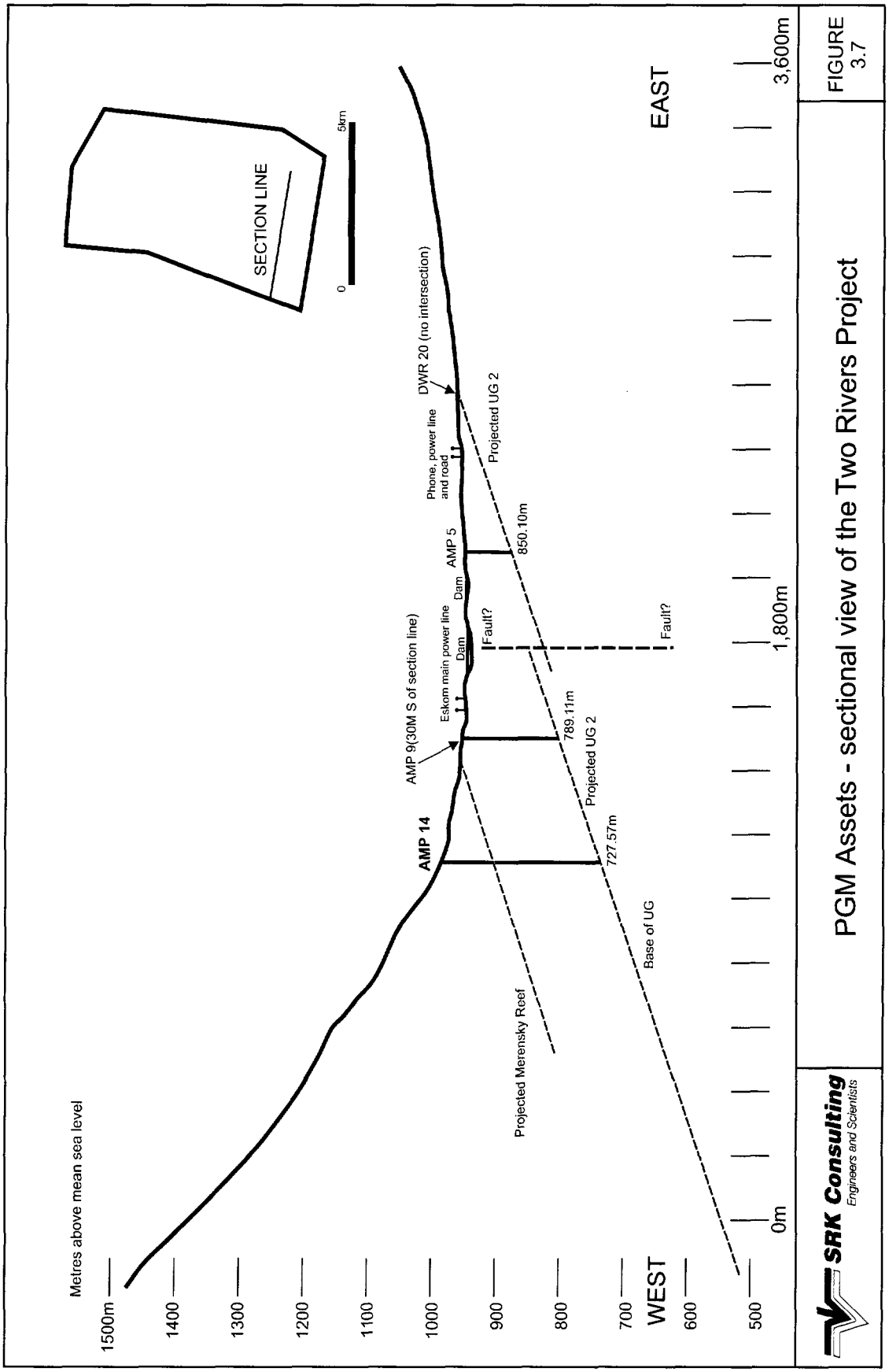
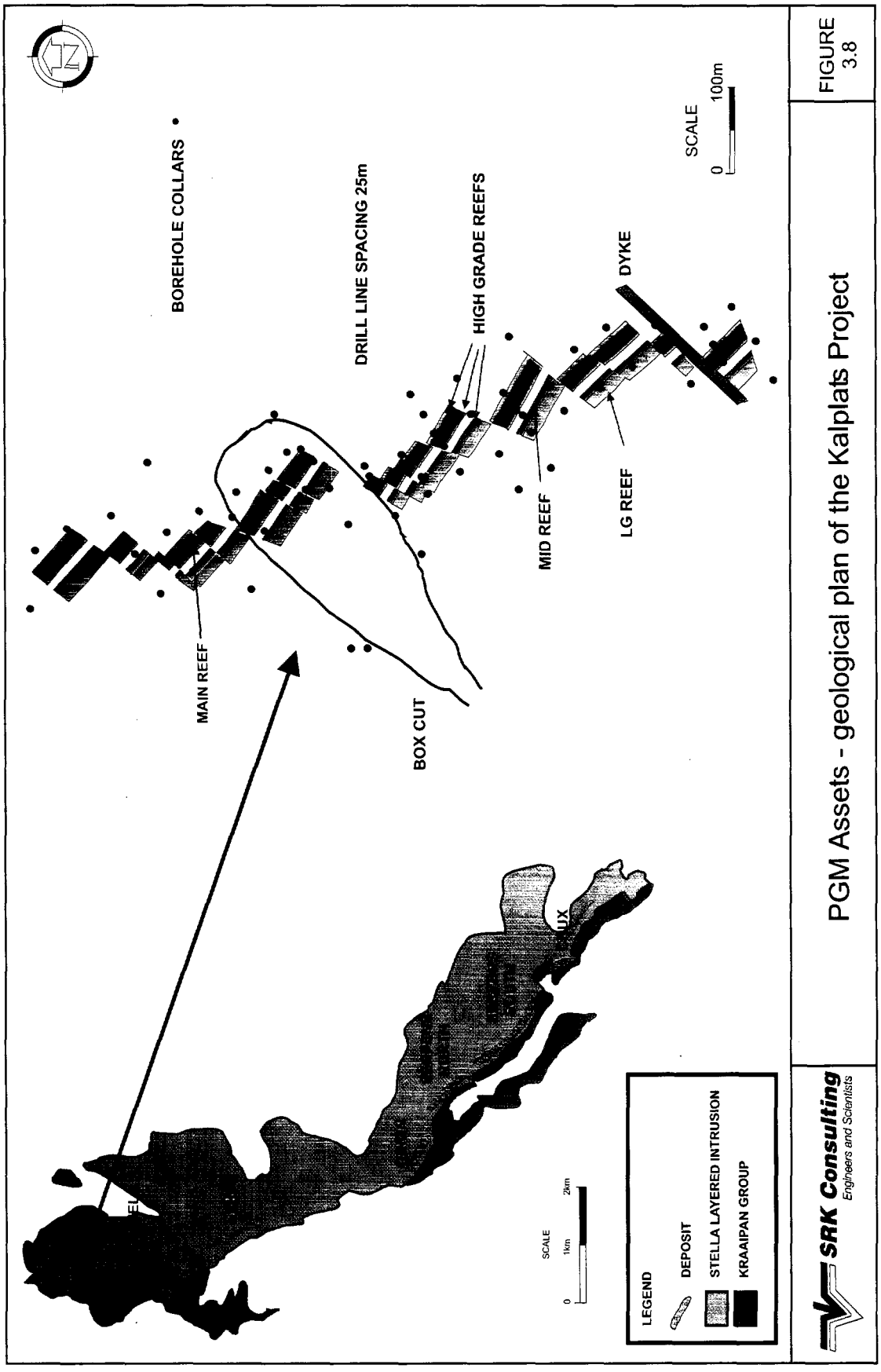


Figure 3.8 PGM Assets: geological plan of the Kalplats Project



The Mineral Resource for the MMZ and PCMZ is based solely on surface diamond and percussion drilling, the majority of which was carried out on a 100m grid. In total 530 surface diamond drillholes (150,000m) and 250 percussion holes (9,200m) have been drilled during various campaigns. Sampling protocol has varied over the different phases of evaluation, however from 1993 onwards, which accounts for approximately half of the samples in the database, boreholes were logged and sampled to a standard Anglovaal procedure. The diamond drill cores were split and one half used and crushed such that four sub-samples were obtained by riffle splitting. One of these samples was sent for analysis, another was retained as a duplicate and the remaining two samples were retained for possible metallurgical testwork. Prior to 1993 the drilling was managed by Anglo American and an electronic database of this assay information has been checked against original assay certificates where possible.

All samples prior to 1993 were analysed at Anglo American Research Laboratory ("AARL"). Although samples were not always analysed for the exactly the same suite of elements assays for Ni, Cu, Co, Pt, Pd, S and Cr2O3 were always obtained. After this date samples were analysed at the Anglovaal Research Laboratory ("AVRL") by atomic adsorption spectrometer ("AAS") for Ni, Cu, Co, Fe, Cr, Pt, Pd, Rh, Au, Ag and MgO. The laboratories both use similar sample preparation protocols and 30 duplicate samples have been sent to both laboratories for comparison. Results for all major metals were satisfactory, however the results were less favourable for Pt, Rh and Au as the average grades are close to the detection limits. Further duplicate samples were also sent to two other external laboratories in Australia and South Africa.

The Setpoint Laboratory (SANAS T0223) is used for mine sample analysis; the Anglo American Research Laboratory (SANAS T0051) was used for all pre 1993 drilling analysis; and the Anglovaal Research Laboratory (SANAS T0060) was used for all post 1993 drilling analysis.

4.3.2 Orebody Definition

Separate 3-D orebody models have been developed for the MSB Lens 1 and for the total complex excluding the MSB. The Lens 1 MSB model is based on underground drillhole and face information and as the footwall and hangingwall contacts are sharp and also given the large quantity of pre-development that has occurred, the geometry of the lens is reasonably well defined. Large xenoliths (usually larger than 20m by 10m by 2m) have also been modelled in 3-D so they can be excluded from the orebody. Lens 3 has not been modelled in 3-D and no Mineral Resources have been delineated in Lens 3.

The Uitkomst Complex has been modelled using a uniform geometry for the floor and the walls and Indicator Kriging using rock-type parameters to model the complex / country rock boundary. The lithological wireframes have been sub-divided in 14 separate 'blocks' by fault wireframes. In each block the major lithological contacts and diabase sills and dykes have been modelled using the borehole information. Lenses of MMZ and PCMZ have then been modelled within these blocks based on grade cut-offs of 0.35%Ni and 0.30%Ni respectively. A number of cut-offs were tested and these were considered to best reflect the more continuous higher-grade lenses of disseminated sulphides. The lower cut-off used for the PCMZ reflects the fact that the lenses are less continuous than in the MMZ.

The geological models are subsequently used to constrain block models into which grades and densities are interpolated. The MSB model utilises a block size of 20m by 20m by 1m vertically. The MMZ and PCMZ model utilises a block size of 50m by 50m by 2.5m vertically. Volume integrity is maintained through the use of sub cells, which are assigned the grade of the parent block.

4.3.3 Grade and Tonnage Estimation

For the MSB Lens 1 the assay data for each element has been validated and analysed statistically following compositing. The data were split into two domains (east and west) based on Ni and Cu grades. In both domains the Cu and Pt grades increase with depth, while the Ni grade decreases with depth in the west and increases slightly in the east.

The composited data (1m for Ni, Cu, Co and density and 5m for Pt, Pd, Rh and Au) have been subject to geostatistical analyses using omni-directional and down-the-hole semi-variograms. Down-the-hole variograms are not well structured for the PGEs due to the composite length of 5m across a vertical thickness of 20m to 25m. A range of 10m was therefore assumed based on the Cu and Ni semi-variogram ranges. Single structure spherical variograms were modelled with nugget effects usually greater than 60% in the west and lower (less than 55%) in the east and ranges of 30m to 50m.

Grade and density was interpolated into the blocks using ordinary kriging with omni-directional semi-variograms. The 1m and 5m composites were used to estimate each variable modelled separately. The down-the-hole variogram ranges were used to limit the vertical search neighbourhood. The horizontal search neighbourhoods varied according to the samples available being set to approximately twice the range of the semi-variogram for the base metals and 3 to 5 times for the PGEs. Each block was estimated with a minimum of 10 samples. The average density of the MSB is 4.0tm^{-3}.

Using 5m composites to estimate 1m high blocks for the PGEs is not ideal and whilst the global resource estimate should be reasonable, local estimates will be imprecise. However, the 5m composites cannot be sub-divided as this would artificially reduce nugget variance, therefore SRK considers this approach reasonable although the local estimates of the PGE grades will be at a lower level of confidence than those of the base metal grades and the density. No grades are interpolated into the xenolith model.

For the MMZ and PCMZ estimation the drillhole data were separated by rock type and composited into 1.25m lengths. The data were validated and verified using the geological model. Indicator kriging was then used in the LrPXT and PCR to create a 0.17%Ni envelope within the lithologies. The volume between the high-grade lenses and the boundaries of the IK envelope was named the "halo", while the volume outside of the halo was named the "background". The lens / halo boundaries were then "softened" by the addition of one composite either side of the high-grade lens / halo boundary and two composites at the halo / background boundary.

In the case of the MMZ the Slaaihoek and Uitkomst borehole databases were treated separately due to the large sizes of the databases and the fact that the Slaaihoek database comprises only diamond drill holes. To remove the effect of the artificial farm boundary, several rows of holes from Slaaihoek were added to Uitkomst and vice versa. The statistics and variography for the same variables over the two farms are very similar. Statistical analyses indicate a strong correlation between Ni and Co grades (Co is mainly in solid solution in the pentlandite) and between Pt and Pd, which also coexist. Other correlations are generally moderate to weak.

The variography was orientated to the structure of the Uitkomst Complex and three structure spherical models were fitted to the semi-variograms along strike and across strike for each variable. The base metals variograms were almost anisotropic with a first range of 50m to100m and low relative nugget effects of approximately 20%. The PGE variograms were isotropic with the first long range over 100m and a first short range of less than 60m again with low nugget effects. Down-the-hole variograms showed first ranges of less than 8m for each variable. The base metal variogram first ranges are less than the borehole spacing and generally not well-structured. This may be due to the sample populations being a mixture of different ore types and also xenoliths with high-grade halos. In the Slaaihoek area there are a number of boreholes at a spacing of less than 100m and the semi-variograms from Slaaihoek were applied in the modelling of the entire deposit.

Grade and density was interpolated into the blocks using ordinary kriging. The 1.25m composites were used to estimate each variable modelled separately. The variogram ranges were used as a guideline for the search radii and a total of three kriging runs carried out to increase the search radii to 150% of the original. In the final run each block was estimated with a minimum of 7 samples. The high-grade lenses and halo were interpolated separately using the 'soft' boundaries. The same procedure was carried out for the PCMZ. As the PCMZ is less continuous with a more erratic distribution of high-grade lenses compared to the MMZ the semi-variogram structures are less well defined. In the Slaaihoek area the PCMZ is more continuous and the semi-variograms from Slaaihoek were used for the whole deposit. The average densities of the MMZ and PCMZ are 3.1tm^{-3} and 3.2tm^{-3} respectively.

4.3.4 Classification

The individual resource blocks are classified as Measured, Indicated or Inferred Mineral Resources as defined by the SAMREC Code. In the MSB Lens 1 all blocks are classified as Measured Mineral Resources for the base metal grade estimates. As the PGEs are estimated to a lower confidence because of the 5m compositing these estimates are classified as Indicated Mineral Resources. All of the MMZ and PCMZ blocks are classified as Indicated Mineral Resources. There are no Inferred Mineral Resources currently delineated at Nkomati Mine.

4.3.5 *Selective Mining Units*

Selectivity at Nkomati Mine is essentially restricted to the primary stope dimensions, with certain opportunity to limit extraction of secondary stopes should grade dictate otherwise. Further, in respect of the MSB operations and given the finite life and relatively high operating margin, the likelihood of requiring mining on any selective basis is considered minimal.

In the case of the MMZ orebody, grade within the defined envelopes depicts low variability and being significantly lower in value than the MSB, is globally sensitive in respect of the various commodity prices. Consequently economics will rather dictate the viability of extraction as opposed to consideration for selective mining.

In respect of the Nkomati Expansion project, selective mining within the underground operation will not be practised (other than definition of the ore zones currently defined). In respect of the proposed open pit operation selective mining is assumed specifically in areas where waste/ore definition significantly impacts on dilution.

4.3.6 *Grade Control and Reconciliation*

Grade control practices at Nkomati Mine include the use of mapping, channel sampling and underground infill drilling. One of the main functions of grade control is to delineate mineralisation 'not in resource' such as stringers, which are not included in the lens grade model. The reconciliation of the resource estimate to the tonnage and grade treated at the plant is made difficult by the mining of the 'not in resource' material, the mining of the MMZ and also the waste picking that occurs prior to processing. Grade and tonnage assumptions for each component must be made to enable a comparable reconciliation to be calculated.

Historically significantly more Ni and Cu metal was processed at the plant than was estimated in the resource that was extracted. Following improvements in the estimation technique and increased information available specifically better defining the geometry of the lens this reconciliation has improved. Given the number of material assumptions made in this process SRK considers the recent reconciliation results of 5% more Ni and Cu metal being processed than estimated to be within reasonable limits. This reconciliation was only for a period of three quarters and longer periods should be considered in order for constant and material biases to be detected. All reconciliation and grade control practices are confined to Ni and Cu grades and tonnages and no reconciliation is carried out on the PGEs.

Whilst all elements are separately estimated at Nkomati Mine the LoM weighted average 4E prill split is: Platinum (26.57%); Palladium (67.45%); Rhodium (1.58%); and Gold (4.39%).

4.3.7 *Mineral Reserve Estimation*

Mineral Reserve estimation at Nkomati Mine is based on definition of a LoM plan which accounts for all necessary access development, stope designs and scheduling. All design work is undertaken within Datamine with subsequent scheduling occurring in Mine 2-4D. Table 4.1 presents the modifying factors as used in the Mineral Reserve estimation process, with sensitivity range for commodity prices.

Table 4.1 Nkomati Mine: assumed modifying factors

Factors	Units	Sensitivity Range				
Commodity Price	(%)	–30%	–15%	0%	15.0%	30.0%
Unit Costs (inc credits)	(ZAR/t)	353	266	183	112	34
Unit Costs (exc credits)	(ZAR/t)	768	771	776	794	805
Modifying Factors						
Dilution	(%)	15%	15%	15%	15%	15%
MCF	(%)	100%	100%	100%	100%	100%
Overall Ni Recovery	(%)	72%	72%	72%	72%	72%
Cut-off-Grades						
Run of Mine	(%Ni)	1.07%	0.67%	0.39%	0.21%	0.06%
In Situ	(%Ni)	1.26%	0.78%	0.46%	0.24%	0.06%

The above table has been derived based on the weighted average real terms macro-economic parameters and technical-economic parameters as included in the TEM. SRK notes the significant contribution of both credits and off-mine expenditures to the cut-off-grades as determined. Further, the likelihood of large scale exploitation of the MMZ is significantly impacted by the sustainability of current parameters, notwithstanding any improvements in metallurgical parameters as included in the Nkomati Expansion Project.

Mining extraction within the MSB is effectively 100% given the finite life and also the use of backfill. In respect of the MMZ mining extraction is limited to 60% as no backfill is planned for the current LoM plan.

In respect of the Nkomati Expansion Project, all mine design and planning has been undertaken using similar processes with the open pits based on optimisation techniques and with design phase push-backs in order to maximise NPV and cashflow profiles. Table 4.2 below presents the weighted average Modifying Factors as used in the derivation of the Mineral Reserve statement for the Nkomati Expansion Project.

Table 4.2 Nkomati Expansion Project: assumed modifying factors

Factors	Units	Sensitivity Range				
Commodity Price	(%)	-30%	-15%	0%	15.0%	30.0%
Unit Costs (inc credits)	(ZAR/t)	132	103	68	26	-21
Unit Costs (exc credits)	(ZAR/t)	197	199	201	202	204
Modifying Factors						
Dilution	(%)	5%	5%	5%	5%	5%
MCF	(%)	100%	100%	100%	100%	100%
Overall Ni Recovery	(%)	77%	77%	77%	77%	77%
Cut-off-Grades						
Run of Mine	(%Ni)	0.37%	0.24%	0.13%	0.05%	-0.03%
In Situ	(%Ni)	0.39%	0.25%	0.14%	0.05%	-0.03%

4.4 Modikwa Mine – Mineral Resource and Mineral Reserve Estimation Methodology

Figure 4.3 presents a typical plan view of Mineral Resource blocks at Modikwa Mine.

4.4.1 Quality and Quantity of Data

The Mineral Resource at Modikwa Mine is based on over 700 surface exploration diamond drillholes and over 650 underground channel sample sections. All samples are collected in a systematic fashion, with samples positioned specifically in accordance with geological contacts evident within the cores and underground exposures.

The underground and drillhole sampling information is captured in separate electronic databases, which are combined for estimation purposes. Rigorous data validation routines and checks are performed on the data, with any anomalous data being excluded from the estimation process. The validation routines are extensive and include checking for anomalous collar co-ordinates, stratigraphy, anomalous or missing values, incorrect locations or co-ordinates duplicated between and within sections. The 4E grades have been capped at 13g/t based on statistical analysis.

The UG2 has an average width in the mining lease of approximately 60cm, and a relatively low variability. Where the chromitite layer width is greater than 90cm or less than 30cm, a pothole feature is interpreted and the intersection excluded from the database for estimation of channel thickness.

Samples are submitted to Anglo Platinum Research Centre ("ARC" – SANAS T0208) and analyses are subcontracted to AARL (SANAS T0051). Analyses are completed using two fire-assay techniques to provide individual assay grades for Pt, Pd, Rh and Au, while wet-chemical techniques are used to determine Ni and Cu assay grades. The fire-assays are performed in duplicate as separate legs. This process attempts to replicate each analysis and the sample is re-assayed if the variation between the two is high.

4.4.2 Orebody Definition

For the purposes of estimation, the UG2 mining cut has been divided into three units, comprising the UG2 chromitite layer, the hangingwall and the footwall. Estimation of the three sub-units in the mining cut is carried out separately and independently.

In some areas there is a lens of pyroxenite within the UG2 chromite seam, usually occurring near the base. Where the underlying chromite seam is thicker than the pyroxenite lens the total package is defined as the chromitite layer. Where the pyroxenite lens is thicker than the underlying chromite seam, only the upper seam is defined as the chromitite layer.

The estimation of the mining cut is important for resource estimation purposes. In the hangingwall various chromite stringers at variable heights above the main seam form planes of weakness and are used in calculating the hangingwall dilution. Geo commendations indicate that the minimum width of a beam that can be supported by rockbolting is 30cm. Where the first hangingwall chromite stringer is more than 30cm above the top of the main seam, no hangingwall dilution is added to the section on the assumption that the total beam above the chromitite layer can be supported by roofbolting. Where the first stringer is less than 30cm from the top of the main seam, that width is included, and the width to the next stringer is checked. The hangingwall dilution is calculated from below the first stringer that would leave more than a 30cm beam.

A minimum mining width of 103cm is used to calculate the amount of footwall waste that is included in the mining cut. Where the hangingwall and the main seam thickness are greater than 103cm, an additional 5cm of footwall waste is included. The basal contact of the chromitite layer is typically high-grade and it is important that the lower contact of the chromitite layer is not left in the footwall during mining.

Two dimensional resource blocks are created that honour the major structural features such as dykes, faults, potholes, and exclude the mined out areas. A 3-D DTM model is created to represent the UG2, although this is only used to estimate average dips.

4.4.3 Grade and Tonnage Estimation

Two dimensional block models with block sizes of 250m by 250m and 500m by 500m depending on the drillhole spacing are created, which together cover the area of the resource blocks for each of the three units. Pt, Pd, Rh, Au, Ni and Cu grades are interpolated into these block models using ordinary kriging for the UG2 chromitite layer and inverse distance squared weighting for hanging wall and footwall units.

The width of the chromitite and the density are also interpolated into the block models in the same way as the grades. For each unit, an average grade is calculated for each section, over the width selected for the mining cut. From the product of grade and thickness estimates a cmg/t value is calculated for each estimated block.

Grades are not linearly additive when the sample support is variable. For this reason, in SRK's opinion it would be more correct for the estimates to be developed from length-weighted grades (i.e. accumulations) in preference to the grades themselves. However, as the variation in grades and thickness of the chromitite layer is low and as such that lateral selection of material to mine cannot be practically based on a defined cut-off grade, precise local estimates are less important that accurate regional estimates.

The average density is also calculated for each of the sub areas from the kriged block model. For each resource block the horizontal area, cmg/t and mining cut width are determined by overlaying the resource blocks over the kriged block model. An average dip is for each area is estimated from the DTM model of the UG2 and the corrected inclined area calculated. Based on the inclined area, mining cut, value and area density, the tonnage and contained metal are calculated for each block. The average density of the mining cut is $3.72tm^{-3}$.

Discount factors are then applied to tonnages for each area and category of resources ranging from 10% (for Measured Resources) up to 30% to account for loss of ore due to pegmatoid intrusions, faults, dykes and potholes.

4.4.4 *Classification*

The individual resource blocks are classified as Measured, Indicated or Inferred Mineral Resources as defined by the SAMREC Code. The classification of blocks is based primarily on the proximity to drilling and sampling data, and uses the variogram range, and the number of sample values used to estimate a block to determine into which category it falls. A block is classified as a Measured Mineral Resource if it is within 66% of the range of the variogram from the nearest sampling and 6 to 30 samples are used in the estimation process. A block is classified as an Indicated Mineral Resource if it is within the range of the variogram from the nearest sampling and 10 to 30 samples are used in the estimation process. A block is classified as Inferred Mineral Resource if it is outside the variogram range and 30 to 100 samples are used in the estimation process.

This classification system relies solely on geostatistical principles and takes no account of the geological risks that are present in the deposit, particularly with respect to the large geological discounts applied. SRK has therefore adjusted the classification of the Mineral Resources based on geological understanding. These adjustments primarily involve the downgrading of a portion of Measured Mineral Resources, to Indicated Mineral Resources. This results in only blocks mined during the first two years of the LoM plan being classified as Measured Mineral Resources, where sufficient pre-development means that there is higher confidence in the location and size of any potholes, faults and dykes. In this case a lower geological discount is applied to the resource.

4.4.5 *Selective Mining Units*

Selectivity at Modikwa Mine is generally limited to the overall stope layouts which are based on 30m by 180m blocks. In certain instances these may also be constrained by structure (including potholes) which limits the plan extent of mining blocks. In summary however, there is little variability in grade in the plane of the economic horizons and as a consequence consideration for selective mining in this context is limited. Further, as the mineralised horizons are generally thinner than the average stoping width (106cm) then limited potential also exists for selectivity in the vertical context.

4.4.6 *Grade Control and Reconciliation*

Grade control practices at Modikwa Mine include the use of mapping, chip sampling and infill drilling. Reconciliation exercise at Modikwa Mine have enabled the determination of Mine Call Factor ("MCF"), albeit based on a relatively short operating period. The MCF is determined by comparing between the total 4E metal called for and that actually milled during the corresponding time period. Generally unaccounted losses of metal derived during mining are not significant in the platinum industry as losses are predominantly fine-grained and these do not tend to be highly enriched in PGEs.

To date reconciliation studies have yielded MCFs of the order of 120%, however it should be noted that any variances between planned and actual stoping widths and the impact of milling of stockpiled low grade development material may have influenced the high MCF. The current LoM plan has assumed a MCF of 100%, in recognition that changes to the planned stoping width may impact negatively on current performance in addition to the relatively short history and ramp-up status of the mining operations.

In respect of Block Factors, Modikwa Mine has not yet undertaken reconciliations to reflect this 'information effect' factor as a measure of the estimation efficiency. SRK, has however been informed that a programme is underway to reassess this aspect.

Sample points to date include, face sampling, belt sampling, thickener underflow sampling, tailings stream sampling and final concentrate production. In general reconciliations are undertaken for 4E with 6E and prill split assessments being undertaken on a more selected basis. In this respect reconciliation to date for both 4E to 6E conversion and prill splits have been good, and such factors are considered appropriate for future projection. Table 4.3 below presents the current prill splits as assumed in the LoM plan for Modikwa Mine.

Table 4.3 Modikwa Mine: assumed prill splits

Commodity	Prill Split – 6E 2004 (%)
Platinum	39.74%
Palladium	38.21%
Rhodium	8.03%
Gold	1.36%
Ruthenium	11.35%
Iridium	1.31%
4E – 6E Conversion Factor	1.145

The 4E prill split is: Platinum (45.50%); Palladium (43.75%); Rhodium (9.19%); and Gold (1.56%).

4.5.4 *Classification*

The resources have been classified as Measured, Indicated or Inferred Mineral Resources as defined by the SAMREC Code. The majority of the Mineral Resource at the Two Rivers Project is classified as a Indicated Mineral Resource, with only the open pit resource classified as a Measured Mineral Resource. This is because only in the open pit area is drill spacing coverage on a small enough grid to enable the location and size of pothole structures to be predicted with a high level of confidence.

4.5.5 *Selective Mining Units*

Selectivity at Two Rivers Project will largely follow the planned mining layouts where underground operations will be guided by the bord and pillar configurations and the open pit by grade control modelling. Given the limited variability of the in-situ grades it is therefore anticipated that structure (including potholes) and mining layouts will primarily determine the extent by which selective mining will occur.

4.5.6 *Grade Control and Reconciliation*

Grade control and reconciliation procedures at Two Rivers Project are planned to follow recognised industry practice in that, reconciliation will be undertaken to assess both estimation (Block Factor) and mining (MCF) efficiencies. The current LoM plan assumes a Block Factor of 100% and a MCF of 95%, which are considered appropriate in the context of planned operations. Further, sample analysis will include reconciliation between as mined, trammed, milled, tailings and concentrate metal content which should provide a sound basis for reconciliation of both 4E and 6E metals. Table 4.5 below presents the current prill splits as assumed in the LoM plan for Two Rivers Project.

Table 4.5 Two Rivers Project: assumed prill splits

Commodity	Prill Split – 6E 2004 (%)
Platinum	45.78%
Palladium	28.25%
Rhodium	8.47%
Gold	0.71%
Ruthenium	13.59%
Iridium	3.20%
4E – 6E Conversion Factor	1.202

The 4E prill split is: Platinum (55.01%); Palladium (33.95%); Rhodium (10.18%); and Gold (0.86%).

4.5.7 *Mineral Reserve Estimation*

Mineral Reserve estimation at Two Rivers Project is based on definition of a LoM plan which accounts for all necessary access development, stope designs and scheduling. All design work is undertaken within Mine 2-4D for the underground operations and NPV Scheduler routines in Datamine for the open pit. Table 4.6 presents the modifying factors as used in the Mineral Reserve estimation process, with sensitivity range for commodity prices.

Table 4.6 Two Rivers Mine: assumed modifying factors

Factors	Units	Sensitivity Range				
Commodity Price	(%)	-30%	-15%	0%	15.0%	30.0%
Underground Mining						
Unit Costs (inc credits)	(ZAR/t)	154	154	154	154	154
Unit Costs (exc credits)	(ZAR/t)	268	270	272	274	276
Modifying Factors						
Dilution	(%)	8%	8%	8%	8%	8%
MCF	(%)	95.0%	95.0%	95.0%	95.0%	95.0%
4E Recovery	(%)	87.3%	87.3%	87.3%	87.3%	87.3%
Cut-off-Grades						
Run of Mine	(4Eg/t)	1.05	0.87	0.74	0.64	0.57
In Situ	(4Eg/t)	1.20	0.99	0.84	0.73	0.65
Open Pit Mining						
Unit Costs (inc credits)	(ZAR/t)	253	253	253	253	253
Unit Costs (exc credits)	(ZAR/t)	366	368	371	373	375
Modifying Factors						
Dilution	(%)	8%	8%	8%	8%	8%
MCF	(%)	95%	95%	95%	95%	95%
4E Recovery	(%)	87.3%	87.3%	87.3%	87.3%	87.3%
Cut-off-Grades						
Run of Mine	(4Eg/t)	1.73	1.42	1.21	1.05	0.93
In Situ	(4Eg/t)	1.97	1.63	1.38	1.20	1.06

The average stoping width as applied at Two Rivers Project is of the order of 1.72m for both the open pit and underground operations. Mining extraction at Two Rivers Project ranges from 71% to 89% on an area basis which is consistent with the proposed layouts associated with the planned mining method.

4.6 Kalplats Project – Mineral Resource Estimation Methodology

Figure 4.5 presents a sectional view of Mineral Resource blocks at Kalplats Project.

4.6.1 Quality and Quantity of Data

For the Crater and Orion deposits the Mineral Resource is based on RC and diamond surface exploration drilling at an approximate 25m spaced drillhole grid increasing to 50m at the margins of the orebodies. For the remaining deposits the drillhole grid is wider varying from 50m to 200m spacing. In the case of the RC drillholes, logging and sampling was carried out at 1m intervals. The resultant sample was riffle split to produce two sub-samples with one being retained. Diamond core was halved and then quartered and sampling and logging was carried out at approximately 1m intervals or at lithological contacts.

All samples were submitted to SGS/Lakefield Laboratories (SANAS T0169) in Johannesburg. After crushing and milling a 50g aliquot was analysed using Pb collector fire assay, with ICP-OES finishfor Pt, Pd and Au. 'In-house' and international standards were submitted together with the samples for analysis as part of the quality control and quality assurance programme. A total of approximately 1,300 representative pulp samples were also submitted to Genalysis Laboratory Services (NATA 3244) in Perth for check analysis and the overall results were within reasonable limits.

Surface geological plans were prepared through the interpretation of the boreholes and sections. A structural model comprising of faults and dykes was created for all of the deposits. From this 49 structural blocks were delineated for the Crater deposit and 24 structural blocks for the Orion deposit, illustrating the structural complexity of the deposits.

The Crater and Orion deposits were divided by into 'geozones' that exhibited similar geological characteristics and also based on density of data. For the Crater and Orion deposits from these structural blocks 3-D wireframes were created for the Upper Main, Main Reef residual, Lower Main, Mid Waste band, Mid Reef, MR1 Reef band and LG Reef. The individual reef bands were extrapolated down to a depth of 500m for Crater and to 270m for Orion, using a dip of 85° to the West. Block models were then created at 4m by 4m by 10m for Crater and 8m by 8m by 10m for Orion due to the orientation of the deposits.

No geozones or wireframes were defined on the other five deposits as the drill line spacing was deemed to be too wide and insufficient data available. Resource polygons were created and orezone margins defined by a 0.5g/t cut-off and high-grade reef margins by a 2.0g/t cut-off. Except where interpretations of the presence of faults or dykes indicated otherwise, the strike of resource polygons was extended midway to each adjacent drill section. Resources were estimated to 150m vertical depth.

4.6.2 Grade and Tonnage Estimation

The assay data was composited to lengths of 1m where possible within the confines of lithological and reef boundaries for estimation purposes.

The borehole assay data was coded as 'fresh' sulphide rock and 'weathered' oxide rock. The transition from the oxide to the sulphide zone occurs at approximately 30m below surface, although this varies due to faulting. Although oxide resources have been estimated further metallurgical testwork is required before these are shown to be economically extractable. Oxide material makes up approximately 20% of the current resource. Average densities for the various reef bands were calculated from borehole samples and range from $3.1tm^{-3}$ to $3.5tm^{-3}$ for the 'weathered' rock and $3.3tm^{-3}$ to $3.9tm^{-3}$ for the 'fresh rock'.

Due to the structural complexity of the reef and a relatively wide borehole spacing a global estimate for the resources was derived. Statistical analysis was carried out on the 1m composites per reef, per zone for each deposit. The sample populations were shown to be positively skewed.

In the case of the Crater and Orion deposits classical statistical methods were employed to estimate Pt, Pd and Au grades and densities. The Sichel t estimate and the log mean estimate was calculated from log data, which includes an additive constant to approximate to log-normality. If the number of samples was less than 40, the Sichel t estimate was used as the estimate and if the number of samples was greater than 40, the log mean estimate was used. If the Sichel t or log mean value is greater than the arithmetic mean, due to high variances, the arithmetic mean is used for the estimate. The tonnage was then estimated from the block models.

In the case of the other deposits polygons were constructed on each drill section enclosing the various reef units and separate polygons were delineated for oxide and sulphide material. Volumes were determined for each resource polygon to give the resource tonnages. Weighted Pt, Pd and Au grades were calculated from the drill intersections and assigned to each polygon. If two or more drill intersections were present in a single polygon the grade was weighted by the length of each intersection. In projecting grades for down dip reef extensions, preference was given to extending grades vertically in the resource block, rather than using values from adjacent resource blocks.

A 15% metal discount was applied to all resource blocks to account for barren dykes, which are modelled within the ore blocks and would have to be mined as ore, but contain no grade.

4.6.3 Classification

The resource blocks have been classified as Measured, Indicated or Inferred Mineral Resources as defined by the SAMREC Code. Due to the complex nature of the structure and global estimation techniques no Measured Mineral Resources were defined. At the Crater and Orion deposits the Indicated and Inferred Mineral Resource boundaries were defined based on the proximity of the deepest borehole in the structural block. All other deposits were classified as Inferred Mineral Resources.

4.7 Otjikoto Project – Mineral Resource Estimation Methodology

4.7.1 Quality and Quantity of Data

The Otjikoto Project Mineral Resource is based over 100 RC drillholes and diamond drillholes equating to a total of 10,896m (7,172m of diamond drilling and 3,724m of RC drilling). In addition to this five diamond drillholes totalling approximately 600m have been completed for metallurgical testwork samples. The drillholes were drilled on a 100m strike spacing and a 50m dip separation with two smaller areas drilled on 25m centres.

In the case of RC drilling sample collection takes place every 1m drilled and each sample is logged. The samples are weighed and split using a riffler before 4 sub-samples are produced for assay and reference purposes. Diamond drill core is logged and halved with a saw. Half core samples are taken every 100cm for fire assay. Standards and blanks are routinely sent to the laboratories. Two Laboratories have been used for analysis; SGS-Lakefiled (SANAST0169) in South Africa, and Genalysis (NATA 3244) in Australia. Both Laboratories have followed the same basic methodology. The sample is crushed and fed through a 106µm sieve with the entire +106µm fraction, which is routinely 10g to 50g, fire assayed for gold. The remaining -106?m sample is split into eight parts and of that a 50g aliquot is taken for analysis. The 'weighted mean' is then calculated for the sample.

The screen fire assay is done to reduce the effect of particulate gold on the reproducibility of the assays results, which was poor in the original phase of the exploration program and now appears to have improved significantly. The grades for both the coarse and fine fractions are recorded in a database, along with the calculated 'weighted mean'.

4.7.2 Grade and Tonnage Estimation

3-D wireframe models using a cut-off of 0.5g/t were produced in a mining software package from drillhole intersections. Two separate 'orebodies' were identified and modelled approximately 10m apart named Lens 1 and Lens 2.

Drillhole samples were composited over 0.5m within the orebody wireframes. For each drillhole an additional sample of 1m was included outside the boundaries of the wireframe from the 'below cut off' material. The data population is positively skewed and closely approximates a log normal distribution. Semi-variograms were calculated and modelled on the log data values. An omni-directional semi- variogram displayed no structure, while the down hole semi-variogram produced better results. A double spherical semi-variogram was modelled with a nugget effect of 60% and the sill at the log variance of the data, with a first range of 20m and a second range of 95m. The wireframes were used to constrain 50 by 50 by 5m block models, with 3 stages of sub cell splitting in the z direction. Au grade was then interpolated into the block model using ordinary kriging of the log transformed data.

The kriging of log transformed values has inherent difficulties associated with the back transformation of the estimate. All of the resource has been classified as an Inferred Mineral Resource.

4.8 Konkola North – Mineral Resource Estimation Methodology

4.8.1 Quality and Quantity of Data

A number of phases of surface exploration diamond drilling (some pre-collared with RC) have been undertaken at Konkola North. Previous drilling campaigns yielded 17,284m in 41 drillholes, ranging in depth from 100 to 1,250m. Avmin's exploration programme resulted in the drilling of a further 43 shallow holes ranging in depth from 20m to 200m, and 41 deep holes with depths between 400m and 1,200m, totalling over 45,000m. Core was then split with a diamond saw, logged and sampled in approximately 0.5m lengths. Re-sampling of the historical core from previous drilling campaigns has also been undertaken.

A number of samples were analysed at the Kalulushi laboratory, however this laboratory closed during the programme and samples from this set of batches containing >0.1% Cu were reanalysed at AVRL (SANAST0060). All further samples were analysed at AVRL with AARL used as an independent check laboratory. Total Cu and Co analysis was carried out by a two acid digest (HCl and HF) with a flame AAS finish. Acid soluble Cu was determined by a sulphuric acid leach and a flame AAS finish. Sulphur content was also analysed. A 60kg RoM sample was obtained from No.s 1 and 3 Shafts, Konkola division, and was used as a standard reference sample. Ten per cent of all samples within a batch were repeated as duplicate samples to check repeatability.

4.8.2 Grade and Tonnage Estimation

The Konkola North orebody was divided into two zones for estimation purposes; an easterly dipping zone and a southerly dipping zone named the East Limb and South Limb. 3-D wireframe models were created for each of the zones from drillhole information using a 1% total Cu grade cut-off. The wireframe models were used to constrain a 50m by 50m by 5m 3-D block model. The assay data within the wireframe model plus the first sample which falls outside the wireframe model were composited to 0.5m sections to be used in the estimation process.

The South Limb data population was found to conform best to a 3 parameter lognormal distribution, with additive constants of 0.3% and 0.16% for total Cu and acid soluble Cu respectively. The East Limb data population was found to conform best to a two-parameter lognormal distribution. Experimental semi variograms were calculated and semi-variograms modelled. For the East Limb, the variogram model was isotropic, while the South Limb showed anisotropy down dip and along strike. Maximum ranges modelled were of the order of 300m to 400m. Total Cu and acid soluble Cu grades were interpolated into each area separately using ordinary kriging of the natural logs of the grade data. The kriging of log transformed values has inherent difficulties associated with the back transformation of the estimate.

The blocks are classified as Measured, Indicated and Inferred based on a Student-t test, which calculates confidence limits of the mean estimate. Blocks with a confidence limit on the mean grade of less than 10% are classified as Measured Mineral Resources, those with a confidence limit between 10 and 15% as Indicated Mineral Resources and those with a confidence limit greater than 15% as Inferred Mineral Resources. This methodology is based on statistical analysis only and takes no account of geological or interpolation uncertainties. Given the potential for bias arising from the log estimation methodology the Measured Mineral Resource has been downgraded to Indicated.

4.9 Mwambashi Project – Mineral Resource Estimation Methodology

4.9.1 Quality and Quantity of Data

During 2000 a surface exploration program was completed at the Mwambashi B Project comprising of 32 RC and 7 diamond drillholes. In the case of the RC drilling, samples were taken at 1m intervals dried and split into 3kg subsamples at the sample preparation laboratory at the Chambishi Metals plant. In the case of the diamond drillholes, the core was logged and halved with samples being taken at 0.5m to 1.5m intervals based on geology. In both cases the samples were split to 100g and submitted for analysis to Alfred H Knight Laboratories ("AHK") in Kalulushi.

Total Cu and Co analysis was carried out by a two acid digest (HCl and HF) with a flame AAS finish. Acid soluble Cu was determined by a sulphuric acid leach and a flame AAS finish. Two standard reference samples were used on the quality control program and duplicate samples were also submitted.

4.9.2 Grade and Tonnage Estimation

A 3-D wireframe model was created for the Mwambashi orebody from drillhole intersects. The wireframe models were used to constrain a 3-D 25m by 25m by 5m block model. The drillholes were composited to 0.5m sections with the composite distribution of the data bring highly skewed and approaching a lognormal distribution. Experimental semi-variograms on the log transformed total Cu, acid soluble Cu and Co indicated a zonal anisotropy with the longest range in a 150° direction. The maximum range for the modelled total Cu variogram was 150m for the second range. The grade was estimated into the block model using ordinary kriging of the log transformed data for total Cu, acid soluble Cu and Co blocks. The dip of the orebody was used when defining the search ellipsoid for the kriging process.

The resource is quoted at a 1% total Cu cut-off on a block by block basis. Given the sample spacing the local 25m by 25m block estimates will most likely be imprecise. The kriging of log transformed values also has inherent difficulties associated with the back transformation of the estimate and there exists a capacity to include bias within the estimate. Given that the total Cu and acid soluble Cu grade resource estimates at the 1% cut-off are of the order of 20% higher than the mean values of the sample composites there is a possibility that the resource grade is overestimated.

The blocks are classified as Measured, Indicated and Inferred Mineral Resources based on a Student-t test, which calculates confidence limits of the mean estimate. This results in a high proportion of the resource being classified as Measured Mineral Resources. Given the uncertainties highlighted above the Measured Mineral Resource has been downgraded to Indicated.

4.10 SRK Mineral Resource and Mineral Reserve Statements

The following tables present Mineral Resource and Mineral Reserve statements for the PGM Assets and the EPs.

4.10.1 Nkomati Mine

Table 4.7 Nkomati Mine: Mineral Resource and Mineral Reserve Statements[4], [5]

Mineral Reserve Category	Tonnage (kt)	Grade (%Ni)	(%Cu)	(%Co)	(4Eg/t)	Metal (Ni-t)	(Cu-t)	(Co-t)	(4Ekg)
Proved									
– u/g[1]	950	2.13%	1.14%	0.10%	6.52	20,260	10,862	909	6,189
Subtotal	**950**	**2.13%**	**1.14%**	**0.10%**	**6.52**	**20,260**	**10,862**	**909**	**6,189**
Probable									
– u/g[2]	91	0.48%	0.25%	0.03%	1.06	441	227	24	97
Subtotal	**91**	**0.48%**	**0.25%**	**0.03%**	**1.06**	**441**	**227**	**24**	**97**
Total Reserves	**1,041**	**1.99%**	**1.07%**	**0.09%**	**6.04**	**20,701**	**11,090**	**932**	**6,286**
Inferred in LoM									
Total in LoM Plan	**1,041**	**1.99%**	**1.07%**	**0.09%**	**6.04**	**20,701**	**11,090**	**932**	**6,286**

Mineral Resource Category	Tonnage (kt)	Grade (%Ni)	(%Cu)	(%Co)	(4Eg/t)	Metal (Ni-t)	(Cu-t)	(Co-t)	(4Ekg)
Measured									
– u/g[1]	867	2.64%	1.42%	0.12%	8.08	22,891	12,313	1,040	7,006
Subtotal	**867**	**2.64%**	**1.42%**	**0.12%**	**8.08**	**22,891**	**12,313**	**1,040**	**7,006**
Indicated									
– u/g[2]	50,174	0.48%	0.20%	0.02%	1.00	240,835	100,348	10,035	50,174
– o/p[2]	61,729	0.47%	0.19%	0.03%	1.06	290,126	117,285	18,519	65,433
– u/g[3]	19,094	0.38%	0.12%	0.02%	0.80	73,203	23,504	3,334	15,323
– o/p[3]	10,029	0.41%	0.12%	0.02%	0.96	41,205	11,875	1,849	9,593
Subtotal	**141,026**	**0.46%**	**0.18%**	**0.02%**	**1.00**	**645,370**	**253,012**	**33,736**	**140,523**
Total M+Ind	**141,893**	**0.47%**	**0.19%**	**0.02%**	**1.04**	**668,261**	**265,324**	**34,776**	**147,529**
Inferred									
Total Resources	**141,893**	**0.47%**	**0.19%**	**0.02%**	**1.04**	**668,261**	**265,324**	**34,776**	**147,529**

(1) Massive Sulphide including MSB orebodies.

(2) MMZ Disseminated Sulphide.

(3) PCMZ Disseminated Sulphide including PCMZ.

(4) MMZ and PCMZ Disseminated Sulphide Mineral Resources quoted at a 0.30%Ni cut-off grade.

(5) (4Eg/t) grade estimates are classifed as an Indicated Mineral Resource category level of confidence.

Table 4.8 Nkomati Mine and Nkomati Expansion Project: Mineral Resource and Mineral Reserve Statements[4], [5]

Mineral Reserve Category	Tonnage (kt)	Grade (%Ni)	(%Cu)	(%Co)	(4Eg/t)	Metal (Ni-t)	(Cu-t)	(Co-t)	(4Ekg)
Proved									
– u/g[1]	950	2.13%	1.14%	0.10%	6.52	20,260	10,862	909	6,189
Subtotal	**950**	**2.13%**	**1.14%**	**0.10%**	**6.52**	**20,260**	**10,862**	**909**	**6,189**
Probable									
– u/g[2]	5,261	0.48%	0.20%	0.03%	0.92	25,024	10,612	1,326	4,825
– o/p[2]	51,558	0.45%	0.19%	0.02%	1.09	231,186	96,475	12,859	56,118
– u/g[3]									
– o/p[3]	4,968	0.49%	0.14%	0.02%	1.12	24,345	6,956	994	5,541
Subtotal	**61,788**	**0.45%**	**0.18%**	**0.02%**	**1.08**	**280,554**	**114,043**	**15,178**	**66,483**
Total Reserves	**62,737**	**0.48%**	**0.20%**	**0.03%**	**1.16**	**300,814**	**124,905**	**16,087**	**72,672**
Inferred in LoM									
Total in LoM Plan	**62,737**	**0.48%**	**0.20%**	**0.03%**	**1.16**	**300,814**	**124,905**	**16,087**	**72,672**

Mineral Resource Category	Tonnage (kt)	Grade (%Ni)	(%Cu)	(%Co)	(4Eg/t)	Metal (Ni-t)	(Cu-t)	(Co-t)	(4Ekg)
Measured									
– u/g[1]	867	2.64%	1.42%	0.12%	8.08	22,891	12,313	1,040	7,006
Subtotal	**867**	**2.64%**	**1.42%**	**0.12%**	**8.08**	**22,891**	**12,313**	**1,040**	**7,006**
Indicated									
– u/g[2]	50,174	0.48%	0.20%	0.02%	1.00	240,835	100,348	10,035	50,174
– o/p[2]	61,729	0.47%	0.19%	0.03%	1.06	290,126	117,285	18,519	65,433
– u/g[3]	19,094	0.38%	0.12%	0.02%	0.80	73,203	23,504	3,334	15,323
– o/p[3]	10,029	0.41%	0.12%	0.02%	0.96	41,205	11,875	1,849	9,593
Subtotal	**141,026**	**0.46%**	**0.18%**	**0.02%**	**1.00**	**645,370**	**253,012**	**33,736**	**140,523**
Total M+Ind	**141,893**	**0.47%**	**0.19%**	**0.02%**	**1.04**	**668,261**	**265,324**	**34,776**	**147,529**
Inferred									
Total Resources	**141,893**	**0.47%**	**0.19%**	**0.02%**	**1.04**	**668,261**	**265,324**	**34,776**	**147,529**

(1) Massive Sulphide including MSB orebodies.

(2) MMZ Disseminated Sulphide.

(3) PCMZ Disseminated Sulphide including PCMZ.

(4) MMZ and PCMZ Disseminated Sulphide Mineral Resources quoted at a 0.30%Ni cut-off grade.

(5) 4Eg/t grade estimates are classifed as an Indicated Mineral Resource category level of confidence.

4.10.2 Modikwa Mine

Table 4.9 Modikwa Mine: Mineral Resource and Mineral Reserve Statements

Mineral Reserve Category					Mineral Resource Category			
		Tonnage (kt)	Grade (g/t)	Metal (4Ekg)		Tonnage (kt)	Grade (g/t)	Metal (4Ekg)
Proved					**Measured**			
	– u/g[1]	5,081	4.79	24,316	– u/g[1]	5,949	5.42	32,272
Subtotal		**5,081**	**4.79**	**24,316**	**Subtotal**	**5,949**	**5.42**	**32,272**
Probable					**Indicated**			
	– u/g[1]	11,049	4.79	52,881	– u/g[1]	13,686	5.42	74,238
	– u/g[2]				– u/g[2]	80,390	5.36	430,639
Subtotal		**11,049**	**4.79**	**52,881**	**Subtotal**	**94,075**	**5.37**	**504,876**
Total Reserves		**16,130**	**4.79**	**77,197**	**Total M+Ind**	**100,025**	**5.37**	**537,148**
Inferred in LoM					Inferred	166,111	5.33	884,785
Total in LoM Plan		**16,130**	**4.79**	**77,197**	**Total Resources**	**266,136**	**5.34**	**1,421,933**

[1] Mineral Resources modified to generate Mineral Reserves.

[2] Mineral Resources not modified to generate Mineral Reserves.

Mineral Reserve grades for Nickel, Copper and Cobalt are 0.01%, 0.02% and 0.02% respectively. Given their relatively low variability and minor contribution these are not quoted separately for either Mineral Resources or Mineral Reserves. High level projections of mining beyond current Mineral Reserves and within the confines of limited incremental capital expenditure indicate potential for some additional extraction of 5.2Mt grading 4.81(4Eg/t). The resulting valuation impact of this is included in Section 13.0 of this CPR. This RoM grade quoted material would be sourced from the Indicated Mineral Resource category (specifically –u/g2(2)) in the above table.

4.10.3 Two Rivers Project

Table 4.10 Two Rivers Project: Mineral Resource and Mineral Reserve Statements[3]

Mineral Reserve Category					Mineral Resource Category			
		Tonnage (kt)	Grade (g/t)	Metal (4Ekg)		Tonnage (kt)	Grade (g/t)	Metal (4Ekg)
Proved					**Measured**			
	– o/p[1]	1,126	4.09	4,606	– o/p[1]	1,400	4.75	6,650
Subtotal		**1,126**	**4.09**	**4,606**	**Subtotal**	**1,400**	**4.75**	**6,650**
Probable					**Indicated**			
	– u/g[1]	43,676	3.47	151,613	– u/g[1]	59,000	4.00	235,723
	– u/g[2]				– u/g[2]	46,320	3.94	182,628
Subtotal		**43,676**	**3.47**	**151,613**	**Subtotal**	**105,320**	**3.97**	**418,351**
Total Reserves		**44,802**	**3.49**	**156,219**	**Total M+Ind**	**106,720**	**3.98**	**425,001**
Inferred in LoM					Inferred	10,100	3.16	31,916
Total in LoM Plan		**44,802**	**3.49**	**156,219**	**Total Resources**	**116,820**	**3.91**	**456,917**

[1] Mineral Resources modified to generate Mineral Reserves.

[2] Mineral Resources not modified to generate Mineral Reserves.

[3] Mineral Reserve grades for Nickel, Copper and Cobalt are 0.04%, 0.01% and 0.00% respectively and are not quoted separately for each category. Of these Nickel is the primary contributor at some 2.7% of total revenue for the LoM plan.

4.10.4 Kalplats Project

Table 4.11 Kalplats Project: Mineral Resource Statements

Mineral Reserve Category	Tonnage (kt)	Grade (4Eg/t)	Metal (4Ekg)
Indicated			
	7,119	1.70	12,087
Total M+Ind	**7,119**	**1.70**	**12,087**
Inferred	68,111	1.15	78,620
Total Resources	**75,230**	**1.21**	**90,707**

4.10.5 Exploration Properties

Table 4.12 Otjikoto Project: Mineral Resource Statements

Mineral Resource Category	Tonnage (kt)	Grade (g/t)	Metal (koz)
Inferred	25,800	1.14	946
Total Resources	**25,800**	**1.14**	**946**

Table 4.13 Konkola North Project: Mineral Resource Statements

Mineral Resource Category	Tonnage (kt)	Grade (%TCu)	(%TCo)	Metal (%TCut)	(TCo-t)
Indicated					
	78,820	2.21%		1,739,380	0
Subtotal	**78,820**	**2.21%**	**0.00%**	**1,739,380**	**0**
Total M+Ind	**78,820**	**2.21%**	**0.00%**	**1,739,380**	**0**
Inferred	170,420	2.89%		4,925,138	0
	28,800		0.13%	0	37,440
Subtotal	**199,220**	**2.47%**	**0.02%**	**4,925,138**	**37,440**
Total Resources	**278,040**	**2.40%**	**0.01%**	**6,664,518**	**37,440**

Table 4.14 Mwambashi Project: Mineral Resource Statements

Mineral Resource Category	Tonnage (kt)	Grade (%TCu)	(%ASCu)	(%TCo)	Metal (TCu-t)	(ASCu-t)	(TCo-t)
Indicated							
	8,700	2.73%	1.17%	0.05%	237,770	101,700	3,970
Subtotal	**8,700**	**2.73%**	**1.17%**	**0.05%**	**237,770**	**101,700**	**3,970**
Total M+Ind	**8,700**	**2.73%**	**1.17%**	**0.05%**	**237,770**	**101,700**	**3,970**
Inferred							
Total Resources	**8,700**	**2.73%**	**1.17%**	**0.05%**	**237,770**	**101,700**	**3,970**

4.11 Mineral Resource and Mineral Reserve Potential

SRK considers there to be the following opportunities to increase the Mineral Resources and Mineral Reserves:

- **Nkomati:** The geometry of the Uitkomst Complex has been well defined by surface drilling on Vaalkop, Uitkomst and Slaaihoek. The complex dips below the escarpment on Slaaihoek where drilling has indicated further down-dip extent. The MMZ and PCMZ have been well defined to a reasonable depth and additional similar mineralisation down-dip would almost certainly be uneconomic. The only real potential for further Mineral Resources in the Nkomati area is the discovery of further MSB lenses similar to those which are being, or have been, mined at the current operation. Extensive exploration drilling has been carried out around the current operation without such a discovery, however given the size and geometry of the MSB lenses future discoveries should not be discounted.

  In addition the Uitkomst Complex contains chromite mineralisation within the MCHR and PCR. The chromitite is relatively low-grade compared to other BC chromitite mineralisation and has a relatively high Cr:Fe ratio. Also it is estimated that approximately 80% of the massive chromitite and 45% of the semi-massive chromitite units have been affected by weathering to varying degrees. Notwithstanding this, particularly as the chromitite must be extracted to access the MMZ and PCMZ in the Nkomati Expansion Project (open pit) there is an opportunity to exploit the chromitite following further investigation and depending on market conditions.

  There is also an opportunity to discover additional limited resources at the current operation, through better definition of MSB Lens 3 and the stringer ore zones surrounding Lens 1. Although material is currently being mined from Lens 3 and the stringer ore zones no Mineral Resources have been delineated in these areas;

- **Modikwa Mine:** At Modikwa Mine Mineral Resource potential is essentially dependent upon further down-dip extensions and the development of the Merensky Reef. Mineral Reserve potential is however considered to be significant, specifically in respect of conversion of the currently classified Indicated Mineral Resources. The short term focus of the current LoM plan, and limited technical work in respect of the Mineral Resources external to the current planning horizon is considered to be a significant shortfall in this regard. Given that the predominant geological uncertainty in respect of the UG2 is geological structure and the presence of potholes, further potential exists for upgrading of the currently classified Inferred Mineral Resources to Indicated Mineral Resources and similarly converting these to Mineral Reserves on completion of sufficient technical work (hereinafter defined as a positive Pre-Feasibility Study);
- **Two Rivers Platinum Project:** Mineral Resource potential at Two Rivers Platinum Project is directly associated with further exploration of the Merensky Reef on the property and also down-dip extension of the current UG2. A degree of risk however exists in that should board approval not be forthcoming in the near future and the project be placed on hold then the currently defined Mineral Reserves may be downgraded to the Mineral Resource category;
- **Kalplats Project:** The deposit at Kalplats is open at depth however given the low grade of the orebody, and the dominance of Palladium in the metal suite the development potential is considered limited under the current economic conditions. There is opportunity for upgrading the current Inferred Mineral Resource to Indicated Mineral Resource at the deposits other than Crater and Orion, however given the initial results, these are likely to be lower grade than the current Indicated Mineral Resources.

  The potential for Mineral Reserves is a positive Feasibility Study on the current Crater and Orion Indicated Mineral Resources. Given the generally low grade and prevailing economic conditions the potential of conversion in the near term is considered limited; and

- **Exploration Properties:** Potential at the EPs is directly related to the conversion of currently delineated Mineral Resources to Mineral Reserves. At Otjikoto there is potential to upgrade the Inferred Resources to the Indicated category. A scoping study is currently underway at the Otjikoto Project and expected to be completed in the first quarter of 2004. In respect of the copper properties limited advancement of these has occurred to date and that likely potential should be distinguished on the basis of shallow open pit high acid soluble orebodies and the deeper sulphide targets. In respect of the former and given the general interest by third parties in the area these are likely to achieve greater attention than the generally capital intensive deeper (underground) sulphide orebodies.

Figure 4.1 PGM Assets: sectional views of Mineral Resource associated with the current underground and expansion operations of Nkomati Mine

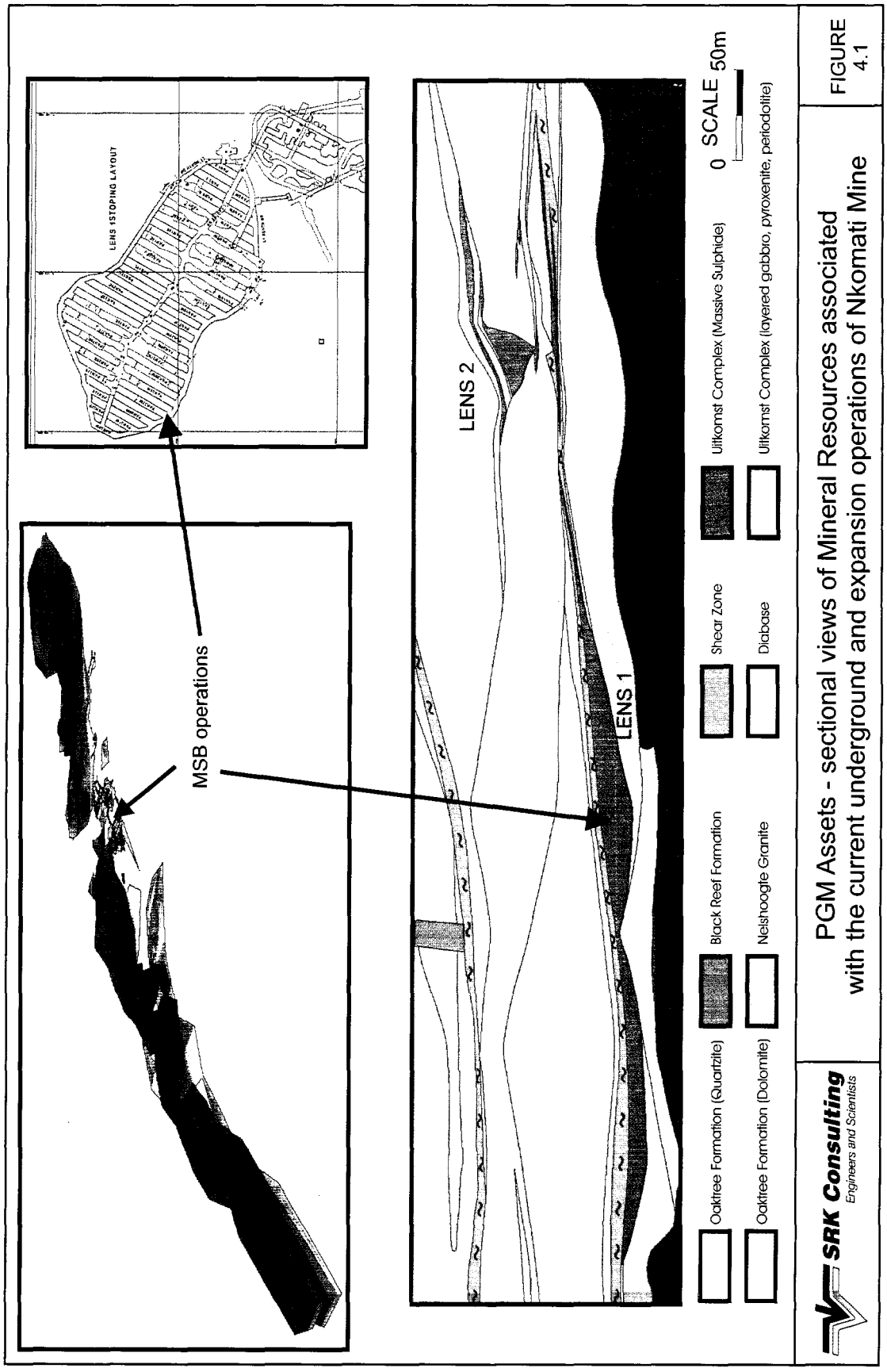


Figure 4.2 PGM Assets: sectional view of Mineral Resources associated with the open pit operations of the Nkomati Expansion Project

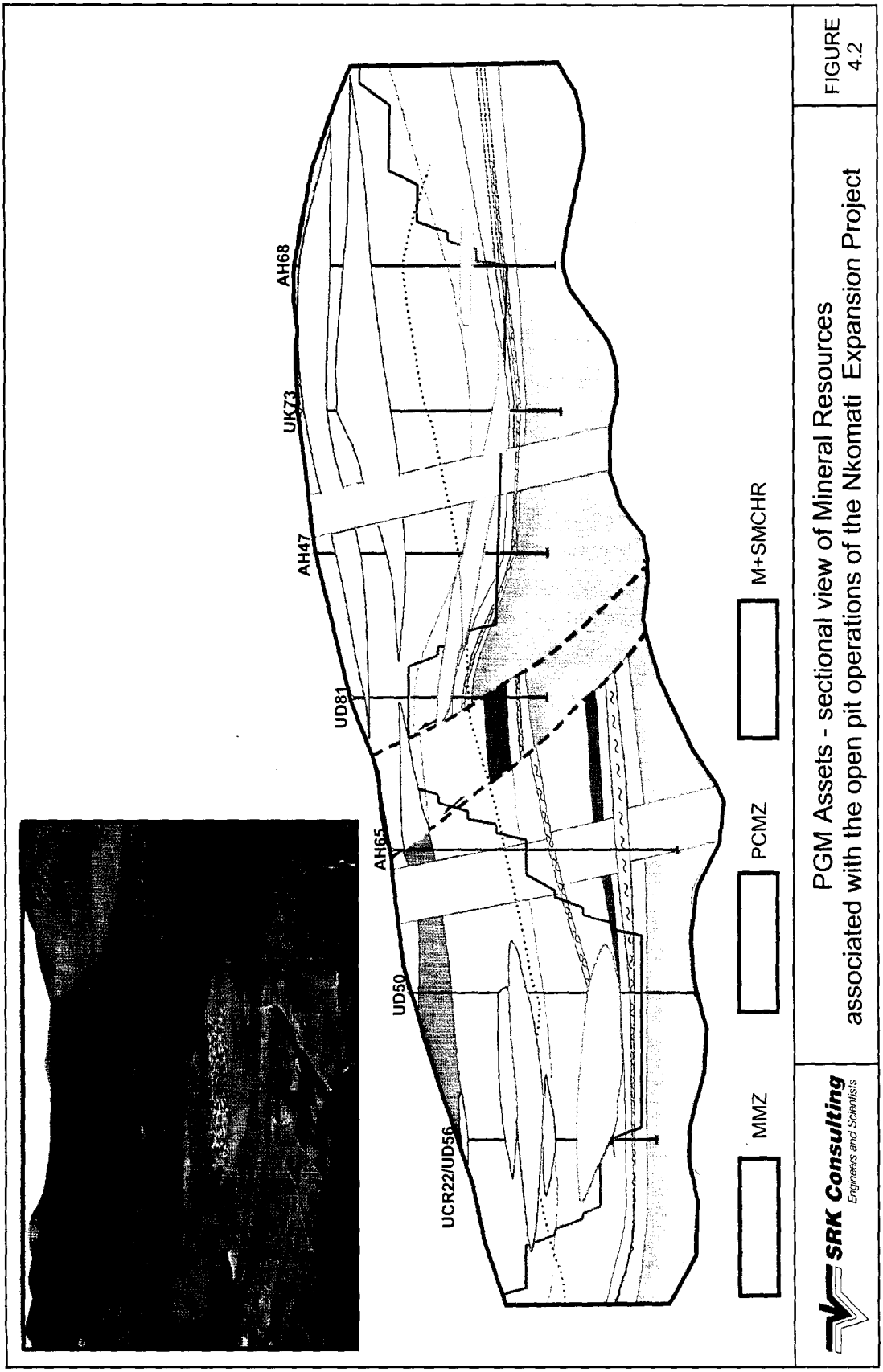


Figure 4.3 PGM Assets: plan view of Mineral Resources at Modikwa Mine

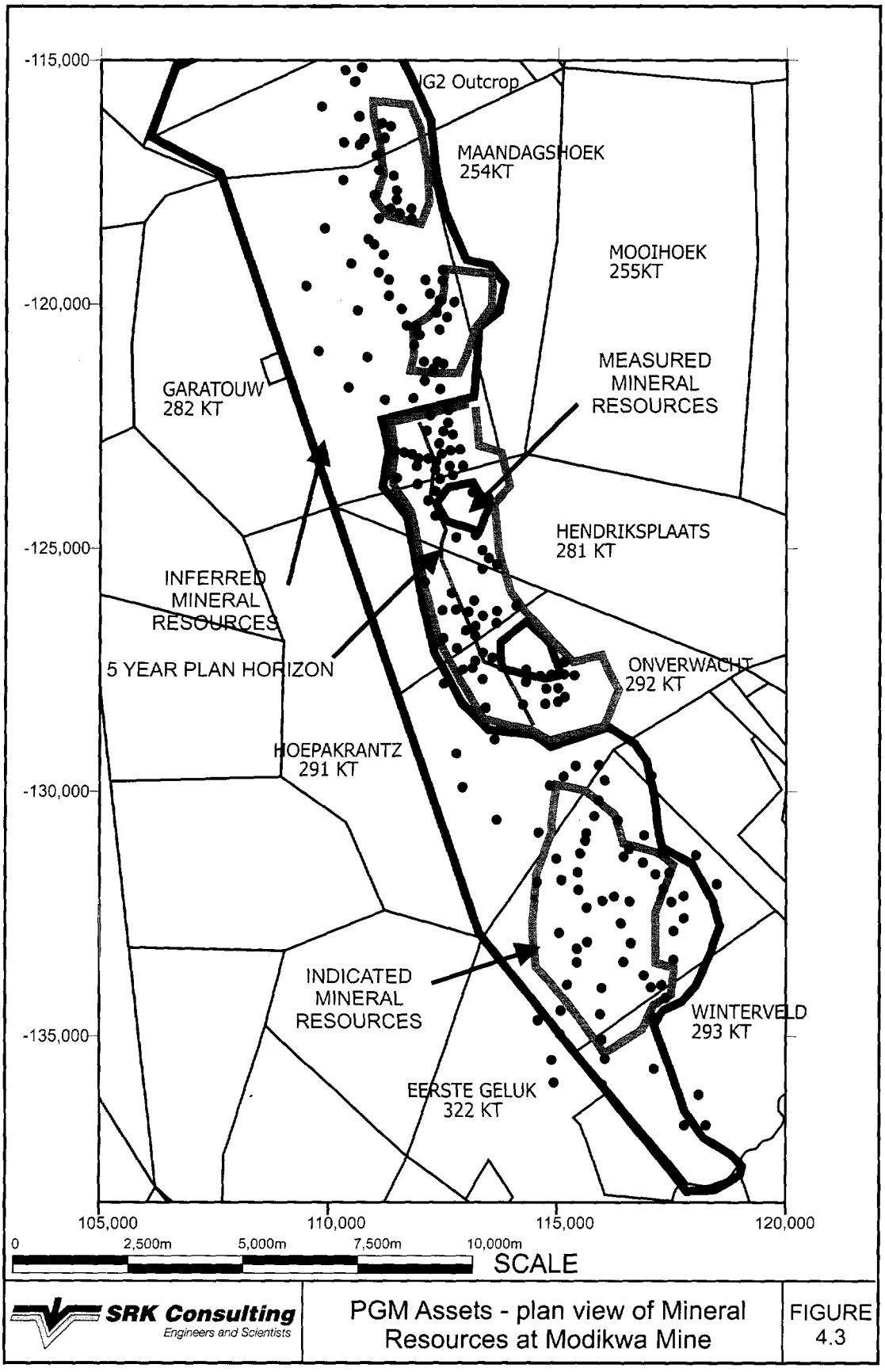
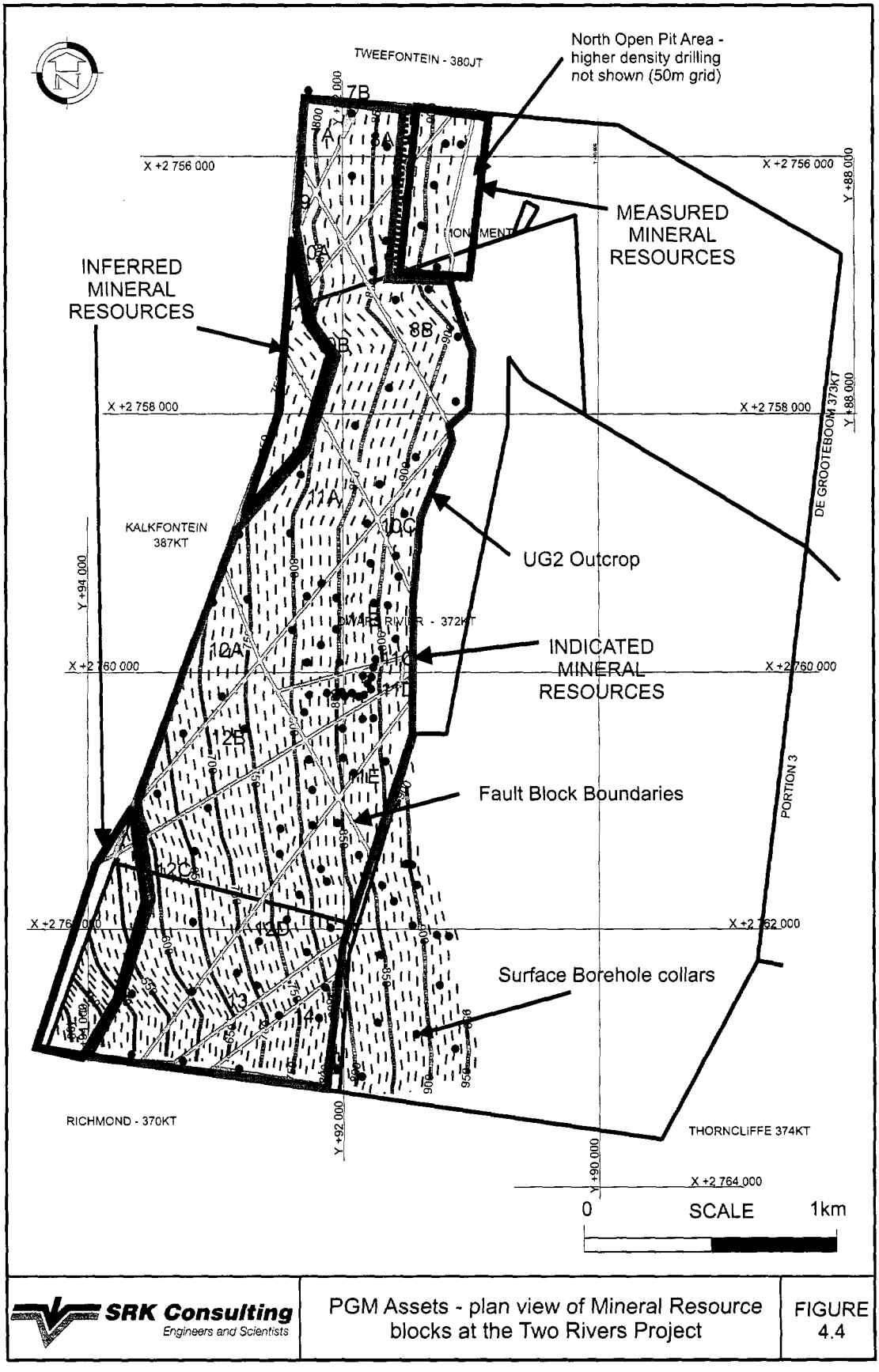
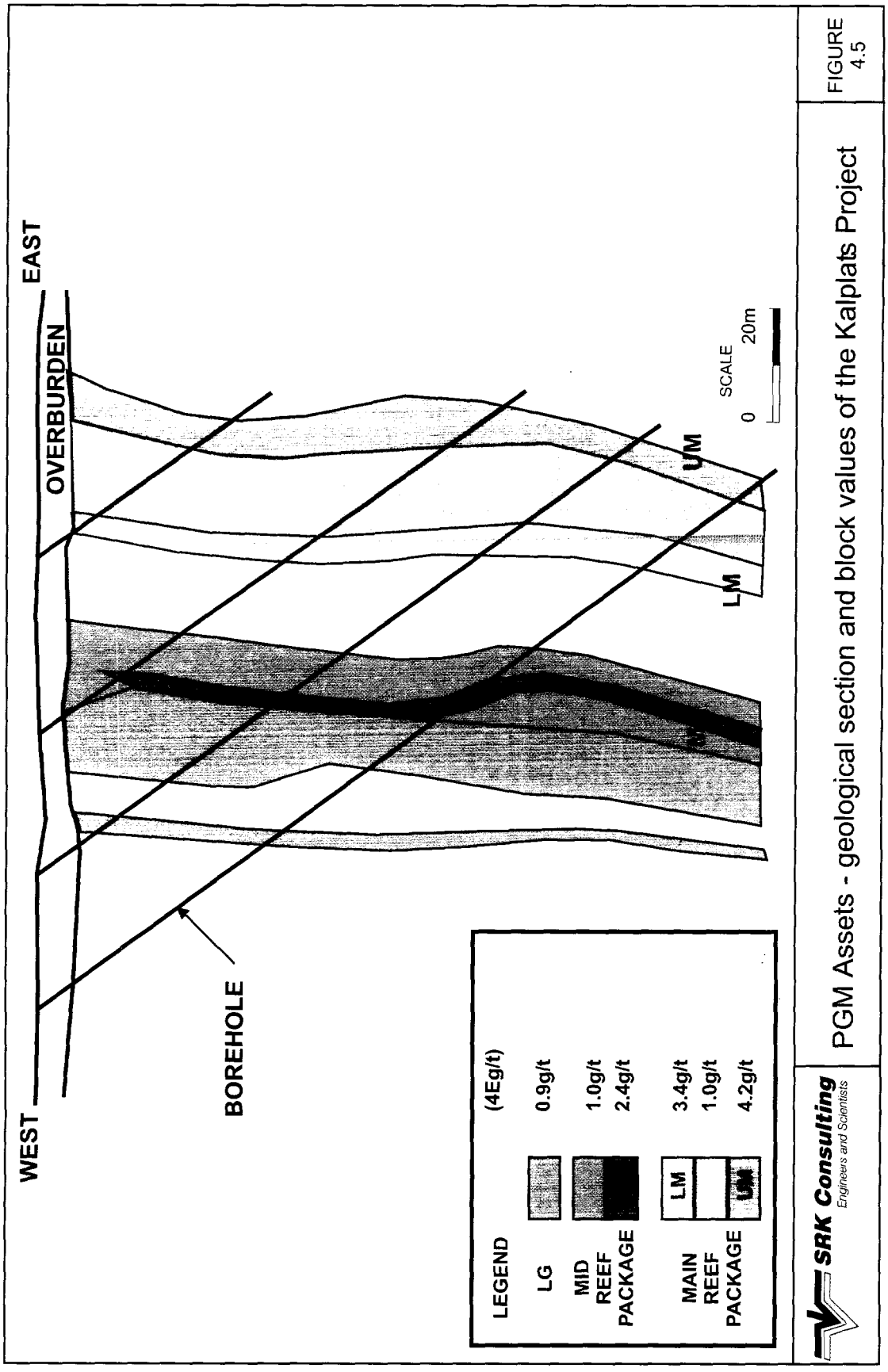


Figure 4.4 PGM Assets: plan view of Mineral Resource blocks at the Two Rivers Project



SRK Consulting Engineers and Scientists	PGM Assets - plan view of Mineral Resource blocks at the Two Rivers Project	FIGURE 4.4

Figure 4.5 PGM Assets: geological section and block values of the Kalplats Project



5. MINING

5.1 Introduction

This section includes discussion and comment on the mining engineering related aspects of the LoM plans associated with the PGM Assets. Specifically, comment is given on the mine planning process, mining methods, geotechnics, mine ventilation and the impact of the foregoing on future mining operations. The valuation base case for Nkomati Mine is currently focused on the MSB operation; accordingly technical descriptions are focused on this aspect with brief commentary in respect of the proposed Nkomati Expansion Project. Mineral Reserve statements and the results of the FMs are presented for both the Nkomati Base Case and the Nkomati Expansion Project in Sections 4.0 and 13.0 of this CPR.

5.2 Nkomati Mine

Underground mining operations at Nkomati Mine are currently focused on extracting the balance of the MSB orebody supplemented by mining a small portion of the MMZ orebody over the remaining short-life. The MSB orebody is essentially pre-developed and as such mining operations are currently focused on secondary stopes. To implement planned extraction in the MMZ pre-development is required in order to gain necessary access to planned mining areas.

The Nkomati Expansion Project is the result of numerous technical studies including a Feasibility Study completed during 2002. This originally considered the establishment of a large scale open pit and a significantly increased underground operation to treat some 375ktpm of ore. On site processing facilities would be further enhanced to include a fully integrated hydrometallurgical process route utilising Activox technology. On this basis refined metal would be produced on site as opposed to the current toll treatment of concentrates. In this option, open pit mining would contribute some 250ktpm and underground mining would contribute the balance at 125ktpm. Total capital expenditure required for execution of this project amounted to some ZAR2.8bn (1 July 2002 terms).

Subsequent optimisation of the study has resulted in a revised option, whereby mining production from the open pit is increased to a maximum of 375ktpm and underground production is reduced to a maximum of 35ktpm. Total project capital expenditure for this option is currently project at ZAR2.3bn (1 January 2004 terms).

5.2.1 Historical Performance

Table 5.1 below gives the historical mining performance for Nkomati Mine where mining costs are stated in nominal terms.

Table 5.1 Nkomati Mine: historical mining statistics

Statistic	Units	2000	2001	2002	2003	2004[1]
Ore Mined	(ktpm)	20	23	21	24	29
Grade Mined	(%Ni)	2.30%	1.91%	2.18%	2.38%	2.10%
Waste Mined	(ktpm)	0	0	1	1	1
Material Mined	(ktpm)	20	23	22	25	29
Mining Costs	(ZAR/tore)	162	158	135	169	133
	(ZAR/tmined)	162	158	132	162	129

[1] 6 months actual to 31 December 2003.

Historical mining at Nkomati Mine has in general been relatively consistent in respect of the primary performance criteria. Further mining production has generally increased over the past few years and other than for 2003 mining costs has accordingly reduced. It should however be noted that as Nkomati Mine operates with trackless equipment then operating costs are exposed to exchange rate fluctuations.

5.2.2 LoM Plan

Table 5.2 below gives the forecast mining performance for Nkomati Mine where mining costs are stated in 1 January 2004 money terms. Forecast expenditures are stated in 1 January 2004 money terms. The planned reduction in grade is a direct result of the LoM plan as developed, however, recent production performance has exceeded plan albeit with a net reduction in overall RoM grade. This has resulted in lower unit costs for the first six months of 2004, however no adjustment to the current LoM plan is deemed appropriate at this stage.

Table 5.2 Nkomati Mine: forecast mining statistics

Statistic	Units	LoM Average	2004[1]	2005	2006	2007	2008
Ore Mined	(ktpm)	24	24	24	24	24	24
Grade Mined	(%Ni)	1.99%	1.96%	2.21%	1.88%	1.93%	1.27%
Waste Mined	(ktpm)	1	2	1	2	1	0
Material Mined	(ktpm)	26	26	25	26	25	24
Mining Costs	(ZAR/t_{ore})	190	193	188	192	189	163
	(ZAR/t_{mined})	179	170	181	180	182	163

[1] 6 months forecast to 30 June 2004.

5.2.3 *Mine Planning*

The mine planning process at Nkomati Mine is based on development of detailed mining and development schedules which are based on the 3-D geological and grade models as developed by the geology department. On completion of the excavation design and layouts, data are exported to a stand-alone scheduling package that incorporates appropriate mine design parameters and extraction rates with sufficient allowances for practical mining considerations. This process is completed on an annual basis with forecasts provided for the five-year planning outlook.

The latest LoM plan developed during 2002 projects production from 1 July 2003 onwards with contribution from both MSB and MMZ orebodies. The primary planning parameters used include:

- Mining dilution of 10% on hanging wall cuts and an allowance of 0.5m below footwall contact for bottom drives;
- Backfill dilution 2.5% by mass for secondary stopes;
- Backfill utilisation of tailings 90%;
- 2% mining loss on secondary benches and 5% on final central pillar; and
- Block Factor of 106% to all metal grades. As discussed in Section 4.0 of this report and recognising that in certain instances historical reconciliation has indicated positive reconciliation factors, SRK considers that the information analysed to date is too variable and the period analysed too short in order to include such a factor in the LoM profiles. In this instance SRK has adjusted the profiles to reflect 100% Block Factor.

5.2.4 *Mine Access and Mining Method*

Mining operations at Nkomati Mine are supported by two shafts; a 6.0m diameter Main Shaft that serves as the main downcast and hoisting shaft, and a 4.0m diameter Ventilation Shaft that contains a small lift and through which return air is forced to surface by underground booster fans.

The Main Shaft is the primary hoisting shaft at Nkomati Mine for the current MSB operations and has a total rock hoisting capacity of 39ktpm. It is equipped with two 5t skips with rope guides for conveyances and pipe columns on brackets secured to the sidewall and the main station is located at 420m from surface.

The Vent Shaft is a 4.0m diameter raise-bored hole with the main airway connection at a depth of 425m from surface. The shaft contains a minimum of steelwork to support the guides for the cage, lift counterweight and backfill pipe ranges. The shaft currently operates as an upcast shaft with 65m3/s at 600Pa of air forced up the shaft by an underground force fan.

Mining methods employed at Nkomati Mine are based on mechanised techniques supplemented by backfilling operations to maximise extraction of the MSB orebody. At the MSB mining methods include a bench and fill method and a primary and secondary drift and fill to secure maximum extraction. In primary stopes, backfill is allowed to cure for 28 days prior to extraction of the secondary stope.

Mining in the MMZ orebody precludes the use of backfill in order to minimize operating costs, and as a consequence extraction is somewhat less at an average of 66% with a range of between 44% and 85%. The three main mining methods used are distinguished on the bases of orebody thickness and include drift and fill, overcut and bench and open stoping.

The mine has selected Sandvik-Tamrock as its preferred supplier of drill rigs and Load-Haul-Dumps ("LHDs") and the full maintenance thereof. The use of a single supplier has cost advantages due to lower quantities of spares holding.

The MSB operations are currently cleaned by one Toro 1,400 LHD that loads two 40t dump trucks that transport the ore to a stockpile above the crusher. A Toro 400 LHD transports the ore from the stockpile to the ore pass feeding the jaw crusher in order to ensure a continuous feed. The Toro 1,400 has a 14t capacity and the Toro 400 approximately 7t. Remote control loading with the LHD is planned to be introduced in the areas with a high mining width.

5.2.5 Mine Ventilation

Nkomati Mine operates one of two available axial fans. These fans are placed underground and exhaust air via a separate ventilation shaft. To meet the specified air flow to diesel power ratio of 0.1m3/s/kW a minimum air requirement of 60m3/s is required. The operating fan handles some 65m3/s at 600Pa and the ventilation plan annotated with airflow quantities and temperatures indicates that conditions are within acceptable limits with 65m3/s currently supplied.

Provision for the purchase, issuing, control and maintenance of self-contained self rescuers ("SCSRs") and introduction of handheld flammable gas measuring instruments and carbon monoxide warning devices has been made. In addition provision is allowed to address certain areas to ensure compliance with the regulatory standards for monitoring pollutants in terms of the occupational hygiene regulations. These aspects are however not considered to be material in terms of management or expenditures.

5.2.6 Geotechnics

Geotechnical services at Nkomati Mine are currently provided by an external consultancy, International Rock Mechanics Consultants ("IRMC"). IRMC is responsible for the establishment and maintenance of the code of practice; mine design and extraction sequencing together with ongoing support recommendations.

A key consideration in the mining of the MSB is the critical path aspect of backfilling sequencing. Primary stopes are mined to the full mining width and then backfilled with classified plant tailings at an average placed density of 2.27tm^{-3} to which an appropriate binder (10%) is added. Secondary stopes are backfilled to approximately 5m from the hangingwall and binder concentration is reduced to 5% to 8%. Waste rock is also introduced in to secondary stopes where possible.

The backfill plant is currently operating at 99% utilisation, some 9% better that planned. This performance is however significantly impacted by fluctuations in the underground tonnage mined and backfill plant downtime. Any reduction below that planned will impact on production sequencing and ensuring the continued stability of the underground workings.

Excavation design for mining in the MMZ is based on local rock mass conditions and the determination of maximum/economic mining spans. These spans are based on rock-quality-density ("RQD") data obtained from diamond drill hole cores; however SRK considers that application of the Q system, Rock Mass Rating ("RMR") and Mining Rock Mass Rating ("MRMR") to be more appropriate. Notwithstanding this comment, SRK notes that similar spans are currently achieved in the MSB and that overall extraction ratios (66%) are appropriate if not conservative given the limited tonnages mined during the short-life. Increased extraction ratios would only be possible if backfilling was introduced as an integral part of the extraction sequence.

Of some concern is the potential interaction between the current mining in the MSB and that proposed in the MMZ where indicated stress levels are considered high, given the depth of mining (500m). Although this aspect has been considered and documented to some degree by Nkomati Mine it would appear that the implications of these stress levels have only been incorporated into the overall regional design strategy and accordingly SRK recommends that this aspect be addressed in more detail.

5.2.7 Nkomati Expansion Project

Table 5.3 below gives the forecast mining performance for the Nkomati Expansion Project where all mining costs are stated in 1 January 2004 money terms. Open pit mining costs increase accordingly with increased haul distances for both waste and ore. Underground mining costs reduce in accordance with increased production to the LoM average of 27ktpm of ore. All waste mining is projected at 17m per ore tonne mined and associated expenditures are capitalised at some ZAR7,000 per metre developed.

These opportunities coupled with maximising the utilisation of the Main Shaft hoisting capacity would most likely result in an extended life at minimal capital expenditure requirements, should the decision be not to proceed with the current Nkomati Expansion Project; and

- Execution of the Nkomati Expansion Project and consideration of the following:
  - increasing underground mining production to match current hoisting capacity of some 50ktpm (ore and waste) is currently being investigated. Additional minimal capital will be required to increase ore production capacity to some 40ktpm, however no major new access is required. Air quantity may need to be increased and this could be achieved using the second fan which is currently not operational,
  - implementation of the underground expansion to the previously envisaged 125ktpm of ore. Note that this was considered in conjunction with the 250ktpm open pit operation.

5.3 Modikwa Mine

Modikwa Mine is in the build-up phase of underground mining production which is targeting the monthly production rate of 46,500m^2 per month and the establishment of 16 months of pre-developed Mineral Reserves. In summary the projections to date have not been met, and remedial action including the introduction of un-planned access points, whilst reducing the shortfalls, has not fully compensated for non-performance. Notwithstanding this, Modikwa Mine has recently embarked on Project 1000; an all encompassing strategy to redress the current shortcomings and it is expected that full production targets will be met by end 2004.

A further key aspect is related to the lack of long term strategic planning to feasibility level status for the exploitation of the significant Mineral Resource base which exists external to the current five year planning horizon.

The valuation of Modikwa Mine is based on two plans: one based solely on extraction of Mineral Reserves and the other based extension of mining beyond the current Mineral Reserve from the un-mined Indicated Mineral Resource base. The latter valuation however only considers incremental extraction from the current access points and does not seek to project production along the significant strike lengths which remain external to the DCF valuation process.

5.3.1 Historical Performance

The primary reasons for the historical non-performance noted at Modikwa Mine can be directly attributed to the following:

- Development of the two decline shafts some six months behind schedule;
- Commencement of stoping operations prior to the establishment of on-reef development at 350m *either side of the shaft. This coupled with the greater than anticipated geological complexity has* resulted in a slower than anticipated pre-developed Mineral Reserve base of 16 months;
- Greater than anticipated geological complexity, specifically:
  - Presence of large potholes in the North Shaft area,
  - Structural disturbance (dykes) and highly variable reef strikes in the South Shaft area,
  - Pegmatoid intrusions and variable strike and dip in the Onverwacht Hill area;
- Stoping widths being some 10% higher than originally planned; and
- Operational difficulties in the natural fines circuit of the metallurgical concentrator.

Implementation of Project 1000 is expected to ensure that full production targets will be met by end 2004.

Table 5.4 below gives the historical mining performance for Modikwa Mine where mining costs are stated in nominal terms.

Table 5.4 Modikwa Mine: historical mining statistics

Statistic	Units	2003[1]	2003[2]
Stoping centares	(m^2pm)	16,066	28,324
Stoping width	(m)	1.12	1.14
RoM – u/g ore	(ktpm)	1,106	1,315
	(4Eg/t)	2.91	3.32
Development – ore	(mpm)	1,479	1,143
Development – low grade	(mpm)	1,919	2,009
Development – capital	(mpm)	2,034	0
Mining Costs	($ZARt_{mined}$)	167	217

[1] 6 months actual to 30 June 2003.

[2] 6 months actual to 31 December 2004.

Historical statistics for Modikwa Mine are difficult to asses owing to the following: build up nature of production; capitalisation of mining costs; stockpiling of RoM ore; pre-concentration and milling of stockpiled low-grade ore as a measure to countenance lower than expected production from underground operations; and changes in the on-mine reporting structures.

In addition to the current technical difficulties, the operational inexperience of locally recruited employees has impacted on production performance.

In respect of RoM grade, it should however be noted that the current achieved MCF is stated at some 120% which is some 20% higher than that planned. To some extent this aspect compensates for the current discrepancy between planned and actual grades. Should this performance above plan in respect of MCF not be continued then in the absence of any further improvements RoM grades may be limited.

5.3.2 LoM Plan

The current LoM plan (Mineral Reserves) projects depletion to Level 4 over a five year period with projected cessation of operations during 2010, mining a total of 16.1Mt grading 4.79(4Eg/t) at an average mining rate of 224ktpm. High grade development comprises some 1.8Mt grading 2.18(4Eg/t) of the stated Mineral Reserve. In addition to this some 3.4Mt grading 1.14(4Eg/t) is planned to be mined and will remain un-processed as a low grade stockpile.

Achievement of this LoM plan assumes significant improvement upon historical performance both in respect of production performance and to some extent operating expenditures. Key factors in this context include:

- Attaining full production of 46,500m2 per month from stoping operations by 30 June 2004;
- A reduction in the stoping width from the current 1.14m to 1.06m due to more extensive application of in-stope roof-bolting and improved mining practices;
- Increase in the development rate in order to achieve a pre-developed Mineral Reserve base of 12 months of full production by 30 June 2004 and 16 months of full production by 31 December 2005;
- Introduction of experienced operators to supplement and improve performance of the locally recruited employees;
- Reduction in total on reef development required by introduction of single line raising (double line raising previously practiced and
- Reduction in overall operating expenditures due to a reduction in the current contractor compliment.

Table 5.5 gives the forecast mining statistics for Modikwa Mine (Mineral Reserves) where all mining costs are stated in 1 January 2004 money terms.

Mining below the four levels has only been addressed on a conceptual basis, with access to the lower levels being facilitated by extending the existing decline infrastructure. The extension to the current declines is phased to be done after seven-years. In the conceptual plan mining is extended from the declines for 21 years.

5.3.5 Mine Production, Materials Handling and Mining Services

The mining method is conventional down-dip stoping with standard hand-held jackhammers being used to drill the holes. The blast (using ANFO explosives) is timed so that the portion of the face nearest to the raise is "throw-blasted" into the pre-developed raise. Face cleaning is then done using a 37kW scraper winch, scraping the rest of the blast into the raise. A 55kW scraper winch is installed in the raise to move the blasted ore to a muck bay situated immediately up-dip of the reef drive. For instances where the scraping distance is over 190m a 75kW winch is used.

A 12.5t capacity LHD is used to load the rock into a Toro 50t capacity articulated dump truck ("ADT") in the reef drive. The ADT then hauls the rock (reef and waste) to an ore pass tip situated above the conveyor decline. The ore pass deposits the rock onto the main conveyor, which transports it to surface.

All rock is conveyed up to a transfer tower on surface that keeps reef separate from waste and low-grade reef (reef drive and muck bay development) via an inter-locking chute and conveyor system. Reef is conveyed to the plant reef bin, with the other material being sent to the low-grade stockpile. An emergency reef stockpile of one day's production is provided on surface, from which a front-end loader is used to load the reef onto the belt when required. The low-grade stockpile provides the means to augment supply to plant feed.

Truck optimisation studies have been carried out for the transport of the reef from the muck bays to the tips. SRK considers that the reef drive footwall requires careful preparation and strict maintenance in order for tramming to be carried out at the rates planned. Provision has been made for handling water by installing a vertical spindle pump in a sump, which is sited against the strike pillar.

Other mining equipment used includes twin-boom hydraulic drill rigs, scalers, roofbolters, trackless utility vehicles, mobile impact breakers and emulsion explosive vehicles. This is standard equipment found on narrow reef underground trackless mines in South Africa.

Each of the two decline conveyors has been rated at 130ktpm, which is in excess of the planned production rate of 240ktpm from the two declines.

5.3.6 Mine Ventilation

Mine ventilation at each of the main declines is provided by one downcast raisebore hole extended from surface to Level 4 and two upcast drop-raise holes extending from surface to Level 0. Ventilation planning in this respect is restricted to the current 5 year plan and no detailed considerations in respect of strategic requirements have been developed beyond this period.

5.3.7 Geotechnics

Modikwa Mine has recently completed a draft Code of Practice, to ameliorate rockfall and rockburst incidents, in accordance with the requirements and terms of the Mine Health and Safety Act 1991.

The major service excavations and decline shafts appear to be stable and suitably supported. Numerical modelling has verified that no protection pillar is required on the decline shafts due to the mining on the UG2 providing over stoping of the decline. A strike pillar 15m wide in a down dip direction is left between the underground workings and the base of the regolith, because of the high amount of fracturing, poor ground conditions and the possibility of water influxes associated with the weathered zone.

Modikwa Mine is not classed as seismically active and there are no reports of any seismic events or rockburst damage on the mine. Low-level strata control training is given to all mining personnel and covers the identification of any strata related hazards or change in ground conditions that should be reported. The mine intends to appoint a full time strata control officer to address the daily strata control issues not always covered during the contracted in and regular visits by Anglo Platinum's consulting geotechnical engineer.

The strategy of bolting the triplet package that lies 0.6m to 0.8m in the immediate hanging wall of the UG2, to reduce dilution appears to be successful, especially in the North Shaft area. Rock mass conditions in the stopes were generally observed to be good. The in-stope support consists of pre stressed timber mine poles on a 2m by 2m spacing. Mine personnel have identified and are addressing the loss of timber support units due to removal by the scraper or during the production blast.

The general ground conditions in the development ends were observed to be good. Support in the muck bays and a breakaway area is achieved with the installation of 4m long anchors, although in places the installation was seen to be behind schedule.

Between 3 and 4 Levels on the South Shaft, the UG2 has rolled down to within 4m to 6m of the decline development and as such a 46m wide strip protection pillar has been left in this area.

Modikwa Mine has recently adopted a single raise philosophy to link two levels, in place of the double raise used previously in the mine planning process. The in-stope pillar layout has also been changed, resulting in an improved extraction ratio and reduced development costs for the single raise system. The stability of this system has been demonstrated through numerical modelling. SRK notes though that for the expected range of ground conditions (MRMR values) in the stope, the support system varies from stable to intermediate position. Inaccurate mining of the 3m by 3m pillars or pillar robbing will result in a smaller pillar dimension so that the system becomes unstable with the concomitant risk of falls of ground. SRK is also concerned that the pillar layout could have an adverse affect on mining productivities and scraper operation in the down-dip mining method. Depending on the severity of this impact an alternative mining method may have to be considered.

5.3.8 Future Mining Operations

Future Mining Operations at Modikwa Mine are critically dependent upon the following:

- Implementation of the single line raising method;
- Achieving the necessary development to ensure that sufficient flexibility exists within the mine plan to negotiate the high geological losses encountered and consequently achieving the projected build-up profile and longer term sustainable conditions. The position will also be somewhat improved as more faces become available at North Shaft, Mid-Shaft and Onverwacht Hill Adits;
- Achieving the primary targets of Project 1000: an all encompassing drive to address the shortfalls in development, rate of advance, production, productivity, stoping widths and developed Mineral Reserve equivalent to 16 months of production; and
- Development of a strategic LoM plan that addresses mining from the current decline systems to their practical limits and also the longer term requirements for underground and surface infrastructure outside of these areas.

In summary, whilst improvements over the past six months are noted, the challenges facing Modikwa Mine in respect of the proposed time frame should not be underestimated. SRK considers that the primary risks are related to the achievement of pre-developed Mineral Reserves equivalent to 12 months of production by 30 June 2004. The inherent inflexibility associated with low pre-developed Mineral Reserves and geological complexity could be considered as the primary drivers of the non-performance experienced to date. In this context there remains a risk that this planned increase may be delayed by a further six months. In respect of the planned reduced stoping widths SRK note that 1.06m was stated to be achieved in December, however the long-term sustainability has not yet been demonstrated. Further, in-situ grades as planned to be mined are stated at some 6% higher than that achieved for the six month period ending 31 December 2003.

5.4 Two Rivers Project

Since completion of the Feasibility Study during the later part of 2002, revised mining operations as envisaged for the Two Rivers Project, consists of underground and open pit mining of the UG2. In total 44.8Mt of Mineral Reserves is mined at an average grade of 3.41(4Eg/t) mined at an average LoM rate of 200ktpm. Mining operations as incorporated into the latest projections are envisaged to commence during 2004, however this is likely to be delayed (up to 6 months) due to the latter than anticipated release for full project approval (Section 2.0).

Principal adjustments since completion of the Feasibility Study include: increasing primary underground mining production from 175ktpm to 185ktpm and mining through to 2021; addition of a short-life (depleted during 2007) open pit at an ore mining rate of 39ktpm; addition of further underground mining operations, accessed from the high-wall of the completed open pit, commencing in 2007 and depleted by 2016.

The current ventilation system is based on a coursing layout which has been achieved by the removal of the ventilation pillars between sections. Though intake air will be supplied to each section, exhaust air will not be kept separate from intake air once it is in the section and all exhaust air from the lower sections will be coursed up through the section above to the exhaust ventilation shaft. This ventilation layout is considered to be higher risk and less desirable than an earlier design whereby each mining section was an independent district.

5.4.5 Geotechnics

Geotechnical considerations at the Two Rivers Project are primarily focused on the bord and pillar designs adopted as the primary mining method. In summary the design provides for 6m by 6m pillars with 12m bords, and a changeover to 14m by 14m pillars to depths of 900m. The designed stoping width is planned at 2.1m. From 50m to 115m below surface a factor of safety of 1.6 is achieved with the 6m by 6m pillars and 12m board. A similar factor of safety is also achieved up to a depth of 480m. At a depth of 900m however this factor of safety for 14m by 14m pillars and 12m boards reduces to 0.9, which SRK consider to be inappropriate. Notwithstanding this comment, SRK concur that a yielding pillar system would be more appropriate at depths in excess of 250m below surface with systematically placed rigid barrier pillars in order to maintain an acceptable extraction ratio.

Geotechnical designs for the open pit are based on appropriate investigations and as the depth is relatively shallow no significant issues are envisaged.

With only a 15m middling between the conveyor decline and the material way it is important that the integrity of the ore passes that feed the main belt are maintained. As the lip area will suffer a degree of blast damage during development, consideration should be given to reinforcing the lip area of the ore pass or even lining the whole length as redevelopment or refurbishment of an existing layout is often costly and time consuming. Minimal additional expenditure during construction would reduce future risk dramatically.

5.4.6 Future Mining Operations

Future mining operations at the Two Rivers Project are dependent upon the following:

- Execution of the current LoM plan in accordance with the budget and time frame as projected. Notwithstanding this comment a delay risk may materialise due to the non-release of full capital commitments which is directly related to the strengthening of the ZAR against the US$; and
- The opportunities associated with:
  - Completion of the Merensky Reef Feasibility Study and implementation of the associated extraction programme;
  - Development of a second open pit situated to the south of the currently proposed north pit.

6. METALLURGICAL PROCESSING

6.1 Introduction

This section includes discussion and comment on the metallurgical processing aspects associated with the PGM Assets. Specifically, detail and comment is given on the process metallurgy and process engineering aspects relating to plant capacity, metallurgical performance and metal accounting practices as incorporated in the LoM plans.

Other than for the Nkomati Expansion Project production at all other operations are constrained to the on-site of production of concentrates which are subsequently toll treated at various third party facilities. Sales revenue as included in the FMs is therefore determined in respect of various contractual agreements and as such the PGM Assets do not have ownership over the final product. Consequently details reported herein are limited to the physical parameters relating to the production of concentrate, other than for the Nkomati Expansion Project.

6.2 Nkomati Mine

6.2.1 Current Operations

The Nkomati Concentrator was commissioned early in 1997 and currently treats underground ore from a polymetallic orebody to produce a high-grade and a bulk-grade nickel concentrate which also includes varying amounts of copper, cobalt, platinum, palladium, rhodium and gold. The process route originally comprised primary jaw crushing, secondary cone crushing, primary open circuit ball milling, secondary ball milling closed with hydrocyclones, two phase flotation, concentrate filtration and backfill production ahead of tailings disposal. Recently however, washing, screening and hand sorting was commissioned ahead of primary crushing to remove identified waste. The process flow diagram is shown in Figure 6.1.

During storage concentrates oxidise and accordingly the saleable tonnage increases by approximately 5% with no significant impact on subsequent toll treatment recoveries. All concentrate production is stated on a dry basis and moisture content on transportation is estimated at some 8% of the transported mass.

Concentrates are transported via road and rail to third party tolling facilities situated at the Selebi-Phikwe smelter in Botswana (Falconbridge International Limited) and the Phokeng facility in South Africa (owned by Implats). The introduction of spot tolling arrangements with Northam Platinum Limited has commenced.

The Nkomati concentrator was originally designed with a capacity of 10ktpm however has achieved throughputs in excess of 29ktpm. The achieved throughput is largely due to a combination of generous over design, a significant relaxation of the required grind size, better utilisation than design and the recent introduction of hand sorting. SRK consider that with the current mix of MSB and MMZ the plant is capable of operating at 30ktpm.

Generally SRK considers the plant to be in good condition both mechanically and structurally and subject to adequate ongoing maintenance should meet the LoM requirements.

Adequate attention is given to sampling, sample preparation and metal accounting. Hand sorted waste is removed regularly by truck, with each load being weighed and every fifth truck being sampled to determine the waste grade. A six idler belt weightometer, installed on the mill silo feed conveyor, serves as the official milled tonnage measurement after moisture correction. Milled ore is automatically sampled ahead of flotation with a manual sample of crushed ore providing a check. Final concentrate is despatched by truck, with each truck being sampled for metal and moisture content determination and weighed. The final tail stream is automatically sampled. The mass of disposed tailings is not independently measured but determined by difference between the milled tonnage and the concentrate despatch tonnage.

Declared metal recovery is determined as a function of metal in concentrate and metal in flotation feed. For plant control purposes, a smoothed mass balance is computed. Whilst variability between the two procedures is observed on a monthly level, longer-term accountability is considered appropriate.

On site analytical performance is limited to atomic absorption analysis of base metals. Precious metal analysis of monthly feed composite samples and final concentrate despatches is conducted by independent laboratories on behalf of Nkomati Mine. Final concentrate samples are also analysed by client laboratories and when necessary, an umpire laboratory is appointed in terms of tolling contracts to resolve disputes.

Final product security is not considered an issue and security is appropriately directed at protecting company assets rather than the concentrate itself.

Table 6.1 below gives the historical processing performance for Nkomati Concentrator where processing costs are stated in nominal terms.

- Concentrator – 4,500ktpa concentrator: ore receipt; primary jaw crushing; stockpiling and blending; ore sizing; fully autogenous ("FAG") primary milling, product screening and critical size pebble re-crushing; secondary pebble milling closed by hydrocycloning; bulk flotation; concentrate thickening; pyrrhotite flotation; high sulphur tailings disposal; and low sulphur tailings disposal;
- Base Metals Recovery Plant - 280ktpa grinding/leach plant with the following metal production 16.0kpa nickel SX/EW; 7.2ktpa copper SX/EW; 0.95kpat cobalt SX/PPT; Ultra fine grinding; moderate pressure and temperature autoclave leaching; solid liquid separation; copper SX & EW; iron precipitation; cobalt SX & PPT; nickel SX & EW; and ammonia recovery; and
- PGE Recovery Plant: 280kpa leach residue flotation plant; 78ktpa concentrate roaster; 133ktpa acid plant; 39ktpa copper leach plant; flotation of Activox leach residue; concentrate roasting; acid production; copper leaching from calcine; solid liquid separation; and PGE toll smelting and refining.

Activox was originally developed as a process for the treatment of refractory gold ore concentrates and subsequent developments have demonstrated its potential for nickel extraction. In essence the process comprises ultrafine grinding and moderate temperature and pressure autoclave leaching, both of which are commercially proven. The recent development of Stirred Media Grinding Mills ("SMGM") dramatically reduced the power consumed in ultrafine grinding, resulting in the commercial development of the technology. Autoclave leaching is widely utilised in both the base and precious metal industries and far more aggressive pressure and temperature conditions than envisaged at the Nkomati Expansion Project are successfully operated.

The remaining unit processes are conventional and any associated process risk is likely to relate to implementation rather than technology. The extensive pilot-scale testing undertaken should minimise any such risk. Integration of the various unit processes into one continuous operation also represents an area of process risk. In mitigating such risk Nkomati Mine has allowed 18 months to ramp-up to full production.

It is noted that unit capacities of the concentrator, Activox and SX/EW circuits are exceeded at times in the expansion LoM plan. This can be addressed by minor rescheduling or equipment size modification in the final design. It does however raise the question as to whether proposed unit capacities provide adequate flexibility for likely deviations from design assumptions such as head grades, concentrate mass pulls and recoveries. This aspect should be addressed when the design is finalised.

Metal recoveries demonstrated in Activox pilot plant studies were discounted in the financial evaluation to allow for lower anticipated head grades than tested in laboratory and pilot-plant tests. This is possibly conservative as there is significant indication that recovery is not that dependent on head grade.

In the case of precious metals and minor base metals included in the PGE concentrate that will be toll refined, typical industry standard terms have been negotiated.

Table 6.3 gives the forecasted processing statistics for the Nkomati Expansion Project where processing costs are stated in 1 January 2004 money terms. The LoM plan projects milling of 61.7Mt of ore grading 0.45%Ni, 0.18%Cu, 0.02%Co and 1.08(4Eg/t) at an average LoM milling rate of 362ktpm to produce saleable metals as follows: 217kt of Nickel; 90kt of Copper; 12kt of Cobalt; 35t of 4E metal comprising 9t of Platinum, 24t of Palladium, 337kg of Rhodium and 1,176kg of Gold. In addition some 561kt of elemental sulphur is also produced. Processing costs are projected at some ZAR86/tmilled over the LoM.

The strategy of bolting the triplet package that lies 0.6m to 0.8m in the immediate hanging wall of the UG2, to reduce dilution appears to be successful, especially in the North Shaft area. Rock mass conditions in the stopes were generally observed to be good. The in-stope support consists of pre stressed timber mine poles on a 2m by 2m spacing. Mine personnel have identified and are addressing the loss of timber support units due to removal by the scraper or during the production blast.

The general ground conditions in the development ends were observed to be good. Support in the muck bays and a breakaway area is achieved with the installation of 4m long anchors, although in places the installation was seen to be behind schedule.

Between 3 and 4 Levels on the South Shaft, the UG2 has rolled down to within 4m to 6m of the decline development and as such a 46m wide strip protection pillar has been left in this area.

Modikwa Mine has recently adopted a single raise philosophy to link two levels, in place of the double raise used previously in the mine planning process. The in-stope pillar layout has also been changed, resulting in an improved extraction ratio and reduced development costs for the single raise system. The stability of this system has been demonstrated through numerical modelling. SRK notes though that for the expected range of ground conditions (MRMR values) in the stope, the support system varies from stable to intermediate position. Inaccurate mining of the 3m by 3m pillars or pillar robbing will result in a smaller pillar dimension so that the system becomes unstable with the concomitant risk of falls of ground. SRK is also concerned that the pillar layout could have an adverse affect on mining productivities and scraper operation in the down-dip mining method. Depending on the severity of this impact an alternative mining method may have to be considered.

5.3.8 Future Mining Operations

Future Mining Operations at Modikwa Mine are critically dependent upon the following:

- Implementation of the single line raising method;
- Achieving the necessary development to ensure that sufficient flexibility exists within the mine plan to negotiate the high geological losses encountered and consequently achieving the projected build-up profile and longer term sustainable conditions. The position will also be somewhat improved as more faces become available at North Shaft, Mid-Shaft and Onverwacht Hill Adits;
- Achieving the primary targets of Project 1000: an all encompassing drive to address the shortfalls in development, rate of advance, production, productivity, stoping widths and developed Mineral Reserve equivalent to 16 months of production; and
- Development of a strategic LoM plan that addresses mining from the current decline systems to their practical limits and also the longer term requirements for underground and surface infrastructure outside of these areas.

In summary, whilst improvements over the past six months are noted, the challenges facing Modikwa Mine in respect of the proposed time frame should not be underestimated. SRK considers that the primary risks are related to the achievement of pre-developed Mineral Reserves equivalent to 12 months of production by 30 June 2004. The inherent inflexibility associated with low pre-developed Mineral Reserves and geological complexity could be considered as the primary drivers of the non-performance experienced to date. In this context there remains a risk that this planned increase may be delayed by a further six months. In respect of the planned reduced stoping widths SRK note that 1.06m was stated to be achieved in December, however the long-term sustainability has not yet been demonstrated. Further, in-situ grades as planned to be mined are stated at some 6% higher than that achieved for the six month period ending 31 December 2003.

5.4 Two Rivers Project

Since completion of the Feasibility Study during the later part of 2002, revised mining operations as envisaged for the Two Rivers Project, consists of underground and open pit mining of the UG2. In total 44.8Mt of Mineral Reserves is mined at an average grade of 3.41(4Eg/t) mined at an average LoM rate of 200ktpm. Mining operations as incorporated into the latest projections are envisaged to commence during 2004, however this is likely to be delayed (up to 6 months) due to the latter than anticipated release for full project approval (Section 2.0).

Principal adjustments since completion of the Feasibility Study include: increasing primary underground mining production from 175ktpm to 185ktpm and mining through to 2021; addition of a short-life (depleted during 2007) open pit at an ore mining rate of 39ktpm; addition of further underground mining operations, accessed from the high-wall of the completed open pit, commencing in 2007 and depleted by 2016.

The risk capital expenditure programme (Section 2.0) as currently underway projects development and re-valuation of some 110m of on-reef infrastructure from the pre-developed bulk sample shaft. The results of this made available to December 2003 confirms certain of the primary assumptions made during the development of the original Feasibility Study and subsequent updates.

5.4.1 LoM Plan

The current LoM plan assumes depletion as forecast in Table 5.7 below where all mining costs are stated in 1 January 2004 money terms. Extraction of the Mineral Reserves as included in Section 4.0 is projected as follows:

- Underground mining of 41.6Mt at a grade of 3.45(4Eg/t) and mined at an average LoM rate of 185ktpm with full depletion occurring by 2021;
- Open pit mining of 1.1Mt at grade of 4.09(4Eg/t) and mined at an average LoM rate of 39ktpm, a stripping ratio of 16 (t_{waste}:t_{ore}) with full depletion occurring by 2006; and
- Adit mining of 2.1Mt at a grade of 3.92(4Eg/t) and mined at an average LoM rate of 21ktpm.

Excluded from the current LoM plan is the following:

- Potential mining of the Merensky Reef located some 140m above the UG2. This is currently the subject of further technical studies projected for completion during the last quarter of 2004; and
- Extension to currently proposed open pit mining operations through establishment of the southern open pit.

Table 5.7 Two Rivers Project: forecast mining statistics

Statistic	Units	LoM Total	2004[1]	2005	2006	2007	2008	2009
RoM – u/g ore	(ktpm)	185	29	68	173	184	186	184
	(4Eg/t)	3.45	2.76	3.46	3.50	3.43	3.39	3.47
Mining Costs	(ZARt_{mined})	78.08	23.70	37.01	62.36	81.44	81.00	81.35
RoM – a/d ore	(ktpm)	21	0	0	0	17	18	21
	(4Eg/t)	3.92	0.00	0.00	0.00	3.92	3.92	3.92
Mining Costs	(ZARt_{mined})	99.64	0.00	0.00	0.00	10.30	105.28	97.76
RoM – o/p ore	(ktpm)	39	9	39	40	40	0	0
	(4Eg/t)	4.09	4.33	4.13	4.09	3.98	0.00	0.00
Stripping Ratio	(t_{waste}:t_{ore})	16.00	16.00	16.00	16.00	16.00	0.00	0.00
Waste Tonnage	(ktpm)	616	150	623	640	640	0	0
Tonnage Mined	(ktpm)	655	159	661	680	680	0	0
Mining Costs	(ZAR/t_{mined})	11.6	14.7	13.1	10.8	9.1	0.0	0.0

[1] 6 months forecast to 30 June 2004.

5.4.2 Mine Planning

The mine planning process at the Two Rivers Project has been based on practical design philosophies and detailed scheduling in respect of both the production build-up and steady state operations. Notwithstanding this comment production scheduling for the underground operations has recently increased from 175ktpm to 185ktpm, which comprises 170ktpm from 8 production sections and 15ktpm from development ore. Given stated equipment productivity (19ktpm for a face drill rig at an average mining height of 2.1m) then it would appear that the 185ktpm option represents a degree of production risk and that any spare capacity built into the current capital schedules will be absorbed.

The principal mine planning parameters used in deriving the current Mineral Reserve are:

- exclusion of all oxidised material at depths shallower than 50m;
- pillar losses of 28%;
- mining (tonnage) recoveries of 95%;
- hangingwall dilution of 6.5% at zero grade;
- other dilution of 8.0% at a grade of 0.83(4Eg./t); and
- MCF of 95%.

In respect of the open pit mining operations planned in the northern area of the property, mine designs for the current pit limits have been developed and cater for access, waste tipping sites and haul road layouts. Further, the current pit was determined using open pit planning software for optimisation in accordance with Net Present Value determinations and projects mining operations to a depth of 50m. Due to the projected extent of weathering, mining recovery increases with depth and it is anticipated that oxidised and fresh ore will be stockpiled separately for batch processing.

SRK considers there to be potential to increase production from this pit should the underground development fall behind in respect of the projected production build-up.

5.4.3 Mine Access, Mining Method, Mine Production and Materials Handling

The underground mining operation will be accessed via a twin decline shaft system, one of which will be dedicated for transportation of mechanised equipment and a rock conveyor and the other for transportation of personnel via a chairlift.

The orebody dips between 7° and 10° beneath a mountain range and as a consequence depth of mining increases rapidly from the outcrop to some 900m.

Both declines will be developed to intersect fresh un-weathered UG2 and a pyroxenite hanging wall at a depth of 50m below surface. The conveyor/vehicle decline will be developed on strike at an initial inclination of 11∞ to the UG2 intersection where the vehicle decline branches off and is developed on true dip in the UG2. The conveyor decline continues on strike through the UG2 to a point 15m below the reef horizon where it then turns onto true dip and is maintained at this middling below the UG2.

On attaining steady state production two on-reef declines (chairlift and vehicle) and one footwall decline (conveyor) will be operational. The RoM conveyor system assumes that no underground crushing will take place and RoM screened (-300mm by 300mm) ore feed is conveyed directly to the silos. Furthermore, the Feasibility Study assumes that waste will constitute the majority of the oversize material, however limited scalping has been accounted for in the production plan.

The mining methods for the underground operation include low-profile mechanised room and pillar methods with production units having a nominal face length of 12m. It is envisaged that there will be 8 production scenarios each constituting 8 working faces (inclusive of 25% spare face within each production section). Mining equipment will include LHDs, drill rigs, roof bolters and utility vehicles. In addition a limited amount of conventional rock drilling will be applied to maximise extraction in the vicinity of potholes and steep rolls in the UG2.

Ore transportation will be by means of LHD onto strike conveyor belts (one per section). These strike belts will discharge into 300t ore passes that feed the main dip conveyor system situated 15m below in the footwall.

In respect of the open pit operations these are planned to a depth of 50m below surface and will be conducted using standard operating equipment at a RoM production rate of 40ktpm. On reaching the economic limit (as yet undefined), adits will be developed into the high-wall of the pit to access ground in the northern area of the property. No detailed planning has occurred to date and considerations are currently only at conceptual level. Mining from this area is planned to contribute some 20ktpm and will be contractor operated.

Mining experience in the Eastern Limb of the BC is by comparison to the Western Limb somewhat limited. Given the relatively large number of projects currently undergoing development in the area there is a shortage of skilled labour. Further, the adoption of mechanised techniques places further strain on the pool of relevant expertise and should the project advance further in respect of construction this aspect requires focused attention prior to and during the build up period.

5.4.4 Mine Ventilation

Mine ventilation is to be provided through raise bored ventilation holes for both upcast and downcast air, with the conveyor and chairlift declines serving as intake airways. Throughout the course of operations further upcast raise bore holes will be developed along strike of the orebody at spacing of 500m to 1,000m.

In the case of the adit developed from the open pit high-wall on-reef declines will be used as intake airways with the return air being exhausted through a short raise bore to surface.

The current ventilation system is based on a coursing layout which has been achieved by the removal of the ventilation pillars between sections. Though intake air will be supplied to each section, exhaust air will not be kept separate from intake air once it is in the section and all exhaust air from the lower sections will be coursed up through the section above to the exhaust ventilation shaft. This ventilation layout is considered to be higher risk and less desirable than an earlier design whereby each mining section was an independent district.

5.4.5 Geotechnics

Geotechnical considerations at the Two Rivers Project are primarily focused on the bord and pillar designs adopted as the primary mining method. In summary the design provides for 6m by 6m pillars with 12m bords, and a changeover to 14m by 14m pillars to depths of 900m. The designed stoping width is planned at 2.1m. From 50m to 115m below surface a factor of safety of 1.6 is achieved with the 6m by 6m pillars and 12m board. A similar factor of safety is also achieved up to a depth of 480m. At a depth of 900m however this factor of safety for 14m by 14m pillars and 12m boards reduces to 0.9, which SRK consider to be inappropriate. Notwithstanding this comment, SRK concur that a yielding pillar system would be more appropriate at depths in excess of 250m below surface with systematically placed rigid barrier pillars in order to maintain an acceptable extraction ratio.

Geotechnical designs for the open pit are based on appropriate investigations and as the depth is relatively shallow no significant issues are envisaged.

With only a 15m middling between the conveyor decline and the material way it is important that the integrity of the ore passes that feed the main belt are maintained. As the lip area will suffer a degree of blast damage during development, consideration should be given to reinforcing the lip area of the ore pass or even lining the whole length as redevelopment or refurbishment of an existing layout is often costly and time consuming. Minimal additional expenditure during construction would reduce future risk dramatically.

5.4.6 Future Mining Operations

Future mining operations at the Two Rivers Project are dependent upon the following:

- Execution of the current LoM plan in accordance with the budget and time frame as projected. Notwithstanding this comment a delay risk may materialise due to the non-release of full capital commitments which is directly related to the strengthening of the ZAR against the US$; and
- The opportunities associated with:
  - Completion of the Merensky Reef Feasibility Study and implementation of the associated extraction programme;
  - Development of a second open pit situated to the south of the currently proposed north pit.

6. METALLURGICAL PROCESSING

6.1 Introduction

This section includes discussion and comment on the metallurgical processing aspects associated with the PGM Assets. Specifically, detail and comment is given on the process metallurgy and process engineering aspects relating to plant capacity, metallurgical performance and metal accounting practices as incorporated in the LoM plans.

Other than for the Nkomati Expansion Project production at all other operations are constrained to the on-site of production of concentrates which are subsequently toll treated at various third party facilities. Sales revenue as included in the FMs is therefore determined in respect of various contractual agreements and as such the PGM Assets do not have ownership over the final product. Consequently details reported herein are limited to the physical parameters relating to the production of concentrate, other than for the Nkomati Expansion Project.

6.2 Nkomati Mine

6.2.1 Current Operations

The Nkomati Concentrator was commissioned early in 1997 and currently treats underground ore from a polymetallic orebody to produce a high-grade and a bulk-grade nickel concentrate which also includes varying amounts of copper, cobalt, platinum, palladium, rhodium and gold. The process route originally comprised primary jaw crushing, secondary cone crushing, primary open circuit ball milling, secondary ball milling closed with hydrocyclones, two phase flotation, concentrate filtration and backfill production ahead of tailings disposal. Recently however, washing, screening and hand sorting was commissioned ahead of primary crushing to remove identified waste. The process flow diagram is shown in Figure 6.1.

During storage concentrates oxidise and accordingly the saleable tonnage increases by approximately 5% with no significant impact on subsequent toll treatment recoveries. All concentrate production is stated on a dry basis and moisture content on transportation is estimated at some 8% of the transported mass.

Concentrates are transported via road and rail to third party tolling facilities situated at the Selebi-Phikwe smelter in Botswana (Falconbridge International Limited) and the Phokeng facility in South Africa (owned by Implats). The introduction of spot tolling arrangements with Northam Platinum Limited has commenced.

The Nkomati concentrator was originally designed with a capacity of 10ktpm however has achieved throughputs in excess of 29ktpm. The achieved throughput is largely due to a combination of generous over design, a significant relaxation of the required grind size, better utilisation than design and the recent introduction of hand sorting. SRK consider that with the current mix of MSB and MMZ the plant is capable of operating at 30ktpm.

Generally SRK considers the plant to be in good condition both mechanically and structurally and subject to adequate ongoing maintenance should meet the LoM requirements.

Adequate attention is given to sampling, sample preparation and metal accounting. Hand sorted waste is removed regularly by truck, with each load being weighed and every fifth truck being sampled to determine the waste grade. A six idler belt weightometer, installed on the mill silo feed conveyor, serves as the official milled tonnage measurement after moisture correction. Milled ore is automatically sampled ahead of flotation with a manual sample of crushed ore providing a check. Final concentrate is despatched by truck, with each truck being sampled for metal and moisture content determination and weighed. The final tail stream is automatically sampled. The mass of disposed tailings is not independently measured but determined by difference between the milled tonnage and the concentrate despatch tonnage.

Declared metal recovery is determined as a function of metal in concentrate and metal in flotation feed. For plant control purposes, a smoothed mass balance is computed. Whilst variability between the two procedures is observed on a monthly level, longer-term accountability is considered appropriate.

On site analytical performance is limited to atomic absorption analysis of base metals. Precious metal analysis of monthly feed composite samples and final concentrate despatches is conducted by independent laboratories on behalf of Nkomati Mine. Final concentrate samples are also analysed by client laboratories and when necessary, an umpire laboratory is appointed in terms of tolling contracts to resolve disputes.

Final product security is not considered an issue and security is appropriately directed at protecting company assets rather than the concentrate itself.

Table 6.1 below gives the historical processing performance for Nkomati Concentrator where processing costs are stated in nominal terms.

Table 6.1 Nkomati Concentrator: historical processing statistics

Operational Statistic		Units	2000	2001	2002	2003	2004[1]
Tonnes Treated		(ktpm)	20	23	21	24	28
Head Grade		(%Ni)	2.30%	1.91%	2.18%	2.38%	2.11%
Tonnes Milled[2]		(ktpm)	20	23	21	23	26
Milled Grades							
	Nickel	(%)	2.30%	1.91%	2.20%	2.50%	2.28%
	Copper	(%)	1.15%	1.06%	1.38%	1.54%	1.17%
	Cobalt	(%)	0.11%	0.09%	0.10%	0.13%	0.10%
	4E	(4Eg/t)	6.93	6.83	8.82	8.29	7.91
Metallurgical Recovery							
	Nickel	(%)	80%	80%	78%	80%	80%
	Copper	(%)	92%	95%	92%	88%	94%
	Cobalt	(%)	86%	85%	84%	76%	88%
	4E	(%)	74%	75%	91%	77%	73%
Concentrate Tonnage		(tpm)	3,430	3,449	3,881	4,612	4,786
Concentrate Grade							
	Nickel	(%)	10.65%	10.39%	9.34%	9.97%	10.00%
	Copper	(%)	6.10%	6.82%	6.94%	6.78%	5.99%
	Cobalt	(%)	0.55%	0.51%	0.45%	0.49%	0.49%
	4E	(4Eg/t)	29.54	34.82	44.16	31.94	31.52
Processing Cost		(ZAR/t_{milled})	124	120	105	123	108

(1) 6 months actual to 31 December 2004.

(2) Waste sorting commences during 2003.

(3) Historical mass pull estimated at 17.7% based on tonnes milled since 1 July 2000.

Historical processing performance at the Nkomati concentrator has remained relatively consistent since 2000. The introduction of waste sorting during 2003 has resulted in reduced tonnage milled as compared to tonnage treated where between 5% and 8% of the mass is removed with minimal metal loss. Metallurgical recoveries during the last 6 months are generally improved over historical performance other than for 4E recoveries which have reduced slightly. Mass pull factors: measured as the proportion of concentrate tonnage to tonnage milled: have ranged between 17% and 20% and generally vary in accordance with head grade. Unit operating costs have generally reduce in real terms, which is the result of both increased throughput and to extent the strengthening of the ZAR against the US$ recently.

Table 6.2 below gives the forecast processing performance for Nkomati Concentrator where processing costs are stated in 1 January 2004 money terms. The LoM plan projects milling of 957kt of ore grading on average 2.15%Ni, 1.15%Cu, 0.10%Co and 6.53(4Eg/t) at an average LoM milling rate of 22ktpm to produce some 158kt of concentrates grading 10.22%Ni, 6.18%Cu, 0.44%Co and 28.09(4Eg/t). Processing costs are projected at some ZAR110/tmilled during this period.

Table 6.2 Nkomati Concentrator: forecast processing statistics [4], [5]

Operational Statistic		Units	LoM Average	2004[1]	2005	2006	2007	2008
Tonnes Treated		(ktpm)	24	24	24	24	24	15
Head Grade		(%Ni)	1.99%	1.96%	2.21%	1.88%	1.93%	1.27%
Tonnes Milled[2]		(ktpm)	22	22	22	22	22	14
Milled Grades								
	Nickel	(%)	2.15%	2.13%	2.39%	2.04%	2.08%	1.37%
	Copper	(%)	1.15%	1.03%	1.28%	1.07%	1.17%	0.86%
	Cobalt	(%)	0.10%	0.10%	0.11%	0.09%	0.09%	0.07%
	4E	(4Eg/t)	6.53	5.80	7.32	6.32	6.39	5.05
Metallurgical Recovery								
	Nickel	(%)	78%	78%	78%	78%	78%	78%
	Copper	(%)	89%	89%	89%	89%	89%	89%
	Cobalt	(%)	76%	76%	76%	76%	76%	75%
	4E	(%)	71%	71%	71%	71%	71%	71%
Concentrate Tonnage[3]		(tpm)	3,677	3,618	4,125	3,503	3,618	1,462
Concentrate Grade								
	Nickel	(%)	10.22%	10.35%	10.21%	10.23%	10.14%	9.97%
	Copper	(%)	6.18%	5.67%	6.18%	6.11%	6.45%	7.12%
	Cobalt	(%)	0.44%	0.47%	0.45%	0.44%	0.43%	0.46%
	4E	(4Eg/t)	28.09	25.53	28.30	28.83	28.24	33.51
Processing Cost		(ZAR/t_{milled})	110	110	110	110	110	110

[1] 6 months forecast to 30 June 2004.

[2] Waste sorting factors are projected at 8% of Tonnage Treated grading 0.10%Ni, 0.10%Cu, 0.01%Co and 0.37(4Eg/t) on a LoM average basis.

[3] Concentrate production is quoted are on a pre-oxidation dry basis. Note moisture is typically 8%. Pre-oxidised mass pull is projected at 16.5%.

[4] Post oxidation (+5% mass bulking) High Grade concentrate production available for sales is estimated at 63.4kt grading 10.40%Ni, 8.99%Cu, 0.45%Co, 43.27(4Eg/t); and for Bulk Grade is estimated at 125.4kt grading 9.36%Ni, 4.23%Cu, 0.42%Co and 16.38(4Eg/t).

[5] As at 1 January 2004 High grade stockpiles are projected at 150t grading 11.08%Ni, 9.39%Cu, 0.42%Co, 47.58(4Eg/t) and Bulk Grade stockpiles are projected at 450t garding 9.16%Ni, 5.29%Cu, 0.41%Co, 22.81(4Eg/t).

Forecasted production is generally aligned with historical performance. Given performance during the first six months of 2004, projections could however be considered conservative.

6.2.2 Nkomati Expansion Project

The Nkomati Expansion Project includes a fully integrated hydrometallurgical process utilising flotation, ultrafine grinding and moderate temperature and pressure autoclave leaching of concentrates as well as solvent extraction ("SX"), electrowinning ("EW") and precipitation ("PPT") to produce refined metals on site. The process flow diagram is shown in Figure 6.2.

- **Metallurgical Testwork:** Numerous testwork programmes associated with various project evaluations have been undertaken since 1970. Most recently a comprehensive testwork programme including bench-scale and pilot-scale testing was conducted as part of the 2002 Feasibility Study. The proposed process route as described in the following section is intricate and performance of the following key unit processes was tested at pilot-scale: concentration via milling and sulphide flotation; ultrafine grinding of concentrates; Activox leaching of concentrates and product filtering; downstream copper, cobalt and nickel recovery by SX, EW and PPT; novel lime boil circuit for ammonia recovery; Activox leach residue flotation for PGE recovery; PGE concentrate roasting; and PGE calcine copper leaching.

  Cobalt chemical production was not piloted but a 100tpa cobalt demonstration plant was being operated at Avmin Laboratories at the time and the same precipitation and calcining principles were incorporated into the cobalt chemicals plant specification; and

- **Process Route and Plant Design:** The proposed process route and plant design criteria recognise the test work findings. The process flow diagram is schematically represented in Figure 6.2 and principal unit processes and capacities are listed below:

- Concentrator – 4,500ktpa concentrator: ore receipt; primary jaw crushing; stockpiling and blending; ore sizing; fully autogenous ("FAG") primary milling, product screening and critical size pebble re-crushing; secondary pebble milling closed by hydrocycloning; bulk flotation; concentrate thickening; pyrrhotite flotation; high sulphur tailings disposal; and low sulphur tailings disposal;
- Base Metals Recovery Plant - 280ktpa grinding/leach plant with the following metal production 16.0kpa nickel SX/EW; 7.2ktpa copper SX/EW; 0.95kpat cobalt SX/PPT; Ultra fine grinding; moderate pressure and temperature autoclave leaching; solid liquid separation; copper SX & EW; iron precipitation; cobalt SX & PPT; nickel SX & EW; and ammonia recovery; and
- PGE Recovery Plant: 280kpa leach residue flotation plant; 78ktpa concentrate roaster; 133ktpa acid plant; 39ktpa copper leach plant; flotation of Activox leach residue; concentrate roasting; acid production; copper leaching from calcine; solid liquid separation; and PGE toll smelting and refining.

Activox was originally developed as a process for the treatment of refractory gold ore concentrates and subsequent developments have demonstrated its potential for nickel extraction. In essence the process comprises ultrafine grinding and moderate temperature and pressure autoclave leaching, both of which are commercially proven. The recent development of Stirred Media Grinding Mills ("SMGM") dramatically reduced the power consumed in ultrafine grinding, resulting in the commercial development of the technology. Autoclave leaching is widely utilised in both the base and precious metal industries and far more aggressive pressure and temperature conditions than envisaged at the Nkomati Expansion Project are successfully operated.

The remaining unit processes are conventional and any associated process risk is likely to relate to implementation rather than technology. The extensive pilot-scale testing undertaken should minimise any such risk. Integration of the various unit processes into one continuous operation also represents an area of process risk. In mitigating such risk Nkomati Mine has allowed 18 months to ramp-up to full production.

It is noted that unit capacities of the concentrator, Activox and SX/EW circuits are exceeded at times in the expansion LoM plan. This can be addressed by minor rescheduling or equipment size modification in the final design. It does however raise the question as to whether proposed unit capacities provide adequate flexibility for likely deviations from design assumptions such as head grades, concentrate mass pulls and recoveries. This aspect should be addressed when the design is finalised.

Metal recoveries demonstrated in Activox pilot plant studies were discounted in the financial evaluation to allow for lower anticipated head grades than tested in laboratory and pilot-plant tests. This is possibly conservative as there is significant indication that recovery is not that dependent on head grade.

In the case of precious metals and minor base metals included in the PGE concentrate that will be toll refined, typical industry standard terms have been negotiated.

Table 6.3 gives the forecasted processing statistics for the Nkomati Expansion Project where processing costs are stated in 1 January 2004 money terms. The LoM plan projects milling of 61.7Mt of ore grading 0.45%Ni, 0.18%Cu, 0.02%Co and 1.08(4Eg/t) at an average LoM milling rate of 362ktpm to produce saleable metals as follows: 217kt of Nickel; 90kt of Copper; 12kt of Cobalt; 35t of 4E metal comprising 9t of Platinum, 24t of Palladium, 337kg of Rhodium and 1,176kg of Gold. In addition some 561kt of elemental sulphur is also produced. Processing costs are projected at some ZAR86/tmilled over the LoM.

Table 6.3 Nkomati Expansion Project: forecast processing statistics

Operational Statistic		Units	LoM Average	2004[1]	2005	2006	2007	2008
Tonnes Milled	(ktpm)	362	0	0	71	260	374	378
Milled Grades								
	Nickel (%)	0.45%	0.00%	0.00%	0.38%	0.46%	0.40%	0.43%
	Copper (%)	0.18%	0.00%	0.00%	0.25%	0.21%	0.17%	0.15%
	Cobalt (%)	0.02%	0.00%	0.00%	0.02%	0.03%	0.02%	0.02%
	4E (4Eg/t)	1.08	0.00	0.00	0.95	1.08	0.89	1.01
Metallurgical Recovery								
	Nickel (%)	77%	0%	0%	62%	75%	75%	77%
	Copper (%)	79%	0%	0%	71%	79%	78%	78%
	Cobalt (%)	77%	0%	0%	65%	75%	75%	77%
	4E (%)	52%	0%	0%	46%	52%	51%	51%
Metal Production								
	Nickel (t)	216,979	0	0	831	10,714	13,515	15,087
	Copper (t)	90,202	0	0	626	5,082	5,955	5,360
	Cobalt (t)	11,728	0	0	53	673	751	743
	4E (4Eg/t)	34,594	0	0	153	1,765	2,038	2,351
	Elemental Sulphur (t)	560,976	0	0	4,099	26,226	33,641	40,029
Processing Cost	(ZAR/t_{milled})	86	0	0	169	90	76	81

[1] 6 months forecast to 30 June 2004.

Excluded from the above is the potential for processing of the massive and semi-massive chromitites. Investigations to date have indicated that the beneficiation of the chromitite ores by flotation of the base metal sulphides and the gravity separation of a chromitite concentrate is viable. This has the potential to add some ZAR20m to the NPV of the expansion project at a discount rate of 15%. This potential however will only be realisable after Year 4 of the project and is not included in the base case valuation reported in Section 14.0 of this CPR.

6.3 Modikwa Mine

The Modikwa concentrator was commissioned in August 2002 with an operating capacity of 240ktpm and the combined metallurgical process comprises crushing, milling and flotation of UG2 ore to produce a PGE and base metal bearing sulphide with specifications as given in Table 6.2. Potential exists to produce a Chrome concentrate at a later stage, which would contain >42% Cr_2O_3 and a minimum Cr/Fe ratio of 1.35. The process flow diagram is shown in Figure 6.3.

The primary circuits of the Modikwa Concentrator comprise:

- **Primary Crushing and Ore Storage**: Ore from the two overland conveyors is combined and conveyed to a vibrating grizzly installation, the oversize from which passes to a primary jaw crusher. The combined grizzly undersize and jaw crusher product is conveyed to silos where the material is classified into fine and coarse fractions which are stored separately;
- **Natural Fines and Primary Milling:** Material is drawn from the silos and fed to a screening plant. The fine material is treated separately under specialised conditions for optimum yield (Natural Fines Circuit). The coarse material reports to the primary milling circuit;
- **Milling and Flotation:** A closed circuit milling operation is used to grind the ore to 40% passing 75µm. The primary mill product is then classified via a cyclone. The overflow and underflow reports to the main rougher flotation circuit and the underflow is ground in an open circuit "chrome" secondary mill prior to flotation for the recovery of valuable metals to the concentrate. Main rougher tailings is reground to 60% -75µm and re-floated via a scavenger flotation circuit. The tailings from the scavenger flotation circuit and chrome flash flotation circuit combines as feed to the tailings thickeners. All final concentrate streams report to the concentrate handling area;
- **Concentrate Handling:** All final grade concentrate is routed directly to a concentrate thickener where the slurry is thickened The thickened final concentrate in the surge tank is pumped on an as needed basis to a Larox filter for de-watering to less than 15% moisture. The final product is trucked to Anglo Platinum's Polokwane smelter for further refining; and

- **Tailings Disposal:** The tailings from the silica scavenger flotation and chrome flotation circuit are combined. The combined tailings are pumped to two tailings thickeners. Thickened tailings are pumped to the tailings dam. Decant water from the tailings dam is recovered to the return water dam and returned to process for re-use.

The major metallurgical factors considered in terms of ore characterisation were the natural distribution of PGEs in the ore and the high chromite content. As some 20% of the total PGEs are contained in the sub 150µm range which comprises 10% of the mass a separate treatment route (the "Natural Fines Circuit") was introduced in order to mitigate against reduced recoveries likely to occur with over-milling. The UG2 process thus requires that the incoming ore be split into size categories dependant upon the grade and distribution of the PGE minerals and the Cr_2O_3 content.

Standard metal accounting procedures are followed. The "Anstat" sampling systems as supplied by Thermogammametrics in Australia is used for all process streams. Metal accounting and control samples are kept separately. Accounting samples are separately prepared and submitted to a centralised laboratory for analysis. The control samples are fed to an in-plant Process Laboratory for Pt and Pd spectrometry for low grade streams or to in-stream X Ray Fluoresence spectormatry analysers for concentrates. The metal accounting samples will be: blended plant feed, final flotation tailings, and dispatched concentrate. The assays are carried out at the PPL Platinum Mine and Anglo Platinum Research Centre Laboratories. The Process Control Laboratory is in the process of being commissioned.

Metallurgical performance is supported by testwork findings and complies with anticipated norms experienced at similar operations. The actual metal recovery January to July 2003 was achieved at feed grades that were lower than expected and the Natural Fines Circuit was also not fully commissioned. The Modikwa concentrator was originally designed to treat 200ktpm, but is now rated at 240ktpm and should reach its full capacity during 2004.

Adequate laboratory and pilot plant test work that was undertaken by Mintek and the Anglo Platinum Research Laboratories in support of the process selection and design. The predicted metallurgical performance is similarly supported by testwork findings and there is good reason to believe that these will be achieved provided the projected feed grade is achieved and fines circuit is in operation.

Provision has been made in the plant design to circumvent possible bottlenecks or build-up of material in certain critical areas. Provision was also made in the flotation circuits to be able to change the grades and recoveries of the different metallurgical balances without having to stop and do reconstruction.

A degree of risk however exists in reproducing the pilot plant scale 4E recoveries (notably in respect of Platinum and Palladium). The added operational complexity of the Natural Fines Circuit and chrome attrition concepts is considered the primary area of risk.

The total process is essentially single stream with little or no capacity to continue operating in the event of failure of major equipment. Regularly monitoring the condition of key equipment and holding critical spares manage this situation but it still represents a risk. In some instances by-pass facilities have been provided and surge capacities allowed for in other instances.

Table 6.4 gives the historical processing statistics for the Modikwa concentrator where unit processing costs are stated in nominal terms.

Table 6.4 Modikwa Concentrator: historical processing statistics

Operational Statistic	Units	2003[1]	2004[2]
Tonnes Milled	(ktpm)	184	219
Milled Grades	(4Eg/t)	2.91	3.32
Metallurgical Recovery	(%)	83.3%	88.0%
Concentrate Tonnage	(tpm)	1,436	4,854
Concentrate Grade	(4Eg/t)	116	132
Processing Costs	(ZAR/t)	39.89	51.85

(1) 6 months actual to 30 June 2003.

(2) 6 months actual to 31 December 2004.

Historical performance at the Modikwa Concentrator has improved for the two periods noted above both in respect of throughput and metallurgical recoveries. Note however that mass pull (2.2%) has also improved and metallurgical recoveries indicate a positive relationship to feed grade. Notwithstanding this concentrate grades remain below that targeted of 162(4Eg/t). Unit costs indicate an increase over the past 6 months however this may be related to the build up process and allocation of operating expenditures within the costing system.

Table 6.5 gives the forecast processing statistics for the Modikwa concentrator (Mineral Reserves) where unit processing costs are stated in 1 January 2004 money terms. The LoM plan projects milling of 16.1Mt of ore grading on average 4.79(4Eg/t) at an average LoM milling rate of 205ktpm to produce concentrate tonnage of 403kt grading on average 167(4Eg/t). Unit processing costs stated in 1 January 2004 money terms are estimated to be ZAR44.59/t_{milled} over the LoM.

The achievement of these projections is critically dependent upon the feed grade as delivered from the mining operations and the efficient performance of the Natural Fines Circuit.

Table 6.5 Modikwa Concentrator: forecast processing statistics (Mineral Reserves)

Operational Statistic	Units	LoM Averages	2004[1]	2005	2006	2007	2008	2009
Tonnes Milled	(ktpm)	205	226	236	234	236	232	190
Milled Grades	(4Eg/t)	4.79	4.65	4.77	4.76	4.73	4.77	4.88
Metallurgical Recovery	(%)	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%
Concentrate Tonnage	(tpm)	5,134	5,650	5,892	5,842	5,890	5,799	4,761
Concentrate Grade	(4Eg/t)	167	162	167	166	165	166	171
Processing Costs	(ZAR/t)	44.59	40.40	44.21	44.33	44.21	44.43	47.53

(1) 6 months forecast to 31 December 2004.

(2) Mass pull factor is projected at 2.50%.

(3) Milled base metals grade are estimated as 0.10%Ni, 0.02%Cu and 0.02%Co with recoveries to concentrate of 18%, 56% and 3% respectively.

Table 6.6 gives the forecast processing statistics for the Modikwa concentrator (Mineral Reserves) where unit processing costs are stated in 1 January 2004 money terms. The LoM plan projects milling of 21.5Mt of ore grading on average 4.76(4Eg/t) at an average LoM milling rate of 219ktpm to produce concentrate tonnage of 539kt grading in average 166(4Eg/t). Unit processing costs stated in 1 January 2004 money terms are estimated to be ZAR44.10/t_{milled} over the LoM.

Table 6.6 Modikwa Concentrator: forecast processing statistics (Mineral Reserves and Mineral Resources)

Operational Statistic	Units	LoM Averages	2004[1]	2005	2006	2007	2008	2009
Tonnes Milled	(ktpm)	219	113	236	234	236	232	232
Milled Grades	(4Eg/t)	4.76	4.65	4.77	4.76	4.73	4.77	4.77
Metallurgical Recovery	(%)	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%
Concentrate Tonnage	(tpm)	5,465	2,825	5,892	5,842	5,890	5,799	5,799
Concentrate Grade	(4Eg/t)	166	162	167	166	165	166	166
Processing Costs	(ZAR/t)	44.10	40.40	44.21	44.33	44.21	44.43	44.43

(1) 6 months forecast to 30 June 2004.

(2) Mass pull factor is projected at 2.50%.

(3) Milled base metals grade are estimated as 0.10%Ni, 0.02%Cu and 0.02%Co with recoveries to concentrate of 18%, 56% and 3% respectively.

Excluded from both LoM plans is the potential for processing of the low grade development stockpiles as stated in Section 5.0 of this CPR. Further, should the underground tonnage being mined not be achieved as projected potential exists to source mill feed from this material, albeit at lower recoveries than that projected in the LoM plan.

6.4 Two Rivers Project Concentrator

The Two Rivers Project assumes the establishment of a MF2 concentrator. This process route largely recognises the mineralogical and metallurgical character of the Two Rivers UG2 ore, where the circuit comprises primary crushing, and primary RoM ball milling, primary flotation, secondary ball milling and secondary flotation as schematically represented in Figure 6.4. Final concentrates are planned to be toll treated by Impala Refining Services Limited's ("IRS") smelter in Rustenburg and thereafter refined at Springs.

The Feasibility Study as completed in 2002 envisaged the treatment of 2.1Mtpa underground ore. Recent technical updates (October 2003) have increased this to a maximum of 2.4Mtpa of combined open pit and underground ore in the early years and a maximum of 2.5Mtpa underground UG2 ore in latter years. This has been projected without an increase of mill size on the assumption of a lower proportion of waste in the mill feed in the early years. Achievement of a lower proportion of waste in the mill feed will consequently be key to achieving projected throughput. In latter years where waste levels increase above 30% a Dense Media Separation ("DMS") circuit could be added to the MF2 flowsheet. Introduction of this technology would result in reducing the milled tonnage by removal of waste material and thereby increasing the feed head grade which may further lead to an increase in metallurgical recoveries.

Flotation plant and ancillaries have been appropriately increased to accommodate the increased scale of operation.

The LoM plan currently allows three months to achieve design throughput. Assuming that there are no major setbacks, SRK consider this to be an achievable target.

Based on the testwork results (as stated below), relationships between head grade and individual PGE recoveries have been established. Based on a general observation from the testwork that recoveries drop off as the scale of operation increases, an empirical scale factor that reduces the determined recovery by four percentage points over the pilot plant results for the same head grade has been introduced. SRK has reviewed these relationships and considers that recoveries predicted by this approach are realistically achievable. The LoM plan furthermore, allows six months to achieve target recoveries. In SRK's view this is prudent in order to optimise plant performance.

Table 6.7 gives the forecast processing statistics for the Two Rivers Project concentrator (Mineral Reserves) where unit processing costs are stated in 1 January 2004 money terms. The LoM plan projects milling of 44.8Mt of ore grading on average 3.49(4Eg/t) at an average LoM milling rate of 200ktpm to produce concentrate tonnage of 682kt grading on average 190(4Eg/t). Unit processing costs stated in 1 January 2004 money terms are estimated to be ZAR46.42/t_{milled} over the LoM. Mass pull factors are projected at 1.52% and metallurgical recoveries attain a LoM average of 83%.

Table 6.7 Two Rivers Project Concentrator: forecast processing statistics

Operational Statistic	Units	LoM Averages	2004[1]	2005	2006	2007	2008	2009
Tonnes Milled	(ktpm)	200	0	81	220	220	209	204
Milled Grades	(4Eg/t)	3.49	0.00	3.69	3.62	3.49	3.43	3.52
Metallurgical Recovery	(%)	83.0%	0.0%	81.8%	83.7%	83.1%	82.8%	83.2%
Concentrate Tonnage	(tpm)	3,045	0	1,291	3,502	3,370	3,123	3,144
Concentrate Grade	(4Eg/t)	190	0	190	190	190	190	190
Processing Costs	(ZAR/t)	46.42	0.00	61.20	44.99	44.78	45.75	46.14

(1) 6 months forecast to 30 June 2004.

(2) Mass pull factor is projected at 1.52%.

(3) Milled base metals grade are estimated as 0.04%Ni, 0.01%Cu and 0.00%Co with recoveries to concentrate of 50%, 60% and 0% respectively.

6.4.1 Metallurgical Testwork

Mintek undertook most of the metallurgical testwork, with certain confirmatory testwork being undertaken by other independent laboratories. The test programme focussed on milling and flotation of underground ore, which was comprehensively tested at bench and pilot scale. Testing of open pit material was limited to bench scale investigations. Testwork was undertaken on composite drill core and channel samples and a 600t bulk sample. The bulk sample was considered to be geologically representative of the central and northern parts of the property.

Two comminution options were considered at pilot scale, with the latter being selected on merit:

- Crushing, primary ball milling, secondary ball milling; and
- Primary RoM ball milling, secondary ball milling.

The proportions of chromitite, pyroxenite and pegmatoid in the RoM ore are likely to vary considerably owing to geological and mining factors. In an attempt to quantify the impact of this on mill power, milling testwork was conducted at pilot scale on three simulated samples:

- "as is" bulk sample containing 30% pyroxenite plus pegmatoid waste;
- "intermediate" sample containing 36% pyroxenite plus pegmatoid waste; and
- "worst case" sample containing 42% pyroxenite plus pegmatoid waste.

It was confirmed as expected that the power requirement increases as the proportion of harder waste increases. The primary mill power requirements were estimated on the basis of 50% maximum waste in RoM ore and secondary mill power requirements on the basis of industry standards.

Flotation testwork confirmed the following key findings:

- Two stage milling and flotation, each with separate cleaning circuits resulted in better performance than single stage milling and flotation;
- Oxide ore recovery increases with depth, ranging from approximately 45%(4E) at 15m to approximately 85%(4E) at 55m and approaching that of unoxidised ore at greater depth;
- Sulphide ore recovery of approximately 94%(4E) seen in locked cycle tests dropped to approximately 90%(4E) at acceptable PGE and chromite grades;
- Recovery reduces directly with head grade. This was accounted for in evaluation by assuming a fixed tail value; and
- Recoveries do not vary significantly across the orebody.

Figure 6.1 PGM Assets – schematic metallurgical flowsheet of the Nkomati Concentrator

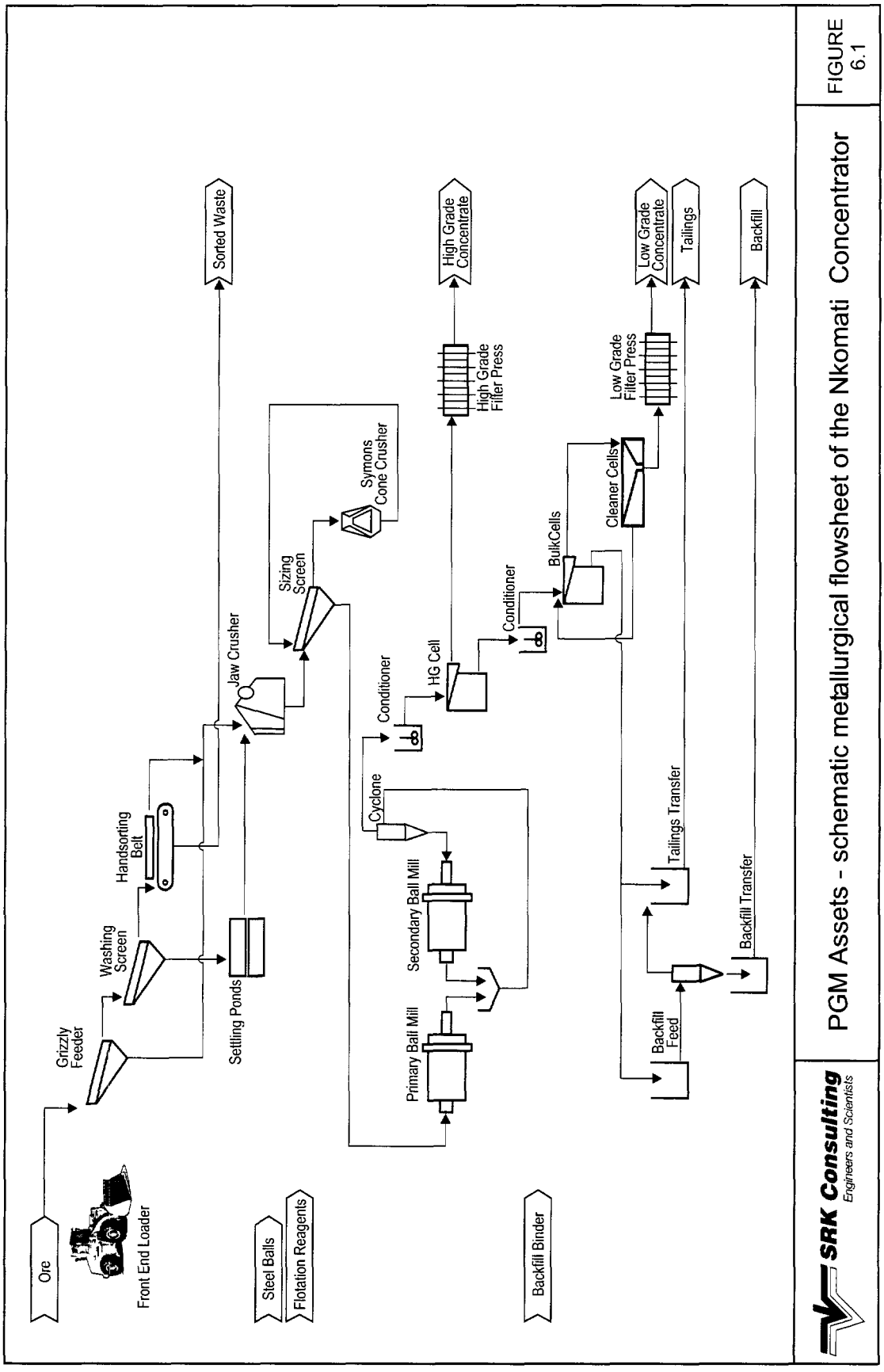


Figure 6.2 PGM Assets – schematic metallurgical flowsheet of the Nkomati Expansion Project

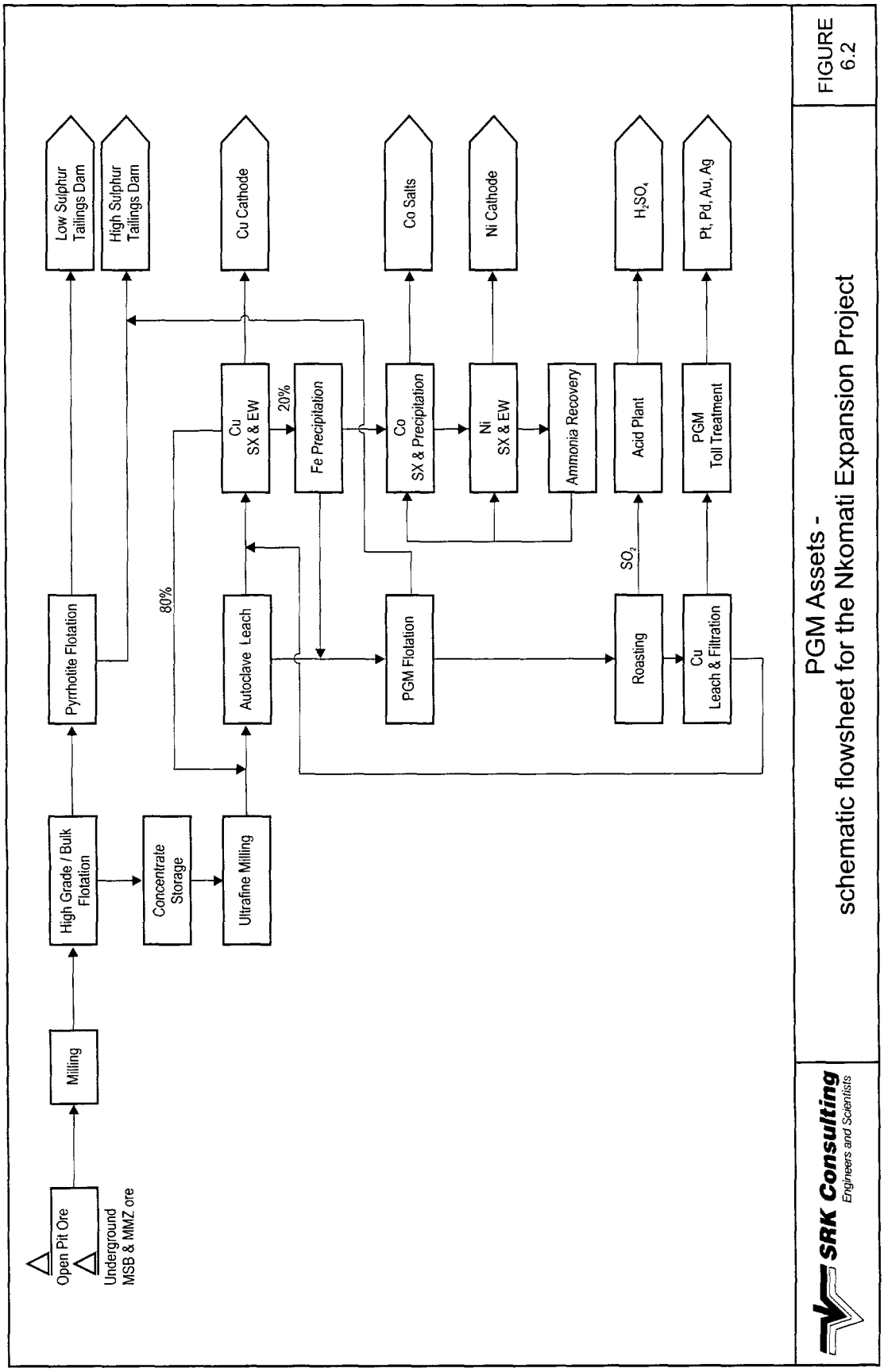


Figure 6.3 PGM Assets – schematic metallurgical flowsheet of the Modikwa Concentrator

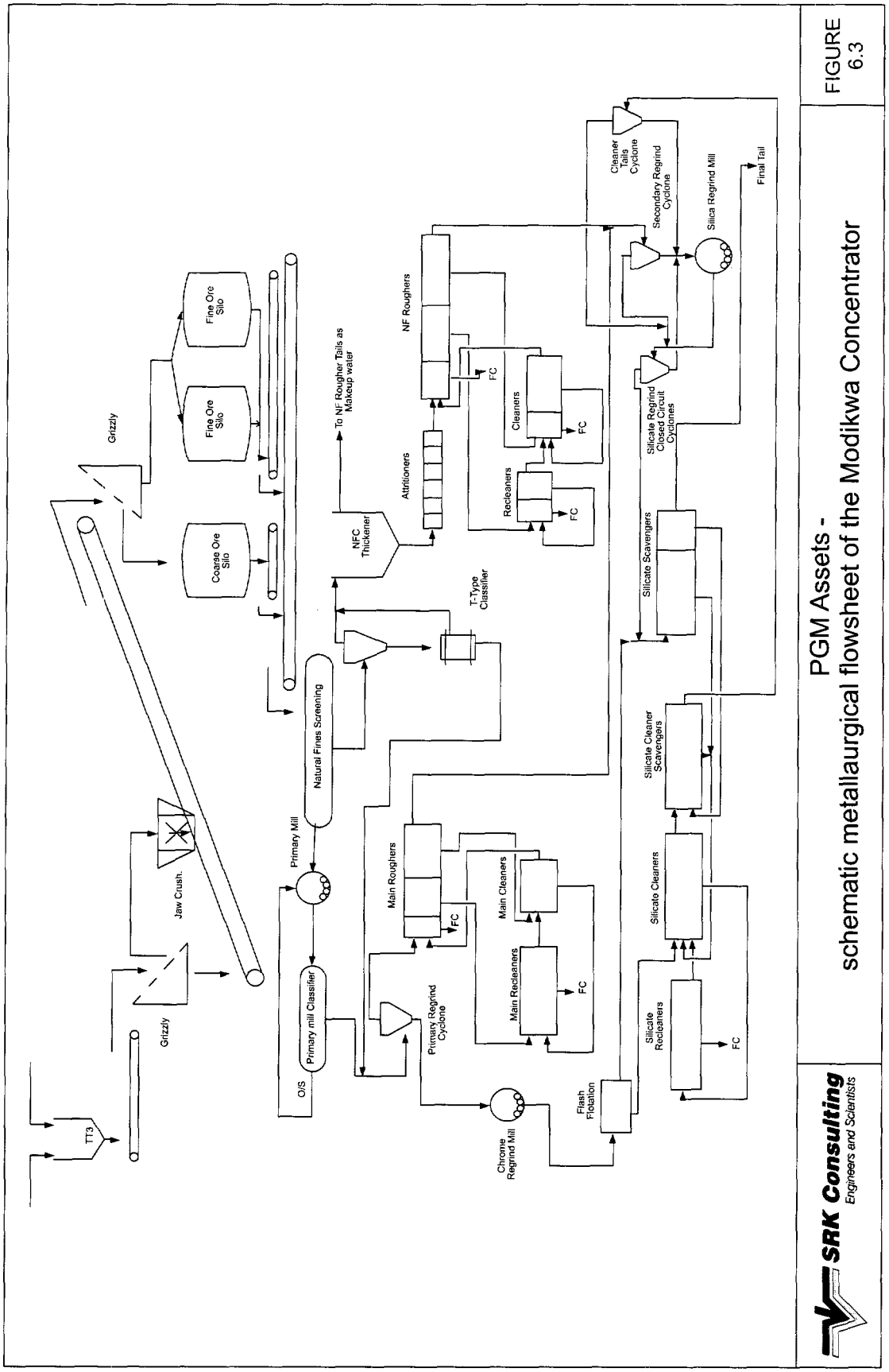
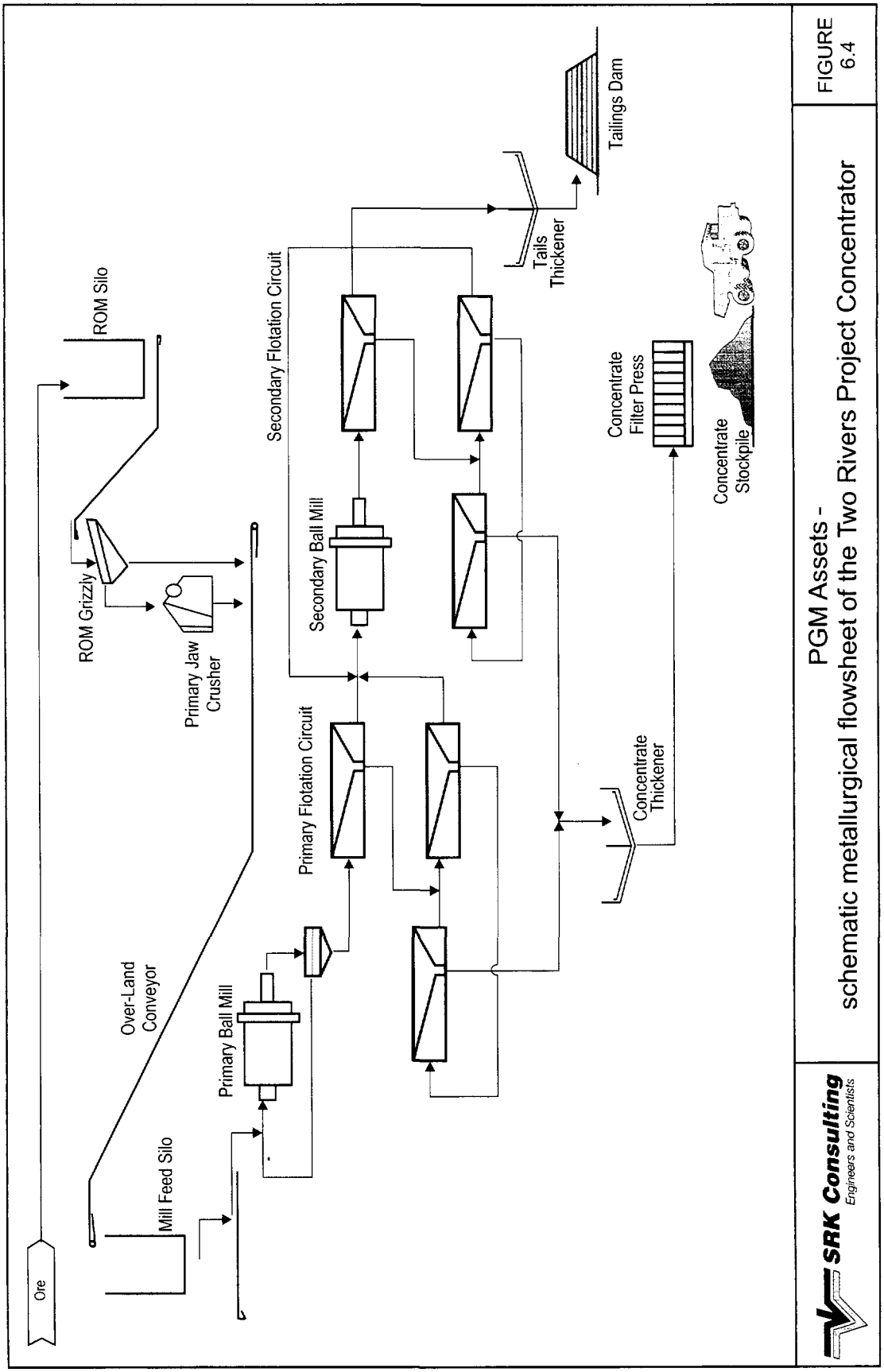


Figure 6.4 PGM Assets – schematic metallurgical flowsheet of the Two Rivers Project Concentrator



7. TAILINGS MANAGEMENT

7.1 Introduction

This section includes discussion and comment on the tailings engineering aspects associated with the PGM Assets. Specifically, detail and comment is focussed on the design, construction, geotechnical integrity, remaining capacity and management practices governing the tailings facilities. Key source data for the review comprised the engineering design constraints, where available, as prepared by the appointed tailings dam review consultants at each of the operations (including in certain cases SRK). Site-specific issues are summarised below.

7.2 Overview of the Tailings Facilities

7.2.1 Nkomati Mine

Nkomati Mine currently operates a single facility, namely the MSB tailings dam, which facilitates deposition of the high sulphide residue from the Nkomati concentrator. It comprises a fully plastic lined facility with clay liners and seep detection layers where deposition occurs in accordance with appropriate rates of rise and design specifications.

The current LoM plan for the Nkomati Mine requires a total placement of approximately 0.2Mt (4 years). The total remaining capacity as at November 2003, is projected at some 0.9Mt, which is adequate to meet the overall requirements of the LoM plan of approximately 0.2Mt (4 years).

The tailings dam facility is currently operated, managed and controlled in a responsible and diligent manner. The monitoring data show a very good performance through the life of the structure, all the piezometer readings stay under the critical level, freeboard is kept always above the regulatory level and the drain flow readings are consistent.

The Nkomati Expansion Project includes an increase in waste production, generating higher rates of sulphide residue and additional products e.g. gypsum. As part of the Feasibility Study expansion of the existing MSB facility and new facilities for the additional sulphide tailings and gypsum were designed.

The expanded MSB tailings dam is planned to contain 5.7Mt which will is designed to a maximum height of 44m. The gypsum residue disposal has been designed to a maximum height of 36m and will be able to accommodate 1.4Mt. In the same manner, the additional sulphide tailings dam has been designed with a capacity 80.2Mt and a maximum height of 76m.

7.2.2 Modikwa Mine

The Modikwa Mine tailings dam was commissioned in 2002 and is currently operated and managed by Fraser Alexander Tailings.

The facility is a side hill compartment, unlined facility and tailings is pumped to the dam in two 250NB steel pipelines with an HDPE lining and deposited by means of the spigot method of deposition at a specific gravity range of 1.4 to 1.5. Free water on the dam is decanted by means of a penstock system and the decant water then spills into the RWD.

The tailings dam has been provided with under-drainage which consists of a blanket drain, collector pipe and a number of outlets discharging into the concrete lined solution trench. The tailings dam is constructed using the spigot method of deposition. The design criteria are considered by SRK to be appropriate and are adhered to for day-to-day operational planning.

Based on the planned design constraints the total capacity available to a final height of 70m is some 65Mt which is sufficient to service the current tonnage throughput (240ktpa) for a further 50 years.

The principal additional items required for the LoM plan is the construction of a future elevated curtain drain, the extension of the penstock pipeline, the maintenance of delivery piping and the de-silting of the return water dam and silt traps.

The present operating procedures for the tailings dam are considered to be in line with normal operating practice for platinum tailings dams in South Africa. Minor remedial repair work is required in certain instances to ensure good housekeeping and maintenance of the facility.

In considering future capital requirements associated with the tailings facility, SRK considers that an additional ZAR2.2m be allowed for to cater for: elevated curtain drains; extension of penstock pipeline; construction of final intake towers; replace valves; extend starter wall; upgrade access road; and minor earthworks.

7.2.3 Two Rivers Project

The Feasibility Study for the Two Rivers Project completed in September 2002 assumes the establishment of a facility capable of accommodating deposition of some 180ktpm situated some 1km south-east of the Two Rivers Project concentrator. The current design was completed on a conceptual basis and is of conventional design and construction with appropriate consideration for: site selection; geotechnical investigations; tailings delivery system; and return water dam and pumping system.

Construction of the starter walls is dependent upon the removal of unsuitable foundation material and sourcing of material from the Dwarsrivier Chrome Mine waste stockpile. Due to the characteristics of this material, the downstream outer slope of the starter wall must be protected against erosion with a 300mm thick waste rock layer. The starter wall will be constructed to 1:1.5 slope angles with a 5m crest width to a maximum height of 19m. Plant tailings slurry will be conveyed through two rubber lined pipelines along an approved route. Seepage control measures include an under-drainage system, located within the dam basin and a starter wall will collect the seepage water. In order to reduce the risk of penstock failure, a double penstock system has been selected.

The facility has been designed for a total capacity of 44.1Mt and is considered appropriate to satisfy the requirements of the LoM plan.

7.3 PGM Assets – LoM Tailings Deposition Assessment

Table 7.1 summarises the LoM deposition projections and comparable available capacities for each of the PGM Assets.

Table 7.1 PGM Assets: LoM Tailings Storage Facility Assessments

PGM Asset	LoM Deposition (Mt)	Available Capacity (Mt)	Surplus/(Shortfall) (%)
Nkomati Mine Base Case	0.2	0.8	74.6%
Nkomati Expansion Project			
Sulphide Tails	61.3	85.9	28.6%
Gypsum Dam	1.4	1.4	0.0%
Modikwa Mine Mineral Reserves	15.7	63.7	75.3%
Modikwa Mine Mineral Reserves + Mineral Resources	21.0	63.7	67.0%
Two Rivers Project	44.1	44.1	0.0%

8. ENGINEERING INFRASTRUCTURE AND CAPITAL PROJECTS

8.1 Introduction

This section includes discussion and comment on the infrastructure and related aspects of the PGM Assets. Specifically, detail and comment is focused on the existing on-mine infrastructure and capital expenditure programmes necessary for execution of the LoM plans.

8.2 Nkomati Mine

Engineering infrastructure servicing the current mining operations can be considered to be well established and appropriate for supporting the current short-life operation.

Road access to Nkomati mine is via three routes – from the west from the Machadadorp/Badplaas tarred road, from the south from the Badplaas/Barberton tarred road and from the north via the Waterval Boven or Ngodwane. An 11km mountainous portion of the western access road has been tarred.

Power to the site is supplied by Eskom via two overhead 132kVA cables incoming from Ngodwana and Machadadorp to on-site Eskom substations. The power which is on a ring main system is distributed to transformers on surface and underground and stepped down to 1,000 volts and 500 volts. The site currently has a 3MVA usage. SRK considers that the power capacity is adequate to serve the mine, the processing plants and associated surface infrastructure.

Water supply in the upper Komati catchment is relatively stressed (Section 11.0) and the regulatory authorities are maintaining strict control in respect of current users in the area. Current potable water storage on site amounts to 172m^3.

Communications to the mine is aided by a dedicated Telkom microwave connection to Nkomati Mine which provides a reliable ISDN backbone for all future voice, data and video requirements. In addition the mine has installed a fully digital PABX system which should be capable of dealing with future requirements.

Table 8.1 gives the projected LoM capital expenditure estimates for the existing operations in 1 January 2004 money terms. This totals some ZAR17m of which ZAR7.3m is classified as project capital. In the main these expenditures allow for minor improvements to current infrastructure with the larger proportion dedicated to maintaining existing operations. Some potential exists to revisit the projected ongoing capital, particularly given that closure is planned during 2008.

Table 8.1 Nkomati Mine: LoM capital expenditure estimates[1]

Capital Items	Units	Project	Ongoing	Total
General	(ZARm)	7.3	9.7	16.9
Total	(ZARm)	7.3	9.7	16.9

[1] No detail in support of contingencies or exposure to forex was available, however as the capital expenditure is limited and given the short life this is not considered to be a material issue.

The Nkomati Expansion Project will rely on existing infrastructure as far as practically possible, however certain adjustments will be necessary and include the following:

The expanded operation is sited almost exclusively on the Slaaihoek/Uitkomst property, the only exception being the main tailings dam which is planned to occupy approximately 30Ha on the farm Onverwacht, located 14km from the processing plant. In order to facilitate disposal of sulphide tailings a servitude connecting the tailings dam to the mine operations will be routed over recently acquired portions of Uitkomst and Vaalkop.

A mine by-pass road will be established to link the western access road to the south and provide a public through route which will not traverse mine property. The southern access road is planned to serve as a low volume, light passenger traffic route. Adequate provisions have been included for substantial realignment and gravel topping of the mine bypass and the southern access roads.

Power supply will need to be upgraded as the main plant load is expected to vary between 68MVA and 75MVA. Eskom has provisionally reserved an 80MVA for the expanded operation.

Water requirements are expected to fluctuate depending on the quantum of return water received from the residue deposits and the open pits. A detailed water balance has been developed and raw water supply in the first instance will be sourced from boreholes situated in the vicinity of the open pit area. This could be supplemented from the Slaaihoek stream and if required from the Gladdespruit River situated approximately 1km from the operations.

Potable water supply will be sourced from the Slaaihoek stream, and can be further supplemented from the Gladdespruit River via the raw water supply system. The cost of water supply has been projected at some ZAR2.00/m^3. Water storage facilities will be supplemented using a new 1,000m^3 potable waster tank which is rated at 48-hour operating supply capacity.

In addition a new 35,000m^3 settling pond will be established near Pits 1 and 2 and for water storage. If required this water can be discharged back into the plant process water circuit. On cessation of mining operations Pit 2 will also be used as a larger settlement pond.

South of the plant complex a new stormwater runoff pond will be developed and will store the first 15mm of runoff during storm events. Any excess will be allowed to discharge into the Slaaihoek stream.

Ore transportation from the open pit and the underground operations to the processing facilities will be via a network of overland conveyors.

Table 8.2 gives the projected LoM capital expenditure estimates for the expanded operations in 1 January 2004 money terms. This totals some ZAR2.8bn of which ZAR2.3bn is classified as project capital. SRK considers that the capital expenditure estimate has been well established with appropriate contingencies (13.6%) allowed for. The overall estimate is subject to forex exposure and accordingly given the forecast real terms devaluation in the ZAR (Section 1.0) the capital estimate will be increased compared to the quantum estimated at current spot exchange rates. The ongoing capital portion is largely related to capitalised waste development which is associated with the underground mining operations.

Table 8.2 Nkomati Expansion Project: LOM capital expenditure estimates[1]

Capital Items	Units	Project	Ongoing	Total
Open pit	(ZARm)	15.3	2.4	17.7
Underground	(ZARm)	100.8	343.0	443.8
Main Concentrator	(ZARm)	477.0	0.0	477.0
Activox	(ZARm)	223.6	0.0	223.6
Base Metals Refining	(ZARm)	603.0	0.0	603.0
Leach Residue Flotation	(ZARm)	28.2	0.0	28.2
PGM Roaster	(ZARm)	113.2	0.0	113.2
Cu Leach	(ZARm)	34.6	0.0	34.6
Human Resources	(ZARm)	45.7	0.0	45.7
Management	(ZARm)	160.8	0.0	160.8
Admin	(ZARm)	40.9	73.2	114.1
Environmental	(ZARm)	20.3	6.6	27.0
Dumps and dams	(ZARm)	125.8	0.0	125.8
Engineering	(ZARm)	71.1	16.6	87.7
Geology	(ZARm)	25.2	0.0	25.2
Common Met Plant Infrastructure	(ZARm)	170.0	0.0	170.0
Subtotal	**(ZARm)**	**2,255.5**	**441.9**	**2,697.4**
Capitalised Opex	(ZARm)	55.1		
Total	**(ZARm)**	**2,310.6**	**441.9**	**2,752.5**

(1) Total contingency is estimated at 13.6% which is included in the above project and ongoing amounts. Further, currency exposure is estimated at 66% in ZAR and 34% in US$.

(2) The capitalised opex is derived from open pit operating expenditures during Year 3 (2006).

The construction schedule is based on a 20 month programme and has been reviewed by two potential Engineering Procurement and Construction Management ("EPCM") contractors. This schedule is however critically dependent upon the completion of detailed engineering and design work, scheduled to take some 4 months prior to project approval.

The ramp-up schedule is projected at some 18 months and has been benchmarked against various hydrometallurgical projects of a similar nature.

The project management structure is proposed to be split into two main groupings which are effectively split based on brown fields or green fields expansion classifications. On securing board approval an EPCM contractor will be appointed and a joint owners/contractor team will be established.

8.3 Modikwa Mine

Engineering infrastructure at Modikwa Mine is well established and operations are in build-up mode with full production anticipated in the near future.

Water supply is provided via the Lebolelo water supply shared scheme. Water drawn from the Oliphants River is reticulated by a long distance pipeline via the Arabies dam. Installed infrastructure caters for all aspects of supply, stormwater reticulation, sewage and solid waste disposal.

Site access is afforded by roads which link operating shafts and the central complex to the existing R37 Pietersburg/Burgersfort road.

Workshops and stores have been established at each main shaft and provide daily support including minor fitting and platework requirements. A more comprehensively equipped workshop has been established at a central location in the immediate vicinity of the concentrator to service and repair the main underground fleet. A main store has also been established to hold strategic spares and long lead items also situated at the central complex.

The compressor plant comprises a total of five $7m^3/s$ units and is housed in a central compressor plant located centrally to South Shaft and North Shaft.

Table 8.3 gives the projected LoM capital expenditure estimates for the Mineral Reserve LoM plan in 1 January 2004 money terms. This totals some ZAR658m of which ZAR17m is classified as project capital. The ongoing capital portion is largely related to exploration and deepening of the underground operations, purchase of strategic spares, replacement of the trackless fleet and provision of 3% of all on-mine opex as ongoing contributions. Limited detail exists in respect of forex exposure, however it is anticipated that some 30% of total capital may be directly exposed to the ZAR:US$ exchange rate. Given current exchange rates and that stated in Section 1.0 of this CPR, the total capital amount is likely to be overstated in ZAR terms.

Table 8.3 Modikwa Mine: LoM capital expenditure estimate (Mineral Reserves)[1]

Capital Items	Units	Project	Ongoing	Total
carry over from 2002 and 2003	(ZARm)	0.8	0.0	0.8
exploration & deepening	(ZARm)	3.8	245.6	249.4
tailings dam phase II	(ZARm)	0.3	2.0	2.3
BTX contracts	(ZARm)	2.1	0.0	2.1
mine vehicles	(ZARm)	8.0	0.0	8.0
vehicle replacement	(ZARm)	0.0	120.2	120.2
chairlift	(ZARm)	1.3	8.6	9.9
CSI	(ZARm)	0.3	2.0	2.3
strategic spares	(ZARm)	0.0	85.5	85.5
Flag Boshielo dam	(ZARm)	0.0	47.0	47.0
3% of on-mine opex – excluding Year 1	(ZARm)	0.0	130.8	130.8
Total	**(ZARm)**	**16.6**	**641.6**	**658.2**

[1] No detail in support of contingencies or exposure to forex was available, however exposure will be limited to that associated with trackless equipment.

Table 8.4 gives the projected LoM capital expenditure estimates for the Mineral Reserve and Mineral Resource LoM plan in 1 January 2004 money terms. This totals some ZAR777m of which ZAR17m is classified as project capital. The increased amounts over and above the Mineral Reserve LoM plan are largely related to the increased operating life and depth as mining progresses beyond Level 4.

Table 8.4 Modikwa Mine: LoM capital expenditure estimate (Mineral Reserves + Mineral Resources)[2]

Capital Items	Units	Project	Ongoing	Total
carry over from 2002 and 2003	(ZARm)	0.8	0.0	0.8
exploration & deepening	(ZARm)	3.8	270.7	274.5
tailings dam phase II	(ZARm)	0.3	2.0	2.3
BTX contracts	(ZARm)	2.1	0.0	2.1
mine vehicles	(ZARm)	8.0	0.0	8.0
vehicle replacement	(ZARm)	0.0	145.5	145.5
chairlift	(ZARm)	1.3	8.6	9.9
CSI	(ZARm)	0.3	2.0	2.3
strategic spares	(ZARm)	0.0	105.7	105.7
Flag Boshielo dam	(ZARm)	0.0	47.0	47.0
3% of on-mine opex – excluding Year 1	(ZARm)	0.0	178.4	178.4
Total	**(ZARm)**	**16.6**	**759.9**	**776.5**

[1] No detail in support of contingencies or exposure to forex was available, however exposure will be limited to that associated with trackless equipment.

8.4 Two Rivers Project

Engineering infrastructure associated with the development of the Two Rivers Project comprises:

Site access is via the Lydenburg-Sekhune road from the de-numbered Richmond Road, which will be shared with Dwarsrivier Chrome Mine, Der Brochen Mine and a number of local farmers. A key factor in the location of principal infrastructure associated with the project was the availability of flat land which is limited by: topography (mountainside on the western portion of the property); the Klein Dwarsrivier (running through the central and eastern side of the property); geotechnical constraints arising from alluvial deposits associated with the Kelin Dwarsrivier; the 275kV and 400kV Eskom transmission servitude passing through the north/south of the property; and the underlying UG2, Meresky Reef and LG6 orebodies.

The Feasibility Study final site selection and location of mining infrastructure, concentrator and the tailings dam is based on extensive geotechnical drilling and field investigations.

As part of the Sale and Purchase Agreement with Assmang during 2002, an additional 260Ha of land was purchased for ZAR14.4m. ZAR14.0m of this payment (payable in 2014) reflects compensation for sterilisation of the chrome ore situated below the proposed tailings dam.

Power Supply are based on projected requirements of some 25MVA to 30MVA which will be sourced from the existing 132kV/33kV Uchoba substation situated on the Dwarsrivier property which has been in operation since December 2002.

Water demand anticipated for the Two Rivers Project is based on a unit rate of $0.8t_{water}$ per tonne of ore treated, which results in a maximum requirement of some 2.04Mlpa. Raw water will be supplied from two main sources:

- Klein Dwarsrivier: abstraction from the Inyoni Dam with an existing water right of 1.5Mlpa; and
- Groot Dwarsrivier: abstraction of 0.3Mlpa from a river pump station located due-east of the Two Rivers concentrator.

In addition Two Rivers has secured access to the industrial water scheduled on nearby properties which provides for the shortfall of 0.24Mlpa.

In respect of all other support services: major maintenance, road maintenance, security; the Two Rivers Project will rely on external suppliers.

Table 8.5 gives the projected LoM capital expenditure estimates for the Two Rivers Project in 1 January 2004 money terms. This totals some ZAR2.5bn of which ZAR1.4bn is classified as project capital. SRK considers that the capital expenditure estimate has been well established with appropriate contingencies (12.8%) allowed for. The overall estimate is subject to forex exposure and accordingly given the forecast real terms devaluation in the ZAR (Section 1.0) the capital estimate will be increased compared to the quantum estimated at current spot exchange rates. The ongoing capital portion is largely related to trackless fleet replacement requirements associated with the underground mining operations.

Table 8.5 Two Rivers Project: LoM capital expenditure estimates

Capital Items	Units	Project[1]	Ongoing[2]	Total
Mining – capital expenditure	(ZARm)	383.9	949.4	1,333.3
Engineering, It and procurement	(ZARm)	0.0	8.1	8.1
Infrastructure	(ZARm)	400.7	0.0	400.7
Metallurgy	(ZARm)	278.1	0.0	278.1
Technical services, geology, environmental	(ZARm)	0.0	27.5	27.5
Administration, finance and other	(ZARm)	45.6	0.0	45.6
Human resources	(ZARm)	8.6	0.0	8.6
Audit costs	(ZARm)	109.8	0.0	109.8
Subtotal	**(ZARm)**	**1,226.8**	**985.1**	**2,211.8**
Contingency	(%)	11.47%	14.59%	12.86%
	(ZARm)	140.7	143.7	284.4
Total	**(ZARm)**	**1,367.5**	**1,128.7**	**2,496.2**

(1) Currency contribution to project capital is estimated as follows: ZAR – 58.2%; US$ – 0.8%; Euro – 41%. Note that this is based on conversion using macro-economic forecasts as included in Section 1.0.

(2) Currency contribution to ongoing capital is estimated as follows: ZAR – 66.8%; US$ – 0.0%; Euro – 33.2%. Note that this is based on conversion using macro-economic forecasts as included in Section 1.0.

In recognition of the current economic climate, the project development schedule has sub-divided into two key areas namely that associated with expenditure of Risk Capital commencing August 2003 and completion through to metallurgical production during March 2004. The Risk Capital period assumes basic engineering design on long lead items, establishing the conveyor and chairlift boxcuts, additional drilling of the north pit and finalising the mining access development contract. To this end some ZAR69.2m has been approved through to December 2002 and continuance of project development through to production was dependent upon Board Approval in November 2003. During January 2004 it was therefore assumed that substantive construction work in respect of the mine, concentrator, tailings dam and infrastructure would commence and secure completion by March 2004. The entire programme of some 18 months was however dependent upon timely project release and the recruitment of management and labour during this period.

Further, in respect of commissioning and ramp-up it was assumed that Plant capacity would be reached by processing ore from development stockpiles by June 2005 and that mining operations would achieve steady state production by December 2005. Commercial operations are assumed to be defined as completion of the bulk of capital works which is assumed to be effective as at June 2005.

Given the current position it is likely that there will be an overall delay of some 6 months as a result of a no-release decision prior to 1 January 2004.

The capital allowance for the development of the main decline infrastructure is based on the tender of the selected contractor (Grinaker LTA). The cost allowance is considered adequate by SRK. It should be noted however that the risk of cost over runs is increased by the high level of monthly P&G's which has been set at ZAR2m per month. Should time delays occur the high percentage of costs budgeted as fixed monthly costs will cause cost overruns to build quickly. Some form of performance bonus/penalty clause in the contract may alleviate this.

8.5 Kalplats Project

Given the status of the Kalplats Project no further capital expenditure is planned.

9. HUMAN RESOURCES

9.1 Introduction

This section includes discussion and comment on the human resources related aspects associated with the PGM Assets. Specifically, information as provided by the Companies is included on the current organisational structures and operational management, recruitment, training, productivity initiatives and remuneration policies, industrial relations and productivity projections.

9.2 Legislation

Various regulatory authorities, in addition to mining and labour codes, govern labour legislation in South Africa. In general these are well established and in conjunction with the Companies operating policies and form the cornerstone of human resource management.

During 1999, many changes and initiatives took effect, primarily in response to the recently promulgated provisions of South African labour legislation. The Labour Relations Act regulates the relationship between employees and trade unions, establishes dispute resolution mechanisms, promotes collective bargaining and protects employees from unfair dismissal. Separation may be carried out on the basis of genuine economic, technological, structural or similar needs of an employer. Consultation, with full disclosure of relevant information, is required with trade unions prior to employers effecting separation programmes. The other major statutes in force in South Africa are:

- The Basic Conditions of Employment Act, which prescribes minimum conditions of employment, excluding wages;
- The Occupational Diseases in the Mines and Work Act;
- The Compensation of Occupational Injury and Diseases Act, which provides a mechanism for compensating employees who have been incapacitated as a result of injury or disease arising from the performance of work;
- The Occupational Health and Safety Act and Mine Health and Safety Act, which impose a duty on employers to provide a safe and healthy working environment;
- The Employment Equity Act, which prohibits unfair discrimination and places an obligation on employers to implement affirmative action measures. In this instance Employment Equity forums have been established with all unions in an effort not only to give effect to the Employment Equity Act, but also to address, through appropriate policies and procedures, the total development of human resources; and
- The Skills Development Act, which seeks to enable the development of the skills of the local workforce. Through a process of negotiation with regulatory authorities and representative bodies, including organised labour, mine management has initiated various programmes to ensure compliance with the various regulatory statutes. The Companies have informed SRK that, with respect to the revised legislation, the PGM Assets are materially compliant and that pro-active involvement to seek appropriate exemptions through a negotiated process will be pursued.

9.3 Organisational Structures and Operational Management

SRK has been informed that the organisational structure currently in place, together with operational management, will remain until such time as planned shaft closures occur, following which, downsizing will be assessed. The PGM Assets are adequately resourced with the appropriate levels of technically qualified and experienced personnel in production and related support functions.

Table 9.1 gives the historical manpower requirements or Total Employees Costed ("TEC") for the PGM Assets. Table 9.2 gives the forecast manpower requirements or TEC for the PGM Assets.

Table 9.1 PGM Assets Manpower: historical statistics

PGM Assets	Units	2000	2001	2002	2003	2004[1]
Nkomati Mine	(No.)	220	222	233	243	243
Modikwa Mine	(No.)			1,980	2,074	4,285

(1) 6 months actual to 31 December 2004.

Table 9.2 PGM Assets Manpower: forecast statistics

PGM Assets	Units	2004[1]	2005	2006	2007	2008	2009
Nkomati Mine	(No.)	243	243	243	243	243	0
Nkomati Expansion Project	(No.)	111	124	552	718	702	692
Modikwa Mine (Reserves)	(No.)	4,178	4,178	4,178	4,178	4,178	4,178
Moikwa Mine (Reserves + Resources)	(No.)	4,178	4,178	4,178	4,178	4,178	4,178
Two Rivers Project	(No.)	238	281	254	277	156	984

(1) 6 months forecast to 30 June 2004.

9.4 Recruitment, Training, Productivity Initiatives and Remuneration Policies

Recruitment, training, productivity initiatives and remuneration policies are, in general, typical of operating practices and strategies as implemented within the South African mining industry.

- **Training:** Training initiatives have focused on the development of both technical and managerial skills of senior and middle management. At the operational level, training initiatives include mine managements commitment to the Adult Basic Education and Training ("ABET") initiatives;
- **Productivity initiatives:** Mine management continually reviews and implements various productivity initiatives which reflect the operational conditions and remuneration policies within the individual labour markets; and
- **Remuneration policies:** Levels generally comply with industry-wide salary scales. In addition to basic components, employees receive additional entitlements, which are related to accommodation and medical and employee benefit plans in the form of pension/provident schemes.

9.5 Industrial Relations

The Companies 2004 business plans in respect of operating assets require some 4,659 mine workers with approximately 80% being members of registered trade unions. Industrial relations at the PGM Assets are managed in accordance with key driving factors. These include the prevailing legislative requirements, regulatory bodies, labour representation, collective bargaining arrangements and regional/operational specific employee-employer agreements.

Historically, trade unions in South Africa have had, due to links with political parties, a significant influence over social and political reform as well as the collective bargaining process. Presently the situation is manageable; however, it is uncertain whether labour disruptions will be used to advocate such political causes in the future.

Mine management involves all labour representatives (unions and management) to ensure appropriate and timely interaction to resolve industrial relations issues, including communication and joint decision-making, bonus strategies and procedures. Depending on fluctuations in the commodity prices and exchange rates together with the rising (above CPI) cost of employment due to recent wage negotiations, future workforce reductions may be required. In this instance, SRK considers that appropriate procedures are in place and other than periodic action during wage negotiations, industrial relations risks to be manageable.

9.6 Productivity Assumptions

Productivity initiatives are primarily focused on restructuring of staffing structures and working practices as part of managements overall strategy. The importance of maintaining economic production levels, where labour cost contributes significantly in a highly regulated labour market (South Africa Region) is the principal focus and is recognised in all strategies. Table 9.3 and Table 9.4 gives historical and projected productivity indices for the PGM Assets respectively.

Table 9.3 Productivity: historical productivity statistics

PGM Assets	Units	2000	2001	2002	2003	2004[1]
Tonnage						
Nkomati Mine	(t_{milled}/TEC/month)	90	105	91	95	107
Modikwa Mine	(t_{milled}/TEC/month)	0	0	0	84	51

(1) 6 months actual to 31 December 2004.

Table 9.4 Productivity: forecast productivity statistics

PGM Assets	Units	2004[1]	2005	2006	2007	2008	2009
Tonnage							
Nkomati Mine	(t_{milled}/TEC/month)	92	92	92	92	5	0
Nkomati Expansion Project	(t_{milled}/TEC/month)	0	0	53	363	533	547
Modikwa Mine (Reserves)	(t_{milled}/TEC/month)	54	56	56	56	56	46
Moikwa Mine (Reserves + Resources)	(t_{milled}/TEC/month)	54	56	56	56	56	56
Two Rivers Project	(t_{milled}/TEC/month)	0	290	864	795	1,334	207

9.7 Separation Liability

The total separation liability for the PGM Assets has been estimated by application of an average unit separation cost multiplied by the projected TEC at the time of either downsizing or closure. Table 9.5 summarises the estimated separation costs to be expended on either closure or down sizing of the PGM Assets in 1 January 2004 money terms.

Table 9.5 PGM Assets: Separation Liability

PGM Assets	Units	Separation Liability
Nkomati Mine	(ZARm)	10.1
Nkomati Expansion Project	(ZARm)	62.0
Modikwa Mine (Reserves)	(ZARm)	28.7
Moikwa Mine (Reserves + Resources)	(ZARm)	28.7
Two Rivers Project	(ZARm)	9.4
Avmin – excluding Nkomati Expansion	**(ZARm)**	**15.3**
Avmin – including Nkomati Expansion	**(ZARm)**	**77.3**
ARM Platinum	**(ZARm)**	**11.9**

10. HEALTH AND SAFETY

10.1 Introduction

This section includes discussion and comment on the safety and health related aspects associated with the PGM Assets. Current and historical health and safety statistics are presented with discussion on the more significant measures in progress to deal with identified risks.

10.2 Legislation

Health and safety in South Africa is governed by various regulatory bodies and mining and labour legislation. In general these are well established and, in conjunction with management's operating policies, form the cornerstone of health and safety management. Key legislation changes as noted in South Africa are summarised below.

Following publication of the Leon Commission Report in 1994 all aspects of health and safety on mines is governed by the Mine Health and Safety Act No. 29 of 1996 ("the Mine Health and Safety Act") which came into effect on January 15, 1997. The Mine Health and Safety Act was the result of intensive discussion and consultations between Government, employers and employee representatives over an extended period of time and, whilst leaving room for self-regulation, also provides for strict control by Government. In complying with the Mine Health and Safety Act, mine management has established risk management and medical surveillance systems in addition to the health and safety committees to which workplace representatives have been elected. In summary this provides for various health and safety measures and provides for employee participation in these matters with stated objectives, *inter alia*:

- To protect the health and safety of persons at mines;
- To require employers and employees to identify hazards and eliminate, control and minimise the risks relating to health and safety at mines;
- To ensure compliance with both domestic and international law and regulations on health and safety at mines;
- To provide for employee participation in matters of health and safety through health and safety representatives and health and safety committees at mines;
- To provide for effective monitoring of health and safety and working conditions at mines;
- To provide for enforcement of health and safety measures at mines;
- To provide for investigations and inquiries to improve health and safety at mines;
- To promote: a health and safety culture and training in health and safety in the mining industry; and
- Co-operation and consultation on health and safety between the regulatory bodies, employers, employees and their representatives.

10.3 Statistics

Table 10.1 presents safety statistics for the PGM Assets and includes the total number of fatalities, fatality rate and Long term injury frequency rate ("LTIFR") where both rates are measured in respect of million man hours worked.

Table 10.1 PGM Assets: historical safety statistics

PGM Assets	Units	2000	2001	2002	2003	2004[1]
Fatalities						
Nkomati Mine	(No.)	0	0	0	0	0
Modikwa Mine	(No.)	1	2	1		
Fatality Rate						
Nkomati Mine	(per mmhrs)	0	0	0	0	0
Modikwa Mine	(per mmhrs)			0.03	0.04	0.02
LTIFR						
Nkomati Mine	(per mmhrs)	32.21	11.25	9.74	2.1	8.65
Modikwa Mine	(per mmhrs)			0.48	0.54	0.71

Measured against the Ontario benchmarks for fatality rates of 0.15/mmhrs and LTIFR of 7.50/mmhrs the PGM Assets currently operate at below these rates, other than at the Nkomati Mine where the LTIFR has reduced from historical levels but remain slightly above the stated benchmark.

10.4 Health and Safety Management

Health and safety management of the PGM Assets is focused on the development of company wide health and safety policies, taking cognisance of the legislation and regulatory environment. The Companies' Health and Safety policies are broadly aligned and operate within the following framework:

- Sustainable Development;
- Community Development;
- Communication with interested and affected parties;
- Partnership approach; and
- Clear definition of roles and responsibility.

Avmin has developed a broad Sustainable Development Policy which enshrines five key areas, namely:

- Safety;
- Occupational Health;
- Environment;
- Social Investment; and
- HIV/AIDS.

Further, Avmin also invests some 1% of pre-tax profit in order to seed and enable sustainable development initiatives in the surrounding communities.

The Companies have informed SRK that all health and safety departments adhere to both the provisions of the Mine, Health and Safety Act and the Minerals Act with full-time, as well as part-time safety representatives employed at all the PGM Assets.

In accordance with the provisions of the Mine, Health and Safety Act, a number of baseline risk assessments, continuous risk assessments and physical conditions ratings are conducted. Managerial instructions, emergency procedures and codes of practice are reasonably in place. Specific health and safety hazards identified include heat/ventilation, water, dust, fire, seismicity and falls of ground, explosions, insufficient emergency power equipment and occupational hygiene issues.

The South African mining industry is stated to have a HIV/AIDS infection rate of approximately 30% (Avmin operations estimated at some 14%). In order to mitigate against the likely impact and consequence of the occurrence of HIV/AIDS, the Companies have embarked on the following activities:

- Awareness programmes in all operating regions;
- Company wide wellness programmes;
- Medical assistance to repatriated employees; and
- Separation packages for employees who wish to return home. Further, actuarial assessments by certain mining companies have indicated that the cost of addressing the disease may peak at approximately 2% of the total cost of production. This cost has, however not been included into the cash flow projections for each Tax Entity for the purpose of valuation, as presented in Section 13 primarily because there is no specific measure at this time to ascertain the accuracy this figure and as such should be considered on a risk basis.

10.5 Future Considerations

The PGM Assets will continue to be exposed to commonplace mining hazards such as water, dust, fire, seismicity, falls of ground ("FoG"), explosions, occupational hygiene issues and materials handling and transportation. Increased vigilance and focus is required in respect to:

- Potential increases in the FoG as the proportion of production sourced from deeper mining areas increases; and
- The potential impacts of HIV/AIDS on the labour force, should the present rate of industry-wide infection not be curtailed.

11. ENVIRONMENTAL

11.1 Introduction

The following section includes discussion and comment on the environmental management aspects of the PGM Assets. Specifically, detail and comment is included on the status of: environmental legislation; environmental policies and management; compliance with legislation, environmental authorisation and internal requirements; environmental liabilities and risks over the life of the operation; decommissioning and closure liabilities and risks. Commentary in respect of the EPs is excluded here where focus is on the PGM Assets.

11.2 South African Legislation

Key environmental legislation which is applicable to the South African mining industry is as follows:

- **National Environmental Management Act (107 of 1998) as regulated by the Department of Environment, Agriculture and Tourism ("DEAT").** This overarches South African environmental legislation and lays down basic environmental principles including: Duty of Care, Polluter Pays & Sustainability;

- **Minerals Act (50 of 1991) as regulated by the Department of Minerals and Energy ("DME").** This governs that required to obtain mining authorisation specifically: an approved EMP (§39) and evidence of financial provision for rehabilitation of the environment approved by the DME (§38). The EMP contains the environmental conditions of authorisation for the development and operation, which are generally defined in the form of objectives, principles and key design criteria. The EMP is developed as part of an impact assessment process reported to the DME in the EMPR, which covers a description of the baseline environment, the project and predicted impacts. Further aspects covered include EMPR amendments, compliance audits, and issuance of closure certificates;
- **National Water Act (36 of 1998) ("NWA") as regulated by the Department of Water Affairs and Forestry ("DWAF")**: This governs water use (abstraction, storage, waste disposal, discharge, removal of underground water and alternation to watercourses (impedances, diversions or crossings), responsibility for pollution, protection of water resources, water supply charges (likely to come into force in 2006 and will cover tailings disposal and releases of underground water);
- **Atmospheric Pollution Prevention Act (45 of 1965) as regulated by DEAT;**
- **Environment Conservation Act (73 of 1989) ("ECA") as regulated by the Provincial Departments of Environment.** Part V states that listed activities cannot be undertaken without an environmental authorisation. The process to obtain approval includes public involvement, and if necessary, an environmental impact assessment. In most cases this is not applicable as it is covered by the Minerals Act, however, this must be agreed with the relevant authorities:
- **National Heritage Resources Act (25 of 1999) as regulated by South African Heritage Resource Agency ("SAHRA");**
- **Hazardous Substances Act (15 of 1973) as regulated by the Department of Health.** Declaration of hazardous substances and control of declared substances. Allows for regulations relating to the manufacturing, modification, importation, storage, transportation and disposal of any grouped hazardous substance;
- **ECA, Forest Act (84 of 1998), Provincial Nature Conservation Acts and other Ordinances** as regulated by Provincial conservation authorities. Ensures protection of certain species of animals and plants. Permissions to move protected species are required in certain cases; and
- **Mineral and Petroleum Resources Development Act ("MPRDA")** as regulated by the DME. This has been enacted but not yet brought into force. It will replace the Minerals Act 1991. It aims to make provision for equitable access to and sustainable development of the nation's mineral and petroleum resources. Draft Regulations have been prepared and indicate the new procedures for the development of EMPs and EMPRs. These appear to be more onerous than previous requirements. A key requirement is the need for a social and labour plan in addition to an EMPR.

Mining practices in South Africa are such that whilst individual operations are usually materially compliant, strict compliance can seldom be demonstrated and is rarely enforced by the relevant regulatory authorities. Where minor/nominal non-compliance occurs, this is generally not considered material to the continuation of future operations. In cases where regulatory authorities are concerned about particular non-compliance issues, a negotiated realistic way forward can usually be agreed upon.

Environmental liability provisioning in the South African mining industry is a condition of the EMP process, which must be agreed with the relevant regulatory authorities (mainly DME and DWAF) and has to be approved by the South African Revenue Services ("SARS"). Based on South African's environmental and regulatory requirements, monies are accrued based on the estimated environmental rehabilitation costs over the operating life of a mine. Further, annual contributions are made to an environmental trust fund, which provide for the estimated cost of pollution control and rehabilitation at the end of the LoM. SARS approves such annual contributions to the trust fund and requires the annual contributions be estimated on the basis of remaining liability divided by the expected remaining life of the operation.

For each of the PGM Assets, the lack of a water use licence ("WUL") is a significant issue. The inordinate delays in obtaining approval of water use licence applications ("WULA") has been raised as a serious issue of concern by the South African Chamber of Mines. Ongoing discussions are taking place with DWAF representatives. It is expected that the licences for Modikwa and Two Rivers will be processed faster than those for Nkomati, as no long term discharges are required and the pollution potential of platinum ore is generally less than that of the nickel ore.

11.3 Nkomati Mine

11.3.1 Environmental Policy and Management

Nkomati Mine commits to Avmin's environmental policy and strategy. The philosophy states 'Avmin is committed to the practice and management of its business in a manner compatible with the broader goals of the social, economic and natural environment and to the integration of Safety, Health and Environment ("SHE") into all its activities. SHE management will thus be regarded as key performance areas for all operations. This manifests itself in one of the six core values that get appraised during each employee's quarterly bonus assessment.

The mine has an electronically based Environmental Management System ("EMS") with an eventual aim of obtaining ISO14001 accreditation (probably in association with the expansion). Environmental management on site is implemented by the SHE Manager who is supported by a SHE assistant and an environmental officer. It is understood that environmental management of the expanded mine would use the same structure and systems.

11.3.2 Environmental Issues

A number of potential impacts have been identified in the EMPR but these are considered to be adequately controlled or of a low significance so are not discussed further. These include: dust related impacts along the access road (now tarred); damage to protected flora and fauna (commitment to relocate protected species in the footprint of Pit 3 should the expansion programme be advanced); and archaeology (no sites of conservation importance will be affected and one site has already been mapped in detail).

- **Water supply**: Currently Nkomati Mine has a water use permit to abstract 91Mlpa from DWAF. Should the proposed expansion be given approval water requirements are expected to average at 55Mlpa with a worst case scenario of 2,000Mlpa during a drought period. DWAF has declared the Komati River basin a water-stressed catchment and has imposed a moratorium on new water allocations from the river until the availability of water in the river system has been clearly defined in terms of the NWA. In respect of this key issue, Nkomati Mine has agreed to trade water with an existing agricultural user;
- **Water management:** DWAF has imposed strict water quality restrictions on the Nkomati Mine through the mine's current EMP and water permit. The restrictions require that the mine has no impact on water quality and there are no discharges of water from the mine. Of the potential pollution sources at the Nkomati Mine, the following are the most important: the tailings dam; the dirty-water holding ponds; and runoff from the shaft and plant areas.

  Full water containment in accordance with Regulation 704 and the permit is not possible. The current operation is making occasional discharges predominantly during the summer months. Both the current mine's and the expansion WULAs include the need for a discharge of excess storm water at certain times during the summer months.

  Current groundwater monitoring indicates that the Slaaihoek stream downstream of the mine regularly fails to comply with the limits set in the permit. Monitoring also shows that the majority of background sampling points are also non-compliant, probably due to the underlying geology and presence of intensive forestry in the catchment. This issue is currently the subject of on-going negotiation with DWAF and in the short term there is an urgent need to revise the current operation water balance to optimise water use and minimise the risk of discharges as far as is reasonably practical. There is a risk that DWAF may issue the licence with similar stringent water quality compliance limits to the existing permit. If this is the case Nkomati Mine will need to appeal to DWAF, as compliance will be impossible. This could result in either a requirement for additional water quality modelling or legal proceedings;
- **Acid rock drainage potential:** Currently mined material is high in sulphide minerals and therefore has a high potential to generate acid. This led to the design and construction of the first fully geomembrane lined tailings dam in South Africa and optimising waste rock backfill underground. Waste rock material with low sulphide content and adequate neutralising potential is unlikely to produce acid or mobilise heavy metals, but may still generate sulphate if the sulphides are oxidised and neutralised in situ.

Ongoing ground water monitoring has indicated some elevated sulphate levels down gradient of the mine infrastructure and the extent of any pollution plume has not been determined. Surface water monitoring indicates that the immediate receiving water body (Slaaihoek stream) has slightly elevated levels of sulphate (about 16mg/l compared to 8mg/l upstream – the permit stipulates 5mg/l).

The expansion open pit mining will result in significant amounts of waste rock. Static pollution potential test work indicated that some material might have the potential to generate acid.

Should sulphate levels in the Gladdespruit River start to increase, the mine has committed to implementing a management system at the point where the Gladdespruit River is diverted into the Gladdespruit irrigation canal (which feeds the dam). This would allow water with slightly higher sulphate concentrations to remain in the Gladdespruit River which joins the Komati River downstream of the dam. The downstream users here (irrigation farmers) are not as sensitive to sulphate as Eskom. These measures have been included in the feasibility estimate for the expanded mine;

- **Socio-economic:** A study has been carried out to look at possible social interventions for the Nkomati Expansion Project. This included economic profiling and a needs analysis of key areas around the mine. A number of possible projects are outlined in the report, some of which have been addressed already (see above). The report addresses some of the requirements of the Mining Charter and MPRDA and provides an outline structure for a social and labour plan; and
- **Closure planning:** A detailed decommissioning and closure plan has not been developed for the Nkomati Mine and it is still relying on the generic objectives laid out in the EMPR. The mine does have closure cost estimates and a rehabilitation plan for the pilot plant tailings dam and current waste rock dump. With the possible closure of the mine in four years, the development of a detailed closure plan including full stakeholder involvement to determine end land use objectives is considered a critical short term requirement. There is a significant dependence on mine-based salaries in the surrounding communities and the multiplier effect could lead to significant social liabilities. Quantification of this liability is not possible with the current level of information and until a final decision is made on the Nkomati Expansion Project. It is assumed that should the Nkomati Expansion not proceed, that Avmin's Community Investment Programme could be called upon for assistance.

11.3.3 Compliance

Nkomati Mine is currently operating in respect of an EMPR approved during June 1996, a 1965 Water Act Permit for abstraction approved in October 1997 and a WULA submission for permission to release return water under excessive rainfall conditions (pending - submitted August 2000).

Regular compliance audits have been conducted both by internal and external consultants every two years with the least external audit concluded in June 2003. Two main areas of non-compliance have been identified:

- The mine is making an occasional discharge from the tailings dam return water dam in contravention of its permit and EMPR commitments (zero discharge); and
- Water quality compliance limits set in the permit for the Slaaihoek stream are routinely exceeded. Discharge occurrences and water quality exceedences are reported to DWAF on a regular basis and motivation for the permit to be amended is included in the WULA for the current operations. This issue is discussed further below.

In the case of the proposed expansion, it is understood that further refinement of the LoM plan has led to the redesign of the open pits and waste rock dumps. These changes are not reflected in the approved EMPR (approved) and the WULA (pending). As soon as the plans are finalised, it will be necessary to apply for amendments to both the EMPR and water use licence. Specific issues include: ground water inflow predictions to the open pits; water balance and the risk of discharges during operation; risk of decant post-closure and its possible treatment; design of the waste rock dump's water management system to minimise pollution associated with potential acid rock drainage.

A number of generic commitments with respect to socio-economic issues are included in both the MSB and expanded mine EMPRs. In line with Avmin's policy, 1% of pre-tax profit will be put to Community Investment Programme which will enable community activities to be funded. A multi-cultural community development committee has been appointed at the mine with the objective of assessing all potential community activities. Development efforts will be implemented in partnership with EcoLink (a non governmental organisation). Activities already in place include:

- Support of Sizonlinda Primary School and community;
- Vacation work for disadvantaged students; and
- Miscellaneous contributions to schools and community awareness programmes.

11.3.4 Liabilities and Risks

The environmental liabilities for Nkomati Mine are as included in Table 11.1 below. These are currently provisioned for by annual contributions to the Nkomati Nature Conservation Trust. As at 1 January 2004 the balance of the trust fund was stated at ZAR2.2m which indicates a shortfall of some ZAR4.8m to be provided for over the remaining LoM. A recent external third party review indicated that the final closure liability could be of the order of ZAR8.5m which would indicate a shortfall of ZAR6.3m on closure. This has however not been verified in respect of variances from the base estimate and it is strongly recommended that this be revisited as part of the closure plan to confirm its validity.

In addition to the above Nkomati Mine expends some ZAR0.7m per annum for ongoing environmental work and also contributes 1% of pre-tax profit in respect of its Corporate Social Involvement programme.

In respect of the Nkomati Expansion Project the total incremental environmental liability is estimated at ZAR46.8m and effectively allows for incremental infrastructure and post closure treatment of possible decant from the open pit.

11.4 Modikwa Mine

11.4.1 Environmental Policy and Management

Modikwa Mine has an approved SHE Policy, which lays down various objectives relating to awareness and protection of the environment. In support of these objectives, Modikwa is working towards ISO14001 EMS accreditation. It has an electronic EMS based on the Isometrix system.

System audits have been conducted on a quarterly basis by Anglo Platinum and over the last year the site has improved from approximately 40% to over 75% compliance. A target of full system compliance by June 2004 has been set. To date no compliance audits have taken place so compliance with the commitments in the EMP has not been confirmed.

In support of the implementation of the EMS, Modikwa Mine has a full time Environmental Officer, who reports to the SHE Leader. The SHE Leader reports directly to the Business Leader (Mine Manager). The Environmental Officer is currently helped by one assistant (training and awareness) and it is planned to employ an environmental and occupational hygiene monitoring officer next year. In addition to these full time employees, each business unit has an environmental representative. Modikwa Mine has a full training centre which deals with induction and ongoing training (including environmental issues).

11.4.2 Environmental Issues

A number of potential impacts listed below have been identified in the EMPR but these are considered to be adequately controlled or of a low significance so are not discussed further. These include: dust related impacts (revegetation of the tailings dam and watering of the roads is occurring); damage to protected flora and fauna (awareness training and continuous rehabilitation); loss of land capability and erosion (the area was previously significantly disturbed and the mine is implementing some erosion control which is required due to the moderate to high erodablity of the soil); visual impact and archaeology.

- **Water Supply:** Modikwa Mine is supplied with raw water from the Olifants River by the Lebalelo Pipeline, which was constructed and operated by a Water Users Association predominately made up of the mines in the area. Additional make-up water is available from the dewatering of the underground workings. At present, the allocation from Lebalelo is not fully utilised but it is recognised that with the extensive development in the Eastern Limb of the BC, water restrictions are a possibility in the future. As part of the pipeline development, an agreement was reached that DWAF and the local authorities would be responsible for providing off takes to local communities for domestic supply purposes. Delays in community supply have lead to some local community unhappiness and the mine is considering providing certain communities with water. It is understood that such supply form part of the Social Economic Development Programme and form part of that budget;

- **Water management:** Although a revised WULA has been submitted, it is expected that the level of information may still not be sufficient to satisfy DWAF. The water balance does not reflect different rainfall and seasonal variations and does not appear to cover the entire current infrastructure. This will need to be updated both to satisfy DWAF and to enable its use as an ongoing management tool. The application also lacks detailed geotechnical information, pollution potential assessments of the mine residues (acid rock drainage and leach tests) and detailed closure predictions/management. These issues may cause delays in the application being processed;
- **Compliance with Regulation 704:** The various EMPR documents indicate a commitment to comply with this regulation but it is clear that although the tailing dam appears to be compliant, the shafts and waste rock dump areas are deficient. In some cases, clean water diversions have been inadvertently provided by roads (North Shaft waste rock dump) but in others there appears to be little or no control at all (South Shaft waste rock dump). The significance of these non-compliances is not considered material in the short term due to the low rainfall in the area and the reportedly low pollution potential of the material. A provision ZAR10m has been included in the current LoM plan and on-site equipment and waste rock can be used to construct the necessary facilities. The North Shaft has old empty pollution ponds which could be converted into storm water containment ponds for the shaft and possibly the waste rock dump. These factors may reduce the overall cost;
- **Ground water:** The aquifer underlying the site, although not of particularly good quality, is considered a sole source aquifer because of its contribution to community water supply in the area. With the mine having significant ground water inflow and a large tailing dam, dewatering and ground water contamination are considered possible risk issues. The mine also needs to improve its predictions on ground water decant (volumes and quality) from the shafts post-closure. Some information is being obtained by the monitoring of the discharge from Maandagshoek Shaft.

  Significant ground water contamination is unlikely however increased salinity levels (particularly sulphate) are likely to occur. Management has recognised the need for a ground water model to assess the potential for pollution during operation and post-closure of the mine;
- **Socio-economic:** Many of the requirements of the Mining Charter and the new MPRDA are being met but will need to be formalised in the form of a Social and Labour Plan. The mine will have five years from the date the Act comes into force to prepare this; and
- **Closure planning:** A detailed closure plan has not been developed for the site. A critical aspect of the closure planning is the need to agree an end land use with stakeholders. To ensure that ongoing rehabilitation and the annual review of closure costing is being evaluated appropriately, these end land uses need to be determined in the short term, rather than left until five years before closure. It is recommended that a preliminary closure plan be developed with a commitment to update the plan every 3 years.

11.4.3 Compliance

Modikwa Mine currently operates under an original EMPR approved in January 2001. Subsequent to this some five amendments have been submitted with four approved to cater for additional mining infrastructure. The pending fifth amendment is expected to be approved before end of 2004 and relates to reprocessing of the Maandagshoek Dump. A further prospecting EMPR was approved during July 2003. A WUL (third revision) was submitted in February 2003.

Modikwa Mine is actively practising environmental management to maintain compliance with its various approvals and its own policy. To achieve and maintain ISO14001 status it will need to show a high level of compliance with the various regulatory requirements with clear progress toward full compliance. One area of concern is the apparent lack of compliance with certain requirements of Regulation 704; particularly those relating to dirty water containment.

Modikwa has a Socio Economic and Development Leader which focuses on the following areas: school infrastructure and equipment; scholarships; water provision (to approximately 4,000 people); access road to communities where staff reside; agricultural development; sports activities; support of Tubatse HIV/AIDS structures; and establishment and maintenance of Companies Act Section 21 companies in the local communities.

The Social Economic Development co-ordinator (who reports to the CSI officer) is starting to address HIV/AIDS in the community. There is also an Empowerment Policy and tenders for services/supplies have been awarded to black economic empowerment ("BEE") companies. An employment equity group has just been set up by the mine and an employment equity plan has been submitted to the Department of Labour. Skills development is recognised as critical and is managed from the Human Resources department.

11.4.4 Liabilities and Risks

The environmental liability for Modikwa Mine is estimated at ZAR51.2m (Table 11.1). As at 1 January 2004 the trust fund had not been established for Modikwa Mine as stand-alone entity and as such the DME has preference that the liability is covered by the joint venture parent companies. In the absence of a final agreement a bank guarantee of ZAR0.8m has been submitted to the DME.

11.5 Two Rivers Project

11.5.1 Environmental Policy and Management

As this project is only at the feasibility stage a detailed management structure has not been developed but it is likely that a SHE manager would report to the Technical Services Manager who in turn reports to the Mine Manager. There is an intention to outsource environmental management activities e.g. monitoring. Avmin's SHE policy and strategy (see Nkomati above) will also be adopted.

11.5.2 Environmental Issues

A number of potential impacts have been identified in the EMPR but these are considered to be adequately controlled by the proposed EMP or of a low significance so are not discussed further. These includes: loss of land use potential; damage to protected flora and fauna; dust related impacts; and archaeology.

- **Water supply:** With a moratorium on new abstraction allocations, water for the mine project needs to be traded with existing lawful users. Two Rivers Project has two water sources (Impala Platinum water transfer from established water rights in the vicinity of Rhodium Reefs / Belivdere Farm and its own water rights transferred from the Dwars River Chrome Mine in the 2001 Sale & Purchase agreement). Taking into account the higher level of assurance needed for industrial use, as opposed to the originally registered agricultural use, a total of 2,200Mlpa is available to the mine. Two Rivers has agreements with its trading parties that the water entitlements will be transferred should the water use licence be approved;
- **Sensitivity of the receiving catchment:** The Klein Dwarsrivier is a relatively undisturbed tributary of the Dwarsrivier (and hence the Steelpoort River) and there are a number of sensitive downstream users, particularly agriculture. Preliminary predictions given in the EMPR and WULA indicate that some ground water inflow into the workings is likely and this could lead to as much as a 25% decrease in the base flow of the river (the impact on the regionally important Steelpoort River is not quantified). It is not clear how this reduction in base flow is affected by the increased head associated with tailing dam and what the overall impact on the catchment is likely to be both during operation and closure.

  Initial predictions on sulphate and nitrate plumes from the tailings dam have been determined and the predictions indicate no significant impact on the river during operation and post closure. The risks associated with the small waste rock dump have not been simulated and the risks associated with the predicted decant post closure have not been assessed.

  The EMPR commits to providing an alternative source of supply should any surrounding ground water users be affected. It is not clear where this supply would come from, considering the stressed nature of the catchment and at what cost this supply could be provided. Without further data and analysis, it is not possible to quantity future potential liabilities, however, with the expected low pollution potential and the commitment to develop a comprehensive water quality/quantity database for modelling purposes, this information gap is not considered critical and the current provisions are adequate for assessment purposes;
- **Water management:** A preliminary Reserve Determination has been approved by DWAF (November 2001). DWAF has requested further information regarding land ownership from Avmin (provided in June 2002). It should be noted that DWAF will not issue a licence without written agreement of the land owner. Therefore negotiations with Dwarsrivier Chrome Mine regarding ownership of parts of Portion 1 are critical (Portion 6 was secured in the 2001 Sale & Purchase Agreement, the additional land purchase agreements is presently being finalised by AVMIN legal services);

- **Socio-economic:** A detailed social and labour plan has not been prepared for the site. A number of generic commitments with respect to socio-economic issues are included in the EMPR. It is also understood that in line with Avmin's policy 1% of pre-tax profit will be put to Community Investment Programme which will enable community activities to be funded. Two Rivers commits to Avmin's policy and strategy regarding HIV/AIDS. It is understood that Two Rivers is proposing to use either the Possible Social Intervention report prepared on behalf of Nkomati Mine or the Anglo Platinum De Brochen Social Plan as a basis for the development of its plan. All relevant programmes, plans etc will need to be consolidated into a single Social and Labour Plan within 5 years of the MPRDA coming into force; and
- **Closure planning:** A detailed closure plan has not been prepared for the site and a critical aspect of the closure planning is the need to agree an end land use with stakeholders. To ensure that ongoing rehabilitation and the annual review of closure costing is being evaluated appropriately, these end land uses need to be determined in the short term, rather than left until five years before closure.

11.5.3 Compliance

The Two Rivers Project will operate under an EMPR approved during March 2003. An amendment to cater for open pit operations is planned to be submitted during November 2003 with approval anticipated by second quarter of calendar 2004. WULA (second revision) was submitted during April 2002 and remains pending. In respect of protected plant and animal species relocation these are expected to be applied for some three weeks prior to expected relocation. An approved grave relocation policy has been established, and applied in the relocation of 4 graves to date. It is anticipated that less than 50 graves will require re-location by March 2004. In this respect a public consultation process is underway.

Development of mining infrastructure will require some farm occupants to be relocated. The EMPR commits relocating these people in line with a draft programme based on the Restitution of Land Rights Act 22 of 1994; Land Reform (Labour Tenants) Act 3 of 1996; and Extension of Security of Tenure Act 62 of 1997.

Two destination sites have been identified (from numerous discounted alternatives) and formal agreements between Two Rivers and the affected families are currently being established. There is also a number of pending land claims registered with Land Affairs but not yet gazetted.

11.5.4 Liabilities and Risks

The environmental liabilities for the Two Rivers Project are as included in Table 11.1 below and amount to some ZAR19.6m. The estimate is not based on a detailed cost breakdown and, although considered adequate for an EMPR, will need to be refined as soon as the actual infrastructure is in place and thereafter on an annual basis. SRK note the following:

- The estimate in the EMPR is based solely on demolition and rehabilitation and does not take into account the remediation of any residual pollution (e.g. ground water). Backfilling of any voids is also excluded;
- The demolition costs appear to be low though a commitment to annually review these costs has been given in the EMPR;
- As open pit mining is now proposed and an additional provision for this will need to be determined. This is understood to be presently estimated at ZAR9m; and
- Ongoing rehabilitation of the tailings dam has been provided for in operating costs.

As at 1 January 2004 contributions to the trust fund amounted to some ZAR2.2m with the balance contributed over the remaining LoM.

11.6 Kalplats Project

In respect of the Kalplats Project, no significant environmental studies have yet been undertaken, save that required to undertake exploration and the collection of a bulk sample. SRK has been informed that no liability provisioning has been made in respect of the site, however this is unlikely to be significant.

11.7 Significant Exploration Properties

In respect of the Exploration Properties, SRK has not inspected the sites in Zambia nor Namibia. However, in this regard little impact is expected for the Otjikoto Project, Mwambashi Project and any such liabilities associated with Konkola North Project which were transferred as part of the privatisation programme.

11.8 Summary of Environmental Liabilities

The PGM Assets have addressed their own environmental and water management requirements. Cost items relating to standard environmental practice, which were included in the analysis, are not discussed here. General risks, which will require environmental management measures in addition to routine practices with potentially significant cost implications, are stated below.

Throughout this review process SRK has identified risks, which cannot be quantified definitively. In such cases, SRK has included indicative provisioning based on a qualitative view, or in areas where the risk is considered to be low, drawn attention to it without including a provision.

A key aspect in determining future liabilities is the possibility that water treatment may be required during operations or following decommissioning. Whilst this is not a requirement in instances to date, the potential for future requirements are dependent upon:

- The execution of both recently passed legislation and more stringent future legislation which imposes more costly water management requirements;
- Discharge criteria demanding potable water standards as opposed to more lenient general standards; and
- Tacit acceptance by various organisations of the concept of desalination and its increasing cost effectiveness as technology improves.

Based on the items identified above and discussions with the Companies, SRK has estimated that the Environmental Liability for the PGM Assets is as summarised in Table 11.1. The net difference will be funded from future contributions (included in the total working cost projections) to fund the total liability and these have been included in the FMs for each Tax Entity accordingly.

These estimates of environmental liability exclude any potential resale or salvage values, which may be realised during the rehabilitation process.

Table 11.1 Environmental Liabilities[1],[2]

PGM Assets	Total Liability (ZARk)	Trust Fund (ZARk)	Outstanding Liability (ZARk)	Closure Date (year)
Nkomati Mine	7.0	2.2	4.8	2008
Nkomati Expansion	46.8	0.0	46.8	2020
Modikwa Mine – Mineral Reserves	51.2	0.8	50.4	2010
Modikwa Mine – (Reserves + Resources)	51.2	0.8	50.4	2012
Two Rivers Project	19.6	2.2	17.4	2023
Avmin – excluding Nkomati Expansion	17.7	4.4	13.3	
Avmin – including Nkomati Expansion	64.5	4.4	60.1	
ARM Platinum	21.2	0.3	20.9	

(1) Additional costs included by SRK in the main cater for development of detailed closure plans, water related studies and social and labour plans, except for Modikwa Mine where ZAR10m is included for upgrading of the water infrastructure.

(2) Additional annual operating costs are ZAR679kpa for Nkomati Mine, ZAR1,200kpa for Modikwa Mine and ZAR620kpa for Two Rivers Project. At Modikwa Mine an additional ZAR6m has been budgeted for CSI and at Nkomati Mine and Two Rivers Project 1% of annual pre-tax profit will be allocated to CSI.

12. TECHNICAL-ECONOMIC PARAMETERS

12.1 Introduction

The following section includes discussion and comment on the technical-economic aspects of the LoM plans associated with the Tax Entities. Specifically, comment is included on the basis of projections, production schedules, operating costs and capital expenditures; these have been compiled into detailed TEPs on an annual basis. Key aspects associated with the generation of the TEPs and their derivations are discussed.

12.2 Basis of Valuation and Technical-Economic Input Parameters

The valuation of the Tax Entities as presented in Section 13, has inter alia been based on the LoM plans, the resulting production profiles and associated revenue streams from concentrate sales and metal sales, by-product credits, operating costs and capital expenditure profiles as provided to SRK by the Companies, reviewed and adjusted where appropriate. The generation of a LoM plan requires substantial technical input and detailed analysis and is critically dependent upon assumptions of the long-term commodity prices and sustained operating expenditure and the respective impact on cut-off-grades, potential expansion or reduction of the Mineral Resource and Mineral Reserve and the return on capital expenditure programmes.

The basis of forward projections of operating costs for mature mining operations are generally based on the previous financial year's performance, with certain modifications for inflation, projected improvements in productivity and other cost-reduction initiatives. In the case of development projects, TEPs are invariably based on recently completed feasibility studies.

Where warranted, following its independent review and post discussions with the Companies, SRK has adjusted the assumed operating costs to account for future operating conditions (i.e. tonnage contribution from various ore sources and mining methods and mineability) and taking cognisance of its view on productivity initiatives.

Unless otherwise stated, operating costs comprise:

- **Cash Cost Components**: namely direct mining costs, direct processing costs, direct general and administration costs, consulting fees, management fees, transportation, treatment charges, refining charges and profit sharing charges;
- the incremental components, including royalties but excluding taxes paid, required to yield **Total Cash Cost.** *Royalties in this regard exclude any potential new mineral royalties applicable to the South African* Assets;
- the incremental components, including terminal separation benefits, reclamation and mine closure costs (the net difference of the total environmental liability and the current trust fund provision) but excluding non cash items such as depreciation and amortisation. Incrementally these cash expenditures summate to yield **Total Working Costs;** and
- **Total Costs:** the summation of total working costs, net movement in working capital and capital *expenditure.*

In addition to long-term capital projects, the LoM capital expenditure programmes generally include significant detail based on approved expenditure programmes (typically five-years). Where warranted, SRK has made provision over and above these expenditures, specifically, for example, where no detail is available beyond this five-year period for additional infrastructure considered essential to implement the LoM plans. Capital provisioning for all assets is not provided for the first year due to a detailed capital budget and is discontinued two-years prior to the projected closure dates. Environmental provisions have been included in the operating costs as they are confirmed as necessary contributions to the environmental fund. All closure costs are to be expended in the year of final production. Further, SRK considers that there will be potential opportunities to realise salvage values on closure, although owing to the indeterminate nature of estimating such values these have been excluded from the LoM projections included herein.

12.3 Technical-Economic Parameters

The TEPs have been provided to the Companies for confirmation of cash flow projections and include:

- *Concentrate and commodity production profiles from all ore sources;*
- Total Working Costs profiles as previously defined; and
- Capital Expenditure Profiles.

The TEPs are detailed in Tables 12.1 to 12.5 for each Tax Entity. All expenditures are stated in financial years and 1 January 2004 money terms. Note that in all instances Total Working Costs stated are exclusive of by-product credits.

Table 12.1 Nkomati Tax Entity: TEPs – expenditures 1 January 2004

Period	Concentrate Sales (t)	Concentrate Grade (%Ni)	(%Cu)	(%Co)	(4Eg/t)	Total Working Costs (ZARm)	Capital Expenditure (ZARm)	Total Expenditures (ZARm)
2004[1]	22,793	9.79%	5.39%	0.45%	24.2	106.9	1.9	108.8
2005	51,975	9.73%	5.89%	0.42%	26.9	235.5	8.4	243.9
2006	44,133	9.75%	5.82%	0.42%	27.4	224.3	4.2	228.6
2007	45,583	9.66%	6.14%	0.41%	26.9	228.0	2.4	230.4
2008	2,135	9.51%	6.47%	0.43%	29.8	19.5	0.0	19.5
2009	0	0.00%	0.00%	0.00%	0.0	–6.3	0.0	–6.3
Total	**166,618**	**9.72%**	**5.88%**	**0.42%**	**26.7**	**808.0**	**16.9**	**824.9**

[1] 6 months forecast to 30 June 2004.

Table 12.2 Nkomati Tax Entity (Expansion Project): TEPs – expenditures 1 January 2004

Period	Nickel Sales (t)	Copper Sales (t)	Cobalt Sales (t)	4E Sales (kg)	Total Working Costs (ZARm)	Capital Expenditure (ZARm)	Total Expenditures (ZARm)
2004[1]	0	0	0	0	11.7	1.3	13.0
2005	0	0	0	0	30.3	906.7	937.0
2006	0	0	0	0	108.2	1,383.6	1,491.7
2007	10,016	4,990	455	1,182	571.5	19.0	590.5
2008	13,332	5,911	728	1,924	849.2	86.6	935.7
2009	14,981	5,403	745	2,221	926.8	57.6	984.4
2010	14,447	5,097	725	2,444	932.3	44.1	976.4
2011	14,119	5,403	740	2,473	922.3	37.8	960.1
2012	14,999	6,286	802	2,586	928.7	14.3	943.0
2013	17,165	6,839	891	2,688	968.3	42.5	1,010.8
2014	19,427	8,275	1,004	2,871	1,015.6	15.5	1,031.1
2015	16,294	7,485	946	2,810	951.9	24.9	976.8
2016	16,242	6,493	874	2,475	907.3	22.6	929.9
2017	16,259	6,421	859	2,403	889.2	27.0	916.1
2018	17,044	6,615	876	2,525	832.8	28.3	861.1
2019	17,091	7,481	907	2,665	710.6	7.9	718.5
2020	15,561	7,501	1,175	3,326	697.2	30.6	727.8
2021	0	0	0	0	105.3	2.4	107.7
2022	0	0	0	0	16.9	0.0	16.9
Total	**216,979**	**90,202**	**11,728**	**34,594**	**12,376.0**	**2,752.5**	**15,128.5**

[1] 6 months forecast to 30 June 2004.

Table 12.3 Modikwa Tax Entity (Mineral Reserves): TEPs – expenditures 1 January 2004

Period	Concentrate Sales (t)	Concentrate Grade (4Eg/t)	Total Working Costs (ZARm)	Capital Expenditure (ZARm)	Total Expenditures (ZARm)
2004[1]	32,205	162	513.5	16.6	530.1
2005	70,068	166	881.5	122.3	1,003.8
2006	70,131	166	878.6	162.6	1,041.2
2007	70,650	165	877.0	127.4	1,004.4
2008	69,648	166	851.9	120.2	972.1
2009	57,757	170	707.8	81.0	788.7
2010	34,598	174	415.8	28.1	444.0
2011	0	0	–33.3	0.0	–33.3
Total	**405,056**	**167**	**5,092.8**	**658.2**	**5,751.1**

[1] 6 months forecast to 30 June 2004.

Table 12.4 Modikwa Tax Entity (Mine Mineral Reserves + Mineral Resources): TEPs – expenditures 1 January 2004

Period	Concentrate Sales (t)	Concentrate Grade (4Eg/t)	Total Working Costs (ZARm)	Capital Expenditure (ZARm)	Total Expenditures (ZARm)
2004[1]	32,205	162	512.0	16.6	528.6
2005	70,068	166	880.0	122.3	1,002.3
2006	70,131	166	877.0	162.6	1,039.7
2007	70,650	165	875.4	127.4	1,002.8
2008	69,648	166	850.3	120.2	970.5
2009	69,594	166	845.5	95.1	940.5
2010	69,594	166	847.3	85.0	932.4
2011	69,594	166	847.4	42.0	889.4
2012	18,959	166	214.9	5.2	220.1
2013	0	0	–21.1	0.0	–21.1
Total	**540,443**	**166**	**6,728.7**	**776.5**	**7,505.2**

(1) 6 months forecast to 30 June 2004.

Table 12.5 Two Rivers Tax Entity: EPs – expenditures 1 January 2004

Period	Concentrate Sales (t)	Concentrate Grade (4Eg/t)	Total Working Costs (ZARm)	Capital Expenditure (ZARm)	Total Expenditures (ZARm)
2004[1]	0	0	23.5	396.3	419.8
2005	14,041	190	260.7	716.0	976.7
2006	40,494	190	485.6	123.9	609.5
2007	40,315	190	476.9	85.3	562.2
2008	37,432	190	448.6	136.3	585.0
2009	37,524	190	444.4	101.0	545.3
2010	38,923	190	440.8	97.2	538.0
2011	38,888	190	422.2	58.8	481.0
2012	40,058	190	423.6	110.3	533.9
2013	40,769	190	423.4	114.5	537.9
2014	38,454	190	419.9	38.3	458.2
2015	37,798	190	422.9	69.3	492.2
2016	36,099	190	408.6	36.8	445.4
2017	35,401	190	403.8	84.7	488.5
2018	33,558	190	397.9	28.2	426.1
2019	33,837	190	395.0	88.6	483.6
2020	36,116	190	403.9	76.1	480.0
2021	35,044	190	399.0	38.3	437.3
2022	38,131	190	408.2	70.8	479.0
2023	26,174	190	288.4	25.2	313.5
2024	0	0	–50.3	0.0	–50.3
Total	**679,056**	**190**	**7,747.2**	**2,495.7**	**10,242.9**

(1) 6 months forecast to 30 June 2004.

12.4 Macro-Economic and Commodity Prices

The following figures present historical statistics and forecast statistics (Deutsche Bank) for both macro-economics and commodity prices presented in nominal US$ and ZAR terms per unit. The time line as presented in years includes the following:

- Historical statistics to March 2004 presented in annual calendar year periods; and
- Forecast statistics from 1 January 2004 to 30 June 2025 in financial year periods (ending 30 June).

Table 12.6 also presents a summary of the actual historical statistics for the following:

- The past five years on a calendar year basis;
- The next five years on a financial year basis;

- The average macro economic parameters and commodity prices for the month of January 2004. These parameters have been employed in an alternative case to indicate the effect on the valuation assuming purchase price parity principles and is reported in Section 13.0 and 14.0 of this CPR.

Table 12.6 Historical and Forecast Macro-Economic and Commodity Prices

Year	Macro-Economic Data			Commodity Prices								
	(US$:ZAR)	(USCPI) (%)	(SACPI) (%)	Pt (US$/oz)	Pd (US$/oz)	Rh (US$/oz)	Au (US$/oz)	Ru (US$/oz)	Ir (US$/oz)	Ni (US$/lb)	Cu (USc/lb)	Co-99.3 (US$/lb)
Historical												
1999	6.12	2.19%	5.21%	378	362	907	279	40	415	2.73	71	15.41
2000	6.95	3.37%	5.37%	549	691	1,993	279	129	415	3.92	82	13.40
2001	8.59	2.83%	5.70%	533	612	1,603	271	131	413	2.70	72	9.66
2002	10.52	1.59%	9.18%	542	339	838	310	66	293	3.07	71	6.84
2003	7.55	2.27%	5.81%	694	203	530	364	35	93	4.37	81	9.86
2004[1]	6.81	1.83%	4.18%	862	233	643	405	55	113	6.75	124	25.92
Future												
2004[2]	7.80	1.38%	2.55%	698	227	570	366	30	83	3.79	82	8.04
2005	9.01	1.03%	4.10%	606	298	833	386	32	87	3.59	95	8.13
2006	10.04	1.00%	4.77%	536	357	1,250	390	32	88	3.63	96	8.21
2007	10.66	1.00%	4.50%	515	381	1,546	394	32	89	3.66	97	8.29
2008	11.21	1.00%	4.50%	520	385	1,561	398	33	90	3.70	98	8.37
2009	11.25	1.00%	4.50%	526	389	1,577	402	33	91	3.74	99	8.46

Year	Macro-Economic Data			Commodity Prices								
	(US$:ZAR)	(USCPI) (%)	(SACPI) (%)	Pt (ZAR/oz)	Pd (ZAR/oz)	Rh (ZAR/oz)	Au (ZAR/oz)	Ru (ZAR/oz)	Ir (ZAR/oz)	Ni (ZAR/lb)	Cu (ZAR/lb)	Co-99.3 (ZAR/lb)
Historical												
1999	6.12	2.19%	5.21%	74,394	71,214	178,306	54,823	7,851	81,573	36,766	9,623	239,364
2000	6.95	3.37%	5.37%	122,637	154,297	445,135	62,322	28,793	92,690	60,035	12,598	250,135
2001	8.59	2.83%	5.70%	147,181	169,168	442,857	74,869	36,306	114,029	51,115	13,562	261,391
2002	10.52	1.59%	9.18%	183,254	114,738	283,533	104,907	22,266	99,011	71,272	16,405	273,154
2003	7.55	2.27%	5.81%	168,534	49,277	128,788	88,292	8,500	22,584	72,765	13,439	285,446
2004[1]	6.81	1.83%	4.18%	188,713	50,917	140,714	88,548	12,109	24,802	101,227	18,554	298,291
Future												
2004[2]	7.80	1.38%	2.55%	175,042	56,926	142,942	91,659	7,464	20,747	65,130	14,058	311,714
2005	9.01	1.03%	4.10%	175,597	86,335	241,446	111,797	9,152	25,281	71,332	18,866	325,741
2006	10.04	1.00%	4.77%	172,924	115,283	403,490	125,823	10,300	28,452	80,281	21,233	340,399
2007	10.66	1.00%	4.50%	176,608	130,690	529,825	134,929	11,045	30,512	86,091	22,770	355,717
2008	11.21	1.00%	4.50%	187,578	138,807	562,733	143,309	11,731	32,407	91,438	24,184	371,725
2009	11.25	1.00%	4.50%	190,129	140,696	570,388	145,259	11,891	32,848	92,682	24,513	388,452

Figure 12.1 Macro-Economic: historical and forecast statistics

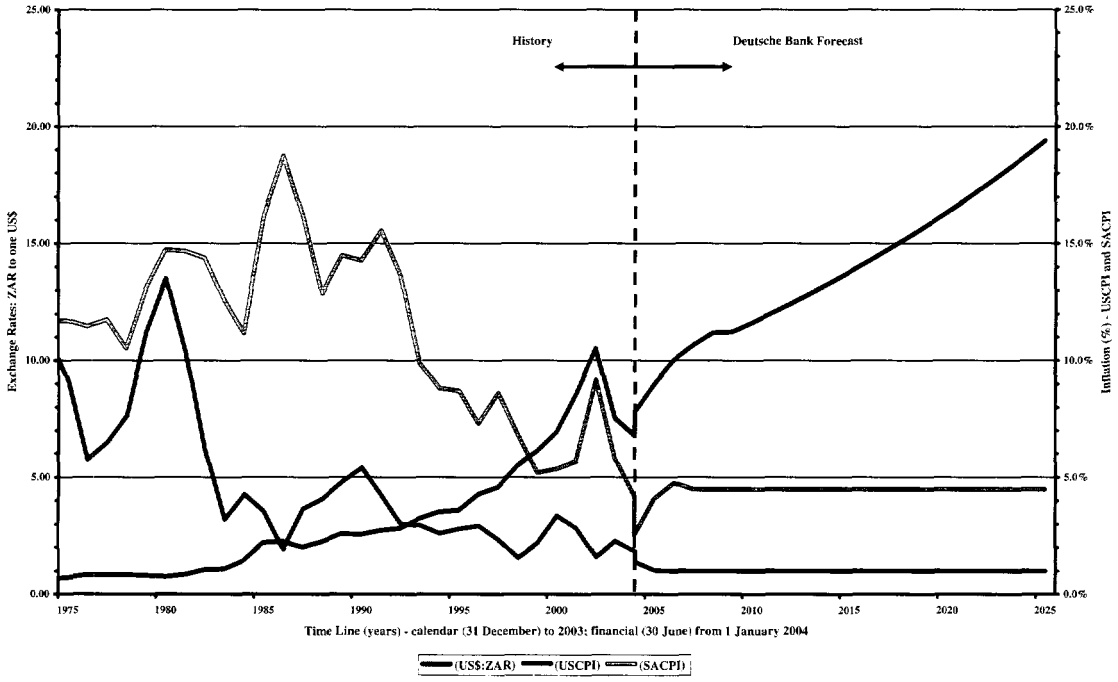


Figure 12.2 Platinum Price: historical and forecast statistics

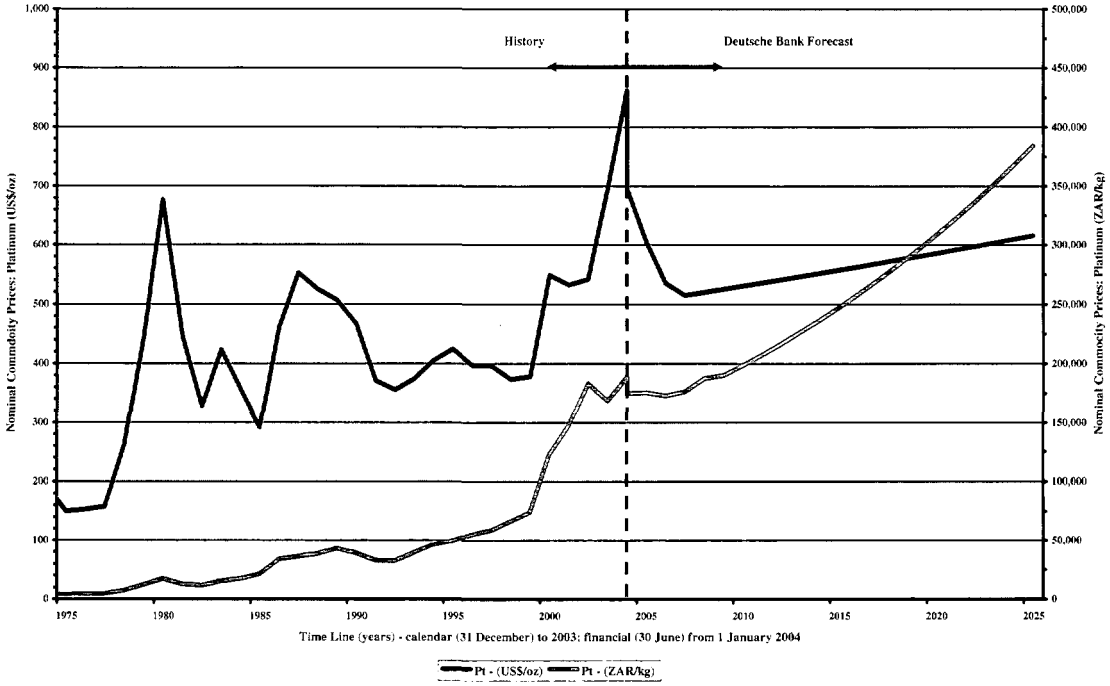


Figure 12.3 Palladium Price: historical and forecast statistics

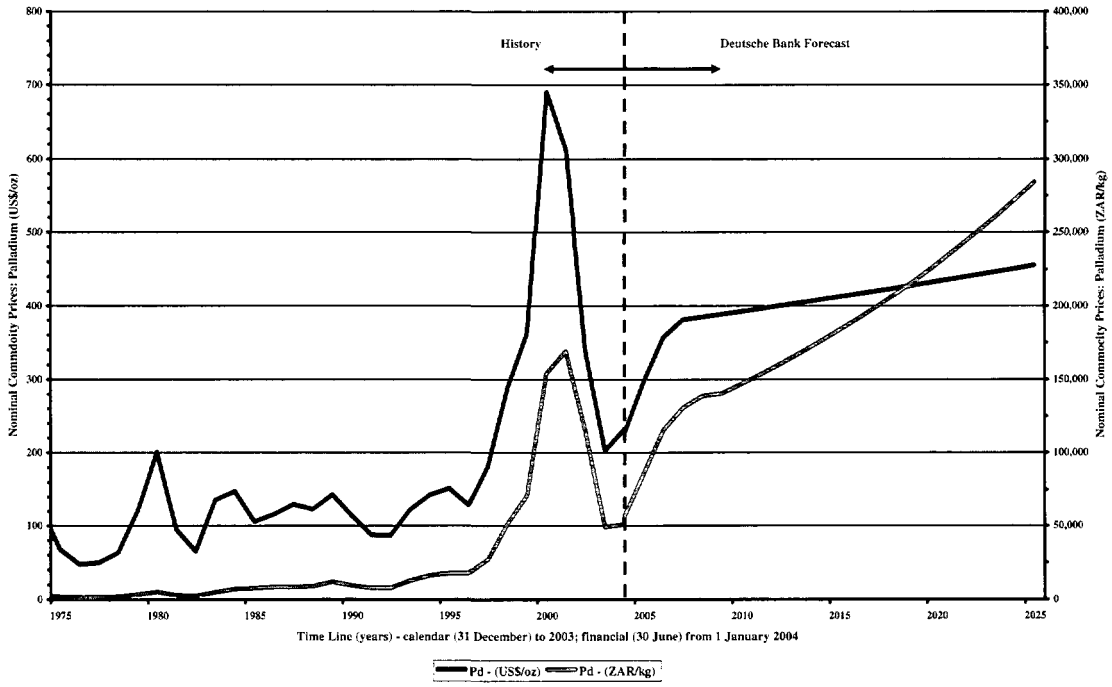


Figure 12.4 Rhodium Price: historical and forecast statistics

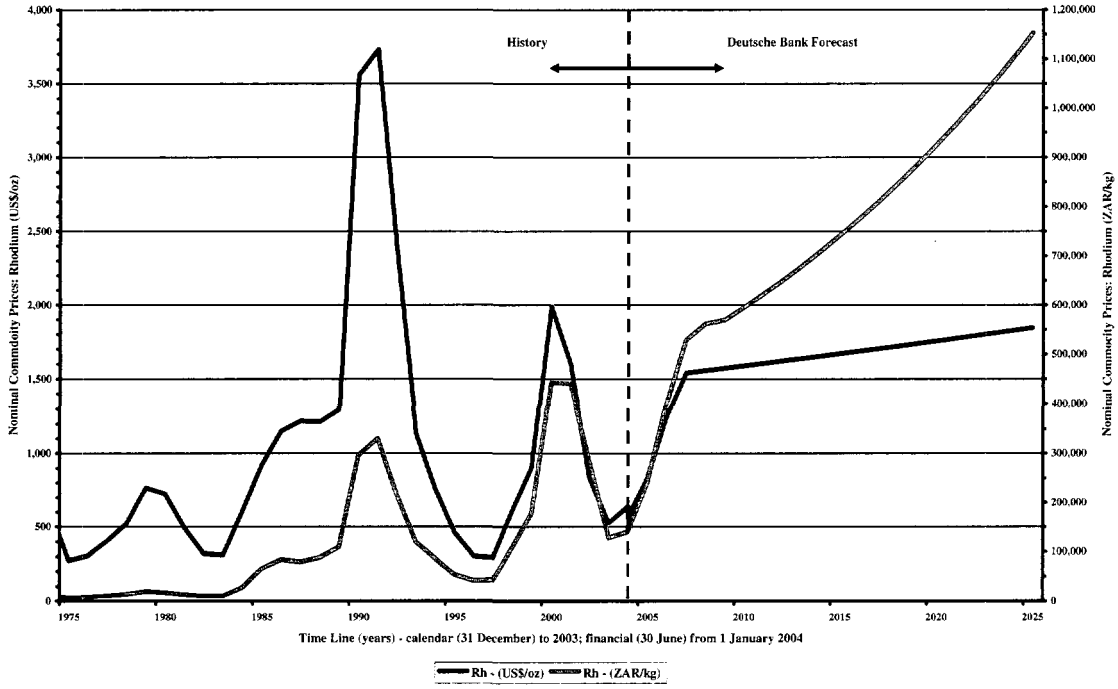


Figure 12.5 Gold Price: historical and forecast statistics

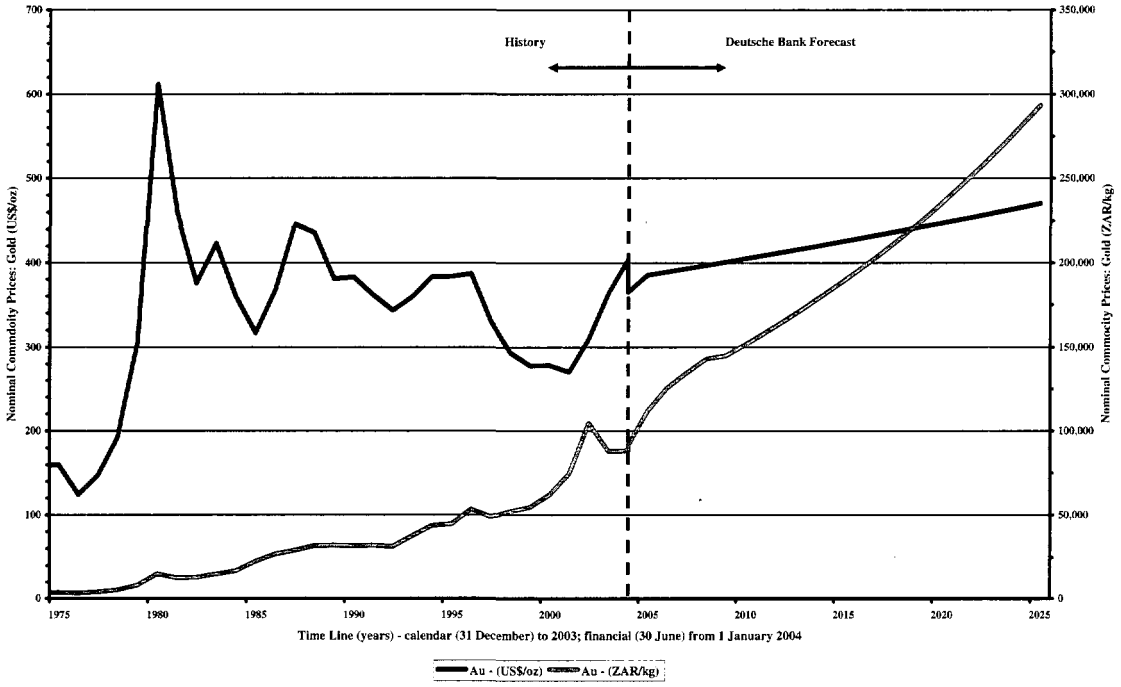


Figure 12.6 Ruthenium Price: historical and forecast statistics

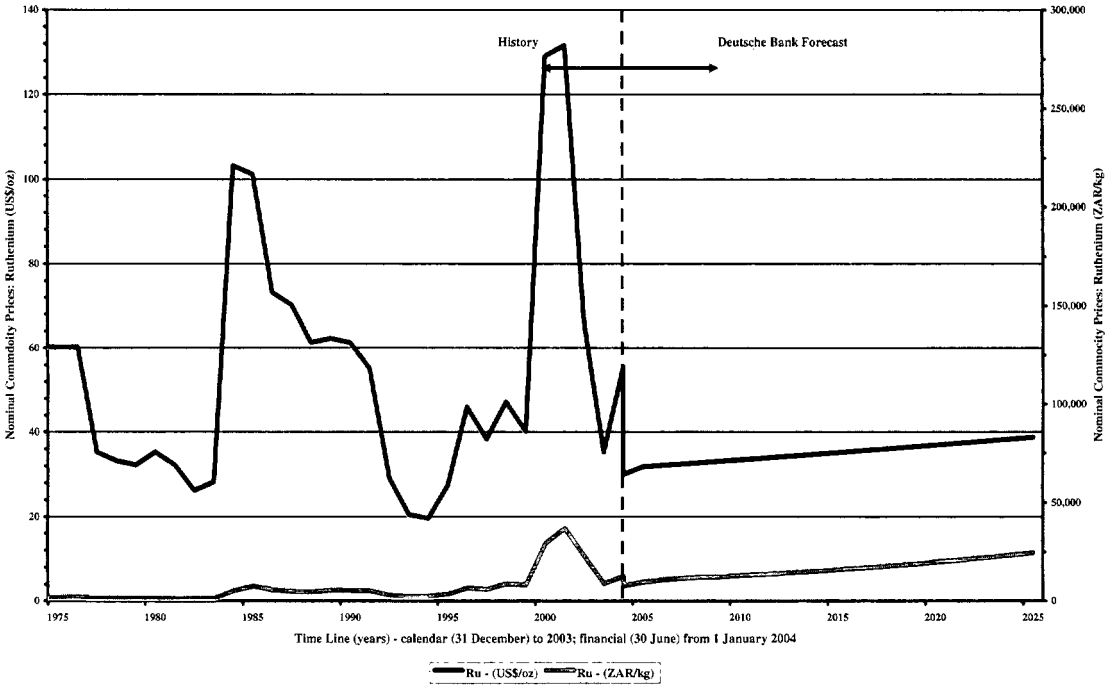


Figure 12.7 Iridium Price: historical and forecast statistics

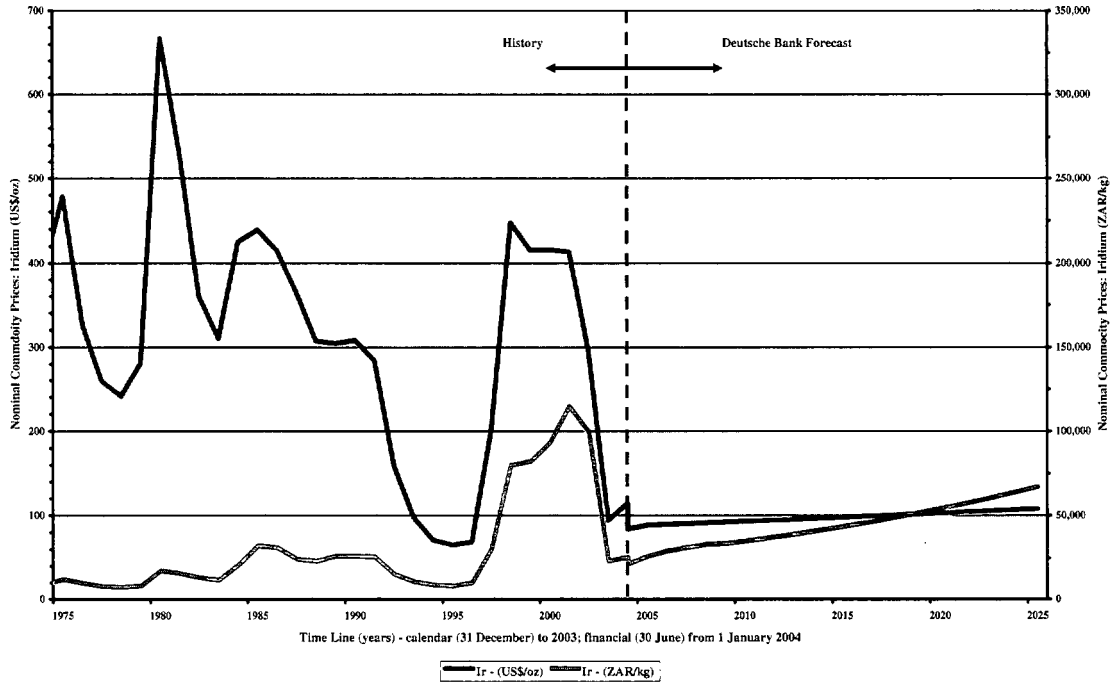


Figure 12.8 Nickel Price: historical and forecast statistics

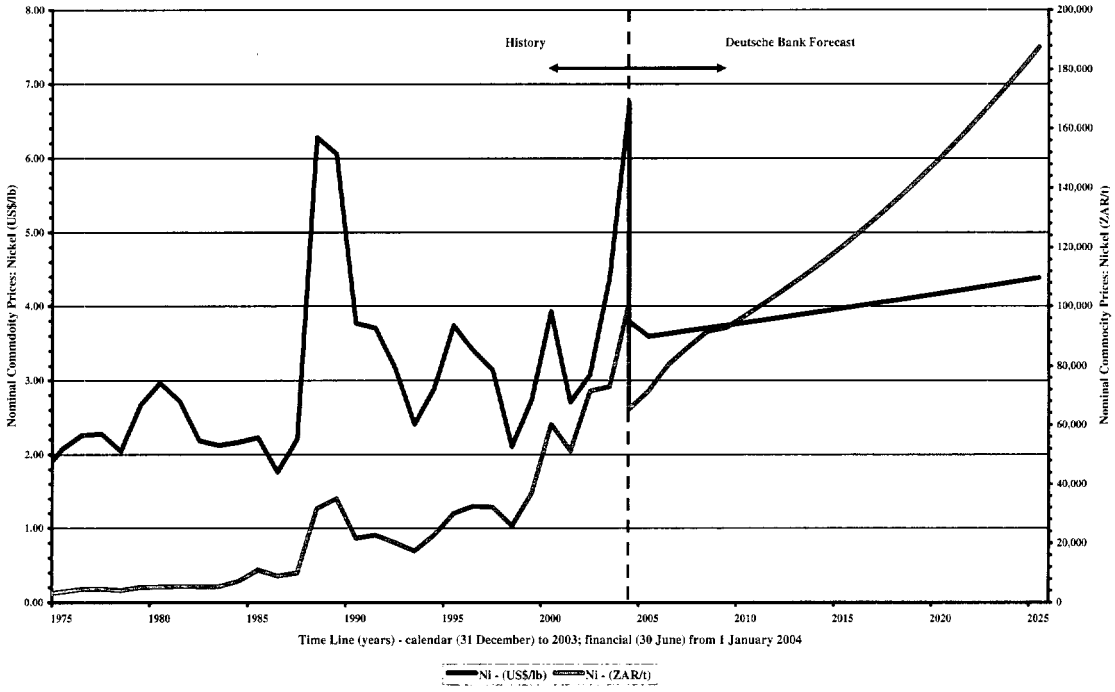


Figure 12.9 Copper Price: historical and forecast statistics

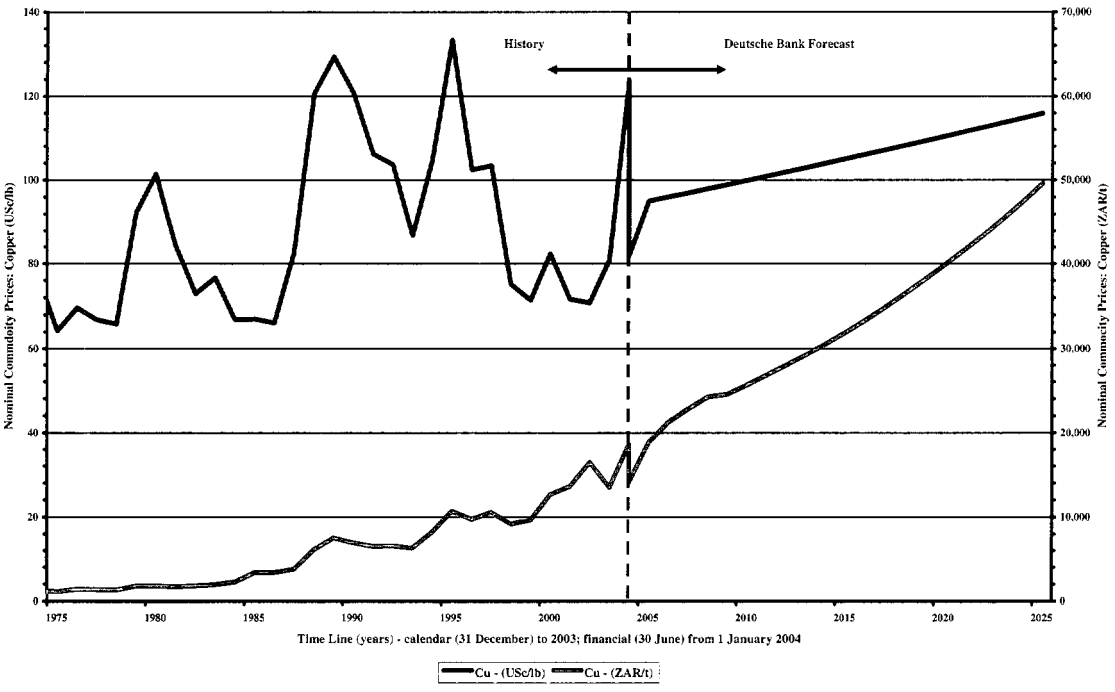
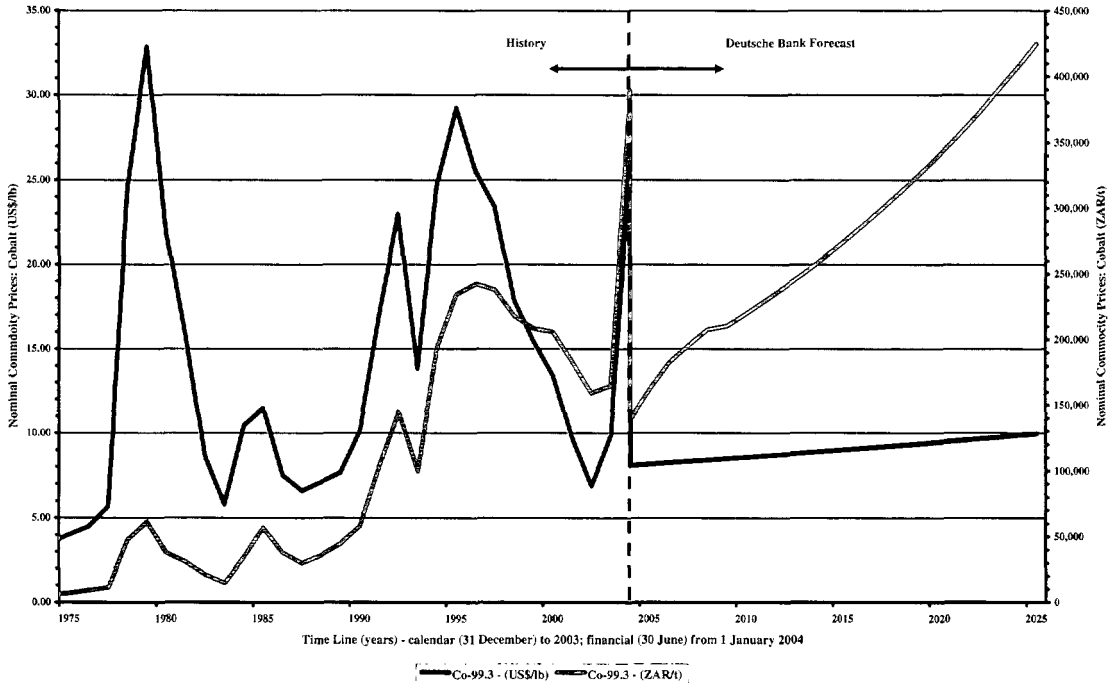


Figure 12.10 Cobalt Price: historical and forecast statistics



12.5 Special Factors

SRK has included its view on the achievement of the LoM plans and the appropriateness of the Mineral Reserve statements when presenting the data in Sections 4, 12 and 13. At the time of writing SRK considered these projections to be both technically and economically achievable.

In all likelihood many of the identified risks and/or opportunities will have impact on the cash flows as presented in Section 13, some positive and some negative. The impact of one or a combination of risks and opportunities occurring cannot be specifically quantified to present a meaningful assessment. SRK has however provided sensitivity tables for single and multi parameters. The sensitivity range covers the anticipated range of accuracy in respect of commodity prices, operating expenditures and capital expenditure projections.

Where specific technical issues have arisen as part of the review process, SRK has given an indication of the likely impact on resulting NPV's and other financial criteria accordingly.

12.5.1 General Risks and Opportunities

The PGM Assets are subject to certain inherent risks, which apply to some degree to all participants of the South African mining industry. These include:

- **Commodity Price Fluctuations:** These may be influenced inter alia, by supply and demand for base metals, the consumption of certain PGE metals in production of catalytic converters and demand for precious metals in jewellery manufacturing;
- **Exchange Rate Fluctuations:** Specifically related to the relative strength of the US$, the currency in which commodity prices are generally quoted. During the period between 2001 and 2003 the US$:ZAR exchange rate has ranged between 11.68:1 ZAR:US$ and 6.54 ZAR:US$;
- **Inflation Rate Fluctuations;**
- **Country Risk:** Specific country risk including political and economic stability in the long-term;

- **Legislative Risk:** changes to future legislation (tenure, mining activity, labour, health and safety and environmental) within South Africa;
- **Exploration risk:** Resulting from the elapsed time between discovery of deposits, development of economic feasibility studies to bankable standards and associated uncertainty of outcome;
- **Environmental Liability Risk:** The inability of the PGM Assets to fund the balance of their environmental liabilities from estimated operating cash flows, should operations cease prior to the stated LoM. This would result in an outstanding liability since the estimated rehabilitation expenditure exceeds the amounts available in the respective rehabilitation trust funds as at 31 December 2003; and
- **Mining Risks:** Specifically Mineral Reserve estimate risks, uninsured risks, industrial accidents, labour disputes, unanticipated ground water conditions, human resource management, health and safety performance (including the impact of HIV/AIDS).

In contrast, whilst certain of the above reflect opportunities in addition to risk, SRK recognise that as of yet, an un-quantified opportunity is the beneficial application of new technology.

12.5.2 Operational Specific Risks and Opportunities

In addition to those stated above, the PGM Assets are subject to certain specific risks and opportunities, which independently may not be classified to have a material impact (i.e. likely to affect more than 10% of the Tax Entities' annual pre-tax profits), but in combination may do so. These are as follows:

Risks:

- A degree of risk associated with non-achievement of significantly improved production targets as compared to historical performance at Modikwa Mine. Specifically this relates to the following:
  - the planned reduction in stoping width from the current 115cm to 106cm with concomitant increase in situ mined grade,
  - the increased development necessary to deliver the required pre-developed Mineral Reserve equating to 12 months of production by 30 June 2004;
  - the introduction of the single line raising mining method;
  - increasing stope production to the necessary 46,500m2pm;
  - reduction in operating expenditures in accordance with the planned reduction in contracted labour;
  - the attainment of efficient operation of the natural fines circuit. Should this not be achieved then the projected increases in recovery and concentrate grade are unlikely to be achieved;
- A degree of risk associated with the Two Rivers Project, specifically achievement of the proposed construction schedule and primary assumptions as reflected in the latest Feasibility Study. Further, execution delays may well continue should the current appreciation of the ZAR against the US$ prevail for the foreseeable future; and
- A degree of risk associated with Nkomati Expansion Project and the introduction of metallurgical flowsheets which on the proposed basis has not been achieved as a single production stream elsewhere to date.

Opportunities:

- A opportunity to significantly enhance the value of Modikwa Mine by
  - consideration of strategic planning issues external to the current short term 5-year planning horizon;
  - potential to exploit the Merensky Reef and other non LoM Mineral Resources;
- A opportunity to improve performance of the Two Rivers Project by:
  - Exploitation of the Merensky Reef,
  - Establishing a second open pit situated to the south of the currently proposed operation,
  - Introduction of a DMS circuit to reduce waste from the milling circuit and hence increase milled grade,
  - Bringing to account certain of the currently identified non-LoM Mineral Resources;
- A opportunity to develop certain of the EPs specifically the Otjikoto property on completion of the latest drilling campaign and successful outcome of pre-feasibility studies;

- A opportunity to dispose or joint venture certain of the EPs and land holding positions as currently held by Avmin; and
- A opportunity to improve the valuation of the Nkomati Mine through:
  - Assessing the potential to increase the MSB Mineral Resource through interpretation of the latest drilling data;
  - Discovery of additional MSB material through successful exploration external to the currently defined lenses;
  - Increasing extraction of the underground MMZ Mineral Resource from the current 13% of available in-situ tonnage;
  - Long term sustainability of the currently experienced positive metal reconciliation factor of 106%;
  - Increasing underground mining production from the currently proposed 27ktpm of ore to 125ktpm of ore as envisaged in the original Feasibility Study;
  - Metallurgical processing of the massive and semi-massive chromitites.

13. PGM ASSETS VALUATION

13.1 Introduction

The following section presents discussion and comment on the valuation of the Tax Entities. Specifically, comment is included on the methodology used to generate the TEMs and to establish the Base Cases including basis of valuation, valuation techniques and valuation results.

In complying with Section 12.14 of the JSE listing Requirements, specifically the non-technical requirements of 12.14(b), SRK has relied upon the Companies and Deutsche Bank (South Africa) for certain inputs to the FMs. These inputs are duly acknowledged by SRK. Further in reproducing the results of the FMs in this CPR, SRK provides assurances to the Directors of the Companies, that the technical-economic inputs: Sections 12.14(b) (i, ii, iii, v, vi and vii) including operating costs, capital expenditure and saleable product profiles of the Tax Entities, as provided to and reviewed by SRK, are accurately incorporated into the FMs. SRK also duly acknowledge the Companies that the remaining inputs to the FMs required in compliance with Section 12.14 (b) (iv, viii, ix, x, xi, xii, xiii, xiv, xvi, xv, xvi, xvii and xviii) are accurately reflected in the FMs.

13.2 Valuation Methodology

The valuation methodology for the Companies is based on a sum of the parts approach comprising NAVs for the PGM Assets and supplemental information as provided by the Companies (balance sheet items and interests in listed and unlisted companies).

The NAV for the PGM Assets have been derived using DCF techniques applied on a post-tax pre finance basis for the individual Tax Entities. These are based on the various LoM plans, including the resulting TEPs (Section 12.0), and where appropriate are subdivided into valuations based on Mineral Reserves alone and Mineral Reserves and Mineral Resources where such LoM plans have been generated.

In respect of non-LoM Mineral Resources and the EPs and for indicative purposes only these have been valued separately, based on values per unit of commodity and appropriate factors for likely extraction. Further, SRK has been supplied with the companies estimates of values for the Land Holding Positions which are largely based on historical expenditures to date and certain planned future expenditures.

The post-tax pre-finance cash flows from each Tax Entity have been developed on the basis of the commodity price and macro-economic projections as presented in Table 1.2. For each tax entity SRK have developed FMs which are based on: annual cashflow projections ending 30 June; and TEPs stated in 1 January 2004 money terms. As the valuation date is 1 January 2004, the cashflow projection for Year 1 includes projections for 6 months.

At the time of writing no indication of the sensitivity of the Mineral Reserve or LoM plans to commodity prices were available. Variances in commodity prices exist between those used to derive Mineral Reserves, the current spot market prices and that used for the financial valuation. The impacts on the individual valuation is considered limited as, either grade is not significantly variable across the deposits (Modikwa Mine and Two Rivers Project) or due to finite life (Nkomati Mine Base Case). Further, as the generation of LoM plans is constrained by the annual planning process and planning periods (different year end), SRK has based its review on the latest available information as presented by the Companies.

13.3 Basis of the Valuation of the PGM Assets

In generating the FMs and deriving the Base Case valuations, SRK has:

- Incorporated certain macro-economic parameters (Table 1.1) as provided by Deutsche Bank (South Africa);
- Incorporated the commodity price forecasts (Table 1.1) as provided by the Financial Advisors;
- Determined a Base Case nominal WACC based discount factor of 14.0%, as provided by Deutsche Bank (South Africa), which has been applied to Nkomati Mine. Risk premiums of 2% has been applied to derive NPV's for Modikwa Mine, and 4% for both the Nkomati Expansion Project and Two Rivers Project. The WACC has been calculated taking into account the Companies average tax rate; RSA inflation rate and debt/capital ratio.The after tax cost of debt and the cost of equity multiplied by the debt/capital ratio results in an appropriate WACC for the Companies;
- Relied upon the Companies for all accounting inputs as required for the generation of the FMs –Table 13.1 below;
- Relied upon the Companies that the calculation of nominal cash flows is in accordance with the fiscal regime within which the Tax Entity operates and are accurately reflected in the FMs;
- Excluded any potential new order mineral royalties which may be applied to the PGM Assets located in South Africa. At the time when this CPR was generated, no formal agreement and/or notification has been put in place with regard to when or if mining companies will be subjected to this revenue based royalty. The materiality of implementing revenue based royalties can be assessed by viewing the sensitivity tables provided in this Section where a percentage decrease between 0% and -5% on the revenue line indicates the impact on NPV;
- Reported a DCF valuation, dated 1 January 2004 for the Base Case LoM plans, which include Mineral Reserves only. For comparative and compliance purposes only, SRK also report NPV's which on a simplistic basis, represent cash flows based on Mineral Reserves and Mineral Resources (specifically for Modikwa Mine);
- Performed sensitivity analyses to ascertain the impact of discount factors, commodity prices, total working costs and capital expenditures;
- No salvage value has been included for plant and equipment on cessation of operations;
- The valuation of the Tax Entities is on a stand alone basis and no STC has been incorporated into the projections;
- Generated a valuation of the Non-LoM Mineral Resources associated with the PGM Assets and the Exploration Properties;
- Included the companies valuation of certain land-holding positions which is ostensibly based on historical exploration expenditures and future expenditures;
- The sum of the valuation of the Tax Entities does not equate to the valuation of the Companies. Notwithstanding this aspect the Companies have provided SRK with certain data, which in addition to the valuation of the Tax Entities, represent equity-based valuations of the Companies. These items include:
  - the net cash position of the individual companies as at 31 December 2003 being ZAR77m for Avmin and ZAR-1,314.2m for ARM Mining Consortium (83% of which is attributable to ARM Platinum),
  - the attributable valuation by assessment of market capitalisation of the various interests in listed companies,
  - the unallocated head office annual operating expenditures as incurred by the Companies are ZAR120m per annum for Avmin and ZAR6m per annum for ARM Mining Consortium. These amounts are projected in constant amounts for ten-years and presented at a nominal discount factor of 14.0%;
- No hedging or forward sale components are applicable and as such has not been included in the valuation; and
- The statement that, as at 31 December 2003, there were 114,128,287 shares in issue for Avmin, 1,000 shares in issue for ARM Platinum and 258,350,934 shares in issue for Harmony. This information was provided by the Companies and relates to the shares in issues reported in the Companies quarterly results to 31 December 2003.

Table 13.1 Taxation and working capital input parameters as at 1 January 2004

Tax Entity	Units	Unredeemed Capex	Assessed Losses	Tax Rate
Nkomati	(ZARm)	17.1	0.0	30%
Modikwa	(ZARm)	2,057.1	0.0	30%
Two Rivers	(ZARm)	60.0	0.0	30%
Tax Entity	**Units**	**Debtors**	**Creditors**	**Stores**
Nkomati	(ZARm)	11.7	-10.1	0.3
Modikwa	(ZARm)	19.8	-84.1	1.0
Two Rivers	(ZARm)	0.0	0.0	0.0

13.4 Limitations and Reliance on Information

The cashflows reported for the Tax Entities are contingent upon the current and anticipated performance of mine management, as well as the expected achievement of the operating parameters as provided to and reviewed by SRK and set out in this CPR.

SRK has relied upon the Companies that such projections and forecasts as indicated, will be realised in the amounts and time periods contemplated.

The cash flow projections and valuation is based upon the anticipated operating performance as well as information provided to SRK by the Companies and their respective Financial Advisors at the date hereof. It should be understood that unforeseen developments might affect our opinion, or the reasonableness of any assumptions or basis used.

The LoM plans and the TEMs include forward-looking statements that are not historical facts. These forward-looking statements are necessarily estimates and involve a number of risks and uncertainties that could cause actual results to differ materially.

Notwithstanding the aforementioned comments, SRK considers that at the time of compilation, the Mineral Reserves and associated depletion resulting in cash flow projections are appropriate and technically and economically achievable, however it must be noted that SRK does consider that a certain amount of upside potential is already built into the projections that fundamentally rely on the existing management performance to implement and sustain recent initiatives to ensure that the projected cash flows are realised within the anticipated timeframe.

13.5 Post-Tax – Pre-Finance Cash Flows

Table 13.2 through Table 13.7 inclusive; present the un-geared nominal cash flows for Nkomati Tax Entity, Modikwa Tax Entity and Two Rivers Project Tax Entity. Note that these tables are not representative of financial statements as may be customary for determining the consolidated cash flow positions for companies. Further, no account is taken of movements in working capital at the company level, or deferrals of tax liabilities between accounting periods, as may be the case in the generation of such financial statements. The first period 2004 reports the forecast six-month projections to between January and June 2004, thereafter the projections are annual ending 30 June. Actual results for the first six-month period of 2004 are reported in Section 2. The Tax Entity valuations are derived from the reported cash flows commencing 01 January 2004.

Note that in the following tables present costs to metal represented by cash operating cost, total cash costs, total working costs and total costs. In such instances negative amounts reflect expenditures. Where positive amounts are reflected these are the net result of the significant impact of by-product credits, which offset the primary expenditures.

Table 13.2a Nkomati Tax Entity (Base Case): FM in ZAR nominal terms

Financial Year	Units	Totals/	2004	2005	2006	2007	2008	2009
Project Year		Averages	1	2	3	4	5	6
Production Mining								
RoM Tonnage	(kt)	1,041	147	293	293	293	15	
Head Grade	(Ni%)	1.99%	1.96%	2.21%	1.88%	1.93%	1.27%	
	(Cu%)	1.07%	0.96%	1.18%	1.00%	1.08%	0.80%	
	(Co%)	0.09%	0.09%	0.10%	0.08%	0.08%	0.06%	
	(4Eg/t)	6.04	5.37	6.77	5.84	5.91	4.68	
Processing								
Tonnage Milled	(kt)	957	135	270	270	270	14	
Grade Milled	(Ni%)	2.15%	2.13%	2.39%	2.04%	2.08%	1.37%	
	(Cu%)	1.15%	1.03%	1.28%	1.07%	1.17%	0.86%	
	(Co%)	0.10%	0.10%	0.11%	0.09%	0.09%	0.07%	
	(4Eg/t)	6.53	5.80	7.32	6.32	6.39	5.05	
Metallurgical Recovery – Milled								
Nickel	(%)	78%	78%	78%	78%	78%	78%	
Copper	(%)	89%	89%	89%	89%	89%	89%	
Cobalt	(%)	76%	76%	76%	76%	76%	75%	
4E	(%)	71%	71%	71%	71%	71%	71%	
Concentrate Produced	(t)	158,112	21,707	49,500	42,031	43,412	1,462	
Concentrate Grade	(Ni%)	10.22%	10.35%	10.21%	10.23%	10.14%	9.97%	
	(Cu%)	6.18%	5.67%	6.18%	6.11%	6.45%	7.12%	
	(Co%)	0.44%	0.47%	0.45%	0.44%	0.43%	0.46%	
	(4Eg/t)	28.09	25.53	28.30	28.83	28.24	33.51	
Sales								
Concentrate	(t)	166,618	22,793	51,975	44,133	45,583	2,135	
Grade	(Ni%)	9.72%	9.79%	9.73%	9.75%	9.66%	9.51%	
	(Cu%)	5.88%	5.39%	5.89%	5.82%	6.14%	6.47%	
	(Co%)	0.42%	0.45%	0.42%	0.42%	0.41%	0.43%	
	(4Eg/t)	26.73	24.25	26.92	27.45	26.91	29.77	
Nickel	(t)	16,196	2,232	5,056	4,301	4,404	203	
Copper	(t)	9,793	1,227	3,059	2,570	2,799	138	
Cobalt	(t)	703	102	221	186	186	9	
4E	(kg)	4,453	553	1,399	1,211	1,227	64	
Platinum	(kg)	1,087	133	346	288	303	16	
Palladium	(kg)	3,180	393	993	873	876	45	
Rhodium	(kg)	39	7	12	11	9	0	
Gold	(kg)	147	19	49	39	38	2	
Commodity Prices								
Nickel	(ZAR/t)	116,029	65,130	71,332	80,281	86,091	91,438	92,682
Copper	(ZAR/t)	30,529	14,058	18,866	21,233	22,770	24,184	24,513
Cobalt	(ZAR/t)	262,138	138,330	161,435	181,688	194,837	206,939	209,754
4E	(ZAR/kg)	199,256	91,334	113,818	135,057	148,555	157,263	
Platinum	(ZAR/kg)	241,970	175,042	175,597	172,924	176,608	187,578	190,129
Palladium	(ZAR/kg)	172,614	56,926	86,335	115,283	130,690	138,807	140,696
Rhodium	(ZAR/kg)	686,771	142,942	241,446	403,490	529,825	562,733	570,388
Gold	(ZAR/kg)	181,329	91,659	111,797	125,823	134,929	143,309	145,259

Table 13.2a Nkomati Tax Entity (Base Case): FM in ZAR nominal terms (continued)

Financial Year Project Year	Units	Totals/ Averages	2004 1	2005 2	2006 3	2007 4	2008 5	2009 6
Macro-Economics								
Exchange Rates	(US$:ZAR)		7.80	9.01	10.04	10.66	11.21	11.25
RSA CPI	(%)		1.28%	4.10%	4.77%	4.50%	4.50%	4.50%
US CPI	(%)		0.69%	1.03%	1.00%	1.00%	1.00%	1.00%
Financial – Nominal								
Sales Revenue	**(ZARm)**	**1,877.2**	**196.0**	**470.0**	**514.1**	**539.2**	**157.9**	**–**
Nickel	(ZARm)	1,202.3	134.4	312.7	327.4	340.1	87.7	–
Copper	(ZARm)	187.5	16.9	48.6	51.7	55.9	14.4	–
Cobalt	(ZARm)	31.1	3.4	8.3	8.4	8.6	2.4	–
4E	(ZARm)	456.2	41.3	100.4	126.6	134.5	53.4	–
Platinum	(ZARm)	157.5	20.4	39.5	41.0	40.3	16.3	–
Palladium	(ZARm)	279.1	19.4	57.1	80.1	87.6	34.9	–
Rhodium	(ZARm)	9.5	0.5	1.5	2.7	3.6	1.2	–
Gold	(ZARm)	10.1	1.0	2.3	2.8	3.0	1.0	–
Total Working Costs	**(ZARm)**	**(861.4)**	**(106.9)**	**(243.5)**	**(241.4)**	**(254.3)**	**(22.9)**	**7.5**
Mining	(ZARm)	(213.0)	(28.2)	(57.3)	(61.3)	(63.3)	(2.9)	–
Processing	(ZARm)	(113.7)	(14.8)	(30.9)	(32.4)	(33.8)	(1.8)	–
Overheads	(ZARm)	(93.2)	(12.0)	(25.4)	(26.4)	(27.7)	(1.9)	–
Transportation Costs	(ZARm)	(50.8)	(6.9)	(16.1)	(13.3)	(13.8)	(0.6)	–
Transportation Credits	(ZARm)	35.3	3.8	10.7	9.6	10.8	0.5	–
Treatment Costs	(ZARm)	(123.6)	(14.6)	(35.8)	(34.3)	(36.8)	(2.2)	–
Refining Charges	(ZARm)	(261.4)	(26.8)	(71.9)	(72.2)	(73.1)	(17.3)	–
Realisation Charges	(ZARm)	(20.0)	(1.2)	(5.1)	(6.0)	(6.5)	(1.2)	–
Price Participation Charges	(ZARm)	(6.2)	(1.2)	(1.1)	(1.4)	(1.8)	(0.6)	–
Environmental	(ZARm)	(5.1)	(0.7)	(1.4)	(1.5)	(1.5)	(0.1)	–
Terminal Benefits	(ZARm)	(11.8)	–	–	–	(5.8)	(6.0)	–
Net Change in Working Capital	(ZARm)	2.0	(4.3)	(9.3)	(2.1)	(1.0)	11.2	7.5
Operating Profit	**(ZARm)**	**1,015.8**	**89.1**	**226.5**	**272.8**	**284.9**	**135.0**	**7.5**
Tax Liability	**(ZARm)**	**(294.2)**	**(21.0)**	**(65.3)**	**(80.4)**	**(84.6)**	**(40.5)**	**(2.3)**
Capital Expenditure	**(ZARm)**	**(18.0)**	**(1.9)**	**(8.7)**	**(4.6)**	**(2.8)**	**–**	**–**
Project	(ZARm)	(7.5)	(1.9)	(5.6)	–	–	–	–
Ongoing	(ZARm)	(10.5)	–	(3.1)	(4.6)	(2.8)	–	–
Final Net Free Cash	**(ZARm)**	**703.6**	**66.1**	**152.5**	**187.7**	**197.5**	**94.5**	**5.3**
Statistics – Nominal								
Cash Operating Costs	(ZAR/tNi)	–10,594	–18,084	–14,936	–11,866	–10,654	208,147	
Total Cash Costs	(ZAR/tNi)	–10,594	–18,084	–14,936	–11,866	–10,654	208,147	
Total Working Costs	(ZAR/tNi)	–11,642	–18,385	–15,212	–12,207	–12,314	177,974	
Total Costs	(ZAR/tNi)	–12,628	–21,163	–18,768	–13,777	–13,167	233,105	

Table 13.3a Nkomati Tax Entity (Expansion Case): FM in ZAR nominal terms

Financial Year / Project Year	Units	Totals/ Averages	2004 1	2005 2	2006 3	2007 4	2008 5	2009 6	2010 7	2011 8	2012 9	2013 10	2014 11	2015 12	2016 13	2017 14	2018 15	2019 16	2020 17	2021 18	2022 19
Production Mining																					
RoM Tonnage	(kt)	61,697		108	294	3,112	4,819	4,282	4,501	4,840	4,449	4,455	4,576	4,576	4,443	4,310	4,881	4,153	3,895		
Head Grade	(Ni%)	0.45%		0.38%	0.38%	0.46%	0.40%	0.43%	0.42%	0.41%	0.44%	0.49%	0.53%	0.46%	0.47%	0.46%	0.48%	0.49%	0.43%		
	(Cu%)	0.18%		0.25%	0.25%	0.21%	0.17%	0.15%	0.15%	0.15%	0.18%	0.19%	0.23%	0.21%	0.18%	0.18%	0.18%	0.21%	0.20%		
	(Co%)	0.02%		0.02%	0.02%	0.03%	0.02%	0.02%	0.02%	0.02%	0.02%	0.03%	0.03%	0.03%	0.03%	0.02%	0.02%	0.03%	0.03%		
	(4Eg/t)	1.08		0.88	0.99	1.08	0.89	1.01	1.09	1.05	1.16	1.13	1.24	1.14	1.00	1.06	1.07	1.14	1.02		
Processing																					
Tonnage Milled	(kt)	61,697			354	3,125	4,492	4,540	4,512	4,548	4,479	4,483	4,492	4,498	4,514	4,461	4,553	4,502	4,143		
Grade Milled	(Ni%)	0.45%			0.38%	0.46%	0.40%	0.43%	0.42%	0.41%	0.44%	0.49%	0.53%	0.46%	0.47%	0.46%	0.48%	0.49%	0.43%		
	(Cu%)	0.18%			0.25%	0.21%	0.17%	0.15%	0.15%	0.15%	0.18%	0.19%	0.23%	0.21%	0.18%	0.18%	0.18%	0.21%	0.20%		
	(Co%)	0.02%			0.02%	0.03%	0.02%	0.02%	0.02%	0.02%	0.02%	0.03%	0.03%	0.03%	0.03%	0.02%	0.02%	0.03%	0.03%		
	(4Eg/t)	1.08			0.95	1.08	0.89	1.01	1.09	1.05	1.16	1.13	1.24	1.14	1.00	1.06	1.07	1.15	1.02		
Metallurgical Recovery – Milled																					
Nickel	(%)	77%			62%	75%	75%	77%	77%	76%	77%	79%	82%	78%	76%	79%	78%	78%	76%		
Copper	(%)	79%			71%	79%	78%	78%	78%	78%	78%	80%	82%	79%	79%	79%	80%	80%	78%		
Cobalt	(%)	77%			65%	75%	75%	77%	77%	76%	77%	79%	81%	78%	76%	79%	78%	78%	76%		
4E	(%)	52%			46%	52%	51%	51%	51%	51%	52%	53%	54%	52%	52%	52%	53%	53%	52%		
Metal Production																					
Nickel	(t)	216,979			831	10,714	13,515	15,087	14,401	14,098	15,064	17,317	19,580	16,057	16,255	16,260	17,101	17,091	13,608		
Copper	(t)	90,202			626	5,082	5,955	5,360	5,077	5,429	6,353	6,877	8,386	7,413	6,420	6,421	6,630	7,549	6,624		
Cobalt	(t)	11,728			53	673	751	743	716	752	827	923	1,045	897	863	857	886	918	824		
4E	(kg)	34,594			153	1,765	2,038	2,351	2,511	2,446	2,687	2,689	3,001	2,673	2,334	2,452	2,577	2,728	2,189		
Sulphur	(t)	560,976			4,099	26,226	33,641	40,029	40,104	35,631	39,691	45,385	54,006	41,234	38,195	47,132	41,849	41,225	32,529		
Sales																					
Nickel	(t)	216,979				10,016	13,332	14,981	14,447	14,119	14,999	17,165	19,427	16,294	16,242	16,259	17,044	17,091	15,561		
Copper	(t)	90,202				4,990	5,911	5,403	5,097	5,403	6,286	6,839	8,275	7,485	6,493	6,421	6,615	7,481	7,501		
Cobalt	(t)	11,728				455	728	745	725	740	802	891	1,004	946	874	859	876	907	1,175		
4E	(kg)	34,594				1,182	1,924	2,221	2,444	2,473	2,586	2,688	2,871	2,810	2,475	2,403	2,525	2,665	3,326		
Platinum	(kg)	8,990				305	480	576	643	655	679	691	740	743	659	623	639	674	883		
Palladium	(kg)	24,090				814	1,332	1,543	1,705	1,725	1,794	1,842	1,965	1,941	1,728	1,700	1,796	1,891	2,312		
Rhodium	(kg)	337				3	14	26	23	21	22	24	28	34	35	34	30	25	19		
Gold	(kg)	1,176				60	97	75	74	71	92	131	137	91	54	46	60	76	112		
Sulphur	(t)	560,976			820	20,763	31,169	37,900	40,079	37,122	38,337	43,487	51,133	45,491	39,208	44,153	43,610	41,433	46,271		
Commodity Prices																					
Nickel	(ZAR/t)	116,748	65,130	71,332	80,281	86,091	91,438	92,682	96,853	101,211	105,766	110,525	115,499	120,696	126,127	131,803	137,734	143,932	150,409		
Copper	(ZAR/t)	31,001	14,058	18,866	21,233	22,770	24,184	24,513	25,616	26,769	27,973	29,232	30,548	31,922	33,359	34,860	36,429	38,068	39,781		
Cobalt	(ZAR/t)	267,236	138,330	161,435	181,688	194,837	206,939	209,754	219,193	229,056	239,364	250,135	261,391	273,154	285,446	298,291	311,714	325,741	340,399		
4E	(ZAR/kg)	200,588	143,655	154,317	158,676	164,963	172,054	179,714	187,758	196,751	207,253	217,727	227,194	235,423	244,335	253,786					
Platinum	(ZAR/kg)	241,532	175,042	175,597	172,924	176,608	187,578	190,129	198,685	207,626	216,969	226,733	236,936	247,598	258,740	270,383	282,550	295,265	308,552		
Palladium	(ZAR/kg)	178,881	56,926	86,335	115,283	130,690	138,807	140,696	147,027	153,643	160,557	167,782	175,333	183,223	191,468	200,084	209,087	218,496	228,329		
Rhodium	(ZAR/kg)	730,306	142,942	241,446	403,490	529,825	562,733	570,388	596,056	622,878	650,908	680,199	710,808	742,794	776,220	811,150	847,651	885,796	925,656		
Gold	(ZAR/kg)	180,227	91,659	111,797	125,823	134,929	143,309	145,259	151,796	158,626	165,765	173,224	181,019	189,165	197,677	206,573	215,869	225,583	235,734		
Sulphur	(ZAR/t)	112	58	68	77	82	87	89	93	97	101	106	110	115	121	126	132	138	144		

Table 13.3a Nkomati Tax Entity (Expansion Case): FM in ZAR nominal terms (continued)

Financial Year	Units	Totals/	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Project Year		Averages	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Macro-Economics																					
Exchange Rates	(US$:ZAR)		7.80	9.01	10.04	10.66	11.21	11.25	11.64	12.04	12.46	12.89	13.34	13.80	14.28	14.77	15.29	15.82	16.36		
RSA CPI	(%)		1.28%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%		
US CPI	(%)		0.69%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%		
Financial – Nominal																					
Sales Revenue	(ZARm)	38,264.3	–	–	0.1	1,236.1	1,812.3	2,033.0	2,095.7	2,172.2	2,423.0	2,829.3	3,329.6	3,051.6	3,058.4	3,174.6	3,461.8	3,697.0	3,889.7	–	–
Nickel	(ZARm)	25,331.8	–	–	–	862.3	1,219.1	1,388.5	1,399.2	1,429.0	1,586.4	1,897.2	2,243.8	1,966.7	2,048.5	2,143.0	2,347.6	2,460.0	2,340.6	–	–
Copper	(ZARm)	2,796.3	–	–	–	113.6	143.0	132.5	130.6	144.6	175.8	199.9	252.8	238.9	216.6	223.8	241.0	284.8	298.4	–	–
Cobalt	(ZARm)	3,134.2	–	–	–	88.6	150.6	156.4	158.9	169.6	192.1	222.8	262.5	258.5	249.6	256.3	273.1	295.4	400.0	–	–
4E	(ZARm)	6,939.1	–	–	–	169.9	296.9	352.4	403.2	425.5	464.8	504.8	564.9	582.3	538.9	545.9	594.4	651.1	844.0	–	–
Platinum	(ZARm)	2,171.4	–	–	–	53.9	90.1	109.5	127.7	136.1	147.2	156.6	175.4	184.0	170.5	168.4	180.6	198.9	272.4	–	–
Palladium	(ZARm)	4,309.3	–	–	–	106.4	184.9	217.1	250.7	265.1	288.0	309.1	344.6	355.7	330.8	340.1	375.5	413.1	528.0	–	–
Rhodium	(ZARm)	246.5	–	–	–	1.4	7.9	14.7	13.6	13.0	14.3	16.3	20.1	25.4	27.0	28.0	25.4	22.1	17.3	–	–
Gold	(ZARm)	211.9	–	–	–	8.1	14.0	11.0	11.2	11.3	15.3	22.7	24.8	17.2	10.6	9.5	12.9	17.1	26.4	–	–
Sulphur	(ZARm)	62.9	–	–	0.1	1.7	2.7	3.4	3.7	3.6	3.9	4.6	5.6	5.2	4.7	5.6	5.7	5.7	6.7	–	–
Total Working Costs	**(ZARm)**	**(18,901.8)**	**(11.7)**	**(31.3)**	**(117.2)**	**(649.1)**	**(1,004.1)**	**(1,143.8)**	**(1,202.4)**	**(1,243.1)**	**(1,309.1)**	**(1,428.0)**	**(1,566.7)**	**(1,534.2)**	**(1,527.9)**	**(1,566.2)**	**(1,533.0)**	**(1,370.4)**	**(1,411.9)**	**(216.1)**	**(35.8)**
Mining	(ZARm)	(7,712.1)	(13.5)	(29.3)	(75.1)	(346.5)	(514.8)	(547.5)	(584.8)	(602.2)	(608.9)	(646.3)	(666.6)	(712.8)	(652.3)	(637.2)	(486.4)	(261.4)	(324.1)	(2.4)	–
Processing	(ZARm)	(8,248.0)	(1.0)	(1.5)	(65.1)	(319.4)	(407.8)	(457.9)	(476.9)	(481.3)	(526.7)	(595.0)	(680.9)	(622.1)	(638.3)	(712.3)	(725.7)	(755.3)	(691.1)	(89.8)	–
Overheads	(ZARm)	(1,223.1)	(4.4)	(8.1)	(25.5)	(54.2)	(68.4)	(70.4)	(72.9)	(75.5)	(78.6)	(82.0)	(85.7)	(89.1)	(92.9)	(97.1)	(101.6)	(106.3)	(110.4)	–	–
Transportation Costs	(ZARm)	(1,213.9)	–	–	–	(41.0)	(58.2)	(64.4)	(64.8)	(67.3)	(75.9)	(89.7)	(107.0)	(96.5)	(97.4)	(101.5)	(110.4)	(118.2)	(120.1)	(1.4)	–
Transportation Credits	(ZARm)	39.5	–	–	0.0	1.1	1.7	2.1	2.3	2.3	2.4	2.9	3.5	3.3	3.0	3.5	3.6	3.6	4.2	–	–
Treatment Costs	(ZARm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Refining Charges	(ZARm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Realisation Charges	(ZARm)	(552.4)	–	–	–	(18.8)	(26.6)	(30.2)	(30.5)	(31.2)	(34.6)	(41.3)	(48.9)	(43.0)	(44.6)	(46.7)	(51.1)	(53.6)	(51.2)	(0.0)	–
Price Participation Charges	(ZARm)	131.0	–	–	–	5.0	8.3	8.0	7.8	8.1	9.0	9.8	11.1	11.0	9.7	9.3	9.3	9.9	14.6	0.1	–
Environmental	(ZARm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Terminal Benefits	(ZARm)	(122.7)	–	–	–	(1.9)	(1.3)	–	–	–	–	–	–	–	–	–	–	–	(119.5)	–	–
Net Change in Working Capital	(ZARm)	(0.0)	7.2	7.6	48.5	126.7	63.1	16.6	17.4	4.0	4.1	13.7	7.7	14.9	(14.9)	15.7	(70.6)	(89.1)	(14.3)	(122.6)	(35.8)
Operating Profit	**(ZARm)**	**19,362.5**	**(11.7)**	**(31.3)**	**(117.2)**	**587.0**	**808.2**	**889.2**	**893.3**	**929.2**	**1,113.9**	**1,401.3**	**1,762.9**	**1,517.4**	**1,530.5**	**1,608.5**	**1,928.8**	**2,326.6**	**2,477.8**	**(216.1)**	**(35.8)**
Tax Liability	**(ZARm)**	**(4,947.6)**	**–**	**–**	**–**	**–**	**–**	**–**	**(92.9)**	**(263.3)**	**(328.1)**	**(401.5)**	**(521.7)**	**(443.1)**	**(447.7)**	**(468.2)**	**(562.9)**	**(693.4)**	**(724.8)**	**–**	**–**
Capital Expenditure	**(ZARm)**	**(3,127.5)**	**(1.3)**	**(943.8)**	**(1,509.0)**	**(21.7)**	**(103.1)**	**(71.6)**	**(57.3)**	**(51.3)**	**(20.3)**	**(63.0)**	**(24.0)**	**(40.4)**	**(38.3)**	**(47.8)**	**(52.3)**	**(15.3)**	**(61.8)**	**(5.1)**	**–**
Project	(ZARm)	(2,475.8)	(1.3)	(943.8)	(1,509.0)	(21.7)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ongoing	(ZARm)	(651.6)	–	–	–	–	(103.1)	(71.6)	(57.3)	(51.3)	(20.3)	(63.0)	(24.0)	(40.4)	(38.3)	(47.8)	(52.3)	(15.3)	(61.8)	(5.1)	–
Final Net Free Cash	**(ZARm)**	**11,287.4**	**(13.0)**	**(975.1)**	**(1,626.2)**	**565.3**	**705.1**	**817.6**	**743.0**	**614.5**	**765.5**	**936.8**	**1,217.3**	**1,033.9**	**1,044.5**	**1,092.5**	**1,313.5**	**1,617.9**	**1,691.2**	**(221.2)**	**(35.8)**
Statistics – Nominal																					
Cash Operating Costs	(ZAR/tNi)	–26,945				–39,939	–35,451	–34,433	–36,228	–35,686	–31,788	–29,688	–25,151	–28,486	–30,977	–33,846	–20,426	–2,591	17,420		
Total Cash Costs	(ZAR/tNi)	–26,945				–39,939	–35,451	–34,433	–36,228	–35,686	–31,788	–29,688	–25,151	–28,486	–30,977	–33,846	–20,426	–2,591	17,420		
Total Working Costs	(ZAR/tNi)	–27,511				–40,134	–35,548	–34,433	–36,228	–35,686	–31,788	–29,688	–25,151	–28,486	–30,977	–33,846	–20,426	–2,591	9,742		
Total Costs	(ZAR/tNi)	–41,924			–	–29,648	–38,550	–38,107	–38,990	–39,036	–32,854	–32,562	–25,986	–30,050	–34,253	–15,814	–27,639	–8,698	4,846		

Table 13.4a Nkomati Tax Entity (Integrated Expansion Case): FM in ZAR nominal terms

Financial Year	Units	Totals/	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Project Year		Averages	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Production Mining																					
RoM Tonnage	(kt)	62,737	147	402	587	3,405	4,834	4,282	4,501	4,840	4,449	4,455	4,576	4,576	4,443	4,310	4,881	4,153	3,895		
Head Grade	(Ni%)	0.48%	1.96%	1.72%	1.13%	0.59%	0.40%	0.43%	0.42%	0.41%	0.44%	0.49%	0.53%	0.46%	0.47%	0.46%	0.48%	0.49%	0.43%		
	(Cu%)	0.20%	0.96%	0.93%	0.62%	0.28%	0.17%	0.15%	0.15%	0.15%	0.18%	0.19%	0.23%	0.21%	0.18%	0.18%	0.18%	0.21%	0.20%		
	(Co%)	0.03%	0.09%	0.08%	0.05%	0.03%	0.02%	0.02%	0.02%	0.02%	0.02%	0.03%	0.03%	0.03%	0.03%	0.02%	0.02%	0.03%	0.03%		
	(4Eg/t)	1.16	5.37	5.18	3.42	1.50	0.90	1.01	1.09	1.05	1.16	1.13	1.24	1.14	1.00	1.06	1.07	1.14	1.02		
Processing																					
Tonnage Milled	(kt)	62,654	135	270	623	3,395	4,506	4,540	4,512	4,548	4,479	4,483	4,492	4,498	4,514	4,461	4,553	4,502	4,143		
Grade Milled	(Ni%)	0.48%	2.13%	2.39%	1.10%	0.59%	0.40%	0.43%	0.42%	0.41%	0.44%	0.49%	0.53%	0.46%	0.47%	0.46%	0.48%	0.49%	0.43%		
	(Cu%)	0.20%	1.03%	1.28%	0.61%	0.28%	0.17%	0.15%	0.15%	0.15%	0.18%	0.19%	0.23%	0.21%	0.18%	0.18%	0.18%	0.21%	0.20%		
	(Co%)	0.03%	0.10%	0.11%	0.05%	0.03%	0.02%	0.02%	0.02%	0.02%	0.02%	0.03%	0.03%	0.03%	0.03%	0.02%	0.02%	0.03%	0.03%		
	(4Eg/t)	1.16	5.80	7.32	3.27	1.50	0.90	1.01	1.09	1.05	1.16	1.13	1.24	1.14	1.00	1.06	1.07	1.15	1.02		
Metallurgical Recovery – Milled																					
Nickel	(%)	77%	78%	78%	75%	76%	75%	77%	77%	76%	77%	79%	82%	78%	76%	79%	78%	78%	76%		
Copper	(%)	80%	89%	89%	85%	82%	78%	78%	78%	78%	78%	80%	82%	79%	79%	79%	80%	80%	78%		
Cobalt	(%)	77%	76%	76%	73%	75%	75%	77%	77%	76%	77%	79%	81%	78%	76%	79%	78%	78%	76%		
4E	(%)	54%	71%	71%	67%	59%	51%	51%	51%	51%	52%	53%	54%	52%	52%	52%	53%	53%	52%		
Metal Production																					
Nickel	(t)	233,131	2,246	5,055	5,132	15,118	13,661	15,087	14,401	14,098	15,064	17,317	19,580	16,057	16,255	16,260	17,101	17,091	13,608		
Copper	(t)	99,969	1,232	3,061	3,195	7,883	6,059	5,360	5,077	5,429	6,353	6,877	8,386	7,413	6,420	6,421	6,630	7,549	6,624		
Cobalt	(t)	12,430	103	221	239	859	757	743	716	752	827	923	1,045	897	863	857	886	918	824		
4E	(kg)	39,035	554	1,401	1,365	2,991	2,087	2,351	2,511	2,446	2,687	2,689	3,001	2,673	2,334	2,452	2,577	2,728	2,189		
Sulphur	(t)	560,976			4,099	26,226	33,641	40,029	40,104	35,631	39,691	45,385	54,006	41,234	38,195	47,132	41,849	41,225	32,529		
Sales																					
Nickel	(t)	233,175	2,232	5,056	4,301	14,421	13,535	14,981	14,447	14,119	14,999	17,165	19,427	16,294	16,242	16,259	17,044	17,091	15,561		
Copper	(t)	99,996	1,227	3,059	2,570	7,790	6,049	5,403	5,097	5,403	6,286	6,839	8,275	7,485	6,493	6,421	6,615	7,481	7,501		
Cobalt	(t)	12,432	102	221	186	640	737	745	725	740	802	891	1,004	946	874	859	876	907	1,175		
4E	(kg)	39,047	553	1,399	1,211	2,409	1,988	2,221	2,444	2,473	2,586	2,688	2,871	2,810	2,475	2,403	2,525	2,665	3,326		
Platinum	(kg)	10,077	133	346	288	608	497	576	643	655	679	691	740	743	659	623	639	674	883		
Palladium	(kg)	27,270	393	993	873	1,690	1,377	1,543	1,705	1,725	1,794	1,842	1,965	1,941	1,728	1,700	1,796	1,891	2,312		
Rhodium	(kg)	377	7	12	11	12	14	26	23	21	22	24	28	34	35	34	30	25	19		
Gold	(kg)	1,323	19	49	39	99	99	75	74	71	92	131	137	91	54	46	60	76	112		
Sulphur	(t)	560,976			820	20,763	31,169	37,900	40,079	37,122	38,337	43,487	51,133	45,491	39,208	44,153	43,610	41,433	46,271		
Commodity Prices																					
Nickel	(ZAR/t)	113,795	65,130	71,332	80,281	86,091	91,438	92,682	96,853	101,211	105,766	110,525	115,499	120,696	126,127	131,803	137,734	143,932	150,409		
Copper	(ZAR/t)	29,840	14,058	18,866	21,233	22,770	24,184	24,513	25,616	26,769	27,973	29,232	30,548	31,922	33,359	34,860	36,429	38,068	39,781		
Cobalt	(ZAR/t)	254,618	138,330	161,435	181,688	194,837	206,939	209,754	219,193	229,056	239,364	250,135	261,391	273,154	285,446	298,291	311,714	325,741	340,399		
4E	(ZAR/kg)	189,395	74,745	71,772	104,516	126,342	176,255	158,676	164,963	172,054	179,714	187,758	196,751	207,253	217,727	227,194	235,423	244,335	253,786		
Platinum	(ZAR/kg)	231,117	175,042	175,597	172,924	176,608	187,578	190,129	198,685	207,626	216,969	226,733	236,936	247,598	258,740	270,383	282,550	295,265	308,552		
Palladium	(ZAR/kg)	168,254	56,926	86,335	115,283	130,690	138,807	140,696	147,027	153,643	160,557	167,782	175,333	183,223	191,468	200,084	209,087	218,496	228,329		
Rhodium	(ZAR/kg)	679,346	142,942	241,446	403,490	529,825	562,733	570,388	596,056	622,878	650,908	680,199	710,808	742,794	776,220	811,150	847,651	885,796	925,656		
Gold	(ZAR/kg)	167,848	91,659	111,797	125,823	134,929	143,309	145,259	151,796	158,626	165,765	173,224	181,019	189,165	197,677	206,573	215,869	225,583	235,734		
Sulphur	(ZAR/t)	112	58	68	77	82	87	89	93	97	101	106	110	115	121	126	132	138	144		

Table 13.4a Nkomati Tax Entity (Integrated Expansion Case): FM in ZAR nominal terms (continued)

Financial Year / Project Year	Units	Totals/ Averages	2004 1	2005 2	2006 3	2007 4	2008 5	2009 6	2010 7	2011 8	2012 9	2013 10	2014 11	2015 12	2016 13	2017 14	2018 15	2019 16	2020 17	2021 18	2022 19
Macro-Economics																					
Exchange Rates	(US$:ZAR)		7.80	9.01	10.04	10.66	11.21	11.25	11.64	12.04	12.46	12.89	13.34	13.80	14.28	14.77	15.29	15.82	16.36		
RSA CPI	(%)		1.28%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%		
US CPI	(%)		0.69%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%		
Financial – Nominal																					
Sales Revenue	**(ZARm)**	**40,141.5**	**196.0**	**470.0**	**514.2**	**1,775.2**	**1,970.2**	**2,033.0**	**2,095.7**	**2,172.2**	**2,423.0**	**2,829.3**	**3,329.6**	**3,051.6**	**3,058.4**	**3,174.6**	**3,461.8**	**3,697.0**	**3,889.7**	–	–
Nickel	(ZARm)	26,534.1	134.4	312.7	327.4	1,202.4	1,306.8	1,388.5	1,399.2	1,429.0	1,586.4	1,897.2	2,243.8	1,966.7	2,048.5	2,143.0	2,347.6	2,460.0	2,340.6	–	–
Copper	(ZARm)	2,983.9	16.9	48.6	51.7	169.6	157.4	132.5	130.6	144.6	175.8	199.9	252.8	238.9	216.6	223.8	241.0	284.8	298.4	–	–
Cobalt	(ZARm)	3,165.3	3.4	8.3	8.4	97.2	153.0	156.4	158.9	169.6	192.1	222.8	262.5	258.5	249.6	256.3	273.1	295.4	400.0	–	–
4E	(ZARm)	7,395.3	41.3	100.4	126.6	304.3	350.3	352.4	403.2	425.5	464.8	504.8	564.9	582.3	538.9	545.9	594.4	651.1	844.0	–	–
Platinum	(ZARm)	2,328.9	20.4	39.5	41.0	94.2	106.4	109.5	127.7	136.1	147.2	156.6	175.4	184.0	170.5	168.4	180.6	198.9	272.4	–	–
Palladium	(ZARm)	4,588.3	19.4	57.1	80.1	194.0	219.8	217.1	250.7	265.1	288.0	309.1	344.6	355.7	330.8	340.1	375.5	413.1	528.0	–	–
Rhodium	(ZARm)	256.0	0.5	1.5	2.7	5.0	9.1	14.7	13.6	13.0	14.3	16.3	20.1	25.4	27.0	28.0	25.4	22.1	17.3	–	–
Gold	(ZARm)	222.1	1.0	2.3	2.8	11.2	15.0	11.0	11.2	11.3	15.3	22.7	24.8	17.2	10.6	9.5	12.9	17.1	26.4	–	–
Sulphur	(ZARm)	62.9	–	–	0.1	1.7	2.7	3.4	3.7	3.6	3.9	4.6	5.6	5.2	4.7	5.6	5.7	5.7	6.7	–	–
Total Working Costs	**(ZARm)**	**(19,763.2)**	**(118.6)**	**(274.8)**	**(358.6)**	**(903.3)**	**(1,027.0)**	**(1,136.2)**	**(1,202.4)**	**(1,243.1)**	**(1,309.1)**	**(1,428.0)**	**(1,566.7)**	**(1,534.2)**	**(1,527.9)**	**(1,566.2)**	**(1,533.0)**	**(1,370.4)**	**(1,411.9)**	**(216.1)**	**(35.8)**
Mining	(ZARm)	(7,925.0)	(41.7)	(86.6)	(136.5)	(409.8)	(517.7)	(547.5)	(584.8)	(602.2)	(608.9)	(646.3)	(666.6)	(712.8)	(652.3)	(637.2)	(486.4)	(261.4)	(324.1)	(2.4)	–
Processing	(ZARm)	(8,361.7)	(15.9)	(32.4)	(97.5)	(353.2)	(409.5)	(457.9)	(476.9)	(481.3)	(526.7)	(595.0)	(680.9)	(622.1)	(638.3)	(712.3)	(725.7)	(755.3)	(691.1)	(89.8)	–
Overheads	(ZARm)	(1,316.4)	(16.4)	(33.4)	(51.9)	(81.8)	(70.3)	(70.4)	(72.9)	(75.5)	(78.6)	(82.0)	(85.7)	(89.1)	(92.9)	(97.1)	(101.6)	(106.3)	(110.4)	–	–
Transportation Costs	(ZARm)	(1,264.7)	(6.9)	(16.1)	(13.3)	(54.9)	(58.9)	(64.4)	(64.8)	(67.3)	(75.9)	(89.7)	(107.0)	(96.5)	(97.4)	(101.5)	(110.4)	(118.2)	(120.1)	(1.4)	–
Transportation Credits	(ZARm)	74.8	3.8	10.7	9.6	11.8	2.1	2.1	2.3	2.3	2.4	2.9	3.5	3.3	3.0	3.5	3.6	3.6	4.2	–	–
Treatment Costs	(ZARm)	(123.6)	(14.6)	(35.8)	(34.3)	(36.8)	(2.2)	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Refining Charges	(ZARm)	(261.4)	(26.8)	(71.9)	(72.2)	(73.1)	(17.3)	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Realisation Charges	(ZARm)	(572.3)	(1.2)	(5.1)	(6.0)	(25.2)	(27.8)	(30.2)	(30.5)	(31.2)	(34.6)	(41.3)	(48.9)	(43.0)	(44.6)	(46.7)	(51.1)	(53.6)	(51.2)	(0.0)	–
Price Participation Charges	(ZARm)	124.8	(1.2)	(1.1)	(1.4)	3.2	7.8	8.0	7.8	8.1	9.0	9.8	11.1	11.0	9.7	9.3	9.3	9.9	14.6	0.1	–
Environmental	(ZARm)	(5.1)	(0.7)	(1.4)	(1.5)	(1.5)	(0.1)	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Terminal Benefits	(ZARm)	(134.5)	–	–	–	(7.7)	(7.3)	–	–	–	–	–	–	–	–	–	–	–	(119.5)	–	–
Net Change in Working Capital	(ZARm)	2.0	3.0	(1.7)	46.3	125.7	74.3	24.1	17.4	4.0	4.1	13.7	7.7	14.9	(14.9)	15.7	(70.6)	(89.1)	(14.3)	(122.6)	(35.8)
Operating Profit	**(ZARm)**	**20,378.3**	**77.4**	**195.2**	**155.6**	**871.9**	**943.2**	**896.8**	**893.3**	**929.2**	**1,113.9**	**1,401.3**	**1,762.9**	**1,517.4**	**1,530.5**	**1,608.5**	**1,928.8**	**2,326.6**	**2,477.8**	**(216.1)**	**(35.8)**
Tax Liability	**(ZARm)**	**(5,241.8)**	**(17.1)**	–	–	–	–	**(119.2)**	**(250.8)**	**(263.3)**	**(328.1)**	**(401.5)**	**(521.7)**	**(443.1)**	**(447.7)**	**(468.2)**	**(562.9)**	**(693.4)**	**(724.8)**	–	–
Capital Expenditure	(ZARm)	(3,145.5)	(3.2)	(952.5)	(1,513.6)	(24.4)	(103.1)	(71.6)	(57.3)	(51.3)	(20.3)	(63.0)	(24.0)	(40.4)	(38.3)	(47.8)	(52.3)	(15.3)	(61.8)	(5.1)	–
Project	(ZARm)	(2,483.3)	(3.2)	(949.4)	(1,509.0)	(21.7)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ongoing	(ZARm)	(662.1)	–	(3.1)	(4.6)	(2.8)	(103.1)	(71.6)	(57.3)	(51.3)	(20.3)	(63.0)	(24.0)	(40.4)	(38.3)	(47.8)	(52.3)	(15.3)	(61.8)	(5.1)	–
Final Net Free Cash	**(ZARm)**	**11,991.0**	**57.0**	**(757.3)**	**(1,358.0)**	**847.5**	**840.1**	**705.9**	**585.2**	**614.5**	**765.5**	**936.8**	**1,217.3**	**1,033.9**	**1,044.5**	**1,092.5**	**1,313.5**	**1,617.9**	**1,691.2**	**(221.2)**	**(35.8)**
Statistics – Nominal																					
Cash Operating Costs	(ZAR/tNi)	–25,809	–26,579	–22,625	–50,382	–30,995	–31,798	–34,433	–36,228	–35,686	–31,778	–29,688	–25,151	–28,486	–30,977	–33,846	–20,426	–2,591	17,420		
Total Cash Costs	(ZAR/tNi)	–25,809	–26,579	–22,625	–50,382	–30,995	–31,798	–34,433	–36,228	–35,686	–31,778	–29,688	–25,151	–28,486	–30,977	–33,846	–20,426	–2,591	17,420		
Total Working Costs	(ZAR/tNi)	–26,408	–26,880	–22,6902	–50,722	–31,637	–32,346	–34,433	–36,228	–35,686	–31,778	–29,688	–25,151	–28,486	–30,977	–33,846	–20,426	–2,591	9,742		
Total Costs	(ZAR/tNi)	–39,899	–27,008	–211,630	–391,864	–24,614	–34,476	–37,605	–38,990	–39,036	–32,854	–32,562	–25,986	–30,050	–34,253	–35,814	–27,639	–8,698	4,8846		

Table 13.5a Modikwa Tax Entity (Mineral Reserves): FM in ZAR nominal terms

Financial Year	Units	Totals/	2004	2005	2006	2007	2008	2009	2010	2011
Project Year		Averages	1	2	3	4	5	6	7	8
Production Mining										
RoM Tonnage	(kt)	16,130	1,356	2,828	2,804	2,827	2,784	2,285	1,246	
Head Grade	(4Eg/t)	4.79	4.65	4.77	4.76	4.73	4.77	4.88	5.00	
	(Ni%)	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	
	(Cu%)	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	
Processing										
Tonnage Milled	**(kt)**	16,130	1,356	2,828	2,804	2,827	2,784	2,285	1,246	
Grade Milled	(4Eg/t)	4.79	4.65	4.77	4.76	4.73	4.77	4.88	5.00	
	(Ni%)	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	
	(Cu%)	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	
	(Co%)	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	
Metallurgical Recovery – Milled										
4E	(%)	87.26%	87.26%	87.26%	87.26%	87.26%	87.26%	87.26%	87.26%	
Nickel	(%)	18.00%	18.00%	18.00%	18.00%	18.00%	18.00%	18.00%	18.00%	
Copper	(%)	56.00%	56.00%	56.00%	56.00%	56.00%	56.00%	56.00%	56.00%	
Cobalt	(%)	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	
Concentrate Produced	(t)	403,256	33,900	70,708	70,101	70,679	69,594	57,134	31,141	
Concentrate Grade	(4Eg/t)	167	162	167	166	165	166	171	175	
	(Ni%)	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	
	(Cu%)	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	
	(Co%)	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	
	(%Cr203)	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	
	(6Eg/t)	188	183	187	187	186	187	192	196	
Sales										
Concentrate	**(t)**	405,056	32,205	70,068	70,131	70,650	69,648	57,757	34,598	
Grade	(4Eg/t)	167	162	166	166	165	166	170	174	
	(Ni%)	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	
	(Cu%)	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	
	(Co%)	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	
	(%Cr203)	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	
	(6Eg/t)	188	183	187	187	186	187	191	196	
	(Ptg/t)	77	75	76	76	76	76	78	80	
	(Pdg/t)	74	72	73	73	73	73	75	77	
	(Rhg/t)	15	14	15	15	14	15	15	15	
	(Aug/t)	2	2	2	2	2	2	2	2	
	(Rug/t)	19	18	19	19	18	19	19	19	
	(Irg/t)	2	2	2	2	2	2	2	2	

Table 13.5a Modikwa Tax Entity (Mineral Reserves): FM in ZAR nominal terms (continued)

Financial Year Project Year	Units	Totals/ Averages	2004 1	2005 2	2006 3	2007 4	2008 5	2009 6	2010 7	2011 8
Commodity Prices										
4E	**(ZAR/kg)**	**251,558**	**119,115**	**141,601**	**168,160**	**188,330**	**200,027**	**202,748**	**211,872**	
Nickel	(ZAR/t)	116,029	65,130	71,332	80,281	86,091	91,438	92,682	96,853	
Copper	(ZAR/t)	30,529	14,058	18,866	21,233	22,770	24,184	24,513	25,616	
Cobalt	(ZAR/t)	261,238	137,855	160,880	181,065	194,168	206,228	209,034	218,440	
6E	**(ZAR/kg)**	**221,924**	**105,150**	**125,039**	**148,407**	**166,134**	**176,452**	**178,853**	**186,901**	
Platinum	(ZAR/kg)	241,970	175,042	175,597	172,924	176,608	187,578	190,129	198,685	
Palladium	(ZAR/kg)	172,614	56,926	86,335	115,283	130,690	138,807	140,696	147,027	
Rhodium	(ZAR/kg)	686,771	142,942	241,446	403,490	529,825	562,733	570,388	596,056	
Gold	(ZAR/kg)	181,329	91,659	111,797	125,823	134,929	143,309	145,259	151,796	
Macro-Economics										
Exchange Rates	(US$:ZAR)		7.80	9.01	10.04	10.66	11.21	11.25	11.64	
RSA CPI	(%)		1.28%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	
US CPI	(%)		0.69%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	
Financial – Nominal										
Sales Revenue	(ZARm)	**10,003.7**	**513.2**	**1,219.8**	**1,525.2**	**1,700.3**	**1,796.7**	**1,611.0**	**1,637.5**	**-**
4E	**(ZARm)**	**9,766.4**	**498.7**	**1,188.9**	**1,488.3**	**1,660.5**	**1,754.9**	**1,574.1**	**1,600.9**	**-**
Nickel	(ZARm)	198.4	12.4	25.9	30.8	33.2	34.9	30.8	30.5	-
Copper	(ZARm)	32.2	1.7	4.3	5.1	5.5	5.7	5.1	5.0	-
Cobalt	(ZARm)	6.5	0.4	0.9	1.0	1.1	1.2	1.0	1.0	-
6E	**(ZARm)**	**9,766.4**	**498.7**	**1,188.9**	**1,488.3**	**1,660.5**	**1,754.9**	**1,574.1**	**1,600.9**	**-**
Platinum	(ZARm)	4,653.5	338.5	686.4	717.8	733.4	775.1	695.2	707.1	-
Palladium	(ZARm)	2,931.1	104.8	321.2	455.4	516.5	545.8	489.6	497.9	-
Rhodium	(ZARm)	2,094.9	50.6	170.0	301.6	396.2	418.8	375.6	382.0	-
Gold	(ZARm)	87.0	4.9	11.3	13.5	14.4	15.3	13.7	13.9	-
Total Working Costs	**(ZARm)**	**(5,816.9)**	**(513.5)**	**(916.9)**	**(959.2)**	**(1,002.6)**	**(1,019.9)**	**(888.2)**	**(553.7)**	**37.2**
Mining	(ZARm)	(3,723.2)	(315.2)	(607.1)	(632.7)	(663.8)	(665.5)	(546.3)	(292.6)	-
Processing	(ZARm)	(820.8)	(54.8)	(130.2)	(135.6)	(142.5)	(147.3)	(135.2)	(75.3)	-
Overheads	(ZARm)	(66.0)	(137.3)	(143.9)	(150.3)	(157.1)	(164.2)	(87.9)	-	
Transportation Costs	(ZARm)	(12.6)	(0.9)	(1.9)	(2.0)	(2.1)	(2.1)	(2.2)	(1.4)	-
Treatment Costs	(ZARm)	(22.9)	(1.4)	(3.6)	(3.8)	(4.0)	(4.1)	(3.6)	(2.2)	-
Refining Charges	(ZARm)	-	-	-	-	-	-	-	-	-
Realisation Charges	(ZARm)	(166.8)	(5.8)	(17.7)	(24.1)	(28.2)	(31.9)	(28.8)	(30.3)	-
Mineral Royalty	(ZARm)	(6.3)	-	-	-	-	(1.9)	(1.7)	(2.7)	-
Environmental	(ZARm)	(57.1)	(7.7)	(8.0)	(8.4)	(8.8)	(9.2)	(9.6)	(5.5)	-
Terminal Benefits	(ZARm)	(37.3)	-	-	-	-	-	-	(37.3)	-
Net Change in Working Capital	(ZARm)	(63.3)	(61.8)	(11.1)	(8.8)	(3.0)	(0.7)	3.4	(18.5)	37.2
Operating Profit	**(ZARm)**	**4,186.8**	**(0.3)**	**302.9**	**565.9**	**697.7**	**776.9**	**722.8**	**1,083.8**	**37.2**
Tax Liability	**(ZARm)**	**(414.8)**	**-**	**-**	**-**	**-**	**-**	**(89.5)**	**(314.2)**	**(11.2)**
Capital Expenditure	**(ZARm)**	**(747.0)**	**(16.6)**	**(127.3)**	**(177.4)**	**(145.2)**	**(143.2)**	**(100.8)**	**(36.6)**	**-**
Project	(ZARm)	(16.6)	(16.6)	-	-	-	-	-	-	-
Ongoing	(ZARm)	(730.4)	-	(127.3)	(177.4)	(145.2)	(143.2)	(100.8)	(36.6)	-
Final Net Free Cash	**(ZARm)**	**3,025.0**	**(16.9)**	**175.6**	**388.6**	**552.5**	**633.7**	**532.5**	**733.0**	**26.0**
Statistics – Nominal										
Cash Operating Costs	(ZAR/4Ekg)	-80,140	-82,139	-74,342	-77,652	-81,541	-83,574	-85,973	-75,608	
Total Cash Costs	(ZAR/4Ekg)	-80,140	-82,139	-74,342	-77,652	-81,541	-83,574	-85,973	-75,608	
Total Working Costs	(ZAR/4Ekg)	-81,535	-83,612	-75,029	-78,372	-82,293	-84,365	-86,948	-82,703	
Total Costs	(ZAR/4Ekg)	-93,513	-98,605	-86,897	-94,345	-94,994	-96,790	-96,851	-91,844	

Table 13.6a Modikwa Tax Entity (Mineral Reserves+ Mineral Resources): FM in ZAR nominal terms

Financial Year Project Year	Units	Totals/ Averages	2004 1	2005 2	2006 3	2007 4	2008 5	2009 6	2010 7	2011 8	2012 9	2013 10
Mining												
RoM Tonnage	(kt)	21,546	1,356	2,828	2,804	2,827	2,784	2,784	2,784	2,784	595	
Head Grade	(4Eg/t)	4.76	4.65	4.77	4.76	4.73	4.77	4.77	4.77	4.77	4.77	
	(Ni%)	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	
	(Cu%)	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	
Processing												
Tonnage Milled	(kt)	21,546	1,356	2,828	2,804	2,827	2,784	2,784	2,784	2,784	595	
Grade Milled	(4Eg/t)	4.76	4.65	4.77	4.76	4.73	4.77	4.77	4.77	4.77	4.77	
	(Ni%)	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	
	(Cu%)	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	
	(Co%)	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	
Metallurgical Recovery – Milled												
4E	(%)	87.26%	87.26%	87.26%	87.26%	87.26%	87.26%	87.26%	87.26%	87.26%	87.26%	
Nickel	(%)	18.00%	18.00%	18.00%	18.00%	18.00%	18.00%	18.00%	18.00%	18.00%	18.00%	
Copper	(%)	56.00%	56.00%	56.00%	56.00%	56.00%	56.00%	56.00%	56.00%	56.00%	56.00%	
Cobalt	(%)	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	
Concentrate Produced	(t)	538,643	33,900	70,708	70,101	70,679	69,594	69,594	69,594	69,594	14,879	
Concentrate Grade	(4Eg/t)	166	162	167	166	165	166	166	166	166	166	
	(Ni%)	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	
	(Cu%)	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	
	(Co%)	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	
	(%Cr203)	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	
	(6Eg/t)	187	183	187	187	186	187	187	187	187	187	
Sales												
Concentrate	(t)	540,443	32,205	70,068	70,131	70,650	69,648	69,594	69,594	69,594	18,959	
Grade	(4Eg/t)	166	162	166	166	165	166	166	166	166	166	
	(Ni%)	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	0.72%	
	(Cu%)	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	0.45%	
	(Co%)	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	
	(%Cr203)	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	
	(6Eg/t)	187	183	187	187	186	187	187	187	187	187	
	(Ptg/t)	76	75	76	76	76	76	76	76	76	76	
	(Pdg/t)	73	72	73	73	73	73	73	73	73	73	
	(Rhg/t)	15	14	15	15	14	15	15	15	15	15	
	(Aug/t)	2	2	2	2	2	2	2	2	2	2	
	(Rug/t)	19	18	19	19	18	19	19	19	19	19	
	(Irg/t)	2	2	2	2	2	2	2	2	2	2	

Table 13.6a Modikwa Tax Entity (Mineral Reserves+ Mineral Resources): FM in ZAR nominal terms (continued)

Financial Year Project Year	Units	Totals/ Averages	2004 1	2005 2	2006 3	2007 4	2008 5	2009 6	2010 7	2011 8	2012 9	2013 10
Commodity Prices												
4E	**(ZAR/kg)**	**251,558**	**119,115**	**141,601**	**168,160**	**188,330**	**200,027**	**202,748**	**211,872**	**221,406**	**231,369**	
Nickel	(ZAR/t)	116,029	65,130	71,332	80,281	86,091	91,438	92,682	96,853	101,211	105,766	
Copper	(ZAR/t)	30,529	14,058	18,866	21,233	22,770	24,184	24,513	25,616	26,769	27,973	
Cobalt	*(ZAR/t)*	*261,238*	*137,855*	*160,880*	*181,065*	*194,168*	*206,228*	*209,034*	*218,440*	*228,270*	*238,542*	
6E	**(ZAR/kg)**	**221,924**	**105,150**	**125,039**	**148,407**	**166,134**	**176,452**	**178,853**	**186,901**	**195,312**	**204,101**	
Platinum	(ZAR/kg)	241,970	175,042	175,597	172,924	176,608	187,578	190,129	198,685	207,626	216,969	
Palladium	(ZAR/kg)	172,614	56,926	86,335	115,283	130,690	138,807	140,696	147,027	153,643	160,557	
Rhodium	(ZAR/kg)	686,771	142,942	241,446	403,490	529,825	562,733	570,388	596,056	622,878	650,908	
Gold	(ZAR/kg)	181,329	91,659	111,797	125,823	134,929	143,309	145,259	151,796	158,626	165,765	
Macro-Economics												
Exchange Rates	(US$:ZAR)	7.80	9.01	10.04	10.66	11.21	11.25	11.64	12.04	12.46		
RSA CPI	(%)	1.28%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%		
US CPI	(%)	0.69%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%		
Financial – Nominal												
Sales Revenue	**(ZARm)**	**13,540.0**	**513.2**	**1,219.8**	**1,525.2**	**1,700.3**	**1,796.7**	**1,817.5**	**1,899.2**	**1,984.6**	**1,083.5**	**-**
4E	**(ZARm)**	**13,218.6**	**498.7**	**1,188.9**	**1,488.3**	**1,660.5**	**1,754.9**	**1,775.3**	**1,855.1**	**1,938.5**	**1,058.3**	**-**
Nickel	(ZARm)	268.8	12.4	25.9	30.8	33.2	34.9	35.3	36.8	38.5	21.0	-
Copper	(ZARm)	43.8	1.7	4.3	5.1	5.5	5.7	5.8	6.1	6.3	3.5	-
Cobalt	(ZARm)	8.9	0.4	0.9	1.0	1.1	1.2	1.2	1.2	1.3	0.7	-
6E	**(ZARm)**	**13,218.6**	**498.7**	**1,188.9**	**1,488.3**	**1,660.5**	**1,754.9**	**1,775.3**	**1,855.1**	**1,938.5**	**1,058.3**	**-**
Platinum	(ZARm)	6,178.2	338.5	686.4	717.8	733.4	775.1	784.1	819.3	856.2	467.4	-
Palladium	(ZARm)	4,004.8	104.8	321.2	455.4	516.5	545.8	552.2	577.0	602.9	329.2	-
Rhodium	(ZARm)	2,918.6	50.6	170.0	301.6	396.2	418.8	423.6	442.7	462.6	252.5	-
Gold	(ZARm)	117.0	4.9	11.3	13.5	14.4	15.3	15.4	16.1	16.9	9.2	-
Total Working Costs	**(ZARm)**	**(8,038.4)**	**(512.0)**	**(915.3)**	**(957.5)**	**(1,000.8)**	**(1,018.0)**	**(1,058.9)**	**(1,110.7)**	**(1,162.6)**	**(327.9)**	**25.4**
Mining	(ZARm)	(5,235.7)	(315.2)	(607.1)	(632.7)	(663.8)	(665.5)	(695.5)	(726.8)	(759.5)	(169.7)	-
Processing	(ZARm)	(1,130.7)	(54.8)	(130.2)	(135.6)	(142.5)	(147.3)	(153.9)	(160.9)	(168.1)	(37.6)	-
Overheads	(ZARm)	(1,209.6)	(66.0)	(137.3)	(143.9)	(150.3)	(157.1)	(164.2)	(171.6)	(179.3)	(40.1)	-
Transportation Costs	(ZARm)	(16.6)	(0.9)	(1.9)	(2.0)	(2.1)	(2.1)	(2.2)	(2.3)	(2.4)	(0.7)	-
Treatment Costs	(ZARm)	(32.0)	(1.4)	(3.6)	(3.8)	(4.0)	(4.1)	(4.3)	(4.5)	(4.7)	(1.3)	-
Refining Charges	(ZARm)	-	-	-	-	-	-	-	-	-	-	-
Realisation Charges	(ZARm)	(241.0)	(5.8)	(17.7)	(24.1)	(28.2)	(31.9)	(33.0)	(36.5)	(40.4)	(23.4)	-
Mineral Royalty	(ZARm)	(9.4)	-	-	-	-	(1.9)	(1.8)	(1.9)	(2.0)	(1.8)	-
Environmental	(ZARm)	(59.3)	(6.1)	(6.4)	(6.7)	(7.0)	(7.3)	(7.6)	(8.0)	(8.3)	(1.9)	-
Terminal Benefits	(ZARm)	(40.8)	-	-	-	-	-	-	-	-	(40.8)	-
Net Change in Working Capital	(ZARm)	(63.3)	(61.9)	(11.1)	(8.8)	(3.0)	(0.7)	3.8	1.8	2.1	(10.8)	25.4
Operating Profit	**(ZARm)**	**5,501.6**	**1.2**	**304.5**	**567.6**	**699.5**	**778.7**	**758.7**	**788.5**	**822.0**	**755.5**	**25.4**
Tax Liability	**(ZARm)**	**-**	**-**	**-**	**-**	**-**	**(97.5)**	**(203.4)**	**(229.5)**	**(224.4)**	**(7.6)**	
Capital Expenditure	**(ZARm)**	**(903.1)**	**(16.6)**	**(127.3)**	**(177.4)**	**(145.2)**	**(143.2)**	**(118.3)**	**(110.6)**	**(57.1)**	**(7.4)**	**-**
Project	(ZARm)	(16.6)	(16.6)	-	-	-	-	-	-	-	-	-
Ongoing	(ZARm)	(886.5)	-	(127.3)	(177.4)	(145.2)	(143.2)	(118.3)	(110.6)	(57.1)	(7.4)	-
Final Net Free Cash	**(ZARm)**	**3,836.0**	**(15.5)**	**177.2**	**390.3**	**554.3**	**635.5**	**542.8**	**474.6**	**535.4**	**523.7**	**17.7**
Statistics – Nominal												
Cash Operating Costs	(ZAR/4Ekg)	-84,217	-82,139	-74,342	-77,652	-81,541	-83,574	-87,452	-91,561	-95,874	-79,042	
Total Cash Costs	(ZAR/4Ekg)	-84,217	-82,139	-74,342	-77,652	-81,541	-83,574	-87,452	-91,561	-95,874	-79,042	
Total Working Costs	(ZAR/4Ekg)	-85,333	-83,313	-74,890	-78,226	-82,141	-84,205	-88,112	-92,250	-96,594	-92,551	
Total Costs	(ZAR/4Ekg)	-96,108	-98,330	-86,758	-94,199	-94,842	-96,630	-98,004	-101,644	-101,347	-98,322	

Table 13.7a Two Rivers Project Tax Entity: FM in ZAR nominal terms

Financial Year / Project Year	Units	Totals/ Averages	2004 1	2005 2	2006 3	2007 4	2008 5	2009 6	2010 7	2011 8	2012 9	2013 10	2014 11	2015 12	2016 13	2017 14	2018 15	2019 16	2020 17	2021 18	2022 19	2023 20	2024 21
Production Mining																							
RoM Tonnage	(kt)	44,802	38	1,284	2,562	2,425	2,453	2,463	2,442	2,457	2,488	2,500	2,500	2,550	2,500	2,500	2,450	2,400	2,450	2,400	2,350	1,590	
Head Grade	(Ni%)	0.04%	0.04%	0.03%	0.03%	0.03%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.03%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.05%	0.04%	
	(Cu%)	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	
Processing																							
Tonnage Milled	(kt)	44,802		975	2,637	2,646	2,504	2,450	2,450	2,450	2,500	2,500	2,500	2,550	2,500	2,500	2,450	2,400	2,450	2,400	2,350	1,590	
Grade Milled	(Ni%)	0.04%		0.03%	0.03%	0.03%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.03%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.05%	0.04%	
	(Cu%)	0.01%		0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	
	(4Eg/t)	3.49		3.69	3.62	3.49	3.43	3.52	3.63	3.62	3.65	3.71	3.52	3.42	3.34	3.29	3.20	3.29	3.42	3.37	3.70	3.43	
Metallurgical Recovery – Milled																							
Nickel	(%)	50%	40%	46%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	
Copper	(%)	60%	48%	55%	59%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	
4E	(%)	83%		82%	84%	83%	83%	83%	84%	84%	84%	84%	83%	83%	82%	82%	82%	82%	83%	82%	84%	83%	
Concentrate Produced	(t)	682,468		15,489	42,024	40,438	37,472	37,726	39,192	39,078	40,321	41,009	38,523	37,960	36,192	35,547	33,631	34,027	36,417	35,157	38,489	23,778	
Concentrate Grade	(Ni%)	1.24%		0.92%	0.98%	1.10%	1.26%	1.21%	1.14%	1.13%	1.13%	1.17%	1.17%	1.15%	1.27%	1.36%	1.49%	1.37%	1.44%	1.62%	1.43%	1.24%	
	(Cu%)	0.33%		0.30%	0.33%	0.34%	0.34%	0.33%	0.32%	0.31%	0.31%	0.30%	0.31%	0.31%	0.33%	0.34%	0.35%	0.36%	0.36%	0.37%	0.33%	0.33%	
	(4Eg/t)	190.00		190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	190	
Sales																							
Concentrate	(t)	679,056		14,041	40,494	40,315	37,432	37,524	38,923	38,888	40,058	40,769	38,454	37,798	36,099	35,401	33,558	33,837	36,116	35,044	38,131	26,174	
Grade	(Ni%)	1.24%		0.92%	0.97%	1.09%	1.25%	1.21%	1.15%	1.13%	1.13%	1.17%	1.17%	1.15%	1.27%	1.35%	1.48%	1.38%	1.43%	1.61%	1.44%	1.26%	
	(Cu%)	0.33%		0.30%	0.33%	0.33%	0.34%	0.33%	0.32%	0.31%	0.31%	0.30%	0.31%	0.31%	0.33%	0.34%	0.35%	0.36%	0.36%	0.37%	0.33%	0.33%	
	(4Eg/t)	190.00		190.00	190.00	190.00	190.00	190.00	190.00	190.00	190.00	190.00	190.00	190.00	190.00	190.00	190.00	190.00	190.00	190.00	190.00	190.00	
Nickel	(t)	8,445		129	394	440	468	454	447	440	452	476	452	434	457	478	496	466	518	564	549	331	
Copper	(t)	2,242		43	133	135	128	124	123	122	125	124	118	117	119	119	118	121	129	130	127	87	
4E	(kg)	129,021		2,668	7,694	7,660	7,112	7,130	7,395	7,389	7,611	7,746	7,306	7,182	6,859	6,726	6,376	6,429	6,862	6,658	7,245	4,973	
Platinum	(kg)	71,153		1,533	4,404	4,355	3,969	3,949	4,095	4,105	4,241	4,273	4,105	4,053	3,826	3,693	3,423	3,394	3,597	3,464	3,947	2,727	
Palladium	(kg)	43,906		864	2,492	2,488	2,374	2,412	2,504	2,488	2,548	2,637	2,403	2,343	2,290	2,304	2,255	2,343	2,519	2,442	2,496	1,704	
Rhodium	(kg)	13,162		253	749	767	722	725	753	754	780	793	759	748	705	691	658	645	695	702	752	511	
Gold	(kg)	799		17	49	50	47	44	43	42	42	43	39	38	38	39	41	47	51	50	49	31	
Ruthenium	(kg)	19,291		440	1,195	1,163	1,050	1,050	1,083	1,085	1,114	1,137	1,116	1,125	1,070	1,033	969	946	983	936	1,060	737	
Iridium	(kg)	3,827		88	238	231	209	209	214	214	219	223	218	219	209	204	194	189	199	191	213	146	
Commodity Prices																							
Nickel	(ZAR/t)	119,045	65,130	71,332	80,281	86,091	91,438	92,682	96,853	101,211	105,766	110,525	115,499	120,696	126,127	131,803	137,734	143,932	150,409	157,178	164,251	171,642	
Copper	(ZAR/t)	31,335	14,058	18,866	21,233	22,770	24,184	24,513	25,616	26,769	27,973	29,232	30,548	31,922	33,359	34,860	36,429	38,068	39,781	41,571	43,442	45,397	
Cobalt	(ZAR/t)	268,985	138,330	161,435	181,688	194,837	206,939	209,754	219,193	229,056	239,364	250,135	261,391	273,154	285,446	298,291	311,714	325,741	340,399	355,717	371,725	388,452	
4E	(ZAR/kg)	270,144	131,507	152,446	176,366	196,820	208,953	211,617	221,227	231,368	242,124	252,601	265,527	277,695	288,845	301,211	314,184	325,548	340,793	359,006	375,926	392,271	
Platinum	(ZAR/kg)	247,970	175,042	175,597	172,924	176,608	187,578	190,129	198,685	207,626	216,969	226,733	236,936	247,598	258,740	270,383	282,550	295,265	308,552	322,437	336,947	352,109	
Palladium	(ZAR/kg)	177,360	56,926	86,335	115,283	130,690	138,807	140,696	147,027	153,643	160,557	167,782	175,333	183,223	191,468	200,084	209,087	218,496	228,329	238,603	249,341	260,561	
Rhodium	(ZAR/kg)	706,632	142,942	241,446	403,490	529,825	562,733	570,388	596,056	622,878	650,908	680,199	710,808	742,794	776,220	811,150	847,651	885,796	925,656	967,311	1,010,840	1,056,328	
Gold	(ZAR/kg)	186,081	91,659	111,797	125,823	134,929	143,309	145,259	151,796	158,626	165,765	173,224	181,019	189,165	197,677	206,573	215,869	225,583	235,734	246,342	257,427	269,011	
Ruthenium	(ZAR/kg)	15,231	7,464	9,152	10,300	11,045	11,731	11,891	12,426	12,985	13,569	14,180	14,818	15,485	16,182	16,910	17,671	18,466	19,297	20,165	21,073	22,021	
Iridium	(ZAR/kg)	42,080	20,747	25,281	28,452	30,512	32,407	32,848	34,326	35,870	37,485	39,171	40,934	42,776	44,701	46,713	48,815	51,011	53,307	55,706	58,212	60,832	
Macro-Economics																							
Exchange Rates	(US$:ZAR)		7.80	9.01	10.04	10.66	11.21	11.25	11.64	12.04	12.46	12.89	13.34	13.80	14.28	14.77	15.29	15.82	16.36	16.93	17.52	18.13	
RSA CPI	(%)		1.28%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	
US CPI	(%)		0.69%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	

Table 13.7a Two Rivers Project Tax Entity: FM in ZAR nominal terms (continued)

Financial Year	Units	Totals/	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Project Year		Averages	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Financial – Nominal																							
Sales Revenue	**(ZARm)**	**32,105.8**	**–**	**246.6**	**966.9**	**1,363.7**	**1,385.9**	**1,371.7**	**1,467.2**	**1,549.4**	**1,652.8**	**1,766.2**	**1,785.8**	**1,815.7**	**1,831.1**	**1,857.6**	**1,861.9**	**1,908.0**	**2,084.8**	**2,195.4**	**2,405.3**	**2,589.6**	–
Nickel	(ZARm)	907.7	–	7.1	25.5	32.9	37.3	37.2	38.2	39.3	42.0	46.0	46.2	46.4	50.4	55.2	59.8	59.5	67.7	77.2	79.6	60.3	–
Copper	(ZARm)	61.2	–	0.6	2.2	2.6	2.7	2.6	2.7	2.8	3.0	3.1	3.1	3.2	3.4	3.6	3.7	4.0	4.4	4.6	4.8	4.0	–
Cobalt	(ZARm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
4E	(ZARm)	30,903.8	–	235.6	929.3	1,317.9	1,336.1	1,321.9	1,415.7	1,496.1	1,595.8	1,704.3	1,723.3	1,752.4	1,763.6	1,785.0	1,784.7	1,830.5	1,997.6	2,098.4	2,303.1	2,512.4	–
Platinum	(ZARm)	15,332.5	–	146.9	502.9	675.4	675.4	658.6	702.5	744.9	795.0	844.5	863.1	881.2	883.8	883.4	868.8	876.5	946.6	987.3	1,105.6	1,290.1	–
Palladium	(ZARm)	6,966.1	–	54.3	223.8	284.4	290.7	296.2	320.1	334.8	356.4	384.6	374.3	376.7	384.4	401.9	412.8	443.5	495.3	510.5	540.3	481.0	–
Rhodium	(ZARm)	8,472.1	–	33.4	198.6	352.2	364.0	361.4	387.2	410.5	438.3	468.7	479.5	488.2	488.8	492.8	495.6	501.7	545.4	589.7	646.1	729.8	–
Gold	(ZARm)	133.1	–	1.1	4.1	5.8	6.0	5.7	5.8	5.9	6.1	6.4	6.4	6.4	6.5	6.9	7.5	8.8	10.2	10.8	11.1	11.5	–
Ruthenium	(ZARm)	160.9	–	2.2	6.8	7.1	6.8	6.9	7.4	7.7	8.3	8.9	9.1	9.6	9.5	9.6	9.4	9.6	10.4	10.4	12.3	8.9	–
Iridium	(ZARm)	72.2	–	1.0	3.1	3.2	3.0	3.1	3.3	3.5	3.7	3.9	4.0	4.2	4.2	4.3	4.3	4.3	4.8	4.8	5.6	4.0	–
Total Working Costs	**(ZARm)**	**(12,234.0)**	**(23.5)**	**(270.7)**	**(527.6)**	**(543.7)**	**(535.4)**	**(553.8)**	**(574.0)**	**(575.0)**	**(602.2)**	**(628.8)**	**(651.6)**	**(685.3)**	**(692.9)**	**(714.5)**	**(735.5)**	**(762.5)**	**(813.4)**	**(840.9)**	**(898.8)**	**(678.9)**	**75.1**
Mining	(ZARm)	(7,042.8)	(12.4)	(180.6)	(307.1)	(311.8)	(322.9)	(338.1)	(340.2)	(329.9)	(344.7)	(357.3)	(377.4)	(398.3)	(394.6)	(405.3)	(419.0)	(433.2)	(457.6)	(473.1)	(489.0)	(350.0)	–
Processing	(ZARm)	(3,311.4)	(5.4)	(62.1)	(129.4)	(135.0)	(136.4)	(140.7)	(147.0)	(153.7)	(162.5)	(169.8)	(177.5)	(187.7)	(193.8)	(202.5)	(209.1)	(215.8)	(228.3)	(235.7)	(243.3)	(175.4)	–
Overheads	(ZARm)	(1,070.5)	(5.3)	(22.0)	(37.8)	(42.6)	(44.1)	(45.3)	(47.7)	(50.0)	(52.6)	(55.4)	(57.2)	(59.3)	(61.2)	(63.3)	(65.3)	(67.8)	(71.9)	(75.3)	(79.9)	(66.3)	–
Transportation Costs	(ZARm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Treatment Costs	(ZARm)	(383.2)	–	(4.9)	(15.5)	(16.4)	(16.1)	(16.6)	(18.0)	(18.7)	(20.2)	(21.5)	(21.1)	(21.7)	(21.7)	(22.2)	(22.0)	(23.2)	(25.9)	(26.2)	(29.8)	(21.4)	–
Refining Charges	(ZARm)	(98.3)	–	(0.9)	(2.9)	(3.6)	(4.0)	(4.1)	(4.2)	(4.3)	(4.6)	(5.0)	(5.0)	(5.0)	(5.5)	(5.9)	(6.4)	(6.4)	(7.3)	(8.3)	(8.5)	(6.5)	–
Realisation Charges	(ZARm)	(72.9)	–	(0.6)	(2.2)	(2.7)	(3.0)	(3.0)	(3.1)	(3.2)	(3.4)	(3.7)	(3.7)	(3.7)	(4.1)	(4.4)	(4.7)	(4.8)	(5.4)	(6.1)	(6.3)	(4.8)	–
Social Levy	(ZARm)	(207.2)	–	–	(4.9)	(8.7)	(8.8)	(8.5)	(9.3)	(10.2)	(10.9)	(11.8)	(11.7)	(11.7)	(11.8)	(11.9)	(11.7)	(11.9)	(13.3)	(14.1)	(15.9)	(20.0)	–
Environmental	(ZARm)	(27.0)	(0.9)	(0.9)	(1.0)	(1.0)	(1.1)	(1.1)	(1.1)	(1.2)	(1.3)	(1.3)	(1.4)	(1.4)	(1.5)	(1.6)	(1.6)	(1.7)	(1.8)	(1.9)	(1.9)	(1.4)	–
Terminal Benefits	(ZARm)	(20.7)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	(20.7)	–	–
Net Change in Working Capital	(ZARm)	–	0.5	1.3	(26.8)	(21.8)	1.0	3.5	(3.4)	(3.8)	(1.9)	(2.9)	3.5	3.6	1.3	2.7	4.4	2.4	(1.9)	(0.3)	(3.5)	(33.1)	75.1
Operating Profit	(ZARm)	19,871.8	(23.5)	(24.2)	439.3	819.9	850.5	817.9	893.3	974.4	1,050.7	1,137.4	1,134.2	1,130.5	1,138.3	1,143.1	1,126.4	1,145.5	1,271.4	1,354.5	1,506.5	1,910.8	75.1
Tax Liability	**(ZARm)**	**(4,968.3)**	**–**	**–**	**–**	**–**	**(139.7)**	**(207.7)**	**(230.1)**	**(268.4)**	**(268.2)**	**(290.2)**	**(322.5)**	**(305.4)**	**(322.8)**	**(298.0)**	**(322.3)**	**(292.3)**	**(335.3)**	**(382.1)**	**(405.1)**	**(555.8)**	**(22.5)**
Capital Expenditure	**(ZARm)**	**(3,250.8)**	**(396.3)**	**(745.4)**	**(135.1)**	**(97.2)**	**(162.3)**	**(125.6)**	**(126.4)**	**(79.9)**	**(156.6)**	**(170.0)**	**(59.3)**	**(112.3)**	**(62.4)**	**(149.9)**	**(52.1)**	**(171.2)**	**(153.7)**	**(80.8)**	**(156.2)**	**(58.0)**	–
Project	(ZARm)	(1,436.6)	(396.3)	(745.4)	(132.8)	(69.4)	(23.8)	(24.9)	(22.4)	(10.2)	–	(11.5)	–	–	–	–	–	–	–	–	–	–	–
Ongoing	(ZARm)	(1,814.2)	–	–	(2.4)	(27.9)	(138.5)	(100.7)	(104.0)	(69.7)	(156.6)	(158.5)	(59.3)	(112.3)	(62.4)	(149.9)	(52.1)	(171.2)	(153.7)	(80.8)	(156.2)	(58.0)	–
Final Net Free Cash	(ZARm)	11,652.7	(419.8)	(769.6)	304.1	722.7	548.5	484.6	536.8	626.2	625.8	677.2	752.4	712.7	753.1	695.3	752.0	682.0	782.4	891.5	945.2	1,296.9	52.6
Statistics – Nominal																							
Cash Operating Costs	(ZAR/4Ekg)	–85,136		–97,532	–60,094	–62,034	–68,267	–71,029	–70,025	–69,927	–71,214	–72,640	–80,932	–86,905	–91,144	–95,591	–103,691	–106,668	–105,279	–111,405	–106,352	–114,054	
Total Cash Costs	(ZAR/4Ekg)	–85,136		–97,532	–60,094	–62,034	–68,267	–71,029	–70,025	–69,927	–71,214	–72,640	–80,932	–86,905	–91,144	–95,591	–103,691	–106,668	–105,279	–111,405	–106,352	–114,054	
Total Working Costs	(ZAR/4Ekg)	–85,506		–97,876	–60,219	–62,166	–68,415	–71,183	–70,180	–70,090	–71,379	–72,809	–81,119	–87,104	–91,362	–95,824	–103,947	–106,934	–105,539	–111,685	–109,476	–114,331	
Total Costs	(ZAR/4Ekg)	–110,702		–376,804	–81,260	–77,700	–91,104	–88,315	–87,729	–81,411	–92,205	–95,131	–88,759	–102,234	–100,271	–117,716	–111,437	–133,185	–128,214	–123,867	–131,515	–132,648	

13.6 Net Present Values and Sensitivities

The following tables present the NPVs of the nominal cash flow as derived from the FMs for each Tax entity. IN summary they include the following:

- The variation in NPV with discount factors;
- The variation in NPV based on single parameter sensitivities; and
- The variation in NPV based on twin (revenue and operating expenditure) sensitivities.

13.6.1 Nkomati Tax Entity

Table 13.8 Nkomati Tax Entity (Base Case): variation of NPV with discount factors

Discount Factor (%)	NPV (ZARm)
0%	703.6
8%	598.0
12%	555.4
14%	**536.1**
16%	518.1
18%	501.2
20%	485.3

Table 13.9 Nkomati Tax Entity (Base Case): NPV – single parameter sensitivity

Sensitivity Range – Revenue	–30%	–20%	–10%	0%	10%	20%	30%
Sensitivity Range – Working Costs	–15%	–10%	–5%	0%	5%	10%	15%
Sensitivity Range – Working Capital	–15%	–10%	–5%	0%	5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Variation in NPV at 0% DCF							
Revenue	317.7	447.8	577.7	703.6	824.8	950.6	1076.2
Total Working Costs	787.1	759.2	731.4	703.6	675.8	647.9	620.1
Capital	705.5	704.9	704.2	703.6	703.0	702.3	701.7
Variation in NPV at 14% DCF							
Revenue	238.0	338.5	438.9	536.1	629.8	726.9	823.9
Total Working Costs	602.0	580.0	558.1	536.1	514.2	492.3	470.3
Capital	537.7	537.2	536.7	536.1	535.6	535.1	534.6

Table 13.10 Nkomati Tax Entity (Base Case): NPV – twin parameters sensitivity at 14% discount factor

NPV (ZARm)		Revenue Sensitivity						
		–30%	–20%	–10%	0%	10%	20%	30%
TWC Sensitivity	–15%	303.8	404.3	504.7	602.0	695.6	792.7	889.7
	–10%	281.8	382.4	482.8	580.0	673.7	770.8	867.8
	–5%	259.9	360.4	460.8	558.1	651.7	748.8	845.9
	0%	238.0	338.5	438.9	536.1	629.8	726.9	823.9
	5%	216.0	316.5	417.0	514.2	607.8	704.9	802.0
	10%	194.1	294.6	395.0	492.3	585.9	683.0	780.0
	15%	172.1	272.6	373.1	470.3	563.9	661.0	758.1

Table 13.11 Nkomati Tax Entity (Expansion Case): variation of NPV with discount factors

Discount Factor (%)	NPV (ZARm)
0%	11,287.4
8%	4,125.1
12%	2,443.8
14%	1,847.5
16%	1,367.2
18%	**978.1**
20%	661.3

Table 13.12 Nkomati Tax Entity (Expansion Case): NPV – single parameter sensitivity

Sensitivity Range – Revenue	–30%	–20%	–10%	0%	10%	20%	30%
Sensitivity Range – Working Costs	–15%	–10%	–5%	0%	5%	10%	15%
Sensitivity Range – Working Capital	–15%	–10%	–5%	0%	5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Variation in NPV at 0% DCF							
Revenue	(2,972.9)	1,754.1	6,252.0	11,287.4	16,860.5	22,971.2	29,619.5
Total Working Costs	13,257.6	12,600.9	11,944.2	11,287.4	10,630.7	9,974.0	9,317.2
Capital	11,616.1	11,506.5	11,397.0	11,287.4	11,177.9	11,068.4	10,958.8
Variation in NPV at 18% DCF							
Revenue	(2,316.9)	(1,209.0)	(140.3)	978.1	2,178.9	3,483.9	4,888.7
Total Working Costs	1,436.0	1,283.4	1,130.7	978.1	825.5	671.5	515.6
Capital	1,240.7	1,153.2	1,065.6	978.1	890.6	803.1	713.9

Table 13.13 Nkomati Tax Entity (Expansion Case): NPV – twin parameters sensitivity at 18% discount factor

NPV (ZARm)		Revenue Sensitivity						
		–30%	**–20%**	**–10%**	**0%**	**10%**	**20%**	**30%**
	–15%	(1,693.6)	(694.0)	335.2	1,436.0	2,628.5	3,929.7	5,331.2
	–10%	(1,899.5)	(861.5)	179.0	1,283.4	2,478.6	3,781.8	5,183.7
	–5%	(2,108.2)	(1,032.9)	19.4	1,130.7	2,328.7	3,633.8	5,036.3
TWC Sensitivity	**0%**	(2,316.9)	(1,209.0)	(140.3)	978.1	2,178.9	3,483.9	4,888.7
	5%	(2,525.6)	(1,390.4)	(302.4)	825.5	2,029.0	3,334.0	4,740.8
	10%	(2,734.3)	(1,575.9)	(465.9)	671.5	1,879.1	3,184.1	4,592.8
	15%	(2,943.0)	(1,764.3)	(631.9)	515.6	1,729.2	3,034.2	4,444.9

Table 13.14 Nkomati Tax Entity (Integrated Expansion Case): variation of NPV with discount factors

Discount Factor (%)	NPV (ZARm)
0%	11,991.0
8%	4,774.4
12%	3,065.2
14%	2,455.3
16%	1,961.5
18%	**1,559.2**
20%	1,229.4

Table 13.15 Nkomati Tax Entity (Integrated Expansion Case): NPV – single parameter sensitivity

Sensitivity Range – Revenue	–30%	–20%	–10%	0%	10%	20%	30%
Sensitivity Range – Working Costs	–15%	–10%	–5%	0%	5%	10%	15%
Sensitivity Range – Working Capital	–15%	–10%	–5%	0%	5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Variation in NPV at 0% DCF							
Revenue	(2,527.3)	2,201.9	6,829.7	11,991.0	17,685.3	23,921.8	30,695.6
Total Working Costs	14,044.7	13,360.2	12,675.6	11,991.0	11,306.5	10,621.9	9,937.4
Capital	12,321.5	12,211.4	12,101.2	11,991.0	11,880.9	11,770.7	11,660.5
Variation in NPV at 18% DCF							
Revenue	(2,008.7)	(795.9)	362.2	1,559.2	2,841.5	4,230.7	5,733.3
Total Working Costs	2,079.2	1,905.9	1,732.6	1,559.2	1,385.9	1,212.5	1,036.8
Capital	1,815.5	1,730.1	1,644.7	1,559.2	1,473.8	1,388.3	1,302.8

Table 13.16 Nkomati Tax Entity (Integrated Expansion Case): NPV – twin parameters sensitivity at 18% discount factor

NPV (ZARm)		Revenue Sensitivity						
		–30%	–20%	–10%	0%	10%	20%	30%
	–15%	(1,312.7)	(216.6)	896.6	2,079.2	3,353.2	4,742.5	6,240.0
	–10%	(1,535.3)	(406.1)	719.8	1,905.9	3,182.7	4,571.9	6,071.7
	–5%	(1,772.0)	(599.7)	542.9	1,732.6	3,012.1	4,401.3	5,903.5
TWC Sensitivity	0%	(2,008.7)	(795.9)	362.2	1,559.2	2,841.5	4,230.7	5,733.3
	5%	(2,246.0)	(998.5)	180.7	1,385.9	2,670.9	4,060.1	5,562.7
	10%	(2,484.3)	(1,207.6)	(4.2)	1,212.5	2,500.3	3,889.5	5,392.1
	15%	(2,722.5)	(1,421.2)	(191.3)	1,036.8	2,329.2	3,718.9	5,221.5

Table 13.17 Nkomati Tax Entity (Expansion Case): IRR – twin parameter sensitivity

IRR		Revenue Sensitivity						
		–30%	–20%	–10%	0%	10%	20%	30%
	–15%	0.0%	11.2%	21.0%	29.8%	38.1%	46.3%	54.3%
	–10%		9.4%	19.6%	28.6%	37.0%	45.3%	53.3%
	–5%		7.6%	18.2%	27.4%	35.9%	44.3%	52.4%
TWC Sensitivity	0%		5.6%	16.7%	26.2%	34.9%	43.3%	51.5%
	5%		3.6%	15.2%	24.9%	33.8%	42.3%	50.6%
	10%		1.5%	13.7%	23.7%	32.7%	41.3%	49.6%
	15%		0.0%	12.1%	22.4%	31.6%	40.3%	48.7%

Table 13.18 Nkomati Tax Entity (Integrated Expansion Case): IRR – twin parameter sensitivity

IRR		Revenue Sensitivity						
		–30%	–20%	–10%	0%	10%	20%	30%
	–15%	0.7%	15.4%	28.4%	41.6%	55.7%	72.1%	92.0%
	–10%	0.0%	13.1%	26.3%	39.4%	53.3%	69.3%	88.4%
	–5%	0.0%	10.7%	24.3%	37.3%	51.0%	66.5%	85.1%
TWC Sensitivity	0%	0.0%	8.3%	22.2%	35.2%	48.8%	63.9%	81.8%
	5%	0.0%	5.8%	20.1%	33.2%	46.6%	61.4%	78.6%
	10%	0.0%	3.2%	18.0%	31.2%	44.5%	58.9%	75.7%
	15%	0.0%	0.6%	15.8%	29.2%	42.5%	56.6%	72.9%

13.6.2 *Modikwa Tax Entity*

Table 13.19 Modikwa Tax Entity (Mineral Reserves): variation of NPV with discount factors

Discount Factor (%)	NPV (ZARm)
0%	3,025.0
8%	2,222.1
12%	1,930.1
14%	1,804.3
16%	**1,689.9**
18%	1,585.6
20%	1,490.4

Table 13.20 Modikwa Tax Entity (Mineral Reserves): NPV – single parameter sensitivity

Sensitivity Range – Revenue	–30%	–20%	–10%	0%	10%	20%	30%
Sensitivity Range – Working Costs	–15%	–10%	–5%	0%	5%	10%	15%
Sensitivity Range – Working Capital Currency	–15% (ZARm)	–10% (ZARm)	–5% (ZARm)	0% (ZARm)	5% (ZARm)	10% (ZARm)	15% (ZARm)
Variation in NPV at 0% DCF							
Revenue	492.3	1,474.8	2,337.2	3,025.0	3,712.7	4,400.5	5,088.2
Total Working Costs	3,643.6	3,437.4	3,231.2	3,025.0	2,818.8	2,612.6	2,406.3
Capital	3,103.4	3,077.3	3,051.1	3,025.0	2,998.8	2,972.7	2,946.5
Variation in NPV at 16% DCF							
Revenue	42.9	650.3	1,209.1	1,689.9	2,152.8	2,608.3	3,051.1
Total Working Costs	2,135.2	1,989.2	1,840.8	1,689.9	1,538.9	1,383.3	1,227.1
Capital	1,747.9	1,728.6	1,709.2	1,689.9	1,670.5	1,651.1	1,631.8

Table 13.21 Modikwa Tax Entity (Mineral Reserves): NPV – twin parameters sensitivity at 16% discount factor

NPV (ZARm)		Revenue Sensitivity						
		–30%	**–20%**	**–10%**	**0%**	**10%**	**20%**	**30%**
	–15%	615.6	1,188.6	1,671.0	2,135.2	2,591.2	3,035.1	3,479.0
	–10%	424.7	1,032.8	1,520.4	1,989.2	2,445.5	2,892.8	3,336.4
	–5%	233.8	841.8	1,364.9	1,840.8	2,299.2	2,750.5	3,193.7
TWC Sensitivity	**0%**	42.9	650.3	1,209.1	1,689.9	2,152.8	2,608.3	3,051.1
	5%	(148.0)	458.9	1,053.3	1,538.9	2,006.5	2,461.7	2,908.5
	10%	(338.9)	267.5	873.9	1,383.3	1,857.7	2,315.0	2,765.8
	15%	(529.8)	76.1	682.0	1,227.1	1,706.3	2,168.3	2,622.7

Table 13.22 Modikwa Tax Entity (Mineral Reserves+ Mineral Resources): variation of NPV with discount factors

Discount Factor (%)	NPV (ZARm)
0%	3,836.0
8%	2,662.2
12%	2,259.8
14%	2,090.7
16%	**1,939.4**
18%	1,803.5
20%	1,681.0

Table 13.23 Modikwa Tax Entity (Mineral Reserves+ Mineral Resources): NPV – single parameter sensitivity

Sensitivity Range – Revenue	–30%	–20%	–10%	0%	10%	20%	30%
Sensitivity Range – Working Costs	–15%	–10%	–5%	0%	5%	10%	15%
Sensitivity Range – Working Capital	–15%	–10%	–5%	0%	5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Variation in NPV at 0% DCF							
Revenue	614.8	1,942.7	2,906.5	3,836.0	4,765.5	5,695.1	6,624.6
Total Working Costs	4,693.7	4,407.8	4,121.9	3,836.0	3,550.1	3,264.2	2,978.3
Capital	3,930.9	3,899.2	3,867.6	3,836.0	3,804.4	3,772.8	3,741.2
Variation in NPV at 16% DCF							
Revenue	37.9	765.5	1,374.3	1,939.4	2,486.3	3,025.7	3,552.6
Total Working Costs	2,472.1	2,296.9	2,119.5	1,939.4	1,759.2	1,574.7	1,389.2
Capital	2,003.9	1,982.4	1,960.9	1,939.4	1,917.9	1,896.4	1,874.9

Table 13.24 Modikwa Tax Entity (Mineral Reserves+ Mineral Resources): NPV – twin parameters sensitivity at 16% discount factor

NPV (ZARm)		**Revenue Sensitivity**						
		–30%	**–20%**	**–10%**	**0%**	**10%**	**20%**	**30%**
	–15%	734.7	1,356.2	1,923.7	2,472.1	3,012.3	3,540.6	4,068.9
	–10%	502.4	1,166.1	1,744.0	2,296.9	2,837.5	3,369.0	3,896.8
	–5%	270.2	972.0	1,559.7	2,119.5	2,661.9	3,197.3	3,724.7
TWC Sensitivity	**0%**	37.9	765.5	1,374.3	1,939.4	2,486.3	3,025.7	3,552.6
	5%	(194.4)	532.6	1,183.7	1,759.2	2,310.7	2,849.9	3,380.5
	10%	(426.6)	299.7	989.8	1,574.7	2,132.8	2,673.8	3,208.4
	15%	(658.9)	66.8	792.5	1,389.2	1,952.2	2,497.7	3,036.0

13.6.3 Two Rivers Project Tax Entity

Table 13.25 Two Rivers Project Tax Entity: variation of NPV with discount factors

Discount Factor (%)	**NPV (ZARm)**
0%	11,652.7
8%	4,510.0
12%	2,937.4
14%	2,386.2
16%	1,942.8
18%	**1,582.3**
20%	1,286.4

Table 13.26 Two Rivers Project Tax Entity: NPV – single parameter sensitivity

Sensitivity Range – Revenue	–30%	–20%	–10%	0%	10%	20%	30%
Sensitivity Range – Working Costs	–15%	–10%	–5%	0%	5%	10%	15%
Sensitivity Range – Working Capital	–15%	–10%	–5%	0%	5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Variation in NPV at 0% DCF							
Revenue	4,889.8	7,108.7	9,370.1	11,652.7	13,826.4	15,828.9	17,801.8
Total Working Costs	12,808.7	12,423.4	12,038.1	11,652.7	11,267.3	10,881.9	10,496.5
Capital	11,994.0	11,880.2	11,766.5	11,652.7	11,538.9	11,425.1	11,311.3
Variation in NPV at 18% DCF							
Revenue	84.6	588.7	1,087.3	1,582.3	2,031.8	2,452.3	2,874.1
Total Working Costs	1,863.6	1,769.9	1,676.1	1,582.3	1,488.6	1,394.8	1,301.0
Capital	1,769.1	1,706.9	1,644.6	1,582.3	1,520.1	1,457.8	1,395.6

Table 13.27 Two Rivers Project Tax Entity: NPV – twin parameters sensitivity at 18% discount factor

NPV (ZARm)		Revenue Sensitivity						
		–30%	**–20%**	**–10%**	**0%**	**10%**	**20%**	**30%**
	–15%	380.1	876.0	1,368.6	1,863.6	2,307.9	2,728.4	3,150.2
	–10%	282.1	780.2	1,274.9	1,769.9	2,215.9	2,636.4	3,058.0
	–5%	184.2	684.5	1,181.1	1,676.1	2,123.8	2,544.3	2,966.1
TWC Sensitivity	**0%**	84.6	588.7	1,087.3	1,582.3	2,031.8	2,452.3	2,874.1
	5%	(15.6)	492.7	993.2	1,488.6	1,938.0	2,360.2	2,782.0
	10%	(115.8)	394.8	897.5	1,394.8	1,844.2	2,268.2	2,690.0
	15%	(218.2)	296.9	801.7	1,301.0	1,750.4	2,176.1	2,597.9

Table 13.28 Two Rivers Project Tax Entity: IRR – twin parameters sensitivity

IRR		Revenue Sensitivity						
		–30%	**–20%**	**–10%**	**0%**	**10%**	**20%**	**30%**
	–15%	23.5%	30.3%	36.9%	43.4%	48.9%	54.1%	59.3%
	–10%	22.0%	28.9%	35.5%	42.0%	47.5%	52.6%	57.8%
	–5%	20.6%	27.5%	34.1%	40.5%	46.1%	51.3%	56.4%
TWC Sensitivity	**0%**	19.2%	26.2%	32.8%	39.2%	44.8%	49.9%	55.0%
	5%	17.8%	24.8%	31.4%	37.8%	43.4%	48.5%	53.6%
	10%	16.4%	23.4%	30.1%	36.4%	42.0%	47.2%	52.2%
	15%	14.9%	22.1%	28.7%	35.1%	40.6%	45.8%	50.9%

13.7 Valuation of Non-LoM Mineral Resources, Exploration Properties and Land Holding Positions

The following section presents a valuation of the following areas not assessed in respect of DCF valuations as considered for the LoM plans associated with the PGM Assets. These are:

- The non-LoM Mineral Resources associated with the PGM Assets. In this context they are defined as those Mineral Resources, which have not been used as a base for derivation of Mineral Reserves. In the main they either reflect Mineral Resources upon which insufficient technical work has been undertaken to enable conversion to Mineral Reserves or their Inferred Mineral Resource status. In general these have been valued by due consideration of the in-situ unit values per LoM Mineral Resource as derived from the DCF valuation of the relevant LoM plans and risk discount factors as applied to the various Mineral Resource categories;
- The Mineral Resources associated with the Exploration Properties. These have been value based on in-situ unit values as considered appropriate and derived from previously quoted comparable transactions; and
- The land holding position as held by the various companies which do not have an associated SAMREC compliant Mineral Resource statement. In these instances values have been largely derived based on historical expenditures and planned future expenditures as reported by the Companies.

In the context of this CPR, SRK note however that the valuations as reported in respect of non-LoM Mineral Resources, Mineral Resources associated with the Exploration Properties and the land holding positions are highly subjective and as such cannot be relied upon to the same degree of confidence as that derived for those PGM Assets which are supported by Mineral Reserve statements. Consequently these should only be considered as indicative and may materially differ based on the assumptions stated herein.

Further, in considering the relative contribution of the values ascribed to the collective of the operating mines, projects and listed entities, SRK note the relatively lesser contribution of the Non-LoM Mineral Resources, the Exploration Properties and the Land Holding positions.

13.7.1 DCF analysis for PGM Assets' Non LoM Mineral Resources

The basis of the valuation of the PGM Assets' Non-LoM Mineral Resources is as set out in Table 13.29 below. The Base Case DCF valuation for each asset and the related LoM Mineral Resources have been used to derive unit values per in-situ primary commodity content. These unit values have then been adjusted which have subsequently been adjusted for historical/future capital requirements. In determining the quantum of non-LoM Mineral Resource to which the unit value is applied a risk discount factor has been applied to the quantum of non-LoM Mineral Resources which have been uniformly applied at 10% for Measured, 40% for Indicated and 60% for Inferred Mineral Resource categories. The capital adjustment is largely based on a broad estimate of future capital which would be required to bring such resources to account earlier than which current infrastructure would permit. Note that should this capital consideration be excluded then the unit rate applied to in-situ values may require further downwards revision to account for the perspective that such Mineral Resources would only be brought to account following completion of the current LoM plan.

Table 13.29 Valuation of Non-LoM Mineral Resources associated with the PGM Assets

NPV assessment	Units	Nkomati Mine Expansion (ZARm)	Modikwa Mine (P^2) (ZARm)	Two Rivers Project (ZARm)
0%	(%)	11,287.4	3,025.0	11,652.7
8%	(%)	4,125.1	2,222.1	4,510.0
12%	(%)	2,443.8	1,930.1	2,937.4
14%	(%)	1,847.5	1,804.3	2,386.2
16%	(%)	1,367.2	1,689.9	1,942.8
18%	(%)	978.1	1,585.6	1,582.3
20%	(%)	661.3	1,490.4	1,286.4
Base Case Discount Factor		18%	16%	18%
Base Case Value		**978.1**	**1,689.9**	**1,582.3**
Non-LoM Resource Valuation		**Ni (t)**	**4E (kg)**	**4E (kg)**
RoM		**280,114**	**77,198**	**156,219**
LoM Resources		**379,246**	**106,510**	**242,373**
Non-LoM Resources		**289,014**	**1,315,423**	**214,544**
Measured		0	0	0
Indicated		289,014	430,639	182,628
Inferred		0	884,785	31,916
Risk Discount Factor				
Measured		10%	10%	10%
Indicated		40%	40%	40%
Inferred		60%	60%	60%
Non-LoM Resource for Valuation		**173,409**	**612,297**	**612,297**
Base Case Value	(ZARm)	978.1	1,689.9	1,582.3
Historical Capex / Future Capex	(ZARm)	840.0	1,260.0	720.0
Revised Base Value	(ZARm)	138.1	429.9	862.3
Implied Value per LoM Resource	(ZAR/unit)	364	4,036	3,558
Implied Value (Non-LoM Resource)	(ZARm)	**63.2**	**2,471.1**	**435.3**

(1) Example calculation: Modikwa Mine P^2 – base case value is ZAR1,689.9m, less capital adjustment of ZAR1,260m gives a net value of ZAR429.9m. This dividend by LoM mineral resources of 77,198(4Ekg) gives an implied value per LoM resource of ZAR4,036/kg. Multiplication of this by non-LoM Resource after application of risk discount factor gives an implied non-LoM Resource value of ZAR2,471.1m. Similar logic is applied to both Nkomati mine expansion and Two Rivers Project.

13.7.2 Exploration Properties

In consideration of the valuation of the Mineral Resources associated with the Exploration Properties (Table 13.30) SRK has considered the unit in-situ rates as derived in 13.29 above where applicable and in-situ values as deemed applicable based on published data in respect of comparable transactions (Table 13.33).

The unit rate as applied to Kalplats is based on 50% of the average rate of the value derived for non-LoM Mineral Resources for Modikwa Mine and Two Rivers Project. SRK note the relatively low grade of the deposit and the generally limited potential as identified by technical studies completed to date. Further SRK note that the historical expenditures as applicable to Kalplats is of the order of ZAR40m and that a further ZAR17m would be required to advance the property to Feasibility Study levels.

The unit rate as applied to the Otjikoto property is largely based on the mid range of the values applied to the comparable transactions. Values in the range of US$5/oz to US$10/oz have been noted, however these are generally considered applicable to in-situ estimates whereby no discounting has been considered. Notwithstanding this aspect application of the value derived to the total Mineral Resource base yields a value of US$10/oz.

In respect of the copper interests a uniform value of 1 USc/lb has been used. Potential exists within certain of these deposits for open pit acid soluble copper, and accordingly consideration could made for differentiation within the Mineral Resource statements to apply, say, 2 USc/lb.

Table 13.30 Valuation of Exploration Properties(1)

Item	Metal Content	Discount	In-situ for valuation	Unit Rate	Value	
Kalplats Project	(4Ekg)	(%)	(4Ekg)	(ZAR/4Ekg)	(US$m)	(ZARm)
Mineral Resources	**90,707**	**43%**	**38,700**	**1,898**	**9.4**	**73.5**
Measured	0	0%	0	1,898	0.0	0.0
Indicated	12,087	40%	7,252	1,898	1.8	13.8
Inferred	78,620	60%	31,448	1,898	7.7	59.7
Otijkoto	**(koz)**	**(%)**	**(koz)**	**(US$/oz)**	**(US$m)**	**(ZARm)**
Mineral Resources	**946**	**40%**	**378**	**25**	**9.5**	**73.8**
Measured	0	0%	0	25	0.0	0.0
Indicated	0	40%	0	25	0.0	0.0
Inferred	946	60%	378	25	9.5	73.8
Konkola North	**(MlbCu)**	**(%)**	**(MlbCu)**	**(USc/lb)**	**(US$m)**	**(ZARm)**
Mineral Resources	**14,693**	**45%**	**6,644**	**1.0**	**6.6**	**51.8**
Measured	0	0%	0	1.0	0.0	0.0
Indicated	3,835	40%	2,301	1.0	2.3	17.9
Inferred	10,858	60%	4,343	1.0	4.3	33.9
Mwambashi	**(MlbCu)**	**(%)**	**(MlbCu)**	**(USc/lb)**	**(US$m)**	**(ZARm)**
Mineral Resources	**524**	**60%**	**315**	**1.0**	**0.3**	**2.5**
Measured	0	0%	0	1.0	0.0	0.0
Indicated	524	40%	315	1.0	0.3	2.5
Inferred	0	60%	0	1.0	0.0	0.0
Summary EPs						
Avmin			127.3			
ARM Platinum			0			
Harmony			73.5			

(1) 100% of Kalplats is attributable to Harmony; and 100% of Otjikoto, Konkola North and 70% at Mwambashi is attributable to Avmin.

13.7.3 Land Holding Positions

Table 13.31 below presents a summary of the valuation of various land holding positions that is largely based on past exploration expenditures and future commitments. Note that these values have been generated by the Companies and have not been audited in detail by SRK. These are not however considered by SRK to be material to the overall transaction.

Table 13.31 Valuation of Land Holding Positions[1], [2]

Project	Location	Past Exploration Expenditures (US$m)	Future (US$m)	Nominal (US$m)	Basis	Project Value (US$m)	Attributable (%)	Value (US$m)	(ZARm)
BHP/Biliton JV	Zambia		7.3	2.1	PEE&F	9.4	51%	4.8	37.2
Copperbelt JV	Zambia		10.6	1.5	F	1.5	70%	1.1	8.2
Leopards Hill Project	Zambia		0.1	0.1	PEE&F	0.2	100%	0.2	1.4
Star Project	Zambia		0.2	0.5	PEE&F	0.7	100%	0.7	5.5
Kalumines	DRC		0.4	1.6	PEE&F	2.0	60%	1.2	9.4
Sheffield	South Africa	0.0	0.0	1.0	Nominal	1.0	50%	0.5	3.9
Avmin/ Falconbridge Sub-Saharan	South Africa	0.0	0.0	0.1	Nominal	0.1	100%	0.1	0.8
Equity	Australia	0.0	0.0	0.1	Nominal	0.1	100%	0.1	0.6
SA Properties	South Africa			0.4	Nominal	0.4	100%	0.4	2.9
Total		**18.5**	**5.8**	**1.6**		**15.3**		**9.0**	**69.9**

(1) All values are attributable to Avmin.

(2) PEE – Past Exploration Expenditures; F – Future; PEE&F – Past Exploration Expenditures and Future.

13.7.4 Comparable Transactions

Table 13.32 presents the results of published surveys for comparable transactions for copper, nickel and gold projects in addition to unit in-situ values as used for the derivation of value for the non-LoM Mineral Resources and the Exploration Properties.

Table 13.32 Comparable Transactions and in-situ values as applied to the Non-LoM Mineral Resources and the Exploration Properties[1], [2]

Assets	Units	Period	Average Commodity Price	Values Low	High
Nickel Assets	(USc/lbNi)	1999-2002	310	0.2	15.0
Copper Assets	(USc/lbCu)	1998-2002	74	0.1	11.0
Gold Assets	(US$/ozAu)	1999-2003	301	5	50
PGM Transactions					
Kroondaal Listing	(ZAR/kg)	1998	66,424[2]	2,061	
Northam Acquisition	(ZAR/kg)	1999	74,394[2]	1,333	
Dwars Rivier Acquisition	(ZAR/kg)	2001	147,181[2]	7,277	
PGM Assets – Non-LoM Valuation					
Nkomati Mine – Expansion Project	(USc/lbNi)	2004		2.12	
Modikwa Mine	(ZAR/kg)	2004	n/a	4,036	
Two Rivers Project	(ZAR/kg)	2004	n/a	3,558	
Exploration Properties					
Kalplats Project	(ZAR/4Ekg)	2004	n/a	1,898	
Otjikoto	(US$/oz)	2004	405	25	
Konkola North	(USc/lb)	2004	124	1.0	
Mwambashi	(USc/lb)	2004	124	1.0	

(1) Mining Journal, London, April 26, 2002

(2) Platinum Price.

13.7.5 Summary of Non-LoM Resources, Exploration Properties and Land Holding Positions

Table 13.33 below presents a summary valuation of the Non-LoM Resources, Exploration Properties and Land Holding Positions for the Companies.

Table 13.33 Summary Valuations of Non-LoM Resources, Exploration Properties and Land Holding Positions(1)

Item		Project Value (ZARm)
Non-LoM Mineral Resources		
	Nkomati Mine	63.2
	Modikwa Mine	2,471.1
	Two Rivers Project	435.3
Exploration Properties		
	Kalplats	73.5
	Otijkoto	73.8
	Konkola North	51.8
	Mwambashi	2.5
Land-Holding Positions		69.9
Summary		
	Avmin	499.7
	ARM Mining Consortium	1,235.6
	Harmony	73.5

(1) 100% of Nkomati Mine; 55% of Two Rivers Project; 100% of Otjikoto; 100% of Konkola North; 70% of Mwambashi and 100% of the Land Holding Positions are attributable to Avmin. 50% of Modikwa Mine is attributable to ARM Mining Consortium of which 83% is attributable to ARM Platinum; and 100% of Kalplats is attributable to Harmony.

14. SUMMARY EQUITY VALUATION AND CONCLUDING REMARKS

14.1 Introduction

The following section includes a summary valuation of the Companies based on the aggregation of the following:

- NAV for the LoM plans as represented by the NPVs as included in Section 13.0. These include valuations derived from Mineral (Proved and Probable) Reserves ("P^2 Valuations") and the Mineral Reserve and Mineral Resource ("LoM Valuations");
- The estimated value of non-LoM Mineral Resources associated with the PGM Assets;
- The estimated value of the Exploration Properties;
- The estimated value of the Land Holding Positions;
- The companies estimate of the value of EPs;
- Unallocated corporate expenses valued on the basis of a DCF approach for the projected LoM up to a maximum of 10 years; and
- Balance sheet adjustments to account for debt, cash position on 1 January 2004 and interests in listed and unlisted entities.

For Harmony as a Company no value is quoted other than that estimated for the value of Kalplats as stated in 14.2.

14.2 Summary Equity Valuation

Tables 14.1, 14.2 and 14.3 present the summary equity valuation for the Companies.

Table 14.1 Avmin: Summary Equity Valuation[15], [16], [17]

Valuation Item		Base Case
PGM Assets		
	Nkomati Mine[1]	536.1
	Nkomati Mine Expansion[2]	978.1
	Two Rivers Operation[3]	870.3
Interests in Listed Entities		
	Assmang Limited[4]	2,177.5
	Assore Limited[5]	208.8
	Avgold Limited[6]	2,948.9
Other Assets		
	PGM Assets – Non-LoM Mineral Resources[7]	302.6
	Exploration Properties[8]	127.3
	Land Holding Positions[9]	69.9
Sub-total (Table 13.33)		**499.7**
Total Asset Valuation		8,219.6
Adjustments		
	Unallocated Corporate Expenses[10]	(253.0)
	Net (debt)/cash as at 01 January 2004[11]	(145.0)
	Mark to Market of derivatives[12]	–
Equity Value (EV)		7,821.6
	Shares In Issue (millions)[13]	114.1
Value per share (ZAR) – Avmin		68.53
	Share price as a 1 January 2004 (ZAR)[14]	39.50
	Market Premium / (Discount) to EV	(42.4%)

(1) Based on NPV of MSB LoM plan and 14% nominal DCF (Table 13.8).

(2) Based on NPV of NEP stand alone LoM plan and 18% nominal DCF (Table 13.11).

(3) Based on attributable (55%) NPV of TRP LoM plan and 18% nominal DCF (Table 13.25).

(4) Based on attributable (50.3%) market capitalisation (ZAR4,329m) of Assmang as at 1 January 2004.

(5) Based on attributable market capitalisation of Assore Limited as at 1 January 2004. For attributable Assore value: Avmin shares in Assore is 2,610,600; price as at 1 January 2004 was ZAR80/share; market capitalisation of Assore was ZAR2,240m giving 9.3% holding in Assore.

(6) Based on attributable (42.1%) market capitalisation (ZAR7,372m) of Avgold as at 1 January 2004. The proposed disposal of Avmin's stake in Avgold was announced on 13 November 2003, this value therefore represents the transacted value of Avgold.

(7) Valuation of non-LoM Mineral Resources associated with PGM Assets as considered in Section 13.0 above. (Table 13.33)

(8) Valuation of Exploration Properties (Table 13.33).

(9) Valuation of Land Holding Positions (Table 13.33).

(10) Unallocated corporate expenses based on ZAR62m per annum for four years and ZAR27m per annum for the following seven years and discounted at 14%.

(11) Net debt/cash position as supplied by Avmin as at 1 January 2004. The ZAR260m paid for 25% of Nkomati Mine by Avmin has been taken into account.

(12) No derivative financial instruments in place as at 1 January 2004.

(13) 114,128,287 shares in issue as at 1 January 2004.

(14) Share price as at 2 January 2004 estimated at ZAR39.50/share.

(15) The impact of the real terms devaluation of the ZAR against the US$ in the forecast as provided by Deutsche Bank would result in a reduction in the EquityValue based sher price of ZAR68.53 to ZAR54.33. This is primarily due to the reduction in value of the PGM Assets attributable to Avmin by some 50% and elimination of the value of the Non-LoM Mineral Resources associated with the PGM Assets.

(16) The above table excludes any impact of Secondary Taxation on Companies ("STC")

(17) The above table reflects the position assuming the acquisition of the remaining 25% of Nkomati was effective as at 1 January 2004.

Table 14.2 ARM Platinum: Summary Equity Valuation

Valuation Item		Base Case
PGM Assets		
	Modikwa Mine[1]	844.9
Other Assets		
	Non-LoM Mineral Resources[2]	1,235.6
Total Asset Valuation		2,080.5
Adjustments		
	Unallocated Corporate Expenses[3]	(26.3)
	Net (debt)/cash as at 01 January 2004[4]	(1,314.2)
	Mark to Market of derivatives[5]	–
Equity Value (EV) – ARM Mining Consortium		740.0
Equity Value (EV) – ARM Platinum(6)		614.2
	Shares In Issue (No.)	1,000
Value per share (ZAR) – ARM Platinum		0.61

(1) Based on attributable (50%) NPV of Modikwa Mine LoM plan and 16% nominal DCF (Table 13.19).

(2) Non-LoM Mineral Resources valuation as indicated in 13 above (Table 13.29).

(3) Unallocated corporate expenses based on ZAR6m per annum and discounted at 14% for 6.5 years.

(4) Net debt/cash position as supplied by ARM Platinum and includes: Bank Debt of ZAR691m; IDC Preference shares and accrued dividends of 65m; a Loan from ARMI of ZAR509m; a further loan from ARMI of ZAR40m due on 30 May 2003 and will be repaid in cash by Avmin; Restricted cash of ZAR8m, Overdraft of ZAR44m and cash on hand of ZAR28m.

(5) No derivative financial instruments in place as at 1 January 2004.

(6) ARM Platinum has 83% attributable interest in ARM Mining Consortium.

(7) The impact of the real terms devaluation of the ZAR against the US$ in the forecast as provided by Deutsche Bank would result in a reduction in the EquityValue based share price of ZAR0.61 to ZAR-0.71. This is primarily due to the reduction in value of Modikwa Mine some 45% and elimination of the value of the Non-LoM Mineral Resources associated with the PGM Assets.

Table 14.3 Kalplats: Summary Equity Valuation

Valuation Item		Base Case
PGM Assets		
	Kalplats Project	73.5
Total Asset Valuation		73.5
Equity Value (EV)		73.5
Shares In Issue (No.)		258.4
Value per share (ZAR)		0.28

(1) The impact of the real terms devaluation of the ZAR against the US$ in the forecast as provided by Deutsche Bank would result in a reduction in the EquityValue based share price of ZAR0.28 to ZAR-0.14. This is primarily due to the reduction in unit value applied (as derived from 50% of the average of that noted for Modikwa Mine and Two Rivers Project).

14.3 Concluding Remarks

In considering the valuations as derived herein, SRK note the significant contribution of the interests in listed entities and the sensitivity of the PGM Assets to both macro-economic and commodity price forecasts. Further, the Nkomati Expansion Project and Two Rivers Project have not yet been given formal board approval for full project release and are also dependent upon the securing of appropriate financing through the development phase. In respect of Modikwa Mine, the resulting valuation is conditional upon the achievement and sustainability of various improvements in relation to historical performance. As a consequence development/operational risks are a factor for consideration and as such has resulted in the differential risk premiums as included in the discount factors applied.

Notwithstanding the above comments recent increase in the US$ price of the base metals will if sustained countenance the impact of the strengthening ZAR. This will have a material impact on the valuation of the Nkomati Expansion Project and a negligible impact on the valuation of Modikwa Mine and the Two Rivers Project.

The views expressed by SRK in this CPR have based on the fundamental assumption that the required management resources and pro-active management skills to access the adequate capital necessary to achieve the LoM plan projections for the PGM Assets are sustained.

SRK has conducted a comprehensive review and assessment of all material issues likely to influence the future operations of the PGM Assets. The LoM plans for the PGM Assets, as provided to and taken in good faith by SRK, have been reviewed in detail for appropriateness, reasonableness and viability, including the existence of and justification for departures from historical performance. Where material differences were found, these were discussed with the Companies and adjusted where considered appropriate. SRK consider that the resulting TEPs are based on sound reasoning, engineering judgement and technically achievable mine plans, within the context of the risks associated with the South African mining industry.

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GLOSSARY, ABBREVIATIONS AND UNITS

GLOSSARY

Acid Soluble	That portion of the concentration of metal which is soluble in acid.
Activox	Activox is a hydrometallurgical process for treating a wide variety of metal sulphide concentrates. It breaks down sulphide minerals by reacting them with oxygen to produce a discharge slurry consisting of a solid residue and a liquor. This discharge slurry requires further processing to produce saleable commodities.
Aeromagnetic	A technique of geophysical exploration of an area using an airborne magnetometer to survey that area.
Albite	Triclinic mineral, $NaAlSi_3O_8$; feldspar group, with up to 10 mol % CaAl replacing NaSi; a member of the plagioclase and the alkali feldspar series.
Aliquot	A small sample taken for chemical analysis.
Amphibolite	A crystalloblastic rock consisting mainly of amphibole and plagioclase with little or no quartz. As the content of quartz increases, the rock grades into hornblende plagioclase gneiss
Anorthosite	A plutonic rock composed almost entirely of plagioclase.
Anstat	A assay technique used in metallurgical sampling.
Anticline	A fold, generally convex upward, whose core contains the stratigraphically older rocks.
Argillaceous	Pertaining to, largely composed of, or containing clay-size particles or clay minerals, such as an argillaceous ore in which the gangue is mainly clay; esp. said of a sediment (such as marl) or a sedimentary rock (such as shale) containing an appreciable amount of clay.
ARM Control Structure	A voting pool arrangement.
Assay	To analyze the proportions of metals in an ore; to test an ore or mineral for composition, purity, weight, or other properties of commercial interest.
Auriferous	Refers to a substance that contains gold, esp. gold-bearing mineral deposits.
Autoclave	A vat containing liquid or gas for ore treatment and recovery of mineral values requiring elevated temperatures and pressure, usually for long periods of time.
Avgold Share Disposal	The consideration for which will be discharged by the issue of new Harmony Shares.
Avmin Acquisitions	The consideration for which will be discharged by the issue of new Avmin shares to ARMI or its nominee.
Backfill	Tailings material used to support the roof or walls after removal of ore from a stope.
Back Transformation	A mathematical technique to convert log kriged values to metal concentration/accumulation values.
Ball Milling	A method of grinding and mixing material, with or without liquid, in a rotating cylinder or conical mill partially filled with grinding media such as balls or pebbles.
Basement	In geology, an underlying complex that behaves as a unit mass and does not deform by folding.
Basin	A natural depression of strata containing a stratified deposit.
Bench	A ledge that, in open pit mine and quarries, forms a single level of operation above which minerals or waste materials are excavated from a contiguous bank or bench face. The mineral or waste is removed in successive layers, each of which is a bench, several of which may be in operation simultaneously in different parts of, and at different elevations in, an open pit mine or quarry.

Bench and Fill	Similar mining method to drift-and-fill other than the process of primary stoping necessitates the mining of the ore at increased height of extraction prior to filling.
Biotite	A dark-brown or dark-green to black mica, $K_2(Mg,Fe,Al)_6(Si,Al)_8O_20(OH)_4$, found in igneous and metamorphic rocks.
Block Factor	A measure of the estimation efficiency based on comparisons of the estimate of contained metal based on estimates undertaken with preliminary pre-mining data and that obtained during the process of mining.
Bord	A drive in the bord-and-pillar method of mining.
Bornite	An isometric mineral, $1[Cu_5\ FeS_4]$; metallic; brownish bronze tarnishing to iridescent blue and purple; brittle; massive; in hypogene and contact metamorphic deposits and mafic rocks; a valuable source of copper.
Boxcut	The initial cut driven in a property, where no open side exists; this results in a highwall on both sides of the cut.
Breakaway	The area immediately surrounding the intersection of two horizontal or sub-horizontal tunnels.
Buffer Blasting	A method of blasting which seeks to minimise the degree of excessive throw and fragmentation.
Calcine	Ore or concentrate after treatment by calcination or roasting and ready for smelting. By heating, to expel volatile matter as carbon dioxide, water, or sulphur, with or without oxidation; to roast.
Carrolite	An isometric mineral, $Cu(Co,Ni)_2\ S_4$; linnaeite group. Significant ore mineral for Cobalt.
Cash Cost	Direct mining costs, direct processing costs, direct general and administration costs, consulting fees, management fees, transportation, treatment charges, refining charges and profit sharing charges.
Chairlift	A means for transportation of personnel within the underground operation.
Chalcocite	A monoclinic mineral, $96[Cu_2\ S]$; pseudohexagonal, metallic gray-black with blue to green tarnish; specific gravity, 5.5 to 5.8; a secondary vein mineral; an important source of copper.
Chalcopyrite	A tetragonal mineral, $CuFeS_2$; brass-yellow with bluish tarnish; massive; softer than pyrite; occurs in late magmatic hydrothermal veins and secondary enrichment zones; the most important source of copper.
Channel sampling	A sampling technique in which a continuous section across the mineralised interval is extracted using a hammer and chisel or rotary diamond saw.
Chromitite	A rock composed chiefly of the mineral chromite.
Classical Statistics	The statistical analysis of geological assay data.
Clinopyroxenite	A group name for monoclinic pyroxenes.
the Companies	Collectively referring to Avmin, ARMI, and Harmony.
Concentrate	The clean product recovered in froth flotation.
Concentrator	A plant where ore is separated into values (concentrates) and rejects (tails). An appliance in such a plant, e.g., flotation cell, jig, electromagnet, shaking table. Also called mill; reduction works; cleaning plant.
Cone Crusher	A crushing device in which material is commissioned between an eccentrically moving core and a outer conical shell.
Conglomerate	A coarse-grained clastic sedimentary rock, composed of rounded to subangular fragments larger than 2mm in diameter (granules, pebbles, cobbles, boulders) set in a fine-grained matrix of sand or silt.

Conjugate Fault	Group of faults that are coeval but are aligned in different directions.
Copperbelt Joint Venture	a joint venture agreement between Azam and Korea Zinc.
Crosscut	A tunnel driven at an angle to the dip of the strata.
Cut-offs	The lowest grade of mineralized material that qualifies as Mineral Resources in a given deposit.
Datamine	A generalised mining software package used for the purpose of derivation of Mineral Resources and Mineral Reserves.
Decline	An inclined excavation which may connect two underground workings or enable access from the surface to the underground operations.
Derivative Instrument	A financial instrument, the value of which is derived from the indirect trading of a commodity or currency.
Dextral Fault	A fault on which the displacement is such that the side opposite the observer appears displaced to the right.
Diabase	An intrusive rock whose main components are labradorite and pyroxene and that is characterized by ophitic texture.
Diamond Drilling	The act or process of drilling boreholes using bits inset with diamonds as the rock-cutting tool. The bits are rotated by various types and sizes of mechanisms motivated by steam, internal-combustion, hydraulic, compressed-air, or electric engines or motors. A common method of prospecting for mineral deposits.
Dilution	The contamination of ore with barren wall rock in stoping.
Dip	Inclination of geological features from the horizontal.
Dip-slip fault	A fault which has moved in the direction of dip. e.g. a normal fault.
Disseminated	Said of a mineral deposit (esp. of metals) in which the desired minerals occur as scattered particles in the rock, but in sufficient quantity to make the deposit an ore.
Dolerite	Any dark, igneous rock composed chiefly of silicates of iron and magnesium with some feldspar.
Dolomite	Rock composed of calcium and magnesium.
Dome	An uplift or anticlinal structure, either circular or elliptical in outline, in which the rocks dip gently away in all directions.
Downcast	The shaft through which the fresh air is drawn or forced into the mine; the intake.
Drift and Fill	A stoping method in which the ore is excavated by flat or inclined slices. After each slice is blasted down, all broken ore is removed, and the stope is filled with waste.
Drive	A tunnel or level in or parallel to and near an orebody, as distinct from a crosscut, which only gives access normal to the orebody.
Dyke	A tabular igneous intrusion that cuts across the bedding or foliation of the country rock.
Facies	A term of wide application, referring to such aspects of rock units as rock type, mode of origin, composition, fossil content, or environment of deposition.
Fault	Fracture or a fracture zone in crustal rocks along which there has been displacement of the two sides relative to one another parallel to the fracture.
Feasibility Study	Technical investigation to a mining project which assesses all material aspects including technical and economic viability have been demonstrated to a high degree of confidence.
Felsic	An acronymic term derived from Feldspar and silica and used to describe light coloured silicate rich rocks.
Ferrous	The term or prefix used to denote compounds or solutions containing iron in which iron is in the divalent (+2) state.

Filtration	Removal of suspended and/or colloidal material from a liquid by passing the suspension through a relatively fine porous medium, e.g., a canvas or other fabric diaphragm; the process is activated by suction or pressure, and commonly includes filter aids. The products are clear liquid and a filter cake.
Fire Assay	The assaying of metallic ores, usually gold and silver, by methods requiring a furnace heat; commonly involves the processes of scorification, cupellation.
Flame AA	An instrumental technique for determining the metal content in a sample by measuring the absorption of light at specific wavelengths by atoms of particular metals.
Flotation	The separating of finely crushed minerals from one another by causing some to float in a froth and others to remain in suspension in the pulp. Oils and various chemicals are used to activate, make floatable, or depress the minerals.
Footwall	The part of the country rock that lies below the deposit.
Fresh Rock	Rock or geological unit which has not been exposed to alteration through weathering or leaching processes.
Gabbro	A group of dark-colored, basic intrusive igneous rocks composed principally of basic plagioclase (commonly labradorite or bytownite) and clinopyroxene (augite), with or without olivine and orthopyroxene; also, any member of that group.
Garnet	The silicate minerals almandine, andradite, calderite, goldmanite, grossular, hibshite, katoite, kimzeyite, knorringite, majorite, pyrope, schlorlomite, spessartine, and uvarovite.
Geomembrane	A PVC lining for hazardous material dumping sites.
Geostatistics	A methodology for the analysis of spatially correlated data. The characteristic feature is the use of variograms or related techniques to quantify and model the spatial correlation structure. Also includes the various techniques such as kriging, which utilize spatial correlation models.
Geozone	An area defined by geological characteristics.
Graben	A downthrown block between two sub-parallel faults.
Granite	A plutonic rock in which quartz constitutes 10% to 50% of the felsic components and in which the alkali feldspar/total feldspar ratio is generally restricted to the range of 65% to 90%.
Hangingwall	The overlying side of an orebody or stope.
Hartzburgite	An ultra-mafic rock, consisting principally of olivine and orthopyroxene.
Haulage	A drive used for mechanical transport.
Haul Road	A road built to carry heavily loaded trucks at a good speed in open pit. The grade is limited on this type of road and usually kept to less than 17% of climb in direction of load movement.
Hedge	A form of a derivative instrument which seeks to regulate the producers received revenue per unit of commodity produced and therefore protect against excessive upwards and downwards movement in the commodity price.
Hoisting Shaft	A vertical excavation in which rock is transported.
Hornfels	A fine-grained rock composed of a mosaic of equidimensional grains without preferred orientation and typically formed by contact metamorphism.
Hydraulic Shovel	A bucket-equipped machine used for digging and loading earthy or fragmented rock materials in an open pit.
Hydrocyclone	A cyclone separator in which a spray of water is used.
ICP-OES	Inductively coupled plasma optical emission spectrometry. An instrumental technique for determining metal content in a sample.

ICP-MS	Inductively coupled plasma mass spectrometry. A sophisticated electronic technique for determining metal content in a sample.
Igneous	Said of a rock or mineral that solidified from molten or partly molten material, i.e., from a magma; also, applied to processes leading to, related to, or resulting from the formation of such rocks. Igneous rocks constitute one of the three main classes into which rocks are divided, the others being metamorphic and sedimentary.
Incline Shaft	A shaft sunk at an inclination from the vertical, usually following the dip of an *orebody*.
Indicated Mineral Resource	That portion of a Mineral Resource for which quantity and quality are estimated with a lower degree of certainty than for a Measured Mineral Resource. The sites used for inspection, sampling, and measurement are too widely or inappropriately spaced to enable the material or its continuity to be defined or its grade throughout to be established.
Indicator Kriging	Indicator kriging is one particular geostatistical approach to geospatial modelling, based on theyse of indicators (Boolean values) assigned relative to various threshold grades.
Inferred Mineral Resource	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 assumed but not verified geological and/or 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, or of uncertain quality and reliability.
Intercalated	Said of layered material that exists or is introduced between layers of a different character; esp. said of relatively thin strata of one kind of material that alternates with thicker strata of some other kind, such as beds of shale intercalated in a body of sandstone.
Intrusion	In geology, a mass of igneous rock that, while molten, was forced into or between other rocks.
Isotropic	Said of a medium with properties the same in all directions.
Jaw Crusher	A machine for reducing the size of materials by impact or crushing between a fixed plate and an oscillating plate, or between two oscillating plates, forming a tapered jaw.
Kaapvaal Craton	The ancient proto-continental crystalline basement of South Africa.
Kalplats Acquisition	The consideration for which will be discharged by the issue of new Avmin shares.
Kotulskite	A hexagonal mineral, Pd(Te,Bi).
Kriging	An interpolation method that minimises the estimation error in the determination of a mineral resource.
Lenticular	Convex on both sides.
Log mean	The mean of the log transformed data.
Log transformed	The log value of geological data e.g. assay, metal concentration, metal accumulation.
Long Life	Operation with life of greater than 10 years.
Lower Group	A geological sequence in the Bushveld Complex.
Magmatic	Of, pertaining to, or derived from magma.
Mafic	Pertaining to or composed dominantly of the ferromagnesian rock-forming silicates; said of some igneous rocks and their constituent minerals
Magnetite	An isometric mineral, $8[FeOFe_2O_3]$; spinel group; forms series with jacobsite and with magnesioferrite; crystallizes in octahedra; metallic; black; strongly ferrimagnetic.

Marble	A metamorphic rock composed essentially of calcite, dolomite, or a combination of the two, with a fine- to coarse-grained crystalline texture.
Mark to Market	The market value of derivative instruments which would be realised should the position be unwound at a given date.
Massive Sulphide	A term describing an orebody with a high concentration of sulphide minerals.
Mass Pull Factor	The ratio of dry concentrate tonnage to the original dry tonnage of rock milled.
Measured Mineral Resource	That portion of a Mineral Resource for which the tonnage or volume is calculated from dimensions revealed in outcrops, pits, trenches, drill-holes, or mine workings, supported where appropriate by other exploration techniques. The sites used for inspection, sampling and measurement are so spaced that the geological character, continuity, grades and nature of the material are so well defines that the physical character, size, shape, quality and mineral content are established with a high degree of certainty.
Medium-Life	Operation with life ob between 5 and 10 years.
Merensky Reef	A stratiform PGM and base metal-bearing orebody located within the Upper Critical Zone of the Rustenburg Layered Suite, the mineralisation is frequently spatially associated with the lower portion of the Merensky Pyroxenite and contained chromitite stringers.
Mesozoic	Era of geological time commencing 245 million years before present and ending 65 million years before present.
Metal Accumulation	An estimate of metal concentration derived from the multiplication of grade and orebody thickness.
Mine Call Factor	A measure of the mining efficiency based on comparisons between metal content extracted and delivered to the mill and that projected by the mine planning process taking into account the volume/area mined during the reconciliation period.
Mine2-4D	A mine scheduling package used in the development of Life of mine plans.
Minerals Act	The Minerals and Petroleum Resources Development Act (Act 28 of 2002).
Mineral Reserve	The economically mineable material derived from a Measured and/or Indicated Mineral Resource. It is inclusive of diluting materials and allows for losses that may occur when the material is mined. Appropriate assessments, which may include feasibility studies, have been carried out, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction is reasonably justified.
Mineral Resource	A concentration [or occurrence] of material of economic interest in or on the Earth's crust in such a 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 knowledge, or interpreted from a well constrained and portrayed geological model.
Minimum Mining Width	The minimum mining width at which an in-situ Mineral Resources is stated.
Mining Licence	A licence issued by the regulatory authority which governs the process of mining.
Modikwa Joint Venture	The joint venture which manages the Modikwa Mine.
Modikwa Tax Entity	The tax entity in which the cashflows for Modikwa Mine are taxed.
Muck Bay	An excavation which is temporarily used to store broken rock prior to transportation.
Nkomati Expansion Project	The brownfields expansion at Nkomati Mine which extends current operations from the 4-year horizon to approximately 20 years.
Nkomati Tax Entity	The tax entity in which the cashflows for Nkomati Mine are taxed.

Non-electric detonator	The firing of one or more charges using safety fuse, igniter cord, detonating cord, shock or gas tubing, or similar nonelectric materials to initiate a blasting cap. shock tube system.
Norite	A coarse-grained plutonic rock containing basic plagioclase (labradorite) as the chief constituent and differing from gabbro by the presence of orthopyroxene (hypersthene) as the dominant mafic mineral.
Olivine	A mineral group including fayalite, $Fe_2\ SiO_4$; forsterite, $Mg_2\ SiO_4$; liebenbergite, $(Ni,Mg)_2\ SiO_4$; and tephroite, $Mn_2\ SiO_4$
Omi-directional	A term attributed to the structure of a semi-variogram which displays similar characteristics in all directions.
Open pit	A mine working or excavation open to the surface.
Open Stoping	Stoping in which no regular artificial method of support is employed, although occasional props or cribs may be used to hold local patches of insecure ground. The walls and roof are self-supporting, and open stopes can be used only where the ore and wall rocks are firm.
Ordinary Kriging	A variety of kriging in which the local mean is estimated from local data. Ordinary kriging is the most commonly used method for all Mineral Resource estimates.
Orthopyroxene	The subgroup name for pyroxenes crystallizing in the orthorhombic system, commonly containing no calcium and little or no aluminium; e.g., enstatite, hypersthene, and ferrosilite.
Overburden	Designates material of any nature, consolidated or unconsolidated, that overlies an economic deposit.
Overcut and Bench	A mining method where the primary stopes are mined by a vertical sequence of benching commencing from the hangingwall to the footwall contacts.
Oxide	A compound of oxygen with another element.
Pegmatoid	Said of the texture of an exceptionally coarsely crystalline igneous rock..
Pelitic	Metamorphic rock derived from a pelite; e.g., a pelitic hornfels or a pelitic schist, derived by metamorphism of an argillaceous or a fine-grained aluminous sediment.
Penstock	A sluice or gate for restraining, deviating, or otherwise regulating the flow of water.
Pentlandite	An isometric mineral, $(Fe,Ni)_9\ S_8$; octahedral parting; metallic; pale bronze-yellow; nonmagnetic; generally associated with pyrrhotite, less commonly associated with chalcopyrite in magmatic sulphide deposits; the principal sulphide ore of nickel.
Perennial	Describing a watercourse that flows throughout the year.
Pillar	A block of ore entirely surrounded by stoping, left intentionally for purposes for ground control or on account of low value.
Plagioclase	Any of a group of feldspars containing a mixture of sodium and calcium feldspars,.
Polymetallic	Comprising numerous metals which are generally associated with sulphide minerals.
Pothole	A kettlelike to irregular steep-walled subcircular interruption of bedding in the economic horizons of the Bushveld Complex, South Africa. It is filled with younger material.
Precious Metals	Commodities including, Pt, Pd, Rh, Au, Ag, Ru, and Ir.
Pre Splitting	Smooth blasting method in which cracks for the final contour are created by blasting prior to the drilling of the rest of the holes for the blast pattern. Once the crack is made, it screens off the surroundings to some extent from ground vibrations in the main round

Prill	The button of metal from an assay.
Prill split	The percentage split between either 4E or 6E metals contained within a prill sample.
Proterozoic	A geological era.
Pulp	Pulverized ore mixed with water.
Pyrite	Common iron sulphide mineral.
Pyroxenite	A coarse-grained, holocrystalline igneous rock consisting of 90% pyroxenes. It may contain biotite, hornblende, or olivine as accessories.
Pyroxene	An iron and magnesium bearing silicate mineral group, that may contain variable calcium. Minerals of this group form a major component of most basaltic lavas, as well as being abundant within many intrusive diabase dykes, and also forming a major component of the Rustenburg Layered Suite.
Pyrrhotite	A monoclinic and hexagonal mineral, FeS ; invariably deficient in iron; variably ferrimagnetic; metallic; bronze yellow with iridescent tarnish; in mafic igneous rocks, contact metamorphic deposits, high-temperature veins, and granite pegmatites. Where associated with pentlandite and nickel replaces iron, it is a source of nickel.
Q System	The Norwegian Geotechnical Institute Q rock mass classification system establishes a numerical value for the quality of the rock for engineering purposes.
Quartzite	A granoblastic metamorphic rock consisting mainly of quartz and formed by recrystallization of sandstone or chert by either regional or thermal metamorphism; metaquartzite
Raise-bore	A circular excavation either between two existing levels in an underground mine or between the surface and an existing level in a mine. In raise boring, a pilothole is drilled down to the lower level, the drillbit is removed and replaced by a reamer head having a diameter with the same dimension as the desired excavation and this head then is rotated and pulled back up towards the machine.
Reef	A provincial term for a metalliferous mineral deposit, esp. gold bearing quartz.
Reef Drive	An excavation driven within the plane of the orebody.
Refractory	Said of an ore from which it is difficult or expensive to recover its valuable constituents.
Regolith	The layer or mantle of loose incoherent rock material, of whatever origin, that nearly everywhere underlies the surface of the land and rests on bedrock. It comprises rock waste of all sorts: volcanic ash, glacial drift, alluvium, windblown deposits, organic accumulations, and soils
Resource	A tonnage or volume of rock or mineralisation or other material of intrinsic economic interest, the grades, limits and other appropriate characteristics of which are known with a specified degree of knowledge.
Rheology	Study of the flowage of materials, particularly plastic flow of solids and flow of non-Newtonian liquids.
Rockbolt	A bar, usually constructed of steel, that is inserted into pre-drilled holes in rock and secured for the purpose of ground control. Rock bolts are classified according to the means by which they are secured or anchored in rock.
Roofbolt	A long steel bolt inserted into walls or roof of underground excavations to strengthen the pinning of rock strata.
RoM	Run-of-Mine.
SAMREC Code	South African Code for reporting of Mineral Resources and Mineral Reserves.

Saprolite	A soft, earthy, typically clay-rich, thoroughly decomposed rock, formed in place by chemical weathering of igneous, sedimentary, and metamorphic rocks. It often forms a layer or cover as much as 100m thick, esp. in humid and tropical or subtropical climates; the colour is commonly some shade of red or brown, but it may be white or gray. Saprolite is characterized by preservation of structures that were present in the unweathered rock.
Scraper	Machine used in mines for transporting ore for short distances.
Sedimentary	Pertaining to or containing sediment; e.g., sedimentary deposit or a sedimentary complex.
Semi-variogram	See Variogram.
Servitude	A right that grants use of another's property.
Schist	A strongly foliated crystalline rock, formed by dynamic metamorphism, that can be readily split into thin flakes or slabs due to the well developed parallelism of more than 50% of the minerals present, particularly those of lamellar or elongate prismatic habit, e.g., mica and hornblende
Shaft	An excavation of limited area compared with its depth; made for transportation of men, materials and rock or ventilating underground workings. The term is often specif. applied to an approx. vertical shaft, as distinguished from an incline or inclined shaft. A shaft is provided with a hoisting engine at the top for handling workers, rock, and supplies; or it may be used only in connection with pumping or ventilating operations.
Short-life	Operation of with less than 5 years.
Shear Zone	A tabular zone of rock that has been crushed and brecciated by many parallel fractures due to shear strain. Such an area is often mineralized by ore-forming solutions.
Sichel t	An estimator in which samples are randomly drawn from a log normal distribution.
Sidewalls	The sides of an excavation.
Silicate	A compound whose crystal structure contains SiO_4 tetrahedra, either isolated or joined through one or more of the oxygen atoms to form groups, chains, sheets, or three-dimensional structures with metallic elements.
Sill	A concordant sheet of igneous rock lying nearly horizontal. A sill may become a dike or vice versa.
Silo	A tall tower, usually cylindrical and of reinforced concrete construction, in which grain, cement, coal, or similar bulk material is stored.
Siltstone	An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which the silt predominates over clay; a nonfissile silt shale. It tends to be flaggy, containing hard, durable, generally thin layers, and often showing various primary current structures.
Slope angle	The angle at which the wall of an open pit or cut stands as measured along an imaginary plane extended along the crests of the berms or from the slope crest to its toe.
Sperrylite	An isometric mineral, $PtAs_2$; pyrite group; tin white; sp gr, 10.6; occurs with heavy-metal ores, also in placers.
Stratiform	Said of a special type of strata-bound deposit in which the desired rock or ore constitutes, or is strictly coextensive with, one or more sedimentary, metamorphic, or igneous layers; e.g., beds of salt or iron oxide, or layers rich in chromite or platinum in a layered igneous complex
Stibiopalladinite	A palladium antimony mineral.

Stope	Any excavation in a mine, other than development workings, made for the purpose of extracting ore. The outlines of the orebody determine the outlines of the stope. The term is also applied to breaking ground by drilling and blasting or other methods.
Stoping	The act of excavating rock, either above or below a level, in a series of steps. In its broadest sense rock stoping means the act of excavating rock by means of a series of horizontal, vertical, or inclined workings in veins or large, irregular bodies of ore, or by rooms in flat deposits. It covers the breaking and removal of the rock from underground openings, except those driven for exploration and development.
Strike	The course or bearing of the outcrop of an inclined bed, vein, or fault plane on a level surface; the direction of a horizontal line perpendicular to the direction of the dip.
Stripping Ratio	Ratio of waste to ore in an open pit operation.
Supergene	Said of a mineral deposit or enrichment formed near the surface, commonly by descending solutions; also, said of those solutions and of that environment.
Synform	A fold whose limbs close downward in strata for which the stratigraphic sequence is unknown.
Sulphide	A mineral compound characterized by the linkage of sulphur with a metal or semimetal.
Tailings	The gangue and other refuse material resulting from the washing, concentration, or treatment of ground ore.
Talc	A monoclinic and triclinic mineral, 2[Mg_6 $(OH)_4$ (Si (sub 8) O_{20})]; basal cleavage; soft; has a greasy or soapy feel; easily cut with a knife; occurs as hydrothermal alteration of ultramafic rocks, low-grade metamorphism of siliceous dolomites in foliated, granular, or fibrous masses; an insulator, ceramic raw material, and lubricant.
Talcose	Resembling talc; e.g., a talcose rock that is soft and soapy to the touch.
Tax Entities	The Nkomati Tax Entity, the Modikwa Tax Entity, and the Two Rivers Project Tax Entity
Thickening	The concentration of the solids in a suspension with a view to recovering one fraction with a higher concentration of solids than in the original suspension.
Total Cash Cost	incremental components to cash costs including royalties but excluding taxes paid.
Total Costs	The summation of total working costs, net movement in working capital and capital expenditure.
Total Working Cost	Incremental components to total cash costs including terminal separation benefits, reclamation and mine closure costs (the net difference of the total environmental liability and the current trust fund provision) but excluding non cash items such as depreciation and amortisation.
Tramming Drive	See Haulage Drive.
Transactions	The range of indivisible Transactions.
The Act	Minerals Act (Act 50 of 1991).
Mine Health and Safety Act	Mine Health and Safety Act No. 29 of 1996
The 1995 Act	Mines and Minerals Act (1995).
The 1997 Act	Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations 1997.
Triple acid digest	A dissolution assay test using Nitric-Perchloric-Hydrofluoric Acid Digestion.

Two Rivers Project Tax Entity	The tax entity in which the cashflows for Two Rivers Project Mine are taxed.
UG2	The second chromitite seam in the upper group, within the Upper Critical Zone of the Rustenburg Layered Suite.
Ultra-mafic	Pertaining to rocks that are predominantly composed of mafic minerals, containing less than 10 percent feldspar. Includes dunite, peridotite, hartzburgite, and pyroxenite.
Unredeemed capital	Capital expenditure which may be offset against future profits to lessen the taxable profit.
Upper Group	A geological sequence within the BC.
Variogram	Used synonymously with semi-variogram. A plot of the variance (one-half the mean squared difference) of paired sample measurements as a function of the distance (and optionally of the direction) between samples. Typically, all possible sample pairs are examined, and grouped into classes (lags) of approx. equal distance and direction. Variograms provide a means of quantifying the commonly observed relationship that samples close together will tend to have more similar values than samples far apart.
Water Use Licence	A licence issued by the regulatory authority governing the abstraction, use and discharge of water.
Weathered Rock	Rock mass which has degraded due to exposure to the elements.
Weightometer	An appliance for the continuous weighing of broken ore material in transit on a belt conveyor.
Wehrlite	A peridotite composed chiefly of olivine and clinopyroxene with accessory opaque oxides common.
Working capital	Expenditures required to fund the resulting change in the debtors, creditors and stores position at a point in time.
Xenoliths	A foreign inclusion in an igneous rock.
X-Ray Fluorescence	A sample is irradiated by an intense x-ray beam which causes the emission of fluorescent x-rays. The spectrum of emitted x-rays is detected using either energy dispersive or wavelength dispersive detector. The elements in the sample are identified by the wavelengths of the emitted x-rays while the concentrations of the elements are determined by the intensity of those x-rays.

ABBREVIATIONS

4E	A term used for combinations of Pt, Pd, Rh and Au.
6E	A term used for combinations of Pt, Pd, Rh, Ru, Ir and Au.
AAC	Anglo American Corporation Limited.
AARL	Anglo American Research Laboratories.
AAS	Atomic Absorption Spectrometry.
ABET	Adult Basic Education and Training.
a/d	adit.
ADT	Articulated Dump Truck.
ADS	American Depositary Receipts.
ADT	Articulated Dump Truck.
Ag	Chemical symbol for silver.
AHK	Alfred H Knight Laboratories.
AIDS	Acquired Immune Deficiency Syndrome.
ANFO	Ammonium nitrate and fuel oil (and additions) based explosive.
Anglo Platinum	Anglo American Platinum (Pty) Limited.
ARC	Anglo Platinum Research Centre.
ARM	The African Rainbow Minerals group of companies.
ARMI	African Rainbow Minerals & Exploration Investments (Proprietary) Limited.
ARM Consortium	ARM Mining Consortium Limited.
ARM Platinum	African Rainbow Minerals (Pty) Platinum Limited.
Assmang	Assmang Limited.
Au	chemical symbol for gold.
Avgold	Avgold Limited.
Avmin	Anglovaal Mining Limited.
AVRL	Anglovaal Research Laboratory.
Azam	Avmin (Zambia) Limited.
BC	Bushveld Complex.
BEE	Black Economic Empowerment.
BID	Base Information Date.
BMZ	Basal Mineralised Zone
Co	Chemical symbol for Cobalt.
Co-99.3	Cobalt ingot purity for which cobalt prices are quoted.
CPI	Consumer Price Index.
CPR	Competent Persons' Report.
Cr	Chemical symbol for chrome.
Cr/Fe	Chrome to Iron ration.
Cu	Chemical symbol for copper.
DCF	Discounted Cash Flow.

DD	Diamond Drilling.
DEAT	Department of Environmental Affairs and Tourism.
DME	Department of Minerals and Energy.
DMS	Dense Media Separation.
DRC	Democratic Republic of Congo.
DTM	Digital Terrain Model.
DWAF	Department of Water Affairs and Forestry.
ECA	Environmental Conservation Act.
ECZ	Environmental Council of Zambia.
EMP	Environmental Management Programme.
EMPR	Environmental Management Programme Report.
EMS	Environmental Management System
EP	Exploration Properties.
EPCM	Engineering Procurement and Construction Management.
ETC	Eastern Transvaal Consolidated Mines Limited.
EW	Electrowinning.
F	Future.
FAG	Fully Autogenous Grinding.
Fe	Chemical symbol for iron.
FM	Financial Models.
FoG	Fall of Ground.
GAB	Basal Gabbro Unit.
Genalysis	Genalysis Laboratories.
GFMD	Gold Fields Mining and Development Limited.
Gold Fields	Gold Fields Limited.
GRZ	Government of the Republic of Zambia.
Harmony	Harmony Gold Mining Company Limited.
HCL	Hydrochloric Acid.
HDPE	High Density Polyethylene
HDSA	Historically Disadvantaged South Africans.
HF	Hydrofluoric Acid.
HIV	Human Immuno Virus.
INCO	International Nickel Company.
Implats	Impala Platinum Holdings Limited.
Ir	Chemical symbol for iridium.
IRMC	International Rock Mechanics Consultants.
IRS	Impala Refining Services Limited.
ISDN	Integrated Services Digital Network.
ISO14001	International Organisation for Standardisation policy 14001.

JSE	JSE Securities Exchange South Africa.
JV	Joint Venture.
Konnoco	Konnoco (Zambia) Limited.
Korea Zinc	Korea Zinc Company Limited.
LG1,2,3	Numbering sequence in the Lower Group.
LML	Large Scale Mining Licence.
LHD	Load-Haul-Dump.
LoM	Life-of-Mine.
LPP	Leuconorite Parting Plane.
LrPXT	Lower Pyroxenite Unit.
LSE	London Stock Exchange Limited.
LTIFR	Long Term Injury Frequency Rate.
MCF	Mine Call Factor.
MCHR	Massive Chromitite Unit.
MF2	
MSB	Massive Sulphide Body.
MMZ	Main Mineralised Zone.
MPRDA	Mineral and Petroleum Resources Development Act.
MR	Merensky Reef.
MRMR	Mining Rock Mass Rating.
NATA	National Association of Testing Authorities.
NAV	Net Asset Value.
Ni	Chemical symbol for nickel.
NiS	Nickel Sulphide.
Nkomati Mine	The operation which is valued within the Nkomati Tax Entity which is wholly owned by Avmin.
No.	Number.
NPV	Net Present Value.
NRT	Norite / Gabbro Unit.
NYSE	New York Stock Exchange.
NWA	National Water Act.
o/p	open pit.
Opex	Operating Expenditure.
Os	chemical symbol for osmium.
P^2	Proven and Probable.
PABX	Private Automatic Branch Exchange.
Pb	Chemical symbol for Lead.
PCMZ	Chromititic Peridotite Mineralised Zone.
PCR	Chromititic Peridotite Unit.
Pd	Chemical symbol for Palladium.

PEE	Past Exploration Expenditures.
PGE	Platinum Group Elements.
PGM	Platinum Group Metals.
PGM Assets	Platinum Group Metal Assets comprising Nkomati Mine, Nkomati Expansion Project, Modikwa Mine, Two Rivers Project and Kalplats Project.
PPP	Purchase Price Parity.
PPT	Precipitation.
PRD	Peridotite Unit.
Pt	chemical symbol for platinum.
P&G's	Preliminary and Generals.
RAB	Rotary Air Blast Drilling.
RAW	Return airway.
RC	Reverse Circulation Drilling.
Rh	Chemical symbol for rhodium.
RLS	Rustenburg Layered Suite.
RMR	Rock Mass Rating.
RPM	Rustenburg Platinum Mines Limited.
RoM	Run of Mine.
RQD	Rock-Quality-Density.
Ru	chemical symbol for ruthenium.
RWD	Return Water Dam.
SACNASP	South African Council for Natural Scientific Professions.
SCSR	Self Contained Self Rescuers.
SEC	United States Securities Exchange Commission.
SEP	Significant Exploration Properties.
SA	South Africa.
SAHRA	South African Heritage Resources Agency.
SANAS	South African National Accreditation System.
SARS	South African Revenue Services.
SHE	Safety Health and Environment.
SMCHR	Semi-Massive Chromitite.
SMGM	Stirred Media Grinding Mills.
SRK	Steffen, Robertson and Kirsten (South Africa) (Pty) Limited.
SRK Group	SRK Global Limited.
SX	Solvent Extraction.
TEC	Total Employees Costed.
TEM	Technical-economic models.
TEP's	Technical-economic parameters.
TS	Transvaal Sequence.
TWC	Total Working Cost.

Two Rivers	Two Rivers Platinum (Pty) Limited.
Two Rivers Project	The operation which is valued in the Two Rivers Tax Entity, 55% of which is attributable to Avmin.
u/g	underground.
UG1,2,3	Numbering sequence in the Upper Group.
UPXT	Upper Pyroxenite Unit.
US	United States.
WACC	Weighted Average Cost of Capital.
WUL	Water Use Licence.
WULA	Water Use Licence Application.
ZCCM	Zambia Consolidated Copper Mine Limited.

UNITS

Bn	a billion.
cm	a centimetre.
Co-t	a metric tonne of Cobalt metal.
Cu-t	a metric tonne of Copper metal
g	grammes.
g/t	grammes per metric tonne – metal concentration.
Ha	a hectare.
hrs	hours.
k	a thousand.
km	a kilometre.
koz	a thousand ounces.
kt	a thousand metric tonnes.
ktpm	a thousand metric tonnes per month.
kV	a thousand Volts.
kVA	a thousand Volt-Amperes
kW	a thousand Watts.
Lb	a imperial pound.
m	a metre.
Mlpa	a million litres per annum.
mm	a millimetre.
mm/TEC/month	a millimetre per TEC per month.
m^2	a square metre.
m^2pm	square metres per month.
m^2/TEC/m	square metres per TEC per month.
Mm^3	a million cubic metres.
m^3	a cubic metre.
m^3/s	a cubic metre per second.
m^3/s/kW	a cubic metre per second per kilo Watt.

mmhrs	a million man hours.
mpm	*metres per month.*
Mt	a million metric tonnes.
Mtpa	*a million metric tonnes per annum.*
MVA	a million volt amperes.
Ni-t	*a metric tonne of Nickel metal.*
oz	a fine troy ounce equalling 31.10348 grammes.
Pa	*a pascal.*
st	a short ton.
t	a metric tonne.
$t_{waste:tore}$	the ratio of tonnage of waste to tonnage of ore.
t/TEC/month	metric tonnes per TEC per month.
tm^{-3}	density measured as metric tonnes per cubic metre.
US$	United States Dollar.
USc	United States cent.
USc/lb	United States cent per imperial pound.
US$m	a million US$.
US$/oz	United Sates Dollar per troy ounce.
US$:ZAR	Exchange rate value of one US$ in ZAR.
V	a volt.
ZAR	South African Rand.
ZAR/4Ekg	South African Rand per 4E kilogramme.
ZAR/kg	South African Rand per kilogramme.
ZARm	a million South African Rands.
ZAR/t	South African Rand per tonne.
ZAR/t_{milled}	South African Rand per total tonnage milled.
ZAR/t_{mined}	South African Rand per total tonnage mined.
ZAR/t_{ore}	South African Rand per tonne of ore.
ZAR/tNi	South African Rands per tonne of Nickel metal.
°	degrees.
'	minutes.
%	percentage.
%Co	percentage Cobalt.
%Cu	percentage Copper.
%Ni	percentage Nickel.
4Eg/t	combined grade of platinum, palladium, rhodium and gold.
4Eg/TEC/month	4E grammes per TEC per month.
4Ekg	a kilogramme of 4E metal.
µm	a micro metre.

COMPETENT PERSON'S REPORT ON HARMONY INCLUDING AVGOLD

AN INDEPENDENT COMPETENT PERSON'S REPORT ON CERTAIN MINING ASSETS OF AVGOLD LIMITED AND HARMONY GOLD MINING COMPANY LIMITED

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AND

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AN INDEPENDENT COMPETENT PERSON'S REPORT ON CERTAIN MINING ASSETS OF AVGOLD LIMITED AND HARMONY GOLD MINING COMPANY LIMITED

1. INTRODUCTION

1.1 Background

Steffen, Robertson and Kirsten (South Africa) (Pty) Limited ("SRK") is a subsidiary of the international Group holding company, SRK Global Limited (the "SRK Group"). SRK has been commissioned by the Directors of Avgold Limited ("Avgold") and Harmony Gold Mining Company Limited ("Harmony") to prepare an independent competent person's report ("CPR") on certain mining assets (the "Mining Assets") of Avgold and Harmony (the "Companies").

The Mining Assets of Avgold include:

- a 100% interest in the Target Gold Mine ("Target Mine") located in the Free State Province, South Africa; and
- a 100% interest in Target North, Oribi and Sun South deposits to the north of the existing Target Mine.

The Mining Assets of Harmony include:

- a 100% interest in Free Gold Joint Venture Company (Proprietary) Limited ("Free Gold");
- a 100% interest in Joel Mine situated in the Free State Goldfield, South Africa, hereinafter defined as ("Joel"). Ownership of this assets is held at the Harmony level;
- a 100% interest in Randfontein Estates Limited ("Randfontein");
- a 100% interest in Evander Gold Mining Company Limited ("Evander");
- a 100% interest in Kalahari Goldridge Mining Company Limited ("Kalgold"). Harmony is in the process of disposing of its entire interest in Kalgold to Afrikander Lease Limited ("Aflease"). The sale will be effective after all the legal conditions of the transaction have been met, which is anticipated by the end of February 2004. Conditional to the sale is that Harmony retains its interests in the company's Kalplats platinum discovery and associated mineral rights;
- a 100% interest in Harmony Gold (Australia) Proprietary Limited ("Harmony Australia");
- a 100% interest in Harmony Gold (Canada) Inc ("Harmony Canada");
- a 100% interest in various mining operations situated in the Free State Goldfield, South Africa, hereinafter defined as ("Harmony Free State"). Ownership of these assets is held at the Harmony level;
- a 100% interest in various significant exploration properties, notably the Rolspruit gold project ("Rolspruit"), the Poplar gold project ("Poplar") and the Kalplats PGM project ("Kalplats");
- a 100% interest in the mining operations situated in Orkney, South Africa, previously owned and operated by African Rainbow Minerals Gold Limited ("ARMgold") herein defined as ("Harmony Orkney"). Ownership of these assets is currently held at Harmony level; and
- a 100% interest in the mining operations situated in Welkom, South Africa, previously owned and operated by ARMgold herein defined as ("Harmony Welkom"). Ownership of these assets is currently held at Harmony level.

In addition, Harmony holds interests in wholly-owned, joint venture and associate companies via direct and indirect subsidiaries. These interests comprise dormant companies, exploration companies, investment holding companies, management service companies, marketing companies, beneficiation companies, mineral rights holding companies and property holding companies.

All assets incorporating operating mines and exploration properties, for which Harmony holds less than 100% and/or does not have legal rights to disclose information, other than that already reported in the public domain, have therefore been excluded from the collective term Mining Assets and do not form part of this CPR. Specifically, Harmony's material interests that are not reported upon in this CPR, include:

- a 33.9% interest in Anglovaal Mining Limited ("Avmin") which was recently acquired through an ARMgold/Harmony joint venture. The principal assets in Avmin include:
  - 50.3% of Assmang Limited which operates various manganese ore, iron ore and chrome ore operations located in the Republic of South Africa ("South Africa");
  - 55.0% of Two Rivers Platinum (Proprietary) Limited ("Two Rivers") which is currently developing a platinum mining operation located in Mpumalanga Province, South Africa;
  - 100% of the Nkomati nickel mine ("Nkomati") located in Mpumalanga Province, South Africa;

- Harmony's 87% interest in Abelle Limited ("Abelle") a company listed on the Australian Stock Exchange Limited ("ASX"), which operates a gold mining operation in Australia and has various interests in exploration properties in Australia and Papua New Guinea; and
- Harmony's 31.8% interest in Bendigo Mining NL ("Bendigo") a company listed on the ASX which owns a single gold development project in Australia.

Appendage 1 to this report includes brief technical summaries of these assets, which have been reproduced from information lawfully contained in the public domain. SRK has not had access to either the underlying information or supporting data, therefore no opinion has been provided herein.

1.2 Requirement for the CPR

SRK has been informed that Avgold and Harmony have reached an agreement, in terms of a merger agreement (the "Merger"). It is intended that the Merger will be implemented by means of a Scheme of Arrangement (the "Scheme") to be proposed by Avgold, between Harmony and its shareholders.

This CPR principally comprises a technical-economic appraisal of the Mining Assets and has been prepared in compliance with the Listings Requirements of the JSE Securities Exchange, South Africa (the "JSE"), specifically Sections 12.3, 12.8, 12.9 and 12.14.

A copy of this CPR will be included in the Scheme document and circular to be dispatched to the Companies' shareholders. In this CPR, SRK provides assurances to the directors of the Companies that the technical-economic projections ("TEPs"), including production profiles, operating expenditures and capital expenditures, of the Mining Assets as provided to SRK by the Companies and reviewed by SRK are reasonable, given the information currently available.

1.3 Structure of the CPR

For reporting purposes SRK note that the valuations of the Mining Assets have been grouped in accordance with the following Tax Entities, herein referred to as ("the Tax Entities") and that all entries (including text, tables and other data) are quoted assuming 100% ownership and not on an attributable basis according to the respective shareholdings:

- the tax entity within which Target Mine is assessed ("Target Tax Entity");
- the tax entity within which Free Gold is assessed ("Free Gold Tax Entity");
- the tax entity within which Joel is assessed ("Joel Tax Entity");
- the tax entity within which Harmony Free State is assessed ("Harmony Free State Tax Entity");
- the tax entity within which Harmony Welkom is assessed ("Harmony Welkom Tax Entity");
- the tax entity within which Randfontein Estates Limited is assessed ("Randfontein Tax Entity");
- the tax entity within which Evander Gold Mines Limited is assessed ("Evander Tax Entity");
- the tax entity within which Harmony Orkney is assessed ("Harmony Orkney Tax Entity");
- the tax entity within which Kalahari Goldridge Mining Company Limited is assessed ("Kalgold Tax Entity"); and
- Harmony Australia comprising:
  - the tax entity within which Mt. Magnet & Cue is assessed ("Mt. Magnet & Cue Tax Entity"); and
  - the tax entity within which South Kalgoorlie is assessed ("South Kalgoorlie Tax Entity").

Technical descriptions of the Mining Assets have been grouped into operations that broadly reflect the management structures and/or common geographical location. The Mining Assets are grouped into the following operations:

- Target Operations: Includes Target Mine, Target North and Extensions and Oribi;
- Free Gold Operations;
- Harmony Free State Operations;
- Welkom Operations;
- West Wits Operations includes Randfontein, Elandsrand and Deelkraal;
- Evander Operations;
- Orkney Operations;
- Kalgold Operation; and
- International Operations, sub-divided into Harmony Australian Operations and Harmony Canadian Operations.

In accordance with the Listings Requirements of the JSE and the SAMREC Code, this CPR has been prepared under the direction of the Competent Person (the "CP") which assumes overall professional responsibility for the document (Section 1.4). The CPR, however is published by SRK, the commissioned entity, and accordingly SRK assumes responsibility for the views expressed herein. On this basis, all references to SRK mean the CP and *vice versa*.

1.4 Valuation Date and Base Technical Information

The Mining Assets have been valued based on cash flow projections commencing 1 January 2004 which is dependent upon the following:

- technical information as generated by the Companies in accordance with their annual planning process defined as the Base Information Date ("BID"): 1 July 2003; and
- adjustments to all technical information to reflect depletion and historical performance from the respective BIDs to 31 December 2003.

The LoM plans and associated Mineral Reserve statements for the Mining Assets have been derived as follows:

Avgold: The LoM plans and associated Mineral Reserve statements for Target Mine have been derived using a gold price of ZAR107,000/kg. No sensitivity is currently available to assess the impact on the Mineral Reserves at current (approximately ZAR80,000/kg in December 2003) gold price; which represents a 25% reduction. This aspect is discussed further in Section 4 of this CPR; and

Harmony: The LoM plans and associated Mineral Reserve statements for the Mining Assets have been derived using a gold price of ZAR93,000/kg for the Mining Assets located in South Africa and AUS$522/oz for the Mining Assets located in Australia.

The post-tax pre-finance cash flows from each Tax Entity have been developed on the basis of a US$ gold price increasing in constant money terms from US$366/oz in 2004 to US$382/oz in 2005 and macro-economic factors as defined in Table 1.1.

1.5 Verification, Validation and Reliance

The valuation as reported herein is dependent upon technical, financial and legal aspects. The technical information as provided to and taken in good faith by SRK has not been independently verified by means of recalculation. SRK has however conducted:

- inspection visits to surface and underground operations, processing facilities, surface structures and associated infrastructure at each of the Mining Assets during November 2003 for the Avgold Assets and between May and June 2003 for the Harmony Assets;
- discussion and enquiry following access to key personnel based at the individual Business Units ("BUs") and head office;
- a review and, where considered appropriate by SRK, modification of the Companies' estimates and their classification of Mineral Resources and Mineral Reserves;
- a review of the Companies' plans and supporting documentation and, where considered appropriate by SRK, modification of the Companies' LoM plans and the associated TEPs, including assumptions regarding future operating costs, capital expenditures and gold production of the Mining Assets;
- an examination of historical information and results made available by the Companies in respect of the Mining Assets the forecasts contained in the LoM plans and one-year budgets; and
- an update undertaken in January 2004 to reflect the latest opinion of the Financial Advisors on the macro-economic parameters including commodity prices, exchange rates and inflation factors as presented in Table 1.1. In addition SRK has considered any material departures from the projections provided to and reviewed by SRK during the inspection visits to the Harmony Assets completed during May and June 2003. In addition SRK has accounted for depletion that has taken place during the six-month period that has elapsed between June 2003 and December 2003.

SRK's approach in undertaking a review of the Mineral Resource and Mineral Reserve estimations and classifications is detailed in Section 4 of this CPR. In summary, SRK has reported Mineral Resource and Mineral Reserve statements based on a review of the LoM plans and the methodologies applied for estimation and classification of both Mineral Resources and Mineral Reserves.

SRK consider that with respect to all material technical-economic matters it has undertaken all necessary investigations to ensure SAMREC compliance, both in terms of level of investigation and level of disclosure. In doing so SRK has not reproduced the information provided to it by the Companies without due consideration or appropriate modification. Notwithstanding this comment, SRK has not recalculated the base

information supporting the Mineral Resource estimates as derived from bore-hole and assay data, this given the generally extensive history of the Mining Assets and geological investigations undertaken by the Companies, however has undertaken sufficient checks through the course of its investigations to enable an appropriate level of reliance to be placed on such data, as provided.

Where fundamental base data has been provided (LoM plans, capital expenditures, operating budgets etc) for the purposes of review, SRK recognise the requirements of 12.3(e) and accordingly state that SRK has performed all necessary validation and verification procedures deemed appropriate in order to to place an appropriate level of reliance on such information.

1.5.1 Technical Reliance

SRK places reliance on the Companies CPs that all technical information provided to SRK at the time of writing is both valid and accurate for the purpose of compiling this CPR.

The information with respect to Mineral Resources and Mineral Reserves as defined by the Companies has been prepared under the direction of the following individuals:

- *Avgold:* Dr F Camisani-Calzolari, PrSciNat (SACNASP), FSAIMM, MAuIMM, FGSSA, CRIRSCO (Combined Reserve International Report Standards Committee of CMMI). Dr Camisani-Calzolari has over 30 years' experience in the mining industry and was responsible for Mineral Resource and Mineral Reserve reporting at Avmin for a number of years until recently, and is currently retained as a consultant to Avmin on a part-time basis; and
- *Harmony:* Mr Graham Briggs, Pr. Sci. Nat, BSc (Hons) Geology. Mr Briggs is responsible for ore reserve management, organic growth and capital projects on the executive committee of Harmony. He has 29 years' experience in the gold mining industry and is a registered geological scientist.

1.5.2 Financial Reliance – the Companies

In consideration of all financial aspects relating to the valuation of the Mining Assets and the Summary equity valuation of the Companies, SRK has placed reliance of the Financial Officers of the Companies that the following information for the Tax Entities and the Companies is accurate at 1 January 2004:

- unredeemed capital balances;
- assessed losses;
- opening balances for debtors, creditors and stores;
- working capital and taxation logic;
- values ascribed to interests in unlisted and listed entities; and
- balance sheet items, specifically cash on hand, debt and mark-to-market value of derivative instruments (currency and commodity hedges).

The information with respect to the above financial data as defined by the Companies has been prepared under the direction of the following individuals:

- *Avgold:* Mr Michael Arnold, BSc Eng (Mining Geology), CA(SA). Mr Arnold is the Chief Financial Officer for Avgold; and
- *Harmony:* Mr Frank Abbot, BCom, CA(SA). MBL is the chief financial officer for Harmony and has 22 years' experience in financial management, 22 years of which has been within the mining industry.

1.5.3 Financial Reliance – Deutsche Bank (South Africa)

In generating the valuation of the Mining Assets, SRK has relied upon the commodity price and macro-economic forecasts as included in Table 1.1 below, which have been generated by Deutsche Bank South Africa. In respect of compliance with 12.3(e) of the Listings Requirements of the JSE, SRK has secured the JSE's dispensation from providing details of the individuals responsible for the generation of the information as presented in Table 1.1.

Table 1.1 Base Case Macro-Economic Parameters

Parameter	Units	2004	2005	2006	2007	2008
Gold Price – Nominal	(US$/oz)	366	386	390	394	398
	(ZAR/kg)	91,659	111,797	125,823	134,929	143,309
	(AUS$/oz)	487	499	499	492	485
RSA CPI	(%)	2.55%	4.10%	4.77%	4.50%	4.50%
AUS CPI	(%)	2.40%	2.40%	2.40%	2.40%	2.40%
US CPI	(%)	1.38%	1.03%	1.00%	1.00%	1.00%
Nominal Exchange Rate	(US$:ZAR)	7.80	9.01	10.04	10.66	11.21
	(US$:AUS$)	1.33	1.32	1.34	1.34	1.34
	(AUS$:ZAR)	5.85	5.95	6.08	6.21	6.34

Table 1.1 summaries the base-case macro-economic projections as generated by Deutsche Bank (South Africa), Financial Advisors to Avgold. Taking cognisance of the volatile nature of both the gold price (US$/ozt) and the exchange rate between the US$ and both the ZAR and AU$, SRK has run sensitivities on revenue ranging between –30% and +30% to these macro-economic projections as discussed in the risks and opportunities in Section 12 of this CPR.

1.5.4 Legal Reliance

In consideration of all legal aspects relating to the valuation of the Mining Assets SRK has placed reliance on the following representatives of the Companies that the following legal aspects are correct at 1 January 2004:

- in respect of 12.8(e) and 12.10(g) that "a statement by the Directors of any legal proceedings that may have an influence on the rights to explore for minerals, or an appropriate negative statement" has been included in the body of the various circulars relating to the Transactions;
- in respect of 12.10(e) that the legal ownership and of all mineral and surface rights has been verified;
- in respect of 12.14(a)(xii) that no significant legal issue exists which would effect the "likely viability of a project and/or on the estimation and classification of the Mineral Reserves and Mineral Resources" as reported herein; and
- The information with respect to the above legal data as defined by the Companies has been prepared under the direction of the following individuals:
  - *Avgold:* Mr Pieter Coetzee, BProc. Mr Coetzee is the general manager legal services for Avmin and has 20 years' experience in the mining industry,
  - *Harmony:* Mr Mike Wasserfall B.Com (Hons) LLM is legal advisor to Harmony and has 20 years experience, all of which is in the mining industry. Mr Wasserfall is assisted by Mr George Edward Warren de Wit who is the Group Surveyor for Harmony.

1.6 Valuation Techniques

The summary equity valuation for the Companies is based on a sum-of-the-parts approach comprising net asset values ("NAV") for the Mining Assets and supplemental information as provided by the Companies (Balance sheet items and interests in listed and unlisted companies).

The NAVs for the Mining Assets have been derived using discounted cash flow ("DCF") techniques applied on a post-tax pre-finance basis for the individual Tax Entities. These are based on the various LoM plans and where appropriate are sub-divided into valuations based on Mineral Reserves alone and Mineral Reserves and Mineral Resources where such LoM plans have been generated accordingly.

In respect of non-LoM Mineral Resources, these have not been valued separately and commentary is limited to technical disclosure requirements in accordance with the Listings Requirements of the JSE.

The post-tax pre-finance cash flows from each Tax Entity have been developed on the basis of the commodity price and macro-economic projections as presented in Table 1.1. For each Tax Entity SRK has developed Financial Models ("FM"), the results of which are presented in Section 13 and Section 14 of this CPR. The FMs are based on annual cash flow projections ending 30 June and technical-economic input parameters ("TEP") stated in 1 January 2004 money terms. As the valuation date is 1 January 2004, the cash flow projections for the first period present a six-month forecast to 30 June 2004.

1.7 JSE Compliance

This CPR principally comprises a technical-economic appraisal of the Mining Assets and has been prepared in compliance with the Listings Requirements of the JSE, specifically Sections 12.3, 12.8, 12.9 and 12.14. In addition to the Mining Assets, technical information on a number of exploration properties has also been included.

In compliance with 12.6, Table 1.2 presents a cross-reference between the Listings Requirements of the JSE and the primary sections as included in this CPR.

Table 1.2 JSE Compliance cross-reference

CPR Section	Listings Requirements
1	12.3(a), 12.3(b), 12.3(c), 12.3(e); 12.6, 12.8(a), 12.9(a), 12.9(b), 12.9(c), 12.9(d), 12.9(e), 12.9(f); 12.11(a), 12.11(b) 12.14(a) – (viii), (xi), (xii), (xvi), (xvii), (xviii); 12.14(b) – (iv), (xvii)
2	12.10(d), 12.10(g), 12.10 (h) – (i), (ii), (iii); 12.10(i), 12.10(j) 12.11(a), 12.11(b) 12.14(a) – (ix), (x), (xii), (xvii)
3	12.10(a) – (xi); 12.10(b) – (i); 12.10(d)
4	12.10(a) – (i), (ii), (iii), (iv), (v), (vi), (vii), (viii), (ix), (x), (xii), (xiii), (xv), (xvi), 12.10(b) – (ii), (iii), (iv); 12.10(b) – (vi) – (1), (2), (3), (4), (5), (6), (7), (8), (9); 12.10(d); 12.10(f) – (i), (ii); 12.14(a) – (ii), (iii), (iv), (xii), (xiv), (xv); 12.14(b) – (ii)
5	12.10(b) – (v); 12.10(d); 12.14(a) – (iv), (x), (xii)
6	12.10(b) – (v); 12.14(a) – (v), (vi), (vii), (x), (xii); 12.14(b) – (iii)
7	12.14(a) – (xii)
8	12.14(a) – (viii); 12.14(b)(vi)
9	12.14(a) – (xii)
10	12.14(a) – (xii)
11	12.10(c), 12.14(a) – (i), (viii), (xii)
12	12.14(a) – (viii); 12.14(b) – (v), (vi)
13	12.10(b) – (v); 12(b) – (i), (iii), (iv), (vi), (viii), (ix), (xi), (xiv), (xv), (xvi), (xvii)
14	12.14(a) – (ii), (xiii), (xviii), (xix); 12.14(b) – (vi), (x), (xii), (xiii), (xvi), (xviii)
Glossary	12.10(k)

In respect of specific compliance items SRK note the following:

- 12.10(e) – (i), (ii): A detailed list of the Companies mineral and surface rights will be made available at the corporate offices of each of the respective companies. Dispensation has been granted in this regard from inclusion in the CPR for practical purposes of volume;
- 12.8(e); 12.10(g): A detailed statement of all legal proceedings which may have an influence on the rights to explore for minerals or an appropriate negative statement has been included in the body of the circulars;
- 12.14(a)(xvi): The Companies are in effect mature operating companies with a track record of operating history and accordingly, other than brief summaries of Directors (as included in the body of the Circular), details relating to qualifications of key technical and managerial staff have been excluded from this CPR. Dispensation has been granted in this regard from inclusion into this CPR for practical purposes relating to volume of information; and
- 12.10(x)(i), 12.10(d): SRK has, during the course of its investigations, reviewed technical plans in order to support its opinions on the geology, Mineral Resource and Mineral Reserves, mining plans and processing facilities, these together with land holdings, lease areas and surface infrastructure. Due to pure volume and scale of these plans it is not appropriate to include copies into this CPR for the 75 business units operated by Avgold and Harmony. Dispensation has been granted in this regard from inclusion into this CPR; however these plans are available for inspection at various company operating offices where they remain due to the fact that many are working plans required for the continual management of the respective business units.

1.8 Warranties and Limitations

SRK's opinion is effective 1 January 2004 and is based on information provided by the Companies throughout the course of SRK's investigations, which in turn reflect various technical-economic conditions prevailing at the time of writing. These conditions can change significantly over relatively short periods of time and as such the information and opinions contained in this report may be subject to change.

In this CPR, SRK provides assurances to the Directors of the Companies that the technical-economic projections ("TEPs"), including production profiles, operating expenditures and capital expenditures, of the Mining Assets as provided to SRK by the Companies and reviewed by SRK are reasonable, given the information currently available.

The achievability of LoM plans, budgets and forecasts are neither warranted nor guaranteed by SRK. The forecasts as presented and discussed herein have been proposed by the Companies' management and cannot be assured; they are necessarily based on economic assumptions, many of which are beyond the control of the Companies. Future cash flows and profits derived from such forecasts are inherently uncertain and actual results may be significantly more or less favourable.

This report includes technical information, which requires subsequent calculations to derive subtotals, totals and weighted averages. Such calculations may involve a degree of rounding and consequently introduce an error. Where such errors occur, SRK does not consider them to be material.

1.9 Disclaimers and Cautionary Statements for US Investors

In considering the following statements SRK notes that the term "Mineral Reserve" for all practical purposes is synonymous with the term "ore reserve".

The United States Securities and Exchange Commission (the "SEC") permits mining companies, in their filings with the SEC, to disclose only those mineral deposits that a company can economically and legally extract or produce from. Certain terms are used in this report, such as "resources", that the SEC guidelines strictly prohibit companies from including in filings.

Mineral Reserve estimates are based on many factors, including, in this case, data with respect to drilling and sampling. Mineral Reserves are determined from estimates of future technical factors, future production costs, future capital expenditure, future product prices and the exchange rate between the South African Rand ("ZAR") and the United States Dollar ("US$"). The Mineral Reserve estimates contained in this report should not be interpreted as assurances of the economic life of the Mining Assets or the future profitability of operations. Because Mineral Reserves are only estimates based on the factors and assumptions described herein, future Mineral Reserve estimates may need to be revised. For example, if production costs increase or product prices decrease, a portion of the Mineral Resources, from which the Mineral Reserves are derived, may become uneconomical to recover and would therefore result in lower estimated Mineral Reserves.

The LoM plans and the TEPs include forward-looking statements that are required in compliance with the JSE Listings Requirements. These forward-looking statements are necessarily estimates and involve a number of risks and uncertainties that could cause actual results to differ materially.

1.10 Qualifications of Consultants

The SRK Group comprises 500 staff, offering expertise in a wide range of resource engineering disciplines. The SRK Group's independence is ensured by the fact that it holds no equity in any project. This permits the SRK Group to provide its clients with conflict-free and objective recommendations on crucial judgment issues. The SRK Group has a demonstrated track record in undertaking independent assessments of resources and reserves, project evaluations and audits, CPRs and independent feasibility evaluations to bankable standards on behalf of exploration and mining companies and financial institutions worldwide. The SRK Group has also worked with a large number of major international mining companies and their projects, providing mining industry consultancy service inputs. SRK also has specific experience in commissions of this nature.

This CPR has been prepared based on a technical and economic review by a team of 30 consultants sourced from the SRK Group's offices in South Africa, the United Kingdom and Australia over a two-month period. These consultants are specialists in the fields of geology, resource and reserve estimation and classification, underground and open pit mining, rock engineering, metallurgical processing, hydrogeology and hydrology, tailings management, infrastructure, environmental management and mineral economics.

Neither SRK nor any of its employees and associates employed in the preparation of this report has any significant beneficial interest in the Companies or in the assets of the Companies. SRK will be paid a fee for this work in accordance with normal professional consulting practice.

The individuals who have provided input to this CPR, who are listed below, have extensive experience in the mining industry and are members in good standing of appropriate professional institutions:

- Andrew Pooley, Pr. Eng, MSAIMM, AMIMM, B.Eng (Mining);
- Andrew Smithen, Pr. Eng., MBL, MSAICE, MSAIAE, MSAIMM, MSc;
- Andrew Vigar, FAusIMM, BSc (Applied Geology);
- Awie Swart, MSAIMM, MSANIRE, COM Adv. Rock Eng. Cert. B.Eng.;
- Boet van der Vyfer, FMVS, Adv. Cert. Mine Env. Control;

- Dawood Wepener, BSc Eng., MSAIME, Govt. Cert of Comp.;
- Ian Home, MIAIA, MSc;
- Iestyn Humphreys, AM.I.Min.E, AIME, PhD;
- Jim Williams, ACSM, C.Eng., FAusIMM;
- Jonathan Suthers, B.Eng.;
- John Miles, C. Eng., MIMMM, MSc;
- Kenneth Owen, FSAIMM, MAMMSA, MSc Eng;
- Kirsty Sells, CPEnv, FAuSIMM, BSc, MBS;
- Lee Barnes, C.Eng, MIMMM, MSc;
- Louis Voortman, CPGeo, FAusIMM, MAIG, MGAA, MGASA, SIA(aff), AIM(Aff), Sc MSc;
- Louie Human, COM Adv. Rock Eng. Cert., NHD (Geology);
- Mark Campadonic, FGS, AIQ, Msc;
- Michael Armitage, C. Eng., C. Geol., MIMM, PhD;
- Michael Boylett, C.Eng, MA (Met.), MSAIMM, MIMMM;
- Michael Harley, Pr. Sci Nat., MSAIMM, MAusIMM, PhD;
- Michael McWha, Pr.Sci Nat., FGSSA, MSAIMM, BSc Hons;
- Oskar Steffen, Pr. Eng. (ECSA)., MSAIMM, PhD;
- Peter Munro, MAuSIMM, B. Appl. Sc., B. Comm, B. Econ;
- Richard Clayton, C.Geol, FGS, Msc;
- Robert Wilson, Pr. Eng, FSAIMM, B.Sc.Eng.(Mech.);
- Roger Dixon, Pr. Eng, FSAIMM, BSc (Mining);
- Victor Hills, Pr.Eng., MSAIMM, B.Eng.;
- Wally Waldeck, Pr. Eng (reg. ECSA), MSAIMM, BSc (Mining), MBA; and
- William Schoeman, Pr. Eng, MSAIME, BSc.Eng (Mech).

In compliance with Section 12.3 of the JSE Listings Requirements, the following CPs are presented:

- the Competent Person with overall responsibility for the compilation of this CPR is Mr H G Waldeck, Pr. Eng registered with the Engineering Council of South Africa ("ECSA") who is an employee of SRK. Mr Waldeck is a mining engineer with 28 years' experience in the mining industry and has supervised numerous due-diligence reviews and various technical studies on the Witwatersrand Basin during the past five years. In compliance with the SAMREC requirements, Mr. Waldeck also assumes responsibility for the reporting of Mineral Reserves as included in this CPR; and
- in compliance with the SAMREC requirements and definitions, the Competent Person with overall responsibility for Mineral Resources is Dr Michael Harley, Pr. Sci Nat., MSAIMM, MAusIMM, PhD who is an employee of SRK. Dr Michael Harley is a mining geologist with 14 years' experience in the mining industry and has been responsible for the reporting of Mineral Resources on various properties in South Africa and internationally during the past five years.

1.11 Valuation Summary

The summary equity valuation for the Companies is presented in Section 14 of this CPR, specifically Table 14.1 for Avgold, Table 14.2 for Harmony. In respect of the Kalgold Tax Entity, a DCF valuation is included; however reference is made to the circular which details the terms and associated proceeds relating to the disposal of Kalgold by Harmony.

In addition SRK has been informed by Harmony that it has recently disposed of its interests in the following companies:

- Harmony's 31.7% interest in Highland Gold Mining Limited ("Highland Gold"). In October 2003, Harmony disposed of its 31.7% shareholding in Highland Gold in a placing arranged by City Capital Corporation Limited in London; and
- Harmony's 17.0% interest in High River Gold Mines Limited ("High River"). In October 2003 Harmony disposed of its 17% shareholding in High River in a placing arranged by BMO Nesbitt Burns in Canada.

No summary equity valuation has been included and any proceeds have been incorporated into the net cash position of Harmony at 31 December 2003.

2. MINING ASSETS

2.1 Introduction

This section gives a brief overview of the Companies and their respective Mining Assets including, location and historical company development, property description, mining methods and operating results. Specifically where reference is made to legal compliance within the regulatory environment in which the Companies operate, SRK has placed reliance on the Companies and their respective legal advisers.

2.2 The Companies and Operating Structures

2.2.1 Avgold

Avgold is a South African-based mining, development and exploration company, publicly listed on the JSE (primary listing), with International Depositary Receipts ("IDR") traded on the Brussels Bourse. Table 2.1 gives the recent historical company development of Avgold to date. By measure of annual gold production attributable to the company, Avgold is ranked 22nd in terms of the world's gold mining companies. Avgold states its core business as that directly associated with a gold mining and gold exploration whose activities include operating the recently commissioned Target Mine (May 2002) and the continued exploration in an area known as Target North.

Avgold's executive office is located at 56 Main Street, Johannesburg 2001, Gauteng Province South Africa. In addition Avgold has an operations office located at Target Mine situated between the towns of Bothaville and Welkom.

Table 2.1 Avgold: Company Development

Date	Activity
Late 1980s	Surface exploration intersected payable reef horizons in the Target area.
November, 1990	Target Exploration Company Limited ("Target Exploration") incorporated.
February, 1991	Target Exploration listed on the JSE.
January, 1993	23 surface boreholes completed at the Target area.
April, 1995	Commenced an underground exploration decline at Target from the Lorraine u/g workings.
July, 1996	106,000m of u/g exploration drilling completed and scope of Target Project increased to a 105ktpm mine.
November, 1996	Target Exploration changed its name to Avgold Limited and acquired the gold assets of Avmin, namely ETC Operations, Hartebeestfontein Mine and Lorraine Mine.
January, 1998	Acquired the Fairview Mine from Goldfields.
August, 1998	Mining operations at Lorraine ceased and No.1 Shaft became the principal access for the Target Project.
April, 1999	Mining Licence obtained for Target.
August, 1999	Disposed of the Hartebeestfontein Mine.
May, 2002	Target Mine commissioned.
February, 2003	Entered into an agreement to sell the assets of ETC.
June, 2003	Announcement of completion of surface drilling of Target North.
June, 2003	Disposal of ETC division to Metorex.
September, 2003	Announcement of completion of pre-feasibility study on Northern Free State.
November, 2003	Announcement that: Anglovaal Mining Limited ("Avmin") will dispose of its entire 42.2% interest in Avgold to Harmony.

Table 2.2 gives the historical operating statistics attributable to Avgold from 2001 through to 31 December 2003, inclusive.

Table 2.2 Avgold: Salient Historical Operating Statistics

Statistic[2]	Units	2001	2002	2003	2004[1]
Production					
Tonnes Milled	(kt)	492	782	1,389	540
Yield	(g/t)	3.0	6.6	8.6	11.1
Gold Production	(koz)	47	165	383	192
Development	(m)	5,144	6,022	14,677	4,226
Productivity					
TEC	(No.)	1,177	1,355	2,907	1,088
Milling	(t/TEC/month)	35	48	40	83
Gold Production	(g/TEC/month)	105	316	341	917
Health and Safety					
Fatalities	(No.)	2	0	0	0
Fatality Rate	(per mmhrs)	0.35	0	0	0
LTIFR	(per mmhrs)	9	9	11	6
Expenditures					
Cash Operating Costs	(ZARm)	290	523	673	260
Capital Expenditure	(ZARm)	521	102	123	50
Cost Performance					
Cash Operating Costs	(ZAR/t)	589	669	485	481
	(ZAR/kg)	189,949	98,496	56,588	43,409
Capital Expenditure	(ZAR/t)	1,059	130	88	93
	(ZAR/kg)	341,252	19,181	10,329	8,361

[1] 2004 reports six-month actual results to December 2003.

[2] Production from ETC mines is included, however those assets were sold during 2003.

2.2.2 Harmony

Harmony is a public listed company. Its primary listing is on the JSE and secondary listings are on the LSE, the Paris Bourse, with IDRs traded on the Brussels Bourse and an American Depositary Shares ("ADS") programme on the New York Stock Exchange, Inc. ("NYSE").

Harmony, through wholly-owned subsidiaries or joint venture agreements, manages and operates BUs, comprising operating and developing underground, open pit and surface reclamation operations in three countries. In addition, Harmony's exploration programme, targeting gold and PGEs, extends its country presence (through direct and indirect subsidiaries) into a total of five countries.

Harmony's company ownership comprises holdings in direct subsidiaries, indirect subsidiaries, direct and indirect joint venture companies and indirect associate companies. These comprise dormant companies, exploration companies, gold mining companies, investment holding companies, management service companies, marketing companies, beneficiation companies, mineral rights holding companies and property holding companies.

Harmony's operating structure principally comprises two reporting entities represented by South African Operations and International Operations. South African Operations are sub-divided into nine reporting entities: Free Gold Operations, Harmony Free State Operations, Welkom Operations, West Wits Operations (including Randfontein, Elandsrand and Deelkraal), Evander Operations, Orkney Operations, Kalgold Operations and International Operations (sub-divided into two operations, namely the Australian Operations and Canadian Operations).

Harmony's principal executive offices are located at 4 High Street, First Floor, Melrose Arch, Melrose North 2196, Johannesburg, Gauteng Province, South Africa.

Table 2.3 gives the historical company development of Harmony to date. By measure of attributable annual gold production Harmony is ranked 6th and by attributable total cash costs ranked 6th in terms of the world's gold mining companies. Harmony's core business is gold mining whose activities include the exploration, development and operation of gold mines, including direct interests in the marketing of gold and indirect interests in the manufacturing and retailing of gold jewellery.

Table 2.4 gives historical operating statistics attributable to Harmony from 2001 through to 31 December 2003, inclusive, with figures reported on a financial year basis.

Table 2.3 Harmony: Company Development

Date	Activity
August, 1950	Harmony Gold Mining Company Limited incorporated and registered as a public company in South Africa.
1994	Management agreement between Randgold & Exploration Company Limited ("Randgold") and Harmony cancelled and replaced with service agreement.
1997	Service agreement between Randgold and Harmony cancelled resulting in Harmony operating as a completely independent gold mining company.
1997	Acquisition of Lydenburg Exploration Limited ("Lydex") for a consideration of ZAR204m.
June, 1998	Acquisition of Bissett gold mine from the liquidators of Rea Gold corporation for a consideration of ZAR26m.
July, 1998	The acquisition of Evander Gold Mines Limited for a consideration of ZAR545m.
October, 1999	Acquisition of Kalahari Goldridge Mining Company Limited and West Rand Consolidated Mines Limited for a consideration of ZAR321m.
March, 2000	Acquisition of Randfontein Estates Limited for a consideration of ZAR931m.
April, 2001	Acquisition of the Elandskraal mining operations from AngloGold Limited for a consideration of ZAR1,053m.
April, 2001	Acquisition of New Hampton Goldfields Limited for a consideration of ZAR229m.
September, 2001	Acquisition of 31.8% of the issued share capital of Bendigo Mining NL for a consideration of ZAR292m.
December, 2001 (effective date 3 January 2002)	Acquisition of 50% of the issued share capital of Free Gold which purchased the Free Gold operations and certain other assets for approximately ZAR1,4bn.
April, 2002	Acquisition of Hill 50 Limited for a consideration of ZAR1,419m.
May, 2002	Acquisition of 32.5% of the ordinary share capital of Highland Gold Limited for a consideration of ZAR188m.
October, 2002	Joint acquisition by Free Gold of St. Helena BUs from Gold Fields Limited for a gross sale consideration of ZAR127m.
November, 2002	Harmony lists on the New York Stock Exchange ("NYSE").
November, 2002	Acquisition of 21% of the ordinary share capital of High River Gold Limited for a consideration of ZAR141m.
January, 2003	Randfontein Estates Limited ("Randfontein"), entered into agreement with Africa Vanguard Resources (Pty) Ltd ("AV"), in terms of which Randfontein sold 26% of its mineral rights in respect of Doornkop Mining Area to AV for a purchase consideration of R250m. Randfontein and AV entered into a JV agreement to jointly conduct mining operations at Doornkop.
February, 2003	Harmony announces offer for Abelle Limited ("Abelle") which values Abelle at ZAR689m.
May, 2003	Announcement of merger with ARMgold.
May, 2003	Announcement of an acquisition by Free Gold of 34.5% of the shares of Avmin for a consideration of ZAR844m in which Harmony and ARMgold each have 50%.
August 2003	Shareholder approval of the merger between Harmony and ARMgold for which 64,000,000 Harmony shares were issued to ARMgold, in the ratio of 2 Harmony shares for every 3 ARMgold shares.
August 2003	The arrangements between Randfontein and AV were implemented, and purchase price paid as per the agreement drawn up in January 2003. Gold at UK£2.05 per share valuing the shareholding at ZAR830.0m.
October 2003	Harmony disposed of its 17.0% shareholding in High River Gold at C$1.75 per share valuing the shareholding at ZAR156.7m.
November 2003	Announcement that: Anglovaal Mining Limited ("Avmin") will dispose of its entire 42.2% interest in Avgold to Harmony, Harmony will dispose of its Kalplats platinum discovery and associated mineral rights to Avmin.
November 2003	Harmony announced the sale of its Kalgold Operations to The Afrikander Lease Limited ("Aflease") for a consideration of ZAR275m. In terms of the agreement, Aflease will pay Harmony ZAR137.5m in cash, with the remaining ZAR137.5m being funded with the issue of ordinary shares. The sale will be effective after all legal conditions of the deal have been met, by approximately the end of February 2004. Harmony excluded its Kalplats deposit interests from this transaction.

Table 2.4 Harmony: Salient Historical Operating Statistics [1], [2]

Statistic	Units	2001	2002	2003	2004[3]
Production					
Area Mined	(m^2)	2,027,043	2,286,395	3,301,125	1,690,296
Tonnes Milled	(kt)	17,074	22,934	35,259	16,777
Yield	(g/t)	3.9	3.6	3.6	3.5
Gold Production	(koz)	2,140	2,668	4,040	1,911
Development	(m)	128,625	152,006	207,272	109,746
Productivity					
TEC	(No.)	43,448	46,873	58,886	59,451
Centares	(m^2/TEC/month)	3.9	4.8	4.7	4.7
Milling	(t/TEC/month)	32	41	50	47
Gold Production	(g/TEC/month)	125	147	178	167
Health and Safety					
Fatalities	(No.)	26	37	38	21
Fatality Rate	(per mmhrs)	0.28	0.35	0.30	0.28
LTIFR	(per mmhrs)	28	23	25	19
Expenditures					
Cash Operating Costs	(ZARm)	3,822	5,215	8,673	4,486
Capital Expenditure	(ZARm)	424	735	773	445
Cost Performance					
Cash Operating Costs	(ZAR/t)	224	227	246	267
	(ZAR/kg)	57,419	62,853	69,030	75,479
Capital Expenditure	(ZAR/t)	25	32	22	27
	(ZAR/kg)	6,370	8,859	6,154	7,486

[1] TEC and productivity statistics exclude the Canadian operations as TEC figures unavailable.

[2] Health and Safety statistics for Canadian and Australian Operations for 2001 are unavailable.

[3] 2004 reports actual results to December 2003.

2.3 Overview of the Mining Assets

2.3.1 Target Operations

Target Operations comprise Target Mine, Target North and Extensions and Oribi Exploration Property situated near the town of Allanridge in the Free State Province, South Africa, some 270km southwest of Johannesburg. Located at approximately latitude 28°00'S and longitude 26°30'E on the northern limit of the Welkom Goldfields, the site is accessed via the R30 situated between the towns of Bothaville and Welkom.

The Target Operations area was initially explored through surface drilling in the late 1980s with further exploration being undertaken from a 5.6km long decline, commenced in 1995, driven from 203L at Lorraine No.1 shaft. A positive feasibility study into the development of a 105ktpm operation was produced in May 1998 resulting in the decision to develop Target Mine. A detailed mine design was produced in 2000 and the mine officially opened in May 2002. Upon the closure of Loraine Mine in August 1998 the Lorraine No.1 and No.2 shafts were transferred to Target Mine becoming Target No.1 Shaft and Target No.2 Shaft, respectively.

Mining operations comprise one primary underground mine commissioned in May 2002 making use of information systems and mechanisation, combined with process-driven organisational design that relies on a multi-skilled workforce. The majority of the production is derived from mechanised mining; however conventional stoping is still employed primarily to de-stress areas ahead of the mechanised mining. The mining operations feed one central process facility, namely the Target Gold Plant.

Table 2.5 gives the salient operating statistics and Table 2.6 gives the historical operating statistics for Target Mine from 1 July 2001 through to 31 December 2003, inclusive.

Table 2.5 Target Operations – Target Mine: Salient Operating Statistics

Production Unit	Design Capacity (ktpa)	Maximum Operating Capacity[1] (ktpa)	Life (years)	Classification
Business Units				
Target Mine	1,500	1,404	17	Long-life
Total Hoisting Capacity	**1,500**	**1,404**	**17**	**Long-life**
Surface Sources				
Processing Plants				
Target Gold Plant	1,260	1,285	17	Long-life
Total Processing Capacity	**1,260**	**1,285**	**17**	**Long-life**

[1] Maximum Operating Capacity represents the maximum planned annual throughput for the LoM period.

Table 2.6 Target Operations – Target Mine: Salient Historical Operating Statistics

Statistic	Units	2001	2002	2003	2004[1]
Production					
Tonnes Milled	(kt)	492	782	1,068	540
Yield	(g/t)	3.0	6.6	8.6	11.1
Gold Production	(koz)	47	165	294	192
Development	(m)	5,144	6,022	7,431	4,226
Productivity					
TEC	(No.)	1,177	1,355	1,119	1,088
Milling	(t/TEC/month)	35	48	31	83
Gold Production	(g/TEC/month)	105	316	262	917
Health and Safety					
Fatalities	(No.)	2	0	0	0
Fatality Rate	(per mmhrs)	0.35	0	0	0
LTIFR	(per mmhrs)	9	9	11	6
Expenditures					
Cash Operating Costs	(ZARm)	290	523	470	260
Capital Expenditure	(ZARm)	521	102	101	48
Cost Performance					
Cash Operating Costs	(ZAR/t)	589	669	440	482
(ZAR/kg)	189,949	98,496	51,327	43,461	
Capital Expenditure	(ZAR/t)	1,059	130	94	89
(ZAR/kg)	341,252	19,181	10,982	8,002	

[1] 2004 reports six-month actual results to December 2003.

2.3.2 Free Gold Operations

The Free Gold Operations are situated in the Free State Province, South Africa, some 270km southwest of Johannesburg. Located at approximately latitude 28°00'S and longitude 26°30'E, the site is accessed via the national highway N1 between Johannesburg and Bloemfontein.

Exploration, development and production history in the area dates from the early 1940s, leading to commercial production by 1947. Subsequent consolidation and restructuring led to the formation of Free State Consolidated, which in addition to HJ Joel, became a wholly-owned subsidiary of AngloGold Limited ("AngloGold") in June 1998. Free Gold acquired the assets from Anglogold in December 2001 and St. Helena BUs from Goldfields during May 2002.

Mining operations comprise nine underground mining BUs: Tshepong, Phakisa, Bambanani, West, Eland, Sable & Kudu, Nyala, Joel and St. Helena (comprising BUs No.2, No.4, No.8 and No.10). Phakisa is currently a project for which capital is committed and is anticipated to commence in 2004. The mining operations feed four process facilities: FS1 Plant; FS2 Plant; Joel Plant and St. Helena Plant.

Table 2.7 gives the salient operating statistics and Table 2.8 gives the historical operating statistics for Free Gold Operations from 1 January 2001 through to 31 December 2003, inclusive. Note that 2001 is reported on a calendar year, 2002 comprises six-months to 30 June 2002 and 2003 comprises 12-month actual results to June 2003 and 2004 is reports actual results to 31 December 2003.

Table 2.7 Free Gold Operations: Salient Operating Statistics

Business Unit	Design Capacity (ktpa)	Maximum Operating Capacity[1] (ktpa)	Life	Classification
Production Shafts				
Tshepong BU	2,400	3,026	16	Long-Life
Bambanani BU	2,340	1,835	8	Medium-life
West BU	960	306	4	Short-life
Eland BU	840	385	3	Short-life
Kudu & Sable BU	1,440	247	4	Short-life
Nyala BU	3,360	606	7	Medium-life
Joel North & South BU	4,200	544	11	Long-Life
Phasika BU	1,800	1,400	19	Long-Life
St. Helena BU	4,020	618	5	Medium-life
Total Hoisting Capacity	**21,360**	**7,079**	**20**	**Long-Life**
Surface Sources		**3,547**	**4**	**Short-life**
Processing Plants				
FS1 Plant – Milling	5,280	5,006	20	Long-Life
FS1 Plant – Leaching	5,280	5,006	20	Long-Life
FS2 Plant – Milling	3,240	3,240	4	Short-life
FS2 Plant – Leaching	3,600	3,600	4	Short-life
Joel Plant – Milling	1,620	1,458	11	Long-Life
Joel Plant – Leaching	1,800	1,458	11	Long-Life
St. Helena Plant – Milling	1,080	34	1	Short-life
St. Helena Plant – Leaching	1,200	1,120	3	Short-life
Total Processing Milling Capacity	**11,220**	**9,561**	**20**	**Long-Life**
Total Processing Leaching Capacity	**11,880**	**11,007**	**20**	**Long-Life**

[1] Maximum Operating Capacity represents the maximum planned annual throughput for the LoM period.

Table 2.8 Free Gold Operations: Salient Historical Operating Statistics

Statistic	Units	2001	2002	2003	2004[1]
Production					
Area Mined	(m^2)	1,045,758	395,496	964,142	508,968
Tonnes Milled	(kt)	8,479	4,371	9,362	6,997
Yield	(g/t)	4.4	4.0	3.8	4.8
Gold Production	(koz)	1,199	558	1,155	1,085
Development	(m)	41,455	19,324	53,551	29,231
Productivity					
TEC	(No.)	20,368	14,722	16,106	17,119
Centares	(m^2/TEC/month)	4.3	4.5	5.0	5.0
Milling	(t/TEC/month)	35	49	48	68
Gold Production	(g/TEC/month)	153	197	186	329
Health and Safety					
Fatalities	(No.)	11	10	6	5
Fatality Rate	(per mmhrs)	0.35	0.24	0.15	0.25
LTIFR	(per mmhrs)	17	15	15	20
Expenditures					
Cash Operating Costs	(ZARm)	2,409	883	2,125	2,290
Capital Expenditure	(ZARm)	58	32	63	135
Cost Performance					
Cash Operating Costs	(ZAR/t)	284	202	227	327
	(ZAR/kg)	64,619	50,879	59,141	67,847
Capital Expenditure	(ZAR/t)	7	7	7	19
	(ZAR/kg)	1,555	1,827	1,746	4,010

[1] 2004 reports six-month actual results to December 2003.

2.3.3 Harmony Free State Operations

The Harmony Free State Operations are situated in the Free State Province, South Africa, some 270km southwest of Johannesburg. Located at approximately latitude 28°10'S and longitude 26°30'E, the site is accessed via the national highway N1 between Johannesburg and Bloemfontein.

Exploration, development and production history in the area dates from the early 1940s. Harmony's Free State Operations commenced with amalgamation of Harmony, Virginia and Merriespruit mining operations. Subsequent acquisitions included: Unisel BU in 1996; Saaiplaas BU in 1997; Brand BUs in 1998 and Masimong in 1998.

Table 2.9 gives the salient operating statistics and Table 2.10 gives the historical operating statistics for Harmony Operations from 1 January 2001 through to 31 December 2003, inclusive. Note that 2003 comprises twelve-month actual results to June 2003 and 2004 reports the actual results to 31 December 2003.

Table 2.9 Harmony Free State Operations: Salient Operating Statistics

Business Unit	Design Capacity (ktpa)	Maximum Operating Capacity[1] (ktpa)	Life	Classification
Production Shafts				
Harmony No.2 BU	2,724	550	5	Medium-life
Harmony No.3 BU	1,080	0	0	Not in use
Harmony No.4 BU	1,752	0	0	Not in use
Merriespruit No.1 BU	1,548	597	9	Medium-life
Merriespruit No.3 BU	2,364	826	9	Medium-life
Virginia No.2 BU	1,236	0	0	Not in use
Unisel BU	1,644	751	11	Long-Life
Saaiplaas No.3 BU	2,112	327	10	Long-Life
Brand No.2 BU	1,440	0	0	Not in use
Brand No.3 BU	1,440	461	5	Medium-life
Brand No.5 BU	1,812	0	0	Not in use
Masimong No.4 BU	840	341	10	Long-Life
Masimong No.5 BU	960	946	15	Long-Life
Total Hoisting Capacity	**20,952**	**4,504**	**15**	**Long-Life**
Surface Sources		**2,822**	**13**	**Long-Life**
Processing Plants				
Central Plant – Milling	2,160	2,160	11	Long-Life
Central Plant – Leaching	2,880	2,880	11	Long-Life
Virginia Plant – Milling	1,980	1,944	9	Medium-life
Virginia Plant – Leaching	2,160	1,944	9	Medium-life
Saaiplaas Plant – Milling	1,800	1,823	15	Long-Life
Saaiplaas Plant – Leaching	2,640	2,663	15	Long-Life
Total Processing Milling Capacity	**5,940**	**5,927**	**15**	**Long-Life**
Total Processing Leaching Capacity	**7,680**	**7,487**	**15**	**Long-Life**

[1] Maximum Operating Capacity represents the maximum planned annual throughput for the LoM period.

Table 2.10 Harmony Free State Operations: Salient Historical Operating Statistics

Statistic	Units	2001	2002	2003	2004[1]
Production					
Area Mined	(m^2)	721,709	738,793	767,555	427,929
Tonnes Milled	(kt)	5,289	4,536	5,338	2,950
Yield	(g/t)	4.0	4.2	3.6	3.5
Gold Production	(koz)	686	612	611	330
Development	(m)	50,027	51,188	53,691	28,047
Productivity					
TEC	(No.)	15,668	12,776	11,178	12,673
Centares	(m^2/TEC/month)	3.8	4.8	5.7	5.6
Milling	(t/TEC/month)	28	30	40	39
Gold Production	(g/TEC/month)	114	124	142	135
Health and Safety					
Fatalities	(No.)	9	8	2	6
Fatality Rate	(per mmhrs)	0.26	0.27	0.07	0.51
LTIFR	(per mmhrs)	35	26	24	21
Expenditures					
Cash Operating Costs	(ZARm)	1,385	1,351	1,518	852
Capital Expenditure	(ZARm)	120	95	126	26
Cost Performance					
Cash Operating Costs	(ZAR/t)	262	298	284	289
	(ZAR/kg)	64,883	70,978	79,875	82,995
Capital Expenditure	(ZAR/t)	23	21	24	9
	(ZAR/kg)	5,622	4,991	6,631	2,515

[1] 2004 reports six-month actual results to December 2003.

2.3.4 Welkom Operations

The Welkom Operations are situated in the Free State Province, South Africa, some 270km southwest of Johannesburg. Located at approximately latitude 28°00'S and longitude 26°30'E, the site is accessed via the national highway N1 between Johannesburg and Bloemfontein.

Exploration, development and production history in the area dates from the 1940s leading to commercial production by 1947. Mining operations comprise six underground mining BUs: BU No.1; BU No.2; BU No.3, BU No.4; BU No.6 and BU No.7 which have a combined rock hoisting capacity of 313ktpm. The mining operations process their ore via a toll agreement with Free Gold.

Table 2.11 gives the salient operating statistics and Table 2.12 gives the historical operating statistics for Welkom Operations from 1 January 2001 through to 31 December 2003, inclusive. Note that 2001 is reported on a calendar year, 2002 comprises six months to 30 June 2002 and 2003 comprises 12-month actual results to June 2003 and 2004 reports the actual results to 31 December 2003.

Table 2.11 Welkom Operations: Salient Operating Statistics

Business Unit	Design Capacity (ktpa)	Maximum Operating Capacity[1] (ktpa)	Life	Classification
Production Shafts				
No.1 BU	816	305	3	Short-life
No.2 BU	648	66	2	Short-life
No.3 BU	660	76	3	Short-life
No.4 BU	660	49	2	Short-life
No.6 BU	816	105	3	Short-life
No.7 BU	816	288	8	Medium-life
Total Hoisting Capacity	**4,416**	**864**	**8**	**Medium-life**
No Surface Sources				
Processing Plants				
No operational plant				

[1] Maximum Operating Capacity represents the maximum planned annual throughput for the LoM period.

Table 2.12 Welkom Operations: Salient Historical Operating Statistics

Statistic	Units	2001	2002	2003	2004[1]
Production					
Area mined	(m^2)	73,178	38,065	104,571	58,764
Tonnes Milled	(kt)	340	224	577	315
Yield	(g/t)	5.1	4.9	3.4	3.6
Gold Production	(koz)	56	35	63	36
Development[2]	(m)	1,296	1,483	5,843	459
Productivity					
TEC	(No.)	1,492	1,786	2,348	2,179
Centares	(m^2/TEC/month)	4.1	3.6	3.7	4.5
Milling	(t/TEC/month)	19	21	20	24
Gold Production	(g/TEC/month)	97	102	69	86
Health and Safety					
Fatalities	(No.)	4	1	2	0
Fatality Rate	(per mmhrs)	0.92	0.38	0.35	0
LTIFR	(per mmhrs)	17	10	12	15
Expenditures					
Cash Operating Costs	(ZARm)	144	101	203	115
Capital Expenditure	(ZARm)	10	7	30	0
Cost Performance					
Cash Operating Costs	(ZAR/t)	425	449	352	366
	(ZAR/kg)	82,737	92,093	104,211	102,703
Capital Expenditure	(ZAR/t)	28	33	51	0
	(ZAR/kg)	5,444	6,778	15,236	0

[1] 2004 reports actual results to December 2003.

[2] During 2003 high-speed development team was contracted for a specific development project required to improve ventilation aspects at BU No.1.

2.3.5 West Wits Operations

The West Wits Operations principally comprise Elandsrand BU, Deelkraal BU, Cooke 1 BU, Cooke 2 BU, Cooke 3 BU and Doornkop BU and the non-operational Randfontein No.4 BU. Elandsrand BU and Deelkraal BU are situated in the Gauteng and North West Province, South Africa, some 85km southwest of Johannesburg. Located at approximately latitude 26°00'S and longitude 27°00'E, the site is accessed via the national highway N12 between Johannesburg and Kimberley. Cooke BUs and Doornkop BU are situated in the Gauteng Province, South Africa, some 50km west of Johannesburg. Located at latitude 26°22'S and longitude 27°42'E, the site is accessed via the local R28 highway between Randfontein and Westonaria.

Exploration, development and production history in the West Wits area dates from 1930, leading to large-scale production by the 1940s whilst exploration, development and production history in the Cooke BUs and Doornkop BU areas dates back to 1889.

Table 2.13 gives the salient operating statistics and Table 2.14 gives the historical operating statistics for West Wits Operations from 1 January 2001 through to 31 December 2003, inclusive. Note that 2003 comprises 12-month actual results to June 2003 and 2004 reports the actual results to 31 December 2003.

Table 2.13 West Wits Operations: Salient Operating Statistics

Business Unit	Design Capacity (ktpa)	Maximum Operating Capacity[1] (ktpa)	Life	Classification
Production Shafts				
Elandsrand BU	3,972	2,168	20	Long-Life
Deelkraal BU	2,244	837	6	Medium-life
Cooke 1 BU	2,112	672	6	Medium-life
Cooke 2 BU	2,244	853	16	Long-Life
Cooke 3 BU	3,180	1,186	16	Long-Life
Cooke 4 BU	1,788	0	0	Not in use
Doornkop BU	2,400	2,383	19	Long-Life
Total Hoisting Capacity	**17,940**	**6,605**	**20**	**Long-Life**
Surface Sources		**2,250**	**6**	**Medium-life**
Processing Plants				
Elandsrand Plant – Milling	2,280	1,775	20	Long-Life
Elandsrand Plant – Leaching	2,280	1,775	20	Long-Life
Deelkraal Plant – Milling	1,260	720	6	Medium-life
Deelkraal Plant – Leaching	1,260	720	6	Medium-life
Cooke Plant – Milling	3,360	3,173	19	Long-Life
Cooke Plant – Leaching	3,360	3,173	19	Long-Life
Doornkop Plant – Milling	2,400	2,220	2	Short-life
Doornkop Plant – Leaching	2,700	2,220	2	Short-life
Total Processing Milling Capacity	**9,300**	**7,444**	**20**	**Long-Life**
Total Processing Leaching Capacity	**9,600**	**7,444**	**20**	**Long-Life**

[1] Maximum Operating Capacity represents the maximum planned annual throughput for the LoM period.

Table 2.14 West Wits Operations: Salient Historical Operating Statistics

Statistic	Units	2001	2002	2003	2004[1]
Production					
Area Mined	(m^2)	870,966	946,311	806,649	373,309
Tonnes Milled	(kt)	6,991	8,078	7,862	3,893
Yield	(g/t)	3.8	4.0	3.4	3.1
Gold Production	(koz)	846	1,038	859	394
Development	(m)	47,738	59,155	57,355	35,884
Productivity					
TEC	(No.)	17,640	16,907	15,110	14,131
Centares	(m^2/TEC/month)	4.1	4.7	4.4	4.4
Milling	(t/TEC/month)	33	40	43	46
Gold Production	(g/TEC/month)	124	159	147	144
Health and Safety					
Fatalities	(No.)	12	20	20	5
Fatality Rate	(per mmhrs)	0.32	0.47	0.54	0.23
LTIFR	(per mmhrs)	24	23	23	22
Expenditures					
Cash Operating Costs	(ZARm)	1,400	1,963	1,869	1,017
Capital Expenditure	(ZARm)	115	262	169	134
Cost Performance					
Cash Operating Costs	(ZAR/t)	200	243	238	261
	(ZAR/kg)	53,187	60,819	69,973	83,048
Capital Expenditure	(ZAR/t)	16	32	22	34
	(ZAR/kg)	4,369	8,117	6,335	10,915

[1] 2004 reports six-month actual results to December 2003.

2.3.6 *Evander Operations*

Evander Operations are situated in the Mpumalanga Province, South Africa, some 120km east-southeast of Johannesburg. Located at latitude 28°28'S and longitude 29°06'E, the site is accessed via the local R29 road between Leandra and Bethel in the vicinity of Kinross.

Exploration, development and production history in the area dates from 1903, leading to full-scale production by 1955. Evander Operations originally comprised Kinross, Bracken, Leslie and Winkelhaak that were merged in 1996 due to declining Mineral Reserves. In August 1998, Harmony acquired Evander as a wholly-owned subsidiary.

Table 2.15 gives the salient operating statistics and Table 2.16 gives the historical operating statistics for Evander Operations from 1 January 2001 through to 31 December 2003 inclusive. Note that 2003 comprises 12-month actual results to June 2003 and 2004 reports the actual results to 31 December 2003.

Table 2.15 Evander Operations: Salient Operating Statistics

Business Unit	Design Capacity (ktpa)	Maximum Operating Capacity[1] (ktpa)	Life	Classification
Production Shafts				
Evander No.2 BU	828	615	10	Long-Life
Evander No.3 BU	240	0	0	Not in use
Evander No.5 BU	1,128	332	10	Long-Life
Evander No.7 BU	1,272	602	11	Long-Life
Evander No.8 BU	1,764	824	15	Long-Life
Evander No.9 BU	996	235	4	Short-life
Total Hoisting Capacity	**6,228**	**2,545**	**15**	**Long-Life**
Surface Sources		**237**	**9**	**Medium-life**
Processing Plants				
Kinross Plant – Milling	1,920	1,576	15	Long-Life
Kinross Plant – Leaching	2,400	2,428	15	Long-Life
Winkelhaak Plant – Milling	816	852	10	Long-Life
Winkelhaak Plant – Leaching	0	0	0	Not in use
Total Processing Milling Capacity	**2,736**	**2,428**	**15**	**Long-Life**
Total Processing Leaching Capacity	**2,400**	**2,428**	**15**	**Long-Life**

[1] Maximum Operating Capacity represents the maximum planned annual throughput for the LoM period.

Table 2.16 Evander Operations: Salient Historical Operating Statistics

Statistic	Units	2001	2002	2003	2004[1]
Production					
Area Mined	(m^2)	434,368	403,543	350,391	183,029
Tonnes Milled	(kt)	2,481	2,352	2,127	1,113
Yield	(g/t)	5.7	5.5	5.3	5.3
Gold Production	(koz)	458	415	360	188
Development	(m)	30,861	32,002	28,435	14,074
Productivity					
TEC	(No.)	8,805	8,639	6,906	7,203
Centares	(m^2/TEC/month)	4.1	3.9	4.2	4.2
Milling	(t/TEC/month)	23	23	26	26
Gold Production	(g/TEC/month)	135	125	135	135
Health and Safety					
Fatalities	(No.)	5	6	4	3
Fatality Rate	(per mmhrs)	0.27	0.33	0.23	0.41
LTIFR	(per mmhrs)	22	24	34	30
Expenditures					
Cash Operating Costs	(ZARm)	693	723	796	441
Capital Expenditure	(ZARm)	69	98	98	49
Cost Performance					
Cash Operating Costs	(ZAR/t)	279	307	374	396
	(ZAR/kg)	48,628	55,960	71,006	75,433
Capital Expenditure	(ZAR/t)	28	42	46	44
	(ZAR/kg)	4,842	7,585	8,776	8,405

[1] 2004 reports six-month actual results to December 2003.

2.3.7 *Orkney Operations*

The Orkney Operations are situated in North West Province, South Africa, some 175km south-west of Johannesburg. Located at approximately latitude 26°30'S and longitude 26°45'E, the site is accessed via the national highway N12 between Johannesburg and Kimberley.

Exploration, development and production history in the area dates from 1886 and following dormant periods, large-scale production commenced during the 1940s with the formation of Vaal Reefs Gold Mining and Exploration Company Limited ("Vaal Reefs") in 1944.

Mining operations comprise six underground mining BUs: BU No.1, BU No.2, BU No.3, BU No.4, BU No.6 and BU No.7. BU No.1 will shortly become non-operational and BU No.5 has been closed. The mining operations process their ore via a toll agreement with Vaal River Operations ("VRO") belonging to AngloGold.

Table 2.17 gives the salient operating statistics and Table 2.18 gives the historical operating statistics for Orkney Operations from 1 January 2001 through to 31 December 2003, inclusive. Note that 2001 is reported on a calendar year basis, 2002 comprises six-months to 30 June 2002 and 2003 comprises 12-month actual results to June 2003 and 2004 is reported as the actual results to 31 December 2003.

Table 2.17 Orkney Operations: Salient Operating Statistics

Business Unit	Design Capacity (ktpa)	Maximum Operating Capacity[1] (ktpa)	Life	Classification
Production Shafts				
No.1 BU	1,644	0	0	Not in use
No.2 BU	1,704	468	3	Short-life
No.3 BU	1,560	279	4	Short-life
No.4 BU	1,920	443	5	Medium-life
No.5 BU	1,320	0	0	Not in use
No.6 BU	1,620	218	8	Medium-life
No.7 BU	1,620	108	8	Medium-life
Total Hoisting Capacity	**11,388**	**1,484**	**8**	**Medium-life**
No Surface Sources				
Processing Plants				
No operational plant				

[1] Maximum Operating Capacity represents the maximum planned annual throughput for the LoM period.

Table 2.18 Orkney Operations: Salient Historical Operating Statistics

Statistic	Units	2001	2002	2003	2004[1]
Production					
Area Mined	(m^2)	348,345	164,939	307,817	138,297
Tonnes Milled	(kt)	2,060	942	1,761	783
Yield	(g/t)	7.1	7.6	7.2	6.4
Gold Production	(koz)	468	232	408	161
Development	(m)	6,944	2,628	4,398	2,053
Productivity					
TEC	(No.)	6,579	6,174	5,854	4,696
Centares	(m^2/TEC/month)	4.4	2.2	4.4	4.9
Milling	(t/TEC/month)	26	13	25	28
Gold Production	(g/TEC/month)	184	97	180	178
Health and Safety					
Fatalities	(No.)	10	7	4	2
Fatality Rate	(per mmhrs)	0.56	0.48	0.48	0.45
LTIFR	(per mmhrs)	28	24	24	15
Expenditures					
Cash Operating Costs	(ZARm)	730	407	788	345
Capital Expenditure	(ZARm)	30	23	6	4
Cost Performance					
Cash Operating Costs	(ZAR/t)	355	432	447	440
	(ZAR/kg)	50,195	56,450	62,125	68,827
Capital Expenditure	(ZAR/t)	15	24	4	5
	(ZAR/kg)	2,076	3,152	490	856

[1] 2004 reports six-month actual results to December 2003.

2.3.8 Kalgold Operation

Kalgold Operation is currently subject to sale as described in more detail within the circular. Until such time as the sale agreement has become unconditionally effective, the asset still forms part of Harmony. As at the base valuation date of 31 December 2003, Kalgold was still contributing to the equity value of Harmony as reported in Section 14. Notwithstanding this statement, the valuation as reported in Section 14 considers the combined Mining Asset valuation with and without Kalgold.

The Kalgold Operation is situated some 50km southwest of Mafikeng in the North West Province, South Africa, some 300km west of Johannesburg. Located at latitude 26°10'S and longitude 26°14'E, the site is accessed via the local R49 road between Mafikeng and Vryburg.

The gold deposits at Kalgold were discovered by Shell South Africa (Pty) Limited ("Shell") in 1991 following an exploration programme focused on the poorly exposed Archaean Greenstone belts of the Kraaipan Group, which occur in the area. In 1995 a feasibility study was conducted by West Rand Consolidated Mines Limited ("WRCM") who acquired the mineral and surface rights leading to the development of an open pit operation in July 1996. Harmony acquired Kalgold in July 1999.

Table 2.19 gives the salient operating statistics and Table 2.20 gives the historical operating statistics for Kalgold Operations from 1 January 2001 through to 31 December 2003, inclusive. Note that 2003 comprises 12-month actual results to June 2003 and 2004 reports the actual results to 31 December 2003.

Table 2.19 Kalgold Operation: Salient Operating Statistics

Business Unit	Design Capacity (ktpa)	Maximum Operating Capacity[1] (ktpa)	Life	Classification
Business Units				
Processing Operations	1,620	1,572	4	Short-life

[1] Maximum Operating Capacity represents the maximum planned annual throughput for the LoM period.

Table 2.20 Kalgold Operation[1]: Salient Historical Operating Statistics

Statistic	Units	2001	2002	2003	2004[2]
Production					
Waste Tonnes Mined	(kt)	8,542	7,323	7,711	4,763
Tonnes Milled	(kt)	959	961	1,084	694
Yield	(g/t)	1.6	2.0	2.1	2.0
Gold Production	(koz)	49	62	75	46
Stripping Ratio	(t_{waste}:t_{ore})	8.9	7.6	7.1	6.9
Productivity					
TEC	(No.)	453	444	501	533
Milling	(t/TEC/month)	176	180	180	217
Gold Production	(g/TEC/month)	282	363	386	445
Health and Safety					
Fatalities	(No.)	0	0	0	0
Fatality Rate	(per mmhrs)	0.00	0.00	0.00	0.00
LTIFR	(per mmhrs)	7	13	4	9
Expenditures					
Cash Operating Costs	(ZARm)	98	130	150	99
Capital Expenditure	(ZARm)	33	25	39	1.8
Cost Performance					
Cash Operating Costs	(ZAR/t)	102	135	138	143
	(ZAR/kg)	63,844	67,218	64,583	69,845
Capital Expenditure	(ZAR/t)	34	26	36	3
	(ZAR/kg)	21,498	12,927	16,785	1,232

[1] The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

[2] 2004 reports six-month actual results to December 2003.

2.3.9 *Harmony Australian Operations*

The two main operating groups of Harmony Australia are the Mt. Magnet & Cue Operations and the South Kalgoorlie Operations. Mt. Magnet & Cue Operations are situated in the Murchison region, Western Australia whilst the South Kalgoorlie operations are located as part of the Eastern Goldfields near the town of Kalgoorlie. Mt. Magnet Operation comprises a number of open pits and decline operations at Morning Star and Hill 50 and the processing of surface stockpiles. The Cue Operation comprises a number of open pits at Big Bell, Cuddingwarra, Golden Crown and Tuckabianna. The Big Bell underground operation was recently closed. The South Kalgoorlie operations comprise the Jubilee and New Celebration facilities, the Mt. Marion mine comprises an underground and open pit operations.

Exploration, development and production history at Mt. Magnet & Cue and South Kalgoorlie areas dates from 1896 and 1937, respectively. Mining at Mt. Magnet began with the discovery of gold in 1896 and up to 30 June 2002 some 5Moz has been produced. Gold mining at Big Bell in the Cue area commenced in 1937 but closed between 1955 and 1989 and up until 30 June 2002 gold sales exceeded 2Moz. Mining at South Kalgoorlie substantively commenced in 1987 and up until 30 June 2002 gold production of some 2Moz has been realised.

Table 2.21 gives the salient operating statistics and Table 2.22 gives the historical operating statistics for Harmony Australia Operations from 1 January 2001 through to 31 December 2003 inclusive. Note 2003 comprises 12-month actual results to June 2003 and 2004 reports the actual results to 31 December 2003.

Table 2.21 Harmony Australian Operations: Salient Operating Statistics

Business Unit	Design Capacity (ktpa)	Maximum Operating Capacity[1] (ktpa)	Life	Classification
Business Units				
Mount Magnet & Cue Plant	5,940	2,496	7.3	Medium-life
Jubilee Plant	1,320	1,176	3.0	Short-life
New Celebration Plant	1,656	504	0.3	Short-life
Total	**8,916**	**4,176**	**7.3**	**Medium-life**

[1] Maximum Operating Capacity represents the maximum planned annual throughput for the LoM period.

Table 2.22 Harmony Australian Operations: Salient Historical Operating Statistics

Statistic	Units	2001	2002	2003	2004[1]
Production					
Tonnes Milled	(kt)	1,088	4,782	7,148	2,545
Yield	(g/t)	1.6	1.6	2.2	2.4
Gold Production	(koz)	56	253	510	193
Productivity					
TEC	(No.)	882	882	882	917
Milling	(t/TEC/month)	103	452	675	463
Gold Production	(g/TEC/month)	164	743	1,498	1,092
Health and Safety					
Fatalities	(No.)	0	0	0	0
Fatality Rate	(per mmhrs)	0.00	0.00	0.00	0.00
LTIFR	(per mmhrs)	na	15	2	15
Expenditures					
Cash Operating Costs	(ZARm)	135	608	1,226	431
Capital Expenditure	(ZARm)	18	233	242	95
Cost Performance					
Cash Operating Costs	(ZAR/t)	124	127	171	169
	(ZAR/kg)	77,990	77,265	77,311	71,643
Capital Expenditure	(ZAR/t)	17	49	34	37
	(ZAR/kg)	10,399	29,610	15,274	15,798

[1] 2004 reports six-month actual results to December 2003.

2.3.10 Harmony Canadian Operations

Harmony's Canadian Operations comprise the Bisset gold mine located near Bisset in the Manitoba Province, Canada. Mining activities were suspended in the second quarter of 2002 for economic reasons. The first mining at Bisset commenced in 1932 and continued until operations were ceased in June 1998 following the liquidation of the Bisset Gold Mine Company. Bisset had sold some 1.3Moz up until June 1995.

Table 2.23 gives the historical operating statistics for Harmony Canadian Operations from 1 July 2001 through to 31 December 2003, inclusive. For 2003, there was no production due to suspension of mining operations in the previous year.

Table 2.23 Harmony Canadian Operations: Salient Historical Operating Statistics

Statistic	Units	2001	2002	2003	2004
Production					
Tonnes Milled	(kt)	266	39	na	na
Yield	(g/t)	5.2	6.6	na	
Gold Production	(koz)	44	8	na	
Productivity					
TEC	(No.)	na	na	na	na
Milling	(t/TEC/month)	na	na	na	na
Gold Production	(g/TEC/month)	na	na	na	na
Health and Safety					
Fatalities	(No.)	0	0	na	na
Fatality Rate	(per mmhrs)	0.00	0.00	na	na
LTIFR	(per mmhrs)	37	32	na	na
Expenditures					
Cash Operating Costs	(ZARm)	111	9	na	na
Capital Expenditure	(ZARm)	49	-10	na	na
Cost Performance					
Cash Operating Costs	(ZAR/t)	417	231	na	na
	(ZAR/kg)	80,552	35,019	na	na
Capital Expenditure	(ZAR/t)	184	-256	na	na
	(ZAR/kg)	35,559	-38,911	na	na

2.4 Significant Exploration Properties

2.4.1 Avgold

The Target North Project considers options to exploit the Sun South area comprising the Paradise, Siberia and Mariasdal blocks of ground located immediately north of the Eldorado block of the existing Target Mine. From the south, the Blast Fault separates the Eldorado and Paradise blocks whilst the Siberia Fault separates the Paradise and Siberia blocks. The Mariasdal block adjoins the Siberia block and is bounded to the north by the Mariasdal Fault. The Sun South area comprises an extension of the Elsburg and Dreyerskuil reefs mined at Target Mine. Mineral Resources (Table 4.9 in Section 4) have been identified, of which 60% are classed as Inferred. High-level pre-feasibility/scoping studies have been completed by Avgold that consider three options for possible future development:

- a "greenfields" development comprising a newly developed two shaft system to exploit all the blocks;
- the "brownfields" development comprising an initial twin shaft system sunk to 2,500m below surface adjacent to the Target Mine ground handling infrastructure at 282L, a third "North Shaft" to be sunk to 2,500m below surface located towards the north of the Siberia block. The twin shaft system would exploit the Paradise block and certain material of the Siberia block whilst the North Shaft would be used to exploit the remainder of the Siberia block and the Mariasdal block. Ground between 2,500m and 3,000m would be accessed by vehicle ramps; and
- the "brownfields" development comprising an initial single shaft sunk to 2,500m below surface, adjacent to the Target Mine ground handling infrastructure at 282L (South Shaft) and a subsequent North Shaft located towards the north of the Siberia block. The South Shaft would cater for men, material, ventilation and limited rock handling facilities. These shafts, together with access ramps for ground between 2,500m and 3,000m, would be used to exploit the blocks of the Sun South area.

High-level indicative cash flows derived negative NPVs for the first two options; however the third option did realise a positive NPV. For Option 3, the first phase of the two-shaft system would utilise the existing ground handling facilities of Target Mine to recover 120ktpm of high-grade ore whilst 40 ktpm of low-grade material would be hoisted directly by the South Shaft, resulting in overall production of some 160ktpm. Mining would be concentrated on material above 2,500m from the Target workings and the Paradise block. Phase 2 would focus on development into the Paradise and Siberia blocks and expand production to some 220ktpm. The final third phase would introduce the North Shaft for the provision of men, material and ventilation to the northern blocks maintaining production at some 220ktpm.

Installing the initial single shaft for Phase 1 is estimated, by Avgold, to cost ZAR0.9billion, a further ZAR1.5 billion is estimated for the expanded infrastructure to cater for a 220ktpm operation of Phase 2 and an additional ZAR4billion for Phase 3. A feasibility study will commence during 2004 to further define the technical and economic parameters of the project to ascertain the NPV prior to making any capital commitments.

Until such time as the appropriate level of technical detail has been completed no Mineral Reserves and associated DCF valuation can be applied and as such only reports Mineral Resources.

2.4.2 Harmony

Harmony has three significant exploration properties: namely Poplar, Rolspruit and Kalplats.

The **Poplar Project** considers the green-fields development through installation of a twin shaft system to some 1,200m below surface to access ore some 20km from the existing Evander Operations. Mineral Resources have been estimated and the project is currently the focus of a pre-feasibility study.

The **Rolspruit Project** considers the exploitation of deeper resources of the Kimberley Reef adjacent to the No.8 BU at Evander Operations. Harmony has recently (March 2003) completed a feasibility study, which assesses two distinct options:

- green-fields option: the installation of a twin shaft system from surface; and
- brown-fields option: the installation of a twin sub-vertical shaft system at No.8 BU.

Given the high capital expenditure requirements and long lead-time to full production, current focus is on improving project economic performance.

The **Kalplats Project** is situated some 90km southwest of Mafikeng in the North West Province, South Africa, some 340km west of Johannesburg. The project is located some 40km to the west of the Kalgold Operation and accessed via the local R49 road between Mafikeng and Vryburg.

Kalplats is a platinum group metal ("PGM") prospect that was discovered during the course of gold prospecting in the Kraaipan greenstone belt in 2000. Mineralisation is contained in some seven separate ore zones with strike lengths between 500m to 1,000m and widths between 15m and 45m. Exploration has been completed and comprised a combination of Rotary Air Blast, Reverse Circulation and Diamond Drilling and a Pre-feasibility Study was completed in July 2002.

The Pre-feasibility Study concluded that the future viability of commissioning a mining operation at Kalplats depended on selectively mining the higher-grade reef zones. A Feasibility Study was commissioned in 2003 and work included the excavation of a 500t bulk sample for metallurgical testing of anticipated flotation recoveries and concentrate grades. Harmony is currently commissioning a Feasibility Study in order to assess the potential development of an open pit mining operation.

2.5 Mining Authorisations and Mining Leases

SRK has not reviewed the various agreements relating to mineral rights, authorisations and leases from a legal perspective and has consequently relied on advice by the Companies to the effect that the Companies are entitled to mine all material falling within their respective mineral rights and/or mining rights and that all the necessary statutory mining authorisations are lawfully in place.

Notwithstanding this statement, SRK has been provided with sufficient documentation and a supporting letter confirming that following the completion of a recent and comprehensive internal audit all mineral rights, mynpatchen, claims and mining leases being in respect of said mining leases have been duly validated and verified by the individuals as identified in Section 1 and employed by Harmony's legal services.

2.5.1 *South African Law: Current Status*

Ownership of mineral rights and statutory mining rights in South Africa may be affected through the common law or by statute. Under the common law, mineral rights vest with the owner of the land. The common law recognises the principal that mineral rights may be severed from title to land, rendering it possible for the surface rights, the rights to precious metals and the rights to base minerals to be owned by different persons.

Earlier mining legislation, which has since been repealed, granted, by way of mining leases, statutory rights to mine for precious metals. Despite the repeal of this earlier legislation, mining leases continue to be valid under the terms of the Minerals Act (Act 50 of 1991) (the "Act"). Registration of title to mineral rights ensures that real rights are constituted in and to the minerals concerned. Upon registration, those rights (either common law mineral rights or statutory mining rights) become effective against third parties. Registered title may be obtained in a number of ways. For example, where mineral right ownership has been separated from land ownership, registered title to the common law mineral rights is obtained by the registration of such ownership in the Deeds Registry Office. Alternatively, where a person has acquired statutory mining rights pursuant to a mining lease, registered title to the statutory mining rights is effected after receipt of the necessary consent from the Minister of Minerals and Energy and by registration of those rights in the Mining Titles Office.

The Act currently governs prospecting and mining activities in South Africa. The Act provides that statutory mining rights supersede common law mineral rights. Thus, pursuant to the Act, the holders of statutory mining rights are deemed to be the common law holders of the mineral rights.

2.5.2 *South African Law: The Minerals and Petroleum Resources Development Act*

The Minerals and Petroleum Resources Development Act (Act 28 of 2002) was promulgated by the South African Parliament during July 2002 as the Minerals Act (the "Minerals Act"). The Minerals Act sets out to "make provision for the equitable access and sustainable development of the nation's mineral and petroleum resources" by bringing the country's mining law up to internationally accepted standards. It is also expected to provide many opportunities for recognised empowerment exploration and mining companies.

The legislation will enforce the "use it or lose it" principle of mineral exploration and development. In platinum, in particular, it unlocks stagnant areas currently owned by private owners of mineral rights unwilling or unable to bring them to account and by mining companies wishing to hold reserves and resources for the next 30 years and longer. Government's view is that in order to redress the wrongs of the past, it needs to promote industry to provide employment and to generate revenue for the country-wide Reconstruction and Development Initiative.

The Minerals Act seeks to address the issue of Historically Disadvantaged South Africans ("HDSA") ownership. The South African Government's Mining Charter embodies the policy of facilitating the transfer of ownership within the South African mining industry to HDSA within the next 10 years. All stakeholders have agreed a target of 26% empowerment status to be achieved in a transparent manner and at fair market value.

The Mining Charter also aspires to achieve employment equity and targets of at least 40% HDSA participation in management within five years, with 10% being participation by women.

2.5.3 *South African Law: Prospecting Permits*

Prospecting is governed by the Act and is defined as "intentionally searching for any mineral by means which disturb the surface of the earth, including the portion under the sea or under other water or of any tailings, by means of excavation or drilling necessary for that purpose".

Section 5(2) states that no person may prospect or mine without the necessary authorisations. This requirement departs from the common law principles governing ownership of minerals and restricts the right of owners to prospect and exploit mineral resources that fall within their ownership. It is a requirement that the applicant for a prospecting permit be the holder of the mineral right or has acquired the written consent of the mineral right holder to prospect for his own account. The prospector may not remove or dispose of any mineral found during prospecting operations unless the Director of Mineral Development has given permission for such removal. Under the Act the Director of Mineral Development has the power to issue prospecting permits. A prospecting application must be submitted and be accompanied by proof of right to the minerals, details about the manner in which the applicant intends to prospect and rehabilitate disturbances of the surface which may be caused by the intended prospecting operations and particulars concerning the applicant's ability to make the necessary provision to rehabilitate disturbances of the surface which may be caused by the intended prospecting operations.

The details of the manner in which the applicant intends to rehabilitate disturbances of the surface are to be submitted in the form of an environmental management programme ("EMP") for approval by the Director of Minerals Development. Such approval is in addition to the approval of the prospecting permit and no prospecting operation may commence without approval of the EMP.

A prospecting permit is issued for a period of 12 months but may be granted for longer should it be so determined by the Director of Minerals Development and can be renewed. The Act restricts and prohibits prospecting on certain lands including National Parks, townships or urban areas, land comprising public roads, a railway or cemetery and land that has been reserved for public purposes.

2.5.4 South African Law: Mining Authorisations

Under the Act, no person or mining entity may mine for minerals without being granted a mining authorisation, either temporary or permanent. Prior to granting a mining authorisation, two requirements must be fulfilled. Firstly, the mining entity must either be the registered holder of the mineral rights or have obtained the written consent of the registered holder of the mineral rights to mine the minerals concerned, for its own account. Secondly, the Department of Minerals and Energy must be satisfied with the scale, manner and duration of the intended mining operations and must approve an Environmental Management Programme Report ("EMPR").

The Act provides for two forms of permanent mining authorisations, namely mining permits and mining licences. A mining permit is issued where the minerals occur in limited quantities or will be mined on a limited scale and on a temporary basis. A mining licence is issued where the minerals occur in more than limited quantities or will be mined on a larger than limited scale and for a period longer than two years.

The Act allows a temporary mining authorisation to be issued either to ensure the continuation of existing operations or to accommodate circumstances where approval of an EMPR is outstanding. Temporary mining authorisations are generally issued for limited periods but are renewable until the EMPR has been approved.

2.5.5 South African Law: The Royalty Bill

On 10 March 2003, the Royalty Bill was released for public comment. The Royalty Bill is currently being revised and the date of release of the revised version is unknown.

The Royalty Bill proposes to impose a 3%, 4% and 8% revenue-based royalty on the South African gold mining sector, platinum sector and diamond sector respectively, payable to the South African Government. Under the terms of the Royalty Bill released for comment, the royalty is to take effect when companies convert to New Order Mining Rights in accordance with the New Minerals Act, although the Minister has indicated that the royalty is not expected to take effect until the transitional period for the conversion of mining rights under the New Minerals Act expires. If adopted, the Royalty Bill may have an impact on the operating results (technical) and will have a negative impact on the financial performance, hence valuation of the Mining Assets.

2.5.6 Australian Law

In Australia, with few exceptions, all onshore mineral rights are reserved to the government of the relevant state or territory. Exploration for and mining of minerals is regulated by the mining legislation of that state or territory and controlled by the relevant state or territory department. Where native title has not been extinguished, native title legislation may apply to the grant of tenure and some subsequent administrative processes. Heritage legislation may operate to preclude or regulate the disturbance of a particular area. In most Australian states, if the holder of an exploration license establishes indications of an economic mineral deposit and expends a minimum level of investment, it may apply for a mining lease which gives the holder exclusive mining rights with respect to all minerals on the property. It is possible for one person to own the surface of the property and for another to own the mineral rights. The maximum initial term of a mining lease is 21 years and the holder has the right to renew the lease for a further period of 21 years. Subsequent renewals are subject to the minister's discretion and the lease can only be assigned with the consent of the relevant minister. Royalties are payable as specified in the relevant legislation in each state or territory. A general-purpose lease may also be granted for one or more of a number of permitted purposes. These purposes include erecting, placing and operating machinery in connection with mining operations, depositing or treating minerals or tailings and using the land for any other specified purpose directly connected with mining operations.

2.5.7 *Avgold: Current Status*

Avgold classifies their land holding position into three main categories: existing mining authorisation; contiguous mineral rights for which extensions may be applied; and all non-contiguous mineral rights. On approval of areas currently under consideration for extension Avgold will have mining authorisations totalling 4,151Ha.

Details relating to the EMPR status as required by section 39(1) of the Minerals Act are also included in Section 11 of this CPR.

Table 2.24 Avgold: Land Holdings

Mining Area	Existing Mining Authorisation (Ha)	Extension Application (Ha)	Contiguous Mineral Rights (Ha)	Non-Contiguous Mineral Rights (Ha)
Target	4,151			
Sun – Target North			23,200	
Oribi				3,251
Total	**4,151**		**23,200**	**3,251**

2.5.8 *Harmony: Current Status*

Harmony currently classifies their land holding position into four main categories: existing mining authorisation; area for which extensions have been applied; all contiguous mineral rights; and all non-contiguous mineral rights. On approval of areas currently under consideration for extension Harmony will have mining authorisations totalling 122,615Ha.

Being effectively lease bound, Harmony's South African mining operations do not include any significant mineral rights external to the current lease areas.

Details relating to the EMPR status as required by section 39(1) of the Minerals Act are also included in Section 11 of this CPR.

Table 2.25 Harmony: South African Operations Land Holdings

Tax Entity	Existing Mining Authorisation (Ha)	Extension Application (Ha)	Contiguous Mineral Rights (Ha)	Non-Contiguous Mineral Rights (Ha)
Free Gold including Joel	21,204	9,162	4,877	24,484
Harmony Free State	22,583	1,815	3,256	4,094
Welkom	5,511	0	0	0
Randfontein	24,266	0	3,006	572
Evander[1]	36,898	2,262	2,837	1,462
Orkney Operations	9,317	0	0	0
Harmony Free State	22,583	1,815	3,256	4,094
Kalgold[2]	615	3,810	0	0
Total	**142,977**	**18,864**	**17,232**	**34,706**

[1] Evander excludes prospecting rights granted of 162,237Ha.

[2] Kalgold is currently the subject of a sale agreement.

Harmony Australian Operations control exploration and mineral rights over a total area of 298,355Ha, of which the active mining areas currently total 75,516Ha.

In Australia, most mineral rights belong to the government and mining companies must pay royalties to the government based on production. There are, however, limited areas where the government granted freehold estates without reserving mineral rights. Harmony has freehold ownership of its Jubilee mining areas, but the other mineral rights in Harmony Australian Operations belong to the Australian Government and are subject to royalty payments. In addition, current Australian law generally requires native title approval to be obtained before a mining license can be granted and mining operations can commence. Harmony Australian Operations have approved mining leases for most of their Mineral Reserves, including all Mineral Reserves that are currently being mined and Mt. Magnet & Cue Operations, which have an approved mining license for the current development area. If Harmony Australia Operations expand into additional areas under exploration, these operations would need to convert the relevant exploration licenses prior to commencing mining and that process could require native title approval. There can be no assurance that any approval would be received.

Table 2.26 Harmony: Australian Operations Land Holdings[1]

Regulatory Area	Units	Totals	Mt.Magnet & Cue	Sth. Kalgoorlie	Other
Western Australia					
Mining Lease					
Active Permits[1]					
Areas/Blocks	(No.)	**65,577**	38,199	27,379	0
Total Area	(Ha)	**655**	382	274	0
Pending Permits					
Areas/Blocks	(No.)	**54,951**	17,114	37,837	0
Total Area	(Ha)	**550**	171	378	0
Prospecting Licence					
Active Permits					
Areas/Blocks	(No.))	**16,664**	8,096	8,568	0
Total Area	(Ha)	**167**	81	86	0
Pending Permits					
Areas/Blocks	(No.)	**9,285**	2,578	5,138	1,569
Total Area	(Ha)	**93**	26	51	16
Exploration Licence					
Active Permits					
Areas/Blocks	(No.)	**311**	127	185	0
Total Area	(Ha)	**870**	372	498	0
Pending Permits					
Areas/Blocks	(No.)	**454**	198	218	38
Total Area	(Ha)	**1,264**	566	589	109
Miscellaneous Licence					
Active Permits					
Areas/Blocks	(No.)	**6,848**	532	6,316	0
Total Area	(Ha)	**68**	5	63	0
Pending Permits					
Areas/Blocks	(No.)	**177**	97	80	0
Total Area	(Ha)	**56**	1	55	0
General Purpose Lease					
Active Permits					
Areas/Blocks	(No.)	**936**	936	0	0
Total Area	(Ha)	**9**	9	0	0
Pending Permits					
Areas/Blocks	(No.)	**0**	0	0	0
Total Area	(Ha)	**0**	0	0	0
Special Lease					
Active Permits					
Areas/Blocks	(No.)	**2,226**	0	2,226	0
Total Area	(Ha)	**22**	0	22	0
Pending Permits					
Areas/Blocks	(No.)	**0**	0	0	0
Total Area	(Ha)	**0**	0	0	0

[1] The Mineral Reserves supporting the valuation reported in Section 14 are contained within the Active Permits and are valid for the LoM period.

Figure 2.1 Mining Assets: General Location Map

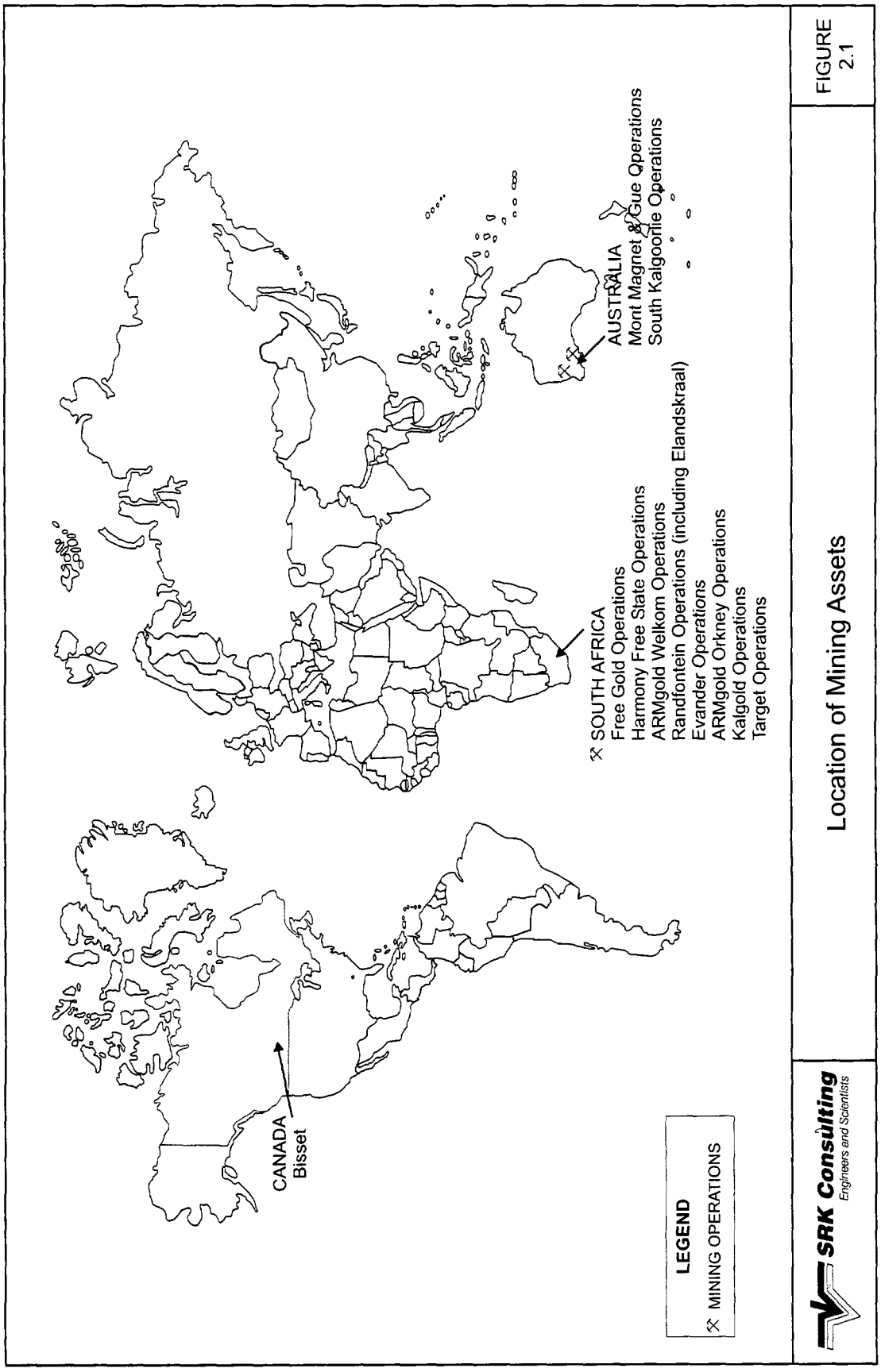


Figure 2.2 Avgold: Location Map and Lease Area for Target Operations

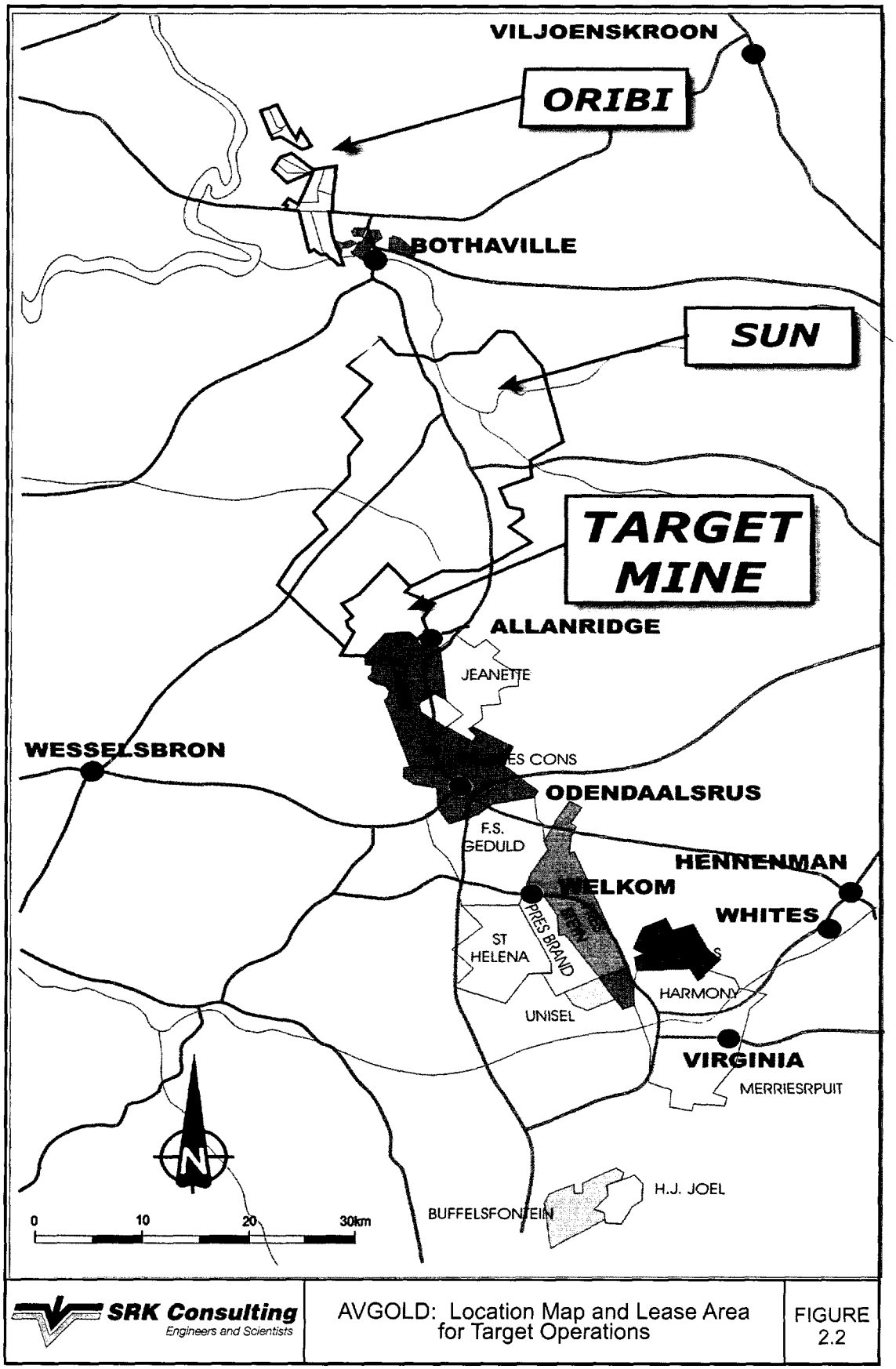


Figure 2.3 Harmony: Location Map and Lease Area Harmony Free Gold Operations, Free State Operations and Welkom Operations

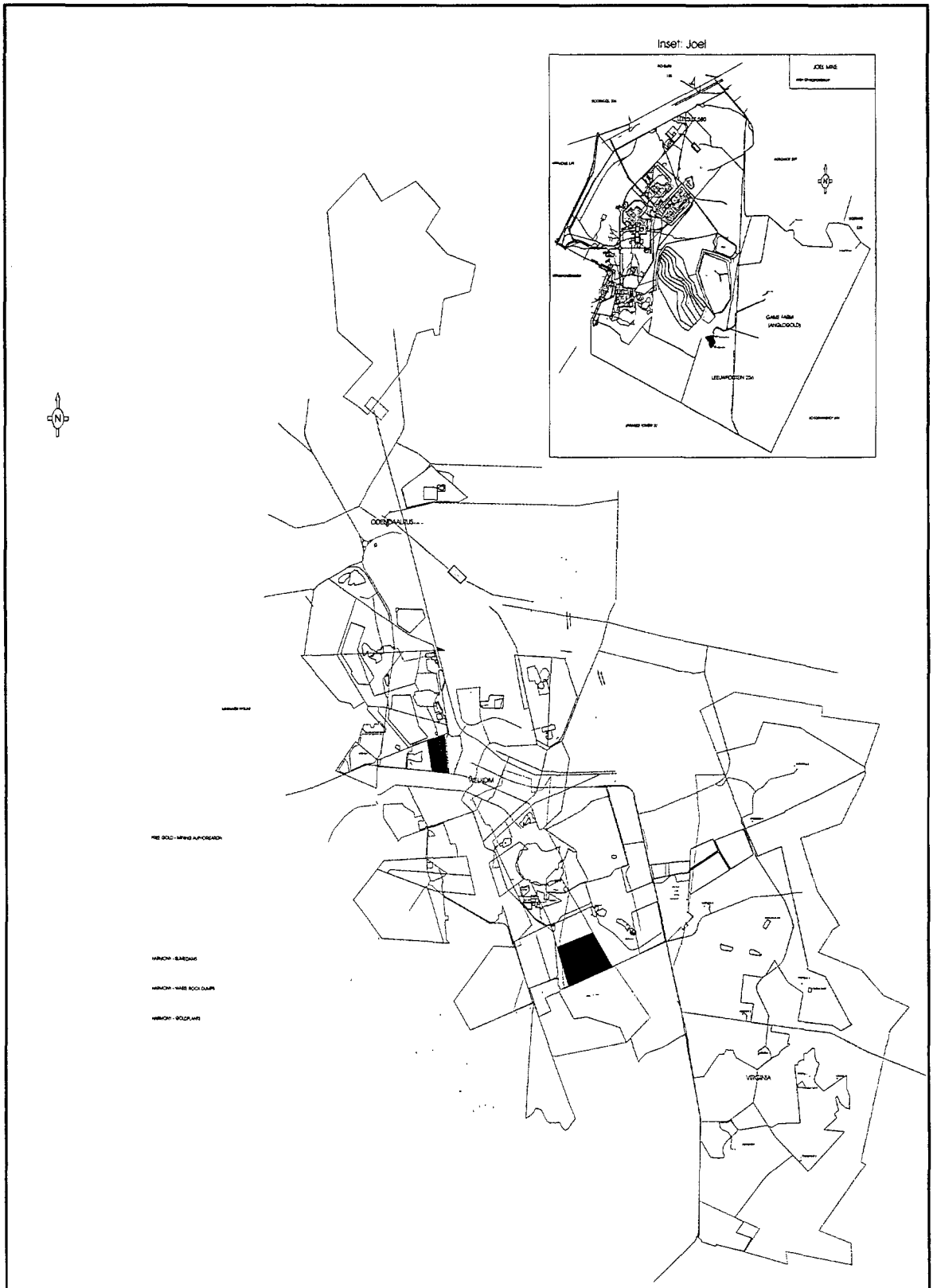


Figure 2.4 Harmony: Location Map and Lease Area for Evander Operations

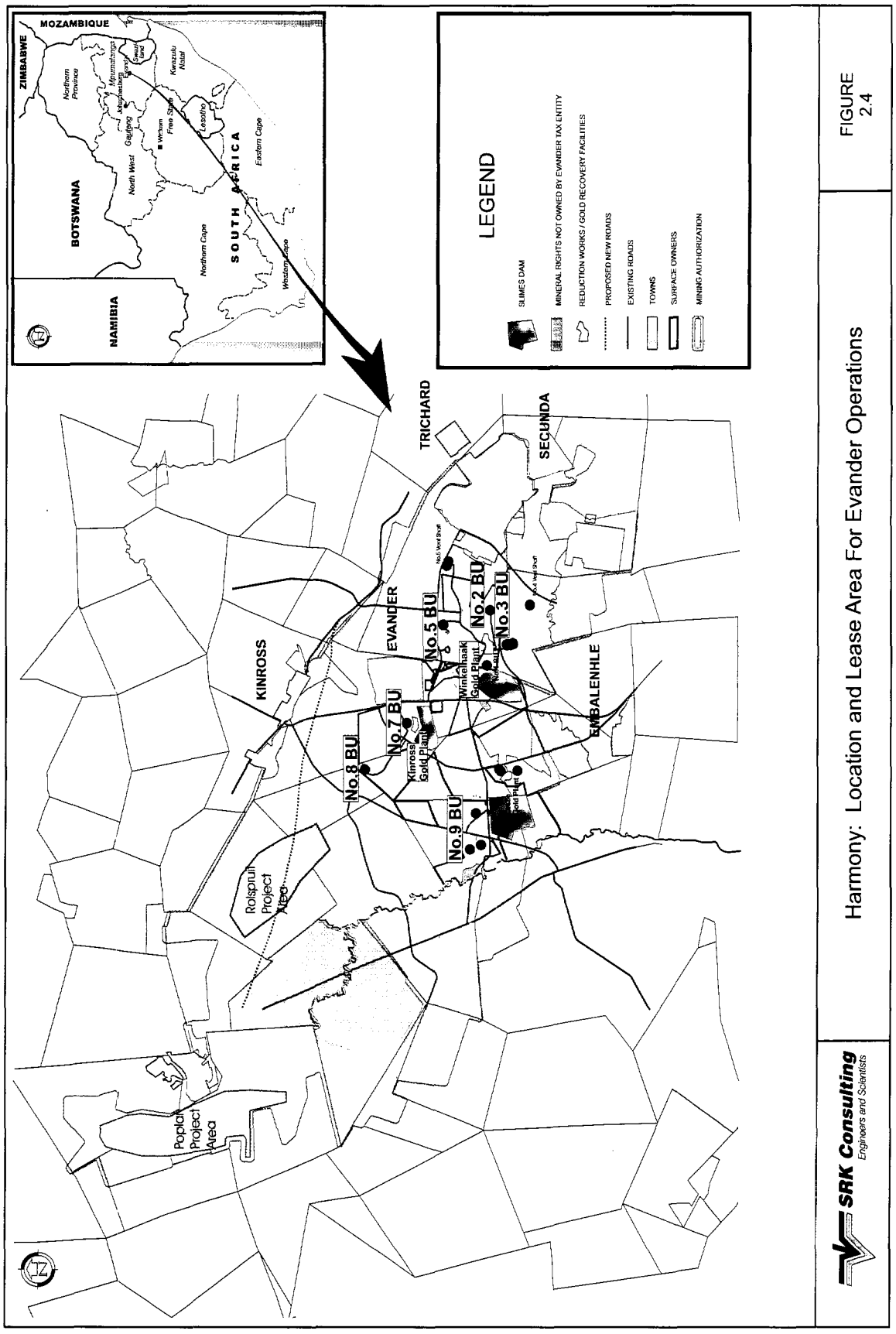


Figure 2.5 Harmony: Location Map and Lease Area for Orkney Operations

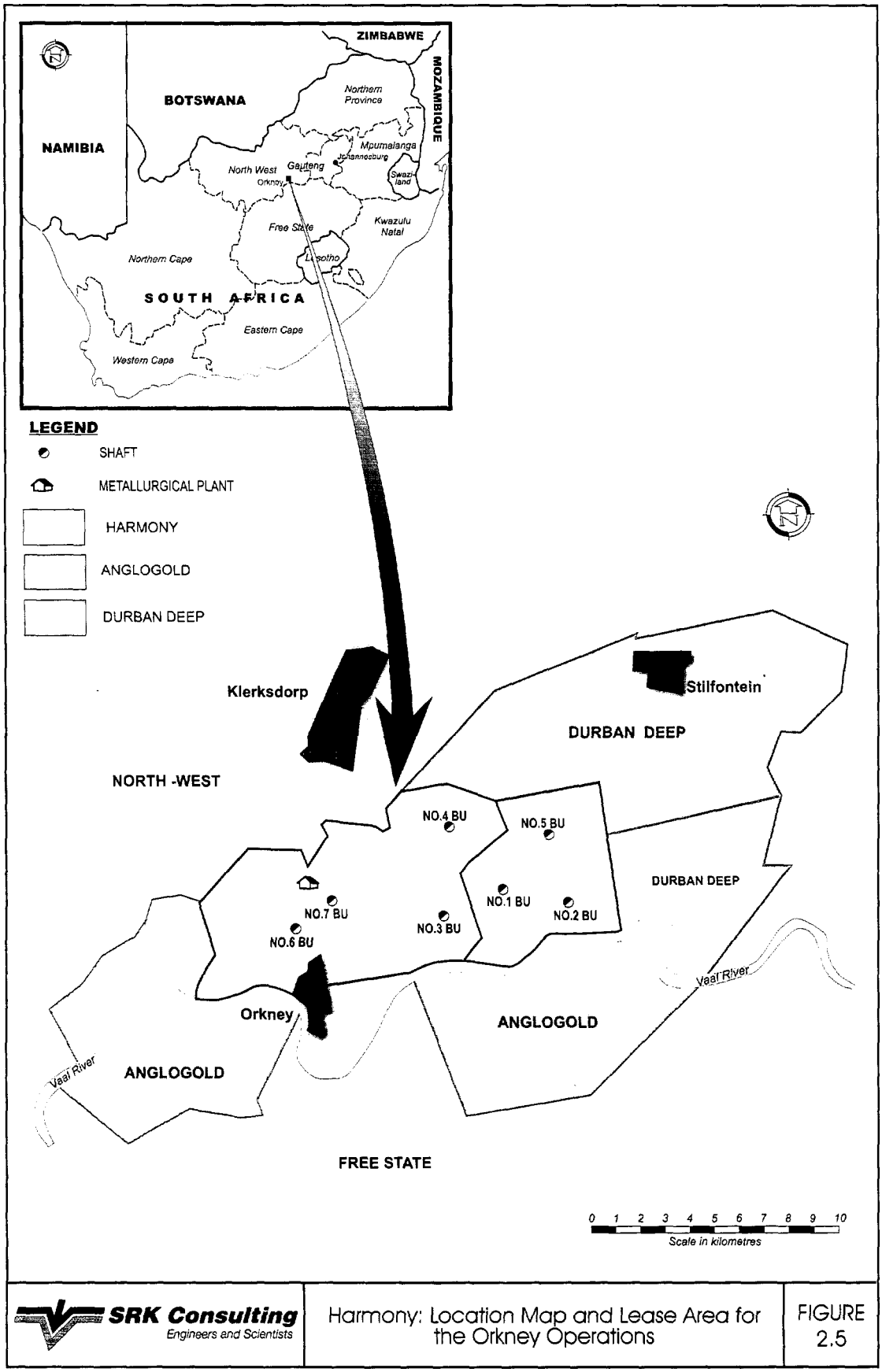


Figure 2.6 Harmony: Location Map and Lease Area for West Wits Operations, Elandsrand and Deelkraal

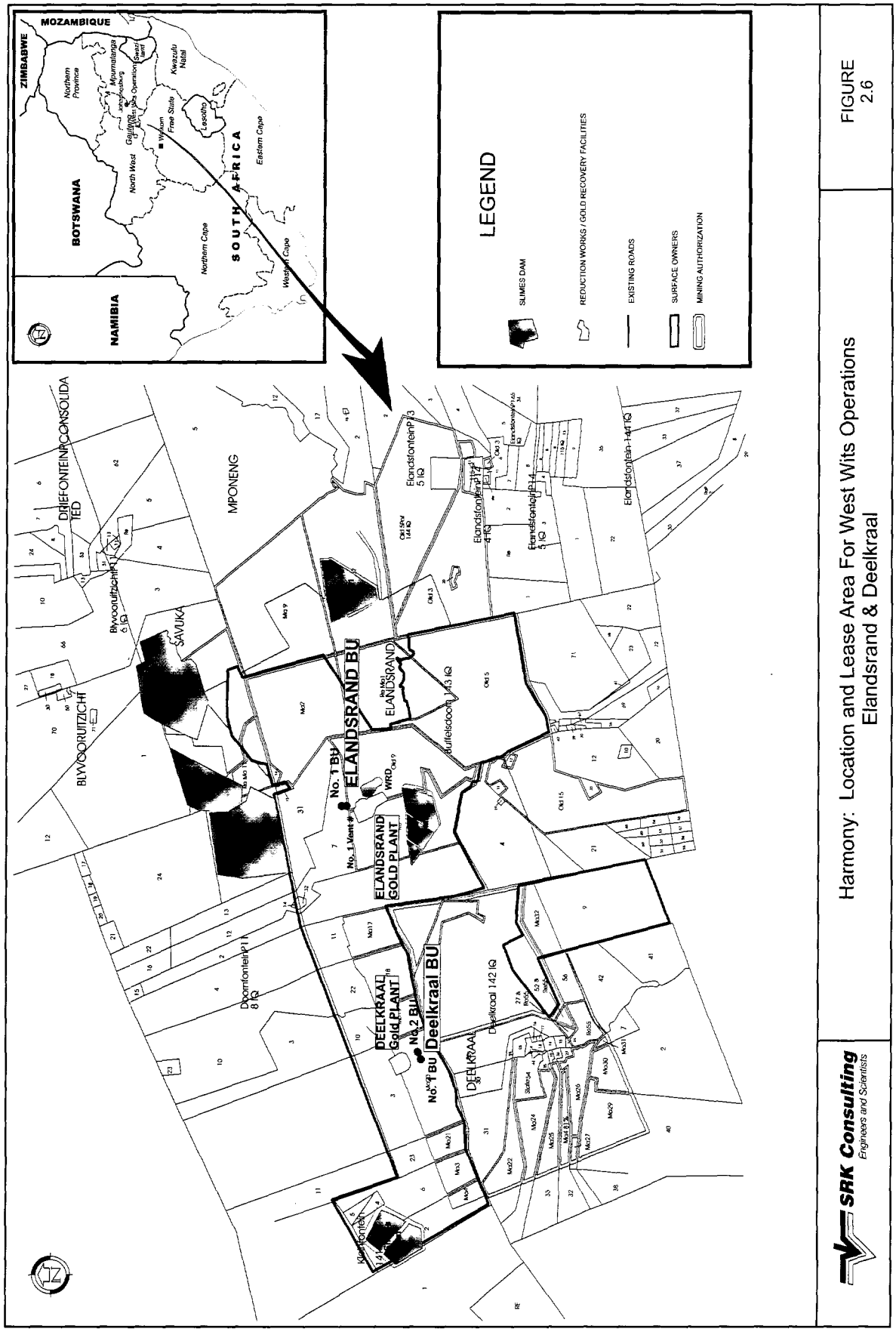
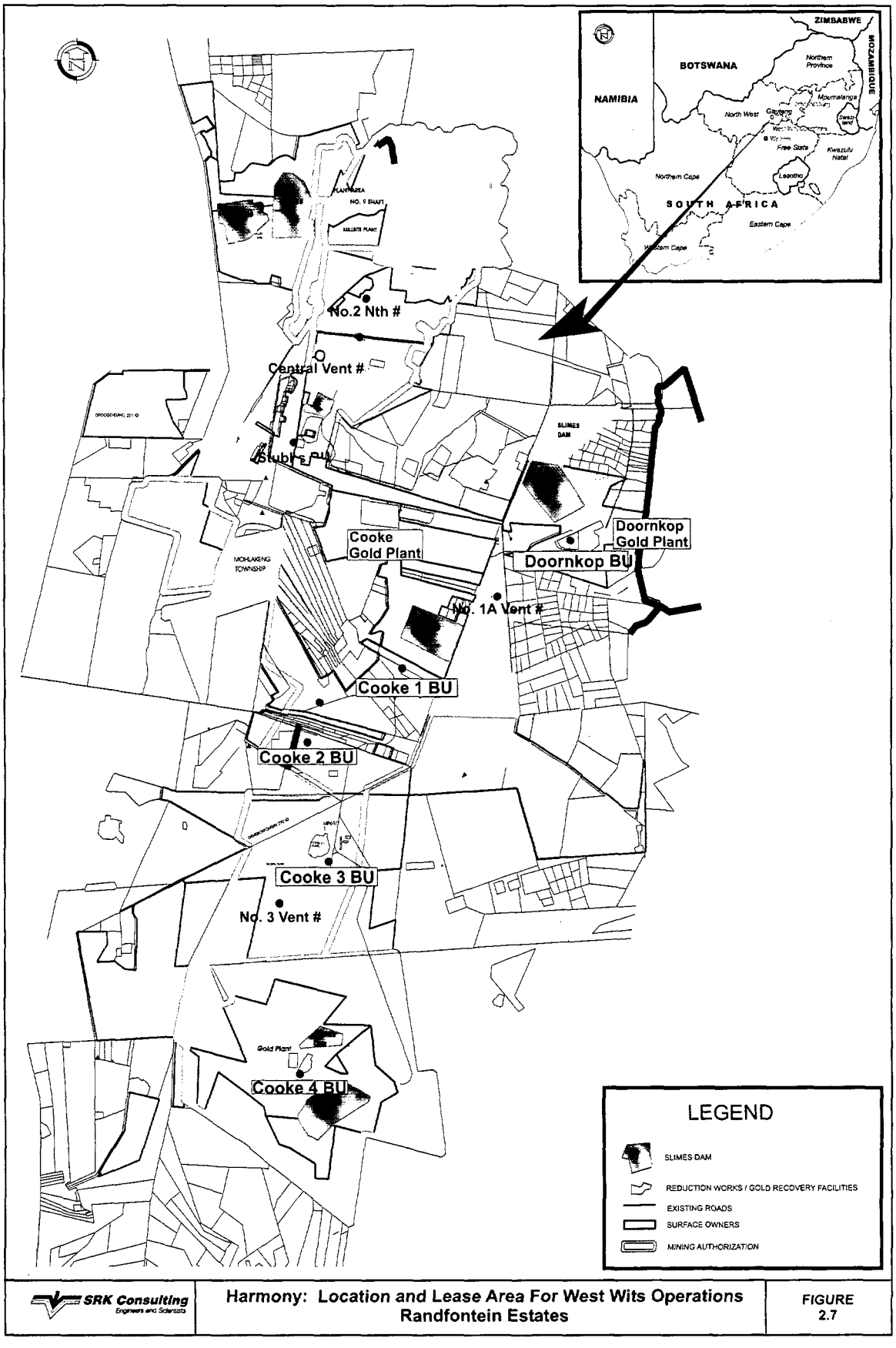


Figure 2.7 Harmony: Location Map and Lease Area for West Wits Operations, Randfontein Estates



3. GEOLOGY

3.1 Introduction

This section describes the geology of the Mining Assets. The nature and geometry of the orebodies being or planned to be mined, their structural complexity and the variability of grades is also discussed. In addition to this, a brief description of the geological potential is presented.

3.2 South African Goldfields

Witwatersrand Basin Geology: Witwatersrand Basin operations are mostly deep-level underground mines exploiting gold bearing, shallow dipping tabular bodies, which have collectively produced over 50kt (1,608Moz) of gold over a period of more than 100 years.

The Witwatersrand Basin comprises a 6km vertical thickness of argillaceous and arenaceous sedimentary rocks situated within the Kaapvaal Craton, extending laterally for some 300km east-northeast and 150km south-southeast. The sedimentary rocks generally dip at shallow angles towards the centre of the basin though locally this may vary. The basin sediments outcrop to the south of Johannesburg but further to the west, south and east these are overlain by up to 4km of Archaean, Proterozoic and Mesozoic volcanic and sedimentary rocks. The Witwatersrand Basin sediments themselves are considered to be between 2,700 and 3,100 million years old.

Gold mineralisation in the Witwatersrand Basin occurs within laterally extensive quartz pebble conglomerate horizons, termed reefs. These occur within seven separate goldfields located along the eastern, northern and western margins of the basin. These goldfields are known as the Evander Goldfield, the East Rand Goldfield, the Central Rand Goldfield, the West Rand Goldfield, the Far West Rand Goldfield, the Klerksdorp Goldfield and the Free State Goldfield. As a result of faulting and other primary controls on mineralisation, the goldfields are not continuous and are characterised by the presence or dominance of different reef units. The reefs are generally less than 2m in thickness and are widely considered to represent laterally extensive braided fluvial deposits or unconfined flow deposits, which formed along the flanks of alluvial fan systems that developed around the edge of what was effectively an inland sea.

All major reef units are developed above unconformity surfaces. The extent of unconformity is typically greatest near the basin margin and decreases toward more distal areas. Complex patterns of syn-depositional faulting have caused complex variations in sediment thickness within the basin. Sub-vertical to over-folded reef structures is a characteristic of basin margin features within certain areas.

Most early theories believed the gold to be deposited syngenetically with the conglomerates, but recent research has confirmed that the Witwatersrand Basin has been subject to metamorphism and that some post-depositional redistribution of gold has occurred. Other experts regard the gold to be totally epigenetic and to have been deposited solely by hydrothermal fluids some time after deposition of the reef sediments.

Despite these varied viewpoints, the most fundamental control to the gold distribution remains the association with quartz-pebble conglomerates on intra-basinal unconformities. The reefs are extremely continuous, as a consequence of the regional nature of the erosional surfaces. Bedrock (footwall) controls have been established governing the distribution of many of the reefs. Preferential reef development within channel systems and sedimentary features such as facies variations and channel frequency assist in mapping out local gold distributions. In all cases the grade of the orebodies varies above and below the pay limit. Consequently, the identification and modeling of erosional/sedimentary features is the key to in-situ resource estimation.

3.2.1 Free State Goldfield

The Free State Goldfield lies some 270km southwest of Johannesburg on the southwest rim of the Witwatersrand Basin. Exploration within the Free State Goldfield dates from the mid-1940s when values within the Basal Reef, the predominant economic reef in the district, were intersected.

Structurally, the Free State Goldfield lies within a north-south trending syncline forming an apex in the southwestern corner of the Witwatersrand Basin. The northerly plunging syncline is roughly divided by two major faults into three major blocks: the Odendaalsrus section to the west of the De Bron fault, the Central Horst, between the De Bron and Homestead faults and the Virginia Section east of the Homestead Fault. The Central Horst was uplifted and the Central Rand Group rocks eroded away prior to Ventersdorp time.

The Central Rand Group in the Free State comprises some 2,000m of sedimentary sequences deposited over successive unconformity surfaces in an expanding depositional area. The lack of major faulting and folding of Central Rand Group age has led to the conclusion that subtle tectonic warping of the basin with granite doming on the margins controlled deposition.

The auriferous horizons are most typically conglomeratic units deposited at the base of each depositional sequence, although they may also occur as scours within a given formation. The principal reefs mined in the Free State are the Basal Reef, the Saaiplaas Reef, the Leader Reef, the 'B' Reef, the 'A' Reef, Elsburg Reefs and the Dreyerkuil Reefs.

The Basal Reef is the most extensive, continuous and economically significant reef in the Free State Province, accounting for over one-half of all of the gold produced there to date.

3.2.2 West Rand Goldfield

The Cooke BUs and Doornkop BU of the West Wits Operations are situated in the West Rand Goldfield, the structure of which is dominated by the Witpoortjie and Panvlakte Horst blocks which are superimposed over broad folding associated with the southeast plunging West Rand Syncline. The northern limb of the syncline dips in a south-south-westerly direction and the southern limb in an east-south-easterly direction. The fold axis of the West Rand Syncline is located along a line that runs from the West Rand Consolidated Mines Limited lease area near Krugersdorp and trends south-eastwards through the northern part of the Doornkop section.

The structural geology in the north section of the Cooke shafts is dominated by a series of northeast trending dextral wrench faults. The most significant of these are the Roodepoort/Panvlakte Fault and the Saxon Fault, which have downthrows of 550m to the southeast and the Doornkop Fault which has a 250m down throw to the southeast. Several other smaller scale faults have downthrows ranging from 20m to 150m. Pilanesburg, Bushveld and Ventersdorp age doleritic dykes are also present. These strike in a northerly direction, with the exception of some of the latter dykes, some of which strike in an easterly direction.

At Cooke Section two major fault trends are present. The first set parallel the Panvlakte Fault striking NNE. These faults are steeply dipping, generally have small throws and do have any noticeable lateral movement to displace payshoots. A second major fault system, however trends north-westerly to east-west, which significantly displace these payshoots. They have small throws and tend to be water bearing showing a connection to the dolomites and indicating a Transvaal age. Many of them are mylonite or dyke filled.

Six main reef groupings have been identified at West Wits Operations on the West Rand Goldfield, the Elsburg Formations, the Kimberleys, the Black Reef, the Livingstone Reefs, the Ventersdorp Contact Reef (the "VCR") and the South Reef. Within these, a total of nine economic reef horizons have been mined at depths below surface between 600m and 1,260m.

3.2.3 Far West Rand Goldfield

Three primary reefs are exploited in the Far West Rand Goldfield, the VCR located at the top of the Central Rand Group, the Carbon Leader Reef near the base and the Middelvlei Reef, which occurs some 50m to 75m above the Carbon Leader Reef. Secondary reefs also occur in the area but the only *examples of any significance are individual bands within the Mondeor Conglomerate Reef Zone that* sub-crop beneath the VCR at Deelkraal BU and on the western side of Elandsrand BU.

The separation between the VCR and Carbon Leader Reef increases east to west from 900m to over 1,300m as a result of the relative angle of the VCR unconformity surface to the regional stratigraphic strike and dip. The Carbon Leader Reef strikes west-southwest and dips to the south at 25°. The VCR strikes east-northeast and has a regional dip of 21° to the south-southeast. Local variations in dip are largely due to the terrace-and-slope palaeotopographic surface developed during VCR deposition. In the location of the Mining Assets the Carbon Leader Reef occurs too deep to allow mining from current infrastructure and is lower in grade than elsewhere on the Far West Rand Goldfield. Consequently the VCR is the only reef currently exploited.

There are a series of east trending, north dipping normal faults with throws of up to 40m and a series of north-northeast striking normal faults with generally smaller displacements in the northwest. The original displacements on these faults are occasionally increased as a function of subsequent post-Bushveld displacement but overall faulting is much less prevalent than it is in other Witwatersrand goldfields. There are, for example, no major faults with throws of the order of several hundred meters or more. Moving to the eastern sections of the Far West Rand Goldfield the structure becomes simpler with few major faults. Most faults are high-angle normal faults trending north-northwest and eastwards and having throws of less than 70m.

3.2.4 Evander Goldfield

The Evander Basin is a tectonically preserved sub-basin outside of the main Witwatersrand basin, the Devon Dome, a large granitoid cupola, separates it from the main Witwatersrand Basin. It is the most easterly mined Witwatersrand gold occurrence. The basin forms an asymmetric syncline, with the fold axis between No.5 BU and No.6 BU, plunging to the northwest and contains only one economic reef system, the Kimberley Reef.

The Evander Basin was a part of the main Witwatersrand Basin until post-Booysens shale times. It was separated from the East Rand and South Rand Basins by uplift in the areas now marked by the basement Devon and Cedarmont Domes. Deeper within the basin, the Central Rand Group is overlain by Ventersdorp Lavas and Transvaal Sequence sedimentary rocks. West Rand Group rocks are present beneath the Central Rand Group. A poorly mineralised reef, stratigraphically above the Kimberley Reef, termed the Intermediate Reef, is also developed but is not economic, except where it has eroded the sub-cropping Kimberley Reef in the south and west of the basin.

The Evander Basin is one of the more structurally complicated parts of the Witwatersrand. Mining and drilling have defined the larger elements of the structure of the shallow southern and western basin margins. The northern and north-eastern extent of the basin is poorly drilled because of the depth to the Kimberley Reef and because of poor grades encountered to the north. The geological structure there has been inferred from two-dimensional seismic survey lines.

3.2.5 Klerksdorp Goldfield

The Klerksdorp Goldfield is located on the northwest margin of the Witwatersrand Basin and lays some 150km south-southwest of Johannesburg. Exploration, development and production history in the area dates from 1886 and following dormant periods, large-scale production commenced during the 1940s.

The Witwatersrand Basin sedimentary rocks are overlain by up to 2,000m of cover rocks and the reefs themselves occur at depths of between 80m and 4,000m and, with the exception of the VCR, which dips moderately steeply west-northwest, generally dip gently to the southeast.

The most significant structural features of the Klerksdorp Goldfield are northeast striking normal faults, which dip to the northwest and southeast and have throws of several hundred metres. These features break up the stratigraphy containing the stratiform orebodies into a series of horsts and grabens, which vary in width from several hundred metres to over a thousand metres. These horsts and grabens are internally disturbed by small-scale faults sympathetic to the major faults, which typically have throws of tens of metres and break up the reef into continuous blocks of up to 100m in width. These brittle faults can be identified by drilling from access development and as the dip of the stratigraphy is reasonably consistent, can usually be negotiated without significant difficulty. There are, however, smaller-scale faults in the immediate vicinity of these larger faults, which disrupt the reefs and can result in increased losses and dilution.

All mining to date in the Klerksdorp Goldfield has taken place to the northwest of one of the major northeast-southwest striking normal faults, the Jersey Fault, which has a down throw to the southeast of up to 1,000m, displacing the Vaal Reef down to a depth below surface exceeding 3,000m. Two further sub-parallel faults occur to the southeast of the Jersey Fault displacing the reefs down to more than 5,000m below surface.

Two primary conglomerate reefs are exploited within the Klerksdorp Goldfield, namely the Vaal Reef and the VCR. The Vaal Reef and VCR reef horizons occur at depths between 80m and 4,000m. The VCR dips moderately steeply west-northwest, the Vaal Reef generally dips gently to the southeast. Other, secondary reefs, including the Black Reef, Zandpan Marker and Denny's Reef exist; however they are not currently considered to be economically viable.

3.3 Deposit Geology

Most of the operations can be described as mature mining operations with good underlying geological models backed up with grade models based on vast amounts of historical mining and sampling data. The electronic capture of sampling data over the past ten-years has allowed a far greater understanding of the grade and payshoot characteristics of the orebodies than was possible previously. The Companies Indicated and Inferred Mineral Resources are more reliant on the projection of geological or facies models than the Measured Mineral Resources due to the much lower density of sampling data in these areas.

3.3.1 Target Operations

The gold mineralisation currently exploited by Target Mine is contained within a succession of Elsburg and Dreyerskuil quartz pebble conglomerate reefs hosted by the Van den Heeversrust and Dreyerskuil Members of the Eldorado Formation, respectively. Additional Mineral Resources have been delineated in the Big Pebble Reefs of the Kimberley Formation but these are not planned to be exploited in the current LoM plan.

The individual Elburg Reefs are separated by quartzite beds and form a a wedge shaped stacked sequence which strikes north north-west and comprises some 35 separate reef horizons interpreted to have been deposited in an alluvial fan system similar in nature to present day river deltas. This sequence of Elsburg Reefs and quartzites is truncated by an unconformity with the overlying younger Dreyerskuil Member. Immediately below the sub-crop with the Dreyerskuil the Elsburg Reefs and quartzites dip steeply to the east becoming progressively shallower dipping resulting in a structure analogous with a recumbent syncline, verging to the west, with the upper limb removed. This synclinal structure plunges shallowly at 10° to the north. In the more proximal areas to the sub-crop the thickness of the intervening quartzites reduces and many of the individual Elsburg Reefs coalesce to form reef packages that are exploited by the massive mining methods employed at Target Mine. Gold grades in the Elsburg Reefs are also higher in the proximal areas decreasing down dip until reaching an economic limit some 200m to 450m from the sub-crop.

The majority of the Mineral Reserves at Target Mine are contained within the Eldorado fan, a structure with dimensions of some 135m vertically, 450m down-dip and 500m along strike. The Eldorado fan is similar in nature to the fans historically mined at Loraine gold mine to the south. The Eldorado fan is connected to the subsidiary Zuurbron fan, located between Target Mine and Loraine, by a thinner and lower grade sequence of Elsburg reefs termed the Interfan area. The economic mineralisation in the Interfan is less persistent distally than within the fans and does not contribute significantly to the reserves. To the north of the Eldorado fan a number of other fans have been intersected by surface drilling of which the Siberia and Mariasdal fans are the most significant. These fans are subject to ongoing technical studies and do not form part of the current Target Mine LoM Mineral Reserve.

The Dreyerskuil Member consists of a series of stacked reefs, dipping shallowly to the east, that are less numerous but laterally more continuous than the underlying Elsburg Reefs. At Loraine this unit correlates stratigraphically with the Uitkyk Member that consists of an immature conglomerate informally termed the 'Boulder Beds'. These beds did not contain significant gold mineralisation and were therefore not mined at Loraine. Towards the north the Uitkyk Member grades into a series of reworked conglomerates and quartzites, similar in nature to the Elsburgs, which becomes the Dreyerskuil Member in the vicinity of Target Mine. The conglomerate reefs contain economic mineralisation, some of which may have been derived through the erosion and reworking of Elsburg Reefs at the sub-crop.

The Big Pebble Reefs are found in the Kimberley Formation, which is overlain by the Eldorado Formation. The BP6a Reef, which has been historically mined at Loraine No.2 Shaft, lies on the unconformity at the base of the upper member of the Kimberley Formation (the Earl's Court Member). This overlies the Big Pebble Reef Member, the base of which comprises a series of argillaceous quartzites and several well-developed conglomerates. These are collectively referred to as the Big Pebble Zone ("BPZ"), which varies in thickness between 1m and 15m. The BPZ conglomerates are well developed at Target Mine and Loraine and coalesce into thick multiple conglomerate reef units close to their western subcrop position. Although resources have been delineated in the BPZ in the Loraine and Target Mine areas, these are not exploited in the current LoM plan.

A number of faults that displace the reefs at Target Mine have been identified of which the most prominent are the north-south trending Eldorado fault and the east-west trending Dam and Blast faults. The Eldorado uplifts the more distal portions of the Elsburg and Dreyerskuil Reefs while the Blast fault forms the northern boundary of Target Mine. The structure is known to a reasonable degree of confidence through a combination of underground drilling and mapping augmented by surface seismic surveys.

The plunging synclinal feature at Target Mine continues northwards, where the geological setting is similar and additional non-LoM resources have been delineated on the Elsburgs, Dreyerskuil and Big Pebble Reefs. In the Target North area low-grade mineralisation has also been intersected on the Maraisdal Reef and the Sun Reef, which are thought to be the equivalent of the 'B' Reef and Basal Reef, respectively, elsewhere in the Free State Goldfield.

An erratically developed reef has been intersected in some surface boreholes in an area to the far north of the Target Mine at the base of the Ventersdorp Conglomerate Formation, which overlies the Eldorado Formation. This is interpreted to be the VCR, which is present in the Klerksdorp, West Rand and Far West Rand Goldfields but not elsewhere in the Free State Goldfield. The VCR is a coarse to very coarse quartz pebble conglomerate, which appears to be highly channelised and varies in thickness from almost zero to 4m.

Target North is sub-divided into the Paradise, Siberia and Maraisdal areas by the east-west trending Siberia and Maraisdal faults. To the north of the Siberia Fault, the Eldorado Fault continues trending more to the northwest and an additional north-south trending fault, the Twin fault has uplifted the distal portions of the reefs. North of the Maraisdal fault the reef horizons are at a depth greater than 2,500m below surface and a farm boundary sub-divides this area into Maraisdal and Kruidfontein. The large-scale structure in the Target North area is known to a reasonable degree of confidence through the surface boreholes and extensive three-dimensional seismic surveys. Resources have been delineated on strike up to 15km north of Target Mine.

Approximately 40 km north of Target Mine, surface boreholes have intersected gold bearing reefs in the Oribi area close to the town of Bothaville. Resources have been delineated at Oribi on the VCR and Elsburgs at depths of approximately 2.75km below surface.

3.3.2 Free Gold Operations

The primary reef mined at Tshepong BU is the Basal Reef with minor contribution from the 'B' Reef, which lays some 140m stratigraphically above the Basal Reef. The 'B' Reef is highly channelised in nature with a much more erratic grade distribution than the Basal Reef. The relatively incompetent Khaki Shale overlies the Basal Quartzite, which occurs in the upper portion of the Basal Reef. The Basal Quartzite provides natural support to the Khaki Shale and where the thickness of this is less than 60cm, mining dilution can and does increase dramatically.

The Basal Reef dips at shallow angles to the east and is intersected by two significant north-south striking faults, the Dagbreek and the Ophir Faults. These faults dip at moderate angles to the west and have significant strike-slip and up-dip throws of the order of 1,000m to 2,000m and 200m to 300m, respectively.

Economic grades at Tshepong BU are constrained within a broad payshoot, which trends east-southeast. Currently a geological model of the Basal Reef facies variations is used for grade estimation. The method of assigning facies type is a scoring system developed in conjunction with Leeds University, UK. Scoring is based on geological type (Lorraine Facies or Black Chert Facies), presence of Waxy Brown Quartzite ("WBQ"), which is thought to trap fluids in the underlying reef, presence of micro-thrusting, which is thought to encourage fluid flow into the reef and presence of reducing minerals such as sulphides and carbon, which are thought to encourage the precipitation of gold mineralisation.

Phakisa BU is situated immediately to the east of Tshepong BU where shaft-sinking operations ceased prior to completion. The resources at Phakisa comprise the Basal Reef and represent the down-dip extension from Tshepong BU.

The primary reefs mined at Bambanani include the Basal Reef and in particular the Steyn Facies which covers approximately 90% of the mine area. The Khaki Shale in the north and the Waxy Brown Quartzite in the south overlie the Basal Reef. Secondary reefs such as the Leader Reef have been mined on a small scale historically but have always been found to be low grade.

The whole package dips at angles of between 25° and 45° to the east and is generally between 1m and 3m thick.

The lease area is bound to the west by the Stuurmanspan Fault and to the east by the De Bron Fault. The Harrison Fault, parallel and to the west of the De Bron Fault demarcates the eastern mining limit. Both of these are significant north-south striking normal faults, which dip at moderate angles to the west and have throws of over 100m. Faults sympathetic to these occur with displacements of up to 50m, as do east-west faults with lateral shifts of up to 400m on the northern edge of the mining area.

Joel BU exploits two distinct forms of a single reef, developed on a single unconformity surface. These are known as the Beatrix Reef and the Beatrix-VS5 Composite Reef. The reefs dip to the northeast at 15° and the composite reef sub-crops against the overlying Karoo Supergroup just to the north of Joel South BU, defining the southern limit of the orebody.

The Beatrix Reef conglomerates are found throughout the mine area and generally have multiple basal degradation and internal scour surfaces, often thinning to a single pebble lag on paleotopographic highs. The Beatrix-VS5 Composite Reef represents a re-working of the Beatrix Reef accompanied by a mixing with lower grade VS5 material. This occupies a 500m to 1,000m wide channel running almost north south through the centre of the lease area, which is interpreted to widen to the northeast of Joel North BU.

A deep erosional channel of Waterpan sedimentary rock, known as the Klippan Channel, truncates the reef some 1.8km to the northeast of Joel South BU. This washout is wedge-shaped with its apex to the west and widens to the southeast. The estimated dimension from the apex to the eastern property boundary is approximately 1.8km. The reefs have been shown to be continuous to the north of this transgressive feature.

Where untouched by the Klippan Channel, the reefs are 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, due to the multiple pulses of detrital influx and scouring, paleo-topographic highs and mixing between the Beatrix and Beatrix-VS5 Composite Reef, has resulted in a highly irregular distribution of gold throughout the mining area. There are broad low and high-grade zones on the scale of 100's of metres, which are likely to repeat beyond 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 and absence of well-mineralised reef at paleo-topographic highs.

Eland BU, Kudu & Sable BU and Nyala BU are contiguous to the south and west of Tshepong BU and Basal Reef is mined almost exclusively. The geological setting is similar to that described for Tshepong BU, however, faulting in the mining lease is the most intense to be found at the Free Gold Operations (excluding Joel BU). The Dagbreek fault intersects Eland BU lease area and the Rheedersdam thrust fault forms the western boundary of the remaining three BUs. These and other generally north striking normal faults including the Eureka, Rietpan and Wesselia faults represent the dominant the structures in the area. The reef in the Rheedersdam fault zone has been multiply repeated by thrusting which has resulted in stacks of up to eight reef repeats.

Further variability in reef occurrence has been caused by changes in palaeotopographic slope, which controlled the nature of sedimentation and subsequent mineralisation potential.

The Basal Reef is particularly carbonaceous at Eland BU, Kudu & Sable BU and Nyala BU and the gold tends to concentrate strongly on the kerogen-rich footwall contact and visible gold has been observed in several areas. The best grades were historically mined at Kudu & Sable BUs. The Nyala BU area is characterised by marginal grades.

Eland BU and Kudu & Sable BU are predominantly remnant operations with short lives and the extensive historical mining and the nature of the remaining Basal Reef Mineral Resources minimise uncertainties regarding grade, structural complexity and loss of ground. Nyala BU has only recently re-opened and the LoM plan is focused on exploiting the Basal Reef shaft pillar.

The St. Helena BU has a complex geological structure with faults generally trending north south with *downthrows of up to 2,000m and dips of between 30° and 50°. Reverse and thrust faulting is present,* sometimes resulting in local duplication of reef. Two economic reefs are present within the mine property with the Basal Reef being the most economically important unit and the Leader Reef, which lies some 15m above the Basal Reef.

St. Helena is predominantly a remnant operation with extensive historical mining and the nature of the remaining Basal Reef Mineral Resources minimise uncertainties regarding grade, structural complexity and loss of ground.

Surface sources at the Free Gold Operations comprise numerous Waste Rock Dumps ("WRDs") and Slimes Dams, which in addition to various plant clean-up tonnages, are processed at FS1 Plant, FS2 Plant and to some degree at Joel Plant. WRDs comprise both waste material and reef material, the latter of which is sourced from cross-tramming of mined ore. Typical grades range between 0.5g/t and 1.0g/t, which are either processed directly or pre-screened to ensure Run of Mine ("RoM") grades in excess of 1g/t.

Slimes Dams may also contain significant gold grades owing to occasional sub-optimal metallurgical performance, which resulted in gold being sent to tails. Grade distribution within WRDs and Slimes Dams can vary significantly owing to fundamental changes in mining, hoisting and processing methods, which have been implemented over prolonged years of mining.

3.3.3 Harmony Free State Operations

At these operations mining was originally established to exploit the rich Basal Reef, but, as reserves in this orebody became depleted, production is being increasingly sourced from the more erratically mineralised and lower grade Leader Reef, Middle Reef, 'A' Reef and the 'B' Reef. The Basal Reef is a high grade, generally thin (<100cm) reef, which has been payable across most of its exposed extent. In the south, at both Harmony No.2 BU and Unisel BU, the reef pinches out against elevated footwall and grades deteriorate. The Leader Reef, 'A' Reef, 'B' Reef and Middle Reef are only payable in distinctive and often extensive payshoots and discrete pods where these reefs overlie the Basal Reef. Where the Leader Reef truncates the Basal Reef east of the so-called "line of coalescence" at Harmony, it is more uniformly payable.

The mineralised meta-conglomerates mined at Masimong are the Basal Reef, 'B' Reef and 'A' Reef. The Basal is mined at all three of the Masimong BUs while the 'A' Reef is mined at Masimong No.4 BU and the 'B' Reef at Masimong No.5 BU . At Masimong No.4 BU and Saaiplaas No.3 BU the Basal Reef is present as the Steyn facies, comprising three to four upward fining sedimentary cycles. The lower cycle, being the primary gold carrier comprises a basal conglomerate with an overlying protoquartzite. Carbon seams, which carry most of the gold, occur locally on the bottom contacts. Channel widths are generally below 70cm but in places only the carbon contact between the hanging BU wall and footwall exists. A north-south trending payshoot extending through the Saaiplaas No.3 BU towards the north along the western side of Masimong No.4 BU forms the main target area for the Basal Reef.

The black chert facies Basal Reef at Masimong No.5 BU comprises two upward fining cycles, of which the lower carbonaceous unit is the primary gold carrier. Channel widths average 60cm. The target area for this facies is a northwest-southeast trending payshoot that cuts through the shaft and is truncated to the east by younger leader quartzites.

The 'A' Reef at Masimong No.4 BU lies 140m to 160m above the Basal Reef and is characterised by a highly channelised series of conglomerate bands that are generally only payable in locations where one or more bands exist within the channel itself. These oligomictic conglomerates are dark in colour with abundant, mostly fine pyrite and occasional carbon. Channel thickness is highly variable but can be up to 1.8m, with gold values highly dependent on the reef thickness and the presence of carbon.

The 'B' Reef, lying 110m above the Basal Reef, comprises complex sedimentologically controlled gold mineralisation within a wide east-west trending channel that cuts through the Masimong No.5 BU area. Within this channel very high grade lenticular gravel bars contain abundant visible gold and form the targets for mining. Gold grades are erratic and extremely nuggety, while the channel widths also vary from zero to approximately 1.8m.

The two conglomerate horizons at Harmony No.2 BU, the Basal Reef and 'A' Reef, are separated by 140m of mostly quartzites and conglomerate. The reefs dip 5° to 15° towards the west, becoming steeper to the west approaching the De Bron Fault. Numerous east-west trending dykes cut the reef, resulting in up throw and lateral shift. The Basal Reef occurs as thin bands of upward fining conglomerates, with full channel widths of up to 120cm. The payable reefs are often associated with carbon. Weak shales overlie the Basal Reef and must either be undercut or removed with the reef. The footwall to the 'A' Reef at Harmony No.2 BU is the 1m to 15m thick Big Pebble Marker, which, where thinnest, is associated with better developed 'A' Reef. Better gold grades are associated with thicker channels greater than 1m thick.

Brand No.1 BU and Brand No.3 BU are characterised by large north-south trending faults with lateral movement. The 'A' Reef is the predominantly targeted reef and is found in wide fault displaced east west pay trends. The Basal Reef belongs to the former 'Basal Placer' facies and is predominantly found in the form of a thin reef, rich in carbon. Pebbles are not always present. The reef thickness seldom exceeds 20cm and is generally less than 10cm.

Brand No.5 BU is sub-divided into fault blocks, with complex north-south structural trends intersected by normal north-northeast-south-southwest trending faults. Vertical fault displacements are minor, whereas right-lateral displacements are significant. The reefs on average, dip 40° to the east. The main reefs mined at Brand No.5 BU are the Basal Reef and Leader Reef. The Steyn Facies Basal Reef comprises four sedimentological conglomerate sub-facies, with gold best developed at the base of the conglomerates and associated with pyrite. The Leader Reef, lying between 7m and 16m above the Basal Reef is highly channelised with thickness increasing from east to west. This upwardly fining sequence comprises three sub-facies that can be up to 400cm thick. Gold is generally distributed evenly throughout the reef package.

The reefs at Unisel BU dip 30° to the East and are structurally complex due to fault intersections and the presence of sills in the vicinity of the Basal Reef. The principal reefs mined are the Basal Reef and the Leader Reef. The Basal Reef has been divided into three distinct sedimentological facies, with gold mainly associated with moderate-to-well developed buckshot pyrite. The Leader Reef is highly channelised with limited sedimentological information and shows an erratic grade distribution.

The Merriespruit area is structurally complex with extensive north-south and east-west trending faults, with vertical displacements of up to 650m. Igneous intrusive are associated with the structurally complex areas. In general the reefs structures strike northeast southwest and dip 20° to the north. The Basal Reef is typically thin (<1m) and channelised, with payable grades located in northeast-southwest trending payshoots. This upwardly fining conglomerate is poorly to well mineralised with the local occurrence of buckshot pyrite. Locally mineralised Middle Reef, found above the Basal Reef in the hanging wall quartzites, is only payable when adjacent to Basal Reef or overlying Leader Reef. The Leader Reef comprises a series of conglomerate bands separated by pebbly quartzite bands that are variably mineralised, with typically poor to moderate grades. Payable grades are often located in NE-SW trends. In general the gold is dispersed throughout the package, with gold associated with the pyrite.

Surface sources at the Harmony Operations comprise numerous WRDs, Slimes Dams and Other Sources, which in addition to various plant clean-up tonnages, are processed at the Central, Virginia and Saaiplaas Plants. WRDs comprise both waste material and reef material, the latter of which is sourced from cross-tramming of mined ore. Typical grades range between 0.4g/t and 1.0g/t.

Slimes Dams may also contain significant gold grades owing to occasional and historical sub-optimal metallurgical performance, which resulted in gold being sent to tails. Grade distribution within WRDs and Slimes Dams can vary significantly owing to fundamental changes in mining, hoisting and processing methods, which have been implemented over prolonged years of mining.

3.3.4 Welkom Operations

The Welkom Operation lease area is centrally located within the Free State Goldfield in an area containing several other mature operations. The property is bounded to the south by the Free Gold Operation's St. Helena, Harmony Free State Operation's President Brand and President Steyn Gold Mines Limited's President Steyn Mine and the property is bounded to the north by Free Gold Operation's Eland BU, Kudu & Sable BU, Nyala BU and Tshepong BU.

The Basal Reef is the main reef exploited at Welkom Operation. In addition to the Basal Reef, No.6 BU also exploits the Leader Reef, lying some 15m above the Basal Reef. No.7 BU plans to exploit the Saaiplaas Reef or 'pyrite stringers' as it is commonly referred to at this mine. This consists of thick (up to 6m), low-grade channels superimposed on the Basal Reef.

The Basal Reef strikes north to north-northwest and generally dips to the east between 20° and 40°. The reef is bounded on the west by the north trending Rheedersdam Fault system and sub-crops against the Karoo Supergroup along a northward trending line representing the basin margin. To the east the north trending De Bron Fault bound the reef. Two major faults, the Dagbreek and Ararat further dissect the reef into three contiguous blocks.

No.1 BU and No.2 BU are situated within the easternmost of these three blocks, between the De Bron and the Ararat Faults. No.3 BU and No.4 BU are situated within the central block between the Dagbreek and Ararat Faults and No.6 BU and No.7 BU are situated within the western most block.

The Leader Reef also varies in thickness between 0.3m and 1.7m and comprises a well-packed, small-to-medium pebble conglomerate with white quartz and black chert clasts and a moderate percentage of buckshot and crystalline pyrite.

One other reef, the Middle Reef, has been exploited in a very small, opportunistic way. The Middle Reef is an impersistent, lensoid, cherty and/or quartz-pebble conglomerate unit within the Middling Quartzite of the Harmony formation. While sometimes of very high grade, individual lenses are typically less than 30m in planar dimensions and as such too small to systematically drill for, generally resulting in accidental discovery.

3.3.5 West Wits Operations

The economic horizons change from north to south along the length of the Doornkop-Cooke-Western Areas part of the Witwatersrand Basin, from a few lower Central Rand unconformities in the north to the development of multiple upper Central Rand unconformities in the south. The structural and depositional history of the goldfield is still not fully understood due to the complicated pattern of stacked sub-cropping reefs, the syndepositional tectonics; however the individual orebodies have detailed grade models that assist evaluation.

A key feature of reef development at Cooke Section is the thickening of the Westonaria Formation to the east of the anticline and importantly to the south. This wedging of formations indicates that syndepositional uplift along the Panvlakte trend (before the anticline developed) had an effect on reef formation. The area to the west of the crest of the current anticline is characterised by narrow single band UE1A reef overlying a pronounced unconformity, whereas to the east the Elsburg A1 to A5 stacked package of conglomerate horizons forms a wedge interleaved with barren quartzites. This wedge opens out to the east and to the south with greater thicknesses of barren quartzites separating the individual reef horizons. To the east the conglomerates become increasingly distal in nature, to the south more individual horizons are developed.

The Main orebodies on the Cooke 1, 2 and 3 Section shafts of the West Wits Operations are the UE1A and the Elsburg A5 Reefs. Cooke 4 in the south mined 10 individual horizons including Elsburg Reefs and the VCR. On Doornkop the Kimberley Reefs and the South Reef are being mined. Moving further, the primary orebodies on the adjoining Central Rand goldfield were the Lower Central Rand Group orebodies the Main Reef Leader and the Main Reef.

A pronounced feature of the grade distribution at the Cooke shafts is the location of what were previously described as fan entry points into the basin. These pronounced fan shaped grade distributions on the grade plans are due in part to the presentation of the two different aged orebodies, the UE1A and A1, on the same plans; and the lack of palinspastic reconstruction of payshoots that terminate along these younger lateral movements.

The area covered by the original exploration pattern on the Cooke Shafts has now largely been mined out. Mining is now concentrating on pillars and areas on the periphery of the initial exploration area that are poorly explored from surface drilling.

Doornkop has been mining the Kimberley Reefs but attention is now focusing on the South Reef, which has been previously exploited on nearby operations. The South Reef comprises broad south-easterly trending shoots (palaeodepressions) separated by lower grade zones (palaeo-highs). One of these ore shoots, indicated by surface drilling and confirmed by recent stoping, runs through the Doornkop area.

Elandsrand BU and Deelkraal BU exploit the VCR, which unconformably overlies the Mondeor and Elsburg Formations of the Central Rand Group. These footwall sediments primarily comprise siliceous quartzites there are four major polymictic conglomerate zones within the Mondeor, which have supported minor stoping on Deelkraal. The VCR is overlain by the lava of the Alberton Formation, which forms the basal unit of the Klipriviersberg Group of the Ventersdorp Supergroup. The dip of the VCR at Deelkraal BU is relatively consistent at 24° although there is some postulation of a slight flattening of dip at depth at Elandsrand.

The VCR sits on a highly-incised unconformity surface exhibiting a marked palaeotopography. The unconformity (erosion) surface was covered with a residue of mature quartz pebble conglomerates (reef) preserved on fluvial terraces and slopes. These now reflect as local variations in the dip and strike of the reef. Terrace reef (being originally close to horizontal) has the attitude of the regional dip and it tends to be thicker and accompanied by higher gold accumulations. Terraces are preferentially mined. Slope reef is indicated where the attitude of the reef now departs significantly from the regional dip. Slope reef represents the inter-terrace slope areas, the reef is thin, has less conglomerate and less total gold. Slope reef gold values are generally below the paylimit.

The VCR is present throughout the Elandsrand BU lease area, but at Deelkraal BU there is a limit of deposition running roughly north-south through the centre of the lease area. The VCR is poorly developed to the west of this line.

The facies and morphological models encompassing the Mining Assets have been developed through reef mapping in stopes and on-reef development mapping. They are used in the estimation of Mineral Resources to constrain the interpolation of grade into geologically homogenous areas.

Mondeor Conglomerate bands sub-crop beneath the VCR on the western side of Elandsrand BU and on Deelkraal BU. They have been mined in places underneath or close to their sub-crop on Deelkraal BU.

Structures present at Deelkraal BU and Elandsrand BU include faults, dykes and sills. The sills occur in the footwall in many areas adjacent to dykes; however, these only affect the reef horizon in old, mined out areas near Elandsrand BU. The faults and dykes are classified according to the relative geological ages and comprise Pre-VCR, Early Ventersdorp, Late Ventersdorp, Bushveld and Pilanesberg Structures.

The structural model at Elandsrand BU has been developed from information compiled over many years, from continual mapping of footwall haulages, cross-cuts, on-reef raises, winzes, development drives and stopes. In contrast at Deelkraal, where the low angle faulting is more common, a relatively poor structural database exists, as it was previously not consistently recorded. Ongoing mapping and re-interpretation is rectifying this situation and enabling the development of a more detailed model.

3.3.6 Evander Operations

Within the Evander Operations lease area the Kimberley Reef dips predominantly northwards. There are several distinct fault styles developed within the mine lease. Earliest faults tend to have thrust movements, resulting in duplication of the reef. These faults strike northwards to westwards and are generally consistent with thrust movement into the basin. Throws of up to 150m have been encountered within the mine workings. The predominant faulting within the mine is a series of extensional faults. The resulting shallow-dipping faults trend west-northwest and have up throws to the north. This is an extremely fortuitous situation as the successive up throws maintain the Kimberley Reef at a consistently shallow depth below surface throughout the main part of the Evander lease. Significant fault losses are, however, associated with these faults. There has been only minor lateral movement along these faults. Channels can normally be traced across them with only minor displacements.

Vertical and overturned Kimberley Reef is present in the BU No.6 area in the southeast corner of the mine. This structurally complex area represents a basin margin structure, in many ways analogous to the structural regimes observed on the Western Margin of Free State Goldfield. The vertically dipping reef sub-crops against the overlying Karoo Sequence rocks. Complex wrench faulting is also developed within the No.6 BU area.

Ventersdorp, Bushveld and Karoo age dykes and sills are present within the mining lease. Bushveld age intrusives occur as dykes and sills, Ventersdorp and Karoo intrusives occur as predominantly north trending dykes. By far the most problematic is a doleritic footwall sill that varies from 30m to 70m in thickness. In several areas this sill steps upwards and occupies the same stratigraphic position as the Kimberley Reef, in places splitting the reef into two separate components. Fortunately interference from the sill is generally localised in areas such as the southern portion of the previous Winkelhaak mine and specific areas in the western part of Kinross.

Gold in the Kimberley Reef is associated with heavy minerals on re-activation surfaces specifically associated with the more robust, clast supported oligomictic quartz pebble conglomerates, or in association with flyspeck carbon. The gold generally occurs in native form often associated with pyrite and carbon. Pyrite, chromite, rutile, zircon and leucoxene have been identified within the Kimberley Reef. Pyrite dominates the heavy mineral suite and displays several distinct forms. Pyrite grains displaying detrital characteristics are common. Rounded balls of porous pyrite are also recognised, as are secondary remobilised pyrites. These latter minerals may occupy fractures across pre-existing pebbles, as well as overgrowing existing detrital pyrites within the sand matrix. Uraninite is present within the Kimberley Reef, but in concentrations so low that routine sampling for uranium is not practiced.

Carbon is generally rare within the more robust Kimberley Reef, becoming common in the distal areas as flyspeck carbon on the footwall contact. This has an effect on gold grades. As the channel width of the reef decreases the gold accumulation (cmg/t) does not change significantly. This is attributed to high gold grades associated with the carbon.

3.3.7 Orkney Operations

The Orkney Operation mining area is bounded to the east and north by the North West Operations owned by Durban Roodepoort Deep, Limited ("DRD"), to the west by AngloGold's Tau Lekoa and to the south by AngloGold's Vaal River Operations ("VRO") and the course of the Vaal River.

The major faults within the lease area are: the Nooitgedacht and Buffelsdoorn faults occurring in No.6 BU and No.7 BU areas; the Witkop Fault between No.6 BU and No.7 BU; the WK22 and No.3 BU Faults between No.7 BU and No.3 BU; the No.5 BU Fault; and the No.2 BU South Fault. The horsts and grabens are further disturbed by faults sympathetic to the major faults which typically have throws of tens of metres and further divide the reef into blocks of up to 100m in width. Drilling from access development can identify these brittle faults, as the dip of the stratigraphy is reasonably constant (15° to 20°).

The Vaal Reef is by far the most significant reef mined at the Orkney operations and is the major contributor to gold production. The reef strikes northeast, dipping to the southeast and is heavily faulted to form a series of graben structures. The dip is generally less than 30° but can vary locally in direction and magnitude to exceed 45°. Gold is present throughout the reef horizon; however it tends to be concentrated close to the basal contact where carbon commonly occurs as thin seams. Well-mineralised carbon seams occur most commonly in three stacked sequences.

The VCR is exploited solely at BU No.3, BU No.6 and BU No.7 and, like the Vaal Reef, can occur as a composite reef consisting of several distinct sedimentary packages. In an attempt to improve grade estimation in such packages, a terrace and slope-based geological model was developed by AngloGold and has been retained by the geologists now employed by Harmony. The model divides

the orebody into a main channel; lower; middle and upper terraces and also involves delineation of certain higher-grade reworked channels. The reef is clearly identifiable and its location at the contact between the overlying Klipriviersberg Lavas and the underlying Witwatersrand Supergroup Rocks renders the footwall and hangingwall rocks distinct from the reef, except in areas where Elsburg conglomerates sub-outcrop against the VCR. The contrasting lithologies aids fault negotiation and have facilitated the use of three-dimensional seismic survey techniques to image the gross reef topography in the past.

The Elsburg Reefs are exploited at BU No.6 and No.7, usually in conjunction with the overlying VCR, against which it sub-outcrops along a northeast trending band, south of and sub-parallel to the Buffelsdoorn Fault. The sedimentological characteristics of the Elsburg Reefs in the region of the sub-outcrop are similar to those exhibited by the VCR.

3.3.8 Kalgold Operations

The Kalgold Operation is situated on the Kraaipan granite-greenstone belt, which is a typical gold-bearing greenstone formation. It has undergone intense structural deformation that has led to its dislocation into separate units. Within the mining lease area six steeply dipping zones of mineralisation have been identified. The discrete mineralised ore zones are the result of the percolation of mineralised fluids into the Banded Ironstone Formation ("BIF") host rocks.

The zones comprise the A, A-West, D, Mealie Field, Watertank and Windmill zones and the mineral resources of the A, D, Windmill and Watertank Zone have been comprehensively evaluated. The D-Zone is the first area to be exploited by open pit mining over a strike length of 1,400m and an ore zone width of between 15m and 40m.

Gold mineralisation is associated with pyrite and pyrrohotite, which was developed as a replacement mineral within a BIF and also within extensional, cross-cutting quartz veins within the ironstone.

3.3.9 Harmony Australian Operations

Gold mineralisation at the Mt. Magnet operation occurs in the southern tip of the Mt. Magnet Greenstone Belt in the Murchison Province of the Achaean Yilgarn cratonic block. The belt consists of a series of tholeiitic and komatiitic volcanics and associated ultramafic volcanics and mafic tuffs. Several folding events led to the formation of the Boogardie Synform and, after a major period of ductile deformation, selective fracturing of brittle rocks introduced gold mineralisation synchronous with certain deformation events. Shearing of the country rock usually provided a conduit for mineralising fluids.

The majority of the gold mineralisation is hosted by BIF that are cross-cut by faults, at or near the contact of ultramafic and mafic rocks with felsic intrusions. Fault zones and shears are generally north-south to north-northeast trending and selective fracturing appears to form a major trap-site for gold mineralisation. Crossing of several shear directions appear to enhance mineralisation, which is often characterised by an epigenetic pyrrhotite-pyrite alteration.

At Hill 50, the bulk of the mineralisation is hosted in a thick sequence of intercalated sedimentary BIF with both komatiitic and tholeiitic volcanics and associated ultra-mafic volcanics and mafic tuffs. The mineralisation is characterised by pyrrhotite-pyrite wall rock alteration. The BIF's are locally offset by faults with offsets ranging from one to two metres to up to tens of metres.

At Morning Star, mineralisation is hosted within quartz-carbonate veins containing molybdenite, scheelite and stibnite in a series of pyritic, sericite-altered mafic and felsic schists. The gold mineralisation is strongly associated with large vein packages and detailed geological mapping has indicated that the mineralisation can be correlated from level to level with a high degree of confidence.

Mineralised zones are primarily defined on the basis of geological mapping while stope designs are also based on detailed sampling and mapping. Wire framing based on geological mapping and interpretation is routinely carried out and grade shells are then defined within the geological domains.

In the Cue area, approximately 85km north of Hill 50 and Morning Star, the Big Bell deposit is hosted in a steeply dipping and locally overturned northeast trending extension of the Achaean Meekatharra-Wydgee Greenstone belt. This belt forms the west limb of a north-plunging regional anticlinal structure. At Cue, towards the east of Big Bell, the anticlinal structure changes to a north-plunging regional synclinal structure. In the Big Bell area, three main zones are recognised in the regional volcano-sedimentary sequence, a lower sequence of ultramafics, graphitic sediments and BIF, gradationally overlain by a felsic volcanic sequence of andesitic, dacitic and rhyolitic rocks and then by a sequence of mainly submarine basaltic flows.

The free-milling gold mineralisation at Big Bell is mainly hosted by a sub-vertical series of potassium-altered metamorphic schists with some mineralisation occurring in hanging wall biotite schists. In the Cuddingwarra area, gold mineralisation is related to a major phase of porphyritic intrusive activity.

At South Kalgoorlie Operations gold mineralisation was discovered in the Archaean Norseman-Wiluna granite-greenstone terrain in the late 1890s consisting of extensive volcanic sedimentary rocks deposited in an extensional environment. The stratigraphy is characterised by mafic/ultramafic rocks and komatitic basalt flows with intercalated sediments of the Kalgoorlie Group, conformably overlain by a thick series of felsic volcanics and intercalated sedimentary rocks of the Black Flag Group. The discovery of gold led to the exploitation of major historic gold mines in the Kalgoorlie "Golden Mile" and to the south at Jubilee.

Jubilee forms part of a major 4km strike length mineralised system that includes the Celebration, Mutooroo, Hampton Boulder, Mt. Martin, Dawns Hope, White Hope and Golden Hope open pit and underground mines. There are many sub-parallel northsouth trending tectonic zones in the granite-greenstone terrain with a multitude of deposits occurring further towards the west near Coolgardie.

Mineralisation is hosted along brittle-ductile shear contacts between biotite schist and ultramafics (Mt. Marion), in brittle shear in granite (Trojan open pit), along the Boorara shear in felsic porphyry (Goldenridge open pit), in biotite-tremolite schist (Freddo open pit), in shears in quartz dolerite and gabbro (Scrubby Tank) or quartz diorite (Rose Hill) or in Archaean basalts or paleo-channels (Lake Cowan open pits).

At Mt. Marion, mineralisation is hosted in "lode gneiss" along the Kunanulling Shear, within a sub-vertical package of gneiss and ultramafics that is footwall as well as hangingwall lode and has a lower grade core. Mineralised zones are defined on the basis of geological mapping and drilling. Mineralisation occasionally extends from the hangingwall gneiss into the ultramafic hanging wall and appears to be moving further into the hangingwall with increasing depth. The footwall contact of mineralisation generally coincides with the footwall contact of the gneiss and is most consistent.

3.3.10 Harmony Canadian Operations

The orebodies at Bisset are located within the Red lake Archaen greenstone belt and comprise two major sets of shear related quartz veins occurring within a steeply dipping intrusive host. One set of veins consists of stockwork breccias and the other narrower, fault-controlled veins cross-cutting the stockwork. Gold mineralisation occurs in both sets of veins but is enriched at the intersection of the two vein types.

3.4 Exploration Potential

The majority of the operations are mature and well explored and as such SRK consider there to be limited opportunity for discovering any new mineralised horizons or areas within the existing property boundaries within South Africa. Some potential does however exist for the Target, Free Gold, Evander and Harmony Australia Operations:

- the eastern extension in the Dreyerskuil Reefs at Target Mine;
- the southern extension in Basal Reef at Bambanani BU, the northern extension of certain facies at Tshepong BU and ongoing surface drilling at Joel BU, which is designed to delineate extensions to the Joel North BU area;
- the development of the Poplar and Rolspruit projects at the Evander Operations, where exploration has defined significant additional resources and are currently being investigated in the form of pre-feasibility and feasibility studies;
- at Harmony Australian Operations there is significant potential for new discoveries in the vicinity of the existing areas and an extensive conceptual exploration programme based on detailed regional geological mapping is underway. This potential is enhanced by the consolidation of all available information in the hands of one organisation. The ore in the South Kalgoorlie area can, however be less free-milling than the Mt. Magnet & Cue ores, signalling a potentially higher risk with regard to the maintenance of the current metallurgical recoveries; and
- the tenements in the South Kalgoorlie area are located just north of the well-known Kambalda nickel sulphide deposits where over a million tonnes of contained Ni metal has been produced to date. Portions of the tenements cover strike extensions of the Kambalda Dome stratigraphy and komatites along the Wildcatter's Shear Zone and are considered highly prospective for nickel sulphide deposits. A number of nickel sulphide deposits have been recognised on the Harmony South Kalgoorlie tenements.

4. MINERAL RESOURCES AND MINERAL RESERVES

4.1 Introduction

This section summarises the methods used by Avgold and Harmony to derive and classify the latest Mineral Resource and Mineral Reserve estimates for the Mining Assets. It also presents SRK's comments and opinions on the reasonableness of these estimates. In addition this section sets out SRK's view regarding any potential for proving up of further Mineral Resources and Mineral Reserves at the Mining Assets.

4.2 Review Procedures

SRK has not re-estimated the Mineral Resources and Mineral Reserves as estimated by the Companies for each of the Mining Assets. SRK has, however, undertaken sufficient check calculations and where appropriate, made necessary adjustments to the estimates to derive the statements presented herein and supporting the respective LoM plans.

The tables in this section summarise the audit process in support of the presented Statements of Mineral Resources and Mineral Reserves. The terms and definitions are those given in the March 2000 South African Code for Reporting of Mineral Resources and Mineral Reserves. This is known as the SAMREC Code ("SAMREC") and is published by the South African Mineral Resource Committee under the auspices of The South African Institute of Mining and Metallurgy.

Avgold and Harmony both report Mineral Resources and Mineral Reserves in accordance with the SAMREC Code. Harmony uses stricter criteria to limit its Measured and Indicated Mineral Resources than other South African gold mining companies. The limit of the Indicated Mineral Resource is 60m from current stoping, whereas certain other South African gold mining companies classify Indicated Mineral Resource utilising confirmed drill intersections which may be at a distance considerably further than 60m.

Within the scale of current mining operations this approach does not affect short-term term planning, nor does it impact on the long-term potential for the operations with large Inferred Resources based on sound geological models. It does, however introduce a problem with respect to reporting SAMREC compliant financial valuations where only projections derived from Proved and Probable Mineral Reserve areas can be presented.

For this reason it is necessary to stress the confidence in the underlying resource models and to include Inferred Mineral Resources into certain of the base case LoM projection and associated cash flow models.

Further, in presenting the Mineral Resource and Mineral Reserve statements the following points apply:

- the Measured and Indicated Mineral Resources are inclusive of those Mineral Resources modified to produce Mineral Reserves. Accordingly Mineral Resource statements are sub-divided into those Mineral Resources which have been modified to produce Mineral Reserves (designated by the suffix 1) and those which have not (designated by suffix 2);
- Mineral Resources are quoted at an appropriate in-situ economic cut-off-grade with tonnages and grades based on the planned minimum mining width;
- Mineral Reserves for Target Mine are based on a gold price of US$375/oz and ZAR:US$ exchange rate of 8.87 (ZAR107,000/kg);
- all Mineral Reserves for the Harmony's South African Mining Assets are based on a gold price of US$350/oz and ZAR:US$ exchange rate of 8.26 (ZAR93,000/kg). Harmony's Australian Assets use a US$350/oz and AUD:US$ exchange rate of 1.49 (AUD523/ozt);
- all Mineral Resources and Mineral Reserves were estimated as part of the Companies annual planning cycle dated 1 July 2003, the statements as reported herein have been adjusted for depletion that has occurred during the six months that have elapsed and are now dated 1 January 2004;
- unless otherwise stated all Mineral Reserves and Mineral Resources are quoted as 100% and not attributable with respect to ownership;
- all Mineral Reserves quoted in terms of RoM grades and tonnage as delivered to the metallurgical processing facility and are therefore fully diluted;
- Mineral Reserve statements include only Measured and Indicated Mineral Resources modified to produce Mineral Reserves and planned for extraction in the LoM plans;
- Mineral Reserve sensitivities have been derived from application of the relevant cut-off-grades to the underlying block listings. Accordingly, these have not been based on detailed depletion schedules and should be considered as incremental changes to the Base Case; and
- all references to Mineral Resources and Mineral Reserves relate to the SRK estimates stated in accordance with the SAMREC Code.

Surface sources at the Mining Assets comprise WRDs, Slimes Dams and other surface sources such as spillage and small stockpiles. WRDs are notoriously difficult to sample, given the range of particle sizes commonly present and the heterogeneity of grade. In the majority of instances, SRK has classified those WRDs with sufficient information as Indicated Mineral Resources. In instances where the grade and/or the density are known with insufficient confidence, SRK has classified these as Inferred Mineral Resources. In contrast to WRDs, slimes dams, in general tend to have more homogeneously distributed grades and the smaller particle size facilitates sampling. With adequate sampling and in-situ determinations, SRK consider that slimes dams as such may be classified as Measured Mineral Resources. In instances where the grade and/or the density are known with insufficient confidence, SRK has classified these as Indicated Mineral Resources.

4.3 South African Deposits: Mineral Resource and Mineral Reserve Estimation Methodologies

Mineral Resource and Mineral Reserve estimation and classification is dependent upon the quality and quantity of data, block definition, grade and tonnage estimation, grade control and reconciliation. Such parameters are considered by SRK to be typical of Witwatersrand Basin gold mines at most operations.

Unlike most other Witwatersrand deposits, the stacked nature of the reefs at Target Mine in combination with the bulk mining methods utilised, are condusive to three dimensional computerised geological modelling. As a result of this and the fact that a significant amount of drilling has been completed at Target Mine relative to other mines, the approach used to estimate the Mineral Resources and Reserves at Target Mine differs in some regards from that used at most other Witwatersrand mines.

The majority of resources in the Target North and Oribi areas have been estimated using standard two-dimensional classical statistical methods employed at other Witwatersrand mines where the reefs have been intersected by surface drilling only. At Loraine and to the immediate north of Target additional underground information has enabled a three-dimension computerised approach to be used similar to that employed at Target Mine.

Given the similar nature of the majority of the South African Mining Assets, the following sub-section summarises the general techniques commonly used by Avgold and Harmony for estimation.

4.3.1 Quality and Quantity of Data

Avgold: The Mineral Resource at Target Mine is primarily based on underground exploration drilling. Limited surface drilled intersections also exist as well as chip sampling in areas of the mine with underground development. The underground exploration holes were drilled from a footwall decline on sections lines 50m apart. The holes were drilled on a fan pattern at 15° intervals resulting in drill coverage of between 15m and 80m. Due to the fan nature of the drilling the broader coverage occurs in stratigraphically higher reefs as well as more proximal and distal areas to the sub-crop. Over 35 individual reef horizons have been intersected within the Eldorado Fan between 20 and 200 drillhole intersections per reef. The use of underground drilling has resulted in a significantly larger amount of sampling data being available in areas not yet accessed by underground development compared to most other Witwatersrand deep-level operations.

The Mineral Resource at Target North and Oribi is primarily based on surface exploration drilling. At Loraine 33 underground exploration drillholes and small quantities of chip samples form the basis of the Mineral Resource. The surface drillholes in the Target North area have been drilled on an irregular pattern, forming a drillhole grid spacing of between approximately 500m in the south up to 2,000m in the north. In the Oribi area 7 surface boreholes have been drilled over a strike length of 10km. Due to the geometry and geological characteristics of the individual reefs and reef packages these surface drillhole grids do not necessarily apply to all reefs or reef packages.

Arithmetic means of the short deflections in each surface borehole have been used for the true thickness and gold accumulation value of that borehole. Long deflections were treated as separate intersections, however, data were declustered by taking the arithmetic mean of borehole values for the same reef falling within 100m of each other on plan.

In the case of surface drillholes, the core is halved using a diamond saw, one-half is retained as a geological record and one-half is assayed. For underground drillholes, the core diameter is considered to be too small to allow the core to be split and to yield a sufficiently large sample to allow assaying and, in this instance, the entire core is assayed.

Assaying on the exploration samples was undertaken using fire assay techniques by ISO accredited laboratories with the use of blanks, standards and check assays for quality control. Inter-laboratory checks were also performed with the full process having been independently audited by external consultants.

Given the density of drillhole data, the assaying and quality control procedures applied, together with the operating history to date at Target Mine, in SRK's opinion the quality and quantity of the data available is sufficient to support the Mineral Resource and Reserve estimates as derived.

Harmony: The resource estimation process at all of the underground operations is based on surface drilling, underground drilling and underground channel sampling. Unless cropping out the reefs are initially explored by drilling from surface on regular 500m to 2,000m grids. Once underground access is available, infill development drilling may be undertaken from access haulages and cross-cuts to provide a 30m by 60m grid of intersections. Evaluation is then by extrapolation from or interpolation between stoping and development sampling.

In the case of surface drillholes, the core is halved using a diamond saw, one-half is retained as a geological record and one-half is assayed. For underground drillholes, the core diameter is considered to be too small to allow the core to be split and to yield a sufficiently large sample to allow assaying and, in this instance, the entire core is assayed.

Within the underground workings, exposures of the reef are channel sampled. Individual channels are cut from the wall rocks using a hammer and chisel or diamond saw and the cuttings are caught using steel pans. A detailed sampling record is kept showing the reef geometry at each section.

Current channel sampling standards comprise development sampling at 2m intervals and stope face sampling at 5m intervals. Channels are defined perpendicular to the reef plane and individual sample lengths of 10cm to 30cm are taken to reflect the internal geometry of the reef. The sample size collected is in the order of 0.3kg. Two adjacent samples spanning the footwall contact may be taken in order to double the sample volume of this part of the reef that frequently contains the highest grades. This is important where the reef is 'bottom-loaded', providing more confidence in the high-grade values at the footwall contact.

The Evander and West Wits operations use private assay laboratories. All other operations rely on mine owned and managed laboratories.

Two different assaying techniques are utilised at the Mining Assets. The Aztec Analysis is an automated technique for analysing underground chip samples using non-destructive energy dispersive X-Ray analysis ("EDAX") that gives rapid quantitative analyses for gold and uranium. Check assaying is carried out on a proportion of the samples, which are analysed by fire assay with gravimetric finish. The fire assay method is used for the analysis of reef and waste dump samples as well as for checking Aztec analysis results. The samples are dried, sorted, crushed and pulverised then approximately 180g flux is used for a 50g-sample aliquot. A gravimetric finish is used for reef samples and atomic absorption finish is used for waste samples.

As part of Quality Control and Quality Assurance procedures checks are conducted on the assay laboratories and sample preparation plants. Blank samples and repeat assays are part of the external check process undertaken regularly which ensures that the laboratory adheres to assaying standards and procedures.

In SRK's opinion, the long mining history and the quantity and quality of data upon which the Mineral Resource estimates at the Mining Assets are based, is sufficient to support the Mineral Resource and Mineral Reserve estimates as derived. All of the current operations comprise mature operating BUs and consequently Mineral Resource and Mineral Reserve estimates are based largely on underground stope development and pillar sampling.

The Companies are in the process of rationalising and updating their mining software systems. Currently a mixture of computer systems are being used for survey pegs, sampling data, measuring, geological structure, facies, geozones, ore reserve management and mine planning. These systems comprise different versions of commercial packages and proprietary systems. The proprietary systems are being phased out (for support reasons) in favour of the commercial products.

The majority of the Mining Assets have their sampling data in digital format. MS Excel spreadsheets are used for Mineral Reserve and Mineral Resource data management. Specifically "Optimiser" which is used to calculate optimum grade cut-off and "CLS" which is used to generate Mineral Resource and Reserve statements.

At Free Gold Operations, Joel uses a newly established computerised system, utilising a mining software package allowing the completion of all blocking, statistics, geostatistics and grade and tonnage estimation in a fully integrated evaluation system. This system is currently being developed and managed centrally with specialised support staff. Bambanani BU, West BU, Tshepong BU and Phakisa BU use more established 2D CAD computer systems, which have been developed to suit the tabular nature of the Witwatersrand gold deposits. At all these operations all survey data and sampling information is captured digitally and stored in electronic database.

4.3.2 *Orebody and Block Definition*

Avgold: At Target Mine a computerised three-dimensional geological model of the reefs and interbedded quartzites has been developed using stratigraphic correlation between the boreholes. Underground geological mapping and high-resolution seismic surveys are also used to supplement the stratigraphic and structural data from the drilling. This enables the reef and quartzite models to be truncated against faults and dyke contacts maintaining the three-dimension volume integrity of the model.

The geological model is subsequently used to constrain a block model into which grades are interpolated. This model utilises a block size of 20m along strike, 10m normal to strike and 5m vertically. Volume integrity is maintained through the use of 2m by 1m by 1m sub-cells, which are assigned the grade of the parent block.

At Target North and Oribi the geometry of the orebodies is difficult to interpret with a high-level of confidence given the relative sparsity of the reef intersections from the surface boreholes. The Mineral Resources are as such appropriately classified as either Indicated or Inferred. Fans similar in geometry to the Eldorado Fan at Target Mine have therefore been postulated to exist at reasonable north-south intervals. The characteristics and geometry of this fan together with the borehole intersections have been used to define the limits of the Elsburgs and Dreyerskuil Reef orebodies.

For the Big Pebble Reefs the syncline has been sub-divided into four zones from west to east to account for the separation of the distal reefs. This enables the resource estimation process to account for the probability that in the west the reefs would be mined in a single cut, while in the east the reefs would be mined individually in separate cuts.

In the case of the VCR the geological models have been based solely on the coverage of the surface borehole intersections on that reef.

The geological models developed as described above have been used as the basis of two-dimensional resource polygons constrained by surface borehole coverage and the regional structural model for each reef or reef package.

Where more information is available at Loraine and immediately to the north of Target Mine, computerised three-dimensional geological models of the reefs and interbedded quartzites or total reef packages have been developed using stratigraphic correlation between the boreholes and underground mapping if available. In these cases the three-dimensional models have been used to constrain a block model into which grades are interpolated as at Target Mine.

Harmony: Once the geological structure of an area and reef have been defined, the resource is blocked out on 2-D plan projections using major geological features such as faults, facies boundaries, channel structures and payshoots to define zones of homogeneity. These initial macro-scale blocks are referred to as 'geozones'.

Mining blocks are determined once the geozones have been defined. Stoping is blocked out per panel in 30m mining blocks; development will be blocked out for 10m. Major geological features such as faults, facies boundaries and payshoots are used to define zones of homogeneity and to terminate blocks. In some circumstances, the intersection line between the reef and a certain access elevation (e.g. a mine level) may also be used.

The geozones are used to define and separate data populations within the sampling database for further statistical and geostatistical studies. Once geozones and mining blocks have been defined they are digitised for use in computer-aided grade and tonnage evaluation.

4.3.3 *Grade and Tonnage Estimation*

Avgold: At Target Mine the assay data for each reef have been analysed statistically following the production of reef composites using the geological model. The reef grade populations exhibit positively skewed distributions therefore the cutting of high-grades has been applied to the dataset prior to grade estimation in order to limit the influence of these high grades. The individual reefs within the reef packages demonstrate variable statistical characteristics supporting their evaluation as separate entities.

The cut composites have been subject to geostatistical spatial analyses using semi-variograms calculated in a best-fit plane for the reefs. These analyses indicate the presence of two structures with minor ranges in the order of 40m to 100m and major ranges from 100m to 200m. A nugget effect of 20% has been modelled. As with the statistical characteristics the individual reefs display marked geostatistical differences in range and anisotropy.

Grade has been directly interpolated into the blocks by means of ordinary kriging using parameters derived from the semi-variogram analyses. Each individual reef horizon has been separately estimated. The search parameters in the plane of the reef correspond closely to the semi-variogram ranges. The search normal to the reef plane varies between 50m and 80m in order to accommodate the throw of the faults and the synclinal structure of the fan. A second longer range kriging run has been used to interpolate grades into peripheral blocks not assigned a grade by the initial run. Grade has also been interpolated into the intervening quartzite horizons in order to assess the diluting grade of this material when it is incorporated as internal dilution into the massive stopes.

In the case of the two-dimensional resource estimates the declustered gold accumulation data which falls within each resource polygon are plotted on a log-normal probability plot. If deemed necessary a third constant beta parameter is estimated and a three parameter log-normal distribution assumed. If necessary using the log-probability plots any high outliers are then cut to fit the distribution. The gold accumulation estimate (cmg/t) is then derived for each resource polygon using the lower value of the arithmetic mean and sichel 't' estimate.

In the case of the three-dimensional models at Loraine and Target North a similar methodology is used as at Target Mine. However, due to the sparser nature of the data, grade is interpolated into the blocks by means of a sichel 't' estimate using search radii derived from the variography of each reef horizon. In the case of Target North the semi-variograms used at Target Mine form the basis of the search radii, while at Loraine semi-variograms have been modelled using the limited underground chip sampling available (although this is not used in the estimation itself). A minimum of three samples is required for the block to be estimated. As at Target Mine, a second longer range run is used to interpolate grades into peripheral blocks not assigned a grade by the initial run.

For the two-dimensional polygons an average dip for the steeper west limb and shallower east limb of the syncline has been estimated, together with a proportional split between the two, from cross-sections to derive a true reef area for each polygon. The arithmetic mean of the declustered data is used to derive an average thickness and therefore a volume. If the thickness is below 100cm a minimum mining width of 100cm is used in this process.

Tonnage estimates are derived through the application of tonnage factors for each reef package as follows:

- Elsburg: 2.70t/m^3;
- Dreyerskuil: 2.76t/m^3;
- Big Pebble/Kimberley: 2.73t/m^3; and
- VCR: 2.70t/m^3.

As the small-scale structure in the Target North, Loraine and Oribi is not as well-known as at Target Mine and the estimates are based on two-dimensional models, a 10% tonnage discount factor has been applied to all resources in these areas to account for reef losses.

Harmony: Resource estimation techniques at the Mining Assets follow the same basic principles; however different computer software packages are employed.

At Kudu & Sable BU, Nyala BU, Eland BU and St. Helena BU data capture and estimation is paper based.

Where data is captured digitally each mine uses its defined geozones to sub-divide the reef data into discrete populations that have distinct grade distribution characteristics. Statistical analyses of the metal accumulation values are undertaken so as to substantiate the different grade populations in each domain. The data will often be log transformed to allow a lognormal or compound lognormal model to be applied. In some cases other parameters such as channel width and stope width will be analysed, to look for trends that could be investigated further with geostatistics.

Data are checked and validated and any extreme values investigated to ensure there are no transcription errors. Despiking and grade cutting techniques are used on some of the secondary reef data to assist with further statistical and geostatistical studies.

Point variograms are calculated and modelled from underground channel sample metal accumulation values (and borehole data) for each domain. The data generally provide well-structured, two component spherical variograms with high nugget effects (50% to 80%) and ranges of 10m to 20m and 60m to 90m, these variograms are usually isotropic. This indicates a high random variability in sample grades and an underlying spatial control on sample grades whose zone of influence extends for up to 90m in all directions.

Further variography is carried out on data to be used in the macro-kriging process. These data are used to construct variograms comprising regularised channel sample data, diamond drillhole intersections and underground drillhole intersections.

The variograms from these datasets provide a larger scale control on block grade estimation. The large-block regularised data tends to give excellent structure with little or no nugget effect and produces larger ranges, which can exceed 1,500m.

At Tshepong BU, Phakisa BU, Bambanani BU and West BU kriging is undertaken separately for each geostatistical domain. Channel sample data is used to estimate grade into 10m by 10m blocks using ordinary kriging based on the point variograms and a search radius equivalent to the short range in the variograms. Only those blocks with a high statistical confidence (regression slope greater than 0.6) are evaluated by this method.

Next, 30m by 30m blocks are used to house values generated by a simple kriging process which incorporates the local area mean (based on the ordinary kriged values) into the estimate and therefore smoothes data more than the ordinary kriging, but gives more confidence to the kriged values in those blocks which were not estimated by the ordinary kriging process. The search radius used is approximately 30m and therefore restricts the 30m by 30m block estimates to the vicinity of well-sampled areas. Again, only those blocks with a high statistical confidence within a 3-by-3 neighbourhood search range are evaluated by this method.

A third method is used to extrapolate grades much further using the large-block regularised channel sample data and incorporating the diamond drillhole intersection data which is more dispersed. This kriging is based on 250m by 250m blocks and a large search radius. The data is then co-kriged. The blocks from each of the three block models are combined so as to result in high confidence estimates in the vicinity of the channel sampling using 10m by 10m and 30m by 30m blocks which contribute to the Measured Resource and well founded long range estimates which contribute to the Indicated and Inferred Resource.

The kriging technique utilised by Harmony and Joel BU differs to that stated above. Three prototype block models are created prior to grade estimation, a 15m by 15m Measured model, a 30m by 30m Indicated model and a 60m by 60m Inferred model. The kriged estimates of the Measured model are restricted by the range of the semi-variogram and including a minimum of 15 sample points within the search radius. The kriged estimates of the Indicated model are restricted by two times the range with a minimum of two sample points. In general the sichel 't' estimate technique and application of calculated additive constants is used for estimation of the Inferred model. The three grade models are then combined to form one overall grade model. Channel widths are also estimated using the same technique.

Resource blocks are assigned grades from the block models using the respective software packages. Resource blocks are kept as an inventory listing with several attributes recorded for each. Availability and status record whether or not the ground has been abandoned, whether the area is currently accessible and the time required accessing a currently inaccessible area.

Each block is assigned a stoping width, which is based on the expected mining width in virgin ground, or otherwise the stoping widths encountered historically in the vicinity of that block which accounts for the hangingwall dilution often incurred at these mines. In addition, the square metres of the block are corrected for dip and discounted for fault losses on the basis of previously encountered factors and incorporating the results of a fractal analysis of fault frequency and displacement. The volume described by the resultant square metres and the stoping width is multiplied by the respective tonnes per cubic metre in order to estimate the block tonnage.

Harmony's Welkom and Orkney Operations, Eland BU, Kudu & Sable BU, Nyala BU and St. Helena BU do not use a computerised system for resource and reserve estimation. The Eland BU shaft pillar has been kriged using 30m by 30m blocks, using separate runs for each of the two facies identified in that area, namely the Geduld and the BCF. All other areas are estimated using either a weighting method or simple stretch averages. These methods are considered to be adequate given the high pillar content of the resource and therefore the high density of samples available. The virgin areas at Nyala BU have been estimated using a value contour technique.

Block listing data is generally managed using MS Excel, using company template spreadsheets that perform simple calculations and present data in common formats.

4.3.4 Classification

Avgold: The individual resource blocks have been classified on a block by block basis as Measured, Indicated or Inferred as defined by the SAMREC Code. At Target Mine blocks are classified as Measured Resources where the drillhole spacing is less than that which equates to the point on the semi-variograms where the variance is two-thirds of the total sample variance. Indicated Resources extend beyond the Measured Resource to include all those remaining blocks estimated by the first interpolation run. Inferred Resources comprise blocks estimated by the second longer range interpolation run and also resource areas with very limited sample data.

At Target North and Loraine where the resources have been modelled in three-dimensions Indicated Resources are defined as those blocks into which grade is interpolated in the first estimation run and Inferred Resources are defined as those blocks estimated by the second longer range interpolation run.

In the case of the resources modelled in two-dimensions the resource polygons, and therefore the basis of the classification, have generally been delineated based on borehole coverage. Indicated Resources are broadly defined as those blocks containing a reasonable coverage of surface borehole intersections (usually a minimum of 10 intersections on a minimum approximate borehole grid spacing of 1km). Inferred Resources are those containing fewer intersections and where the continuity of blocks has been inferred using geological interpretation to major structural features. The Inferred Resources are therefore generally situated in the far north of Target North and at Oribi or closer to Target Mine on reefs that have not been intersected by many surface boreholes.

SRK considers that given the quantity and quality of the sample data available, together with the grade and tonnage estimation methodology applied, the classification applied by Avgold is appropriate and in accordance with the SAMREC Code.

Harmony: The individual resource blocks have been classified as Measured, Indicated or Inferred as defined by the SAMREC Code.

Where paper estimation methods are employed resource blocks that are adjacent to sampled developments, including current production and ongoing sampling, are classified as Measured. Blocks that are generally close to sampled developments, but are themselves usually sampled by only a few underground drillholes, are classified as Indicated. The remaining blocks, remote from underground developments where the estimation of tonnage and grade is based upon extrapolation of known geological features such as payshoots/channels as well as faults, are thus classified as Inferred.

Classification of Indicated and Inferred Mineral Resources at Tshepong BU and Phakisa BU is based on the kriging variance applied to the resource block. This is used to derive percentage values, which represent the maximum theoretical difference between the estimated grade and the actual grade of a block at 95% confidence. The limit of the Measured blocks is determined by the extent of the simple kriged 30m by 30m blocks.

Harmony Freestate Operations, Joel BU, Bambanani BU, West BU, West Wits Operations and Evander Operations classify resource blocks based on the following criteria. Measured Mineral Resources are blocked out to 30m or against structures and payshoots and are adjacent to sampled stoping. Indicated Mineral Resources are blocked out to 60m from sampled stoping and within geozones. Inferred Mineral Resources are within large blocks defined by facies, structure and the mining lease boundaries.

SRK considers the Harmony interpretation of the Indicated and Inferred classification boundary to be conservative relative to the approach used at other Witwatersrand deep level gold operations. This has particular impact where an operation has large areas of Inferred Mineral Resources, which are structurally simple and have high payability, such as Joel BU, Bambanani BU, Elandsrand BU and Evander Operations. As the SAMREC Code states that Inferred Mineral Resources cannot be converted into Mineral Reserves this approach may in turn lead to conservative estimates of the Mineral Reserve at these operations.

4.3.5 Selective Mining Units

Avgold: Theoretically the minimum selective mining unit ("SMU") applied at Target Mine is the individual 20m by 10m by 5m blocks used for the grade estimation. However, in practice the reserve is defined through the superimposition of practical stope designs on the block model. While the individual blocks are used to determine the margins of these stopes they are not planned to be mined in isolation but rather as aggregations of blocks within the stope design.

Harmony: The choice of SMU is dependent upon the mining method to be applied. In the case of narrow reef mining used at the Mining Assets, the SMU is an agglomeration of contiguous panels, each of dimension 30m by 30m. For practical reasons at this block size, mining of both pay and unpay material is unavoidable and the halting of stope faces is only triggered by unacceptably high levels of unpay ore being mined.

For remnant extraction, the pillar dimensions define the SMU. Due to the relatively small volumetric size of such remnant and/or pillar area, the sampling density available from previous mining activities facilitates a high degree of confidence for grade estimation.

4.3.6 *Grade Control and Reconciliation*

Avgold: Grade control practices at Target Mine are based on the results of development chip sampling and underground infill drilling and are used primarily to aid stope definition especially in areas where the fan drilling has resulted in larger spaced sample coverage. In the areas where conventional narrow reef mining methods are applied such as in the Dreyerskuil reefs, stope face sampling and surveying is undertaken as is standard practice on other Witwatersrand mines. In the massive Elsburg stopes a cavity monitoring system is employed which assess the degree of stope overbreak and resulting dilution. Hoisted grade is reconciled back to the mined grade to derive a Shaft Call Factor ("SCF"). The grade reported by the mill is compared to the hoisted grade to derive a Plant Call Factor ("PCF"). These two factors are then combined to derive a Mine Call Factor ("MCF"). Over the last 11 months the MCF has been in excess of 100%.

SRK considers the grade control and reconciliation practices employed at Target Mine to be appropriate for the nature of the orebody and mining methods employed. The high mine call factor may well be a function of underestimation of the grade in the higher-grade proximal areas of the Eldorado fan as a result of the smoothing inherent in the grade interpolation procedure. In SRK's opinion this is likely to reduce over time as mining progresses to lower grade, more distal areas.

Harmony: Grade control and reconciliation practices follow similar procedures to those applied elsewhere in Witwatersrand Basin gold mining operations. The reefs and the hangingwall and footwall lithologies are visually identifiable and channel sampling ensures that the face grade is monitored accordingly. As part of the reconciliation exercises, physical factors, including stope widths, dilution, MCFs and Block Factors ("BF"s) are monitored and recorded on a monthly basis. The results are used to reconcile Mineral Reserve estimates with actual mined tonnages and grades.

As stopes are mined, surveyors monitor the stope width and face advance to provide an accurate stope tonnage estimate. The channel samples taken within the stope are reconciled against the pre-mining grade estimate based on the kriging described above. The difference in gold metal is recorded as a BF, which is a combination of bias in the resource estimate and mining losses. BFs tend to approximate 100% and accordingly no further adjustment has been made.

Belt samplers at the shaft head also record grade and tonnage. These figures are compared back to the surveyed estimates on a monthly basis to give a SCF, which multiplied with the PCF gives the MCF. Generally SRK consider that the underlying grade control and reconciliation processes are appropriate and do not materially affect the underlying Mineral Resource estimates as presented herein.

4.3.7 *Reserve Estimation*

Avgold: The Mineral Resources at Target Mine together with the survey outlines of the existing stopes, excavations and development tunnels form the basis of the engineering design of the Mineral Reserves. The Mineral Reserves are based on the Measured and Indicated Resources that exceed a cut-off grade ("CoG"), that is determined for each mining method, have been the subject of engineering design and have consequently been classified into Proved and Probable Reserves.

Datamine is used for all GIS and 3-D modelling of the orebody outlines and stope design at Target Mine and the survey outlines are imported from StopeCAD. In terms of the mechanised section a mining method is assigned to a particular area of ground within a block and the design parameters applicable to the method are used as a basis for developing the stope outline. The stope design considers aspects such as maximum drill hole length, the angle of repose, location of drill drive and loading drive as well as backfill, ventilation and equipment resource constraints. The stope outline may in places not be coincident with the orebody outline and result in planned dilution and/or ore losses. Internal waste between reef packages is also incorporated into the stope design where necessary. Once the design is complete the material contained within the stope outline becomes an Engineered Resource and subsequent to the application of further factors associated with un-planned dilution and ore loss with for the Mineral Reserve. The Narrow Reef Mining ("NRM") reserves are determined in a similar but simpler manner in that an appropriate stoping width is selected and the planned dilution represents the difference between this width and the channel width of the Mineral Resource.

A portion of the Inferred Resources has been modified to form the not in reserve ("NIR") category of material contained in the latter years of the LoM plan.

Harmony: The procedure for estimating Mineral Reserves involves the definition of appropriate SMU's, the application of appropriate survey factors based on tonnage, volume and grade reconciliation exercises, the use of cut-off-grade policies and technical-economic investigations leading through to the development of an appropriately detailed and engineered LoM plan.

Tables 4.1 through to 4.6 give the various mine planning parameters utilised in the derivation of cut-off-grades and the modification of Mineral Resources to Mineral Reserves for each mine separately.

All factors relate solely to underground resources and primarily utilise BF, MCF, Stoping Width ("SW") and Milling Width ("MW"). The BF is a correction factor used to account for historical variance between the in-situ estimate of the mining block and the average block grade post-sampling during block depletion. The MCF is the estimated historical discrepancy between the gold estimated to have been broken from the stoping faces to that back allocated post-metallurgical metal accounting as received at the plant as a head grade. The SW is the average in-stope mining width achieved during extraction. Finally the MW is estimated as the total tonnage delivered to the plant from underground divided into the total stope area depleted over the same period. The difference between MW and SW expressed as a ratio to MW is the measure of dilution. Surface sources are processed directly and are generally not screened. As such no modifying factors are applicable for conversion to RoM grades. BUs that supply RoM material to the same metallurgical plant are assigned the same Metallurgical Recovery Factor ("MRF").

The modifying factors as given below are based on historical reconciliation exercises and as such are considered valid for the purpose of reporting Mineral Reserves for the Mining Assets. The seemingly large range in certain modifying factors is as a result of mining several different reef types and under different operating conditions combining virgin ground, remnant pillars and delivering ore to one or a selection of processing plants. The factors are determined by historical records over significant period of time. For new projects, factors have been selected on the basis of comparable operations working the same reefs.

Table 4.1 Target Operations – Target Mine: Assumed Modifying Factors

Business Units	BF (%)	MCF[1] (%)	Un-planned Stope Dilution (%)	Un-planned Development Dilution (%)	Dilutant Grade (g/t)
Target	100	93.6	7	10	0

[1] A certain quantity of dilution and ore loss is contained within the stope outlines and is not quantified. The dilution and MCF reflected above represent an allowance for additional dilution and ore loss respectively.

Table 4.2 Free Gold Operations: Assumed Modifying Factors

Business Units	BF (%)	MCF (%)	SW (cm)	MW (cm)
Tshepong BU	100	88	102	143
Phakisa BU	100	88	102	143
Bambanani BU	100	72	151	233
West BU	100	72	160	188
Eland BU	100	73	141	209
Kudu & Sable BU	100	73	167	214
Nyala BU	100	80	134	155
St. Helena BU	100	68	137	177
Joel BU	100	84	139	167

Table 4.3 Harmony Free State Operations: Assumed Modifying Factors

Business Units	BF (%)	MCF (%)	SW (cm)	MW (cm)
Harmony No.2 BU	100	77	178	188
Harmony No.3 BU	100	na	na	na
Harmony No.4 BU	100	na	na	na
Merriespruit No.1 BU	100	72	164	188
Merriespruit No.3 BU	100	71	202	217
Virginia No.2 BU	100	na	na	na
Unisel BU	100	77	179	236
Saaiplaas No.3 BU	100	78	158	175
Brand No.2 BU	100	na	na	na
Brand No.3 BU	100	78	193	223
Brand No.5 BU	100	78	201	265
Masimong No.4 BU	100	78	139	179
Masimong No.5 BU	100	78	131	168

Table 4.4 Welkom Operations: Assumed Modifying Factors

Business Units	BF (%)	MCF (%)	SW (cm)	MW (cm)
No.1 BU	100	64	119	140
No.2 BU	100	64	140	154
No.3 BU	100	70	151	253
No.4 BU	100	60	150	158
No.6 BU	100	65	130	217
No.7 BU	100	75	150	189

Table 4.5 West Wits Operations: Assumed Modifying Factors

Business Units	BF (%)	MCF (%)	SW (cm)	MW (cm)
Elandsrand BU	100	87	126	152
Deelkraal BU	100	93	170	227
Cooke 1 BU	100	83	172	205
Cooke 2 BU	100	72	144	177
Cooke 3 BU	100	73	159	195
Randfontein No.4 BU	100	na	na	na
Doornkop BU	100	93	244	366

Table 4.6 Evander Operations: Assumed Modifying Factors

Business Units	BF (%)	MCF (%)	SW (cm)	MW (cm)
No.2 BU	100	75	162	209
No.5 BU	100	75	111	177
No.7 BU	100	75	135	217
No.8 BU	100	70	120	160
No.9 BU	100	65	116	163

Table 4.7 Orkney Operations: Assumed Modifying Factors

Business Units	BF (%)	MCF (%)	SW (cm)	MW (cm)
No.2 BU	100	85	164	210
No.3 BU	100	84	200	210
No.4 BU	100	78	120	181
No.6 BU	100	84	154	193
No.7 BU	100	91	112	152

4.4 International Deposits: Mineral Resource and Mineral Reserve Estimation Methodologies

The International Operations in Australia and Canada principally focus on small and shallow orebodies and orezones where the gold is hosted by banded iron formations and quartz veins are steeply dipping. The Mineral Resource and Mineral Reserve estimation methodology is similar at these operations and it is therefore not described separately. It should be noted that the procedures and methodologies discussed below are current only for the Harmony Australian Operations as Bisset, the only asset of Harmony's Canadian Operations, is currently on care and maintenance.

4.4.1 Quality and Quantity of Data

A large quantity of data exists at the various operations that comprise a combination of historic and current drilling and sampling data. Drilling and sampling methods include open-hole, reverse circulation, diamond drilling, face and stockpile sampling. Limited information is available on historic quality assurance and quality control procedures and Harmony employs ongoing data validation procedures when completing the geological modelling and resource estimation. A check analysis is performed for every 20 sludge holes drilled. All current sampling takes place under geological control and, where applicable, older geological codes are converted to newer codes.

4.4.2 *Orebody Definition*

At the underground operations detailed underground geological and structural mapping is undertaken that forms the basis for geological modelling, the understanding of the ore genesis and the mapping of gaps within the sub-vertical oreshoots. In the open pits, results from reverse circulation, diamond and earlier open-hole (if available) drilling are used to define geological wire-frames and grade shells that conform to the geological boundaries. As a standard, the reverse circulation and diamond drilling is composited to standard 1m or 2m lengths. Top-cutting of grades is used as a standard.

4.4.3 *Grade and Tonnage Estimation*

Mineral Resource estimation procedures are based on ordinary kriging or inverse distance methods. When using inverse distance methods for open pits inverse distance squared or inverse distance cubed weightings are used. The block models are based on information from different sampling and drilling support without extensive QA/QC control and monitoring. Where applicable, the search neighbourhoods for the inverse distance methods are based on the results of geological modelling.

In the open pit mines, optimised pit outlines are designed around the resource block models. In many of the orebodies there is a significant nugget effect and dense sampling grids are required to estimate resources with a high degree of confidence and the search neighbourhoods employed during estimation are therefore of critical importance.

Tonnage modelling is based on average dry bulk density values that are, in places, based on a limited number of samples but have shown to be realistic when compared to density values obtained from mining reconciliation between underground and open pits.

Mineral Resource models for many of the underground orebodies are not based on block models but on the projection of historical averages. At a number of the underground mines there is history of a large variation in the thickness of the undulating sub-vertical oreshoots in the vertical plane that is difficult to predict from the available drillhole spacing. It has been found that, in these cases, the downward projection of the average mine tonnages and grades obtained from extensive current mine development is more appropriate than generating a block model. In terms of the projection of tonnages, gaps in the mineralisation identified by geological mapping of current mine development, are taken into account in the model. SRK concurs that, at this stage, the method of downward plunge projection of tonnage and grade from well developed mine production levels provides the best method for resource modelling for the deeper portions of the mines.

4.4.4 *Grade Control and Reconciliation*

Grade control drilling in the open pits consists of angled reverse circulation drilling and takes place at different drillhole spacing, locally down to a spacing of 5m by 5m. Reconciliation in the open pits is carried out on each pit level and compared with grade control drilling or sampling. Channel samples are taken and used as the basis of grade control and reconciliation at the underground operations whilst grab samples are taken at the surface stockpiles. Reconciliation between production data and block models shows that tonnages and grade reconcile reasonably well over longer periods. However, on a local scale over short time periods there are significant deviations in the reconciliations, which is usual for inverse distance weighting estimation. The production results from open pits is also compared with the grade from the upper underground levels (where possible) and confirms the average gold grades indicated by the available sampling data.

4.4.5 *Reserve Estimation*

In the underground mines, resources are converted to reserves by designing stopes on a panel-by-panel basis using different cut-off-grades, determining a practical extraction and adding a percentage for mining dilution. Stopes and development outlines are designed using computerised mine design software. Cross-sections, long-sections and plans are generated as required that reflect a combination of drilling results, assays and geology and interpretations and are used to reflect the stopes, development ends and Mineral Reserves.

In the open pit mines, an optimised pit outline is developed to represent the economically extractable reserves. The Mineral Resources are derived from engineered pit designs, based on the optimal pit outlines.

4.5 Mineral Resource and Mineral Reserve Statements

The Mineral Reserves quoted are sensitive to changing operating costs and gold price. Tables within each sub-section show the Mineral Reserves at eight different gold prices including the Base Case. These sensitivities are presented to give an indication of the changes relative to gold price. SRK has shown a range that relates the extremes in gold price (hence in-situ cut-off grades appropriate to satisfy the context of "potentially

economically viable") over the past few years and into the future and to give an indication of the gold price required to report resources equivalent to 250cmg.t as per Harmony's Annual Report. In this way SRK does not consider the range to reflect the dynamics of international currency exchange and fluctuations in dollar based gold price.

Note that these sensitivities are approximations only and accordingly at different gold prices alternative mining strategies may be pursued to exploit payable material in a more optimal manner. In turn, these may also affect the operating cost structure and cut-off-grades owing to changes in scale of operation, reflecting the dynamic nature of the mining process.

AtTarget Mine the impact on the Mineral Reserve of different gold prices is not presented due to the complex, interactive mine planning methodology.

The Mineral Resource and Mineral Reserve statements as presented herein differ from those generated by the Companies due to the following:

- the Companies present Mineral Resources for the South African assets at an in-situ cut-off-grade of 250cmg/t or between 0g/t and 3g/t. SRK has reported Mineral Resources at in-situ cut-off-grades which are reflective of current macro-economic and specific technical-economic parameters at each of the individual BUs;
- SRK has adjusted the Companies Mineral Resource and Mineral Reserve Statements for depletion that has occurred during the six-months that have elapsed since their respective generation. The statements presented herein are dated 1 January 2004; and
- Mineral Reserve statements include only Measured and Indicated Mineral Resources modified to produce Mineral Reserves and planned for extraction as projected in the respective LoM plans.

In considering the Mineral Resource and Mineral Reserve statements SRK note the following:

- with respect to the classification of Mineral Reserves by Harmony SRK considers that at the majority of the South African operations the boundary between Indicated Mineral Resources and Inferred Mineral Resources is conservatively defined and that for primary reef units reclassification could increase Indicated Mineral Resources and potentially the Probable Mineral Reserves;
- the LoM plans in certain instances rely on significant contribution from the Inferred Mineral Resource category and reported at RoM tonnage and grades. Given the generally conservative classification potential exists to significantly increase the Indicated Mineral Resource and consequently the Probable Mineral Reserve. SRK has on a high-level basis determined the relative impact on value should mining operations extract only that material currently defined as Mineral Reserves. This assessment crudely assumes that all Inferred Mineral Resources are depleted in the later part of the respective LoM plans. The resulting NPVs should be viewed on a comparative basis only and by definition reflect a lower level of technical planning than the LoM plans as the base case projections presented by the Companies;
- Mineral Resources classified by the suffix (1) represent those groupings of Mineral Resources which have been used as a base for modification to produce Mineral Reserves or those Inferred Resources which have been modified to produce material included for depletion in the respective LoM plans. Conversion in this instance is dependent upon all modifying factors inclusive of MCF, dilution, extraction and other planning considerations. In certain instances, specifically where groupings of Mineral Resources contain a high portion of remnant pillars, only a relatively small portion of the reported Mineral Resource is currently planned for extraction. Where this is the case such as Free Gold Operations there is an apparent overall low conversion to Mineral Reserves;
- the Mineral Resources not modified to produce Mineral Reserves as defined by the suffix (2), generally include:
  - reef horizons not currently planned to be extracted in the current LoM plans;
  - groupings of pillars and other resource blocks for which insufficient technical work has been completed to allow conversion to Mineral Reserves.

  In such instances, opportunity also exists for future modification to Mineral Reserve status. In contrast, risks also exist that further technical assessments may render portions of these Mineral Resources to be excluded from the Mineral Resource base on technical grounds; and
- vamping tonnages and grades are not currently included in the following statements, SRK consider there to be insufficient investigations to base continued contribution at current levels of production and hence warrant inclusion in the Mineral Resource and Mineral Reserve statements as presented herein. This represents further potential for increasing both the Mineral Resource and Mineral Reserve statements; and
- the Mineral Resource statements as presented for Harmony Canada Operations have only been reviewed by SRK on a desk top basis alone. SRK note however, that the operation is currently under care and maintenance with no near term intent to recommence operations.

4.5.1 Target Operations

Table 4.8 Target Operations: Target Mine – Mineral Resource and Mineral Reserve Statement

Mineral Reserve Category	Tonnage (kt)	Grade (g/t)	Gold (koz)	Mineral Resource Category	Tonnage (kt)	Grade (g/t)	Gold (koz)
Proved				**Measured**			
– u/g (1)	5,190	7.4	1,227	– u/g (1)	5,545	9.4	1,674
Subtotal	**5,190**	**7.4**	**1,227**	**Subtotal**	**5,545**	**9.4**	**1,674**
Probable				**Indicated**			
– u/g (1)	11,656	6.3	2,374	– u/g (1)	12,910	9.3	3,840
Subtotal	**11,656**	**6.3**	**2,374**	**Subtotal**	**12,910**	**9.3**	**3,840**
Total Reserves	**16,846**	**6.6**	**3,601**	**Total**	**18,455**	**9.3**	**5,514**
M+I+Inf in LoM				**Inferred**			
– u/g (1)	3,098	6.4	641	– u/g (1)	6,720	7.5	1,630
				– s/f (1)	11,980	0.6	227
Subtotal	**3,098**	**6.4**	**641**	**Subtotal**	**18,700**	**3.1**	**1,857**
Total in LoM Plan	**19,944**	**6.6**	**4,242**	**TOTAL**	**37,155**	**6.2**	**7,371**

The impact of different gold prices on the Mineral Reserve is not presented for the Target Mine. Given the number of mining methods employed and the sensitivity of these to changes in mining costs and potential revenues, a significant amount of re-design work would be required to produce the optimum mining layout and hence a Mineral Reserve estimate for each price. Further, given that a very high percentage of the Target Mine Mineral Resource is converted to Mineral Reserve in the current statement, there is limited potential for the Mineral Reserve to increase with a higher gold price, such as that used as the basis of the Mineral Reserve at Harmony. In addition, while any decrease in price would more likely change the ratio between the mining methods employed, and reduce the operating margins, there would again be less of an impact on the Mineral Reserve itself.

Table 4.9 Target Operations: NFSEC – Mineral Resource and Mineral Reserve Statement

Mineral Reserve Category	Tonnage (kt)	Grade (g/t)	Gold (koz)	Mineral Resource Category	Tonnage (kt)	Grade (g/t)	Gold (koz)
Probable				**Indicated**			
u/g – Loraine				u/g – Loraine	11,190	6.5	2,338
u/g –Target North				u/g –Target North	69,950	7.0	15,676
Subtotal	**0**	**0.0**	**0**	**Subtotal**	**81,140**	**6.9**	**18,015**
Total Reserves	**0**	**0.0**	**0**	**Total**	**81,140**	**6.9**	**18,015**
M + I + INF in LoM				**Inferred**			
u/g –Target North				u/g –Target North	52,200	8.4	14,073
u/g – Oribi				u/g – Oribi	46,890	6.5	9,792
Subtotal	**0**	**0.0**	**0**	**Subtotal**	**99,090**	**7.5**	**23,865**
Total in LoM Plan	**0**	**0.0**	**0**	**TOTAL**	**180,230**	**7.2**	**41,880**

4.5.2 *Free Gold Operations*

Table 4.10 Free Gold Operations: Mineral Resource and Mineral Reserve Statement

Mineral Reserve Category					Mineral Resource Category			
		Tonnage (kt)	Grade (g/t)	Gold (koz)		Tonnage (kt)	Grade (g/t)	Gold (koz)
Proved					**Measured**			
	– u/g (1)	15,688	8.1	4,082	– u/g (1)	26,252	12.9	10,930
					– u/g (2)	507	11.0	179
	– s/f (1)	2,687	0.5	43	– s/f (1)	2,694	0.5	44
Subtotal		**18,375**	**7.0**	**4,125**	**Subtotal**	**29,453**	**11.8**	**11,153**
Probable					Indicated			
	– u/g (1)	45,101	6.9	10,000	– u/g (1)	63,355	10.5	21,391
					– u/g (2)	1,237	7.2	287
	– s/f (1)	7,674	0.8	196	– s/f (1)	10,095	0.7	233
Subtotal		**52,775**	**6.0**	**10,196**	**Subtotal**	**74,688**	**9.1**	**21,911**
Total Reserves		**71,150**	**6.3**	**14,321**	**Total**	**104,141**	**9.9**	**33,064**
M+I+Inf in LoM								
	– u/g (1)	7,456	6.5	1,566	– u/g (1)	122,126	9.1	35,551
					– u/g (2)	83,508	4.8	12,987
Subtotal		**7,456**	**6.5**	**1,566**	**Subtotal**	**205,634**	**7.3**	**48,538**
Total in LoM Plan		**78,605**	**6.3**	**15,887**	**TOTAL**	**309,774**	**8.2**	**81,602**

In addition to the stated Mineral Resources and Mineral Reserves, over the LoM period Free Gold Operations plan to deliver to the plant some 892kt of material recovered from vamping operations at an average grade of 4.5g/t. This material is included in the LoM plan projections, however has not been classified as either Mineral Resources or Mineral Reserves.

Table 4.11 summarises the sensitivity of the Mineral Resources and Mineral Reserves at a range of gold prices. The results exclude the material projected from vamping operations.

Table 4.11 Free Gold Operations: Mineral Resource, Mineral Reserve and LoM plan Sensitivity

Gold Price	(ZAR/kg)	46,500	69,750	93,000	116,250	139,500	186,000	232,500	279,000
Mineral Resources – Total									
Tonnage	(kt)	94,528	211,691	**309,774**	363,861	547,743	969,333	1,180,394	1,221,461
Grade	(g/t)	9.1	9.0	**8.2**	7.6	5.4	3.5	3.1	3.1
Metal	(koz)	27,768	61,478	**81,602**	88,718	95,662	109,093	118,732	120,957
Mineral Reserves – Total									
Tonnage	(kt)	31,880	52,532	**71,150**	77,356	177,606	343,457	347,242	348,756
Grade	(g/t)	8.7	7.6	**6.3**	6.0	2.8	1.6	1.6	1.6
Metal	(koz)	8,912	12,752	**14,321**	14,857	16,178	17,980	18,174	18,237
LoM Plan – Total									
Tonnage	(kt)	32,857	57,380	**78,605**	85,943	187,279	354,446	367,312	369,227
Grade	(g/t)	8.7	7.6	**6.3**	6.0	3.0	1.7	1.7	1.7
Metal	(koz)	9,196	13,928	**15,887**	16,551	17,927	19,767	20,193	20,275

4.5.3 *Harmony Free State Operations*

Table 4.12 Harmony Free State Operations: Mineral Resource and Mineral Reserve Statement

Mineral Reserve Category					Mineral Resource Category			
		Tonnage (kt)	Grade (g/t)	Gold (koz)		Tonnage (kt)	Grade (g/t)	Gold (koz)
Proved					**Measured**			
	– u/g (1)	11,449	4.6	1,700	– u/g (1)	21,415	7.5	5,180
					– u/g (2)	981	7.6	239
	– s/f (1)	13,241	0.4	151	– s/f (1)	13,412	0.4	151
Subtotal		**24,690**	**2.3**	**1,851**	**Subtotal**	**35,808**	**4.8**	**5,570**
Probable					**Indicated**			
	– u/g (1)	11,946	4.7	1,792	– u/g (1)	15,413	7.3	3,636
					– u/g (2)	174	7.3	41
	– s/f (1)	6,003	0.6	114	– s/f (1)	6,080	0.6	114
Subtotal		**17,949**	**3.3**	**1,906**	**Subtotal**	**21,668**	**5.4**	**3,791**
Total Reserves		**42,638**	**2.7**	**3,758**	**Total**	**57,475**	**5.1**	**9,362**
M+I+Inf in LoM								
	– u/g (1)	18,949	4.6	2,774	– u/g (1)	37,980	6.3	7,645
					– u/g (2)	22,423	6.0	4,348
Subtotal		**18,949**	**4.6**	**2,774**	**Subtotal**	**60,403**	**6.2**	**11,992**
Total in LoM Plan		**61,587**	**3.3**	**6,532**	**TOTAL**	**117,878**	**5.6**	**21,354**

In addition to the stated Mineral Resources and Mineral Reserves, over the LoM period Harmony Freestate Operations plan to deliver to the plant some 1,431kt of material recovered from vamping operations at an average grade of 3.3g/t. This material is included in the LoM plan projections, however has not been classified as either Mineral Resources or Mineral Reserves.

Table 4.13 summarises the sensitivity of the Mineral Resources and Mineral Reserves at a range of gold prices. The results exclude the material projected from vamping operations.

Table 4.13 Harmony Free State Operations: Mineral Resource, Mineral Reserve and LoM plan Sensitivity

Gold Price	(ZAR/kg)	46,500	69,750	93,000	116,250	139,500	186,000	232,500	279,000
Mineral Resources – Total									
Tonnage	(kt)	5,813	31,499	**117,878**	191,958	305,413	623,364	791,815	960,722
Grade	(g/t)	14.0	7.4	**5.6**	5.2	4.6	3.3	2.9	2.5
Metal	(koz)	2,621	7,488	**21,354**	32,245	45,410	66,133	73,260	76,741
Mineral Reserves – Total									
Tonnage	(kt)	2,281	13,819	**42,638**	52,838	69,238	159,963	237,340	242,443
Grade	(g/t)	8.0	4.4	**2.7**	2.7	2.6	1.4	1.1	1.1
Metal	(koz)	584	1,956	**3,758**	4,537	5,887	7,430	8,434	8,619
LoM Plan – Total									
Tonnage	(kt)	2,416	15,976	**61,587**	92,822	122,596	252,775	337,201	352,822
Grade	(g/t)	8.1	4.5	**3.3**	3.2	3.5	2.0	1.6	1.6
Metal	(koz)	627	2,295	**6,532**	9,667	13,620	16,542	17,822	18,310

4.5.4 *Welkom Operations*

Table 4.14 Welkom Operations: Mineral Resource and Mineral Reserve Statement

Mineral Reserve Category					Mineral Resource Category			
		Tonnage (kt)	Grade (g/t)	Gold (koz)		Tonnage (kt)	Grade (g/t)	Gold (koz)
Proved					**Measured**			
	– u/g (1)	1,426	4.5	205	– u/g (1)	1,486	9.4	449
					– u/g (2)	5,825	9.1	1,700
Subtotal		**1,426**	**4.5**	**205**	**Subtotal**	**7,311**	**9.1**	**2,149**
Probable					**Indicated**			
	– u/g (1)	1,645	3.2	171	– u/g (1)	1,585	5.8	297
					– u/g (2)	4,935	7.8	1,232
Subtotal		**1,645**	**3.2**	**171**	**Subtotal**	**6,520**	**7.3**	**1,529**
Total		**3,071**	**3.8**	**376**	***Total***	**13,831**	**8.3**	**3,678**
M+I+Inf in LoM Plan					**Inferred**			
					– u/g (2)	1,307	7.1	298
Subtotal		**0**	**0.0**	**0**	**Subtotal**	**1,307**	**7.1**	**298**
Total in LoM Plan		**3,071**	**3.8**	**376**	**TOTAL**	**15,138**	**8.2**	**3,975**

In addition to the stated Mineral Resources and Mineral Reserves, over the LoM period Welkom Operations plan to deliver to the plant some 97kt of material recovered from vamping operations at an average grade of 4.8g/t. This material is included in the LoM plan projections, however has not been classified as either Mineral Resources or Mineral Reserves.

Table 4.15 summarises the sensitivity of the Mineral Resources and Mineral Reserves at a range of gold prices. The results exclude the material projected from vamping operations.

Table 4.15 Welkom Operations: Mineral Resource, Mineral Reserve and LoM plan Sensitivity

Gold Price	(ZAR/kg)	46,500	69,750	93,000	116,250	139,500	186,000	232,500	279,000
Mineral Resources – Total									
Tonnage	(kt)	4,434	9,093	**15,138**	23,454	46,641	51,774	64,162	78,813
Grade	(g/t)	12.2	9.5	**8.2**	6.9	5.4	5.1	4.5	3.9
Metal	(koz)	1,741	2,782	**3,975**	5,167	8,068	8,545	9,232	9,845
Mineral Reserves – Total									
Tonnage	(kt)	634	2,153	**3,071**	3,292	3,446	3,542	3,644	3,653
Grade	(g/t)	5.6	4.2	**3.8**	3.7	3.6	3.6	3.5	3.5
Metal	(koz)	115	291	**376**	393	401	405	408	408
LoM Plan – Total									
Tonnage	(kt)	634	2,153	**3,071**	3,292	3,446	3,542	3,644	3,653
Grade	(g/t)	5.6	4.2	**3.8**	3.7	3.6	3.6	3.5	3.5
Metal	(koz)	115	291	**376**	393	401	405	408	408

4.5.5 *West Wits Operations*

Table 4.16 West Wits Operations: Mineral Resource and Mineral Reserve Statement

Mineral Reserve Category					Mineral Resource Category			
		Tonnage (kt)	Grade (g/t)	Gold (koz)		Tonnage (kt)	Grade (g/t)	Gold (koz)
Proved					**Measured**			
	– u/g (1)	9,686	6.6	2,048	– u/g (1)	12,045	10.5	4,078
					– u/g (2)	10,435	9.8	3,288
	– s/f (1)	441	2.7	38	– s/f (1)	729	2.4	55
Subtotal		**10,127**	**6.4**	**2,086**	**Subtotal**	**23,208**	**9.9**	**7,422**
Probable					Indicated			
	– u/g (1)	14,612	8.1	3,814	– u/g (1)	18,947	11.7	7,143
					– u/g (2)	5,540	9.1	1,624
	– s/f (1)	2,201	1.1	75	– s/f (1)	5,530	0.8	147
Subtotal		**16,812**	**7.2**	**3,889**	**Subtotal**	**30,016**	**9.2**	**8,914**
Total Reserves		**26,939**	**6.9**	**5,974**	**Total**	**53,225**	**9.5**	**16,336**
M+I+Inf in LoM								
	– u/g (1)	39,814	6.0	7,695	– u/g (1)	66,724	8.3	17,744
					– u/g (2)	3,063	4.4	430
Subtotal		**39,814**	**6.0**	**7,695**	**Subtotal**	**69,787**	**8.1**	**18,174**
Total in LoM Plan		**66,754**	**6.4**	**13,670**	**TOTAL**	**123,012**	**8.7**	**34,510**

In addition to the stated Mineral Resources and Mineral Reserves, over the LoM period West Wits Operations plan to deliver to the plant some 5,714kt of material recovered from vamping operations at an average grade of 5.2g/t. This material is included in the LoM plan projections, however has not been classified as either Mineral Resources or Mineral Reserves.

Table 4.17 summarises the sensitivity of the Mineral Resources and Mineral Reserves at a range of gold prices. The results exclude the material projected from vamping operations.

Table 4.17 West Wits Operations: Mineral Resource, Mineral Reserve and LoM plan Sensitivity

Gold Price	(ZAR/kg)	46,500	69,750	93,000	116,250	139,500	186,000	232,500	279,000
Mineral Resources – Total									
Tonnage	(kt)	23,812	60,825	**123,012**	362,200	577,241	890,124	1,026,596	1,104,682
Grade	(g/t)	14.9	10.8	**8.7**	4.6	3.7	2.9	2.8	2.7
Metal	(koz)	11,427	21,167	**34,510**	53,823	69,218	83,728	91,565	95,851
Mineral Reserves – Total									
Tonnage	(kt)	8,695	19,084	**26,939**	47,766	56,738	65,399	71,807	75,688
Grade	(g/t)	11.0	8.2	**6.9**	4.5	4.2	3.9	3.7	3.6
Metal	(koz)	3,071	5,042	**5,974**	6,899	7,708	8,223	8,524	8,666
LoM Plan – Total									
Tonnage	(kt)	15,373	35,356	**66,754**	126,908	179,626	223,788	256,426	269,957
Grade	(g/t)	10.0	7.6	**6.4**	4.4	3.8	3.4	3.1	3.0
Metal	(koz)	4,928	8,645	**13,670**	17,905	21,843	24,316	25,942	26,424

4.5.6 *Evander Operations*

Table 4.18 Evander Operations: Mineral Resource and Mineral Reserve Statement

Mineral Reserve Category					Mineral Resource Category			
		Tonnage (kt)	Grade (g/t)	Gold (koz)		Tonnage (kt)	Grade (g/t)	Gold (koz)
Proved					**Measured**			
	– u/g (1)	3,112	5.5	550	– u/g (1)	4,102	10.7	1,405
					– u/g (2)	854	11.2	307
Subtotal		**3,112**	**5.5**	**550**	**Subtotal**	**4,956**	**10.7**	**1,712**
Probable					**Indicated**			
	– u/g (1)	36,124	7.3	8,471	– u/g (1)	37,159	14.2	16,926
					– u/g (2)	12,889	11.4	4,744
					– s/f (2)	210,306	0.3	2,257
Subtotal		**36,124**	**7.3**	**8,471**	**Subtotal**	**260,354**	**2.9**	**23,927**
Total Reserves		**39,237**	**7.2**	**9,021**	**Total**	**265,311**	**3.0**	**25,639**
M+I+Inf in LoM								
	– u/g (1)	4,715	5.2	789	– u/g (1)	17,466	9.9	5,532
					– u/g (2)	43,337	10.2	14,232
					– s/f (2)	1,290	0.3	13
Subtotal		**4,715**	**5.2**	**789**	**Subtotal**	**62,093**	**9.9**	**19,777**
Total in LoM Plan		**43,952**	**6.9**	**9,810**	**TOTAL**	**327,404**	**4.3**	**45,416**

Table 4.18 include Mineral Reserves for the Rolspruit Project amounting to 25,951kt at an average grade of 7.9g/t, which is contained in the Probable Reserve category. A final decision to proceed with the Rolspruit Project has not been made and as such the Mineral Reserves and associated capital are excluded from the Evander TEPs, Section 12 and TEMs, Section 13.

In addition to the stated Mineral Resources and Mineral Reserves, over the LoM period Evander Operations plan to deliver to the plant some 1,525kt of material recovered from vamping operations at an average grade of 6.2g/t. This material is included in the LoM plan projections, however has not been classified as either Mineral Resources or Mineral Reserves.

Table 4.19 summarises the sensitivity of the Mineral Resources and Mineral Reserves at a range of gold prices. The results exclude the material projected from vamping operations.

Table 4.19 Evander Operations: Mineral Resource, Mineral Reserve and LoM plan Sensitivity

Gold Price	(ZAR/kg)	46,500	69,750	93,000	116,250	139,500	186,000	232,500	279,000
Mineral Resources – Total [1]									
Tonnage	(kt)	4,770	61,388	**327,404**	356,976	396,897	435,227	457,581	524,022
Grade	(g/t)	17.4	12.0	**4.3**	4.4	4.5	4.4	4.4	4.2
Metal	(koz)	2,665	23,627	**45,416**	51,016	57,172	61,671	64,256	70,294
Mineral Reserves – Total									
Tonnage	(kt)	2,632	12,958	**39,237**	42,651	50,205	59,645	74,519	82,600
Grade	(g/t)	9.0	7.8	**7.2**	6.8	6.2	5.5	4.8	4.5
Metal	(koz)	761	3,267	**9,021**	9,355	10,021	10,570	11,529	11,855
LoM Plan – Total									
Tonnage	(kt)	3,084	16,191	**43,952**	53,180	65,241	78,128	94,670	103,439
Grade	(g/t)	8.9	7.4	**6.9**	6.2	5.5	4.9	4.4	4.1
Metal	(koz)	878	3,877	**9,810**	10,657	11,624	12,362	13,397	13,749

[1] Sensitivities include a large contribution of surface sources that influence the collective grade at higher gold prices.

4.5.7 *Orkney Operations*

Table 4.20 Orkney Operations: Mineral Resource and Mineral Reserve Statement

Mineral Reserve Category					Mineral Resource Category			
		Tonnage (kt)	Grade (g/t)	Gold (koz)		Tonnage (kt)	Grade (g/t)	Gold (koz)
Proved					**Measured**			
	– u/g (1)	4,457	4.6	653	– u/g (1)	5,712	6.3	1,160
					– u/g (2)	17,294	8.4	4,655
Subtotal		**4,457**	**4.6**	**653**	**Subtotal**	**23,005**	**7.9**	**5,815**
Probable					**Indicated**			
	– u/g (1)	1,208	6.0	234	– u/g (1)	1,308	10.2	428
					– u/g (2)	95,932	3.6	11,219
Subtotal		**1,208**	**6.0**	**234**	**Subtotal**	**97,240**	**3.7**	**11,647**
Total Reserves		**5,666**	**4.9**	**888**	**Total**	**120,245**	**4.5**	**17,462**
M+I+Inf in LoM								
					– u/g (2)	1,041	8.3	279
Subtotal		**0**	**0.0**	**0**	**Subtotal**	**1,041**	**8.3**	**279**
Total in LOM Plan		**5,666**	**4.9**	**888**	**TOTAL**	**121,286**	**4.5**	**17,740**

In addition to the stated Mineral Resources and Mineral Reserves, over the LoM period Orkney Operations plan to deliver to the plant some 90kt of material recovered from vamping operations at an average grade of 3.5g/t. This material is included in the LoM plan projections, however has not been classified as either Mineral Resources or Mineral Reserves.

Table 4.21 summarises the sensitivity of the Mineral Resources and Mineral Reserves at a range of gold prices. The results exclude the material projected from vamping operations.

Table 4.21 Orkney Operations: Mineral Resource, Mineral Reserve and LoM plan Sensitivity

Gold Price	(ZAR/kg)	46,500	69,750	93,000	116,250	139,500	186,000	232,500	279,000
Mineral Resources – Total									
Tonnage	(kt)	10,855	38,039	**121,286**	153,090	210,426	293,081	308,011	334,616
Grade	(g/t)	11.1	7.1	**4.5**	4.2	3.7	3.4	3.3	3.3
Metal	(koz)	3,872	8,671	**17,740**	20,577	25,239	32,096	32,999	35,593
Mineral Reserves – Total									
Tonnage	(kt)	1,125	3,443	**5,666**	6,978	16,612	19,779	21,865	24,974
Grade	(g/t)	7.3	5.8	**4.9**	4.5	2.7	2.5	2.4	2.2
Metal	(koz)	266	642	**888**	1,001	1,433	1,602	1,685	1,801
LoM Plan – Total									
Tonnage	(kt)	1,125	3,443	**5,666**	6,978	16,612	19,779	21,865	24,974
Grade	(g/t)	7.3	5.8	**4.9**	4.5	2.7	2.5	2.4	2.2
Metal	(koz)	266	642	**888**	1,001	1,433	1,602	1,685	1,801

4.5.8 *Kalgold Operation*

Table 4.22 Kalgold Operations[1]: Mineral Resource and Mineral Reserve Statement

Mineral Reserve Category	Tonnage (kt)	Grade (g/t)	Gold (koz)	Mineral Resource Category	Tonnage (kt)	Grade (g/t)	Gold (koz)
Proved				**Measured**			
– s/f (1)	994	1.2	38	– s/f (1)	1,113	1.3	45
– o/p (1)	4,986	2.3	365	– o/p (1)	12,446	2.1	843
				– o/p (2)	11,334	1.1	413
Subtotal	**5,980**	**2.1**	**403**	**Subtotal**	**24,893**	**1.6**	**1,301**
Probable				**Indicated**			
				– o/p (2)	4,485	1.5	217
Subtotal	**0**	**0.0**	**0**	**Subtotal**	**4,485**	**1.5**	**217**
Total Reserves	**5,980**	**2.1**	**403**	**Total**	**29,378**	**1.6**	**1,518**
M+I+Inf in LoM							
				– o/p (2)	14,804	1.8	851
Subtotal	**0**	**0.0**	**0**	**Subtotal**	**14,804**	**1.8**	**851**
Total in LoM Plan	**5,980**	**2.1**	**403**	**TOTAL**	**44,182**	**1.7**	**2,369**

[1] The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

4.5.9 *Harmony Australian Operations*

Table 4.23 Harmony Australia Operations – Mt. Magnet & Cue: Mineral Resource and Mineral Reserve Statement

Mineral Reserve Category	Tonnage (kt)	Grade (g/t)	Gold (koz)	Mineral Resource Category	Tonnage (kt)	Grade (g/t)	Gold (koz)
Proved				**Measured**			
– u/g (1)	388	4.6	57	– u/g (1)	4,035	3.8	499
– s/f (1)	1,256	1.0	39	– s/f (1)	2,787	1.0	94
– o/p (1)	0	0.0	0	– o/p (1)	144	2.8	13
Subtotal	**1,643**	**1.8**	**96**	**Subtotal**	**6,966**	**2.7**	**606**
Probable				**Indicated**			
– u/g (1)	3,413	5.7	624	– u/g (1)	2,114	12.4	846
– s/f (1)	1,027	0.9	31	– s/f (1)	776	1.0	24
– o/p (1)	581	3.2	59	– o/p (1)	16,748	2.3	1,213
Subtotal	**5,021**	**4.4**	**714**	**Subtotal**	**19,638**	**3.3**	**2,083**
Total Reserves	**6,664**	**3.8**	**811**	**Total**	**26,604**	**3.1**	**2,689**
M+I+Inf in LoM							
– u/g (1)	3,021	6.5	632	– u/g (1)	10,310	5.5	1,834
– o/p (1)	3,918	1.9	243	– o/p (1)	10,798	1.9	663
Subtotal	**6,940**	**3.9**	**875**	**Subtotal**	**21,108**	**3.7**	**2,497**
Total in LoM Plan	**13,604**	**3.9**	**1,685**	**TOTAL**	**47,712**	**3.4**	**5,186**

Table 4.24 Harmony Australian Operations – South Kalgoorlie: Mineral Resource and Mineral Reserve Statement

Mineral Reserve Category	Tonnage (kt)	Grade (g/t)	Gold (koz)	Mineral Resource Category	Tonnage (kt)	Grade (g/t)	Gold (koz)
Proved				**Measured**			
– u/g (1)	664	4.8	102	– u/g (1)	1,041	5.1	172
– s/f (1)	428	0.8	11	– s/f (1)	2,140	1.0	70
– o/p (1)	113	2.0	7	– o/p (1)	2,870	2.4	224
Subtotal	**1,205**	**3.1**	**120**	**Subtotal**	**6,051**	**2.4**	**465**
Probable				**Indicated**			
– u/g (1)	561	4.3	77	– u/g (1)	1,419	4.1	186
– s/f (1)	0	0.0	0	– s/f (1)	937	0.7	22
– o/p (1)	829	2.5	68	– o/p (1)	33,636	1.7	1,829
Subtotal	**1,390**	**3.2**	**145**	**Subtotal**	**35,992**	**1.8**	**2,036**
Total Reserves	**2,595**	**3.2**	**265**	**Total**	**42,043**	**1.9**	**2,501**
M+I+Inf in LoM				**Inferred**			
– u/g (1)	297	4.6	44	– u/g (1)	3,174	3.4	343
– s/f (1)	0	0.0	0	– s/f (1)	176	0.7	4
– o/p (1)	292	1.8	17	– o/p (1)	45,991	1.3	1,888
Subtotal	**589**	**3.2**	**61**	**Subtotal**	**49,341**	**1.4**	**2,235**
Total in LoM Plan	**3,184**	**3.2**	**326**	**TOTAL**	**91,384**	**1.6**	**4,737**

4.5.10 Harmony Canadian Operations

Table 4.25 Harmony Canadian Operations: Mineral Resource and Mineral Reserve Statement

Mineral Reserve Category	Tonnage (kt)	Grade (g/t)	Gold (koz)	Mineral Resource Category	Tonnage (kt)	Grade (g/t)	Gold (koz)
Proved				**Measured**			
– u/g (1)				– u/g (1)	533	7.3	126
Subtotal				**Subtotal**	**533**	**7.3**	**126**
Probable				**Indicated**			
– u/g (1)				– u/g (1)	755	8.3	202
Subtotal				**Subtotal**	**755**	8.3	**202**
Total Reserves				**Total**	**1,288**	7.9	**328**
M+I+Inf in LoM				**Inferred**			
– u/g (1)				– u/g (1)	817	9.2	241
Subtotal				**Subtotal**	**817**	9.2	**241**
Total in LoM Plan				**TOTAL**	**2,105**	**8.4**	**569**

4.5.11 *Avgold*

Table 4.26 Avgold: Mineral Resource and Mineral Reserve Statement

Mineral Reserve Category					Mineral Resource Category			
		Tonnage (kt)	Grade (g/t)	Gold (koz)		Tonnage (kt)	Grade (g/t)	Gold (koz)
Proved					**Measured**			
	– u/g (1)	5,190	7.4	1,227	– u/g (1)	5,545	9.4	1,674
Subtotal		**5,190**	**7.4**	**1,227**	**Subtotal**	**5,545**	**9.4**	**1,674**
Probable					**Indicated**			
	– u/g (1)	11,656	6.3	2,374	– u/g (1)	12,910	9.3	3,840
					– u/g (2)	81,140	6.9	18,015
Subtotal		**11,656**	**6.3**	**2,374**	**Subtotal**	**94,050**	**7.2**	**21,855**
Total Reserves		**16,846**	**6.6**	**3,601**	**Total**	**99,595**	**7.3**	**23,529**
M+I+Inf in LoM					**Inferred**			
	– u/g (1)	3,098	6.4	641	– u/g (1)	6,720	7.5	1,630
					– u/g (2)	99,090	7.5	23,865
	– s/f (1)	0	0.0	0	– s/f (1)	11,980	0.6	227
Subtotal		**3,098**	**6.4**	**641**	**Subtotal**	**117,790**	**6.8**	**25,722**
Total		**19,944**	**6.6**	**4,242**	**TOTAL**	**217,385**	**7.0**	**49,251**

4.5.12 *Harmony*

Table 4.27 Harmony: Mineral Resource and Mineral Reserve Statement

Mineral Reserve Category					Mineral Resource Category			
		Tonnage (kt)	Grade (g/t)	Gold (koz)		Tonnage (kt)	Grade (g/t)	Gold (koz)
Proved					**Measured**			
	– u/g (1)	46,869	6.2	9,398	– u/g (1)	76,621	9.7	23,998
					– u/g (2)	35,895	9.0	10,369
	– s/f (1)	19,047	0.5	320	– s/f (1)	22,875	0.6	459
	– o/p (1)	5,099	2.3	372	– o/p (1)	15,460	2.2	1,080
					– o/p (2)	11,334	1.1	413
Subtotal		**71,015**	**4.4**	**10,090**	**Subtotal**	**162,185**	**7.0**	**36,319**
Probable					**Indicated**			
	– u/g (1)	114,610	6.8	25,184	– u/g (1)	142,056	11.2	51,055
					– u/g (2)	120,707	4.9	19,147
	– s/f (1)	16,904	0.8	416	– s/f (1)	23,418	0.7	540
					– s/f (2)	210,306	0.3	2,257
	– o/p (1)	1,410	2.8	127	– o/p (1)	50,383	1.9	3,041
					– o/p (2)	4,485	1.5	217
Subtotal		**132,924**	**6.0**	**25,726**	**Subtotal**	**551,357**	**4.3**	**76,257**
Total Reserves		**203,939**	**5.5**	**35,816**	**Total**	**713,541**	**4.9**	**112,576**
M+I+Inf in LoM					**Inferred**			
	– u/g (1)	74,253	5.7	13,500	– u/g (1)	258,597	8.3	68,890
					– u/g (2)	154,680	6.5	32,573
	– s/f (1)	0	0.0	0	– s/f (1)	176	0.7	4
					– s/f (2)	1,290	0.3	13
	– o/p (1)	4,210	1.9	260	– o/p (1)	56,789	1.4	2,551
					– o/p (2)	14,804	1.8	851
Subtotal		**78,463**	**5.5**	**13,760**	**Subtotal**	**486,335**	**6.7**	**104,881**
Total		**282,401**	**5.5**	**49,576**	**TOTAL**	**1,199,876**	**5.6**	**217,457**

4.6 Mineral Resource and Mineral Reserve Potential

The majority of the deep-level gold operations are mature and other than for re-classification of Inferred and Indicated Mineral Resources together with conversion of Mineral Resources currently classified by suffix (2) to Mineral Reserves, SRK considers there to be limited opportunity for significant increases in Mineral Resources or Mineral Reserves. Some potential does however exist for:

- outlining higher-grade components of areas currently classified as Inferred Mineral Resources and Indicated Mineral Resources;
- focusing exploration activity on all of the secondary reef horizons such as the Leader Reef and the "A" Reef, specifically the "B" Reef at Tshepong BU and secondary reefs at the West Wits Operations;
- exploration into the Jeannette mine and the Basal Reef, directly northeast of Tshepong BU; and
- further potential for increasing the Mineral Resource tonnage relies on the reductions in cut-off-grades.

5. MINING

5.1 Introduction

This section includes discussion and comment on the mining engineering and related aspects of the LoM plans associated with the Mining Assets. Specifically, comments are given on the mine planning process, mining methods, geotechnics, mine ventilation and the impact of the foregoing on future mining operations.

5.2 Mine Planning

The mine planning process at the Mining Assets is dependent upon input from the geology/resource management departments. Responsibility is assigned for addition/revision and depletion sign-off on the Mineral Resource, which forms the basis for subsequent design, planning and extraction sequencing incorporated into the LoM plan. In the majority of instances this is completed using a combination of computerised geological modelling, mine planning and production scheduling utilising various in-house and external software packages.

The planning cycle commences with the ratification of key input parameters, prior to producing a SAMREC compliant Mineral Resource statement, adjusted for all resource depletion. On completion of the resource update, the planning process commences, incorporating:

- targets, objectives and guidelines that are defined by the Companies' respective corporate teams;
- detailed short-term (one year) operating plans extending stoping and development layouts from current mining face positions. Reliance is placed on historically achieved production parameters such as development rates, mining widths and dilution together with metal accounting factors such as mine call factors, ore losses and metallurgical recovery; and
- an extension to the short-term plan resulting in a three-year strategic plan detailing any planned production build-ups or mine expansion programmes. At Target Mine engineering design and computer scheduling software depletes the available Mineral Resources within the constraints of existing infrastructure. At Harmony's Mining Assets, beyond the three-year period, LoM projections are developed on a factorised depletion of the available Mineral Resources.

In conjunction with the above, a detailed (one year) operating and capital cost budget is subsequently produced and where appropriate extended for the LoM production schedule. The one-year budget is generally prepared on a monthly basis, extending into quarterly periods and annually thereafter. Of critical importance is the utilisation of historically achieved data for productivity and operating costs against which operating business units are benchmarked. Where this is not available, zero-based costing is applied. Specific capital projects are evaluated on individual merits to demonstrate the anticipated return on investment.

SRK consider that, despite being in line with general industry practice, a more progressive approach to planning would better assist in assessing the risk profiles and project value drivers of the various operations. SRK consider that future assessment should extend the business window beyond the current three years, to ensure that due recognition of the longer-term risk environment is considered. Detailed planning generally only extends between one and three years for assets where no specific project capital is anticipated; with detailed planning profiles extending over the capital spend profiles for the specific capital projects. The LoM projections for each business unit vary between three and twenty years within the same Tax Entity. In the absence of detailed cost projections beyond the specific period, SRK has assessed the unit operating costs taking cognisance of increasing depth and distance from shaft infrastructure and a general allowance for age of infrastructure and associated additional maintenance costs. Labour (contributing between 40% and 50% of the total costs) has been assessed taking a view on the achievable productivity over the LoM period. Consumables have been split into a fixed and variable component and projected forward using cost drivers such as development meters and stoping area (accounting for variation in stoping width).

5.3 Overview of Mining Operations

5.3.1 Target Operations – Target Mine

The Target orebody is relatively complex comprising of a number of reefs of varying widths, grades and inclinations stacked above one another and separated by layers of quartzite. The LoM planning process is therefore critically dependent on geological input, specifically in terms of structure, geometry and distribution of reef packages and gold content. The main orebody comprises the Eldorado Fan, the Interfan and the Zuurbron Fan systems that strike north-south and the access decline system is located to the west.

The Elsburg Formation sub-crops against the Dreyerskuil Formation and the lowest reef in this group, the DK1A, is exploited by conventional deep-level gold mining techniques. The mining of the Dreyerskuil leads to over-stoping of the Elsburg Formation and the de-stressing of the ground to accommodate the long-hole drilling and large-scale stoping methods that are employed.

The LoM plan essentially comprises 5 main working areas:

- Block 1: located at the south of the Eldorado Fan formation and principally at the centre of the orebody;
- Block 2: located some 250m to the north of Block 1 and in the Eldorado Fan formation and is accessed from sub-levels driven off of the access ramp located in the east;
- Block 3: located within the Eldorado Fan formation to the north of the Damn Fault which forms the boundary between Block 2 and Block 3 and is estimated to have an average down throw of approximately 30m; and
- Block 4 and Block 5: located to the south of Block 1 and principally define the Interfan and Zuurbron Fan formations. The grade of the Mineral Resources in Block 4 and Block 5 is approximately 3g/t lower than that the Mineral Resources comprising Blocks 1 to 3. Consequently Block 4 and Block 5 only form only a minor tonnage and are currently scheduled for depletion later in the LoM plan.

Production and support activities for the underground operations are coordinated from a central, surface based, operations room, which is also responsible for emergency procedures. The control room is also used to monitor, operate and control the major plant such as the conveyor system, pump stations and refrigeration units.

Access and Infrastructure: The No.1 Shaft is used for the transport of men, material and rock to and from surface to the 203L from where a single decline is installed to the 255L some 2,050m below surface. The decline splits at 255L into a conveyor decline and a vehicle decline, descending to the extent of development currently at the 282L, some 2,300m below surface. Two jaw crushers are located at the base of the declines directly beneath surge passes with approximately 4hrs production capacity. The crushers are fed by a vibrating feeder and a 200mm screen ensures only the oversize material is crushed. The undersize is directed straight to the conveyor system. Each crusher can operate at a throughput of some 310tph, which is significantly more than the operating capacity of the hoisting system. The conveyor system comprises six conveyors of various lengths over a distance of some 6km. The conveyor system is designed to operate at 2.5m/s to enable man riding on the 900mm wide belts. The design throughput of the system is 225tph and the conveyors tip rock into one of two 2,000t capacity storage facilities located adjacent to the main shaft on the 203L.

During 2003 the hoisting capacity of the shaft was increased by improving skip cycle time and payload and now hoists at a rate of 23–24 skips per hour (previously 20–21 skips per hour) with 9.5t skips (previously 9.1t) thus at an average hoisting time of 20hr/day the shaft capacity equates to 4,300tpd equivalent to some 125ktpm. Hoisting has only averaged 90ktpm during 2003 principally due to lower massive stope production than planned.

There are no dedicated facilities to separate ore and waste in terms of storage before the conveyor system, and if required one of the two main orepasses together with a crusher would need to bededicated to effect separate waste transportation and hoisting. Operationally the existing facilities make waste separation impractical and therefore waste, that is not backfilled, is hoisted as dilution to ore.

Alternative access to surface, in the event of an emergency, is via the No.1C sub-vertical shaft on the 255L to the No.2 Shaft on the 208L located some 3km from No.1 Shaft. Access to the 255L from the workings is via the conveyor decline and vehicle decline or the return airway decline. No.5 Shaft is utilised as a return airway.

Materials and equipment are transported from the station on 203L to the underground working by an overhead mono-rail system that principally uses an electric drive unit and a diesel back-up. The mono-rail currently operates to the 255L although the second phase of the installation to the 282L is currently in progress. Utility vehicles are used to transfer material and equipment from the mono-

rail station. The main declines are used to provide services, such as water, power, backfill slurry and also houses pump columns as well as being the main air intakes. Due to the limited need for compressed air there is no compressed air reticulation network in the mine and small compressor units are used where necessary. Communication is via a telephone network and radio communication via a leeky feeder system.

Mining Methods: Initial development and mining commenced in Block 1, located in the southern portion of the Eldorado Fan system. A cross-cut was developed from the main decline system to a ramp located to the east of the orebody which provides access across the centre of Block 1. The ramp is located in the east due to unfavourable ground conditions in the west. The mining methods employed at Target Mine comprise long-hole open stoping, drift and fill mining and Narrow Reef Mining ("NRM").

The long-hole open stoping methods are further classified into a number of stope types that are principally defined by stope size: massive open stoping ("MOS"); wide open stoping ("WOS"), dwarf open stoping ("DOS") and narrow open stoping ("NOS"):

- **MOS** is conducted in the upper parts of the orebody principally comprising the sub-crop of the Eldorado Fan against the Dreyerskuil Formation. The primary reef package comprising EA7A to EA13A forms the focus of the stope outlines. The DK1A is principally advanced as a de-stress cut before massive stoping of the primary reef package can commence. As the MOS advances into the areas where the DK1A has been extracted, the old workings occasionally collapse into the MOS resulting in large rocks and old mine support reporting to the drawpoints. In areas where the de-stress cut is not essential the DK1A reef is therefore added to the MOS and mined as one package. The MOS design comprises two levels, a lower drilling and loading level and an upper drilling level. The faces are advanced in sequence on a retreat basis (where possible) to limit hangingwall deterioration from undercutting;
- **WOS** is principally conducted in the main part of the block in areas where the thickness is greater than 10m and the dip greater than 20°. The dip of this area of the orebody in Block 1 varies between 25° to 30°. WOS is also applied to exploit the EA7A to EA13A reef zones which are typically mined in a sequence from the lowest stope upwards. Each stope is drilled and loaded from a single strike drive at the base of the orebody and generally on a retreat basis, although hangingwall drives and additional adjacent loading tunnels have been experimented with. On depletion of the stope backfill is placed prior to repeating the cycle at the next higher level. Block 1 WOS comprises four sequenced stopes the last of which is located adjacent to the bottom MOS. The development drives are developed within the shadow of the de-stressed zone of the NRM;
- **DOS** is a recent innovation and has principally arisen following a need to improve upon drift and fill mining, originally planned in areas where reef packages were not anticipated to be as thick as currently encountered. The DOS design is principally the same as the WOS; and
- **NOS** is planned to be utilised in thin (less than 3m), steeply dipping (greater than 45°) reef packages, these areas are principally confined to discrete EA1 to the EA3 reefs below the main reef package. The mining method uses an upper and lower strike drift to define the limits of the orebody for drilling. The lower drift is used for up-hole drilling and ore loading. No NOS has yet been undertaken.

Drift and fill stoping is undertaken by mechanised short-hole drilling methods utilising development jumbo rigs. The mining is fully trackless in both drilling and loading operations. Drift and Fill is employed in narrow (less than 10m) and shallow dipping (less than 20°) reefs and is principally confined to reefs to the east of the WOS blocks. The method of stoping is principally to develop drifts, up to 60m in length and some 5m in width, on an apparent dip in the orebody. The drift can be widened by a further 3m on a retreat basis before backfilling. Adjacent drifts are only mined after backfilling of the depleted stope is complete.

Production drilling in the open stopes is undertaken with Tamrock Solo rigs that drill 64mm or 76mm diameter holes of up to 30m in length. The principal blasting agent is ammonium nitrate and fuel oil ("ANFO") delivered by a mobile charging vehicle. Emulsion is also used where necessary. The ore is loaded and transported by LHDs into orepasses located in the main crosscut pillar of Block 1. Tramming distances for Block 1 are typically less than 150m and, as operations advance away from primary infrastructure, trucks will be introduced to tram ore from the further blocks back to these orepasses. The ore is directed to permanent rock breakers and a 600mm grizzley located on the 278L before being fed to the crusher passes.

Fragmentation in the massive stopes is good providing there are no hangingwall problems. Recently, however big rocks associated with the relaxation of an upper stope through undercutting, are creating problems by breaking into the old NRM areas. Fragmentation issues are also enhanced by poor drilling practice. The future designs and stope schedules have been modified accordingly, specifically drilling to design specification.

NRM is undertaken by conventional methods using short-hole hand held hydro-power driven rock drills for blast-hole drilling and scraper winches for cleaning; support is by the use of mine poles, elongates and packs. NRM is preferred on the narrow DK1A reef located at the base of the Dreyerskuil Formation and at the subcrop to the Elsburg Formation. The DK1A occurs on an anticline where the dips range between 0° along the anticline axis and 20° on the east and west limb.

All level development for the massive stopes is undertaken by trackless methods using electric-hydraulic jumbo drill rigs, LHDs, mechanised roofbolting machines and explosive charging vehicles. Dump trucks are used for cleaning development ends at longer distances to the ore passes or old stopes. All access and stope drives are excavated 4.5m by 4.5m in dimension to accommodate mechanised vehicles and the designed ventilation volumes. Development advance is typically 4m per round. Sundry development includes slot raises, ventilation passes and rock passes and is generally undertaken by contractors.

A typical force-exhaust ventilation system is used for development and normal support is in the form of split sets. Shotcrete and/or 6m rope anchors are installed in certain development ends and excavations where necessary. Development waste backfilling has steadily increased over the last twelve months to its currently level of approximately 10ktpm. This assists the backfill requirement from the surface plant, which is limited to some 800m^3/day of cemented fill and also reduces unnecessary dilution.

Rock Engineering: The main Eldorado Fan is situated between 2,200m and 2,500m below surface at which depths the principal stress will be of the order of 60Mpa. SRK is generally confident that the de-stressing approach and massive mining methods proposed by Avgold do not present any geotechnical risks more significant than those normally faced in operations at this depth utilising the mining methods proposed.

Further, SRK has assessed the stability of the massive open stope designs proposed by Avgold and is confident that it will be possible to maintain stable openings of this size at the required depth below surface.

Rock engineering input has been taken into account in the mine planning and sequencing. Numerical modelling is carried out on a routine basis and the rock engineering department is adequately staffed with well trained and experienced personnel.

A Code of Practice to combat rockfall and rockburst incidents has been prepared in terms of the Mine Health and Safety Act. This document identifies potential hazards and also strategies to counteract these.

While seismicity is not expected to be significant at Target, a seismic monitoring system is due to be installed and SRK consider this prudent.

Ventilation: The ventilation design at Target Mine is based on an objective to achieve:

- an average wet bulb temperature of 25.5°C;
- a maximum wet bulb temperature of 27.5°C; and
- a reduced presence of pollutants from diesel fumes to comply with the requirements of the Minerals Act. The original design was to limit total diesel equipment to some 3.6MW.

The mean summer wet bulb and dry bulb temperature is 17°C and 27°C, respectively, whilst the virgin rock temperature at the underground workings is some 51°C.

Main intake ventilation is via the conveyor and vehicle declines, of 21m^2 and 15m^2 cross-section areas respectively. The return airway to surface is via No.5 Shaft that is connected to the return airway decline (27m^2 cross-sectional area) by both new and old raisebore holes together with airflow directed through old workings. The ventilation infrastructure limits the primary ventilation capacity to 250m^3/sec.

Mine cooling is required and effected by primary bulk coolers, located on 255L adjacent to the refrigeration plant and to a lesser extent by secondary coolers, tertiary coolers and the use of chilled service water closer to the underground workings. The planned capacity of the refrigeration system is some 28MW compared to an original design of 24MW. The refrigeration capacity comprises five 3MW units and three 4.5MW units. A ninth unit has also been installed for maintenance and servicing requirements. Two of the 4.5MW are still being commissioned and are expected to be operational during January 2004.

The main fans are located at the head of No.5 Shaft and are assisted by a number of underground booster fans located at 208L and 255L. Secondary ventilation is effected through various fans, ventilation ducting, ventilation passes, regulators and controls principally on a force-exhaust basis.

An increase in the number of working places and an increase in the total rated diesel capacity of the equipment at the mine (some 7.1MW versus the 3.6MW in the Feasibility Study) has led to a relaxation of the planned wet bulb temperature to some 27.5°C and an increase in the re-use of air in the workings. Current wet bulb temperatures experienced in the first quarter of 2004 average some 25.0°C and 27.7°C for development and stoping respectively. Once the two additional 4.5MW refrigeration plants are operational the cold water dam temperature is expected to decrease from the current 6.7°C to the 5°C originally planned; which should lead to an ability to maintain the new standard into the future.

LoM Plan: The latest LoM plan comprises ore from a combination of massive stoping, NRM and development ore. Ore from development contributes some 20% to the hoisted tonnage with the majority of the stoping tonnage derived from the three massive mining methods. NRM tonnage is planned to be undertaken according to the de-stressing requirements for the massive stoping programme.

The tonnage derived from massive mining stopes is planned to increase from 50ktpm to 75ktpm once additional stope faces are brought on stream. Individual MOS and WOS can at peak production produce in excess of 30ktm in any one month; the average is between 15ktpm and 20ktpm on an ongoing basis, thus requiring several concurrent stoping areas to make-up the target production.

Although the conveyor and hoist system can in theory handle 125ktpm the tonnage in the mine plan has been capped at 117ktpm. Provision is made in the LoM plan for some 10ktpm of waste backfilling; however separate waste hoisting is not practical and additional waste reports as dilution to the ore stream. Depending on the success of the waste backfilling, the spare hoisting capacity may be taken up by waste not backfilled.

A mine recovery factor ("MRF") has been historically applied at some 92% to account for gold losses occurring during blasting operations. The MRF has, however consistently exceeded 100% during the last twelve months and for the year-to-date averages 110%. SRK consider that the high MRF is related to a positive Block Factor associated with the higher-grade massive stopes that have been mined during this period.

There should be minimal gold loss associated with blasting of a package of reefs in a massive mining method and only a small provision for un-planned ore losses (principally associated with under-breaking of the long-hole stopes) should be included in Mineral Reserve modifying factors. Investigation of the stope volume reconciliation's indicates that un-planned ore loss averages 4%.

5.3.2 Free Gold Operations

Free Gold Operations: comprise a complex of nine mature operating underground mines, namely Tshepong BU, Phakisa BU, Bambanani BU, West BU, Eland BU, Kudu & Sable BUs and Nyala BU, Joel BU, St. Helena BU, various surface sources and tailings re-treatment operations. The individual business units range in planned operational life between 3 years and 19 years thus classifying the collective Free Gold Operations as a long-life asset.

Underground production is mainly sourced from shallow dipping tabular narrow orebodies, in particular, the Basal Reef supplemented by secondary orebodies such as the Leader Reef. The only exception to this is Joel BU, where production is sourced from the Beatrix-VS5 Composite Reef.

Access to and egress from the various reef horizons is via numerous surface shafts and various sub-vertical shafts at the deeper operations. The same access and egress is used for labour, material and production.

RoM ore is hoisted to surface and thereafter transported by conveyor, rail or road to one or more of the four metallurgical processing facilities (FS1 Plant, FS2 Plant, St. Helena Plant and Joel Plant). At shafts where the infrastructure permits waste to be hoisted separately, then it is conveyed to WRDs, generally situated close to shaft heads.

Mining methods at Free Gold Operations include variations on conventional narrow reef mining methods, such as scattered breast, down dip and remnant extraction. The longer-life BUs, Tshepong, Phakisa, Bambanani and Joel predominantly mine virgin ground at increasing depth with West BU, St. Helena BUs, Eland BU, Kudu & Sable BUs and Nyala BU extracting higher portions of remnants, including shaft pillars.

Mine ventilation systems at the Free Gold Operations are well established and have been extensively planned and operated in the past. Operating conditions vary in accordance with the scattered nature of the working places, the operating depths and the virgin rock temperature ("VRT") and control of airflow. The VRT varies from the greatest value at Bambanani B U (62°) to the minimum value at Joel BU (35.6°). Refrigeration plants are installed at Bambanani BU, Tshepong BU and Joel BU.

The control, containment and removal of fire generated toxins creates the greatest challenge to the ventilation team at Bambanani BU, this together with the sealing off old abandoned areas that no longer require cooling or ventilation but are currently getting both.

Geotechnical input at Free Gold Operations is typical of mining environments in the Free State Goldfield, where mining depths range from shallow-intermediate (Joel BU) to deep (Bambanani BU). Bambanani BU, Eland BU, Nyala BU, Kudu & Sable BUs are classed as seismically active operations with seismic monitoring systems installed and activity generally located in the vicinity of remnant operations and/or geological structures. External consultants ISSI supply all seismic systems, which are managed by GeoHydroSeis. Localised ground control issues include the impacts of a weak hangingwall member, the Khaki Shale on exposure and scaling in main orepasses. In such instances mine specific strategies have been implemented either through design modifications and/or remedial repairs.

Tshepong BU: Mining operations at Tshepong BU are conducted at average depths of 1,925m below surface and currently extend to 66L. The current LoM plan includes the sub-66L project, which involves the sinking of a twin decline system from 66L to 71L in order to access ground to the west of current operations. The sub-66L project is planned to commence during 2003 and be completed by 2007. Production build-up is the focal point of the latest LoM plan, following the introduction of Conops in the next two years and the additional production on completion of the sub-66L project.

Phakisa BU: The shaft at Phakisa BU was sunk to 79L and subsequently mothballed by Anglogold. Free Gold plans to complete the work and has initiated a project to complete sinking of the shaft by a further 178m to 81L. The shaft will be equipped to hoist men and material from surface to enable mining to be conducted to 77L and to allow additional rock hoisting to 55L, utilising an underground Koepe hoist. The ore and waste will be transferred at this level to Nyala BU for hoisting to surface. Project capital expenditure over the life of the BU is estimated to be ZAR540m and planned to commence in the second quarter of 2004.

Bambanani BU: Bambanani BU's mining operations extend between 1,200m and 3,000m below surface. Access to the deeper levels is via a surface shaft and then by a sub-vertical shaft, which extends to the lowermost 107L. Mining conditions are considered to be difficult due to low mining flexibility, distance of workings from the shaft, seismicity and high VRT's. The mine is prone to fires, a number of which are currently active and affecting production at both Bambanani BU and West BU.

West BU: The West BU, which was mothballed by AngloGold during the latter half of calendar 2001, was re-commissioned in 2002. Mining operations at West BU are small-scale and focused on Basal Reef pillars and some mining of the Leader Reef.

Eland BU, Kudu & Sable BUs and Nyala BU: The Eland BU and Nyala BU are interlinked on a number of levels and have connections with Tshepong BU, Welkom Operations and President Brand. Mining operations occur at average depths of 1,700m below surface and are focused on the extraction of remnant pillars and shaft pillars. The tramming distance and production continuity from scattered remnants at these mines offers the most challenging aspects to counter against rising operating costs.

St. Helena BUs: St. Helena BU comprises three operating BUs: No.2 BU, No.4 BU and No.8 BU. No.2 BU is currently operating on a marginal basis and is undergoing investigation as to its sustainable contribution in the immediate future. Mining is principally focused on remnant mining operations from Basal Reef pillars and a small contribution from the LDR at an average production rate of 50ktpm, this production is significantly below the shaft hoisting capacity. Mining is conducted at some 1,500m below surface.

The extensive historical mining areas, accessed via kilometres of interlinked tunnels, excavations and connections between the Free Gold and Welkom BUs led to an elevated risk of fire and an increase in illegal mining activity, and allegedly the two are linked. Management believe there to be a high number of illegal miners operating at the mine, which creates its own operational issues. Counter-measures are being given serious consideration, however due to the extensive nature of the abandoned underground workings, in which the activities are taking place and taking cognisance of a high-level of collusion, policing these illegal activities is considered to be extremely difficult.

Joel BU: Joel BU has two shafts: South BU and North BU. Currently mining operations are conducted solely from South BU at an average depth of 1,000m below surface, where a three-barrel decline system extends to the 117L. A holing to North BU from 100L provides a second means of egress. North BU was partially sunk to 20m below 145L and the primary sinking equipment is still in place. The LoM plan assumes commencement of the installation of hoisting facilities in the North BU during 2004, to be operational by 2005. Access to ground below 121L is currently achieved via a winze from South BU in order to confirm grades. Although production is small the working places are far from the shaft and the transport of men, material and rock is complicated via the belted inclines.

The Mineral Reserves as reported in Section 4 and depleted to generate the cash flows presented in Section 12 and Section 13 are deemed by SRK to be appropriate and both technically and economically achieveable, however certain aspects mainly relating to operational management may impact individually or collectively on the execution of mining operations at Free Gold Operations, as follows:

- minimising the risk of further underground fires at Bambanani BU and West BU and managing appropriate fire mitigation measures at the other highly scattered remnant operations, particularly where illegal mining is known to occur;
- timely completion of the four main capital projects, namely:
  - the completion of the sub-66L project at Tshepong BU, which will enable access to ore from the deeper levels;
  - the completion of the Phakisa Project;
  - the completion of the upgrade to the shaft at Nyala BU to enable the extraction of the shaft pillar and the hoisting of rock to surface from the Phakisa Project; and
  - the completion and commissioning of Joel BU's North shaft;
- continuation of infrastructure rehabilitation programmes, specifically to address ventilation conditions and orepass integrity at Bambanani BU. Development waste is hoisted with mined ore;
- continued vigilance with respect to minimising seismic activity, specifically with respect to:
  - remnant extraction at Bambanani BU; and
  - shaft pillar extraction programmes at the Nyala BU;
- the achievement of additional unit cost reductions at Free Gold Operations above those realised through post the formation of Free Gold; and
- the realisation of the planned productivity improvements associated with the introduction of Conops, which is still subject to negotiation with the NUM.

5.3.3 Harmony Free State Operations

Harmony Free State Operations comprise a complex of nine mature operating mines: Brand BU No.1/3, Brand No.5 BU, Harmony No2 BU, Merriespruit No1 BU, Merriespruit No.3, BU Masimong No.4 BU, Masimong No.5 BU, Saaiplaas No.3 BU and Unisel No.1 BU, which are managed as individual business units. Collectively Harmony Free State Operations will continue for 15 years, thus classifying Harmony Free State Operation as a long-life asset.

Underground production is mainly sourced from shallow dipping tabular narrow orebodies, principally the Basal Reef and Leader Reef, with increasing contributions from the 'A' Reef, 'B' Reef and Middle Reef as the mines near depletion. The RoM contribution from specific reefs plays an important role in achieving the planned cash flows taking cognisance of the variation in insitu grade and the highly channelised nature of the secondary reef horizons.

Access to and egress from the reef horizons is from surface shafts. The shafts are utilised for men, materials and production. Mining operations are conducted at depths between 1,500m and 2,200m below surface. Mining is undertaken at Harmony Free State Operations both in virgin areas and through the extraction of various remnants and pillars and the proportion of remnant to virgin mining varies between 20% and 40% at the different mines.

Current underground mining is being conducted at some 426ktpm. Access for rock hoisting and the provision of ventilation, services, men and materials is provided through each of the surface shafts although the ore from Brand BU No.3 is transported underground to Brand BU No.1 for hoisting to surface as mining is being conducted on the shaft pillar. Underground waste is generally separated from the ore however where this is not the case the proportion of waste is relatively low.

Mining operations at Harmony Free State Operations are conducted principally by conventional narrow stoping methods with tracked haulages on a 2-shift basis although a move to Conops is also being considered. Stope production is supplemented by vamping of old gold and contractors are typically employed for this and for other non-core activities such as the provision of permanent support. No mining is currently being conducted at Brand No.2 BU, however contract mining is currently being considered.

The operations are mature and small-scale projects and investigations are predominately focused on extending mining life and/or lowering the cost of production at the various mines. Increased production is being planned from reefs considered to be secondary to the Basal Reef at certain BUs; these reefs include "A" Reef, "B" Reef, Leader Reef and Middle Reef.

The Masimong BU Expansion Project provides for the increase in production and grade at the Masimong No.5 BU through the development of a significant area of Basal Reef to the east and west

of the current workings. No material increase to the primary infrastructure is required and development of the new raise lines is anticipated to commence within the next two to three years.

A limited number of surface sources of ore exist at the Harmony Free State Operations in the form of WRDs and tailings dams and these are processed at production levels dictated by economic conditions. Ore is transported by a number of modes to one of the three process plants, Central Plant, Virginia Plant and the Saaiplaas Plant.

Mine ventilation systems at Harmony Free State Operations are well established and have been extensively planned and operated in the past. Due to the low tonnages the ventilation infrastructure is considered adequate for the relatively shallow operations, thus SRK consider there to be no material ventilation issues.

Due to the shallow depths of operations, seismicity and rock mechanics aspects are, in general, not considered to be a serious concern and seismic events although experienced are infrequent. The extraction of the Harmony No.2 BU shaft pillar is in progress and total extraction is currently planned. Mining is being undertaken in conjunction with sufficient geotechnical consideration and design and the area is being monitored by an ISSI seismic system. Although the seismic impacts are adequately recognised by management and external consultants have reviewed the mining practice, the high extraction ratio still presents a risk to the planned extraction.

The Mineral Reserves as reported in Section 4 and depleted to generate the cash flows presented in Section 12 and Section 13 are deemed by SRK to be appropriate and both technically and economically achieveable, however certain aspects mainly relating to operational management may impact individually or collectively on the execution of mining operations at Harmony Free State Operations, as follows:

- achievement of planned production, which historically has fallen short at the operations where the contribution from remnant areas is material;
- maintaining the planned blend of primary reef extraction to secondary reefs, both in terms of ore tonnage and head grade; and
- achievement of planned development targets to ensure that sufficient flexibility is achieved, specifically for the highly channelised reefs, which have historically proven difficult to work in terms of sustaining the planned grade over the budgeted period.

5.3.4 Welkom Operations

Welkom Operations has six operating BUs: No.1 BU, No.2 BU, No.3 BU, No.4 BU, No.6 BU and No.7 BU. Mining operations at Welkom Operations occur at average depths of between 1,000m and 1,200m below surface and, collectively, have a life of eight years, thus classifying Welkom Operations as a medium-life asset.

Underground production is mainly sourced from shallow dipping tabular narrow orebodies; in particular the Basal Reef with smaller quantities from the higher-grade channels of the Leader Reef located some 15m above the Basal Reef. Access to the reef horizons, including men, materials and production is currently from surface shafts and sub-vertical shafts. RoM ore at all operations is hoisted to surface and thereafter transported directly to Free Gold Operations FS1 Plant. Underground waste is not separated from the ore due to the economic viability of re-equipping waste handling facilities and the relatively low development tonnage. RoM ore delivered to the plant from contractor operations is treated separately for apportionment purposes. The trucks are weighed and the ore delivered is sampled on the conveyor belt to provide an estimate of the gold on surface for each BU.

Mining at Welkom Operations is undertaken by variations on conventional narrow reef mining methods including breast and "undercut" mining. The latter is utilised by Welkom Operations to enable mining in areas where the strong quartzite middling between the Basal Reef and the weak Khaki Shale is less adequate. At BU No.1, where the majority of production is and will continue to be concentrated, the undercut mining method is responsible for some 60% of total production. Core mining activity at BU No.1 is conducted directly by Welkom Operations, while at all other BUs contractors undertake mining and reclamation activities. Mine ventilation systems at Welkom Operations are well established and have been extensively planned and operated in the past. Due to the low tonnages and the large volumes of air that are being circulated in the various sections, the air ratios are considerably greater than industry norms. In SRK's opinion, the installed ventilation and refrigeration infrastructure is adequate to meet all planned requirements.

Fires at Welkom Operations are considered by SRK to represent a material issue and whilst causes are reported as being unknown, the presence of illegal miners is believed to increase the risk of fires. Illegal mining is an increasing phenomenon in Free State Goldfield and is particularly concentrated in high carbon rich remnant panels as found within the Welkom Operations.

SRK and ISSI, which are retained on a contractual basis, provide geotechnical input at Welkom Operations. ISSI provide a seismic monitoring service and SRK is responsible for geotechnical input in all other respects. The main geotechnical issues at Welkom Operations include those typically associated with remnant mining operations and the influence of the weak Khaki Shale.

Mining on the Basal Reef at Welkom Operations is characterised by a largely mined-out orebody extending over vast areas, the extraction of numerous small and highly stressed remnant pillars, an environment of intense faulting and numerous intrusive features, the moderate depth of the workings and the concomitant high levels of induced stress. The primary rock engineering issues are thus those related to the protection of personnel and infrastructure and the maintenance of acceptable levels of production in the face of sometimes fairly adverse mining conditions.

A thin quartzitic layer and then weak Khaki Shale, which varies in thickness from a few centimetres up to many metres, overlie the Basal Reef. This weak and talcose horizon has the capacity to yield, transferring stress away for immediate abutments. Depending on the thickness and integrity of the Basal quartzite middling this creates hangingwall control problems in the areas where it is undercut, which vary from moderate to severe. In such situations mining discipline is critical to ensure safe working conditions and sustained production with minimal dilution.

The Mineral Reserves as reported in Section 4 and depleted to generate the cash flows presented in Section 12 and Section 13 are deemed by SRK to be appropriate and both technically and economically achieveable, however certain aspects mainly relating to operational management may impact individually or collectively on the execution of mining operations at Welkom Operations, as follows:

- minimising the impacts of illegal miners and potential fire risks; and
- minimising economic risk through further cost control.

5.3.5 West Wits Operations

West Wits Operations comprise a complex of six mature mines: Elandsrand BU, Deelkraal BU, Cooke No.1 BU, Cooke No.2 BU, Cooke No.3 BU and Doornkop BU, which are managed as individual business units. Underground operations at the Cooke No.4 BU and the open pit mining at Lindum have ceased. The West Wits operations have a collective life of 19 years, thus classifying West Wits Operations as a long-life asset.

Underground production is mainly sourced from shallow dipping tabular narrow orebodies, including the Elsburg Reef and Upper Elsburg Reef, VCR and Kimberley Reef. Mining operations at Elandsrand BU and Deelkraal BU focus on extraction of VCR, those at the Cooke BUs are principally on the Elsburg and Upper Elsburg Reefs and the Kimberley Reef at Doornkop BU. Access to the reef horizons including men, material and production is from surface shafts. Mining operations at the Elandsrand BU have been conducted at depths between 1,600m and 2,800m below surface with future production planned at some 3,300m below surface and 2,750m below surface at Deelkraal BU. At the Cooke BUs and Doornkop BU, mining has historically been conducted between some 600m and 1,260m below surface. Mining is undertaken at West Wits Operations both in virgin areas and through the extraction of various remnants and pillars, although the proportion of remnant to virgin mining varies from some 50% – 80% at the different mines.

Current underground mining is being conducted at some 433ktpm. Access for rock hoisting and the provision of ventilation, services, men and materials are provided through each of the surface shafts. Underground waste is generally separated from the ore, although waste development in the remnant mining areas is relatively low.

Mining operations at West Wits Operations are conducted principally by conventional narrow stoping methods with tracked haulages on a 2-shift basis. A move to continuous operations ("Conops") is being considered at a number of mines and negotiations are currently being conducted with the NUM. A semi-trackless mining method is practiced at Cooke No.3 BU, which accounts for only some 10% of the production at this BU. The method combines conventional stoping with LHD and truck cleaning on reef drives as opposed to tracked haulages. It is reported that the method is being phased out for cost reasons. A trackless and semi-trackless mining method is practiced at Doornkop BU which in total accounts for some 40% of the mine's production. Stope production is supplemented by vamping operations and contractors are typically employed for this and for other non-core activities, such as the installation of permanent support.

A number of projects exist to extend mining life and/or lower the cost of production at the various mines including: a shaft deepening project at Elandsrand; the development to the Kimberley Reef at Cooke No.1 BU in three target areas with expected raise development in the next six months; and the Doornkop feasibility study. The sub-Shaft Deepening Project at Doornkop BU involves the

deepening of the main shaft from 132L to 212L; this following the completion of a raise bore hole and the re-equipping of the sub-vertical shaft. The project is anticipated to take between four and five years to complete.

A number of surface sources exist at the West Wits Operations in the form of WRDs and tailings dams. Production from surface sources typically accounts for a third of the total rock currently processed and contributes 10% of the total gold produced. The Deelkraal Plant is dedicated to processing the surface sources and certain waste development from the underground operations at West Wits Operations. Ore is transported by a number of modes to one of the three process plants dedicated for ore treatment: Elandsrand Plant, Cooke Plant and the Doornkop Plant.

Mine ventilation systems at West Wits Operations are well established and have been extensively planned and operated in the past. Due to the low tonnages the ventilation infrastructure is considered adequate, however the depth at a number of the shafts and the scattered nature of the remnant mining activities requires that ventilation and refrigeration management remains a core activity.

Seismicity and rock mechanics aspects are of a particular concern at Elandsrand BU and Deelkraal BU due principally to the greater depth of mining. Mining at Elandsrand is being conducted on a sequential grid basis, which has successfully improved regional stability. Current stope support consists of pre-stressed elongated timber props and approximately 50% of all stopes are backfilled. The width of stabilising pillars for future mining is based on the assumption that all stopes will be backfilled, although it is not apparent that there is sufficient backfill to achieve this objective. The staffing level and qualification appears adequate at Elandsrand BU and a system of geophones is used to monitor seismicity at the mine. Although a sequential grid design should be fully utilised at Deelkraal BU scattered and long-wall mining is still being used in conjunction with large mining spans. SRK consider that inadequate regional support is the main cause for an increase in seismicity at the mine. On certain levels on the VCR footwall, SRK consider the development is too close to the reef and this is likely to lead to a deterioration of the excavations during over stoping activities. Precautions need to be taken.

The Mineral Reserves as reported in Section 4 and depleted to generate the cash flows presented in Section 12 and Section 13 are deemed by SRK to be appropriate and both technically and economically achieveable, however certain aspects mainly relating to operational management may impact individually or collectively on the execution of mining operations at West Wits Operations, as follows:

- the lowering of working costs, improvement in productivity and increased mining flexibility;
- the realisation of the planned productivity improvements associated with the introduction of Conops which is subject to negotiation with and approval by the NUM;
- ensuring that sufficient backfill is able to be placed in the stopes at the Elandsrand to adhere to the planned mine design with regard to regional stability when mining at increased depth. If insufficient backfill is placed then SRK consider that the width of the stabilising pillars should be reviewed;
- ensuring that the move to a sequential grid mining is made at Deelkraal and a greater emphasis is placed on the incorporation of geotechnical considerations with regard to the planning and design is made; and
- controlling capital expenditure and the timely completion of the sub-Shaft Deepening Project at Doornkop BU and other projects.

5.3.6 Evander Operations

Evander Operations comprise a complex of six mature shafts: Evander No.2 BU, Evander No.5 BU, Evander No.7 BU, Evander No.8 BU and Evander No.9 BU, which are managed as business units and the Rolspuit and Poplar projects. Operations at the Evander No.3 BU have ceased and any remaining mining from the No.1 BU and No.3 BU areas is affected through No.2 BU. The Evander Operations have a combined life of 15 years, thus classifying Evander Operations as a long-life asset.

Underground production is sourced from the shallow dipping tabular narrow orebodies comprising the Kimberley Reef. Numerous sills and dykes complicate mining layouts, whilst the reef dips typically at some 20° to 25° at most of the BUs increasing to some 40° in certain areas at Evander No.8 BU. Mining at Evander Operations, in general, is relatively shallow and conducted at depths between 500m and 2,000m below surface. The deepest mining is principally undertaken at Evander No.8 BU from the No.2 BU decline area. Mining is undertaken at Evander BUs both in virgin areas and through the extraction of various remnants and pillars. The proportion of remnant to virgin mining varies from some 30% to 60% at the different BUs.

Current underground mining is being conducted at some 185ktpm (ore and waste) with production from No.8 BU contributing the most at some 60ktpm of ore. Access for rock hoisting and the provision of ventilation, services, men and materials is provided through each of the surface shafts although rock from No.8 BU is transported underground on 15L for hoisting at No.7 BU, located adjacent to the process plant. Underground waste is generally separated from the ore, although waste development in the remnant mining areas is relatively low.

Mining operations at Evander Operations are conducted by conventional narrow stoping methods with tracked haulages on a two-shift basis, although a move to Conops is also being considered at a number of the sections. Stope production is supplemented by vamping operations and contractors are typically employed for this and for other non-core activities such as the provision of permanent support. Mining is characterised by scattered workings often a long distance from the shaft stations and in general, old and poorly maintained shaft and engineering infrastructure and insufficient engineering spares. At a number of BUs there is a reliance on single pumping columns and systems.

A principal project at Evander Operations is the Rolspruit Deep's Project, which considers the exploitation of deeper resources of the Kimberley Reef adjacent to No.8 BU, through either the installation of a twin shaft system, from surface or a twin sub-vertical shaft system at No.8 BU. Harmony undertook a project feasibility study commencing July 2002, based on the provision of a men and material shaft and a rock and ventilation shaft to 267L, some 2,670m below surface, to exploit eight ore zones between 1,890m and 2,590m below surface at some 200ktpm (ore and waste) over some 15 years. The study estimated capital expenditure of some ZAR5,200m and projected an IRR of some 9% and 12% post and pre-tax, respectively. The project is considered to be marginal, but of relatively low technical risk, hence the consideration of the twin sub-vertical shaft alternative from No.8 BU as an optimisation. The incremental value at the Base Case discount factor to the Evander Tax Entity is negligible and the project go-ahead will be directly linked to the availability of funding.

The Poplar Project considers the green-fields development through installation of a twin shaft system to some 1,200m below surface to access ore some 20km from the existing Evander Operations. SRK consider the level of this study to be conceptual.

Surface sources at Evander Operations are only processed to enable the plants to operate efficiently. Ore is transported to either the Kinross or Winkelhaak process plants for treatment.

Mine ventilation systems at Evander Operations are well established and have been extensively planned and operated in the past. Due to the low tonnages the ventilation infrastructure is considered adequate and in conjunction with the relatively shallow operations, ventilation concerns are considered limited.

Seismicity and rock mechanics aspects are in general, due to the shallow depths, not considered to be a serious concern and seismic events, although experienced, are infrequent. The partial extraction of the Evander BU No.8 shaft pillar and the over-stoping of the decline area to the north can be considered to be a risk in terms of seismicity at the mine. A risk assessment has been conducted on the overall strategy and SRK consider that in order to ensure that the planned extraction is achieved a greater emphasis needs to be placed on the individual stope sequencing and strategy.

The Mineral Reserves as reported in Section 4 and depleted to generate the cash flows presented in Section 12 and Section 13 are deemed by SRK to be appropriate and both technically and economically achieveable, however certain aspects mainly relating to operational management may impact individually or collectively on the execution of mining operations at Evander Operations, as follows:

- improving profitability through the lowering of working costs and improvement in productivity;
- the realisation of the planned productivity improvements associated with the introduction of Conops, which is subject to negotiation with and approval by the NUM;
- a more detailed strategy with regard to the partial mining of the shaft pillar at Evander No.8 BU and the influence of geological structures on ground control and seismicity;
- the commitment of sufficient funds to improve the spares and maintenance situation at the various shafts and a focus on improved maintenance practices, particularly with respect to No.2 BU, No.5 BU and No.8 BU; and
- a positive decision on the development of the Rolspruit and Poplar projects subsequent to the completion of the necessary feasibility studies.

5.3.7 Orkney Operations

Orkney Operations comprise a complex of six mature BUs: No.1, BU No.2 BU, No.3 BU, No.4 BU, No.6 BU and No.7 BU, which are managed as a business unit. No.5 BU was closed in July 2002, principally due to depletion of reserves and for seismic reasons. These operations have a combined life of eight years, thus classifying Orkney Operations as a medium-life asset.

Underground production is mainly sourced from shallow dipping tabular narrow orebodies, including the Vaal Reef, VCR and Elsburg Reefs. Mining operations at No.1 BU, No.2 BU and No.4 BU focus on extraction of the Vaal Reef, the VCR at No.3 BU and the VCR and Elsburg Reefs at No.6 BU and No.7 BU. Access to the reef horizons for men, material and production is via surface shafts. Production at Orkney Operations, particularly on the Vaal Reef, is mainly derived from the extraction of a host of remnant pillars. By their nature these are small, isolated, scattered and difficult pieces of ground situated at great depth and surrounded by significant mined-out areas.

Mining is undertaken at average depths of between 1,600m and 2,000m below surface. Access for rock hoisting and the provision of ventilation, services, men and materials is provided through each of the surface shafts. Underground waste is not separated from the ore due to the economic viability of re-equipping waste handling facilities and the relatively low development tonnage. Orkney Operations currently has no surface rights to dump waste material and as such would have to seek permission from AngloGold to utilise their WRDs in the event of Orkney Operation's management implementing waste separation.

Orkney Operations and VRO's BUs are interlinked on a number of levels and as a consequence share access ways. In certain instances VRO supply other production services including, compressed air, water and power. RoM ore is transported from the individual shafts to the No.1 Gold Plant via VRO's surface transport network. RoM ore from No.6 BU areas is hoisted at the No.7 BU where it is fed directly by conveyor into the plant.

At Orkney Operations Harmony has entered into various agreements with VRO, which govern right of access, in addition to toll treatment the supply/sharing of production services. Further, major critical spares are pooled between the two groups, however both parties maintain, at their own cost, monitoring systems for emergencies such as fire, flood and seismic events.

Mining methods at Orkney Operations include scattered breast mining methods, up-dip mining, remnant extraction, pillar mining and vamping. Contractor operators are utilised for non-core activities such as development, support and vamping, with stoping undertaken by Orkney Operations personnel. Stope support is with conventional sticks and packs, however at No.2 BU backfill is utilised which is supplied by VRO.

Mine ventilation systems at Orkney Operations are well established and have been extensively planned and operated in the past. Due to the low tonnages and the large volumes of air that are being circulated in the various sections, the air ratios are considerably greater than industry norms. In SRK's opinion, the installed ventilation and refrigeration infrastructure is adequate to meet all planned requirements.

GeoHydroSeis, Rockcon Services and SRK are retained on a contractual basis to provide geotechnical input at Orkney Operations. GeoHydroSeis provide a seismic monitoring service. Rockcon Services are responsible for geotechnical input to No.6 BU, No.7 BU and a portion of No.3 BU. SRK is responsible for geotechnical input in all other areas.

The main strategic rock engineering issue faced by management at Orkney Operation's is the maintenance of acceptable levels of production out of highly stressed, seismically active pillars and remnants. Shaft pillar extraction is in progress at No.2 BU and No.4 BU.

The Mineral Reserves as reported in Section 4 and depleted to generate the cash flows presented in Section 12 and Section 13 are deemed by SRK to be appropriate and both technically and economically achieveable, however certain aspects mainly relating to operational management may impact individually or collectively on the execution of mining operations at Orkney Operations, as follows:

- continued vigilance with respect to minimising seismic activity;
- ensuring economic viability during the latter half of the LoM plan at significantly reduced production rates when only No.6 BU and No.7 BU are operating; and
- continuation of and adherence to the current agreements between Orkney Operations and VRO so as to ensure uninterrupted production.

Other than increases in Mineral Reserves due to reduction in operating costs and increased extraction, SRK consider there to be no other significant opportunities at Orkney Operations.

5.3.8 Kalgold Operation

Kalgold Operations comprise an open pit mine that has a life of approximately four years, thus classifying Kalgold Operations as a short-life asset.

Several steeply dipping ore zones exist at Kalgold Operations and current mining operations are focused on the D-Zone, which has a strike length of 1,400m and a width between 15m and 40m

Mining operations are conducted by normal open pit methods by the use of excavators and trucks. The ore mining and waste stripping is undertaken by a contractor. The current term of the contract is five years commencing in 2001 and the contractor is reimbursed on a rate per cubic metre. Ore is trucked to the plant from either the North-pit or South-pit and stockpiled according to various grade categories before being blended for treatment. The short-term and strategic stockpiles are re-handled using a wheel loader.

The business plan is based on a pit optimisation that seeks to maximise the NPV of the D-Zone. It is planned to make the high-wall steeper following the installation of support anchors enabling access to more high-grade ore. Waste stripping requirements are elevated in the first six months of the plan beyond which stripping requirements will reduce to levels comparable with historical values. A number of ramp modifications to the pit exits and location of switchbacks are planned by Kalgold Operations in order to reduce waste hauling costs. The final pit depth is currently planned at some 155m and 235m below surface for the North-pit and South-pit, respectively and further mining of the orebody by underground methods may be considered.

The Mineral Reserves as reported in Section 4 and depleted to generate the cash flows presented in Section 12 and Section 13 are deemed by SRK to be appropriate and both technically and economically achieveable, however certain aspects mainly relating to operational management may impact individually or collectively on the execution of mining operations at Kalgold Operations, as follows:

- improvement in working costs and productivity;
- maintenance of slope stability and ensuring a continuous supply of ore at the planned grade; and
- the observance to strict grade control guidelines and ore reserve management.

5.3.9 Harmony Australian Operations

Harmony Australian Operations comprise two principal operations, namely Mt. Magnet & Cue and South Kalgoorlie, mining from various underground and open pit mines. The Mt. Magnet operations comprise a number of open pits, decline operations at Morning Star and Hill 50 and the processing of surface stockpiles. Open pit, underground and surface stockpiles are treated at similar production rates. The Cue operation comprises a number of open pits at Big Bell, Cuddingwarra, Golden Crown and Tuckabianna. The Big Bell underground operation was recently closed. These operations have a combined life of approximately seven years, thus classifying Mt. Magnet & Cue operations as a medium-life asset.

The South Kalgoorlie Operations comprise the Jubilee and New Celebration facilities, the Mt. Marion underground mine and various open pits. These operations have a combined life of three years, thus classifying South Kalgoorlie operations as a short-life asset.

At Mt. Magnet underground mining is the principal contributor to gold production with open pit mining restricted to the near surface oxidised resources. The underground and open pit mines are contractor operated, however mine personnel undertaken the planning and mine design. The side slopes of the open pit mines are steep, at some 60° to 70°. A divergence in plan has resulted through problems with the licensing and approvals at one of the open pits although alternative production has been sourced. Underground access is via separate declines at the Morning Star and Hill 50 mines, installed at a gradient of 1 in 7 and accessed from portals close to the base of the open pits. The pit bottoms are 900m and 1,000m deep, respectively. An up-hole benching method is employed at both mines in the steeply dipping orebodies from levels installed at 25m vertical intervals at Morning Start and 30m at Hill 50. The ore is loaded by LHDs into trucks that transport the ore to surface, which is then stockpiled before treatment. The depleted stopes are backfilled with development waste. Operations at Hill 50 are currently restricted due to a collapse of a main return airway and this together with a planned vertical advance rate of 100m per year underground production are currently below budget.

The numerous open pit mines at Cue are considered small and have short lives. Contractors are employed to mine the ore and waste and RoM ore is transported from the mine to the plant using road trains.

The Jubilee and New Celebration operations have been combined to form South Kalgoorlie Operations. Ore contribution is split: 75% from open pit mining; 20% from underground mining; and the remainder from the low-grade surface stockpiles. The underground steeply dipping orebody at Mt. Marion is accessed via a decline from surface and extends along strike some 250m to 300m. A sub-level caving system has recently been introduced utilising mechanised drilling and loading equipment producing at 45ktpm. The average mining depth is relatively shallow at some 500m below surface; however mineralisation has been demonstrated to some 1,000m below surface. The planned future conditions and production rates are comparable to that currently achieved and no material concerns are noted by SRK.

Open pit mining at South Kalgoorlie is concentrated at the Trojan and Golden Ridge. Mineral Reserves at Trojan will be depleted during 2003. Numerous un-planned slips and failures at Golden Ridge are resulting in significant under-performance in terms of ore production and flatter slope angles, necessitated by the failures, have resulted in significant additional stripping.

Mine ventilation systems at the underground operations at Mt. Magnet and Mt. Marion are well established and have been extensively planned and operated in the past. Apart from unexpected airway failures, thought to be associated with seismicity, no material ventilation concerns are anticipated by SRK. The increasing depth of operations coupled with high extraction ratios and massive mining methods have led, it is reported, to a number of seismic events at the underground operations and a focus on control and monitoring is being made in an effort to limit adverse production impacts. Seismicity and rock mechanics aspects are, considered by SRK to be, of a low risk although the costs of increased support may impact on profitability.

The Mineral Reserves as reported in Section 4 and depleted to generate the cash flows presented in Section 12 and Section 13 are deemed by SRK to be appropriate and both technically and economically achieveable; however certain aspects mainly relating to operational management may impact individually or collectively on the execution of mining operations at Harmony Australian Operations to diligently manage production, cost, safety and dilution aspects at the Mt. Magnet underground operations at the deeper mining levels.

5.4 Contribution to LoM Production

The following table presents the projected contribution of various production sources to the individual LoM plans for each operation making up the total Mineral Reserves for the Mining Assets.

Table 5.1 Mining Assets: Production Contribution to LoM Plans

MINING ASSETS	Tonnage (kt)	Grade (g/t)	Content (koz)
Total Target Operations – Target Mine			
LoM Ore ug	19,944	6.6	4,242
Total to Plant	**19,944**	**6.6**	**4,242**
Total Free Gold Operations			
LoM Ore ug	68,244	7.1	15,647
LoM Vamping	892	4.5	129
LoM SS	10,361	0.7	240
Total to Plant	**79,497**	**6.3**	**16,016**
Total Harmony Free State Operations			
LoM Ore ug	42,343	4.6	6,267
LoM Vamping	1,431	3.3	152
LoM SS	19,244	0.4	265
Total to Plant	**63,018**	**3.3**	**6,684**
Total Welkom Operations			
LoM Ore ug	3,071	3.8	376
LoM Vamping	97	4.8	15
Total to Plant	**3,168**	**3.8**	**391**
Total West Wits Operations			
LoM Ore ug	64,112	6.6	13,557
LoM Vamping	5,714	5.2	955
LoM SS	2,642	1.3	112
Total to Plant	**72,468**	**6.3**	**14,625**
Total Evander Operations			
LoM Ore ug	18,001	5.5	3,182
LoM Vamping	1,525	6.2	304
Total to Plant	**19,520**	**5.6**	**3,486**

MINING ASSETS		Tonnage (kt)	Grade (g/t)	Content (koz)
Total Orkney Operations				
	LoM Ore ug	5,666	4.9	888
	LoM Vamping	90	3.5	10
	Total to Plant	**5,756**	**4.9**	**898**
Total Kalgold Operations[1]				
	LoM Ore op	4,986	2.3	365
	LoM SS	994	1.2	38
	Total to Plant	**5,980**	**2.1**	**403**
Total Mt. Magnet Operations				
	LoM Ore ug	6,822	6.0	1,313
	LoM Ore op	4,500	2.1	302
	LoM SS	2,282	1.0	70
	Total to Plant	**13,604**	**3.9**	**1,685**
Total South Kalgoolie Operations				
	LoM Ore ug	1,522	4.6	223
	LoM Ore op	1,233	2.3	92
	LoM SS	428	0.8	11
	Total to Plant	**3,184**	**3.2**	**326**

[1] The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

6. METALLURGY

6.1 Introduction

This section includes discussion and comment on the metallurgical processing aspects associated with the Mining Assets. Specifically, detail and comment is given on the process metallurgy and process engineering aspects relating to plant capacity, metallurgical performance and metal accounting practices as incorporated in the LoM plans.

6.2 Processing Facilities

Metallurgical processing facilities at the Mining Assets include fifteen operating plants in South Africa with a combined milling and treatment capacity of 2,660ktpm and 2,760ktpm, respectively, plus four operating plants in Australia with a combined milling capacity of 660ktpm. The plants currently process ore from underground and open pit mining operations, low-grade stockpiles, WRDs, reclaimed slime and a variety of other surface accumulations. Schematic flow diagrams for each of three primary plant types that are operated by the Companies are provided in Figures 6.1 to 6.3 inclusive at the end of this Section.

6.2.1 Target Operations – Target Mine

Target Plant was commissioned towards the end of 2001 and currently treats only underground ore. The process route comprises primary crushing, open circuit primary SAG milling, secondary ball milling closed with hydrocyclones, thickening, cyanide leaching, CIP adsorption, elution, electrowinning, smelting and tailings disposal. The milling circuit incorporates gravity concentration, the concentrates from which are processed via intensive cyanidation and electrowinning. Gold bullion is despatched to the Rand Refinery.

Target Plant was designed with a capacity of 105ktpm (1,260ktpa). Certain sections of the plant were sized for a future expansion to 160ktpm (1,920ktpa), however this capacity is not required for the current LoM plan. Maximum projected LoM throughput (1,285ktpa) slightly exceeds the design capacity. The ability of the plant to operate continuously at the design capacity has not yet been proven, largely due to ore supply constraints. Irrespective of the feed from mining activities, it is noted that the SAG mill feed rate and the ball mill product size has rarely achieved design specification. The reasons for this are still receiving attention but indications are that feed characteristics and the proportion of waste in the feed differ from design assumptions. Notwithstanding the coarser milled product size, overall recovery has generally exceeded design expectations. This has partly been assisted by the higher than planned grades being realised but in the main shows recovery to be less sensitive to grind than originally anticipated. This significantly compensates for the below specification mill performance. The risk of not achieving projected throughput, albeit at a coarser milled product size, is considered to be low.

Overall leach/CIP recovery, as already mentioned, generally exceeds design expectations, despite the leach component being significantly lower than expected. The reasons for the lower leach recovery are receiving attention, with initial indications suggesting the presence of a mild reversible preg robber in the ore. Overall recovery has however; consistently exceeded the projection of approximately 97% and this is likely to continue, with a slight drop off as the head grade reduces towards the end of the mine life.

Plant housekeeping was observed to be of a high standard. Being new, the plant is generally in good condition both mechanically and structurally and subject to adequate ongoing maintenance should meet the LoM requirements.

6.2.2 Free Gold Operations

FS1 Plant processes underground ore, waste rock and various surface accumulations, delivered by either road or rail. The plant was commissioned in 1986 and comprises three independent modules, each consisting of four feed silos, two RoM mills, two conventional thickeners, cyanide leach, carbon in pulp ("CIP") adsorption, AARL elution, zinc precipitation and smelting. Loaded carbon is also received from Joel for elution and regeneration.

The fully autogenous reef milling capacity is 390ktpm. It is proposed to increase mill throughput to 440ktpm through the addition of steel ball grinding media, at which stage leach/CIP becomes limiting. Maximum projected LoM throughput 5,006ktpa. Projected gold recoveries from metal contained in reef and waste of 97% and 88% respectively, with due consideration for head grade effect over the LoM period, are in line with recent performance.

SRK consider the plant to be generally in good condition both mechanically and structurally and subject to adequate ongoing maintenance should meet the LoM requirements. FS1 plant is projected to be in use until 2023 when underground operations cease.

FS2 Plant is largely dedicated to the treatment of surface sources, although it does toll treat reef on behalf of Welkom Operations and also processes ore from Eland BU and Kudu & Sable BU. The plant was commissioned in the early 1950s and employs conventional technology of that era comprising crushing, ball and pebble milling, thickening, leaching, filtration, zinc precipitation and smelting.

FS2 has a reef milling capacity of 300ktpm, which reduces to its current operating capacity of approximately 270ktpm when processing reef and waste. Maximum projected LoM throughput of 3,240ktpa of reef and waste (milling) and 3,600ktpa of reef, waste and slimes (treatment). Overall recovery is a function of the mix of feed ore, as surface sources tend to have a lower recovery than underground reef. SRK consider that the projected reef recoveries of approximately 95%, WRD recoveries of approximately 80% and slime recoveries of approximately 60% are appropriate considering the recent operating performance.

Considering its age, FS2 appears to be in a fair condition, both mechanically and structurally. Filter maintenance is good but this will have to be sustained if current efficiencies are to be maintained. FS2 is projected to be in use until 2007 when surface operations cease. Providing that routine maintenance is sustained, SRK consider the plant is in adequate condition to meet the requirements of the LoM projections.

Joel Plant processes underground ore and waste rock both of which are delivered to the plant by road. Joel Plant was commissioned in 1987 with a circuit comprising conventional RoM milling, leach, CIP adsorption, elution, electrowinning and smelting. Due to the observed "preg robbing" characteristics of the ore, the leach and adsorption circuit was reconfigured as a CIL circuit to realise improved metallurgical recoveries. In a recent development, elution has been discontinued at Joel Plant and loaded carbon is transported to FS1 for elution.

Joel Plant was originally designed as a fully autogenous reef mill with a capacity of 120ktpm. Following certain modifications the reef capacity was increased to 150ktpm with the mills running semi-autogenously. Current operating capacity, including waste, is approximately 120ktpm with the potential to increase to 135ktpm. Maximum projected LoM throughput is 1,458ktpa. Projected reef and WRD recoveries of approximately 95% and 87% respectively are in line with recent performance with due allowance for the impact of head grade variation over the LoM period.

Generally the plant is considered to be in good condition both mechanically and structurally although the level of housekeeping offers room for improvement. Joel Plant is projected to be in use until 2014 when underground operations cease.

St. Helena Plant was commissioned in 1978. Older plant facilities, which began operating in the 1950s, have since been demolished. The current circuit comprises RoM milling, thickening, leaching, filtration, zinc precipitation and smelting.

Presently only two of the five original milling circuits are operational. On the basis of semi-autogenous operation, current reef milling capacity is approximately 100ktpm, which reduces to the present operating capacity of approximately 90ktpm processing reef and waste. Maximum projected LoM throughput is 1,120ktpa. St. Helena Plant will process a range of surface sources in its remaining life, for which varying recoveries projected to be between 50% and 90% are considered appropriate by SRK.

The plant is generally in good condition although there are signs of corrosion, particularly in the leach area. Planned filter overhauls have fallen behind schedule and will have to be reinstated if current efficiencies are to be maintained. St. Helena Plant is planned to be in use until 2006 when surface operations cease. Providing that routine maintenance is sustained, SRK consider the plant is in adequate condition to meet the requirements of the LoM projections.

6.2.3 Harmony Free State Operations

Central Plant processes underground ore and it is planned to utilise spare treatment capacity to process reclaimed slime in the future. The plant was commissioned in 1986 and comprises RoM milling, thickening, cyanide leaching, CIP adsorption, elution and electrowinning. Loaded carbon is received from Virginia and Saaiplaas Plants for elution and regeneration. Following commissioning of the Harmony refinery, smelting was discontinued and cathode slime is now processed at Central Plant to refined gold products.

The plant was designed to mill 150ktpm of reef at moderate steel addition and has demonstrated an operating reef milling capacity of 180ktpm at higher steel addition. Installed treatment capacity equates to 240ktpm and this differential will be used to process reclaimed slime. Maximum projected reef and slime LoM throughput is 2,160ktpa of reef and waste and 2,880ktpa for treatment including slimes. Projected reef recoveries of approximately 95% are in line with recent performance. Recoveries of 55% are anticipated on the reclaimed slime component of the feed and SRK consider this recovery to be achievable.

Central Plant is planned to be in use until 2014 when underground operations cease. Generally the plant is considered to be in good condition both mechanically and structurally and providing that routine maintenance is sustained, SRK consider the plant is in adequate condition to meet the requirements of the LoM projections.

Saaiplaas Plant processes underground ore and it is planned to utilise spare treatment capacity to process reclaimed slime in future. The plant was commissioned in the late 1950s employing conventional technology of that era. In the early 1980s RoM milling was introduced and part of the leach was converted to a carousel CIL circuit earlier this year. Loaded carbon is transported to Central Plant for elution and regeneration.

Saaiplaas Plant has a reef milling capacity of 150ktpm and installed treatment capacity of 220ktpm. Spare treatment capacity will be used to process reclaimed slime. Maximum projected reef and slime LoM throughput is 1,800ktpa of reef and waste and 2,663ktpa for treatment including slimes. Projected reef recoveries of 95% to 96% are in line with recent performance. Recoveries of 55% are anticipated on the reclaimed slime component of the feed and 88% on the WRD. SRK consider these recoveries to be achievable.

Saaiplaas Plant is planned to be in use until 2018 when underground operations cease. Generally the plant is considered to be in good condition both mechanically and structurally and providing that routine maintenance is sustained, SRK consider the plant is in adequate condition to meet the requirements of the LoM projections.

Virginia Plant processes underground ore and waste. The plant was commissioned in 1986 and comprises RoM milling, thickening, cyanide leaching and CIP adsorption. Local elution and electrowinning facilities have been decommissioned and loaded carbon is transported to Central Plant for elution and regeneration.

The plant was designed to mill 150ktpm of reef at moderate steel addition and has demonstrated an operating reef milling capacity of 180ktpm at higher steel addition. Virginia has a current operating capacity of approximately 165ktpm processing reef and waste. Maximum projected LoM throughput is 1,944ktpa. Projected reef and waste recoveries of approximately 96% and 85%, respectively, are in line with recent performance.

The mills are generally in good condition although certain structural steelwork is showing signs of corrosion. Leach tanks are not in good condition and there have been recent failures. The installation of in-house leach reactors has consequently been necessary to enhance leach kinetics and maintain dissolution. The CIP circuit, being a converted uranium leach circuit, is showing its age and is not in good condition. Both the leach and CIP circuits will have to be refurbished or replaced if extended operations are intended. A capital allowance of ZAR10m has been included to complete the work deemed necessary by SRK to sustain the projected plant performance. Virginia Plant is required until 2012 when underground operations cease. Providing that routine maintenance is sustained and the capital is expended as provisioned, SRK consider the plant is in adequate condition to meet the requirements of the LoM projections.

6.2.4 Welkom Operations

RoM ore from Welkom Operations is processed at Freegold Operation's FS2 Plant. FS2 Plant has a nominal reef milling capacity of 300ktpm. Freegold Operations use excess capacity to treat its own material. Ore is delivered to FS2 Plant by road.

6.2.5 West Wits Operations

Ore is delivered to Elandsrand Plant by conveyor from Elandsrand BU and by road from Deelkraal BU. Elandsrand Plant also operates a waste washing section, with washed fines joining the reef feed and oversize being stockpiled. The plant was commissioned in 1978 and comprises RoM milling, thickening, cyanide leaching and CIP adsorption. A pumpcell CIP circuit was commissioned as an upgrade in 1999. Loaded carbon is transported some 50km to the Cooke Plant for elution and regeneration. A portion of the tailings is cycloned ahead of disposal to produce backfill.

Elandsrand Plant has a maximum reef milling capacity of 190ktpm. Maximum projected LoM throughput is 1775ktpa. Projected reef recoveries of 96% are in line with recent performance and taking cognisance of the projected increase in head grade over the LoM period.

Elandsrand Plant is required until 2023 when underground operations cease. Generally the plant is in excellent condition both mechanically and structurally and providing that routine maintenance is sustained, SRK consider the plant is in adequate condition to meet the requirements of the LoM projections.

Deelkraal Plant was commissioned in 1978 with a circuit comprising RoM milling, thickening, leaching, filtration, zinc precipitation and smelting. A portion of the tailings is cycloned ahead of disposal to produce backfill.

Deelkraal Plant has a design reef milling capacity of 135ktpm and a current operating capacity of 105ktpm when processing waste, largely limited by the condition of the filter plant. In recent years, Deelkraal Plant has primarily treated waste, with Deelkraal underground ore having been transported to the Elandsrand Plant for treatment. It is planned to commission a new 60ktpm pumpcell CIP plant to process Deelkraal BU underground ore from 2004. This decision is partly motivated by the need for backfill at Deelkraal BU. An appropriate capital allowance has been included in the strategic plan for the CIP conversion. Maximum projected LoM throughput is 720ktpa. Projected reef recoveries of 92% should be achievable following the conversion to CIP.

The plant is generally in a fair condition, with the exception of the filter plant and general maintenance will have to be reviewed/improved to prevent disruptions over the LoM period. The Deelkraal Plant is required until 2009 when underground operations cease. Providing that routine maintenance is sustained, SRK consider the plant is in adequate condition to meet the requirements of the LoM projections.

Cooke Plant processes only underground ore delivered from Cooke No.1 BU, No.2 BU and No.3 BU and the Doornkop BU. The plant was commissioned in 1977 as a Gold and Uranium plant. Uranium operations ceased in 1989 and parts of the Uranium plant were utilised to convert from filtration and zinc precipitation to CIP/CIL. The current operation comprises RoM milling, thickening and cyanidation in a hybrid CIP/CIL circuit, elution and electrowinning. Loaded carbon from Doornkop Plant is added to the CIL circuit for further loading and loaded carbon from Elandsrand Plant is separately eluted and regenerated. Electrowon gold slime is transferred to the Harmony refinery.

The plant was designed as a 250ktpm gold and uranium plant, the capacity of which was increased to 300ktpm in 1982 with 280ktpm mill capacity as the current limit. Maximum projected LoM throughput is 3,173ktpa. Projected reef recoveries of 96% to 97% are in good agreement with current performance. The Cooke Plant is planned to be used until 2022. Generally the plant is considered to be in good condition both mechanically and structurally and subject to adequate ongoing maintenance should meet the LoM requirements.

Doornkop Plant is currently dedicated to processing waste rock and other surface accumulations. The plant was commissioned in 1985 and comprises RoM milling, thickening, cyanide leaching and CIP adsorption. Loaded carbon is transported to Cooke Plant for further loading ahead of elution and regeneration.

Doornkop Plant was commissioned with an initial reef milling capacity of 100ktpm. This was expanded to its current reef milling capacity of 225ktpm in 1987, which equates to a waste milling capacity of around 200ktpm. Maximum projected LoM throughput is 2,220ktpa. In line with recent performance, recoveries are projected at approximately 90%.

The plant is required until the final quarter of FYE 2005.

Generally the plant is considered to be in very good condition both mechanically and structurally and subject to adequate ongoing maintenance should meet the LoM requirements.

6.2.6 Evander Operations

Winkelhaak Plant was commissioned in 1958. Only two RoM mills, a thickener and transfer pumping facilities to pump pulp to Kinross Plant are still operational. The Kinross Plant was commissioned in 1967 and comprised three RoM mills followed by conventional leach, filtration and zinc precipitation. In the early 1980s, two further mills were added and the treatment section was modified to incorporate CIP adsorption, elution and electrowinning.

The Winkelhaak Plant and Kinross Plant largely treat underground reef with minor waste inclusion. The Winkelhaak Plant has a reef milling capacity of 68ktpm whilst the reef milling capacity of the Kinross Plant is 160ktpm. The Kinross Plant treatment capacity of 200ktpm limits overall throughput. Maximum projected LoM throughput of 2,428ktpa. Projected reef recoveries of 96% to 97% are in line with recent achievements.

Winkelhaak Plant and Kinross Plant are planned to be used until 2013 and 2018 respectively and are planned to operate close to capacity. Both Winkelhaak Plant and Kinross Plant require some attention in the shaft conveyor and mill feed silo areas if continued operation is intended. The Kinross Plant is otherwise showing its age and will require ongoing attention. Some ZAR6m has been budgeted in the next financial year to cover the needed repairs, however the plants will still need to be better maintained if planned operations are to be met when running at full capacity.

6.2.7 Orkney Operations

RoM ore from Orkney Operations is toll processed at VRO's No.1 Gold Plant. Ore is transported to No.1 Gold Plant by rail from all but Orkney No.2 BU and Orkney No.7 BU, which is conveyed directly to the plant. The circuit comprises two semi autogenous mills, one closed by a hydrocyclone and the other closed by a linear screen, a single closed circuit ball mill, thickening, pre-leaching, carousel CIL adsorption, residue disposal, acid washing of loaded carbon, Zadra elution and electrowinning. Cathode gold is stripped from the washable stainless steel cathodes and transported at the risk of Harmony to No.8 Gold Plant for smelting. Eluted carbon is thermally reactivated before being recycled to the CIL adsorption circuit. Any mill gold recovered during relining is also transported to No.8 Gold Plant for smelting. Gold due to Harmony is determined from metal accounting procedures.

The No.1 Gold Plant has a nominal milling capacity of 180ktpm, and contractually ore from Orkney Operations is processed at a maximum of 6ktpd. VRO are able to use any unutilised milling capacity for processing other material, typically waste rock. In addition, the plant has greater treatment capacity than milling capacity, which allows for the processing of an additional 50ktpm of reclaimed slimes.

In the event of prolonged stoppages, breakdowns or other outages and with Harmony's written consent, the ore may be processed at one or a combination of VRO's other gold plants. Such processing is subject to the provision that process efficiency and throughput would not be lower than that achievable in No.1 Gold Plant.

Various agreements between Harmony and VRO govern supply and quality of RoM ore and gold apportionment. Further, SRK has been informed by Harmony that VRO takes ownership and assumes liability for the treatment, stockpiling and rehabilitation of all residues emanating from No.1 Plant. This includes environmental liability, but specifically excludes Harmony from participating in the recovery of gold or other minerals from secondary processing of residues.

6.2.8 Kalgold Operations

Kalgold Plant processes open pit ore. The plant was commissioned in 1998 and comprises three stage crushing, ball milling, thickening, leaching, CIL adsorption, elution, electrowinning and smelting.

Kalgold Plant was designed to treat 85ktpm and has recently commissioned a third ball mill and additional leach tanks which has increased capacity to 135ktpm. Maximum projected LoM throughput is 1,363ktpa. Variable recovery is experienced in treating the open pit ore and the trend in recent years has been for recoveries to drop to approximately 81%. The recent expansions will result in similar mill product size distribution but will increase the leach residence time. Recoveries are expected to improve slightly to 82% based on performance over the past three years.

Kalgold Plant is generally in good condition; both mechanically and structurally and subject to adequate ongoing planned maintenance should meet the LoM requirements.

6.2.9 Harmony Australian Operations

Checker Plant processes underground ore, open pit ore, low-grade ore from surface stockpiles and tailings from previous operations at Hill 50. Ore from the various sources is separately stockpiled on the RoM pad and reclaimed by a front-end loader to a blend specification, usually on the basis of hardness. The process route comprises two stage jaw crushing, ore blending, primary SAG milling with recycle pebble crushing, closed circuit secondary ball milling, closed circuit tertiary ball milling, cyanide leach enhanced by oxide injection, CIP adsorption, split AARL elution, electrowinning, smelting and tailings disposal. The milling circuit includes centrifugal gravity concentration, the concentrates of which are forwarded to intensive cyanidation in an InLine Leach Reactor ahead of solution electrowinning.

Checker Plant was commissioned in 1989 and designed to treat 125ktpm, however the capacity was increased to 225ktpm in 1999. Projected reef recoveries of 93% are in good agreement with current performance.

Generally the plant is considered to be in good condition both mechanically and structurally and subject to adequate ongoing planned maintenance should meet the LoM requirements.

Big Bell Plant processes underground and open pit ore and is currently in the process of closure. Ore is stockpiled on the RoM pad and reclaimed by a front-end loader to achieve the desired blend on the basis of grade and ore type. The process route comprises gyratory crushing, primary SAG milling with recycle pebble crushing, secondary ball milling closed by hydrocyclones, cyanide leach enhanced by oxygen injection, CIP adsorption, pressure Zadra elution, electrowinning, smelting and tailings disposal.

Plant capacity is 250ktpm on softer oxidised ore and 170ktpm on harder primary ore. Gold recovery is typically 85%.

New Celebration Plant processes underground ore, open pit ore and low-grade ore from surface stockpiles. Ore from the various sources is separately stockpiled on the RoM pad and reclaimed by a front-end loader to achieve a required blend. The process route comprises primary jaw crushing, secondary and tertiary cone crushing closed by screens, ball milling closed by hydrocyclones, thickening, cyanide leaching, CIP adsorption, split AARL elution, electrowinning and smelting.

New Celebration Plant was commissioned in 1986 and has a design treatment capacity of 125ktpm on blended ore. Projected reef recoveries of 92% are in good agreement with current performance.

Generally the plant is considered to be in good condition both mechanically and structurally and subject to adequate ongoing maintenance should meet the LoM requirements.

Jubilee Plant processes underground ore, open pit ore and low-grade ore from surface stockpiles. Ore from the various sources is separately stockpiled on the RoM pad and reclaimed by a front-end loader to achieve a required blend. The process route comprises primary jaw crushing, secondary and tertiary cone crushing closed by screens, primary SAG milling, closed circuit secondary ball milling, cyanide leaching, CIP adsorption, split AARL elution, electrowinning, smelting and tailings disposal.

Jubilee Plant was commissioned in 1987 and has a design treatment capacity of 110ktpm on blended ore. Projected reef recoveries are slightly below the 92% achieved at the New Celebration Plant.

Generally the plant is considered to be in good condition both mechanically and structurally and subject to adequate ongoing planned maintenance should meet the LoM requirements.

6.2.10 Harmony Canadian Operations

The Bisset Plant is currently on care and maintenance.

6.3 Sampling, Analysis, Gold Accounting and Security

6.3.1 Avgold

At the Target Mine, adequate attention is generally given to sampling, sample preparation and metal accounting. A regularly calibrated mass flow system installed on the thickener underflow serves as the principal measurement of plant feed tonnage. A single idler belt weightometer installed on the ore silo feed conveyor serves as a check. Thickener underflow is automatically sampled ahead of leach and CIP and gold content in the leach feed is determined as the product of the thickener underflow grade and mass flow. Gravity gold content is determined from a volumetric measurement and grade of the solution sent to electrowinning after intensive cyanidation. Plant head content is determined as the sum of leach feed content and gravity gold content. A manual sample of the SAG mill discharge serves as a check as does the calculated head grade reconstituted from the gold recovery plus residue content. Final residue is automatically sampled with gold content in the residue being determined as the product of the residue grade and the thickener underflow tonnage.

The previous mine analytical function has been privatised. The laboratory employs fire assay with gravimetric finish for gold analysis, with all samples being parted. Internal laboratory controls are fairly standard including check assaying of certified reference materials. In terms of external quality control, four laboratories in the Free State participate in a round robin sample exchange.

Whilst metal accountability shows fairly high variability at the monthly level, longer-term accountability is acceptable, albeit with room for improvement.

A full security audit was beyond the scope of this review. The security system was however noted to include state of the art monitoring and access control technology and to rely strongly on procedural compliance. In an environment where theft is known to be prevalent, ongoing vigilance and upgrading of systems and procedures will be important. Security facilities and procedures at the process plants of the Mining Assets are considered to be well directed at attempting to minimise the risk of theft.

Security facilities and procedures at the process plants of the Mining Assets are considered to be well directed at attempting to minimise the risk of theft. Notwithstanding the above comment, all forward projections are based on historically achieved Mine Call Factors which will ultimately include any historical gold loss through theft, with the security in place this situation is not deemed to deteriorate and as such the projections are considered valid.

6.3.2 Harmony

Generally across the group adequate attention is given to sampling and sample preparation. Whilst there are accounting anomalies that require further investigation, good accounting procedures are largely in place. All plant feed sources are individually sampled. Underground ore is generally sampled at the shaft head or on the main plant feed conveyor with the aid of Go-Belt samplers. Waste rock is generally sampled from a plant feed conveyor with Go-Belt samplers. Where manual samples are taken, particularly in the case of third party samples, detailed procedures have been laid down and are followed. Daily composites of Go-Belt and other bulk samples are prepared in dedicated sample preparation plants.

Plant head and residue samples are almost exclusively taken automatically with cross-stream pulp cutters or in-stream poppet samplers, composites are accumulated and prepared in the standard way. In most cases, actual gold recovered is apportioned to the various sources in proportion to the estimated content in each source after allowance has been made for any differential metallurgical recovery. The latter is determined from bottle roll tests on monthly composite samples.

Because of the fact that many of the plants treat numerous ore types from different sources, metal accounting is often the subject of some debate, specifically when final gold allocations are made back to each source. SRK consider that there may be inherent inaccuracies in gold allocation which may ultimately impact on the planning factors such as MCF. However, at a collective tax entity level, the allocated gains and losses cancel each other out and over extended time periods the individual BUs feeding the plants will be allocated with the appropriately estimated recovered gold.

A full security audit was beyond the scope of this review. SRK notes that whilst security measures are in place at the Mining Assets, these vary in both management focus and the applied technology. In general, however, mine management is continuing to refine security measures. Security facilities and procedures at the process plants of the Mining Assets are considered to be well directed at attempting to minimise the risk of theft.

6.4 Plant Clean-Up

There are two aspects to gold lock up that need to be considered. Firstly any change in the in-plant gold inventory and secondly the recovery of lock up gold when the plants are finally closed and cleaned up. The quantity of clean-up gold that can be anticipated on closure of a plant is uncertain. Reported figures for South African plants have shown an order of magnitude difference, varying between 0.04% and 0.40% of the total gold produced through the plant during its life. Factors affecting the quantity of gold that is eventually recovered are plant age, installed treatment route, plant layout and detailed design features, plant operational management and the procedure and efficiency of the plant clean-up.

The recorded figures confirm that plants incorporating large crushing and milling circuits will release more gold on closure than compact RoM milling plants. Prediction of the quantity of gold that is likely to be recovered is difficult and will always be subjective. As a guideline, SRK has assumed 0.15% for older crushing and milling plants, 0.10% for more recent, relatively clean plants and 0.04% for RoM milling plants. Where low-level waste has been processed in the latter years of a plants life, significant gold purging is likely to have occurred and lower gold accumulations can be expected.

It is considered that parameters derived from South African experience would considerably overstate the clean-up gold potential of Western Australian processing plants, largely due to their more recent design, shorter operating history and more compact plant layout. SRK has accordingly made no allowance for the recovery of lock up gold in these instances. Estimated clean-up gold for the Mining Assets operations is shown in Table 6.1.

Table 6.1 Mining Assets: Clean-up Gold Estimates

Operation	Clean-up Gold (koz)
Target Operations – Target Mine	7
Free Gold Operations	103
Harmony Free State Operations	22
Welkom Operations	0
West Wits Operations	76
Evander Operations	19
Orkney Operations	0
Kalgold Operations[1]	1
Mt. Magnet & Cue Operations	0
South Kalgoorlie Operations	0
Total	**228**
Avgold	**7**
Harmony	**221**

[1] The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

Figure 6.1 Avgold/Harmony: Schematic Flow Diagram of a Typical Carbon in Pulp Plant

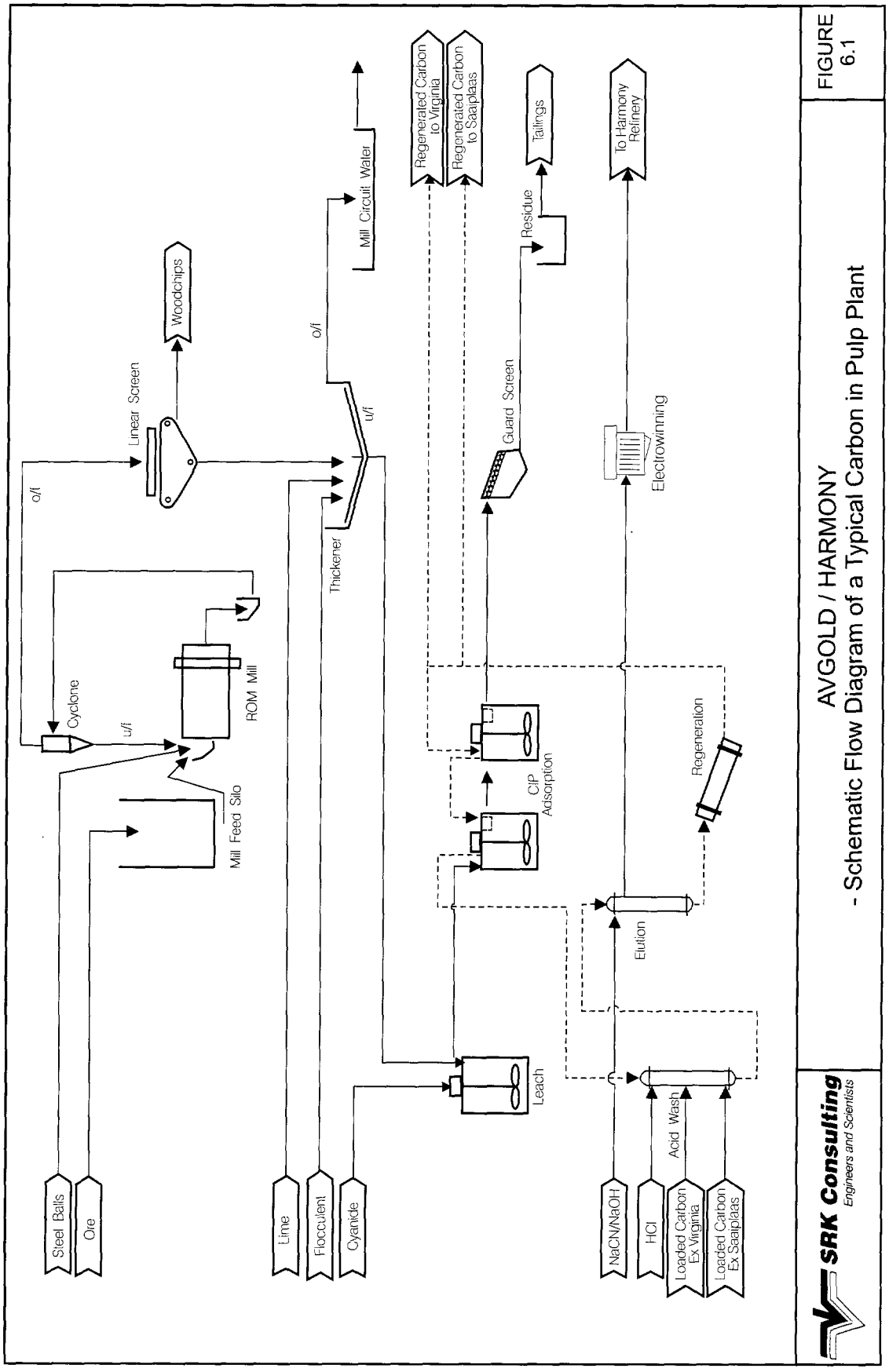


Figure 6.2 Avgold/Harmony: Schematic Flow Diagram of a Typical Carbon in Leach Plant

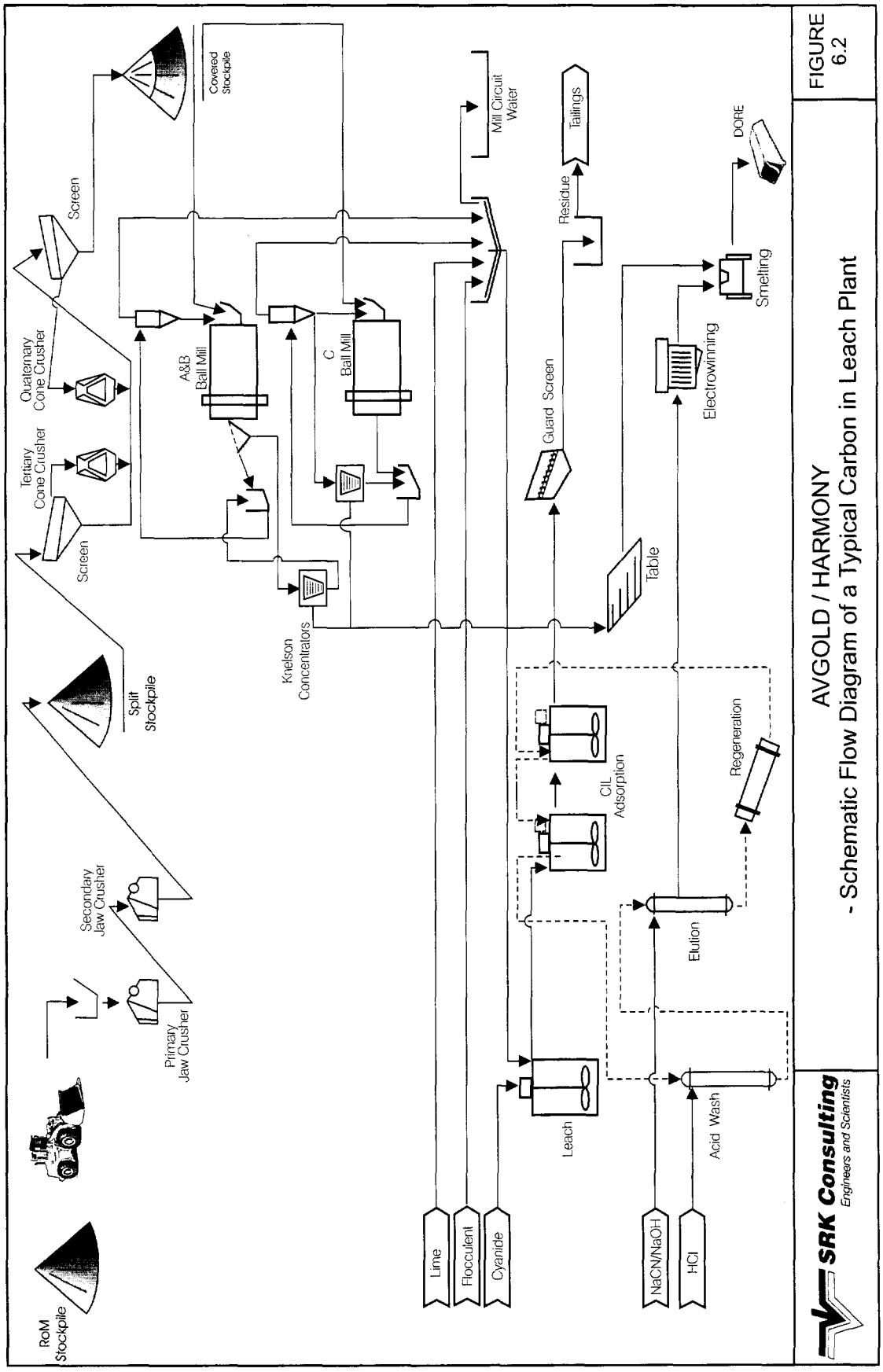
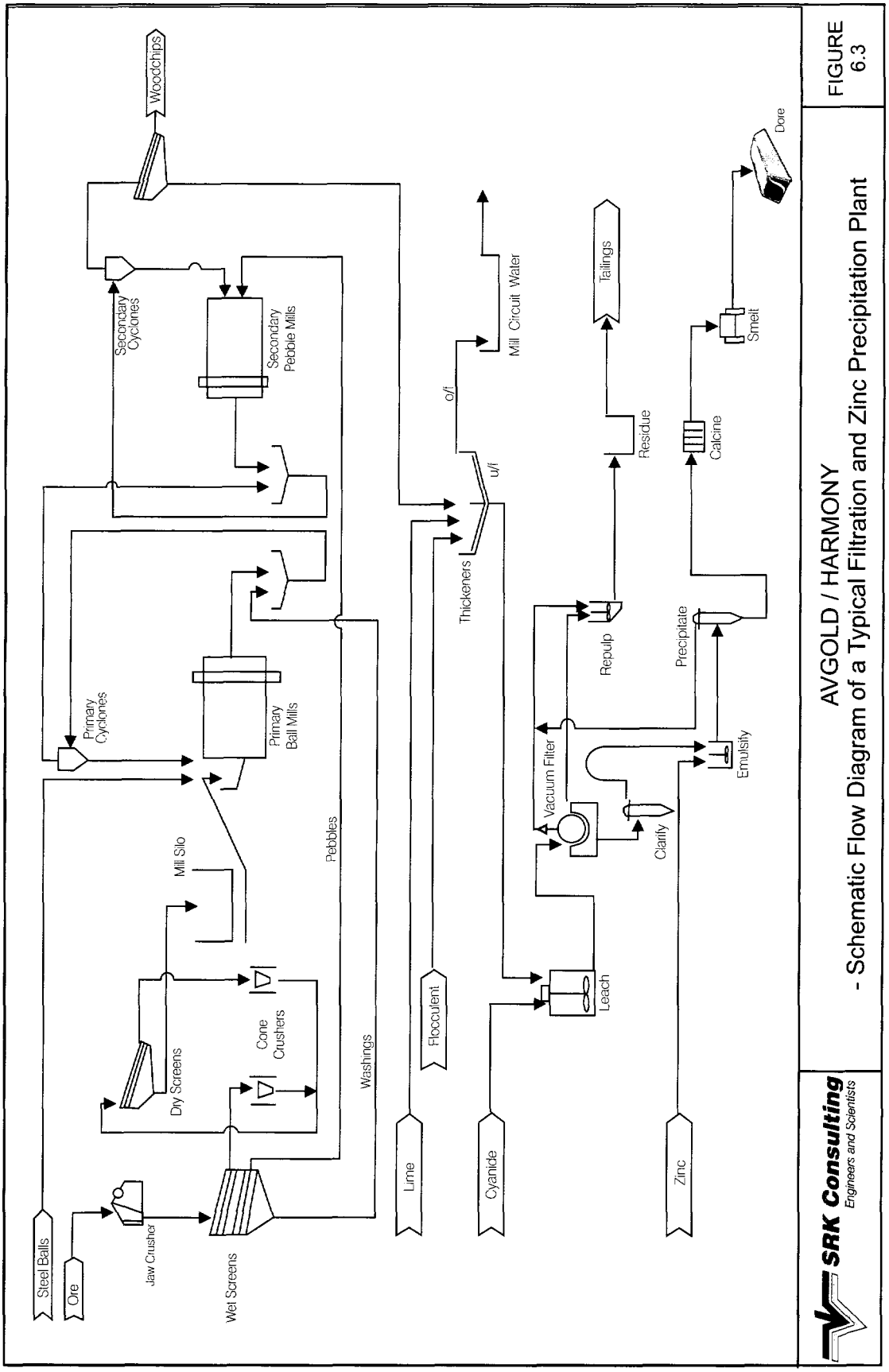


Figure 6.3 Avgold/Harmony: Schematic Flow Diagram of a Typical Filtration and Zinc Precipitation Plant



7. TAILINGS

7.1 Introduction

This section includes discussion and comment on the tailings engineering aspects associated with the Mining Assets. Specifically, detail and comment is focused on the design, construction, geotechnical integrity, remaining capacity and management practices governing the tailings facilities. Key source data for the review comprised the engineering design constraints, where available, as prepared by the appointed tailings dam review consultants at each of the operations (including in certain cases SRK). Site-specific issues are summarised below.

7.2 Target Operations – Target Mine

The Target Operation currently comprises a single tailings dam divided into two compartments known as Dam 1 (the northern section) and Dam 2 (the southern section). The tailings dam is currently built up to an average height of approximately 34m above the surrounding original ground level. By the end of 2020 the tailings dam is likely to rise a further 9.5m. The average height above the original ground level will then be 44m, which is acceptable.

During the last inspection, undertaken during March 2003, an improvement was observed to the general condition of the dam walls, in that the level of toe seepage had reduced from that noted in previous inspections; however this may be attributed to a spell of prevailing drier weather as opposed to successful implementation of a remedial programme. The current LoM plan projects 19.9Mt of processed/tailings material evenly spread over the next 17-year period. The Mine has indicated that 40% of the total tailings stream will be placed back underground as backfill in order to support stoped-out areas required for continued mining operations. SRK note, however, that 40% has not always been achieved and has been low as 20% (therefore 16.0Mt reporting to the tailings). For review purposes SRK has assumed a conservative 20% level of backfill placement to assess tonnage loading on the tailings dam. With 20% reporting to underground, the rate of rise ("RoR") on an annual basis ranges between 0.4m/yr and 0.6m/yr. These rates are not perceived by SRK as being excessive; in fact by normal standards can be considered low. The tailings dam has however exhibited toe seepage emissions, and is likely to display further seepage in the future, specifically during seasons with above average rainfall; as such strict monitoring control must be implemented throughout the year. As a general rule of thumb, SRK consider that a tailings facility with no toe seepage emissions should operate at a RoR of 1.5m/yr without any associated stability problems. As Target has exhibited seepage, it is not advisable to increase the RoR beyond 0.8m/yr without undertaking a detailed stability analysis.

7.3 Free Gold Operations

Free Gold Operations currently include four tailings dam complexes, namely FS North, FS South, St. Helena and Joel Slimes Dams, which facilitate deposition of residue from FS1 Plant, FS2 Plant, St. Helena Plant and Joel Plant. FS North includes seven tailings dams, two of which are operational (FS North 1 and FS North 2), with the other five (FS North 3B, FS North 4, FS North 5 and FS North 6) being dormant. FS North facilitates tailings deposition from FS2 Plant, which includes material treated on behalf of Free Gold Operations and Welkom Operations. FS South includes nine tailings dams, five of which are operational (FS South 1, FS South 2, FS South 4, FS South 8W and FS South 8E), with the other four (FS South 3, FS South 5, FS South 6, FS South 7 and President Brand C) being dormant. FS South facilitates tailings deposition from FS1 Plant and also toll deposition from President Steyn.

The St. Helena tailings dam comprises a single facility known as Dam 4, although very little deposition is taking place on the dam at present, St. Helena plant is planned to treat surface sources for the next three years.

Joel Slimes Dam is also a single facility, which is currently operational, comprising an unlined facility where deposition occurs in accordance with appropriate rates of rise and design specifications.

The current LoM plans for collective Free Gold Operations require a total placement of approximately 89.0Mt. The total remaining capacity as at 31 December 2003 is projected at some 123.8Mt, which is adequate to meet the overall requirements of the LoM plan. At the individual facilities this may require certain re-routing of tailings from the current configuration incurring additional costs for pipes, valves and pumping.

The tailings dam complexes are currently operated managed and controlled in a responsible and diligent manner, although maintenance is needed on the solution trenches and paddocks of a number of dams. Noticeable seepage was observed along the common contact and southern sides of South 8E and South 8W dams, as well as along the perimeter toe-line of the St. Helena tailings dam, both should be investigated. No impairment to the integrity of the dams is anticipated, provided that practices, levels of management and control are maintained at a high-level of diligence with all necessary remedial measures undertaken in a timely manner.

7.4 Harmony Free State Operations

The Harmony Free State Operations comprise the Harmony, Saaiplaas and Merriespruit tailings facilities. The Harmony facility comprises three dams, the H1, H2 and H4 tailings dams, of which only H4 is currently active. The Saaiplaas tailings facilities principally comprise two complexes, which include a total of six dams situated to the east of Welkom of which only three are currently active. The Merriespruit tailings facilities principally comprise five active tailings dams, No.30 (V10), No.30A (V10), No.4b, No.5b, No.5a, situated to the south-east and south-west of Virginia of which only five are currently active.

The current LoM plan for Harmony Free State Operations requires a total placement of some 63.0Mt. The remaining capacity at 31 December 2003 is projected at some 65.2Mt, which is adequate to meet the overall requirements of the LoM plan. At the individual facilities this will require some re-routing of tailings from the current configuration, specifically from the Saaiplaas Plant and is likely to lead to additional costs for pipes, valves and pumping.

The tailings dam complexes are currently operated managed and controlled in a responsible and diligent manner, although maintenance is needed to the solution trenches and paddocks of a number of dams. No impairment to the integrity of the dams is anticipated, provided that practices and levels of management and control are maintained at a high-level of diligence with all necessary remedial measures undertaken in a timely manner.

7.5 Welkom Operations

In line with the toll processing arrangements, Welkom Operations are not responsible for tailings dam deposition.

7.6 West Wits Operations

The West Wits Operations comprise the Elandsrand, Deelkraal, Cooke and Doornkop tailings facilities. The Elandsrand facility comprises two dams located on a hillside with one down slope from the other; both are currently active. The Deelkraal tailings facility also comprises two dams located on a hillside with one down slope from the other; and both are currently active. The Cooke and Doornkop facilities each comprise a single dam both of which are active.

The current LoM plan for Elandsrand and Deelkraal requires a total placement of some 27.3Mt. The remaining capacity as at 31 December 2003 is projected at some 38.2Mt, which is adequate to meet the overall requirements of the LoM plan.

The current LoM plan for Cooke and Doornkop operations requires a total placement of some 45.2Mt. The remaining capacity as at 31 December 2003 is projected at some 51.4Mt, which is adequate to meet the overall requirements of the LoM plan. The RoR for the Doornkop dam is forecast in excess of 2m/yr however considering that the LoM for the Doornkop facilities is less than two years SRK consider that this can be managed.

The tailings dam complexes are currently operated managed and controlled in a responsible and diligent manner, although maintenance is needed to the solution trenches and paddocks at some of dams. No impairment to the integrity of the dams is anticipated, provided current practices and levels of management and control are maintained with all necessary remedial measures undertaken in a timely manner.

7.7 Evander Operations

The Evander Operations comprise the Winkelhaak and Kinross tailings facilities. The Winkelhaak facility comprises four dams, No.1, No.2, No.3 and No.4, located in a cluster of which two dams, No.3 and No.4, are currently active. The Kinross tailings facility comprises three dams located on a gently sloping hillside and all are currently active.

The current LoM plan for Evander Operations requires a total placement of some 19.5Mt. The remaining capacity as at 31 December 2003 is projected at some 25.2Mt, which is adequate to meet the overall requirements of the LoM plan. A high RoR in excess of 2m/yr is forecast at the Winkelhaak No.4 dam although SRK consider that, in conjunction with sufficient monitoring, this can be managed.

The tailings dam complexes are currently operated managed and controlled in a responsible and diligent manner, although maintenance is needed to the solution trenches and paddocks at some of dams. No impairment to the integrity of the dams is anticipated, provided current practices and levels of management and control are maintained with all necessary remedial measures undertaken in a timely manner.

7.8 Orkney Operations

In line with the toll processing arrangements, Orkney Operations are not responsible for tailings dam deposition.

7.9 Kalgold Operation

The Kalgold Operation comprises a single tailings dam that was commissioned in 1998 subsequent to the replacement of the heap leach operation with a CIL plant. The current LoM plan for Kalgold Operations requires a total placement of some 6.0Mt. The remaining capacity at 31 December 2003 is projected at some 6.2Mt, which is adequate to meet the overall requirements of the LoM plan.

The tailings dam complex is currently operated, managed and controlled in a responsible and diligent manner and no impairment to the integrity of the dam is anticipated, provided current practices and levels of management and control are maintained with all necessary measures undertaken in a timely manner.

7.10 Harmony Australian Operations

Checker Plant un-thickened tailings are pumped to one of two operating tailing storage facilities. Both uses the paddock system where tailings is deposited by spigotting around the perimeter to form a beach with supernatant water reclaimed by a central decant tower. An under drain in the new dam is also used for water collection. Walls are raised by upstream lifts using waste rock as the construction material. Analyses of water from bores around the periphery of the dam are reported to be within applicable limits for pH, total dissolved solids, weak acid dissociable cyanide and prescribed heavy metals. The first tailing storage facility at the modern Mt. Magnet operations has finished its service life with trials underway on capping the surface to test methods for rehabilitation.

The current LoM plan for the Checker Plant requires a total placement of some 13.6Mt. Cell No.3 of the current tailings storage facility as at 31 December 2003 is projected to have a service life until 2009 when raised to its design height. This is marginal to meet the overall requirements of the LoM plan.

Big Bell Plant is planned to discontinue operations shortly though the tailings design is based on the underflow from the tailings screen being pumped to the tailings storage facility which is divided into two cells, for deposition of solids and reclamation of water for re-use in the plant.

New Celebration Plant and Jubilee Plant un-thickened tailings are pumped to separate operating tailings storage facilities. Both uses the paddock system where tailings are deposited by spigotting around the perimeter to form a beach with supernatant water reclaimed by a central decant tower. Mine waste was used for the initial starter walls with upstream construction using dried tailings.

The current LoM plan for New Celebration requires a total placement of some 0.1Mt. The remaining capacity of the tailings dams at 31 December 2003 is adequate to meet the overall requirements of the LoM plan.

The current LoM plan for Jubilee requires a total placement of some 3.1Mt. The remaining capacity of the tailings dams at 31 December 2003 is projected at some 4.8Mt when using the Golden Hope North pit, which is adequate to meet the overall requirements of the LoM plan.

The tailings storage facilities are currently operated managed and controlled according to standard gold mining industry practice in Western Australia. No impairment to the integrity of the dams is anticipated, provided acceptable levels of management and control are maintained with all necessary remedial measures undertaken in a timely manner.

7.11 Harmony Canadian Operations

Harmony's Canadian Operations are currently mothballed and as such no assessment has been undertaken of the Tainling Facilities as no future production is currently planned.

7.12 LoM Tailings Deposition Assessment

Table 7.1 summarises the LoM deposition projections and comparable available capacities for each of the operations. Cognisance should be taken that the total deposition includes material that is treated on toll basis; this material is not included in the Companies total LoM projections. Collectively, the Companies toll treats some 10.2Mt from external sources.

Table 7.1 Mining Assets: Assessments of Tailings Storage Capacity for LoM Plans

Operations	LoM Deposition (Mt)	Available Capacity (Mt)	Surplus/Shortfall (%)
Target Operations – Target Mine[1]			
Target Plant and Active Dams	15,955	19,932	
Subtotal Target Operations	**15,955**	**19,932**	**25**
Free Gold Operations[2][3]			
FS1 Plant and Active Dams	62,894	84,581	
FS2 Plant and Active Dams	12,600	22,391	
St. Helena Plant and Active Dams	1,913	3,950	
Joel Plant and Active Dams	11,557	12,902	
Subtotal Free Gold Operations	**88,964**	**123,824**	**39**
Harmony Free State Operations			
Central Plant and Active Dams	22,553	21,867	
Virginia Plant and Active Dams	11,018	24,139	
Saaiplaas Plant and Active Dams	29,447	19,182	
Subtotal Harmony Free State Operations	**63,018**	**65,188**	**3**
West Wits Operations			
Cooke Plant and Active Dams	42,771	15,342	
Doornkop Plant and Active Dams	2,381	36,070	
Elandsrand Plant and Active Dams	23,374	21,544	
Deelkraal Plant Active Dams	3,942	16,613	
Subtotal West Wits Operations	**72,468**	**89,569**	**24**
Evander Operations			
Kinross Plant and Active Dams	19,526	25,204	
Subtotal Evander Operations	**19,526**	**25,204**	**29**
Kalgold Operation			
Kalgold Plant and Active Dams	5,980	6,200	
Subtotal Kalgold Operations	**5,980**	**6,200**	**4**
International Operations			
Checker Plant and Active Dams	13,604	12,981	
Big Bell Plant and Active Dams	na	na	
Jubilee Plant and Active Dams	3,121	4,808	
New Celebration Plant and Active Dams	63	63	

[1] Assumes 20% to Backfill – LoM plant throughput 19.9Mt.
[2] Includes Welkom Operations.
[3] Includes Toll Treatment from non-Harmony mines.

Where additional capital expenditure is required to sustain tailings operations in relation to the LoM projections as presented, such capital expenditure has been allowed for in the individual Tax Entity valuations.

8. ENGINEERING INFRASTRUCTURE AND CAPITAL PROJECTS

8.1 Introduction

This section includes discussion and comment on the infrastructure and related aspects of the LoM plans associated with the Mining Assets. Specifically, detail and comment is focused on the existing on-mine infrastructure and capital expenditure programmes necessary for execution of the LoM plans, as presented.

8.2 Engineering Infrastructure of the Mining Assets

Engineering infrastructure at the Mining Assets includes a wide range of operating technology, which varies in age and extent of mechanisation.

Underground mining operations comprise access infrastructure to convey personnel, materials and equipment to and from the working areas and associated services to support mining operations. Horizontal infrastructure includes cross-cut haulages, footwall haulage levels and declines/inclines. Infrastructure required for ore flow and services include ore and waste passes, conveyor belts, high speed rail

conveyances, crushing stations, ore bins, loading stations, water dams, pump stations, backfill stations, backfill transportation and placement systems, secondary ventilation and refrigeration plant, workshops and power and water reticulation systems. Surface infrastructure includes headgears and winding systems, primary ventilation and refrigeration plants, process facilities, office blocks and training centres, workshops and stores, lamp rooms, change houses and accommodation. At the Mining Assets there are also a number of services and supply centres. These include compressed air supply stations and minor workshops for small repairs to plant and equipment.

Notwithstanding the age of the general infrastructure, SRK consider that all surface and underground infrastructure is reasonably maintained and equipped. In conjunction with planned maintenance programmes including specific remedial action, the current infrastructure is considered by SRK to be adequate to satisfy the requirements of the LoM plans. Further, the power generation and distribution systems, water sourcing and reticulation systems are appropriate for operations as envisaged in the individual LoM plans. Where this has not been the case SRK has allocated appropriate capital provision, which have been included in the TEPs as presented in Section 12.

8.3 LoM Capital Expenditures Programmes

The capital expenditure programmes are the Companies' current projections for the Mining Assets. SRK has reviewed these estimates and consider them appropriate as inputs to the valuation, as incorporated at Tax Entity level. The accuracy of these estimates are of the order of ±15% for the major capital projects, as expected of feasibility level studies and for the provisions for ongoing capital SRK consider these to be in the order of ±25%.

Table 8.1 summarises the latest capital requirements for the Mining Assets, excluding off-mine exploration costs. Where appropriate the estimates have been modified by SRK to include any additional capital requirements as identified in Section 5 through to Section 7. SRK note that all capital estimates are exclusive of financing charges and unless otherwise stated are considered by SRK to be adequate to meet the requirements of the current LoM plan.

Capital projects at the Mining Assets are principally aimed at sustaining the integrity of primary infrastructure required for the underground operations. As described in Section 5 through to Section 7 these include the following:

- **at Target Mine:** All major capital projects have now been commissioned and as such no additional specific project capital is projected/required to exploit the Mineral Reserves as depleted in the LoM plan. A provision amount is however included amounting to approximately 7% of the direct operating costs or equivalent to R32/t milled. This amount is considerably higher, in unit rate per tonne terms, compared to other Free State operations, however reflects the level of mechanisation and required fleet replacement during the 18-year mine life;
- **at Free Gold Operations:**
  - the sub-66L project at Tshepong BU will enable access to the deeper levels. It includes the development of a twin decline system to 71L, planned to commence during 2003 and commissioned at design throughput by 2007;
  - the completion of 178m (vertical) of shaft sinking to the 81L at Phakisa BU and the necessary equipping of the shaft as a men, material and rock hoisting facility at some 150ktpa, this following the installation of a Koepe hoist on the 55L for the transfer of ore and waste to Nyala BU for hoisting to surface. The project is scheduled to commence in the second quarter 2004;
  - infrastructural improvements at Bambanani BU and West BU;
  - the installation of hoisting facilities at Joel North BU to support mining operations below 121L. This is planned to be fully commissioned by 2005; and
  - shaft pillar mining at Nyala BU following associated modification to the shaft hoisting installation;
- **at Harmony Free State Operations:**
  - the Masimong expansion project at No.5 BU to access high-grade areas of Basal Reef to east and west of the current workings. The capital is required to extend flat-end haulage development utilising the existing shaft capacity;
- **at Welkom Operations:** no future capital expenditures are currently forecast;
- **at West Wits Operations:**
  - the South Reef Project at Doornkop BU includes the deepening of the main shaft to 212L and re-equipping of the sub-vertical shaft and is expected to attain maximum production by 2009; and
  - the Sub-shaft Project at Elandsrand BU accessing ore from 102L to 113L which is projected to be complete by 2007;

- **at Evander Operations:** no specific capital projects are planned, however the majority of shafts have continued ongoing capital provisioned amounting to ZAR608m, which includes provision for the plants of ZAR6.4m. The Roslpruit Project, currently excluded from the Base Case valuation, considers the green-fields development of an extension to the Kimberley Reef, adjacent to No.8 BU, through installation of a twin shaft system from surface or from underground. The feasibility study as completed by Harmony projects capital expenditure requirements of ZAR5.2billion;
- **at Orkney Operations:** capital projections are generally of a routine nature and primarily reflect capital development and/or provisions for unforeseen expenditures;
- **at the Kalgold Operations:** capital projections are generally of a routine nature and primarily reflect capital development and/or provisions for unforeseen expenditures;
- **at the Harmony Australian Operations:** capital projections are project related and focused towards exploration and underground development at the underground operations and also includes certain mine closure related costs; and
- **at the Harmony Canadian Operations:** no capital expenditure is currently forecast with Bisset being placed on care and maintenance.

The total estimated capital expenditure for the Mining Assets over the LoM period are summarised in Table 8.1.

Table 8.1 Mining Assets: Estimated Capital Expenditures

Operations	Capital Expenditure (ZARm)
Target Operations – Target Mine	582
Free Gold Operations	1,756
Harmony Free State Operations	370
Welkom Operations	0
West Wits Operations	1,734
Evander Operations	555
Orkney Operations	33
Kalgold Operations[1]	0
Mt. Magnet & Cue Operations	204
South Kalgoorlie Operations	26
Total	**5,262**
Avgold	**582**
Harmony	**4,680**

[1] The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

9. HUMAN RESOURCES

9.1 Introduction

This section includes discussion and comment on the human resources related aspects associated with the Mining Assets. Specifically, information as provided by the Companies is included on the current organisational structures and operational management, recruitment, training, productivity initiatives and remuneration policies, industrial relations and productivity projections.

9.2 Legislation

Various regulatory authorities, in addition to mining and labour codes, govern labour legislation in South Africa. In general these are well-established and in conjunction with the Companies operating policies, form the cornerstone of human resource management.

During 1999, many changes and initiatives took effect, primarily in response to the recently promulgated provisions of South African labour legislation. The Labour Relations Act regulates the relationship between employees and trade unions, establishes dispute resolution mechanisms, promotes collective bargaining and protects employees from unfair dismissal. Separation may be carried out on the basis of genuine economic, technological, structural or similar needs of an employer. Consultation, with full disclosure of relevant information, is required with trade unions prior to employers effecting separation programmes. The other major statutes in force in South Africa are:

- the Basic Conditions of Employment Act, which prescribes minimum conditions of employment, excluding wages;

- the Occupational Diseases in the Mines and Work Act;
- the Compensation of Occupational Injury and Diseases Act, which provides a mechanism for compensating employees who have been incapacitated as a result of injury or disease arising from the performance of work;
- the Occupational Health and Safety Act and Mine Health and Safety Act, which impose a duty on employers to provide a safe and healthy working environment;
- the Employment Equity Act, which prohibits unfair discrimination and places an obligation on employers to implement affirmative action measures. In this instance Employment Equity forums have been established with all unions in an effort not only to give effect to the Employment Equity Act, but also to address, through appropriate policies and procedures, the total development of human resources; and
- the Skills Development Act, which seeks to enable the development of the skills of the local workforce.

Through a process of negotiation with regulatory authorities and representative bodies, including organised labour, mine management has initiated various programmes to ensure compliance with the various regulatory statutes. The Companies have informed SRK that, with respect to the revised legislation, the Mining Assets are materially compliant and that pro-active involvement to seek appropriate exemptions through a negotiated process will be pursued.

9.3 Organisational Structures and Operational Management

SRK has been informed that the organisational structure currently in place, together with operational management, will remain until such time as planned shaft closures occur, following which, downsizing will be assessed. The Mining Assets are adequately resourced with the appropriate levels of technically qualified and experienced personnel in production and related support functions. Table 9.1 gives the historical and the 2004 manpower requirements or Total Employees Costed ("TEC") for the Mining Assets.

Table 9.1 Mining Assets: Historical TECs

Mining Operations	2001 (No.)	2002 (No.)	2003 (No.)	2004[1] (No.)
Target Operations – Target Mine	1,177	1,355	1,119	1,088
Free Gold Operations	20,368	14,722	16,106	17,119
Harmony Free State Operations	15,668	12,776	11, 178	12,673
Welkom Operations	1,492	1,786	2,348	2,179
West Wits Operations	17,640	16,907	15,110	14,131
Evander Operations	8,805	8,639	6,906	7,203
Orkney Operations	6,579	6,174	5,854	4,696
Kalgold Operations	453	444	230	223
Harmony Australia Operations	882	882	882	882
Total	**73,064**	**63,685**	**59,733**	**60,194**
Avgold	**1,177**	**1,355**	**1,119**	**1,088**
Harmony	**71,887**	**62,330**	**58,614**	**59,106**

[1] 2004 reports six-month actual TECs to December 2003.

9.4 Recruitment, Training, Productivity Initiatives and Remuneration Policies

Recruitment, training, productivity initiatives and remuneration policies are, in general, typical of operating practices and strategies as implemented within the South African gold mining industry.

- **training**: Training initiatives have focused on the development of both technical and managerial skills of senior and middle management. At the operational level, training initiatives include mine managements commitment to the Adult Basic Education and Training ("ABET") initiatives;
- **productivity initiatives**: Mine management continually reviews and implements various productivity initiatives which reflect the operational conditions and remuneration policies within the individual labour markets; and
- **remuneration policies**: Levels generally comply with industry-wide salary scales. In addition to basic components, employees receive additional entitlements, which are related to accommodation and medical and employee benefit plans in the form of pension/provident schemes.

9.5 Industrial Relations

The Companies 2004 business plans require some 57,235 mine workers with approximately 80% being members of registered trade unions. Industrial relations at the Mining Assets are managed in accordance with key driving factors. These include the prevailing legislative requirements, regulatory bodies, labour representation, collective bargaining arrangements and regional/operational specific employee-employer agreements.

Historically, trade unions in South Africa have had, due to links with political parties, a significant influence over social and political reform as well as the collective bargaining process. Presently the situation is manageable; however, it is uncertain whether labour disruptions will be used to advocate such political causes in the future.

Mine management has embarked on a process involving all labour representatives (unions and management) to ensure appropriate and timely interaction to resolve industrial relations issues, including communication and joint decision-making, bonus strategies and procedures. Depending on fluctuations in the US$ gold price and exchange rates together with the rising (above CPI) cost of employment due to recent wage negotiations, future workforce reductions may be required. In this instance, SRK consider that appropriate procedures are in place and, other than periodic action during wage negotiations, consider industrial relations risks to be manageable.

9.6 Productivity Assumptions

Productivity initiatives are primarily focused on restructuring of staffing structures and working practices as part of the Companies' overall strategy. This strategy is based on the recent success of both the "*Harmony Way*" and Avgold's normal operating principles. The importance of maintaining economic production levels, where labour cost contributes significantly in a highly regulated labour market (South Africa Region) is the principal focus and is recognised in all strategies. Labour cost constitutes between 40% and 60% of the total working costs.

Table 9.2 gives historical and projected productivity indices for the Mining Assets.

Table 9.2 Mining Assets: Historical Productivity Initiatives

Statistic		2001	2002	2003	2004[2]
Centares					
Target Operations – Taregt Mine	(m^2/TEC/month)	na	na	na	na
Free Gold Operations	(m^2/TEC/month)	4.3	4.5	5.0	5.0
Harmony Free State Operations	(m^2/TEC/month)	3.8	4.8	5.7	5.6
Welkom Operations	(m^2/TEC/month)	4.1	1.8	3.7	4.5
West Wits Operations	(m^2/TEC/month)	4.1	4.7	4.4	4.4
Evander Operations	(m^2/TEC/month)	4.1	3.9	4.2	4.2
Orkney Operations	(m^2/TEC/month)	4.4	2.2	4.4	4.9
Tonnes Milled					
Target Operations – Target Mine	(t/TEC/month)	35	48	31	83
Free Gold Operations	(t/TEC/month)	35	49	48	44
Harmony Free State Operations	(t/TEC/month)	28	30	40	39
Welkom Operations	(t/TEC/month)	19	10	20	24
West Wits Operations	(t/TEC/month)	33	40	43	46
Evander Operations	(t/TEC/month)	23	23	26	26
Orkney Operations	(t/TEC/month)	26	13	25	28
Kalgold Operations[1]	(t/TEC/month)	176	180	392	519
Harmony Australia Operations	(t/TEC/month)	103	452	675	481
Gold Production					
Target Operations – Target Mine	(g/TEC/month)	105	316	262	917
Free Gold Operations	(g/TEC/month)	153	197	186	171
Harmony Free State Operations	(g/TEC/month)	114	124	142	135
Welkom Operations	(g/TEC/month)	97	51	69	86
West Wits Operations	(g/TEC/month)	124	159	147	144
Evander Operations	(g/TEC/month)	135	125	135	135
Orkney Operations	(g/TEC/month)	184	97	180	178
Kalgold Operations[1]	(g/TEC/month)	282	363	839	1,063
Harmony Australia Operations	(g/TEC/month)	164	743	1,498	1,136

[1] The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

[2] 2004 reports six-month actual results to December 2003.

Future production is in part reliant upon the achievement of productivity initiatives currently underway at Free Gold Operations. Termed Continuous Operations ("Conops"), this initiative seeks to increase the amount of labour time at the working face by increasing the number of shifts from the current eleven day fortnight to the maximum allowed, taking due cognisance of all legal requirements and statutory conditions. Conops broadly projects an increase of between 20% and 30% in production (by measure of tonnes milled) for an increase of between 10% and 15% in labour costs. Note that labour costs are approximately 50% of the total operating expenditures.

Conops is currently in place at Harmonys' Orkney and Welkom Operations, however the intention is to implement Conops at all the Companies' South African operations, commencing with Free Gold Operations.

9.7 Separation Liability

The total separation liability for the Mining Assets has been estimated by application of an average unit separation cost multiplied by the projected TEC at the time of either downsizing or closure.

Table 9.3 summarises the estimated separation costs to be expended on either closure or down sizing of the Mining Assets.

Table 9.3 Tax Entities: Separation Costs

Tax Entities	Terminal Separation Benefits Liability (ZARm)
Target Tax Entity	10
Free Gold Tax Entity	200
Joel Tax Entity	18
Harmony Free State Tax Entity	188
Harmony Welkom Tax Entity	32
Randfontein Tax Entity	272
Evander Tax Entity	104
Harmony Orkney Tax Entity	72
Kalgold Tax Entity[1]	8
Mt. Magnet & Cue Tax Entity	0
South Kalgoorlie Tax Entity	0
Total	**904**
Harmony	**894**
Avgold	**10**

[1] The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

10. HEALTH AND SAFETY

10.1 Introduction

This section includes discussion and comment on the safety and health related aspects associated with the Mining Assets. Current and historical health and safety statistics are presented with discussion on the more significant measures in progress to deal with identified risks.

10.2 Legislation

Health and safety in South Africa is governed by various regulatory bodies and mining and labour legislation. In general these are well established and, in conjunction with management's operating policies, form the cornerstone of health and safety management. Key legislation changes as noted in the various operating regions are summarised below.

In South Africa, following publication of the Leon Commission Report in 1994 all aspects of health and safety on mines is governed by the Mine Health and Safety Act No.29 of 1996 ("the Mine Health and Safety Act") which came into effect on 15 January 1997. The Mine Health and Safety Act was the result of intensive discussion and consultations between Government, employees and employee representatives over an extended period of time and, whilst leaving room for self-regulation, also provides for strict control by Government. In complying with the Mine Health and Safety Act, mine management has established risk management and medical surveillance systems in addition to the health and safety committees to which workplace representatives have been elected. In summary this provides for various health and safety measures and provides for employee participation in these matters with stated objectives, *inter alia*:

- to protect the health and safety of persons at mines;
- to require employers and employees to identify hazards and eliminate, control and minimise the risks relating to health and safety at mines;

- to ensure compliance with both domestic and international law and regulations on health and safety at mines;
- to provide for employee participation in matters of health and safety through health and safety representatives and health and safety committees at mines;
- to provide for effective monitoring of health and safety and working conditions at mines;
- to provide for enforcement of health and safety measures at mines;
- to provide for investigations and inquiries to improve health and safety at mines;
- to promote:
  - a health and safety culture in the mining industry; and
  - training in health and safety in the mining industry; and
- co-operation and consultation on health and safety between the regulatory bodies, employers, employees and their representatives.

With respect to the Harmony Australian Operations, they are operated in accordance with the relevant regulatory codes and practices governing Australian mining operations.

10.3 Statistics

Table 10.1 presents safety statistics for the Mining Assets and includes the total number of fatalities, fatality rate and the lost time injury frequency rate ("LTIFR") for 2001 to 2003 inclusive. Table 10.2 presents similar statistics for the Companies.

The overall safety performance of the Mining Assets during calendar 2003 (measured against performance during calendar 2002) is summarised as: a decrease in the number of fatalities by 16%; a decrease in the fatality rate by 30% and a decrease in the LTIFR by 10%.

Table 10.1 Mining Assets: Historical Safety Statistics

Statistics	2001	2002	2003	2004[2]
Fatalities (no.)				
Target Operations – Target Mine	2	0	0	0
Free Gold Operations	11	10	6	5
Harmony Free State Operations	9	8	2	6
Welkom Operations	4	1	2	0
West Wits Operations	12	20	20	5
Evander Operations	5	6	4	3
Orkney Operations	10	7	4	2
Kalgold Operations[1]	0	0	0	0
Harmony Australian Operations	0	0	0	0
Fatality Rate (fatalities per mmhrs)				
Target Operations – Target Mine	0.35	0.00	0.00	0.00
Free Gold Operations	0.35	0.24	0.15	0.25
Harmony Free State Operations	0.26	0.27	0.07	0.51
Welkom Operations	0.92	0.35	0.35	0
West Wits Operations	0.32	0.47	0.54	0.23
Evander Operations	0.27	0.33	0.23	0.41
Orkney Operations	0.56	0.48	0.48	0.45
Kalgold Operations[1]	0.00	0.00	0.00	0.00
Harmony Australian Operations	0.00	0.00	0.00	0.00
LTIFR (mmhrs)				
Target Operations – Target Mine	9	9	11	6
Free Gold Operations	17	15	15	20
Harmony Free State Operations	35	26	24	21
Welkom Operations	17	12	12	15
West Wits Operations	24	23	23	22
Evander Operations	22	24	34	30
Orkney Operations	28	24	24	15
Kalgold Operations[1]	7	13	4	9
Harmony Australian Operations	na	15	2	15

[1] The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

[2] 2004 reports six-month actuals to December 2003.

10.4 Health and Safety Management

Health and safety management of the Mining Assets is focused on the development of company wide health and safety policies, taking cognisance of the legislation and regulatory environment. The Companies' Health and Safety policies are broadly aligned and state that the Companies will endeavour to:

- comply with all applicable laws, regulations and standards and where adequate laws do not exist, develop and apply standards that reflect the Companies commitment to safety and health;
- manage risk by implementing systems to identify, assess, monitor and control hazards and to review performance;
- maintain a consultative process with employees through Health and Safety Representatives and Committees in all aspects related to safety and occupational health;
- provide employees with information, instruction, training and supervision which is necessary to enable them to perform their work safely and without risk to health;
- actively practice a comprehensive Risk Management Safety Programme aimed at continuous improvement of safety and occupational health;
- protect property, equipment, materials and natural assets from damage by fires, explosions, pollution, contamination or any other down grading incident;
- support relevant occupational health and safety research;
- actively participate in the Environmental Management Programmes and compliance with the requirements of its' Nuclear Licence;
- keep abreast of new developments and technology.

The Companies have informed SRK that all health and safety departments adhere to both the provisions of the Mine, Health and Safety Act and the Minerals Act with full-time, as well as part-time safety representatives employed at all the Mining Assets. In accordance with the provisions of the Mine, Health and Safety Act, a number of baseline risk assessments, continuous risk assessments and physical conditions ratings are conducted. Managerial instructions, emergency procedures and codes of practice are reasonably in place. Specific health and safety hazards identified include water, dust, fire, seismicity and falls of ground, explosions, insufficient emergency power equipment and occupational hygiene issues.

The HIV/AIDS infection rate of approximately 28% at the Companies' South African operations is representative of South Africa's mining industry. In order to mitigate against the likely impact and consequence of the occurrence of HIV/AIDS, the Companies have embarked on the following activities:

- awareness programmes in all operating regions;
- company wide wellness programmes;
- medical assistance to repatriated employees; and
- separation packages for employees who wish to return home.

Further, actuarial assessments by the Companies indicate that the cost of addressing the disease at the Mining Assets may peak at approximately 2% of the total cost of production, which equates to approximately US$4/oz. At current levels of infection and taking cognisance of remedial action taken, the net cost has been estimated by the Companies at approximately US$1.20/oz. This cost has, however not been included into the cash flow projections for each Tax Entity for the purpose of valuation, as presented in Section 13 primarily because there is no specific measure at this time to ascertain the accuracy of the Companies estimates.

Measured against the Ontario benchmarks for fatality rates of 0.15/mmhrs and LTIFR of 7.50/mmhrs the Companies currently operate at some 50% of this target. Whilst this does, in part, reflect the impact of deep level gold mining in South Africa, current fatality statistics are considered to be unacceptably high.

10.5 Future Considerations

The Mining Assets will continue to be exposed to commonplace mining hazards such as water, dust, fire, seismicity, falls of ground ("FoG"), explosions, occupational hygiene issues and materials handling and transportation. Increased vigilance and focus is required in respect to:

- potential increases in the FoG as the proportion of production sourced from remnant mining areas increases on certain of the older Mining Assets;
- potential increases in seismicity as the mining extent increases and operations progress deeper;
- the potential impacts of HIV/AIDS on the labour force, should the present rate of industry-wide infection not be curtailed.

11. ENVIRONMENTAL

11.1 Introduction

The following section includes discussion and comment on the environmental and water management aspects of the Mining Assets. Specifically, detail and comment is included on the status of the environmental issues, environmental legislation and permitting, environmental management systems and environmental liabilities.

11.2 South African Legislation and Compliance

11.2.1 Legislation and Environment

Environmental legislation in South Africa, as specifically applied to mining operations, defines the relevant authorisation requirements. This comprises environmental authorisation, mining authorisation, water use licences, water pollution regulations, waste disposal permission, air pollution registration certificates, control of hazardous substances, radiation registration, disturbance of archaeological resources, protection of forests and closure of mines by the issuing of closure certificates. A critical component of authorisation is the requirement for an Environmental Management Programme ("EMP") and evidence of financial provisioning for rehabilitation and final closure. The EMP is developed through an Environmental Impact Assessment ("EIA") process and is documented in an Environmental Management Programme Report ("EMPR"), together with supporting baseline information on the mine environment and a review of identified environmental impacts. The Department of Minerals and Energy ("DME") is responsible for approval of the EMP and ensuring that other regulatory authorities with an interest in the environment accept the EMP. In summary, the EMP contains the environmental conditions of authorisation for the development and operation of a mine, which are generally defined in the form of objectives, principles and key design criteria. EMPRs identify the individual impacts, mitigation measures and rehabilitation issues and must also be approved by other South African Government departments. The requirements imposed upon mining companies to ensure environmental restitution remain under review in the areas of hazardous waste management and mine closure and it is possible that this will result in additional costs and liabilities. Further, water management remains a key focus, specifically in respect to the changed requirements as provisioned for by the National Water Act 36 of 1998 and the National Environmental Management Act 107 of 1998.

Mining practices in South Africa are such that strict compliance can seldom be demonstrated; however where minor/nominal non-compliance occurs, this is generally not considered material to the continuation of future operations.

Environmental liability provisioning in the South African mining industry is a condition of the EMP process, which must be agreed with the relevant regulatory authorities and has to be approved by the South African Revenue Service ("SARS"). Based on South Africa's environmental and regulatory requirements, monies are accrued based on the estimated environmental rehabilitation costs over the operating LoM. Further, annual contributions are made by Avgold and Harmony to environmental trust funds (the "Trust Fund") created in accordance with South African statutory requirements, which provide for the estimated cost of pollution control and rehabilitation at the end of the LoM. SARS in this instance approves such annual contributions to the Trust Fund and requires that the annual contributions be estimated on the basis of remaining liability divided by the expected remaining life of the operation.

Minerals and Petroleum Resources Development Act 28 of 2002: The Act is a recent addition to South African mining legislation. This Act and its draft Regulations require that an EMP be submitted and approved for prospecting and mining alike and that the EMP be monitored and assessed for its continued appropriateness, adequacy, and environmental performance. On approval of the prospecting right or mining permit/right a six monthly progress report to the Regional Manager of the DME will be required, that among other items will have to detail the execution and compliance with the approved environmental management plan. The regulations also require that appropriate financial provision be made for appropriate rehabilitation and remediation of environmental damages and a closure plan. From a social perspective the Regulations require a social and labour plan to be produced and provides for mining companies to contribute to the local economic development of areas within which they operate with visible and measurable poverty eradication. This could result in significantly increased expenditure by mines in meeting their social responsibilities in the future. On the Act coming into force existing mines will have a five-year period in which to convert their current mining rights to the new mining rights and submit with the applications the required environmental and social documents for approval.

11.2.2 Compliance

- **EMP:**
  - ***Avgold***: The EMPR for Target Mine was approved in April 1999 and ongoing environmental management is conducted in accordance with this document. Generally there is broad compliance with the EMPR given that the mine is in the final stages of development following a period of construction and new infrastructure on surface and underground,
  - ***Harmony***: All EMPs at the various operations, apart from West Wits Operations' Cooke No.4 BU, Kalgold Operations and the Evander Operations' No.10 BU have been approved. The Cooke No.4 BU and the Kalgold Operations' EMPs have been submitted for approval. Operations at Evander No.10 BU were ceased prior to the approval of the EMP and discussions are currently being held with the DME with regard to the closure. In the interim, it has been agreed that all the outstanding environmental issues at the Evander No.10 BU will be incorporated into existing EMPs and accounted for in the Evander Operations closure liability. In several instances the EMPRs are in the process of being updated;
- **Water Use Licences:** The recent introduction of the National Water Act has resulted in the necessity to convert water permits issued under the Water Act to water registrations and water use licences.
  - ***Avgold***: All existing water uses have been registered with DWAF with effect from June 2001 and the mine now appears to be in compliance with its water use permits (789N). The ground water and surface water monitoring program is being maintained and reported to the Regional Director, DWAF on a monthly basis as required under the permit conditions. Pertinent to the terms of the Permit is an Exemption 1955B which prohibits discharge of waste water to Swartpan, into which all non-deliberate discharge will make its way. An interception drain with sufficient pumping capacity to cope with spillages during prolonged wet spells has been constructed and is in operation. Finally effluent and groundwater monitoring results indicate contamination levels higher than water quality guidelines. Despite being non-enforceable under present permit conditions, SRK considers that continued monitoring is required and may present liability risks if the current levels do not recede,
  - ***Harmony***: All operations, apart from West Wits Operations, have registered water uses and are awaiting instruction from the DWAF on direction regarding submission of applications for water use licences. Harmony Free State Operations submitted its water use license application in 2002, however to date no license has been received. West Wits Operations is operating, in agreement with the DWAF, under their original water permits; however applications for new order licence have been submitted and approval is awaited;
- **Financial Provision:** In accordance with the requirements of the Minerals Act and in line with the Income Tax Act, trust funds have been set up into which contributions are being made for mine closure.
  - ***Avgold***: Avgold has established and registered a trust fund ring-fenced for its Target Operations and has been making regular contributions to the fund based on its estimated closure liability and a current operating mine life of 17 years,
  - ***Harmony***: Kalgold Operations is in the process of registering a trust into which contributions can be made and is the only operation that is currently not contributing to a registered trust. The Free Gold Operations' St. Helena Environmental Trust has recently been registered;
- **Radiation:** Certificates of Registration are required under the National Nuclear Regulator Act of 1999. The registrations are issued by the National Nuclear Regulator ("NNR").
  - ***Avgold***: NNR has accepted clarification on a report of the radiation audit carried out in 1999. Target Operations previously operated under an NL-72 licence in terms of the Nuclear Energy Act (1993), which included Loraine (now President Steyn) activities. Target applied (December 2001) for a Certificate of Registration in terms of the NNR Act (47 of 1999) to replace the licence held at the time. Operation under a registration certificate would reduce the stringency of the existing licence and eliminate the need for financial guarantees in respect of radiation control. The Certificate of Registration ("CoR") (No.COR10) was issued on 5 May 2003, and includes the Loraine operations owned by President Steyn. Currently there are no indications that the mine is out of compliance with its radiation monitoring and performance. Quarterly reports are submitted as required by the conditions of the licence,
  - ***Harmony***: Registrations have been issued to all operations apart from the Free Gold Operations' St. Helena, however to date no CoR have been received; and

- **Waste Disposal Sites:** Waste disposal sites require permits from DWAF in terms of the Environment Conservation Act. A Memorandum of Understanding has been issued indicating that the permitting function will transfer to the Department of Environmental Affairs and Tourism in the forseeable future.
  - ***Avgold***: has maintained an area with a NNR approved wash bay in its salvage yard for several years for decontamination of radiation-contaminated scrap; however the area is currently empty. Target has contracted a BEE waste recycling company in Welkom (I&S Waste Recycling) to remove and process recyclable wastes from the mine site. Domestic waste is dumped at the Allanridge Municipal waste site with municipal approval. Target does not maintain its own waste site; and
  - ***Harmony***: Permitted waste disposal sites are operated at the West Wits Operations' Elandsrand BU, Deelkraal BU, Free Gold Operations', Joel BU and St. Helena BUs. Unlicensed sites are being used at Elandsrand BU and at Evander No.8 BU. The Evander No.8 BU site will be relocated to the regional municipal site, which is in the initial planning stages. All other operations have integrated their waste management into municipal solid waste systems.

11.3 International Legislation and Compliance

11.3.1 Harmony Australian Operations

Approvals for the mining and processing operations conducted on the Mt. Magnet Hill 50, the Cue Big Bell and the South Kalgoorlie mining leases were obtained from the Department of Industry & Resources ("DIR") (formerly Department of Minerals and Energy) using the Notice of Intent ("NoI") process. The need for formal assessment of the mining activities by the Department of Environmental Protection ("DEP") was considered but found not to be required. Works Approvals were sought and obtained from the DEP for activities such as construction and operation of tailings storage facilities and hyper-saline bore fields.

Commitments made within the NoI and Work Approval documents are binding for any future operations on these tenements unless a request for an amendment is submitted to the relevant government authorities and is accepted. Commitments typically relate to rehabilitation practices (topsoil removal and spreading) and closure criteria (waste dump slope angles, vegetation establishment success), environmental management practices (dust control, chemical storage and handling) and environmental monitoring.

Environmental approvals are actively sought for new projects (i.e. satellite open pits) as directed by Senior Mine personnel. Discussions with site Environmental Managers indicated that approvals are generally received with minimal delay due to the good working relationships established with regulators. Bonds are not typically lodged until work is ready to commence on newly approved areas. Systems have been developed at Hill 50 to actively track the status of all environmental approval submissions. This has helped ensure mining does not commence in areas until all necessary approvals have been obtained and bonds lodged.

11.3.2 Harmony Canadian Operations

The Harmony Canadian Operation's Bisset mine does not own the mineral rights and operates in accordance with a mining lease and an environmental licence. It is understood that whilst the licence has no time restriction, should Harmony Canadian Operations fail to comply with its conditions it may be revoked, temporarily or permanently. As the operation is currently on care and maintenance the environmental aspects were not reviewed in detail.

11.4 Environmental Policy and Management

SRK has considered the Companies Environmental policy statements and commitments at an operational level and is satisfied that the Companies are generally adhering to them. Where non-compliance is occurring in terms of environmental legislation and commitments in terms of the respective EMPs, as discussed throughout Section 11 of this CPR, management is aware of the such issues and SRK consider them to be taking appropriate measures to manage the issues in line with their policies to do so.

11.4.1 Avgold

Avgold maintains an Environmental Management System ("EMS") database modelled after the ISO 14001 system. The company has not yet sought accreditation; however the company conducts external and internal audits annually.

Avgolds' Environmental Policy Statement includes a commitment to:

- comply with the environmental law of all countries in which it operates and where these are deemed by the company to inadequately protect the health and safety of people or ecosystems, endeavours to exceed these standards;
- aspire to minimise and control any impact on the environment and prevent pollution using suitable environmental management systems;
- seek to continuously improve on performance with respect to environmental management by regular review and with the use of suitable auditing techniques;
- ensure that all new projects undergo appropriate environmental impact assessments;
- ensure that all employees who have responsibility for environmental management systems receive appropriate training and are assigned responsibility for performance;
- inform all employees, contractors and sub-contractors of their obligations in respect of the company policy.

In addition to its general Environmental Policy, Avgold have a Radiation Protection Management Policy as summarised:

- Philosophy: Avgold–Target division is committed to the practice and management of its business in a manner compatible with the broader goals of the social, economic and natural environment and to the integration of radiation protection management into all its activities; and
- Objectives:
  - to prevent the occurrence of deterministic effects of radiation and limit stochastic effects to levels deemed to be acceptable during all phases of the operation, shutdown and decommissioning;
  - to ensure compliance with regulatory standards, nuclear energy legislation, company policies and philosophy, by following an approved radiation protection quality management programme;
  - to promote the education, training and motivation of employees to raise their general awareness of radiation protection.

11.4.2 Harmony

Harmony believes that all its employees as well as members of the public have the right to good quality air, water and soil as well as a safe working environment. Harmony is committed to acting responsibility as far as remediation of environmental impacts, resulting from mining activities is concerned. In order to implement policy Harmony commits to the following:

- to conduct environmental impact assessments when establishing new operations;
- to monitor and audit environmental progress;
- adopt the best affordable technology to limit impacts on the environment and minimise waste;
- to interact with all relevant authorities and all interested and affected parties;
- conform with environmental and health and safety legislation.

Harmony environmental affairs are the responsibility of the Group Environmental Coordinator who is assisted by environmental coordinators or foremen at the various business units and an environmental engineer with regard to strategy development.

11.5 Environmental Issues

11.5.1 Target Operations

The key environmental issues at Target Mine are:

- ground water contamination resulting from acid generation in the tailings facility and leached from the waste rock dumps with the footprint of the re-located pyrite dam offering a further potential for contamination;
- ground water contamination resulting from potential seepage beneath the Swartpan, Voëlpan and any unlined evaporation ponds;
- potential inherent liabilities following the sale of Loraine No.3 Shaft and associated assets;
- non-rehabilitated tailings facilities and rock dumps together; and
- potential radiation hazards.

There is a risk that Target Mine will be required to supply one or more neighbouring farmers with potable quality water for domestic use in the short term, this as a result of the ground water contamination to the west of the slimes dam near Swartpan. Crops in this area do however appear to be coping adequately with the current ground water quality. The probable cost of this supply is unlikely to be high, although the supply could be required in perpetuity.

A programme of surface rehabilitation was approved by the Target Division EMP Steering Committee for completion during 2002 and 2003. Included in this programme was a grassing programme for the eastern, western and southern sides of the slimes dam over a three-year period commencing in 2002.

Demolition of the old gold plant, and rehabilitation of the pyrite dam footprint have been completed.

Work is continuing on drainage modifications on the west side of the slimes dam to reduce ground water contamination. A plantation of 1,250 Eucalyptus and other trees has been planted along the west side of the slimes dam to intercept seepage and help to dewater the area. The ground water interception trench west of the tailings dam is in the process of being deepened to make it more effective.

Further expenditure is planned on water management issues associated with the tailings dam. Originally this was to include the lining of the evaporation ponds to the east of the tailings dam. A decision has now been made not to line these ponds in the foreseeable future. Work on other aspects of water management around the tailings dam was delayed, and is anticipated to commence shortly. The role of these ponds will broaden from evaporation to return water/evaporation ponds. Pumps will be installed to return water to the plant, while the balance will be evaporated.

Target intends to carry out some rehabilitation work around the No.3 Shaft rock dump and drainage area during 2004. Some rock has been removed leaving the footprint to be rehabilitated. A wet area adjacent to the rock dump (known as Friccies slimes dam) has been rehabilitated.

Construction of the tailings backfilling plant is complete. Exemption from Regulation 704 of the National Water Act with respect to backfilling of underground workings has been granted by DWAF for this operation.

Generally progress on scheduled environmental rehabilitation has been made, and the environmental risk profile has been marginally reduced; however, the remedial work described for completion during 2003 was extensive, and was more optimistic than could be achieved in that period.

Despite outstanding remedial work SRK consider there to be no significant short-term risks to Target Mine from issues that have been identified. There are some longer-term risks that more extensive ground water remediation may have to be undertaken, for which the closure costing currently makes no provision. Once a comprehensive dataset on ground water quality has been obtained, the mine's management should discuss with DWAF its policy on the need to contain or remove the contaminated ground water plume.

The more important area of risk remains the cost of remediation for contamination known to exist but as yet not fully understood in terms of technical detail and the ultimate stance of the regulators at the time of closure. A detailed closure plan should therefore be developed, and updated periodically during the life of the mine taking cognisance of better technical understanding and regulatory opinion as the mine approaches its end of economic life.

11.5.2 Free Gold Operations

The decontamination of the Joint Metallurgical Scheme ("JMS") presents a significant risk to the Free Gold Operations associated with disturbed ground surrounding discontinued processing facilities. Investigations have been undertaken to determine the extent of contamination; however no firm estimates for decontamination are available. In the context of the existing total liability estimated for Free Gold Operations this risk associated with the JMS is not considered material.

At Joel BU the location of the tailings dam, across a watercourse, represents a potential liability however the mine has clean water diversion facilities in place upstream of the tailings dam and operates a pumping system downstream of the tailings dam by means of which seepage water is re-circulated into the water system for the processing plant.

Water pollution is a significant risk in the Dankbaar/Brakpan Complex area where farmers are being exposed to groundwater pollution. Currently Free Gold Operations are trucking clean water to affected farms at a cost of ZAR80k per month. A project is underway to install a pipe network to supply the farmers with clean water with the pipeline route having been determined and agreed to by the affected

farmers. The tender process is scheduled to commence mid-July 2003. Willow Valley Chicken, located east of Bambanani BU and west of Saaiplaas BU (Harmony Free State Operations) has complained about contamination of groundwater used by the farm. Further investigations are being undertaken to determine the extent and source of contamination and until such time as the investigation reports its findings, the issue remains a risk.

11.5.3 Harmony Free State Operations

Water management at Harmony Free State Operations is a complicated matter, due to the presence of several mining operations in the region. The geographical extent of water contamination is widespread and has been an area of investigation for several years and there are several risks associated with both surface and underground water management. From a groundwater perspective the Unisel and De Kroon pollution plumes have been identified and present a liability to the respective operations. Preliminary investigations have indicated that engineering options such as collection and interception barriers may prevent further movement of the contaminated water to the Sand River. Water pollution control dams for the surface discharge to the Sand River have silted up and will need to be cleaned out to increase retention capacity.

11.5.4 Welkom Operations

Groundwater pollution has been identified at the Welkom tailings dam. AngloGold in its Sale Agreement indemnified the acquirer of the facility from pollution that occurred prior to the purchase date. Harmony as current owners is therefore actively maintaining an enlarged cut-off trench at the facility to reduce the potential of any further contamination thus limiting its liability.

Discharge from the shafts at Welkom Operation is estimated at approximately 2.4Mlpd. The discharge water is handled as part of Free Gold Operation's overall water management system and any specific allocated liability is not therefore allocated to Welkom Operations.

11.5.5 West Wits Operations

Untreated mine decant water was recently discovered at West Wits Operations discharging to the Tweelopies East Spruit. West Wits Operations have commissioned an independent hydrogeological study to investigate this issue; however no conclusive findings are as yet available as to confirm the source and any associated liability. In the event that West Wits Operations are liable for clean-up and treatment of this decant, potential treatment methods include the Paques method, gypCIX or reverse osmosis, which have capital costs ranging from ZAR4.5m/Ml per day to ZAR8.0m/Ml per day (the mine decants 11Ml per day). To date, the cost of managing the mine decant water has been in the order of ZAR10m. It is expected that a future decant may also occur some 2km east of the current decant but the quantities and any costs associated with this decant have not currently been estimated.

Sinkholes have formed in the vicinity of Randfontein No.4 BU that have not been filled and may present a liability to the mine. Sinkholes do not however represent a material liability in the context of the total liability currently estimated and provisioned for the West Wits Operations. Randfontein BU has a separate ZAR300m insurance policy underwritten by Lloyds of London in the event that a claim is made against the mine; however to date no material claims have been made.

Radiation has been detected in the Deelkraal tailings facility and the NNR requires the dam to be appropriately rehabilitated, however Harmony consider that the tailings may have economic potential and as such can be reprocessed. Irrespective of potential to reprocess, heavy rains during the past summer have prevented sufficient drainage required prior to rehabilitation. Until such time as a commitment is made to reprocess the tailings the facility will remain a liability in terms of NNR requirements.

Uranium concentrate at West Wits Operations can be processed at VRO; however is currently being stored until approval for its transport is granted by NNR.

With effect from 10 June 2003, Placer Dome Western Areas Joint Venture ("PDWAJV") took over pumping operations at Randfontein No.4 BU. PDWAJV will continue pumping at approximately 75Mlpd until its Mineral Reserves affected by water made from Randfontein BU are depleted. Pumping costs are estimated to be ZAR54m per annum. Harmony has assumed that the PDWAJV will undertake pumping beyond the life of Randfontein and as such does not include this expenditure in its operating costs.

11.5.6 Evander Operations

At the Evander Operations groundwater pollution has been detected in the vicinity of tailings facilities, however borehole analysis indicates that the pollution plume is not extensive.

Diversion of clean water from Leeuwpan, which is Evander Operations' evaporation facility, is required to achieve compliance with the NWA Regulation 407. A cut-off trench required to bring the management of the facility into compliance.

Return water dams at Evander Operations are located within 1:50 year floodlines however several do not comply with the requirement to accommodate a 1:50-year flood, which could result in pollution events exposing the operation to unprovisioned liabilities.

11.5.7 Orkney Operations

SRK has been informed by the Companies that Harmony is indemnified against historical pollution problems as per the Sale Agreement with VRO; any liabilities are therefore limited to the physical constraint of the shaft surface areas.

In the Black Reef area Harmony may have some liability as a result of the exploration undertaken in the area and their acceptance of some responsibility by virtue of the submission and approval of the EMPR for prospecting. This could result in the need for further rehabilitation (possibly including measures for the treatment of contamination) and the need to flatten the slopes of excavations made during exploration. Much of this contamination is probably the result of the proximity of VRO Western Tailings complex near to the area, rather than the Orkney Operations.

With respect to the regional ground water problem, although contamination of ground water in the Klerksdorp, Stilfontein and Orkney area represents a significant liability, it is unlikely that this will impact significantly on Harmony. This view is taken due to the historic nature of the problem and the number of mines in the area that have contributed to the problem over a far greater time period than Orkney Operations have been operating. Any incremental impact due to the Orkney Operations over a relatively short period is unlikely to be material.

11.5.8 Kalgold Operation

Initial vegetation attempts, as specified in the EMP have proved difficult on the tailings dam. Solutions to the problem are being investigated to ensure that EMP commitments are met. If not successful there will be a risk of having to implement alternative rehabilitation methods such as cladding, which will be more expensive.

Monitoring programmes indicate that groundwater contamination is extending from the plant, heap leach pad, tailings dam, fines drains and return water dams toward the open pit which currently contains the pollution. Monitoring is required to ensure that contamination does not extend beyond the pit at closure.

The river diversion at Kalgold mine pit is not in compliance with DWAF requirements. It is estimated that ZAR4.5m would be required to bring the diversion into compliance. The compliant diversion will be implemented on determining the extent of proposed underground operations, which will influence the final positioning of the diversion.

11.5.9 Harmony Australian Operations

Potential liabilities associated with Mt. Magnet & Cue and South Kalgoorlie operations are considered as follows:

- seepage from tailings storage facilities at the Mt. Magnet Hill 50 operation the Cue Big Bell operation and South Kalgoorlie New Celebration operation. Vegetation deaths and contaminated groundwater plumes have been identified as resulting from such seepage;
- poor rehabilitation of historic waste dumps at South Kalgoorlie and to a lesser extent at the Hill 50 operation. As detailed in the relevant Closure Plans, remedial works are required to bring the rehabilitation to a standard that would be considered acceptable by regulatory authorities;
- inadequate exploration rehabilitation at the New Celebration Operation. Substantial amounts of drill-hole capping, sump rehabilitation and track rehabilitation is required to address disturbance created during historic exploration programs. Regulatory officials have indicated that bonds will be levied on all affected tenements unless progress is demonstrated; and

- *land contamination at the Hill 50, Big Bell and South Kalgoorlie operations. Considerable areas* at all three sites may be classified as contaminated with the proposed introduction of the Contaminated Sites Bill 2002. Contaminants are likely to include hydrocarbons (TPH), arsenic, mercury, cyanide and acid (pH). Areas most likely to be classified as contaminated would include tailings areas, contractors lay down areas, processing plants and open pits containing low pH (acidic) waters. Whilst some contaminated areas can be remediated, others are likely to remain classified as contaminated and future uses restricted. Costs associated with remediation have been included in Closure Plans, but as all three operations have little experience with actual remediation costs, these amounts are not considered to have a high degree of accuracy.

Given that Harmony has identified these issues and implemented detailed improvement programmes to address these, it is considered by SRK that adequate measures have been taken at this time to minimise the environmental risks.

11.5.10 Harmony Canadian Operations

SRK has not reviewed the environmental liabilities at Harmony's Canadian Operations and has been informed that the current operation is currently under care and maintenance. An annual operating cost for continuation of the care and maintenance is in the order of ZAR2.8m and is represented as part of the overall unallocated expenditures for Harmony.

11.6 Liabilities and Risks

SRK has identified risks, which cannot necessarily be accurately quantified. In such cases, SRK has either included indicative provisioning based on best technical estimates, or in areas where the risk is considered to be low, merely drawn attention to it without including specific provision.

Potential future requirements for water treatment during continued operations or following decommissioning is the single most material risk and the most technically and politically difficult to estimate. Whilst water treatment at the majority of the Mining Assets is not currently required, the potential for future requirements will be dependent upon:

- the execution of both recently passed legislation and more stringent future legislation which imposes more costly water management requirements;
- discharge criteria demanding potable water standards as opposed to more lenient general standards;
- tacit acceptance by various organisations of the concept of desalination and its increasing cost effectiveness as technology improves.

Actual requirements for post-closure radiation protection in South Africa are difficult to determine owing to the state of flux pending finalisation of legislative requirements. SRK's interpretation is that, in practice, a compromise will be found between strict idealistic standards and applied pragmatism.

Australian Environmental Bonds were last reviewed by Harmony as part of the Annual Environmental Report submissions made during 2002. It is anticipated that the bond amounts will increase during 2004 due to across the board unit rate bond increases by DIR. Bond reductions should be experienced at Big Bell during 2004 due to the large amount of rehabilitation earthworks undertaken during 2003.

11.7 Environmental Liabilities

Based on the items identified with this Section and discussions with Harmony and Avgold, SRK has estimated that the total Environmental Liability for the Mining Assets, as summarised in Table 11.1. The net difference will be funded from future contributions (included in the total working cost projections in the case of the South African Mining assets and in the capital expenditure projections for the Australian Assets) to fund the total liability.

The Trust Fund balance has been provided to SRK by the financial representative of the Companies at 31 December 2003.

These estimates of environmental liability exclude any potential resale or salvage values, which may be realised during the rehabilitation process.

Table 11.1 Tax Entities: Environmental Liabilities

Tax Entities	Total Liability (ZARm)	Trust Fund (ZARm)	Outstanding Liability (ZARm)	Closure Date (Financial Year)
Target Tax Entity	37	21	16	2020
Free Gold Tax Entity	680	573	107	2023
Joel Tax Entity	18	18	0	2014
Harmony Free State Tax Entity	370	69	302	2018
Harmony Welkom Tax Entity	33	23	10	2011
Randfontein Tax Entity	362	218	145	2023
Evander Tax Entity	120	51	69	2018
Harmony Orkney Tax Entity	25	17	8	2011
Kalgold Tax Entity[1]	13	1	12	2007
Mt. Magnet & Cue Tax Entity	95	0	95	2010
South Kalgoorlie Tax Entity	69	0	69	2006
Bisset	11	0	11	non-operational
Total	**1,834**	**992**	**842**	
Avgold	**37**	**21**	**16**	
Harmony	**1,797**	**971**	**826**	

[1] The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

12. TECHNICAL-ECONOMIC INPUT PARAMETERS

12.1 Introduction

The following section includes discussion and comment on the technical-economic aspects of the LoM plans associated with the Tax Entities. Specifically, comment is included on the basis of projections, production schedules, operating costs and capital expenditures; these have been compiled into detailed TEPs on an annual basis. Key aspects associated with the generation of the TEPs and their derivations are discussed.

12.2 Basis of Valuation and Technical-Economic Parameters

The valuation of the Tax Entities as presented in Section 13 has, *inter alia,* been based on the LoM plans, the resulting production profiles and associated revenue streams from gold sales, by-product credits, operating costs and capital expenditure profiles as provided to SRK by the Companies, reviewed, adjusted where appropriate and provided to the respective Financial Advisors by SRK. The generation of a LoM plan requires substantial technical input and detailed analysis and is critically dependent upon assumptions of the long-term gold price and sustained operating expenditure and the respective impact on cut-off-grades, potential expansion or contraction of the Mineral Resources and Mineral Reserves and the return on capital expenditure programmes.

The basis of forward projections of operating costs for mature mining operations are generally based on the previous financial year's performance, with certain modifications for inflation, projected improvements in productivity and other cost-reduction initiatives. In the case of development projects, TEPs are invariably based on recently completed feasibility studies.

Where warranted, following its independent review and post-discussions with the Companies, SRK has adjusted the assumed operating costs to account for future operating conditions (i.e. tonnage contribution from various ore sources and mining methods, mineability and shaft closures) and taking cognisance of its view on productivity initiatives.

Unless otherwise stated, operating costs comprise:

- **cash cost components**: namely direct mining costs, direct processing costs, direct general and administration costs, consulting fees, management fees, bullion transport and refining charges;

- the incremental components, including royalties but excluding taxes paid, required to yield **total cash costs**. Royalties in this regard exclude any potential new mineral royalties applicable to the South African Assets;
- the incremental components, including terminal separation benefits, reclamation and mine closure costs (the net difference of the total environmental liability and the current trust fund provision) but excluding non-cash items such as depreciation and amortisation. Incrementally these cash expenditures summate to yield **total working costs**; and
- **total costs:** the summation of total working costs, net movement in working capital and capital expenditure.

Additional costs required to reflect the assumed expenditures, as represented by the historical operating statistics in Section 2, are the projections of capital costs as given in Section 8. In addition to long-term capital projects, the LoM capital expenditure programmes generally include significant detail based on approved expenditure programmes (typically five years). Where warranted, SRK has made provision over and above these expenditures, specifically, for example, where no detail is available beyond this five-year period for additional infrastructure considered essential to implement the LoM plans. Capital provisioning for all assets is not provided for the first year due to a detailed capital budget and is discontinued two years prior to the projected closure dates.

Environmental provisions have been included in the operating costs as they are confirmed as necessary contributions to the environmental fund. All closure costs are to be expended in the year of final production. Further, SRK consider that there will be potential opportunities to realise salvage values on closure, although owing to the indeterminate nature of estimating such values these have been excluded from the LoM projections included herein.

No significant revenue is sourced from by-products or other precious metals.

12.3 Technical-Economic Parameters

The TEPs have been provided to the Companies and their respective Financial Advisors for comfirmation of cash flow projections and include:

- gold production profiles from all ore sources, including surface, underground and plant clean-up gold;
- total working costs profiles as previously defined; and
- capital expenditure profiles.

The TEPs are detailed in Tables 12.1 to 12.11 for each Tax Entity and Table 12.12 and Table 12.13 report the TEPs attributable to the Companies. Further, all expenditures are stated in financial years and 1 January 2004 money terms. In all cases the refining charges (typically ZAR50/kg) are included in the total working costs and have not been separately identified given their relatively minor contribution as a percentage of the total working costs.

In the case of Orkney Operations and Welkom Operations certain costs are based on contracts, which are dependent upon revenue projections. In this instance these have, *inter alia*, been based on the Base Case projections as included in Table 1.1 and are included in the total working costs.

In the case of the Doornkop Project certain contractual agreements between Harmony and its Joint Venture Partners have resulted in the initial injection of ZAR140m and an agreement that 16% of future operating profits derived from the Doornkop BU is paid by Harmony to its Joint Venture partner.

In the case of the Australian Operations royalties are paid on the basis of payable gold being 99% of gold recovered and the royalty being 2.5% of the sales revenue associated with the payable gold. The corresponding amounts have been included as items under royalty in the operating expenditures.

Table 12.1 Target Tax Entity: Total Assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004[1]	147	213	37	251
2005	326	546	61	607
2006	338	619	54	673
2007	342	608	51	659
2008	279	600	58	658
2009	296	601	36	637
2010	248	597	36	632
2011	230	606	36	642
2012	217	609	36	645
2013	235	573	36	609
2014	235	570	36	605
2015	235	570	36	605
2016	240	558	36	594
2017	200	532	36	567
2018	184	514	0	514
2019	181	498	0	498
2020	188	507	0	507
2021	0	16	0	16
Total	**4,119**	**9,336**	**582**	**9,918**

[1] Six-month forecast to June 2004, actual results between June 2003 and December 2003 are reported in Section 2.

Table 12.2 Free Gold Tax Entity: Total Assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004[1]	590	1,207	190	1,397
2005	1,281	2,564	462	3,025
2006	1,245	2,382	200	2,582
2007	1,214	2,061	70	2,131
2008	1,193	1,801	140	1,941
2009	1,081	1,761	100	1,861
2010	1,087	1,797	60	1,857
2011	934	1,592	100	1,692
2012	736	1,201	100	1,301
2013	728	1,201	80	1,281
2014	685	1,164	60	1,224
2015	657	1,094	20	1,114
2016	637	1,091	20	1,111
2017	612	1,078	20	1,098
2018	568	1,048	10	1,058
2019	449	1,015	10	1,025
2020	268	489	10	499
2021	268	489	0	489
2022	268	489	0	489
2023	291	553	0	553
Total	**14,791**	**26,077**	**1,651**	**27,728**

[1] Six-month forecast to June 2004, actual results between June 2003 and December 2003 are reported in Section 2.

Table 12.3 Joel Tax Entity: Total Assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004[1]	40	101	0	101
2005	80	189	30	219
2006	78	182	35	217
2007	80	178	10	188
2008	79	174	10	184
2009	77	172	10	182
2010	76	171	10	181
2011	76	171	0	171
2012	74	171	0	171
2013	69	175	0	175
2014	23	91	0	91
Total	**751**	**1,773**	**105**	**1,878**

[1] Six-month forecast to June 2004, actual results between June 2003 and December 2003 are reported in Section 2.

Table 12.4 Harmony Free State Tax Entity: Total Assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004[1]	346	819	31	850
2005	700	1,637	36	1,673
2006	701	1,642	44	1,686
2007	619	1,422	44	1,466
2008	617	1,453	41	1,494
2009	518	1,171	36	1,207
2010	517	1,171	32	1,203
2011	507	1,154	32	1,186
2012	504	1,173	22	1,195
2013	353	817	22	839
2014	279	635	20	655
2015	173	391	10	401
2016	164	382	0	382
2017	160	377	0	377
2018	172	411	0	411
Total	**6,329**	**14,653**	**370**	**15,023**

[1] Six-month forecast to June 2004, actual results between June 2003 and December 2003 are reported in Section 2.

Table 12.5 Welkom Tax Entity: Total Assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004[1]	48	121	0	121
2005	110	308	0	308
2006	89	270	0	270
2007	24	66	0	66
2008	24	66	0	66
2009	24	66	0	66
2010	24	66	0	66
2011	24	70	0	70
Total	**365**	**1,034**	**0**	**1,034**

[1] Six-month forecast to June 2004, actual results between June 2003 and December 2003 are reported in Section 2.

Table 12.6 Randfontein Tax Entity: Total Assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004[1]	460	955	167	1,123
2005	885	1,856	332	2,188
2006	827	1,740	280	2,020
2007	893	1,716	353	2,070
2008	1,000	1,859	225	2,085
2009	1,097	2,061	129	2,190
2010	997	1,779	37	1,816
2011	1,006	1,792	30	1,822
2012	989	1,767	30	1,797
2013	974	1,756	30	1,786
2014	959	1,758	25	1,783
2015	870	1,645	20	1,665
2016	756	1,490	20	1,510
2017	675	1,349	15	1,364
2018	521	1,054	15	1,069
2019	495	1,040	15	1,055
2020	262	546	10	556
2021	271	572	0	572
2022	188	416	0	416
2023	33	67	0	67
Total	**14,158**	**27,218**	**1,734**	**28,952**

[1] Six-month forecast to June 2004, actual results between June 2003 and December 2003 are reported in Section 2.

Table 12.7 Evander Tax Entity: Total Assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004[1]	198	450	52	502
2005	386	848	78	926
2006	392	848	83	931
2007	338	742	83	825
2008	288	633	63	696
2009	277	627	58	685
2010	275	625	38	663
2011	266	619	30	649
2012	232	546	30	576
2013	224	545	20	565
2014	148	340	20	360
2015	86	202	0	202
2016	86	202	0	202
2017	86	202	0	202
2018	102	231	0	231
Total	**3,383**	**7,661**	**555**	**8,217**

[1] Six-month forecast to June 2004, actual results between June 2003 and December 2003 are reported in Section 2.

Table 12.8 Orkney Tax Entity: Total Assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004[1]	134	297	10	308
2005	230	584	13	596
2006	186	518	3	521
2007	113	362	3	365
2008	95	313	1	314
2009	32	119	1	120
2010	31	122	1	122
2011	31	145	1	146
Total	**852**	**2,461**	**33**	**2,493**

[1] Six-month forecast to June 2004, actual results between June 2003 and December 2003 are reported in Section 2.

Table 12.9 Kalgold Tax Entity[1]: Total Assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004[2]	46	112	1	113
2005	89	211	0	211
2006	81	196	0	196
2007	82	156	0	156
2008	31	51	0	51
Total	**330**	**726**	**1**	**727**

[1] The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

[2] Six-month forecast to June 2004, actual results between June 2003 and December 2003 are reported in Section 2.

Table 12.10 Mt. Magnet & Cue Tax Entity: Total Assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004[1]	116	43	23	66
2005	298	91	50	141
2006	302	87	43	130
2007	288	81	37	118
2008	271	74	26	100
2009	158	58	13	71
2010	77	32	8	39
2011	20	18	4	22
Total	**1,529**	**484**	**204**	**688**

[1] Six-month forecast to June 2004, actual results between June 2003 and December 2003 are reported in Section 2.

Table 12.11 South Kalgoorlie Tax Entity: Total Assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004[1]	62	25	10	35
2005	116	48	12	60
2006	121	52	5	56
Total	**298**	**125**	**26**	**151**

[1] Six-month forecast to June 2004, actual results between June 2003 and December 2003 are reported in Section 2.

12.4 Avgold

Table 12.12 Avgold: Total Assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004[1]	147	213	37	251
2005	326	546	61	607
2006	338	619	54	673
2007	342	608	51	659
2008	279	600	58	658
2009	296	601	36	637
2010	248	597	36	632
2011	230	606	36	642
2012	217	609	36	645
2013	235	573	36	609
2014	235	570	36	605
2015	235	570	36	605
2016	240	558	36	594
2017	200	532	36	567
2018	184	514	0	514
2019	181	498	0	498
2020	188	507	0	507
2021	0	16	0	16
Total	**4,119**	**9,336**	**582**	**9,918**

[1] Six-month forecast to June 2004, actual results between June 2003 and December 2003 are reported in Section 2.

Figure 12.1 Avgold: Projected LoM Recovered Gold

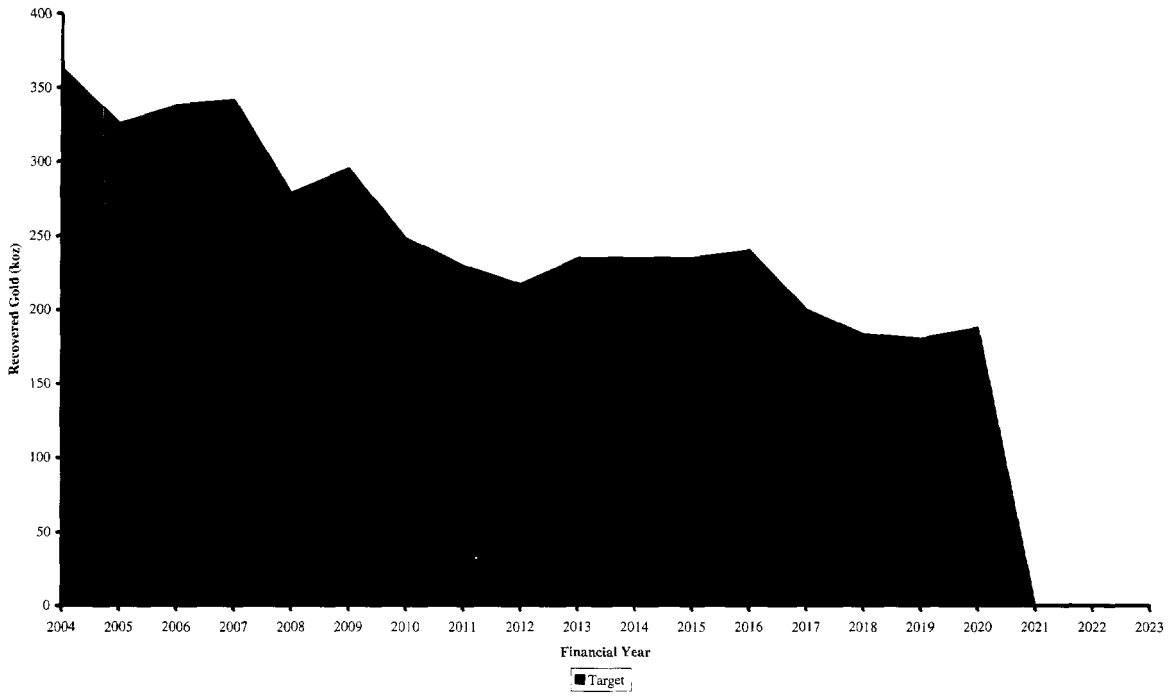
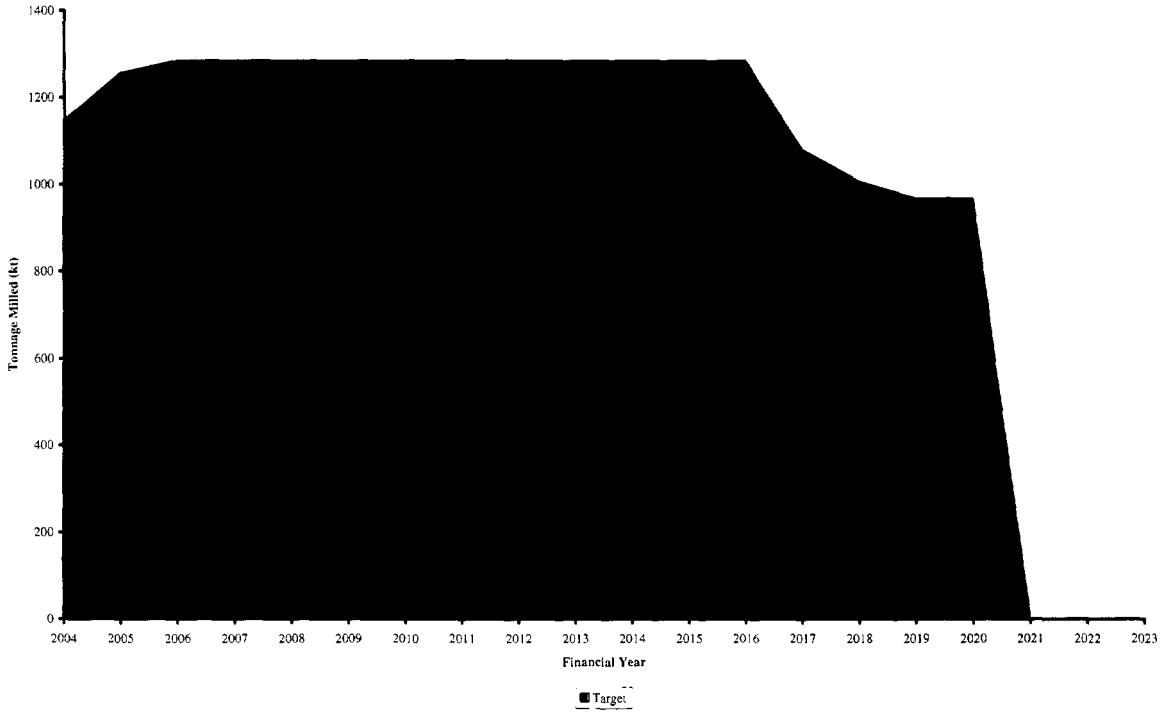


Figure 12.2 Avgold: Projected LoM Tonnes Milled

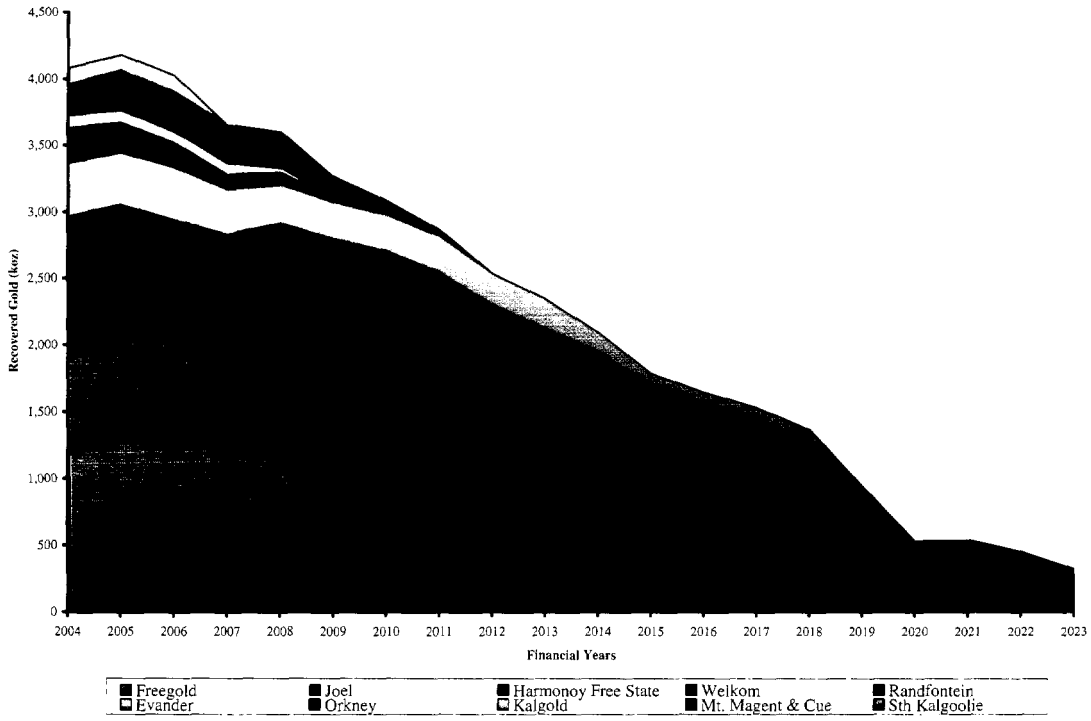


12.5 Harmony

Table 12.13 Harmony: Total Assumed TEPs

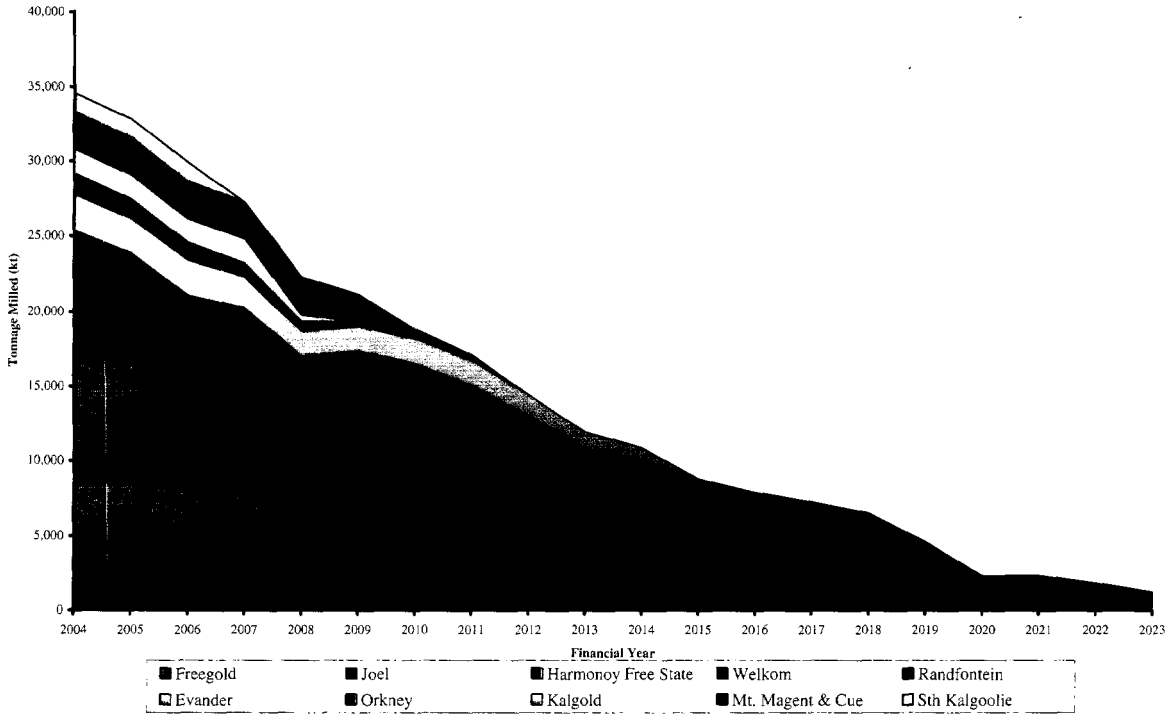
Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004	2,039	4,132	484	4,616
2005	4,175	8,336	1,012	9,347
2006	4,022	7,917	693	8,610
2007	3,650	6,784	601	7,385
2008	3,598	6,423	507	6,930
2009	3,262	6,035	346	6,381
2010	3,084	5,763	185	5,948
2011	2,864	5,561	197	5,758
2012	2,535	4,858	182	5,040
2013	2,346	4,495	152	4,647
2014	2,094	3,987	125	4,112
2015	1,786	3,332	50	3,382
2016	1,643	3,165	40	3,205
2017	1,532	3,006	35	3,041
2018	1,364	2,743	25	2,768
2019	943	2,055	25	2,080
2020	530	1,035	20	1,055
2021	539	1,061	0	1,061
2022	456	905	0	905
2023	324	620	0	620
Total	**42,787**	**82,212**	**4,680**	**86,892**

Figure 12.3 Harmony: Projected LoM Recovered Gold



The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

Figure 12.4 Harmony: Projected LoM Tonnes Milled



The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

12.6 Special Factors

SRK has included its view on the achievement of the LoM plans and the appropriateness of the Mineral Reserve statements when presenting the data in Sections 4, 12 and 13. At the time of writing SRK considered these projections to be both technically and economically achievable.

In all likelihood many of the identified risks and/or opportunities will have impact on the cash flows as presented in Section 13, some positive and some negative. The impact of one or a combination of risks and opportunities occurring cannot be specifically quantified to present a meaningful assessment. SRK has however provided sensitivity tables for single and multi-parameters, which one or a collective number of risks and opportunities. In this way the general risks are, with the aid of the sensitivity tables, adequately covered.

SRK consider that the identified risks should not impact more than 10% (the effect can be seen in the sensitivity tables) however cannot realistically predict the impact of one or more accruing at the same time. Ultimately all the risks and/or opportunities translate to increases/decreases in Revenue and Costs. These parameters have been sensitised accordingly to assess on a percentage basis the impact of one or more occurring individually or collectively.

12.6.1 General Risks and Opportunities

The Mining Assets are subject to certain inherent risks, which apply to some degree to all participants of the gold mining industry. These include:

- changes in the market price for gold which may be influenced, *inter alia*, by demand for gold in industry and jewellery, actual or expected sales by central banks, sales by gold producers in forward transactions and production and cost levels for gold in major gold producing countries. In the three-year period between December 2001 and December 2003 the gold price has ranged between US$260/oz and US$414/oz;
- the relative strength of the US dollar, the currency in which gold prices are generally quoted. During the period between December 2001 and December 2003 the exchange rate has ranged between 11.68:1ZAR:US$ and 6.54 ZAR:US$. The range in gold price in ZAR terms has therefore fluctuated between 103,200ZAR/kg in December 2001 and 85,571ZAR/kg in December 2003. The base case gold price of ZAR91,645/kg falls between these two extremes. The range in ZAR based gold price in the last three years against the base case is within +12% and –6%; however the impact on the Companies valuation is significant, for example using the December 2003 gold price and exchange rate and assuming an exchange rate based on a simple PPP/CPI relationship between the US$ and the ZAR going forward, would have a 30% impact in revenue translating to a material impact on valuation as indicated in sensitivity tables presented in Section 13;
- foreign exchange fluctuations;
- inflation rates;
- specific country risk including political and economic stability in the long-term;
- changes to future legislation (tenure, mining activity, labour, health and safety and environmental) within South Africa and Australia;
- exploration risk including the elapsed time between discovery of gold mineralisation, development of economic feasibility studies to bankable standards and associated uncertainty of outcome;
- the inability of the Mining Assets to fund the balance of their environmental liabilities from estimated operating cash flows, should operations cease prior to the stated LoM. This would result in an outstanding liability since the estimated rehabilitation expenditure exceeds the amounts available in the respective rehabilitation trust funds as at 31 December 2003; and
- mining risks including Mineral Reserve estimate risks, uninsured risks, industrial accidents, labour disputes, unanticipated ground water conditions, human resource management, health and safety performance (including the impact of HIV/AIDS) and, particularly for the South African Region, the management of seismicity and ground control at increased depth and increased production from remnant areas.

In contrast, whilst certain of the above reflect opportunities in addition to risk, SRK recognise that as of yet, an un-quantified opportunity is the beneficial application of new technology.

12.6.2 Operational Specific Risks and Opportunities

In addition to those stated above, the Mining Assets are subject to certain specific risks and opportunities, which independently may not be classified to have a material impact (i.e. likely to affect more than 10% of the Tax Entities' annual pre-tax profits), but in combination may do so. These are as follows:

Avgold: risks:

- a degree of risk that insufficient mechanised stopes will be available to meet the planned production increase due to development and/or scheduling constraints. While SRK consider there to be no technical impediment to the achievement of the projections in the mine plan, the achievement of these projections is dependent on the close management of the operations;
- a degree of risk associated with the fact that all production is derived from a single integrated production section in terms of access, rock transport and ventilation, that is distant from the shaft, with the associated risk that a major access rock failure, infrastructure equipment failure or fire could impact on all production for the duration of the interruption;
- that the commissioning of all the refrigeration units does not lead to the maintenance of reasonable operating temperatures to compensate for increased operating distances of the workings of the future mining blocks;
- a degree of risk that the Target Plant will not achieve the projected throughput. Indications are that actual feed characteristics and the proportion of waste in the feed differ from design assumptions. This is likely to preclude design throughput being achieved at the design mill product grind size but allow design throughput to be achieved at a coarser mill product grind size;
- a degree of risk that the Target Plant will not achieve the projected recovery due to a coarser mill product grind size. Notwithstanding the coarser milled product grind size achieved to date, overall recovery has generally exceeded design expectations. This has partly been assisted by the higher than planned grades being realised but in the main shows recovery to be less sensitive to grind than originally anticipated and this trend is likely to continue; and
- a degree of risk that the Target Plant will not achieve the projected recovery due to low leach recovery. Indications are that lower leach recoveries observed to date are due to the presence of a mild reversible preg robber in the ore. Overall recovery has however, consistently exceeded the projection of approximately 97% and this is likely to continue, with a slight drop off as the head grade reduces towards the end of the mine life.

Harmony: risks:

- a degree of risk associated with non-achievement of production targets as compared to historical performance. Broadly the impact of non-achievement can be assessed by consideration of the valuation sensitivity tables as presented in Section 13. In this instance SRK consider that the –10% reduction in revenue (production) and the +5% increase in operating expenditures reflects this risk;
- a degree of risk associated with the timely completion of the sub-66L project, the Phakisa project and the installation of hoisting facilities at Joel North BU. Should these not materialise they will result in a reduction in life and reduced flexibility at Tshepong BU; a delay in cash flow from Phakisa BU and increased operating costs at Joel BU due to continued use of the triple decline system and Joel South BU for ore transportation;
- a degree of risk associated with seismic activity, specifically with respect to remnant mining operations and shaft pillar extraction programmes, specifically at West Wits Operations and Orkney Operations;
- a degree of risk associated with underground fires at Bambanani BU and Welkom Operations. Should this materialise it is likely to have a direct impact on production;
- a degree of risk associated with the presence of illegal miners in the Free State Goldfield, which may increase the likelihood of underground fires; and
- a degree of risk associated with the various agreements between Harmony and VRO. The various agreements incorporate arrangements for toll processing, shared services and rights of access.

Avgold: opportunities:

- an opportunity to optimise the LoM plan by further improvements to the mine design resulting in lower costs into the cut-off grade. Increased economic Mineral Resources would then translate into increased Mineral Reserves;
- an opportunity to increase the production contribution from open stoping methods in place of drift and fill mining, resulting realising lower unit costs;
- an opportunity to separate the level of waste hoisted with the ore currently resulting which currently has a negative impact on the head grade;

- an opportunity to improve productivities, efficiencies and unit costs associated with a change in management focus as the mine transforms from the construction stage to steady state optimised production; and
- an opportunity to rationalise overhead costs should the proposed transaction take place.

Harmony: opportunities:

- the opportunity to increase Mineral Reserves through: re-classification of portions of the Inferred Mineral Resources (which SRK currently consider to be conservatively based) as Indicated Mineral Resources and consequently Probable Mineral Reserves; future conversion of those Mineral Resources classified by the suffix [2] in the SRK statements; future increase in extraction of certain Mineral Resources classified by the suffix [1], specifically where low extraction ratios are currently planned;
- the opportunity to improve the returns on certain projects, namely Rolspruit through further technical assessments;
- the opportunity to establish the benefits of CONOPS across the Mining Assets;
- the opportunity to out-source certain marginal operations to low-cost contractors;
- the opportunity to rationalise utilisation of process facilities at the operations in the Free State Gold Field; and
- the opportunity to rationalise other services across the BUs should the proposed merger be approved.

13. MINING ASSETS VALUATION

13.1 Introduction

The following section presents discussion and comment on the valuation of the Tax Entities. Specifically, comment is included on the methodology used to generate the TEMs and to establish the Base Cases including basis of valuation, valuation techniques and valuation results.

In complying with Section 12.14 of the JSE Listings Requirements, specifically the non-technical requirements of 12.14(b), SRK has relied upon the Companies and their respective Financial Advisors for certain inputs to the TEMs. These inputs are duly acknowledged by SRK. Further in reproducing the results of the TEMs in this CPR, SRK provides assurances to the Directors of the Companies, that the technical-economic inputs: Sections 12.14(b)(i, ii, iii, v, vi and vii) including operating costs, capital expenditure and saleable product profiles of the Tax Entities, as provided to and reviewed by SRK, are accurately incorporated into the TEMs. SRK also duly acknowledge the Companies and their Financial Advisors' opinion that the remaining inputs to the TEMs required in compliance with Section 12.14(b)(iv, viii, ix, x, xi, xii, xiii, xiv, xvi, xv, xvi, xvii and xviii) are accurately reflected in the TEMs.

13.2 Basis of Valuation of the Mining Assets

In generating the TEM's and deriving the Base Case valuations, SRK has:

- incorporated certain macro-economic parameters (Table 1.1) as provided by the Financial Advisers;
- incorporated the gold price forecasts (Table 1.1) as provided by the Financial Advisers;
- determined a Base Case nominal WACC based discount factor of 12.0%, as provided by the Financial Advisers, which has been uniformly applied;
- relied upon the Companies and their Financial Advisers for all accounting inputs as required for the generation of the TEMs;
- relied upon the Companies and their respective Financial Advisers, that the calculation of nominal cash flows is in accordance with the fiscal regime within which the Tax Entity operates and are accurately reflected in the TEMs;
- excluded any potential new order mineral royalties which may be applied to the Mining Assets located in South Africa. At the time when this CPR was generated, no formal agreement and/or notification has been put in place with regard to when or if mining companies will be subjected to this revenue based royalty and if so what percentage is may be;

- reported a discounted cash flow ("DCF") valuation, dated 1 January 2004 for the Base Case LoM plans, which include Mineral Resources and other material not derived from Mineral Reserves. For comparative and compliance purposes only, SRK also report NPV's which on a simplistic basis, represent cash flows based on Mineral Reserves alone; and
- performed sensitivity analyses to ascertain the impact of discount factors, commodity prices, total working costs and capital expenditures.

13.3 Limitations and Reliance on Information

The cash flows reported for the Tax Entities are contingent upon the current and anticipated performance of mine management, as well as the expected achievement of the operating parameters as provided to and reviewed by SRK and set out in this CPR.

SRK has relied upon the Companies that such projections and forecasts as indicated, will be realised in the amounts and time periods contemplated.

The cash flow projections and valuation is based upon the anticipated operating performance as well as information provided to SRK by the Companies and their respective Financial Advisors at the date hereof. It should be understood that unforeseen developments might affect our opinion, or the reasonableness of any assumptions or basis used.

The LoM plans and the TEMs include forward-looking statements that are not historical facts. These forward-looking statements are necessarily estimates and involve a number of risks and uncertainties that could cause actual results to differ materially.

Notwithstanding the aforementioned comments, SRK consider that at the time of compilation, the Mineral Reserves and associated depletion resulting in cash flow projections are appropriate and technically and economically achievable, however it must be noted that SRK do consider that a certain amount of upside potential is already built into the projections that fundamentally rely on the existing management performance to implement and sustain recent initiatives to ensure that the projected cash flows are realised within the anticipated timeframe.

13.4 Valuation Methodology

In generating the TEMs SRK has been provided with financial input parameters from the Companies as presented in Table 13.1 and Table 13.2. SRK has placed reliance on the Companies financial representatives as identified in Section 1.6.1.

Table 13.1 Assessed Losses and Unredeemed Capital as at 31 December 2003

Tax Entity	AL (ZARm)	UC (ZARm)	"a" Factor	"b" Factor	Tax Threshold	Non-Mining Tax
Target	0	3,652	37	185	5	38%
Free Gold	0	334	46	230	5	38%
Joel	128	756	46	230	5	38%
Harmony Free State	2	0	37	185	5	30%
Welkom	2	2	46	230	5	38%
Randfontein	4	15	46	230	5	38%
Evander	0	15	0	0	0	38%
Orkney	0	0	46	230	5	38%
Kalgold	10	250	46	230	5	38%
Mt. Magnet & Cue	12	12	na	na	na	na
South Kalgoorlie	23	53	na	na	na	na

Table 13.2 Working Capital Opening Balances as at 31 December 2003

Tax Entity	Debtors (ZARm)	Creditors (ZARm)	Stores (ZARm)
Target	34	-65	26
Free Gold	101	234	0
Joel	6	18	0
Harmony Free State	169	-540	157
Welkom	42	-39	0
Randfontein	70	-150	1
Evander	28	-64	2
Orkney	154	-113	5
Kalgold	7	-3	0
Mt. Magnet & Cue	12	-64	18
South Kalgoorlie	6	-35	12

In generating the TEMs SRK note the following:

- the TEMs are used solely for the valuation of the Tax Entities;
- TEMs include:
  - the saleable product projections of the Tax Entities; and
  - the total working costs stated in 1 January 2004 money terms, as defined in Section 12 and including direct mining costs, direct processing costs, direct general and administration costs, consulting fees, management fees, distribution and transportation costs, non-production related sundry income; royalties, terminal separation benefits, reclamation and mine closure costs (the net difference of the total environmental liability and the current trust fund provision);
- the total capital costs stated in 1 January 2004 money terms;
- no salvage value has been included for plant and equipment on cessation of operations;
- the macro-economic parameters as stated in Table 1.1 and their use for generation of post-tax pre-finance cash flows;
- the calculation of taxation liabilities is based on the fiscal structure under which the Mining Assets operate. In this respect the Mining Assets are classified as Tax Entities (Target Tax Entity, Free Gold Tax Entity, Joel Tax Entity, Harmony Free State Tax Entity, Welkom Tax Entity, Randfontein Tax Entity, Evander Tax Entity, Orkney Tax Entity, Kalgold Tax Entity, Mt. Magnet & Cue Tax Entity and South Kalgoorlie Tax Entity). In South Africa mining companies are taxed in accordance with the definitions of mining and non-mining income. Consequently, the non-mining income of the Mining Assets is taxed at a rate of 38%. The South African mining tax rate formula is expressed as: $y=a-(b/x)$, where "y" represents the rate of mining tax and "x" is expressed as a percentage of the ratio between taxable income and taxable revenue from gold mining. The a and b factors for each Tax Entity are presented in Table 13.1;
- the valuation of the Tax Entities has been undertaken on an un-geared basis and excludes deferred tax payments;
- the valuations of the Tax Entities exclude South African mineral royalties; which have not yet been formalised in terms of when and if operations located in South Africa will be liable and what percentage of the net revenue will be payable should the royalties become policy. The materiality of implementing revenue based royalties can be assessed by viewing the sensitivity tables provided in this Section where a percentage decrease between 0% and -5% on the revenue line indicates the impact on NPV. Note this risk is only applicable to the Mining Assets located in South Africa;
- the valuation of the Tax Entities is on a stand alone basis and no STC has been incorporated into the projections.;
- the valuation of the Tax Entities does not equate to the valuation of Avgold and Harmony, the Companies. Notwithstanding this aspect, the Companies have provided SRK with certain data, which in addition to the valuation of the Tax Entities, represent equity-based valuations of the Companies. These items include:
  - the net cash position of the individual companies at 31 December 2003;
  - the attributable valuation by assessment of market capitalisation of the various interests in listed companies; and

- the unallocated head office annual operating expenditures as incurred by the Companies are ZAR0m per annum for Avgold and ZAR103m per annum for Harmony. These amounts are projected in constant amounts for ten years and presented at a nominal discount factor of 12.0%;

- the monthly operating care and maintenance cost for Bisset Mine amounts to ZAR230k per month. This has been included on the same basis as the unallocated head office expenditures;
- the selection of a nominal Weighted Average Cost of Capital ("WACC") based discount factor of 12.0%. A range of discount factors is, however provided in each of the valuation tables. The base case WACC has been provided to SRK by the Companies Financial Advisors as identified in Section 1. The WACC has been calculated taking into account the Companies average tax rate; RSA inflation rate and debt/capital ratio. The after tax cost of debt and the cost of equity multiplied by the debt/capital ratio results in an appropriate WACC for the Companies;
- results of a sensitivity analysis on the main operating parameters including revenue, operating costs and capital expenditure;
- no hedging or forward sale components has been included in the valuation; and
- the statement that, at 31 December 2003, there were 680.1 million shares in issue for Avgold and 258.3 million shares in issue for Harmony. This information was provided by the Companies and relates to the shares in issues reported in the Companies quarterly results to 31 December 2003.

13.5 Post-Tax Pre-Finance Cash flows

Table 13.3 through Table 13.15 inclusive; present the un-geared nominal cash flows for Target Tax Entity, Free Gold Tax Entity, Joel Tax Entity, Harmony Free State Tax Entity, Welkom Tax Entity, Randfontein Tax Entity, Evander Tax Entity, Orkney Tax Entity, Kalgold Tax Entity, Mt. Magnet & Cue Tax Entity and South Kalgoorlie Tax Entity in financial years. Note that these tables are not representative of financial statements as may be customary for determining the consolidated cash flow positions for Avgold and Harmony. Further, no account is taken of movements in working capital at the company level, or deferrals of tax liabilities between accounting periods, as may be the case in the generation of such financial statements.

The first period 2004 reports the forecast six-month projections to between January and June 2004, thereafter the projections are annual YE June. Actual results for the first six-month period of 2004 are reported in Section 2. The Tax Entity valuations are derived from the reported cash flows commencing 1 January 2004.

Table 13.3 Target Tax Entity: TEM in ZAR (nominal terms)

Financial Year		Units	Totals	2004[1]	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Project Year			/Averages	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Production																							
Mining																							
	RoM Tonnage	(kt)	19,944	528	1,257	1,298	1,404	1,404	1,404	1,404	1,404	1,404	1,122	1,122	1,122	1,083	1,045	1,006	968	968			
	Head Grade	(g/t)	6.6	8.9	8.3	8.4	8.5	7.0	7.4	6.2	5.7	5.4	5.7	5.7	5.7	5.9	5.9	5.9	6.0	6.0			
	Contained Gold	(koz)	4,242	151	336	351	384	314	333	280	259	245	207	207	207	204	199	190	187	187			
Processing																							
	Feed Tonnage	(kt)	19,944	528	1,257	1,285	1,285	1,285	1,285	1,285	1,285	1,285	1,285	1,285	1,285	1,285	1,080	1,006	968	968			
	Feed Grade	(g/t)	6.6	8.9	8.3	8.4	8.5	7.0	7.4	6.2	5.7	5.4	5.9	5.9	5.9	6.0	6.0	5.9	6.0	6.0			
	Feed Metal	(koz)	4,242	151	336	348	351	287	304	257	237	225	243	243	243	248	207	190	187	187			
	Metallurgical Recovery	(%)	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%			
	Recovered Gold	(koz)	4,112	147	326	338	342	279	296	248	230	217	235	235	235	240	200	184	181	181			
	Clean-up Gold	(koz)	7	7																			
	Saleable Metal	(koz)	4,119	147	326	338	342	279	296	248	230	217	235	235	235	240	200	184	181	188			
Sales																							
	Gold	(koz)	4,119	147	326	338	342	279	296	248	230	217	235	235	235	240	200	184	181	188			
Commodity Prices																							
	Gold Price	(US$/oz)		366	386	390	394	398	402	406	410	414	418	422	426	431	435	439	444	448	453		
		(ZAR/kg)		91,659	111,797	125,823	134,929	143,309	145,259	151,796	158,626	165,765	173,224	181,019	189,165	197,677	206,573	215,869	225,583	235,734	246,342		
Macro-economics																							
	Exchange Rates	(US$:ZAR)		7.8	9.0	10.0	10.7	11.2	11.3	11.6	12.0	12.5	12.9	13.3	13.8	14.3	14.8	15.3	15.8	16.4	16.9		
		(US$:AUS$)		1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.6		
		(ZAR:AUS$)		5.9	6.8	7.5	7.9	8.4	8.4	8.6	8.7	8.9	9.1	9.3	9.5	9.7	9.9	10.1	10.3	10.5	10.7		
RSA CPI		(%)		2.55%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%		
USA CPI		(%)		1.38%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%		
AUS CPI		(%)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%		
Financial – Nominal																							
Sales Revenue	(ZAR'm)		20,919	420	1,135	1,323	1,435	1,243	1,335	1,173	1,132	1,118	1,264	1,321	1,381	1,475	1,286	1,232	1,267	1,377			
Total Working Costs	(ZAR'm)		−13,576	−267	−586	−687	−699	−702	−754	−765	−820	−863	−859	−886	−926	−950	−928	−947	−963	−1,029	55		
	Mining	(ZAR'm)	−9,320	−147	−385	−481	−485	−504	−523	−546	−581	−611	−579	−605	−633	−640	−643	−644	−643	−671			
	Processing	(ZAR'm)	−1,744	−28	−77	−83	−87	−91	−95	−99	−104	−108	−114	−119	−125	−130	−119	−119	−121	−126			
	Overheads	(ZAR'm)	−2,468	−42	−106	−112	−117	−122	−127	−133	−139	−145	−152	−159	−166	−173	−181	−189	−198	−207			
	Environmental	(ZAR'm)	−19		−2	−2	−2	−2	−2	−3	−3	−3											
	Terminal Separation Benefits	(ZAR'm)	−20																	−20			
	Net Change in Working Capital	(ZAR'm)	−5	−50	−16	−9	−8	18	−6	15	6	4	−13	−3	−3	−6	15	5	−2	−5	55		
Operating Profit		(ZAR'm)	7,343	153	549	636	735	541	582	408	312	255	406	435	455	525	358	286	304	349	55		
Tax Deductible Allowances		(ZAR'm)	−4,418	−153	−549	−636	−735	−541	−582	−408	−312	−212	−53	−55	−58	−60	−63						
Tax Liability		(ZAR'm)	−850										−107	−116	−121	−145	−85	−83	−89	−103			
Capital Expenditure		(ZAR'm)	−766	−37	−64	−59	−58	−69	−44	−46	−48	−51	−53	−55	−58	−60	−63						
Final Net Free Cash		(ZAR'm)	5,727	116	485	577	677	472	537	362	264	205	246	264	276	320	210	203	215	245	55		
Statistics – Nominal																							
Cash Operating Costs		(ZAR/kg)	105,624	47,468	55,907	64,204	64,767	82,692	81,049	100,629	115,329	128,064	115,816	121,027	126,474	126,505	151,558	166,701	171,027	171,876			
Total Cash Costs		(ZAR/kg)	105,624	47,468	55,907	64,204	64,767	82,692	81,049	100,629	115,329	128,064	115,816	121,027	126,474	126,505	151,558	166,701	171,027	171,876			
Total Working Costs		(ZAR/kg)	105,970	58,279	57,733	65,311	65,771	80,939	81,992	98,998	114,878	127,954	117,645	121,374	126,835	127,357	149,092	165,839	171,443	176,079			
Total Costs		(ZAR/kg)	111,949	66,449	64,016	70,905	71,252	88,876	86,814	104,992	121,660	135,452	124,888	128,943	134,745	135,444	159,218	165,839	171,443	176,079			

[1] Six-month forecast to June 2004, actual results between July 2003 and December 2003 are reported in Section 2.

Table 13.4 Free Gold Tax Entity: TEM in ZAR (nominal terms)

Financial Year	Units	Totals	2004[1]	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Project Year		/Averages	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Production																						
Mining																						
RoM Tonnage	(kt)	74,240	4,344	8,747	7,968	8,180	4,698	4,735	4,758	4,051	3,445	3,418	3,051	2,539	2,539	2,537	2,503	2,088	1,160	1,160	1,160	1,160
Head Grade	(g/t)	6.4	4.5	4.8	5.1	4.8	7.6	7.3	7.3	7.4	6.9	6.8	7.2	8.3	8.0	7.7	7.3	6.9	7.4	7.4	7.4	7.4
Contained Gold	(koz)	15,228	628	1,351	1,298	1,259	1,154	1,115	1,121	963	761	752	707	676	656	631	587	464	276	276	276	276
Processing																						
Feed Tonnage	(kt)	74,240	4,344	8,747	7,968	8,180	4,698	4,735	4,758	4,051	3,445	3,418	3,051	2,539	2,539	2,537	2,503	2,088	1,160	1,160	1,160	1,160
Feed Grade	(g/t)	6.4	4.5	4.8	5.1	4.8	7.6	7.3	7.3	7.4	6.9	6.8	7.2	8.3	8.0	7.7	7.3	6.9	7.4	7.4	7.4	7.4
Feed Metal	(koz)	15,228	628	1,351	1,298	1,259	1,154	1,115	1,121	963	761	752	707	676	656	631	587	464	276	276	276	276
Metallurgical Recovery	(%)	96%	94%	95%	96%	96%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%
Recovered Gold	(koz)	14,690	590	1,281	1,245	1,210	1,120	1,081	1,087	934	736	728	685	657	637	612	568	449	268	268	268	268
Clean-up Gold	(koz)	101				4	73															23
Saleable Metal	(koz)	14,791	590	1,281	1,245	1,214	1,193	1,081	1,087	934	736	728	685	657	637	612	568	449	268	268	268	291
Sales																						
Gold	(koz)	14,791	590	1,281	1,245	1,214	1,193	1,081	1,087	934	736	728	685	657	637	612	568	449	268	268	268	291
Commodity Prices																						
Gold Price	(US$/oz)		366	386	390	394	398	402	406	410	414	418	422	426	431	435	439	444	448	453	457	462
	(ZAR/kg)		91,659	111,797	125,823	134,929	143,309	145,259	151,796	158,626	165,765	173,224	181,019	189,165	197,677	206,573	215,869	225,583	235,734	246,342	257,427	269,011
Macro-economics																						
Exchange Rates	(US$:ZAR)		7.8	9.0	10.0	10.7	11.2	11.3	11.6	12.0	12.5	12.9	13.3	13.8	14.3	14.8	15.3	15.8	16.4	16.9	17.5	18.1
	(US$:AUS$)		1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6
	(ZAR:AUS$)		5.9	6.8	7.5	7.9	8.4	8.4	8.6	8.7	8.9	9.1	9.3	9.5	9.7	9.9	10.1	10.3	10.5	10.7	10.9	11.1
RSA CPI	(%)		2.55%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
USA CPI	(%)		1.38%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
AUS CPI	(%)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%
Financial – Nominal																						
Sales Revenue	(ZAR'm)	74,891	1,682	4,453	4,871	5,096	5,320	4,883	5,132	4,608	3,796	3,922	3,857	3,863	3,915	3,933	3,817	3,150	1,964	2,052	2,144	2,434
Total Working Costs	(ZAR'm)	–36,537	–993	–2,742	–2,636	–2,382	–2,177	–2,153	–2,348	–2,132	–1,669	–1,789	–1,798	–1,776	–1,846	–1,906	–1,926	–1,905	–953	–1,036	–1,083	–1,284
Mining	(ZAR'm)	–29,914	–945	–2,121	–2,025	–1,872	–1,819	–1,869	–1,963	–1,789	–1,427	–1,479	–1,490	–1,476	–1,531	–1,571	–1,583	–1,580	–780	–816	–852	–924
Processing	(ZAR'm)	–2,700	–115	–240	–234	–224	–124	–130	–136	–128	–116	–121	–118	–111	–116	–121	–126	–120	–98	–102	–107	–112
Overheads	(ZAR'm)	–3,589	–144	–302	–313	–184	–195	–186	–195	–202	–155	–161	–168	–175	–183	–191	–200	–208	–98	–103	–108	–117
Environmental	(ZAR'm)	–164	–3	–6	–6	–6	–6	–7	–7	–7	–8	–8	–8	–9	–9	–9	–10	–10	–11	–11	–12	–12
Terminal Separation Benefits	(ZAR'm)	–388	–20	–62	–1	–37	–38	–14	–20	–3	–7	–15	–19	–43	–110							
Net Change in Working Capital	(ZAR'm)	219	214	–73	–39	–34	–32	38	–10	32	37	–6	7	–3	1	2	12	57	34	–4	–5	–9
Operating Profit	(ZAR'm)	38,354	689	1,711	2,235	2,713	3,143	2,729	2,784	2,476	2,128	2,133	2,059	2,087	2,069	2,026	1,891	1,244	1,010	1,016	1,061	1,151
Tax Deductible Allowances	(ZAR'm)	–1,987	–190	–480	–218	–80	–167	–124	–78	–136	–142	–119	–93	–32	–34	–35	–18	–19	–20			
Tax Liability	(ZAR'm)	–14,853	–37	–463	–816	–1,094	–1,247	–1,086	–1,127	–970	–826	–836	–816	–856	–846	–825	–773	–491	–410	–420	–439	–473
Capital Expenditure	(ZAR'm)	–1,987	–190	–480	–218	–80	–167	–124	–78	–136	–142	–119	–93	–32	–34	–35	–18	–19	–20			
Final Net Free Cash	(ZAR'm)	21,515	462	767	1,201	1,539	1,730	1,519	1,579	1,369	1,160	1,178	1,151	1,198	1,189	1,166	1,099	734	580	596	623	678
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	78,694	65,648	66,868	66,437	60,391	57,582	65,000	67,858	72,958	74,152	77,806	83,358	86,286	92,436	98,968	107,980	136,706	117,252	122,528	128,042	127,259
Total Cash Costs	(ZAR/kg)	78,694	65,648	66,868	66,437	60,391	57,582	65,000	67,858	72,958	74,152	77,806	83,358	86,286	92,436	98,968	107,980	136,706	117,252	122,528	128,042	127,259
Total Working Costs	(ZAR/kg)	79,419	54,135	68,850	68,099	63,084	58,639	64,065	69,455	73,403	72,863	79,020	84,371	86,976	93,195	100,132	108,937	136,473	114,466	124,419	129,995	141,831
Total Costs	(ZAR/kg)	83,738	64,485	80,912	73,734	65,197	63,131	67,768	71,763	78,082	79,065	84,265	88,738	88,564	94,906	101,991	109,984	137,858	116,891	124,419	129,995	141,831

[1] Six-month forecast to June 2004, actual results between July 2003 and December 2003 are reported in Section 2.

Table 13.5 Joel Tax Entity: TEM in ZAR (nominal terms)

Financial Year	Units	Totals/	2004[1]	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Project Year		Averages	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Production																						
Mining																						
RoM Tonnage	(kt)	5,257	429	858	663	477	470	459	457	457	445	411	131									
Head Grade	(g/t)	4.7	3.1	3.1	3.9	5.4	5.5	5.5	5.5	5.5	5.5	5.4	5.2									
Contained Gold	(koz)	788	42	85	82	84	82	81	80	80	78	72	22									
Processing																						
Feed Tonnage	(kt)	5,257	429	858	663	477	470	459	457	457	445	411	131									
Feed Grade	(g/t)	4.7	3.1	3.1	3.9	5.4	5.5	5.5	5.5	5.5	5.5	5.4	5.2									
Feed Metal	(koz)	788	42	85	82	84	82	81	80	80	78	72	22									
Metallurgical Recovery	(%)	95%	94%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%									
Recovered Gold	(koz)	748	40	80	78	80	79	77	76	76	74	69	21									
Clean-up Gold	(koz)	2	2																			
Saleable Metal	(koz)	751	40	80	78	80	79	77	76	76	74	69	23									
Sales																						
Gold	(koz)	751	40	80	78	80	79	77	76	76	74	69	23									
Commodity Prices																						
Gold Price	(US$/oz)		366	386	390	394	398	402	406	410	414	418	422	426								
	(ZAR/kg)		91,659	111,797	125,823	134,929	143,309	145,259	151,796	158,626	165,765	173,224	181,019	189,165								
Macro-economics																						
Exchange Rates	(US$:ZAR)		7.8	9.0	10.0	10.7	11.2	11.3	11.6	12.0	12.5	12.9	13.3	13.8								
	(US$:AUS$)		1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.5								
	(ZAR:AUS$)		5.9	6.8	7.5	7.9	8.4	8.4	8.6	8.7	8.9	9.1	9.3	9.5								
RSA CPI	(%)		2.55%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%								
USA CPI	(%)		1.38%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%								
AUS CPI	(%)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%								
Financial – Nominal																						
Sales Revenue	(ZAR'm)	3,346	113	278	304	334	350	347	361	377	384	369	130									
Total Working Costs	(ZAR'm)	−2,193	−83	−201	−200	−205	−208	−214	−223	−233	−242	−258	−129	1								
Mining	(ZAR'm)	−1,482	−66	−124	−126	−143	−145	−148	−155	−162	−168	−172	−74									
Processing	(ZAR'm)	−473	−21	−44	−42	−40	−42	−44	−46	−48	−50	−51	−46									
Overheads	(ZAR'm)	−236	−15	−29	−30	−19	−20	−20	−21	−22	−23	−24	−13									
Environmental	(ZAR'm)																					
Terminal Separation Benefits	(ZAR'm)	−26						−2	0	−1	−2	−13	−9									
Net Change in Working Capital	(ZAR'm)	24	18	−5	−2	−2	−1	1	−1	−1	0	2	12	1								
Operating Profit	(ZAR'm)	1,153	30	77	104	129	142	133	138	144	142	112	1	1								
Tax Deductible Allowances	(ZAR'm)	−118		−31	−38	−11	−12	−12	−13													
Tax Liability	(ZAR'm)	−305					−52	−47	−49	−57	−56	−43										
Capital Expenditure	(ZAR'm)	−118		−31	−38	−11	−12	−12	−13													
Final Net Free Cash	(ZAR'm)	730	30	45	66	118	78	73	76	86	85	69	1	1								
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	93,813	82,254	79,055	81,940	81,743	84,652	89,063	93,389	97,593	103,979	115,817	183,926									
Total Cash Costs	(ZAR/kg)	93,813	82,254	79,055	81,940	81,743	84,652	89,063	93,389	97,593	103,979	115,817	183,926									
Total Working Costs	(ZAR/kg)	93,897	67,279	80,935	82,792	82,631	85,060	89,599	93,692	98,088	104,586	120,815	179,408									
Total Costs	(ZAR/kg)	98,956	67,279	93,503	98,581	87,235	89,938	94,816	99,168	98,088	104,586	120,815	179,408									

[1] Six-month forecast to June 2004, actual results between July 2003 and December 2003 are reported in Section 2.

Table 13.6 Harmony Free State Tax Entity: TEM in ZAR (nominal terms)

Financial Year / Project Year	Units	Totals/ Averages	2004[1] 1	2005 2	2006 3	2007 4	2008 5	2009 6	2010 7	2011 8	2012 9	2013 10	2014 11	2015 12	2016 13	2017 14	2018 15	2019 16	2020 17	2021 18	2022 19	2023 20
Production																						
Mining																						
RoM Tonnage	(kt)	63,018	3,743	6,926	6,659	6,367	6,366	6,406	6,409	5,701	4,662	2,474	2,474	1,680	1,206	973	973					
Head Grade	(g/t)	3.3	3.1	3.3	3.5	3.2	3.2	2.7	2.7	2.9	3.5	4.7	3.6	3.4	4.4	5.3	5.3					
Contained Gold	(koz)	6,684	368	746	742	657	655	552	551	539	527	370	289	182	172	167	167					
Processing																						
Feed Tonnage	(kt)	63,018	3,743	6,926	6,659	6,367	6,366	6,406	6,409	5,701	4,662	2,474	2,474	1,680	1,206	973	973					
Feed Grade	(g/t)	3.3	3.1	3.3	3.5	3.2	3.2	2.7	2.7	2.9	3.5	4.7	3.6	3.4	4.4	5.3	5.3					
Feed Metal	(koz)	6,684	368	746	742	657	655	552	551	539	527	370	289	182	172	167	167					
Metallurgical Recovery	(%)	94%	94%	94%	94%	94%	94%	94%	94%	94%	95%	95%	95%	95%	95%	96%	96%					
Recovered Gold	(koz)	6,308	346	700	701	619	617	518	517	507	499	353	275	173	164	160	160					
Clean-up Gold	(koz)	22								4		4				13						
Saleable Metal	(koz)	6,329	346	700	701	619	617	518	517	507	504	353	279	173	164	160	172					
Sales																						
Gold	(koz)	6,329	346	700	701	619	617	518	517	507	504	353	279	173	164	160	172					
Commodity Prices																						
Gold Price	(US$/oz)		366	386	390	394	398	402	406	410	414	418	422	426	431	435	439	444				
(ZAR/kg)			91,659	111,797	125,823	134,929	143,309	145,259	151,796	158,626	165,765	173,224	181,019	189,165	197,677	206,573	215,869	225,583				
Macro-economics																						
Exchange Rates	(US$:ZAR)		7.8	9.0	10.0	10.7	11.2	11.3	11.6	12.0	12.5	12.9	13.3	13.8	14.3	14.8	15.3	15.8				
(US$:AUS$)			1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5				
(ZAR:AUS$)			5.9	6.8	7.5	7.9	8.4	8.4	8.6	8.7	8.9	9.1	9.3	9.5	9.7	9.9	10.1	10.3				
RSA CPI	(%)		2.55%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%				
USA CPI	(%)		1.38%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%				
AUS CPI	(%)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%				
Financial – Nominal																						
Sales Revenue	(ZAR'm)	29,072	986	2,434	2,742	2,598	2,751	2,338	2,443	2,501	2,597	1,900	1,573	1,018	1,008	1,025	1,156					
Total Working Costs	(ZAR'm)	–18,997	–1,061	–1,766	–1,810	–1,621	–1,735	–1,441	–1,527	–1,570	–1,666	–1,185	–973	–611	–645	–667	–764	44				
Mining	(ZAR'm)	–13,607	–613	–1,283	–1,306	–1,201	–1,254	–1,052	–1,100	–1,139	–1,186	–881	–683	–454	–466	–483	–505					
Processing	(ZAR'm)	–1,575	–68	–133	–136	–137	–143	–151	–157	–152	–141	–84	–88	–51	–46	–43	–45					
Overheads	(ZAR'm)	–2,932	–128	–268	–275	–260	–272	–229	–239	–250	–261	–193	–150	–95	–100	–104	–109					
Environmental	(ZAR'm)	–407	–10	–21	–22	–23	–24	–25	–26	–27	–29	–30	–31	–33	–34	–36	–37					
Terminal Separation Benefits	(ZAR'm)	–263			–53	0	–37		0		–49	–25	–34		–1		–64					
Net Change in Working Capital	(ZAR'm)	–214	–242	–62	–19	0	–5	15	–4	–2	–1	28	13	22	2	0	–4	44				
Operating Profit	(ZAR'm)	10,075	–75	668	933	978	1,017	897	916	931	931	715	600	407	363	358	392	44				
Tax Deductible Allowances	(ZAR'm)	–456	–31	–37	–48	–50	–49	–45	–42	–43	–31	–33	–31	–16								
Tax Liability	(ZAR'm)	–3,023		–149	–277	–295	–307	–272	–278	–282	–285	–217	–181	–126	–116	–114	–124					
Capital Expenditure	(ZAR'm)	–456	–31	–37	–48	–50	–49	–45	–42	–43	–31	–33	–31	–16								
Final Net Free Cash	(ZAR'm)	6,596	–106	482	608	632	661	580	596	606	615	465	387	265	247	245	269	44				
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	92,005	75,162	77,326	78,735	82,961	86,957	88,943	92,992	97,704	101,344	105,546	105,912	111,600	119,933	127,171	123,115					
Total Cash Costs	(ZAR/kg)	92,005	75,162	77,326	78,735	82,961	86,957	88,943	92,992	97,704	101,344	105,546	105,912	111,600	119,933	127,171	123,115					
Total Working Costs	(ZAR/kg)	96,497	98,613	81,132	83,027	84,164	90,354	89,538	94,889	99,557	106,350	108,046	111,964	113,492	126,479	134,390	142,606					
Total Costs	(ZAR/kg)	98,816	101,538	82,832	85,229	86,768	92,897	92,321	97,475	102,315	108,344	111,023	115,535	116,504	126,479	134,390	142,606					

[1]Six-month forecast to June 2004, actual results between July 2003 and December 2003 are reported in Section 2.

Table 13.7 Welkom Tax Entity: TEM in ZAR (nominal terms)

Financial Year				2004[1]	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Project Year		Units	Totals/ Averages	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Production																							
Mining																							
	RoM Tonnage	(kt)	3,168	430	802	695	248	248	248	248	248												
	Head Grade	(g/t)	3.8	3.7	4.6	4.3	3.2	3.2	3.2	3.2	3.2												
	Contained Gold	(koz)	391	51	118	95	25	25	25	25	25												
Processing																							
	Feed Tonnage	(kt)	3,168	430	802	695	248	248	248	248	248												
	Feed Grade	(g/t)	3.8	3.7	4.6	4.3	3.2	3.2	3.2	3.2	3.2												
	Feed Metal	(koz)	391	51	118	95	25	25	25	25	25												
	Metallurgical Recovery	(%)	93%	94%	93%	93%	93%	93%	93%	93%	93%												
	Recovered Gold	(koz)	365	48	110	89	24	24	24	24	24												
	Clean-up Gold	(koz)																					
	Saleable Metal	(koz)	365	48	110	89	24	24	24	24	24												
Sales																							
	Gold	(koz)	365	48	110	89	24	24	24	24	24												
Commodity Prices																							
	Gold Price	(US$/oz)		366	386	390	394	398	402	406	410	414											
		(ZAR/kg)		91,659	111,797	125,823	134,929	143,309	145,259	151,796	158,626	165,765											
Macro-economics																							
	Exchange Rates	(US$:ZAR)		7.8	9.0	10.0	10.7	11.2	11.3	11.6	12.0	12.5											
		(US$:AUS$)		1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4											
		(ZAR:AUS$)		5.9	6.8	7.5	7.9	8.4	8.4	8.6	8.7	8.9											
	RSA CPI	(%)		2.55%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%											
	USA CPI	(%)		1.38%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%											
	AUS CPI	(%)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%											
Financial – Nominal																							
Sales Revenue		(ZAR'm)	1,406	137	383	349	99	105	106	111	116												
Total Working Costs		(ZAR'm)	–1,152	–123	–324	–294	–71	–79	–82	–86	–95	2											
	Mining	(ZAR'm)	–1,071	–114	–298	–254	–74	–77	–81	–84	–88												
	Processing	(ZAR'm)	–37	–7	–15	–15																	
	Overheads	(ZAR'm)																					
	Environmental	(ZAR'm)	–11	–1	–1	–1	–1	–2	–2	–2	–2												
	Terminal Separation Benefits	(ZAR'm)	–35	0	–6	–24					–5												
Net Change in Working Capital		(ZAR'm)	3	–1	–3	1	4	0	0	0	0	2											
Operating Profit		(ZAR'm)	254	14	59	55	27	26	24	25	21	2											
Tax Deductible Allowances		(ZAR'm)																					
Tax Liability		(ZAR'm)	–84	–3	–19	–17	–10	–9	–9	–9	–7												
Capital Expenditure		(ZAR'm)																					
Final Net Free Cash		(ZAR'm)	171	11	41	38	17	16	15	16	14	2											
Statistics – Nominal																							
Cash Operating Costs		(ZAR/kg)	97,634	80,927	91,422	97,168	101,096	105,645	110,399	115,367	120,559												
Total Cash Costs		(ZAR/kg)	97,634	80,927	91,422	97,168	101,096	105,645	110,399	115,367	120,559												
Total Working Costs		(ZAR/kg)	101,457	82,309	94,467	105,886	97,709	108,046	112,369	117,785	129,528												
Total Costs		(ZAR/kg)	101,457	82,309	94,467	105,886	97,709	108,046	112,369	117,785	129,528												

[1] Six-month forecast to June 2004, actual results between July 2003 and December 2003 are reported in Section 2.

Table 13.8 Randfontein Tax Entity: TEM in ZAR (nominal terms)

Financial Year	Units	Totals/	2004[1]	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Project Year		Averages	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Production																						
Mining																						
RoM Tonnage	(kt)	72,468	3,722	6,484	5,057	4,959	5,166	5,440	4,575	4,588	4,481	4,461	4,436	4,111	3,692	3,300	2,620	2,479	1,101	1,131	624	41
Head Grade	(g/t)	6.3	4.0	4.4	5.3	5.8	6.3	6.5	7.0	7.1	7.1	7.0	7.0	6.8	6.6	6.6	6.4	6.4	7.7	7.7	7.8	8.9
Contained Gold	(koz)	14,625	483	920	865	932	1,042	1,131	1,032	1,041	1,024	1,008	993	901	783	699	540	512	271	281	157	12
Processing																						
Feed Tonnage	(kt)	72,468	3,722	6,484	5,057	4,959	5,166	5,440	4,575	4,588	4,481	4,461	4,436	4,111	3,692	3,300	2,620	2,479	1,101	1,131	624	41
Feed Grade	(g/t)	6.3	4.0	4.4	5.3	5.8	6.3	6.5	7.0	7.1	7.1	7.0	7.0	6.8	6.6	6.6	6.4	6.4	7.7	7.7	7.8	8.9
Feed Metal	(koz)	14,625	483	920	865	932	1,042	1,131	1,032	1,041	1,024	1,008	993	901	783	699	540	512	271	281	157	12
Metallurgical Recovery	(%)	96%	95%	95%	96%	96%	96%	96%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%
Recovered Gold	(koz)	14,083	460	878	827	893	1,000	1,087	997	1,006	989	974	959	870	756	675	521	495	262	271	152	11
Clean-up Gold	(koz)	76		7				11													36	21
Saleable Metal	(koz)	14,158	460	885	827	893	1,000	1,097	997	1,006	989	974	959	870	756	675	521	495	262	271	188	33
Sales																						
Gold	(koz)	14,158	460	885	827	893	1,000	1,097	997	1,006	989	974	959	870	756	675	521	495	262	271	188	33
Commodity Prices																						
Gold Price	(US$/oz)		366	386	390	394	398	402	406	410	414	418	422	426	431	435	439	444	448	453	457	462
	(ZAR/kg)		91,659	111,797	125,823	134,929	143,309	145,259	151,796	158,626	165,765	173,224	181,019	189,165	197,677	206,573	215,869	225,583	235,734	246,342	257,427	269,011
Macro-economics																						
Exchange Rates	(US$:ZAR)		7.8	9.0	10.0	10.7	11.2	11.3	11.6	12.0	12.5	12.9	13.3	13.8	14.3	14.8	15.3	15.8	16.4	16.9	17.5	18.1
	(US$:AUS$)		1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6
	(ZAR:AUS$)		5.9	6.8	7.5	7.9	8.4	8.4	8.6	8.7	8.9	9.1	9.3	9.5	9.7	9.9	10.1	10.3	10.5	10.7	10.9	11.1
RSA CPI	(%)		2.55%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
USA CPI	(%)		1.38%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
AUS CPI	(%)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%
Financial – Nominal																						
Sales Revenue	(ZAR'm)	73,059	1,312	3,078	3,236	3,747	4,459	4,957	4,707	4,963	5,099	5,247	5,400	5,120	4,651	4,334	3,501	3,470	1,924	2,079	1,503	273
Total Working Costs	(ZAR'm)	–39,110	–1,132	–1,967	–1,913	–1,995	–2,256	–2,584	–2,310	–2,449	–2,516	–2,613	–2,731	–2,646	–2,493	–2,371	–1,909	–2,002	–1,034	–1,213	–888	–101
Mining	(ZAR'm)	–27,315	–681	–1,385	–1,404	–1,451	–1,601	–1,813	–1,674	–1,755	–1,808	–1,880	–1,954	–1,878	–1,741	–1,620	–1,329	–1,317	–715	–768	–499	–44
Processing	(ZAR'm)	–2,992	–115	–215	–154	–159	–170	–196	–146	–152	–157	–163	–170	–167	–161	–157	–143	–145	–107	–113	–150	–51
Overheads	(ZAR'm)	–8,025	–155	–319	–328	–337	–434	–503	–485	–513	–534	–549	–563	–571	–572	–530	–450	–441	–266	–280	–180	–13
Environmental	(ZAR'm)	–218	–4	–8	–8	–9	–9	–9	–10	–10	–11	–11	–12	–12	–13	–13	–14	–15	–15	–16	–17	–1
Terminal Separation Benefits	(ZAR'm)	–482	–1	–5	–3			–44		–4	–1	–2	–27	–37	–37	–68	–13	–92		–30	–72	–45
Net Change in Working Capital	(ZAR'm)	–79	–176	–36	–15	–38	–42	–19	4	–13	–6	–7	–5	19	30	18	40	8	69	–6	30	53
Operating Profit	(ZAR'm)	33,949	180	1,110	1,323	1,752	2,203	2,373	2,397	2,514	2,583	2,633	2,669	2,474	2,158	1,963	1,592	1,468	890	866	615	171
Tax Deductible Allowances	(ZAR'm)	–2,035	–167	–346	–305	–403	–269	–160	–48	–41	–43	–45	–39	–32	–34	–27	–28	–29	–20			
Tax Liability	(ZAR'm)	–12,869	–2	–115	–394	–535	–787	–904	–972	–1,024	–1,051	–1,070	–1,086	–1,005	–870	–791	–639	–582	–356	–350	–249	–81
Capital Expenditure	(ZAR'm)	–2,035	–167	–346	–305	–403	–269	–160	–48	–41	–43	–45	–39	–32	–34	–27	–28	–29	–20			
Final Net Free Cash	(ZAR'm)	19,044	11	649	624	815	1,147	1,309	1,377	1,450	1,489	1,519	1,544	1,436	1,254	1,146	925	857	514	515	367	90
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	87,042	66,409	69,695	73,354	70,130	70,870	73,616	74,310	77,371	81,219	85,609	90,081	96,659	105,128	109,950	118,504	123,738	133,250	137,610	141,910	106,718
Total Cash Costs	(ZAR/kg)	87,042	66,409	69,695	73,354	70,130	70,870	73,616	74,310	77,371	81,219	85,609	90,081	96,659	105,128	109,950	118,504	123,738	133,250	137,610	141,910	106,718
Total Working Costs	(ZAR/kg)	88,811	79,059	71,463	74,378	71,827	72,503	75,721	74,495	78,269	81,790	86,276	91,544	97,767	105,955	112,992	117,713	130,159	126,693	143,736	152,037	100,118
Total Costs	(ZAR/kg)	93,432	90,752	84,033	86,241	86,330	81,134	80,422	76,047	79,572	83,175	87,746	92,844	98,965	107,394	114,258	119,423	132,044	129,167	143,736	152,037	100,118

[1] Six-month forecast to June 2004, actual results between July 2003 and December 2003 are reported in Section 2.

Table 13.9 Evander Tax Entity: TEM in ZAR (nominal terms)

Financial Year	Units	Totals/	2004[1]	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Project Year		Averages	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Production																						
Mining																						
RoM Tonnage	(kt)	19,526	1,214	2,330	2,332	2,023	1,673	1,647	1,634	1,592	1,392	1,154	751	446	446	446	446					
Head Grade	(g/t)	5.6	5.3	5.3	5.4	5.4	5.6	5.4	5.4	5.4	5.4	6.2	6.3	6.2	6.2	6.2	6.2					
Contained Gold	(koz)	3,486	205	401	406	350	299	287	285	276	240	228	153	89	89	89	89					
Processing																						
Feed Tonnage	(kt)	19,526	1,214	2,330	2,332	2,023	1,673	1,647	1,634	1,592	1,392	1,154	751	446	446	446	446					
Feed Grade	(g/t)	5.6	5.3	5.3	5.4	5.4	5.6	5.4	5.4	5.4	5.4	6.2	6.3	6.2	6.2	6.2	6.2					
Feed Metal	(koz)	3,486	205	401	406	350	299	287	285	276	240	228	153	89	89	89	89					
Metallurgical Recovery	(%)	97%	96%	96%	96%	96%	97%	96%	96%	96%	96%	97%	97%	97%	97%	97%	97%					
Recovered Gold	(koz)	3,364	198	386	392	338	288	277	275	266	232	221	148	86	86	86	86					
Clean-up Gold	(koz)	19										3					16					
Saleable Metal	(koz)	3,383	198	386	392	338	288	277	275	266	232	224	148	86	86	86	102					
Sales																						
Gold	(koz)	3,383	198	386	392	338	288	277	275	266	232	224	148	86	86	86	102					
Commodity Prices																						
Gold Price	(US$/oz)		366	386	390	394	398	402	406	410	414	418	422	426	431	435	439	444				
	(ZAR/kg)		91,659	111,797	125,823	134,929	143,309	145,259	151,796	158,626	165,765	173,224	181,019	189,165	197,677	206,573	215,869	225,583				
Macro-economics																						
Exchange Rates	(US$:ZAR)		7.8	9.0	10.0	10.7	11.2	11.3	11.6	12.0	12.5	12.9	13.3	13.8	14.3	14.8	15.3	15.8				
	(US$:AUS$)		1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5				
	(ZAR:AUS$)		5.9	6.8	7.5	7.9	8.4	8.4	8.6	8.7	8.9	9.1	9.3	9.5	9.7	9.9	10.1	10.3				
RSA CPI	(%)		2.55%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%				
USA CPI	(%)		1.38%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%				
AUS CPI	(%)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%				
Financial – Nominal																						
Sales Revenue	(ZAR'm)	15,510	564	1,344	1,534	1,417	1,284	1,251	1,297	1,314	1,194	1,205	832	506	529	553	687					
Total Working Costs	(ZAR'm)	-9,894	-519	-902	-938	-841	-749	-776	-815	-841	-770	-807	-515	-314	-344	-359	-433	28				
Mining	(ZAR'm)	-6,952	-336	-657	-680	-610	-543	-561	-583	-593	-542	-545	-352	-222	-232	-242	-253					
Processing	(ZAR'm)	-877	-35	-65	-68	-64	-62	-65	-67	-69	-67	-68	-47	-43	-45	-47	-63					
Overheads	(ZAR'm)	-1,791	-75	-153	-160	-155	-142	-148	-154	-159	-156	-160	-94	-55	-58	-60	-63					
Environmental	(ZAR'm)	-93	-2	-5	-5	-5	-5	-6	-6	-6	-6	-7	-7	-7	-8	-8	-8					
Terminal Separation Benefits	(ZAR'm)	-148	-2	-4	-12	-11	-1	-1	-3	-15	-4	-30	-27				-39					
Net Change in Working Capital	(ZAR'm)	-34	-69	-19	-13	4	5	4	-2	1	6	2	13	13	-1	-1	-6	28				
Operating Profit	(ZAR'm)	5,616	46	442	596	576	535	475	482	473	423	397	317	192	186	194	255	28				
Tax Deductible Allowances	(ZAR'm)	-659	-52	-81	-91	-95	-75	-72	-49	-41	-43	-30	-31									
Tax Liability	(ZAR'm)	-1,916		-125	-197	-189	-182	-156	-169	-169	-148	-141	-112	-77	-73	-76	-101					
Capital Expenditure	(ZAR'm)	-659	-52	-81	-91	-95	-75	-72	-49	-41	-43	-30	-31									
Final Net Free Cash	(ZAR'm)	3,040	-7	236	308	292	278	246	263	264	233	226	173	115	112	117	153	28				
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	91,411	72,384	72,737	74,511	78,960	83,435	89,848	94,116	99,075	106,247	111,036	107,390	119,720	125,108	130,738	119,271					
Total Cash Costs	(ZAR/kg)	91,411	72,384	72,737	74,511	78,960	83,435	89,848	94,116	99,075	106,247	111,036	107,390	119,720	125,108	130,738	119,271					
Total Working Costs	(ZAR/kg)	94,024	84,259	75,009	76,940	80,116	83,608	90,099	95,365	101,540	106,956	116,074	112,054	117,468	128,320	134,139	135,924					
Total Costs	(ZAR/kg)	100,290	92,765	81,764	84,367	89,123	91,981	98,484	101,151	106,462	112,874	120,343	118,806	117,468	128,320	134,139	135,924					

[1] Six-month forecast to June 2004, actual results between July 2003 and December 2003 are reported in Section 2.

Table 13.10 Orkney Tax Entity: TEM in ZAR (nominal terms)

Financial Year	Units	Totals/	2004[1]	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Project Year		Averages	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Production																						
Mining																						
RoM Tonnage	(kt)	5,756	708	1,333	1,174	923	698	312	304	305												
Head Grade	(g/t)	4.9	6.2	5.7	5.2	4.0	4.4	3.4	3.4	3.4												
Contained Gold	(koz)	898	141	242	196	119	100	34	33	33												
Processing																						
Feed Tonnage	(kt)	5,756	708	1,333	1,174	923	698	312	304	305												
Feed Grade	(g/t)	4.9	6.2	5.7	5.2	4.0	4.4	3.4	3.4	3.4												
Feed Metal	(koz)	898	141	242	196	119	100	34	33	33												
Metallurgical Recovery	(%)	95%	95%	95%	95%	95%	95%	95%	95%	95%												
Recovered Gold	(koz)	852	134	230	186	113	95	32	31	31												
Clean-up Gold	(koz)																					
Saleable Metal	(koz)	852	134	230	186	113	95	32	31	31												
Sales																						
Gold	(koz)	852	134	230	186	113	95	32	31	31												
Commodity Prices																						
Gold Price	(US$/oz)		366	386	390	394	398	402	406	410	414											
	(ZAR/kg)		91,659	111,797	125,823	134,929	143,309	145,259	151,796	158,626	165,765											
Macro-economics																						
Exchange Rates	(US$:ZAR)		7.8	9.0	10.0	10.7	11.2	11.3	11.6	12.0	12.5											
	(US$:AUS$)		1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4											
	(ZAR:AUS$)		5.9	6.8	7.5	7.9	8.4	8.4	8.6	8.7	8.9											
RSA CPI	(%)		2.55%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%											
USA CPI	(%)		1.38%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%											
AUS CPI	(%)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%											
Financial – Nominal																						
Sales Revenue	(ZAR'm)	3,252	381	799	729	474	422	146	148	154												
Total Working Costs	(ZAR'm)	–2,415	–278	–587	–516	–351	–311	–108	–122	–144	3											
Mining	(ZAR'm)	–1,923	–246	–477	–402	–284	–233	–91	–93	–97												
Processing	(ZAR'm)	–311	–35	–68	–62	–51	–40	–18	–18	–19												
Overheads	(ZAR'm)	–150	–16	–32	–30	–24	–19	–9	–9	–10												
Environmental	(ZAR'm)	–9	0	–1	–1	–1	–1	–1	–1	–1												
Terminal Separation Benefits	(ZAR'm)	–68		–6	–23	–1	–20		0	–18												
Net Change in Working Capital	(ZAR'm)	46	19	–4	2	11	2	10	0	1	3											
Operating Profit	(ZAR'm)	838	103	212	213	123	111	38	26	10	3											
Tax Deductible Allowances	(ZAR'm)	–33	–10	–13	–3	–3	–1	–1	–1	–1												
Tax Liability	(ZAR'm)	–294	–34	–73	–80	–44	–41	–14	–8	–1												
Capital Expenditure	(ZAR'm)	–33	–10	–13	–3	–3	–1	–1	–1	–1												
Final Net Free Cash	(ZAR'm)	511	59	126	130	75	69	23	17	9	3											
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	89,939	71,455	80,666	85,293	102,454	99,249	117,149	123,798	129,427												
Total Cash Costs	(ZAR/kg)	89,939	71,455	80,666	85,293	102,454	99,249	117,149	123,798	129,427												
Total Working Costs	(ZAR/kg)	91,108	66,913	82,186	89,096	99,947	105,701	107,930	125,092	148,106												
Total Costs	(ZAR/kg)	92,348	69,409	83,937	89,641	100,878	106,201	108,593	125,803	148,850												

[1] Six-month forecast to June 2004, actual results between July 2003 and December 2003 are reported in Section 2.

Table 13.11 Kalgold Tax Entity[1]: TEM in ZAR (nominal terms)

Financial Year	Units	Totals/	2004[1]	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Project Year		Averages	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Production																						
Mining																						
RoM Tonnage	(kt)	5,080	681	1,324	1,344	1,320	410															
Head Grade	(g/t)	2.3	2.3	2.3	2.1	2.2	2.6															
Contained Gold	(koz)	370	51	100	91	93	34															
Processing																						
Feed Tonnage	(kt)	5,980	792	1,584	1,581	1,584	439															
Feed Grade	(g/t)	2.1	2.2	2.1	2.0	2.0	2.5															
Feed Metal	(koz)	403	56	109	100	101	35															
Metallurgical Recovery	(%)	82%	82%	82%	81%	81%	83%															
Recovered Gold	(koz)	329	46	89	81	82	29															
Clean-up Gold	(koz)	1				1																
Saleable Metal	(koz)	330	46	89	81	82	31															
Sales																						
Gold	(koz)	330	46	89	81	82	31															
Commodity Prices																						
Gold Price	(US$/oz)		366	386	390	394	398	402														
	(ZAR/kg)		91,659	111,797	125,823	134,929	143,309	145,259														
Macro-economics																						
Exchange Rates	(US$:ZAR)		7.8	9.0	10.0	10.7	11.2	11.3														
	(US$:AUS$)		1.3	1.3	1.3	1.3	1.3	1.3														
	(ZAR:AUS$)		5.9	6.8	7.5	7.9	8.4	8.4														
RSA CPI	(%)		2.55%	4.10%	4.77%	4.50%	4.50%	4.50%														
USA CPI	(%)		1.38%	1.03%	1.00%	1.00%	1.00%	1.00%														
AUS CPI	(%)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%														
Financial – Nominal																						
Sales Revenue	(ZAR'm)	1,243	132	311	318	345	138															
Total Working Costs	(ZAR'm)	–780	–116	–224	–215	–183	–51	7														
Mining	(ZAR'm)	–432	–70	–133	–123	–83	–23															
Processing	(ZAR'm)	–320	–39	–81	–85	–89	–27															
Overheads	(ZAR'm)	–11	–1	–3	–3	–3	–1															
Environmental	(ZAR'm)	–12	–1	–3	–3	–3	–1															
Terminal Separation Benefits	(ZAR'm)	–9	–1				–8															
Net Change in Working Capital	(ZAR'm)	4	–4	–4	–1	–4	10	7														
Operating Profit	(ZAR'm)	463	16	87	103	162	87	7														
Tax Deductible Allowances	(ZAR'm)	0	0																			
Tax Liability	(ZAR'm)	–88				–51	–37															
Capital Expenditure	(ZAR'm)	0	0																			
Final Net Free Cash	(ZAR'm)	375	16	87	103	111	50	7														
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	74,393	76,423	77,870	83,338	68,468	53,476															
Total Cash Costs	(ZAR/kg)	74,393	76,423	77,870	83,338	68,468	53,476															
Total Working Costs	(ZAR/kg)	75,997	80,507	80,412	84,923	71,433	52,733															
Total Costs	(ZAR/kg)	76,042	80,831	80,412	84,923	71,433	52,733															

[1] The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.
[2] Six-month forecast to June 2004, actual results between July 2003 and December 2003 are reported in Section 2..

Table 13.12 Mt. Magnet & Cue Tax Entity: TEM in ZAR (nominal terms)

Financial Year	Units	Totals/	2004[1]	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Project Year		Averages	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Production																						
Mining																						
RoM Tonnage	(kt)	13,604	1,248	2,497	2,497	2,497	2,503	1,887	378	98												
Head Grade	(g/t)	3.9	3.2	4.1	4.1	3.9	3.7	2.9	6.8	6.8												
Contained Gold	(koz)	1,685	129	327	332	317	300	176	83	21												
Processing																						
Feed Tonnage	(kt)	13,604	1,248	2,497	2,497	2,497	2,503	1,887	378	98												
Feed Grade	(g/t)	3.9	3.2	4.1	4.1	3.9	3.7	2.9	6.8	6.8												
Feed Metal	(koz)	1,685	129	327	332	317	300	176	83	21												
Metallurgical Recovery	(%)	92%	91%	92%	92%	92%	91%	90%	94%	94%												
Recovered Gold	(koz)	1,544	117	301	305	290	274	159	77	20												
Clean-up Gold	(koz)																					
Saleable Metal	(koz)	1,544	117	301	305	290	274	159	77	20												
Sales																						
Gold	(koz)	1,529	116	298	302	288	271	158	77	20												
Commodity Prices																						
Gold Price	(US$/oz)		366	386	390	394	398	402	406	410	414											
	(ZAR/kg)		91,659	111,797	125,823	134,929	143,309	145,259	151,796	158,626	165,765											
Macro-economics																						
Exchange Rates	(US$:ZAR)		7.8	9.0	10.0	10.7	11.2	11.3	11.6	12.0	12.5											
	(US$:AUS$)		1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4											
	(ZAR:AUS$)		5.9	6.8	7.5	7.9	8.4	8.4	8.6	8.7	8.9											
RSA CPI	(%)		2.55%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%											
USA CPI	(%)		1.38%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%											
AUS CPI	(%)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%											
Financial – Nominal																						
Sales Revenue	(ZAR'm)	6,136	331	1,035	1,183	1,207	1,210	712	361	98												
Total Working Costs	(ZAR'm)	-4,026	-309	-656	-694	-692	-682	-519	-300	-172	-3											
Mining	(ZAR'm)	-2,150	-152	-389	-412	-398	-368	-226	-148	-57												
Processing	(ZAR'm)	-1,609	-87	-210	-234	-252	-271	-296	-145	-113												
Overheads	(ZAR'm)	-78	-4	-8	-9	-10	-11	-11	-12	-12												
Environmental	(ZAR'm)	-153	-8	-26	-30	-30	-30	-18	-9	-2												
Terminal Separation Benefits	(ZAR'm)																					
Net Change in Working Capital	(ZAR'm)	-35	-58	-22	-9	-2	-1	33	14	14	-3											
Operating Profit	(ZAR'm)	2,110	22	379	489	515	528	193	62	-74	-3											
Tax Deductible Allowances	(ZAR'm)	-1,617	-132	-350	-338	-319	-239	-120	-75	-43												
Tax Liability	(ZAR'm)	-230		-24	-53	-69	-80	-5														
Capital Expenditure	(ZAR'm)	-1,617	-132	-350	-338	-319	-239	-120	-75	-43												
Final Net Free Cash	(ZAR'm)	263	-111	5	98	127	209	68	-13	-117	-3											
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	80,701	67,238	65,657	69,685	73,811	77,065	108,891	127,968	297,239												
Total Cash Costs	(ZAR/kg)	80,701	67,238	65,657	69,685	73,811	77,065	108,891	127,968	297,239												
Total Working Costs	(ZAR/kg)	84,666	85,672	70,860	73,785	77,361	80,729	105,878	125,896	279,037												
Total Costs	(ZAR/kg)	118,674	122,339	108,683	109,765	113,051	109,048	130,402	157,382	348,928												

[1] Six-month forecast to June 2004, actual results between July 2003 and December 2003 are reported in Section 2.

Table 13.13 South Kalgoorlie: TEM in ZAR (nominal terms)

Financial Year		Units	Totals/ Averages	2004[1]	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
Project Year				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Production																								
Mining																								
	RoM Tonnage	(kt)	3,184	650	1,246	1,287																		
	Head Grade	(g/t)	3.2	3.2	3.2	3.2																		
	Contained Gold	(koz)	326	67	127	132																		
Processing																								
	Feed Tonnage	(kt)	3,184	650	1,246	1,287																		
	Feed Grade	(g/t)	3.2	3.2	3.2	3.2																		
	Feed Metal	(koz)	326	67	127	132																		
	Metallurgical Recovery	(%)	92%	92%	92%	93%																		
	Recovered Gold	(koz)	301	62	117	122																		
	Clean-up Gold	(koz)																						
	Saleable Metal	(koz)	301	62	117	122																		
Sales																								
	Gold	(koz)	298	62	116	121																		
Commodity Prices																								
	Gold Price	(US$/oz)		366	386	390	394																	
		(ZAR/kg)		91,659	111,797	125,823	134,929																	
Macro-economics																								
	Exchange Rates	(US$:ZAR)		7.8	9.0	10.0	10.7																	
		(US$:AUS$)		1.3	1.3	1.3	1.3																	
		(ZAR:AUS$)		5.9	6.8	7.5	7.9																	
	RSA CPI	(%)		2.55%	4.10%	4.77%	4.50%																	
	USA CPI	(%)		1.38%	1.03%	1.00%	1.00%																	
	AUS CPI	(%)		2.40%	2.40%	2.40%	2.40%																	
Financial – Nominal																								
Sales Revenue		(ZAR'm)	1,052	176	403	473																		
Total Working Costs		(ZAR'm)	–903	–174	–337	–406	14																	
	Mining	(ZAR'm)	–560	–92	–213	–255																		
	Processing	(ZAR'm)	–272	–46	–105	–122																		
	Overheads	(ZAR'm)	–28	–4	–8	–16																		
	Environmental	(ZAR'm)	–26	–4	–10	–12																		
	Terminal Separation Benefits	(ZAR'm)																						
	Net Change in Working Capital	(ZAR'm)	–18	–28	–2	–1	14																	
Operating Profit		(ZAR'm)	149	2	66	67	14																	
Tax Deductible Allowances		(ZAR'm)	–177	–57	–81	–38																		
Tax Liability		(ZAR'm)	–5			–5																		
Capital Expenditure		(ZAR'm)	–177	–57	–81	–38																		
Final Net Free Cash		(ZAR'm)	–32	–55	–15	24	14																	
Statistics – Nominal																								
Cash Operating Costs		(ZAR/kg)	92,538	73,729	90,215	104,348																		
Total Cash Costs		(ZAR/kg)	92,538	73,729	90,215	104,348																		
Total Working Costs		(ZAR/kg)	97,261	90,800	93,426	107,884																		
Total Costs		(ZAR/kg)	116,287	120,487	116,009	118,064																		

[1] Six-month forecast to June 2004, actual results between July 2003 and December 2003 are reported in Section 2.

Table 13.14 Avgold: TEM in ZAR (nominal terms)

Financial Year / Project Year	Units	Totals/ Averages	2004[1] 1	2005 2	2006 3	2007 4	2008 5	2009 6	2010 7	2011 8	2012 9	2013 10	2014 11	2015 12	2016 13	2017 14	2018 15	2019 16	2020 17	2021 18	2022 19	2023 20
Production																						
Mining																						
RoM Tonnage	(kt)	19,944	528	1,257	1,298	1,404	1,404	1,404	1,404	1,404	1,404	1,122	1,122	1,122	1,083	1,045	1,006	968	968			
Head Grade	(g/t)	6.6	8.9	8.3	8.4	8.5	7.0	7.4	6.2	5.7	5.4	5.7	5.7	5.7	5.9	5.9	5.9	6.0	6.0			
Contained Gold	(koz)	4,242	151	336	351	384	314	333	280	259	245	207	207	207	204	199	190	187	187			
Processing																						
Feed Tonnage	(kt)	19,944	528	1,257	1,285	1,285	1,285	1,285	1,285	1,285	1,285	1,285	1,285	1,285	1,285	1,080	1,006	968	968			
Feed Grade	(g/t)	6.6	8.9	8.3	8.4	8.5	7.0	7.4	6.2	5.7	5.4	5.9	5.9	5.9	6.0	6.0	5.9	6.0	6.0			
Feed Metal	(koz)	4,242	151	336	348	351	287	304	257	237	225	243	243	243	248	207	190	187	187			
Metallurgical Recovery	(%)	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%			
Recovered Gold	(koz)	4,112	147	326	338	342	279	296	248	230	217	235	235	235	240	200	184	181	181			
Clean-up Gold	(koz)	7																	7			
Saleable Metal	(koz)	4,119	147	326	338	342	279	296	248	230	217	235	235	235	240	200	184	181	188			
Sales																						
Gold	(koz)	4,119	147	326	338	342	279	296	248	230	217	235	235	235	240	200	184	181	188			
Commodity Prices																						
Gold Price	(US$/oz)		366	386	390	394	398	402	406	410	414	418	422	426	431	435	439	444	448	453		
	(ZAR/kg)		91,659	111,797	125,823	134,929	143,309	145,259	151,796	158,626	165,765	173,224	181,019	189,165	197,677	206,573	215,869	225,583	235,734	246,342		
Macro-economics																						
Exchange Rates	(US$:ZAR)		7.8	9.0	10.0	10.7	11.2	11.3	11.6	12.0	12.5	12.9	13.3	13.8	14.3	14.8	15.3	15.8	16.4	16.9		
	(US$:AUS$)		1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.6		
	(ZAR:AUS$)		5.9	6.8	7.5	7.9	8.4	8.4	8.6	8.7	8.9	9.1	9.3	9.5	9.7	9.9	10.1	10.3	10.5	10.7		
RSA CPI	(%)		2.55%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%		
USA CPI	(%)		1.38%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%		
AUS CPI	(%)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%		
Financial – Nominal																						
Sales Revenue	(ZAR'm)	20,919	420	1,135	1,323	1,435	1,243	1,335	1,173	1,132	1,118	1,264	1,321	1,381	1,475	1,286	1,232	1,267	1,377			
Total Working Costs	(ZAR'm)	−13,576	−267	−586	−687	−699	−702	−754	−765	−820	−863	−859	−886	−926	−950	−928	−947	−963	−1,029	55		
Mining	(ZAR'm)	−9,320	−147	−385	−481	−485	−504	−523	−546	−581	−611	−579	−605	−633	−640	−643	−644	−643	−671			
Processing	(ZAR'm)	−1,744	−28	−77	−83	−87	−91	−95	−99	−104	−108	−114	−119	−125	−130	−119	−119	−121	−126			
Overheads	(ZAR'm)	−2,468	−42	−106	−112	−117	−122	−127	−133	−139	−145	−152	−159	−166	−173	−181	−189	−198	−207			
Environmental	(ZAR'm)	−19		−2	−2	−2	−2	−2	−3	−3	−3											
Terminal Separation Benefits	(ZAR'm)	−20																	−20			
Net Change in Working Capital	(ZAR'm)	−5	−50	−16	−9	−8	18	−6	15	6	4	−13	−3	−3	−6	15	5	−2	−5	55		
Operating Profit	(ZAR'm)	7,343	153	549	636	735	541	582	408	312	255	406	435	455	525	358	286	304	349	55		
Tax Deductible Allowances	(ZAR'm)	−4,418	−153	−549	−636	−735	−541	−582	−408	−312	−212	−53	−55	−58	−60	−63						
Tax Liability	(ZAR'm)	−850										−107	−116	−121	−145	−85	−83	−89	−103			
Capital Expenditure	(ZAR'm)	−766	−37	−64	−59	−58	−69	−44	−46	−48	−51	−53	−55	−58	−60	−63						
Final Net Free Cash	(ZAR'm)	5,727	116	485	577	677	472	537	362	264	205	246	264	276	320	210	203	215	245	55		
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	105,624	47,468	55,907	64,204	64,767	82,692	81,049	100,629	115,329	128,064	115,816	121,027	126,474	126,505	151,558	166,701	171,027	171,876			
Total Cash Costs	(ZAR/kg)	105,624	47,468	55,907	64,204	64,767	82,692	81,049	100,629	115,329	128,064	115,816	121,027	126,474	126,505	151,558	166,701	171,027	171,876			
Total Working Costs	(ZAR/kg)	105,970	58,279	57,733	65,311	65,771	80,939	81,992	98,998	114,878	127,954	117,645	121,374	126,835	127,357	149,092	165,839	171,443	176,079			
Total Costs	(ZAR/kg)	111,949	66,449	64,016	70,905	71,252	88,876	86,814	104,992	121,660	135,452	124,888	128,943	134,745	135,444	159,218	165,839	171,443	176,079			

[1] Six-month forecast to June 2004, actual results between July 2003 and December 2003 are reported in Section 2.

Table 13.15 Harmony: TEM in ZAR (nominal terms)

Financial Year	Units	Totals/	2004[1]	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Project Year		Averages	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Production																						
Mining																						
RoM Tonnage	(kt)	265,300	17,170	32,547	29,675	26,994	22,231	21,134	18,762	17,039	14,425	11,918	10,842	8,776	7,883	7,256	6,542	4,567	2,261	2,291	1,784	1,201
Head Grade	(g/t)	5.2	3.9	4.2	4.4	4.4	5.2	5.0	5.3	5.4	5.7	6.3	6.2	6.6	6.7	6.8	6.6	6.6	7.5	7.6	7.6	7.5
Contained Gold	(koz)	44,481	2,165	4,416	4,240	3,836	3,691	3,400	3,210	2,979	2,630	2,430	2,164	1,848	1,700	1,585	1,383	976	548	557	433	288
Processing																						
Feed Tonnage	(kt)	266,200	17,281	32,807	29,911	27,258	22,260	21,134	18,762	17,039	14,425	11,918	10,842	8,776	7,883	7,256	6,542	4,567	2,261	2,291	1,784	1,201
Feed Grade	(g/t)	5.2	3.9	4.2	4.4	4.4	5.2	5.0	5.3	5.4	5.7	6.3	6.2	6.6	6.7	6.8	6.6	6.6	7.5	7.6	7.6	7.5
Feed Metal	(koz)	44,514	2,170	4,426	4,250	3,844	3,692	3,400	3,210	2,979	2,630	2,430	2,164	1,848	1,700	1,585	1,383	976	548	557	433	288
Metallurgical Recovery	(%)	96%	94%	94%	95%	95%	95%	96%	96%	96%	96%	96%	96%	97%	97%	97%	97%	97%	97%	97%	97%	97%
Recovered Gold	(koz)	42,585	2,041	4,172	4,026	3,649	3,526	3,253	3,085	2,864	2,530	2,344	2,087	1,786	1,643	1,532	1,335	943	530	539	419	279
Clean-up Gold	(koz)	221		7		4	75	11			4	3	7				29				36	45
Saleable Metal	(koz)	42,806	2,041	4,179	4,026	3,652	3,601	3,264	3,085	2,864	2,535	2,346	2,094	1,786	1,643	1,532	1,364	943	530	539	456	324
Sales																						
Gold	(koz)	42,787	2,039	4,175	4,022	3,650	3,598	3,262	3,084	2,864	2,535	2,346	2,094	1,786	1,643	1,532	1,364	943	530	539	456	324
Commodity Prices																						
Gold Price	(US$/oz)		366	386	390	394	398	402	406	410	414	418	422	426	431	435	439	444	448	453	457	462
	(ZAR/kg)		91,659	111,797	125,823	134,929	143,309	145,259	151,796	158,626	165,765	173,224	181,019	189,165	197,677	206,573	215,869	225,583	235,734	246,342	257,427	269,011
Macro-economics																						
Exchange Rates	(US$:ZAR)		7.8	9.0	10.0	10.7	11.2	11.3	11.6	12.0	12.5	12.9	13.3	13.8	14.3	14.8	15.3	15.8	16.4	16.9	17.5	18.1
	(US$:AUS$)		1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6
	(ZAR:AUS$)		5.9	6.8	7.5	7.9	8.4	8.4	8.6	8.7	8.9	9.1	9.3	9.5	9.7	9.9	10.1	10.3	10.5	10.7	10.9	11.1
RSA CPI	(%)		2.55%	4.10%	4.77%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
USA CPI	(%)		1.38%	1.03%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
AUS CPI	(%)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%
Financial – Nominal																						
Sales Revenue	(ZAR'm)	208,968	5,813	14,517	15,740	15,316	16,039	14,740	14,560	14,130	13,070	12,642	11,791	10,508	10,104	9,845	9,161	6,619	3,888	4,131	3,647	2,707
Total Working Costs	(ZAR'm)	–116,006	–4,787	–9,706	–9,621	–8,327	–8,247	–7,871	–7,730	–7,635	–6,861	–6,652	–6,145	–5,346	–5,327	–5,303	–5,032	–3,835	–1,988	–2,249	–1,971	–1,385
Mining	(ZAR'm)	–85,406	–3,315	–7,078	–6,988	–6,116	–6,065	–5,841	–5,800	–5,680	–5,131	–4,957	–4,553	–4,030	–3,970	–3,917	–3,670	–2,897	–1,495	–1,584	–1,351	–967
Processing	(ZAR'm)	–11,164	–567	–1,175	–1,152	–1,017	–879	–900	–716	–682	–531	–487	–469	–373	–368	–369	–378	–265	–205	–215	–256	–163
Overheads	(ZAR'm)	–16,839	–541	–1,123	–1,163	–993	–1,094	–1,107	–1,115	–1,168	–1,128	–1,088	–988	–897	–913	–886	–822	–650	–365	–383	–288	–130
Environmental	(ZAR'm)	–1,093	–34	–80	–88	–79	–79	–67	–61	–57	–53	–56	–58	–61	–64	–67	–70	–25	–26	–27	–28	–13
Terminal Separation Benefits	(ZAR'm)	–1,420	–4	–21	–135	–74	–66	–46	–40	–81	–56	–84	–117	–40	–46	–83	–134	–135		–30	–72	–156
Net Change in Working Capital	(ZAR'm)	–83	–327	–229	–95	–48	–64	90	1	32	39	19	40	54	33	18	42	138	103	–10	26	44
Operating Profit	(ZAR'm)	92,962	1,026	4,811	6,119	6,989	7,792	6,869	6,830	6,495	6,209	5,990	5,646	5,162	4,776	4,542	4,129	2,785	1,900	1,881	1,677	1,322
Tax Deductible Allowances	(ZAR'm)	–7,083	–641	–1,420	–1,080	–961	–812	–535	–306	–305	–258	–226	–194	–81	–68	–62	–46	–48	–40			
Tax Liability	(ZAR'm)	–33,667	–76	–968	–1,838	–2,287	–2,742	–2,493	–2,613	–2,510	–2,366	–2,308	–2,195	–2,064	–1,905	–1,807	–1,637	–1,073	–766	–770	–687	–555
Capital Expenditure	(ZAR'm)	–7,083	–641	–1,420	–1,080	–961	–812	–535	–306	–305	–258	–226	–194	–81	–68	–62	–46	–48	–40			
Final Net Free Cash	(ZAR'm)	52,212	309	2,423	3,201	3,741	4,238	3,841	3,911	3,681	3,584	3,457	3,257	3,016	2,803	2,673	2,446	1,663	1,094	1,111	989	767
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	85,217	69,729	72,203	74,368	71,589	71,821	77,334	79,553	84,529	86,119	89,490	92,250	95,404	102,734	108,523	114,759	129,908	125,171	130,118	133,757	125,190
Total Cash Costs	(ZAR/kg)	85,217	69,729	72,203	74,368	71,589	71,821	77,334	79,553	84,529	86,119	89,490	92,250	95,404	102,734	108,523	114,759	129,908	125,171	130,118	133,757	125,190
Total Working Costs	(ZAR/kg)	87,168	75,484	74,749	76,910	73,356	73,687	77,565	80,593	85,712	87,016	91,145	94,337	96,246	104,230	111,270	118,565	130,687	120,518	134,141	139,079	137,629
Total Costs	(ZAR/kg)	92,491	85,594	85,684	85,541	81,824	80,939	82,839	83,782	89,132	90,295	94,236	97,314	97,705	105,555	112,570	119,654	132,334	122,967	134,141	139,079	137,629

[1] Six-month forecast to June 2004, actual results between July 2003 and December 2003 are reported in Section 2.

13.6 Net Present Values and Sensitivities

The following Tables present the Net Present Values ("NPV") of the 1 January 2004 money terms cash flow as derived from the TEM for each Tax Entity. In summary they include the following:

- the variation in NPV with discount factors;
- variation in NPV based on single parameter sensitivities; and
- variation in NPV based on twin (revenue and operating expenditure) sensitivities.

13.6.1 Target Tax Entity

Table 13.16 Target Tax Entity: NPV at a Range of Discount Factors

Discount Factor (%)	NPV (ZARm)
0.0%	**5,727**
4.0%	4,449
8.0%	3,591
12.0%	**2,990**
16.0%	2,554
20.0%	2,225
24.0%	1,970

Table 13.17 Target Tax Entity: NPV Sensitivity – Varying Single Parameter

Sensitivity Ranges							
Revenue	-30%	-20%	-10%		10%	20%	30%
Working Cost	-15%	-10%	-5%		5%	10%	15%
Capital	-15%	-10%	-5%		5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Valuation at 0.0% Discount Factor							
Revenue	301	2,393	4,303	**5,727**	7,122	8,500	9,880
Total Working Cost	7,054	6,613	6,179	**5,727**	5,278	4,810	4,358
Capital	5,804	5,780	5,756	**5,727**	5,694	5,663	5,638
Valuation at 12.0% Discount Factor							
Revenue	453	1,371	2,254	**2,990**	3,667	4,313	4,954
Total Working Cost	3,604	3,404	3,202	**2,990**	2,774	2,548	2,321
Capital	3,037	3,022	3,007	**2,990**	2,971	2,954	2,938

Table 13.18 Target Tax Entity: NPV Sensitivity – Varying Twin Parameter at 12.0% Discount

NPV (ZARm)		-30%	-20%	-10%		10%	20%	30%
				Revenue Sensitivity Range				
	-15%	2,107	2,849	3,540	4,192	4,836	5,455	6,094
	-10%	1,580	2,412	3,128	3,798	4,443	5,082	5,700
TWC Sensitivity	**-5%**	1,017	1,934	2,702	3,404	4,064	4,707	5,327
		453	1,371	2,254	**2,990**	3,667	4,313	4,954
	5%	-110	807	1,724	2,548	3,265	3,933	4,565
	10%	-673	243	1,160	2,071	2,841	3,533	4,181
	15%	-1,236	-321	595	1,510	2,386	3,128	3,800

13.6.2 Free Gold Tax Entity

Table 13.19 Free Gold Tax Entity: NPV at a Range of Discount Factors

Discount Factor (%)	NPV (ZARm)
0.0%	**21,515**
4.0%	15,649
8.0%	11,929
12.0%	**9,449**
16.0%	7,737
20.0%	6,499
24.0%	5,578

Table 13.20 Free Gold Tax Entity: NPV Sensitivity – Varying Single Parameter

Sensitivity Ranges							
Revenue	-30%	-20%	-10%		10%	20%	30%
Working Cost	-15%	-10%	-5%		5%	10%	15%
Capital	-15%	-10%	-5%		5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Valuation at 0.0% Discount Factor							
Revenue	8,799	13,072	17,285	**21,515**	25,720	29,926	34,131
Total Working Cost	27,455	25,475	23,495	**21,515**	19,523	17,515	15,535
Capital	21,836	21,729	21,622	**21,515**	21,407	21,300	21,193
Valuation at 12.0% Discount Factor							
Revenue	3,691	5,653	7,546	**9,449**	11,329	13,209	15,089
Total Working Cost	12,145	11,247	10,348	**9,449**	8,539	7,611	6,707
Capital	9,659	9,589	9,519	**9,449**	9,379	9,310	9,240

Table 13.21 Free Gold Tax Entity: NPV Sensitivity – Varying Twin Parameter at 12.0% Discount

NPV (ZARm)		-30%	-20%	-10%		10%	20%	30%
					Revenue Sensitivity Range			
	-15%	5,125	7,025	8,917	10,797	12,677	14,557	16,437
	-10%	4,624	6,557	8,468	10,348	12,228	14,108	15,988
TWC Sensitivity	-5%	4,151	6,105	8,019	9,899	11,779	13,659	15,538
		3,691	5,653	7,546	**9,449**	11,329	13,209	15,089
	5%	3,165	5,151	7,084	9,000	10,880	12,760	14,640
	10%	2,689	4,670	6,632	8,539	10,431	12,311	14,190
	15%	2,165	4,210	6,180	8,066	9,981	11,861	13,741

13.6.3 Joel Tax Entity

Table 13.22 Joel Tax Entity: NPV at a Range of Discount Factors

Discount Factor (%)	NPV (ZARm)
0.0%	**730**
4.0%	604
8.0%	509
12.0%	**436**
16.0%	378
20.0%	332
24.0%	295

Table 13.23 Joel Tax Entity: NPV Sensitivity – Varying Single Parameter

Sensitivity Ranges							
Revenue	-30%	-20%	-10%		10%	20%	30%
Working Cost	-15%	-10%	-5%		5%	10%	15%
Capital	-15%	-10%	-5%		5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Valuation at 0.0% Discount Factor							
Revenue	31	319	527	**730**	922	1,117	1,305
Total Working Cost	1,102	975	855	**730**	597	462	319
Capital	751	745	738	**730**	720	712	705
Valuation at 12.0% Discount Factor							
Revenue	7	181	313	**436**	550	667	777
Total Working Cost	660	583	511	**436**	355	272	181
Capital	453	448	442	**436**	428	421	416

Table 13.24 Joel Tax Entity: NPV Sensitivity – Varying Twin Parameter at 12.0% Discount

NPV (ZARm)		-30%	-20%	-10%		10%	20%	30%
				Revenue Sensitivity Range				
	-15%	181	312	435	547	664	773	883
	-10%	133	270	393	511	625	738	848
TWC Sensitivity	-5%	71	226	354	474	586	703	812
		7	181	313	**436**	550	667	777
	5%	-56	133	271	394	514	626	742
	10%	-120	72	226	355	476	589	706
	15%	-184	8	181	314	436	553	671

13.6.4 Harmony Free State Tax Entity

Table 13.25 Harmony Free State Tax Entity: NPV at a Range of Discount Factors

Discount Factor (%)	NPV (ZARm)
0.0%	**6,596**
4.0%	5,144
8.0%	4,122
12.0%	**3,380**
16.0%	2,829
20.0%	2,408
24.0%	2,079

Table 13.26 Harmony Free State Tax Entity: NPV Sensitivity – Varying Single Parameter

Sensitivity Ranges							
Revenue	-30%	-20%	-10%		10%	20%	30%
Working Cost	-15%	-10%	-5%		5%	10%	15%
Capital	-15%	-10%	-5%		5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Valuation at 0.0% Discount Factor							
Revenue	790	2,786	4,709	**6,596**	8,483	10,392	12,281
Total Working Cost	10,170	8,984	7,781	**6,596**	5,411	4,196	2,995
Capital	6,682	6,653	6,625	**6,596**	6,567	6,538	6,509
Valuation at 12.0% Discount Factor							
Revenue	164	1,295	2,356	**3,380**	4,404	5,447	6,469
Total Working Cost	5,356	4,704	4,034	**3,380**	2,726	2,045	1,370
Capital	3,432	3,415	3,397	**3,380**	3,362	3,345	3,328

Table 13.27 Harmony Free State Tax Entity: NPV Sensitivity – Varying Twin Parameter at 12.0% Discount

NPV (ZARm)		-30%	-20%	-10%		10%	20%	30%
				Revenue Sensitivity Range				
	-15%	1,258	2,313	3,337	4,364	5,401	6,424	7,446
	-10%	913	1,986	3,010	4,034	5,076	6,098	7,120
TWC Sensitivity	-5%	555	1,627	2,683	3,707	4,738	5,772	6,795
		164	1,295	2,356	**3,380**	4,404	5,447	6,469
	5%	-312	935	2,020	3,053	4,077	5,113	6,143
	10%	-829	578	1,664	2,726	3,750	4,774	5,818
	15%	-1,345	189	1,333	2,398	3,422	4,446	5,487

13.6.5 Welkom Tax Entity

Table 13.28 Welkom Tax Entity: NPV at a Range of Discount Factors

Discount Factor (%)	NPV (ZARm)
0.0%	**171**
4.0%	152
8.0%	137
12.0%	**124**
16.0%	114
20.0%	105
24.0%	97

Table 13.29 Welkom Tax Entity: NPV Sensitivity – Varying Single Parameter

Sensitivity Ranges							
Revenue	**–30%**	**–20%**	**–10%**		**10%**	**20%**	**30%**
Working Cost	**–15%**	**–10%**	**–5%**		**5%**	**10%**	**15%**
Capital	**–15%**	**–10%**	**–5%**		**5%**	**10%**	**15%**
Currency	**(ZARm)**	**(ZARm)**	**(ZARm)**	**(ZARm)**	**(ZARm)**	**(ZARm)**	**(ZARm)**
Valuation at 0.0% Discount Factor							
Revenue	–167	–27	89	**171**	250	330	409
Total Working Cost	359	296	233	**171**	107	17	–92
Capital	171	171	171	**171**	171	171	171
Valuation at 12.0% Discount Factor							
Revenue	–132	–27	63	**124**	183	243	302
Total Working Cost	266	218	171	**124**	75	6	–78
Capital	124	124	124	**124**	124	124	124

Table 13.30 Welkom Tax Entity: NPV Sensitivity – Varying Twin Parameter at 12.0% Discount

NPV (ZARm)		–30%	–20%	–10%		10%	20%	30%
					Revenue Sensitivity Range			
	–15%	–3	76	135	195	254	314	373
	–10%	–45	50	112	171	231	290	349
TWC Sensitivity	**–5%**	–88	13	88	148	207	266	326
		–132	–27	63	**124**	183	243	302
	5%	–176	–70	29	100	160	219	279
	10%	–219	–114	–10	75	136	196	255
	15%	–263	–157	–52	44	113	172	231

13.6.6 Randfontein Tax Entity

Table 13.31 Randfontein Tax Entity: NPV at a Range of Discount Factors

Discount Factor (%)	NPV (ZARm)
0.0%	**19,044**
4.0%	13,558
8.0%	10,040
12.0%	**7,691**
16.0%	6,077
20.0%	4,924
24.0%	4,079

Table 13.32 Randfontein Tax Entity: NPV Sensitivity – Varying Single Parameter

Sensitivity Ranges							
Revenue	-30%	-20%	-10%		10%	20%	30%
Working Cost	-15%	-10%	-5%		5%	10%	15%
Capital	-15%	-10%	-5%		5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Valuation at 0.0% Discount Factor							
Revenue	6,964	11,078	14,971	**19,044**	22,990	26,923	30,852
Total Working Cost	24,812	22,896	20,976	**19,044**	17,075	15,009	12,811
Capital	19,374	19,264	19,154	**19,044**	18,929	18,811	18,694
Valuation at 12.0% Discount Factor							
Revenue	2,373	4,230	5,893	**7,691**	9,374	11,046	12,718
Total Working Cost	10,180	9,355	8,528	**7,691**	6,816	5,858	4,808
Capital	7,916	7,841	7,766	**7,691**	7,610	7,527	7,444

Table 13.33 Randfontein Tax Entity: NPV Sensitivity – Varying Twin Parameter at 12.0% Discount

NPV (ZARm)		-30%	-20%	-10%		10%	20%	30%
					Revenue Sensitivity Range			
	-15%	3,695	5,411	7,150	8,941	10,619	12,293	13,965
	-10%	3,300	4,991	6,731	8,528	10,205	11,881	13,556
TWC Sensitivity	**-5%**	2,875	4,572	6,312	8,110	9,791	11,469	13,144
		2,373	4,230	5,893	**7,691**	9,374	11,046	12,718
	5%	1,846	3,765	5,462	7,254	8,941	10,613	12,285
	10%	1,272	3,246	4,998	6,816	8,507	10,181	11,852
	15%	717	2,727	4,471	6,361	8,073	9,747	11,419

13.6.7 Orkney Tax Entity

Table 13.34 Orkney Tax Entity: NPV at a Range of Discount Factors

Discount Factor (%)	NPV (ZARm)
0.0%	**511**
4.0%	467
8.0%	430
12.0%	**399**
16.0%	372
20.0%	349
24.0%	328

Table 13.35 Orkney Tax Entity: NPV Sensitivity – Varying Single Parameter

Sensitivity Ranges							
Revenue	–30%	–20%	–10%		10%	20%	30%
Working Cost	–15%	–10%	–5%		5%	10%	15%
Capital	–15%	–10%	–5%		5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Valuation at 0.0% Discount Factor							
Revenue	–171	125	322	**511**	695	878	1,062
Total Working Cost	911	778	644	**511**	372	229	59
Capital	515	514	512	**511**	510	509	507
Valuation at 12.0% Discount Factor							
Revenue	–113	110	256	**399**	539	679	819
Total Working Cost	702	601	500	**399**	295	190	64
Capital	402	401	400	**399**	398	397	396

Table 13.36 Orkney Tax Entity: NPV Sensitivity – Varying Twin Parameter at 12.0% Discount

NPV (ZARm)		–30%	–20%	–10%		10%	20%	30%
					Revenue Sensitivity Range			
	–15%	125	269	411	551	691	831	971
	–10%	63	217	360	500	640	780	920
TWC Sensitivity	–5%	–20	164	308	450	590	730	870
		–113	110	256	**399**	539	679	819
	5%	–207	38	204	347	489	629	769
	10%	–300	–52	150	295	438	578	718
	15%	–394	–146	91	243	386	527	667

13.6.8 Evander Tax Entity

Table 13.37 Evander Tax Entity: NPV at a Range of Discount Factors

Discount Factor (%)	NPV (ZARm)
0.0%	**3,040**
4.0%	2,379
8.0%	1,917
12.0%	**1,582**
16.0%	1,335
20.0%	1,146
24.0%	998

Table 13.38 Evander Tax Entity: NPV Sensitivity – Varying Single Parameter

Sensitivity Ranges							
Revenue	–30%	–20%	–10%		10%	20%	30%
Working Cost	–15%	–10%	–5%		5%	10%	15%
Capital	–15%	–10%	–5%		5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Valuation at 0.0% Discount Factor							
Revenue	276	1,267	2,166	**3,040**	3,927	4,805	5,681
Total Working Cost	4,655	4,121	3,582	**3,040**	2,507	1,973	1,408
Capital	3,147	3,112	3,076	**3,040**	3,005	2,969	2,934
Valuation at 12.0% Discount Factor							
Revenue	45	608	1,106	**1,582**	2,068	2,545	3,020
Total Working Cost	2,467	2,177	1,882	**1,582**	1,290	997	676
Capital	1,653	1,629	1,606	**1,582**	1,558	1,535	1,511

Table 13.39 Evander Tax Entity: NPV Sensitivity – Varying Twin Parameter at 12.0% Discount

NPV (ZARm)		–30%	–20%	–10%		10%	20%	30%
				Revenue Sensitivity Range				
	–15%	574	1,069	1,545	2,032	2,506	2,981	3,456
	–10%	425	923	1,399	1,882	2,361	2,836	3,310
TWC Sensitivity	–5%	255	773	1,253	1,728	2,216	2,691	3,165
		45	608	1,106	**1,582**	2,068	2,545	3,020
	5%	–217	459	960	1,436	1,914	2,400	2,875
	10%	–486	286	802	1,290	1,765	2,255	2,730
	15%	–755	81	642	1,144	1,619	2,100	2,584

13.6.9 Kalgold Tax Entity

Table 13.40 Kalgold Tax Entity[1]: NPV at a Range of Discount Factors

Discount Factor (%)	NPV (ZARm)
0.0%	**375**
4.0%	343
8.0%	315
12.0%	**291**
16.0%	270
20.0%	251
24.0%	235

[1] The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

Table 13.41 Kalgold Tax Entity[1]: NPV Sensitivity – Varying Single Parameter

Sensitivity Ranges							
Revenue	–30%	–20%	–10%		10%	20%	30%
Working Cost	–15%	–10%	–5%		5%	10%	15%
Capital	–15%	–10%	–5%		5%	10%	15%
Currency	**(ZARm)**	**(ZARm)**	**(ZARm)**	**(ZARm)**	**(ZARm)**	**(ZARm)**	**(ZARm)**
Valuation at 0.0% Discount Factor							
Revenue	90	214	306	**375**	452	521	591
Total Working Cost	510	467	425	**375**	332	282	228
Capital	375	375	375	**375**	375	375	375
Valuation at 12.0% Discount Factor							
Revenue	55	154	231	**291**	355	413	470
Total Working Cost	407	371	335	**291**	252	208	159
Capital	291	291	291	**291**	291	291	291

[1] The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

Table 13.42 Kalgold Tax Entity[1]: NPV Sensitivity – Varying Twin Parameter at 12.0% Discount

NPV (ZARm)		–30%	–20%	–10%		10%	20%	30%
				Revenue Sensitivity Range				
	–15%	151	230	289	353	410	467	531
	–10%	119	205	270	335	392	449	514
TWC Sensitivity	**–5%**	87	185	251	310	374	431	489
		55	154	231	**291**	355	413	470
	5%	23	122	206	272	335	394	452
	10%	–9	90	186	252	312	376	433
	15%	–41	58	156	233	293	358	415

[1] The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

13.6.10 Mt. Magnet & Cue Tax Entity

Table 13.43 Mt. Magnet & Cue Tax Entity: NPV at a Range of Discount Factors

Discount Factor (%)	NPV (ZARm)
0.0%	**263**
4.0%	230
8.0%	200
12.0%	**173**
16.0%	148
20.0%	125
24.0%	105

Table 13.44 Mt. Magnet & Cue Tax Entity: NPV Sensitivity – Varying Single Parameter

Sensitivity Ranges							
Revenue	-30%	-20%	-10%		10%	20%	30%
Working Cost	-15%	-10%	-5%		5%	10%	15%
Capital	-15%	-10%	-5%		5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Valuation at 0.0% Discount Factor							
Revenue	-1,302	-713	-202	**263**	705	1,147	1,588
Total Working Cost	1,134	844	553	**263**	-39	-358	-689
Capital	700	555	409	**263**	117	-29	-175
Valuation at 12.0% Discount Factor							
Revenue	-952	-528	-159	**173**	489	805	1,121
Total Working Cost	783	580	376	**173**	-37	-261	-495
Capital	510	397	285	**173**	60	-52	-164

Table 13.45 Mt. Magnet & Cue Tax Entity: NPV Sensitivity – Varying Twin Parameter at 12.0% Discount

NPV (ZARm)		-30%	-20%	-10%		10%	20%	30%
				Revenue Sensitivity Range				
	-15%	-548	-170	162	478	794	1,110	1,421
	-10%	-681	-285	60	376	692	1,009	1,322
TWC Sensitivity	-5%	-817	-404	-46	274	591	907	1,222
		-952	-528	-159	**173**	489	805	1,121
	5%	-1,088	-657	-273	69	387	703	1,020
	10%	-1,223	-793	-388	-37	285	602	918
	15%	-1,358	-928	-511	-147	184	500	816

13.6.11 South Kalgoorlie Tax Entity

Table 13.46 South Kalgoorlie Tax Entity: NPV at a Range of Discount Factors

Discount Factor (%)	NPV (ZARm)
0.0%	**–32**
4.0%	–35
8.0%	–38
12.0%	**–40**
16.0%	–41
20.0%	–43
24.0%	–44

Table 13.47 South Kalgoorlie Tax Entity: NPV Sensitivity – Varying Single Parameter

Sensitivity Ranges							
Revenue	–30%	–20%	–10%		10%	20%	30%
Working Cost	–15%	–10%	–5%		5%	10%	15%
Capital	–15%	–10%	–5%		5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Valuation at 0.0% Discount Factor							
Revenue	–335	–233	–130	**–32**	52	129	206
Total Working Cost	168	104	39	**–32**	–113	–199	–285
Capital	–2	–12	–22	**–32**	–43	–53	–63
Valuation at 12.0% Discount Factor							
Revenue	–300	–212	–124	**–40**	33	100	166
Total Working Cost	134	78	23	**–40**	–110	–183	–257
Capital	–11	–21	–30	**–40**	–49	–59	–68

Table 13.48 South Kalgoorlie Tax Entity: NPV Sensitivity – Varying Twin Parameter at 12.0% Discount

NPV (ZARm)		–30%	–20%	–10%		10%	20%	30%
				Revenue Sensitivity Range				
	–15%	–189	–101	–20	51	117	184	250
	–10%	–226	–138	–52	23	89	156	222
TWC Sensitivity	**–5%**	–263	–175	–87	–7	61	128	194
		–300	–212	–124	**–40**	33	100	166
	5%	–337	–249	–161	–73	5	72	139
	10%	–374	–286	–198	–110	–27	44	111
	15%	–411	–323	–235	–147	–59	16	83

13.7 Avgold's Tax Entities

Table 13.49 Summations of Avgold Tax Entities: NPV at a Range of Discount Factors

Discount Factor (%)	NPV (ZARm)	NPV per Share (ZAR)
0.0%	**5,727**	8.42
4.0%	4,449	6.54
8.0%	3,591	5.28
12.0%	**2,990**	4.40
16.0%	2,554	3.76
20.0%	2,225	3.27
24.0%	1,970	2.90

Table 13.50 Summations of Avgold Tax Entities: NPV Sensitivity – Varying Single Parameter

Sensitivity Ranges							
Revenue	–30%	–20%	–10%		10%	20%	30%
Working Cost	–15%	–10%	–5%		5%	10%	15%
Capital	–15%	–10%	–5%		5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Valuation at 0.0% Discount Factor							
Revenue	301	2,393	4,303	**5,727**	7,122	8,500	9,880
Total Working Cost	7,054	6,613	6,179	**5,727**	5,278	4,810	4,358
Capital	5,804	5,780	5,756	**5,727**	5,694	5,663	5,638
Valuation at 12.0% Discount Factor							
Revenue	453	1,371	2,254	**2,990**	3,667	4,313	4,954
Total Working Cost	3,604	3,404	3,202	**2,990**	2,774	2,548	2,321
Capital	3,037	3,022	3,007	**2,990**	2,971	2,954	2,938

Table 13.51 Summations of Avgold Tax Entities: NPV Sensitivity – Varying Twin Parameter at 12.0% Discount

NPV (ZARm)		–30%	–20%	–10%		10%	20%	30%
				Revenue Sensitivity Range				
	–15%	2,107	2,849	3,540	4,192	4,836	5,455	6,094
	–10%	1,580	2,412	3,128	3,798	4,443	5,082	5,700
TWC Sensitivity	–5%	1,017	1,934	2,702	3,404	4,064	4,707	5,327
		453	1,371	2,254	**2,990**	3,667	4,313	4,954
	5%	–110	807	1,724	2,548	3,265	3,933	4,565
	10%	–673	243	1,160	2,071	2,841	3,533	4,181
	15%	–1,236	–321	595	1,510	2,386	3,128	3,800

13.8 Harmony's Tax Entities

Table 13.52 Summations of Harmony Tax Entities: NPV at a Range of Discount Factors

Discount Factor (%)	NPV (ZARm)	NPV per Share (ZAR)
0.0%	**52,212**	**202.10**
4.0%	38,491	148.99
8.0%	29,562	114.43
12.0%	**23,484**	**90.90**
16.0%	19,218	74.39
20.0%	16,095	62.30
24.0%	13,750	53.22

Table 13.53 Summations of Harmony Tax Entities: NPV Sensitivity – Varying Single Parameter

Sensitivity Ranges							
Revenue	–30%	–20%	–10%		10%	20%	30%
Working Cost	–15%	–10%	–5%		5%	10%	15%
Capital	–15%	–10%	–5%		5%	10%	15%
Currency	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)	(ZARm)
Valuation at 0.0% Discount Factor							
Revenue	14,975	27,889	40,043	**52,212**	64,195	76,168	88,107
Total Working Cost	71,276	64,939	58,583	**52,212**	45,771	39,126	32,289
Capital	53,550	53,105	52,659	**52,212**	51,757	51,302	50,849
Valuation at 12.0% Discount Factor							
Revenue	4,838	11,464	17,481	**23,484**	29,326	35,154	40,951
Total Working Cost	33,101	29,914	26,707	**23,484**	20,202	16,742	13,135
Capital	24,429	24,115	23,800	**23,484**	23,162	22,838	22,516

Table 13.54 Summations of Harmony Tax Entities: NPV Sensitivity – Varying Twin Parameter at 12.0% Discount

NPV (ZARm)		–30%	–20%	–10%	Revenue Sensitivity Range	10%	20%	30%
	–15%	10,369	16,434	22,361	28,308	34,133	39,934	45,733
	–10%	8,624	14,778	20,750	26,707	32,539	38,344	44,148
TWC Sensitivity	–5%	6,806	13,085	19,134	25,092	30,933	36,754	42,556
		4,838	11,464	17,481	**23,484**	29,326	35,154	40,951
	5%	2,641	9,627	15,801	21,852	27,701	33,530	39,341
	10%	401	7,697	14,063	20,202	26,073	31,904	37,731
	15%	–1,868	5,719	12,256	18,510	24,448	30,282	36,116

14. SUMMARY EQUITY VALUATION AND CONCLUDING REMARKS

14.1 Summary Equity Valuation

Tables 14.1 and 14.2 present the summary equity valuation for the Companies for LoM Valuations and Proven and Probable Reserve Valuations ("P&P Valuations"). In addition to the valuations of the Tax Entities, the "Sum-of-the-Parts" valuation includes market-based valuation of various interests attributable to Avgold and Harmony as at 1 January 2004, which has been provided to SRK by the Financial Advisors.

The value per share stated also includes the Net cash position as at 31 December 2004, these being the latest available figures. Unallocated Corporate expenses are as stated in Section 12 of this report and are based on a DCF approach assuming a 12.0% discount factor over a ten-year period.

Table 14.1 Avgold: Summary Equity Valuation

Company/Tax Entity	LoM Valuation NPV @12.0% DCF (ZARm)	P&P Valuation NPV @12.0% DCF (ZARm)
Avgold		
Wholly Owned		
Target[1]	2,990	2,899
Total Asset Valuation	**2,990**	**2,899**
Unallocated Corporate Expenses	0	0
Net (debt)/cash at 31 December 2003	–3	–3
Mark-to-market Gold Hedge Book at 31 December 2003	–394	–394
EQUITY VALUE	**2,593**	**2,502**
Shares in Issue (**millions**) 31 December 2003	**680.1**	**680.1**
DCF per SHARE	**3.81**	**3.68**

[1] Target Mine only, no value attributed to the Mineral Resources in Table 4.9.

Table 14.2 Harmony: Summary Equity Valuation

Company/Tax Entity	LoM Valuation NPV @12.0% DCF (ZARm)	P&P Valuation NPV @12.0% DCF (ZARm)
Harmony		
Wholly Owned		
Free Gold Joint Venture Company (Proprietary) Limited	9,449	9,252
Joel Joint Venture Company (Proprietary) Limited	436	280
Harmony Free State	3,380	2,225
Harmony Welkom	124	124
Randfontein Estates Limited	7,691	4,636
Evander Gold Mining Company Limited	1,582	1,582
Harmony Orkney	399	399
Kalahari Goldridge Mining Company Limited [1]	291	291
Mt. Magnet	173	173
Sth Kalgoolie	–40	–40
Subtotal	**23,484**	**18,922**
Interests In Listed Entities		
Anglovaal Mining Limited (34% Stake)	1,633	1,633
Abelle Limited (83% Stake)	1,547	1,547
Bendigo (31.6% Stake)	297	297
Avgold Limited (11.4% Stake)	837	837
Subtotal	**4,314**	**4,314**
Total Asset Valuation	**27,798**	**23,236**
Unallocated Corporate Expenses [2]	–969	–969
Net (debt)/cash at 31 December 2003	25	25
Mark-to-market of Hedge Book at 31 December 2003	–380	–380
Equity Value	**26,474**	**21,912**
Shares in Issue	**258.4**	**258.4**
DCF per Share	**102.47**	**84.82**

[1] The contribution from Kalgold is subject to a current sale agreement which may see a 100% disposal of the asset in the near future.

[2] Harmony carries unallocated corporate cost at Company Level amounting to approximately ZAR103m per annum. For the purposes of summary equity valuation this cost has been projected out for a period of 10 years and discounted on the same bases as the Tax Entities.

In terms of the pending sale of Kalgold, Harmony has announced that on successful completion of the sale, Harmony will receive ZAR250m. This amount is for a cash consideration of ZAR137.5m and 25,700,935 Aflease shares. The net consideration will therefore replace the ZAR291m contribution from Kalgold as currently detailed in Table 14.1.

14.2 Hedge Books

14.2.1 Avgold

Avgold reports in its unaudited financial results for the quarter and half year ending 31 December 2003 that as at 31 December 2003, Avgold's hedge book represented 72% of forecast gold production to June 2006. The commitment had a mark-to-market value of negative ZAR394m calculated at a gold price of US$414.82/oz and an exchange rate of ZAR6.65:US$1.00. This mark-to-market valuation is inclusive of a negative ZAR286m pertaining to the rand/US$ forward exchange contracts ("FECs") utilised to convert the rand gold hedge into dollar gold hedge.

Subsequent changes to the exchange rates will result in adjustments to the Company's income and thereby creating variability in valuation at Company level.

The net hedge book at 31 December 2003 is presented in Table 14.3.

Table 14.3 Avgold: Net Hedge Book

Period Ending		June 2004	June 2005	June 2006
Dollar forward Sales contracts				
Quantity Sold	(kgs)	4,571	9,137	4,403
	(oz)	146,962	293,762	141,545
	(US$/oz)	**314**	**316**	**323**

14.2.2 Harmony

Harmony reports in its unaudited financial results for the quarter and half year ending 31 December 2003 that at 31 December 2003, Harmony's hedge book relates only to the production from Harmony Australian Operations. The commitment had a mark-to-market value of negative ZAR380m calculated at a gold price of AUS$552/ozt.

Subsequent changes to the exchange rates will result in adjustments to the Company's income and thereby creating variability in valuation at Company level.

The net hedge book at 31 December 2003 is presented in Table 14.4.

Table 14.4 Harmony: Net Hedge Book

Period Ending		June 2005	June 2006	June 2007	June 2008	June 2008
Dollar forward Sales contracts						
Quantity Sold	(kgs)	5,443	3,359	4,572	3,110	3,110
	(oz)	175,000	108,000	147,000	100,000	100,000
	(Aus$/oz)	513	510	515	518	518
Call Contracts	(kgs)	3,953	1,244			
	(oz)	127,100	40,000			
	(US$/oz)	**513**	**522**			

14.3 Precedent Transactions

Table 14.5 Recent Gold Transactions in Africa

Project[1]	Period[1]	Gold Price[2] (US$/ozt)	Location[1]	Status[1]	Seller[1]	Buyer[1]	Price Paid[1] (US$m)	Au Equivalent[1] (ozt)	Tonnage (Mmt)	Grade[1] (g/mt)	Certainty[1]	$Paid/ozt[1]
Disposals/ Acquisitions												
Hartebeestfontein	3Q 1999	295	RSA	PRD[3]	Avgold	DRD	$7.4	1,702,000	7.2	7.3	P&PB[6]	$4.35
Golden Pride Goldfields	3Q 1999	295	Tanzania	PRD	Ashanti	Resolute	$20.0	541,000	5.4	3.1	P&PB	$36.97
Navachab	3Q 1999	295	Namibia	PRD	Inmet	AngloGold	$3.6	59,800	1.0	1.9	P&PB	$60.20
Randfontein Estates	1Q 2000	290	RSA	PRD	Randfontein	Harmony	$143.0	6,402,000	32.1	6.2	P&PB	$22.34
Morila	2Q 2000	280	Mali	PRE	Randgold	AngloGold	$132.0	2,086,800	17.1	3.8	P&PB	$63.25
Teberebie Group	2Q 2000 Goldfields	280	Ghana	PRD	Pioneer	Ashanti	$18.8	4,122,000	113.5	1.1	P&PB	$4.56
Elandsrand	4Q 2000	270	RSA	PRD	Anglogold	Harmony	$130.0	10,150,000	41.0	7.7	P&PB	$12.81
Damang	4Q 2001 Repadre	278	Ghana	PRD	Ranger	Gold Fields/	$41.2	1,447,200	25.0	1.8	P&PB	$28.47
Ity Mining	4Q 2001	278	Ivory Coast	PRD	Normandy	Cogema	$10.8	338,100	2.1	5.0	P&PB	$32.09
Wassa Goldfields	4Q 2001	278	Ghana	FEA[4]	Satellite	Golden Star	$9.0	695,700	13.0	1.7	P&PB	$12.94
Free State and Joel	4Q 2001 Harmony	278	RSA	PRD	Anglogold	ARMgold/	$222.0	12,204,000	52.0	7.3	P&PB	$18.19
President Steyn	4Q 2001	278	RSA	PRD	Mineserv	Thistle Mining	$32.1	1,248,000	6.9	5.6	P&PB	$25.72
Crown Gold Recoveries	1Q 2002 Bathong	290	RSA	PRD	DRD	Khumo Holdings	$9.2	944,400	43.2	0.7	P&PB	$9.74
St. Helena	2Q 2002 Harmony	313	RSA	PRD	Gold Fields	ARMgold/	$11.9	322,000	2.0	5.0	P&PB	$36.96
Golden Reefs Ventures	4Q 2002	323	RSA	PRD	EAGC	Bema Gold	$63.6	1,620,000	15.5	3.3	P&PB	$39.26
Nlotoroso Mines	1Q 2003 Mining	352	Ghana	FEA	Mogdow	Newmont	$20.0	531,000	7.0	2.4	P&PB	$37.66
Doornkop Gold	1Q 2003 Vanguard	352	RSA	PRE[5]	Harmony	Africa	$27.8	1,051,500	3.2	10.2	P&PB	$26.44
ETC (Avgold)	1Q 2003	352	RSA	PRD	Avgold	Metorex/Crew	$36.2	578,000	2.1	8.5	P&PB	$62.63
Syama	2Q 2003 Mining	375	Mali	PRD	Randgold	Resolute	$16.6	4,247,200	41.3	3.2	P&PB	$3.90

Mining Assets	Period	Gold Price (US$/ozt)	Location	Status	Owner	Valuation (US$m)	Au Equivalent (ozt)	Tonnage (Mmt)	Grade (g/mt)	Certainty	$Valued/ozt
Mergers/Listings											
ARMgold	2Q 2002	285	RSA	PRD	ARMgold	$352.0	7,795,000	45.7	5.3	P&PB	$45.16
ARMgold	3Q 2003	350	RSA	PRD	ARMgold	$480.1	8,940,000	47.9	5.8	P&PB	$53.71
Harmony	3Q 2003	350	RSA/AUSS	PRD	Harmony	$1,070.1	28,939,000	173.1	5.2	P&PB	$36.98
Avgold	**1Q 2004**	**366**	**RSA**	**PRD**	**Avgold**	**$318.2**	**3,600,991**	**16.8**	**6.6**	**P&PB**	**$88.37**
Harmony	**1Q 2004**	**366**	**RSA/AUSS**	**PRD**	**Harmony**	**$2,809.2**	**35,816,089**	**203.9**	**5.5**	**P&PB**	**$78.44**

[1] *Source:* Metals Economics Group "Historical Gold Transactions Bi-Annual Report, June 2003".

[2] *Source:* LSE PM Fix (straight average over period).

[3] PRD = Asset in production.

[4] FEA = Project at Feasibility Stage.

[5] PRE = Project at Pre-Production Stage.

[6] P&PB = Proved and Probable Reserve Ounces. The reserve ounces as reported for the Disposals and Acquisitions have not been verified in terms of SAMREC compliance.

14.4 Concluding Remarks

The views expressed by SRK in this CPR have been based on the fundamental assumption that the required management resources and pro-active management skills and access to adequate capital necessary to achieve the LoM plan projections for the Mining Assets are sustained.

SRK has conducted a comprehensive review and assessment of all material issues likely to influence the future operations of the Mining Assets. The LoM plans for the Mining Assets, as provided to and taken in good faith by SRK, have been reviewed in detail for appropriateness, reasonableness and viability, including the existence of and justification for departures from historical performance. Where material differences were found, these were discussed with the Companies and adjusted where considered appropriate. SRK consider that the resulting TEPs are based upon sound reasoning, engineering judgement and technically achievable mine plans, within the context of the risks associated with the gold mining industry.

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GLOSSARY, ABBREVIATIONS AND UNITS

GLOSSARY

AARL elution	a two step gold strip from loaded carbon comprising batch elution followed by batch electrowinning
Abelle	Abelle Limited; a company listed on the ASX, which operates a gold mining operation in Australia and has various interests in exploration properties in Australia and Papua New Guinea
Aliquot	a known formation of a whole used in analysis as a sample
alluvial	water transported, sedimentary deposit
alluvial fan	an outspread, gently sloping mass of alluvium deposited by a stream. Viewed from above, it has the shape of an open fan, the apex being at the valley mouth
andesite	a dark-coloured, fine-grained extrusive rock
AngloGold	AngloGold Limited
Anisotropy	This term is applied both to a random function and to it's variogram (or covariance) when the values of the variogram depend on both the distance and the direction
Archaean	that period of geological time prior to 2.5 x 10^9 years before present, i.e. the earliest part of the Pre-Cambrian
arenaceous	term describing sedimentary rocks with a modal grain size in the sand fraction
argillaceous	applied to rocks or substances composed of clay minerals, or having a notable portion of clay in their composition
assay	the chemical analysis of mineral samples to determine the metal content
asymmetric	without symmetry, having no center, plane, axis of symmetry
atomic absorption	an instrumental analytical technique based on the principle that atoms of elements in the ground state are able to absorb radiation of the same characteristic wavelength, as they would normally emit if excited
auriferous	containing gold
Avmin	Anglovaal Mining Limited
Aztec	automated non-destructive analysis technique using non-destructive energy dispersive X-Ray analysis
backfill	material generally sourced from mine residues and utilised for the filling of mined voids, to ensure long-term stability of excavations and minimise the effects of seismic activity
Bambanani BU	Bambanani Gold Mine
Banded Ironstone	a rock that consists of alternating bands of iron-rich minerals, generally hematite, and chert or fine grained quartz
basalt	a dark-coloured igneous rock, commonly extrusive, composed primarily of calcic plagioclase and pyroxene; the fine-grained equivalent of gabbro
Bayesian	a statistical method that regards parameters of a population as random variables having known probability distribution
bedrock	the solid rock that underlies gravel, soil, or other superficial material
Bendigo	Bendigo Mining NL; a company listed on the ASX which owns a single gold development project in Australia
biotite	a common rockforming mineral of the mica group, has perfect basal cleavage

box hole	a short raise or opening drive above a drift for the purpose of drawing ore from a stope, or to permit access
blasthole	a drill hole in a mine that is filled with explosives in order to blast loose a quantity of rock
braided	divergence of stream channels into complex system of smaller channels
breast mining	a mining method whereby the direction of mining is in the direction of strike
breccia	a coarse-grained clastic rock, composed of angular broken rock fragments held together by a mineral cement or a fine-grained matrix
brittle faults	
buckshot pyrite	
bulk mining	any large-scale, mechanised method of mining involving many thousands of tonnes of orebeing brought to surface each day
Bushveld	
Carbon-in-Leach	the recovery process in which gold is leached from gold ore pulp by cyanide and simultaneously adsorbed onto activated carbon granules in the same vessel. The loaded carbon is then separated from the pulp for subsequent gold removal by elution. The process is typically employed where there is a naturally occurring gold adsorbent in the ore
Carbon-in-Pulp	the recovery process in which gold is first leached from gold ore pulp by cyanide and then adsorbed onto activated carbon granules in separate vessels. The loaded carbon is then separated from the pulp for subsequent gold removal by elution
Carbon-in-Solution	the recovery process in which gold is first leached (typically from heaped ore) by cyanide solution and then adsorbed onto activated carbon granules in separate vessels. The loaded carbon is then separated from the barren solution for subsequent gold removal by elution
capital expenditure	specific project or ongoing expenditure for replacement or additional equipment, materials or infrastructure
cash costs	namely direct mining costs, direct processing costs, direct general and administration costs, consulting fees, management fees, bullion transport and refining charges
channel	watercourse, also in this sense sedimentary material course
chert	granular silica
chip-sample	a method of sampling a rock exposure whereby a regular series of small chips of rock is broken off along a line across the face
chromite	a brownish black to iron-black mineral of the spinal group
clast	rock fragments formed in a sequence of sedimentary rocks
clean-up gold	gold recovered as part of a plant closure and demolition
co-kriging	kriging using more than one type of sampling data
comminution	the term used to describe the process by which ore is reduced in size in order to liberate the desired mineral from the gangue material in preparation for further processing
composite	combining more than one sample result to give an average result over a larger distance
concentrate	a metal-rich product resulting from a mineral enrichment process such as gravity concentration or flotation, in which most of the desired mineral has been separated from the waste material in the ore
conglomerate	detrital sedimentary rock
Conops	Continuous Operations

craton	a part of the earths crust that has attained stability and has been little deformed for a long period of geological time
cross-cut	a horizontal underground drive developed perpendicular to the strike direction of the stratigraphy
crushing	initial process of reducing ore particle size to render it more amenable for further processing
cut-off-grade	the grade of mineralised rock which determines as to whether or not it is economic to recover its gold content by further concentration
dacite	a fine-grained extrusive rock
decline	a surface or sub-surface excavation in the form of a tunnel which is developed from the uppermost point downwards
desalination	*chemical process of removing salt from contaminated water*
design capacity	the unit throughput estimated for capital equipment under normal operating conditions
detrital	minerals occurring in sedimentary rocks, which were derived from pre-existing rocks either within or outside the basin of deposition
development	underground work carried out for the purpose of opening up a mineral deposit, includes shaft sinking, crosscutting, drifting and raising
development drilling	drilling to establish greater confidence in estimation
dextral	right hand displacement on a fault plane
diabase	rock type of basaltic composition
diamond drill	a rotary type of rock drill that cuts a core of rock that is recovered in long cylindrical sections
dilution	waste which is unavoidably mined with ore
dip	angle of inclination of a geological feature/rock from the horizontal
distal	distant from source
dolomite	a common rock-forming mineral. A sedimentary rock, of which more than 50% by weight consists of the mineral dolomite
doré	unrefined gold, usually in bar form and consisting primarily of gold with smaller amounts of other precious and base metals, which will be further refined to high purity gold bullion
downcast	a ventilation system whereby air is forced downwards through a tunnel or shaft, from the point of entry by ventilation fans
drawpoint	an underground opening at the bottom of a stope through which broken ore from the stope is extracted
drill-hole	method of sampling rock that has not bee exposed
dyke	thin, tabular, vertical or near vertical body of igneous rock formed by the injection of magma into planar zones of weakness
elution	the chemical process of desorbing gold from loaded activated carbon
epigenetic	feature being described had a separate genesis to the host material
erosion	the wearing-away of soil and rock by weathering, mass wasting, and the action of streams, glaciers, waves, wind and underground water
Evander Operations	a complex owned by Harmony and located on the East Rand comprising No.2 BU, No.5 BU, No.7 BU, No.8 BU and No.9 BU and the Rolspuit and Poplar Projects
extrusion	rock solidified from magma on the earth's surface
exploration capital	capital associated with continued gold production but not project specific

facies	a rock unit defined by its composition, internal geometry and formation environment
fatality rate	number of deaths per million man hours worked
fault	the surface of a fracture along which movement has occurred
felsic	a mnemonic adjective derived from feldspar and applied to an igneous rock having abundant light-colored minerals
filtration	process of separating usually valuable solid material from a liquid
flotation	the process by which the surface chemistry of the desired mineral particles is chemically modified such that they preferentially attach themselves to bubbles and float to the pulp surface in specially designed machines. The gangue or waste minerals are chemically depressed and do not float, thus allowing the valuable minerals to be concentrated and separated from the undesired material
fluvial	pertaining to the processes and actions of a river/stream
flux	substance used to promote the melting of another substance to which it is added
fold	plastic deformation of previously horizontal rock strata
footwall	the underlying side of an orebody or stope
Free Gold	Free Gold Proprietary Limited
FS1 Plant	Free Gold No.1 Gold Plant
FS2 Plant	Free Gold No.2 Gold Plant
gangue	non-valuable components of the ore
graben	a block of rock that lies between two faults and has moved downward to form a depression between the two adjacent fault blocks. See also horst
grade	the measure of concentration of gold within mineralised rock
granite	a plutonic rock in which quartz makes up 10% to 50% of the felsic components
grantoid cupola	a granitic upward projection of an igneous intrusion into its roof
gravimetric finish	the determination of the gold content after fire assay by measurement of the mass of the resultant gold prill
greenstone	a field term for any compact dark-green altered or metamorphosed basic igneous rock that owes its colour to chlorite
hangingwall	the overlying side of an orebody or slope
Harmony	Harmony Gold Mining Company Limited
Harmony-way	general phrase describing operating principals and company codes of practice and reporting standards specifically developed and implemented by Harmony's management
Harmony Australian Operations	a group of assets owned by Harmony and located in Australia comprising Mt. Magnet & Cue BU operations and South Kalgoorlie BU
Harmony Canadian Operations	the Bisset asset owned by Harmony and located in Canada
Harmony Franchise Rules	Internal Company developed guidelines and procedures for reporting
Harmony Free State Operations	a complex owned by Harmony and comprising: Brand No.1/3 BU, Brand No.2 BU, Brand No.5 BU, Harmony No.2 BU, Merriespruit No.1 BU, Merriespruit No.3 BU, Masimong No.4 BU, Masimong No.5, BU Saaiplaas No.3 BU and Unisel No.1 BU
haulage	a horizontal underground excavation which is used to transport mined ore
head grade	the average grade of ore fed to a mill/plant

hedging	taking a buy or sell position in futures market opposite to a position held in the cash/spot market to minimise the risk of financial loss from an adverse price change
High River	High River Gold Mines Limited; a company listed on AIM which owns, operates and has various interests in gold mining assets in the Russian Federation
Highland Gold	Highland Gold Mining Limited; a company listed on theTSE which has gold mining assets in the Russian Federation, Canada and West Africa
horst	a block of rock that lies between two faults and has moved upward relative to the two adjacent fault blocks. See also graben
homogenous	consisting of only one phase
hydrocyclone	a process whereby material is graded according to size by exploiting centrifugal forces of particulate materials
hydrothermal	process of injection of hot, aqueous, generally mineral-rich solutions into existing rocks or features
igneous	primary crystalline rock formed by the solidification of magma
Indicated Mineral Resource	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 information gathered through appropriate techniques 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
Inferred Mineral Resource	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 assumed but not verified geological and/or grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill-holes which may be limited or of uncertain quality and reliability
International Operations	International Operations comprising Harmony Australian Operations and Harmony Canadian Operations
intercalated	layered material that exists or is introduced between layers of a different character; relatively thin strata of one kind of material that alternate with thicker strata of some other kind
intrusive	pertaining to rocks formed by the injection of magma into pre-existing rock and solidified by cooling beneath the surface
inverse distance	interpolation method of assigning values from samples to blocks based on the distance of the samples to the block centroid
jaw crusher	a machine in which rock is broken by the action of steel plates
Kaapvaal Craton	the ancient, proto-continental crystalline basement of South Africa
Kalgold Operations	an open pit mine owned by Harmony and located near Mafikeng, North West Province, South Africa
kerogen-rich	the solid bituminous mineraliod substance in oil shales
komatite	an igneous suite of basaltic and ultramafic lavas and associated rocks
kriging	an interpolation method of assigning values from samples to blocks that minimises the estimation error
lava	fluid rock that issues from a volcano or fissure, also the same material solidified by cooling
leaching	dissolution of gold from crushed and ground material
lenticular	resembling in shape the cross-section of a lens

leucoxene	a general term for fine-grained, opaque whitish alteration products of ilmenite
Level (mining level)	horizontal tunnel the primary purpose is the transportation of personnel and materials
lithological	geological description pertaining to different rock types
lock-up gold	gold locked as a temporary inventory within a processing plant, or sections thereof, typically milling circuits
lode-gneiss	deposit consisting of a zone of veins (gneiss abundance)
log-kurtosis	statistical parameter describing the peakedness of the curve of the log-frequency distribution of the population
log-mean	arithmetic average of the log values of the population
log-skewness	statistical parameter describing the asymmetry of the curve of the log-frequency distribution of the population
lognormal	term applied to a population whose distribution approximates to normality when the logarithms of the values are taken
log-variance	the square of the standard deviation of the log values of the population
LoM plans	Life-of-Mine plans
longwall mining	a mining method which incorporates breast mining over large continuous spans without the use of pillars
macro-kriging	type of kriging used for long range estimation where sampling information is sparse
mafic	an igneous rock composed chiefly of dark, ferromagnesian minerals
Maximum Operating Capacity	the maximum annual production projected in any given year during the LoM period measured in (ktpa)
Measured Mineral Resource	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 exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill-holes. The locations are spaced closely enough to confirm geological and grade continuity
Merrill Crowe Process	the industrial process by which gold is precipitated from gold bearing solution by first de-aerating the solution and then adding powdered zinc and lead nitrate
Mesozoic	era of geological time between 240 x 10^6 and 63 x 10^6 years ago
metamorphism	structural and/or chemical alteration of rocks and minerals by heat, pressure and/or chemical processes
milling	a general term used to describe the process in which the ore is crushed and ground and subjected to physical or chemical treatment to extract the valuable metals to a concentrate or finished product
mill lock-up	the inventory of gold which has accumulated within milling circuits over a defined period
Mine Health and Safety Act	Mine Health and Safety Act, 29 of 1996
Mineral Resource	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

Mineral Reserve	the economically mineable material derived from a Measured and/or Indicated Mineral Resource. It is inclusive of diluting materials and allows for losses that may occur when the material is mined. Appropriate assessments, which may include feasibility studies, have been carried out, including consideration of and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction is reasonably justified. Mineral Reserves are sub-divided in order of increasing confidence into Probable Mineral Reserves and Proved Mineral Reserve
mineralised	rock in which minerals have been introduced to the point of a potential ore deposit
Minerals Act	the Minerals Act, 50 of 1999
mini-longwall mining method	a mining method similar to the longwall mining method, but where panels are separated by strike stability pillars thus limiting the dip spans mined
Mining Assets	a number of exploration and mining assets comprising Avgold's 100% interest in Target and Harmony's 100% interest in the Free Gold Joint Venture Company (Proprietary) Limited ("Free Gold"), a 100% interest in Randfontein Estates Limited, a 100% interest in Evander Gold Mining Company Limited, a 100% interest in Orkney and Welkom Operations, a 100% interest in Kalahari Goldridge Mining Company, Harmony Gold (Australia) Pty Limited, Harmony Gold (Canada) Inc, Harmony Free State and various Significant Exploration Properties
morphological	rock stratigraphy identified by its topographic features
molybdenite	a lead-grey hexagonal mineral
mylonite	a compact chertlike rock with a streaky or banded structure
mynpachten	originates from the Precious and Base Minerals Act 1908 of the Transvaal. The holder of mineral rights on private land entitled to prospect or mine a maximum of 1/4 of mineralised area. Practice discontinued in terms of Mining Rights Act 20/1967.
normal fault	fault in which the hangingwall moves downward relative to the footwall
nugget effect	a measure of the randomness of the grade distribution within a mineralised zone
oligomictic	a clastic sedimentary rock composed of only a few rock types
on-going capital	capital estimates of a routine nature which are necessary for sustaining operations such as replacement or additional equipment, materials or infrastructure
ordinary kriging	a common type of kriging used when sampling information is relatively dense
Orkney operations	a mining complex owned by Harmony and located in the vicinity of the town of Orkney comprising No.1 BU, No.2 BU, No.3 BU, No.4 BU, No.6 BU and No.7 BU
palaeocurrent	ancient water course direction
palaeotopographic	pertaining to ancient topography
payshoot	linear to sub-linear zone within a reef for which gold grades or accumulations are predominantly above the cut-off-grade
pillar	rock left behind to help support the excavations in an underground mine
placer	concentration of heavy minerals in a fluvial system
plunge	the inclination of a fold axis or other linear feature, measured in the vertical plane
P&P Valuation	Discounted Cash flows determined by cutting off the cash flow projections beyond the point that the total Proved and Probable Mineral Reserves have been depleted i.e. excluding LoM components projected from Measured and Indicated Mineral Resources that have not been converted to Mineral Reserve and/or Inferred Mineral Resources included into the LoM plan.

polymictic	describing clastic feel rock composed of more than one rock type
precipitation	the process of separating mineral constituents from solution by evaporation
pre-concentration	processing of the ore, usually screening, before treatment at the plant
President Steyn	President Steyn Gold Mine
Probable Mineral Reserve	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 is inclusive of diluting materials and allows for losses that may occur when the material is mined. Appropriate assessments, which may include feasibility studies, have been carried out and including consideration of and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction is reasonably justified
project capital	capital expenditure which is associated with specific projects of a non-routine nature
Proterozoic	era of geological time between 2.5×10^9 and 570×10^6 years ago
Proved Mineral Reserve	the economically mineable material derived from a Measured Mineral Resource. It is estimated with a high level of confidence. It is inclusive of diluting materials and allows for losses that may occur when the material is mined. Appropriate assessments, which may include feasibility studies, have been carried out, including consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction is reasonably justified
proximal	near to a source
pyrite	iron sulphide mineral (FeS^2)
pyrite stringers	a pyrite veinlet or filament, usually one of many, occurring in a discontinuous sub parallel pattern in host rock
pyrrhotite	iron sulphide mineral (Fe^1-xS)
quartz	crystalline silica, the commonest gangue mineral of ore deposits
quartzite	metamorphic rock composed of quartz
Range (of a variogram)	the distance at which the variogram model becomes a constant
recumbent syncline	overturned syncline in which the axial surface is more or less horizontal
reef	gold bearing sedimentary horizon in the Witwatersrand Basin
remnant	ore blocks left behind as a result of the underground mining method
reverse/thrust fault	fault in which hangingwall moves upwards relative to the footwall
rhyolite	a group of extrusive igneous rocks, typically porphritic and commonly exhibiting flow texture
SAMREC Code	South African Code for reporting of Mineral Resources and Mineral Reserves
scattered mining	conventional mining method which is applied in a non-systematic configuration
scheelite	a brown tetragonal mineral
scour	concentrated erosive action
sedimentary	pertaining to rocks formed by the accumulation of sediments, formed by the erosion of other rocks
seismic	earthquake or earth vibration including those artificially induced
Semi-variogram	a semi-variogram expresses the rate of change of the differences of grade (and other variables) as the separation between samples increases

sequential grid mining	mining method incorporating dip pillars and mined on a grid system
sericite-altered	a white, fine grained potassium mica occurring in small scales and flakes as an alteration product of various aluminosilicate minerals
shale	a fine grained detrital sedimentary rock, formed by the compaction of clay, silt or mud
shaft	an opening cut downwards from the surface for transporting personnel, equipment, supplies, ore and waste
shear	a deformation resulting from stresses that cause contiguous parts of a body to slide relative to each other in a direction parallel to their plane of contact
sichel 't'	an estimation for the mean of a lognormal distribution (2 or 3 parameters) assuming that random and independent samples have been taken
Significant Exploration Properties	a number of exploration prospects 100% owned by Harmony and comprising the Roslpruit gold project, the Poplar gold project and the Kalplats PGM project
sill	a thin, tabular, horizontal to sub-horizontal body of igneous rock formed by the injection of magma into planar zones of weakness
simple kriging	a type of kriging, which uses a known area mean value as well as sample values
sinistral	left hand displacement on a fault plane
slimes dams	storage facility for metallurgical plant waste product
slope reef	reef comprising a single pebble lag or with no conglomerate developed
smelting	a high temperature pyrometallurgical operation conducted in a furnace, in which the valuable metal is collected to a molten matte or doré phase and separated from the gangue components that accumulate in a less dense molten slag phase
South Africa	the Republic of South Africa
SRK Group	SRK Global Limited
stibnite	a lead-grey mineral
stockwork	a mineral deposit consisting of a three-dimensional network of planar to irregular veinlets closely enough spaced that the whole mass can be mined
stope	underground void created by mining
StopeCAD	integrated mine planning and design computer software
stratiform	strata-bound deposit in which the desired rock or ore constitutes, or is coextensive with, one or more rock layers. Having the form of a layer or bed
stratigraphy	the science of rock strata
strike	direction of line formed by the intersection of strata surfaces with the horizontal plane, always perpendicular to the dip direction
sub-crop	describing a rock stratum that unconformably underlies another rock stratum
sub-vertical shaft	an opening cut below the surface downwards from an established surface shaft
sulphide	sulphur bearing mineral
surface sources	ore sources, usually dumps, tailings dams and stockpiles, located at the surface
syncline	concave fold in stratified rock in which the strata dip down to meet in a trough
syngenetic	feature being described had a common genesis as its host material
tectonic	the forces involved in, or the resulting structures of, tectonics
terrace reef	reef formed as a conglomerate package representing higher grade areas
tertiary shaft	an opening cut below the surface downwards from an established sub-vertical shaft

the Base Case	the Base Case as established as part of the Financial Models
the Financial Model	the financial model as developed by SRK
the Mine Health and Safety Act	the Mine Health and Safety Act, 29 of 1996
the Minerals Act	the Minerals Act, 50 of 1991
thickening	process of concentrating solid particles in suspension
tholeiitic	a basalt characterised by the presence of orthopyroxene
throw	the amount of vertical displacement
thrust fault	see reverse fault
total cash costs	all total cash costs are based on public quoted nominal production costs, include retrenchment costs, rehabilitation costs, corporate costs, by-product credits for silver, sundry revenues and exclude amortisation costs and inventory changes
total expenditure	all expenditures including those of a operating and capital nature
Trust Fund	a fund required by law to be set up, to which annual contributions are paid so that the remaining environmental liability of the operation is covered
Tshepong	Tshepong Gold Mine
tuff	a general term for all consolidated pyroclastic rocks
ultramafic	igenous rock composed chiefly of mafic minerals
unconformity	buried erosion surface separating two rock masses; older exposed to erosion for long interval of time before deposition of younger
upcast	a ventilation system whereby air is drawn upwards through a tunnel or shaft, from the point of entry by ventilation fans
uranite	an isometic metallic mineral, strongly radioactive
Vaal Reefs	Vaal Reefs Gold Mining Company Limited
vamping	a mining method used to recover higher grade ore left in mined stopes
variogram	statistical representation of the characteristics (usually grade)
virgin ground	ground that has had no previous mining activity within it
volcanics	rick types of a volcano
washout	the washing away of earth materials as a result of floods, or a place where such an event took place, also a channel produced in sedimentary deposit by the scouring action of flowing water and later filled with sediment
Welkom Operations	a mining complex owned by Harmony and located in the vicinity of the town of Welkom comprising No.1 BU, No.2 BU, No.3 BU, No.4 BU, No.6 BU and No.7 BU
West Wits Operations	A complex owned by Harmony and located in the West Rand comprising Elandsrand, Deelkraal, Cooke No.1 BU, Cooke No.2 BU, Cooke No.3 BU and No.7 BU
Witwatersrand Basin	sedimentary basin in South Africa
wrench fault	a more or less vertical fault along which there has been strike separation
Zadra elution	a single step gold strip from loaded carbon comprising both elution and electrowinning in a closed circuit
zircon	a mineral

ABBREVIATIONS

AARL	Anglo American Research Laboratory
ABET	Adult Basic Education and Training
ADS	American Depositary Shares
AIM	Alternative Investment Market of the LSE
ANFO	Ammonium Nitrate Fuel Oil
ARM	African Rainbow Minerals
ASAC	Anglo South Africa Capital (Proprietary) Limited
ASX	Australian Stock Exchange Limited
BCF	Black Chert Facies
BF	Block Factor
BIF	Banded Ironstone Formation
BPZ	Big Pebble Zone
BR	Basal Reef
BRP	Basal Reef Package
BRZ	Basal Reef Zone
BSX	Berlin Stock Exchange
BU	Business Units
CCT	Classified Cemented Tailings
CIL	Carbon-in-leach
CIP	Carbon-in-pulp
CIS	Carbon-in-solution
CONOPS	Continual Operations 365 days-a-year, 24 hours-a-day, implemented by a fourth shift pattern and on a variable roster system to ensure legal compliance with associated labour laws.
CoP	Code-of-Practice
CPI	Consumer Price Index
CPR	Competent Persons' Report
DCF	Discounted Cash Flow
DEP	the Australian Department of Environmental Protection
DIR	the Australian Department of Industry & Resources
DME	Department of Minerals and Energy
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
EL	Elsburg Reef
EMP	Environmental Management Programme
EMPR	Environmental Management Programme Report
ERR	Energy Release Rate
ESH	Environmental, Safety and Health
FoG	Fall of Ground
FSG	Free State Goldfield

FSO	Free State Operations
GAF	Gold Accounted For
GCF	Gold Called For
GIS	Geographical Information System
GoS	Gold on Surface
HIV	Human Immunodeficiency Virus
IDR	International Depository Receipts
IER	Independent Engineers Report
ISMS	Integrated Security Management System
ISSI	Integrated Seismic Systems International
JMS	Joint Metallurgical Scheme
JORC Code	1999 Australasian Code for Reporting of Mineral Resources and Ore Reserves
JSE	JSE Securities Exchange, South Africa
JV	Joint Venture
KGF	Klerksdorp Goldfield
L	Level
LF	Loraine Facies
LHD	Load Haul Dump (underground mechanised mining machine)
LoM plan	Life-of-Mine plan
LR	Leader Reef
LSE	London Stock Exchange plc
LTA	Lenders Technical Adviser
LTIFR	Lost Time Injury Frequency Rate, quoted in Mmhrs
NFSEC	Northern Free State (Exploration) Company
NYSE	New York Stock Exchange, Inc
MCF	Mine Call Factor
MF	Modifying Factors
MoU	Memorandum of Understanding
NNR	National Nuclear Regulator
Mmhrs	Million man hours
MRF	Metallurgical Recovery Factor
No	Number
NPV	Net Present Value
NUM	National Union of Mineworkers
PCF	Plant Call Factor
PGE	Platinum Group Elements
PLATO	South African Council for Professional and Technical Surveyors
PPI	Purchase Price Index
PPP	Purchase Price Parity
QIB	Qualified Institutional Buyer

RC	Reverse Circulation
RMB	Rand Merchant Bank
RoM	Run-of-Mine
RSA	Republic of South Africa
SS	Surface Sources
SAG	Semi-autogenous grinding
SAIMM	South African Institute of Mining and Metallurgy
SAMREC	South African Code for Reporting of Mineral Resources and Mineral Reserves
SARS	South African Revenue Service
SEC	United States Securities and Exchange Commission
SBU	Strategic Business Unit
SCF	Shaft Call Factor
SEC	United States Securities Exchange Commission
SF	Steyn Facies
SG	Specific Gravity
SIFR	Severe Injury Frequency Rate
SLFR	Shifts Lost Frequency Rate
SMU	Selective Mining Unit
SRK	Steffen, Robertson and Kirsten (South Africa) (Proprietary) Limited
SSO	Surface Sources Operations
STD	sexually transmitted disease
SW	Stoping width
sf	Surface
TEC	Total Employees Costed
TEIS	Total Employees in Service
TEMs	Technical Economic Models
TEPs	Technical Economic Projections
ToR	Terms of Reference
TSX	Toronto Stock Exchange
ug	underground
US	United States of America
VCR	Ventersdorp Contact Reef
VRO	Vaal River Operations
VRT	Virgin Rock Temperature
WACC	Weighted Average Cost of Capital, as determined by the market determined cost of debt and cost of equity considering the inflation, tax, interest and risk rates relevant to the socio-economic environment in which the Companies operate
WBQ	Waxy Brown Quartzite
WRCM	West Rand Consolidated Mines Limited
WRD	Waste Rock Dump
YTD	Year to Date

UNITS

AUS$	Australian dollar
cm	a centimetre
g	grammes
g/t	grammes per metric tonne – gold concentration
Ha	a Hectare
kg	a kilogram
km	a kilometre
km^2	a square kilometre
koz	a thousand ounces
kt	a thousand metric tonnes
ktpa	a thousand metric tonnes per annum
ktpm	a thousand tonnes per month
m	a metre
m^2	a square metre
m^3	a cubic metre
Ml	a million litres
Moz	a million ounces
oz	a fine troy ounce equalling 31.10348 grammes
t	a metric tonne
tm^{-3}	density measured as metric tonnes per cubic metre
°	degrees
'	minutes
%	percentage
US$	United States dollar
US$k	thousand United States dollar
US$m	million United States dollar
US$/oz	United Sates dollar per ounce
ZAR	South African rand
ZAR/kg	South African rand per kilogram
ZAR'm	million South African rand
ZAR/t	South African rand per metric tonne
ZAR:US$	South African rand per United States dollar

OTHER INVESTMENTS

ANGLOVAAL MINING LIMITED (33,9%)

Anglovaal Mining Limited ("Avmin") is listed on the JSE and has a number of assets that are in production or in the project phase, principally comprising:

- a 42,2% interest in Avgold Limited ("Avgold") that wholly-owns and operates theTarget gold mine located in the Free State Province, South Africa;
- a 50.3% interest in Assmang Limited ("Assmang") whose assets comprise various manganese, iron ore and chrome operations located in South Africa;
- a 55.0% interest in Two Rivers Platinum (Pty) Limited ("Two Rivers") which has an interest in the platinum rights on the farm Dwarsrivier located in the Mpumulanga Province, South Africa; and
- a 100,0% interest in the Nkomati Mine ("Nkomati") a nickel producer located near Machadodorp, South Africa with copper, cobalt and platinum also produced as by-products.

Target is a deep level gold mine that has been recently developed to exploit the various reefs that comprise the Eldorado Fan, situated adjacent to the Loraine Mine.The Eldorado Fan comprises a 100m thick stacked series of Elsburg Reefs separated by barren quartzites overlain by younger Dreyerskuil Reefs. A fully mechanised sub-level stoping type mining method was introduced to extract the ore with rock transport being affected by a number of inclined conveyors to the shaft hoisting facilities at Loraine Mine.

Assmang operates three divisions corresponding to the manganese, iron ore and chrome commodity types that are the focus of its operations.The manganese and iron ore assets of Nchwaning and Beeshoek, respectively, are located in the Northern Cape Province. The manganese alloys are produced at smelting and refining facilities located in the KwaZulu-Natal Province.The chrome ore is mined at the Dwarsrivier mine and the alloys are produced at Machadodorp, both located in Mpumulanga Province. The Dwarsrivier open cast chrome mine and beneficiation plant was officially opened in October 2000.The mine, owned and operated by Assmang, is situated approximately 30km from Steelpoort and 60km from Lydenburg in the Mpumalanga Province.

Two Rivers comprises a joint venture with Impala Platinum Holdings Limited ("Implats") (45.0%) which is investigating the development of a platinum mine at the farm Dwarsrivier. It is expected thatTwo Rivers will be an underground mine using a system of surface declines to transport people, equipment and ore and produce at a level of some 160koz to 170koz per annum for approximately 20 years.

At Nkomati the Massive Sulphide Body is a small, high-grade orebody containing nickel, copper, cobalt, platinum, palladium, rhodium, gold and silver.The orebody is accessed by means of two vertical shafts and a decline to a depth of some 450m and mined by mechanised methods.The milled ore is passed through a flotation circuit from which two types of concentrates are produced. The high grade copper and PGM concentrate is then sent to Rustenburg for smelting, while the high-grade nickel concentrate is sent to Botswana for smelting and to Zimbabwe for refining.

BENDIGO MINING NL (31.6%)

Bendigo Mining NL ("Bendigo") is listed on the ASX and comprises the New Bendigo Gold Project that has tenements of approximately 450km^2 that cover the entire Bendigo goldfield and environs in Victoria State, Australia. Gold was first discovered at Bendigo in 1851 and it is estimated that 22Moz have been produced from up until production ceased in 1954. Bendigo acquired the leases in 1993 and has since undertaken a systematic evaluation of data and a series of geological, metallurgical and engineering studies.The development of an underground mine is reported to be well-advanced and the initial focus is on two lines of reef, Sheepshead and Deborah, where drilling to date has defined an Inferred Mineral Resource of 1.8Mt at 12g/t gold and a further exploration and bulk sampling programme is planned.

ABELLE LIMITED (83,0%)

Abelle Limited ("Abelle") is listed on the ASX and in January 2003, Abelle merged with Aurora Gold. Operations comprise a number of gold projects at various stages of development, principally:

- a 100,0% interest in the Morobe Project in Papua New Guinea with an option to acquire the balance;
- a 100,0% interest in the Wafi Project Papua New Guinea; and
- a 100,0% interest in the Gidgee Gold Mine, Western Australia.

The Morobe Project has four exploration licences covering an area of 966km^2 in the Wau district of the Morobe Province, Papua New Guinea. In October 2002 a positive feasibility study was completed that envisages production of 310koz of gold and 5Moz of silver per annum at a production rate of 5Mtpa over an eight-year life.

The Wafi gold/copper deposit is located some 55km from the Morobe Project and comprises four exploration licences covering an area of 990km^2. The deposit is thought to comprise a porphyry copper–gold pipe overprinted with a high sulphidation gold phase. An infill diamond drilling programme is underway and a series of scoping metallurgical tests have been commissioned to characterise the refractory sulphide mineralisation.

The Gidgee Gold Mine located in Western Australia is currently producing from the underground Swan Bitter operation only. Evaluation of open pit operations is continuing with a view to restarting this year. For the nine months to the March quarter 2003 Gidgee produced 34koz at a cash cost of A$483 per ounce.

Abelle has interests in various other projects including: Mt. Munro in Kalimantan; a 16,4% interest in Mida Resources Limited; the Credo JV at Mt. Pleasant, Western Australia and various other exploration projects in Australia.

CONTINGENT LIABILITIES AND CAPITAL COMMITMENTS

Capital commitments

ARM prior to the transaction:

At 30 June	2003 R'm	2002 R'm	2001 R'm
Commitments in respect of capital expenditure:			
Approved by directors			
– contracted for	**129**	229	272
– not contracted for	**271**	588	988
Total commitments	**400**	817	1 260

ARM Platinum

	At 30 June 2003 R'm	At 31 Dec 2001 R'm	At 31 Dec 2000 R'm
Capital expenditure commitments:			
Contracts for capital expenditure	**–**	–	–
Authorised by the directors but not contracted for	**48**	787	–
Total commitments	**48**	787	–

CONTINGENT LIABILITIES

ARM *prior to the transaction*:

The Company has a contingent liability for the amount of tax relating to the Anglovaal Limited loan stock redemption premium that the South African Revenue Service disallowed in 1998. The potential 1998 liability for tax is R107 million plus interest and penalties. This matter is currently under appeal.

A back-to-back guarantee was issued by ARM to Assore Limited ("Assore") in respect of guarantees issued to bankers by Assore to secure a short-term export finance agreement facility of R180 million (2002: R180 million). Short-term export finance loans negotiated in terms of the above facility in the ordinary course of business at 30 June 2003 were nil (2002: R13 million).

ARM has provided an irrevocable and unconditional guarantee to Copperbelt Energy Corporation plc ("CEC") and the Development Bank of Southern Africa Limited ("DBSA") for the due and punctual payment by Chambishi of the capital charge component of the power supply assets installed and owned by CEC for which financing was obtained by CEC from DBSA. The total outstanding capital charge obligation at June 2003 amounted to US$ nil (2002: US$11,1 million, 2001: US$11,5 million) and will reduce over 10 years ending June 2012 as capital charge payments are made by Chambishi. This guarantee is in the process of being replaced by the new owners of Chambishi.

ARM Platinum

Guarantees issued by ARM Platinum

ARM Platinum, together with ARMI and ARM Consortium, act as co-guarantor and sponsor to support ARM Consortium to secure funding, through a consortium of financiers ("the Lenders"), for the funding of the acquisition and development of the Modikwa Platinum Mine, which is 50% owned by ARM Consortium and 50% by Rustenburg Platinum. ARM Platinum issued certain guarantees and pledged certain assets in favour of the Lenders as set out in notes 14.2 to 14.4 in Annexure 3 to the accompanying circular, on behalf of ARM Consortium.

The details are:

- ARM Platinum pledged, ceded, transferred and made over all its rights, title and interest in, and to, claims, now and in the future, against ARM Consortium, whether in equity, ordinary shares, the right to subscribe for further equity, any benefits, dividends, interest and privileges attracting thereto, or loans, benefits from any bonds, pledges, encumbrances and other securities held by ARM Platinum in respect of such claims, and all bills of exchange, promissory notes and negotiable instruments of any description owned or held in respect of such claims. These will remain in force until such time as all the secured obligations outstanding to the Lenders have been fully and finally discharged;
- ARM Platinum guaranteed the prompt and full repayment of all ARM Consortium's obligations to the Lenders and undertook, on first demand, to pay the Lenders all amounts due by ARM Consortium;
- ARM Platinum shall subscribe or lend R150 million in equity to ARM Consortium;
- ARM Platinum, for as long as ARM Consortium is indebted to the Lenders:
  - will not accept, directly or indirectly, payment of their claims, of whatsoever nature, from ARM Consortium, except for claims arising under the ARM Consultancy Agreement;
  - subordinated, for the benefit of the Lenders, all its loans and claims against ARM Consortium; and
  - will not dispose of, alienate, encumber, cede, assign or make over its claims against ARM Consortium without the prior written consent of the Lenders;
- ARM Platinum shall procure that the shareholders of ARM Consortium shall subscribe, or lend, further equity to ARM Consortium to contribute to the joint venture with Rustenburg Platinum, its share of any unfunded costs;
- the shareholders of ARM Platinum may only dispose of shares in ARM Platinum with the prior written consent of the Lenders, provided the shareholders do not lose control of ARM Platinum;
- ARM Platinum warrants that it will hold at least 60% shareholding in ARM Consortium for a period of five years from March 2002; and
- should the shareholders of ARM Platinum wish to list the shares of ARM Platinum on a stock exchange, written consent must be obtained from the Lenders.

Guarantees issued by ARM Consortium

ARM Consortium, together with ARMI and ARM Platinum, acts as co-guarantor and co-sponsor to secure funding for the acquisition and development of the Modikwa Platinum Mine, through a consortium of financiers ("the Lenders") and issued guarantees and pledged assets in favour of the Lenders.

The details are:

- ARM Consortium is in the process of registering a collateral mortgage bond to the value of R1 billion over all the mineral rights, mining title, rights or authorisation;
- ARM Consortium shall not make or pay any distribution, save for certain contractual exclusions;
- ARM Consortium pledged and ceded:
  - all its assets, including its bank accounts and reserves;
  - its 50% stake in the Modikwa Platinum mine Joint Venture with Rustenburg Platinum Mines Limited; and
  - all its contracts, permits, Government approvals and insurance proceeds;
  - all its rights against ARMI and ARM Platinum to require them to subscribe for equity or to make loans;
  - all its project accounts;
  - its shares held in Modikwa Platinum Mine (Pty) Limited (formerly Rustenburg Pharmaceuticals (Pty) Limited) and in Modikwa Personnel Services (Pty) Limited (formerly Maandagshoek Mining Services (Pty) Limited);
- ARM Consortium is in the process to register a general notarial bond over all its moveable assets and over the plant and certain specified moveable assets of not less than R1 billion;
- ARM Consortium, for as long as it is indebted to the Lenders:
  - will not make payment, directly or indirectly, of the claims, of whatsoever nature, that ARMI and ARM Platinum may have or may have in the future, against ARM Consortium, except for claims arising under the ARM Consultancy Agreement;
  - subordinated, for the benefit of the Lenders, all its loans and claims from ARMI and ARM Platinum;
  - will not dispose of, alienate, encumber, cede, assign or make over any claims against ARM Platinum without the prior written consent of the Lenders; and
  - should the shareholders of ARM Consortium wish to list the shares of ARM Consortium on a stock exchange, written consent must be obtained from the Lenders.

Guarantees issued by ARM

ARM, together with ARM Platinum and ARM Consortium, acts as co-guarantor and co-sponsor to secure funding for the acquisition and development of the Modikwa Platinum Mine, through a consortium of financiers ("the Lenders") and issued guarantees and pledged certain assets in favour of the Lenders.

The details are:

- ARM pledged, ceded, transferred and made over all its rights, title and interest in, and to, claims, now and in the future, against ARM Consortium, whether in equity, ordinary shares, the right to subscribe for further equity, any benefits, dividends, interest and privileges attracting thereto, or loans, benefits from any bonds, pledges, encumbrances and other securities held by ARM in respect of such claims, and all bills of exchange, promissory notes and negotiable instruments of any description owned or held in respect of such claim. These will remain in force until such time as all secured obligations outstanding to the Lenders, have been fully and finally discharged;
- ARMI, for so long as ARM Consortium is indebted to the Lenders:
  - will not accept, directly or indirectly, payment of their claims, of whatsoever nature, from ARM Consortium, except for claims arising under the ARM Consultancy Agreement;
  - subordinated, for the benefit of the Lenders, all its loans and claims against ARM Consortium; and
  - will not to dispose of, alienate, encumber, cede, assign or make over its claims against ARM Consortium without the prior written consent of the Lenders;
- ARM, shall procure that the shareholders of ARM Consortium shall subscribe, or lend, further equity to ARM Consortium to contribute to the joint venture with Rustenburg Platinum, its share of any unfunded costs; and
- the shareholders of ARM may only dispose of shares in ARM with the prior written consent of the Lenders, provided the shareholders do not loose control of the company.

ACQUISITIONS AND DISPOSALS OF COMPANIES, BUSINESSES AND PROPERTIES

ARM AND SUBSIDIARY COMPANIES

Material acquisitions and disposals over the past three years

Item	Company	Acquisition	Disposal	Nature of business	Value	Date
1.	**Anglovaal Mining Limited (ARM)**					
			50% interest in the Venetia Diamond Mine	Diamond mining	R3,7 billion	30/03/2000
			20% interest in Finch Diamond Mine	Diamond mining	R20 million	30/03/2000
			23% interest in Lavino Joint Venture	Chrome ore and associated minerals	R19 million	30/06/2000
			2,5 million shares in Assore Limited	Chrome ore and associated minerals	R95 million	31/10/2001
		Shares in Iscor Limited		Iron and steel mining	Acquisition: R494 million	01/02/2001
			Shares in Iscor Limited		Disposal: R911 million	01/11/2001
		Avgold Limited rights issue – 130,5 million shares		Gold mining	R317 million	22/09/2000
			28 million shares in Avgold Limited	Gold mining	R139 million	31/10/2001
			90 million shares in Avgold Limited	Gold mining	R562 million	11/04/2003
			90% shareholding in Chambishi Metals plc	Cobalt and copper mining	US$6,5 million (R51,4 million)	13/06/2003
		25% shareholding in Nkomati Mine		Nickel and PGM Mining	R260 million	01/02/2004
2.	**Assmang Limited**					
			Rights to Platinum Group Metals on Dwarsrivier Farm	PGMs	R551 million	30/05/2001
3.	**Avgold Limited**					
			ETC	Gold mining	R255 million	15/06/2003
4.	**Two Rivers Platinum (Pty) Limited**	Rights to Platinum Group Metals on Dwarsrivier Farm		PGMs	R551 million	30/05/2001

SUBSIDIARY COMPANIES

	Name	Registration number	Nature of business and/or activity	Authorised share capital R	Issued share capital R	Number of shares held	AVMIN share %
1.	Anglovaal Air (Proprietary) Limited	1966/010522/07	Investment	200	8	4	100
2.	Assmang Limited	1935/007343/06	Mining	3 636 260	3 548 206	1 786 522	50,35
3.	Atscot (Proprietary) Limited	1964/004676/07	Investment	800 000	672 750	672 750	100
4.	AV Rosebank (Proprietary) Limited	1995/001560/07	Investment	100	1	1	100
5.	Avdev (Proprietary) Limited	1995/003172/07	Investment	100	100	100	100
6.	Avmin Computer Supplies (Proprietary) Limited	1995/005644/07	Computer supplies	100	2	2	100
7.	Avmin Exploration (Proprietary) Limited	1980/000578/07	Prospecting	4 000	200	200	100
8.	Bitcon's Investments (Proprietary) Limited	1933/004424/07	Investment	2 000	2 000	1 000	100
9.	Centenary Prospecting & Mining Company (Proprietary) Limited	1937/010430/07	Prospecting	100	100	10 000	100
10.	Cumulus Mining, Prospecting & Development Company (Proprietary) Limited	1969/005886/07	Prospecting	200	200	200	100
11.	Fox Street Nominees (Proprietary) Limited	1949/032427/07	Nominee shareholder	200	4	2	100
12.	Highland Gold Mining (Proprietary) Limited	1975/000182/07	Dormant	4 000	120	120	100
13.	Kransberg Prospecting and Mining Company (Proprietary) Limited	1979/000660/07	Prospecting	200	200	200	100
14.	Lavino (Proprietary) Limited	1954/000856/07	Mining	1 000 000	1 000 000	500 000	100
15.	Letaba Copper & Zinc Corporation Limited	1952/000234/06	Exploration	2 000 000	1 240 000	2 327 188	93,84
16.	Midvaal Mining Company (Proprietary) Limited	1961/001795/07	Prospecting	200	200	200	100
17.	Prieska Copper Mines Limited	1968/003032/06	Dormant	27 000 000	27 000 000	52 628 068	97
18.	Sheffield Minerals (Proprietary) Limited	1980/001567/07	Investment	4 000	100	100	100
19.	South African Base Minerals Limited	1926/008904/06	Exploration	20 000	20 000	10 000	100
20.	Taurus Mining & Prospecting Company (Proprietary) Limited	1968/003070/07	Prospecting	200	200	200	100
21.	Transvaal Copper Mining & Exploration Co (Proprietary) Limited	1948/031887/07	Prospecting	3 000	20	800	100
22.	Tasrose Investments (Proprietary) Limited	1994/002766/07	Investment	4 000 Ords 60m."A" and 60m. "B"	300 Ords, 23,06m. "A" and 2,51m."B"	300 Ords, 23,06m."A" and 2,51m."B"	100
23.	Two Rivers Platinum (Proprietary) Limited	2001/007354/07	Mining	1,000	600	330	55

	Name	Registration number	Nature of business and/or activity	Authorised share capital R	Issued share capital R	Number of shares held	AVMIN share %
25.	Venture Building Trust (Proprietary) Limited	1934/005644/07	Property owning	400 000	400 000	200 000	100
26.	Village Main Reef Gold Mining Company (1934) Limited	1934/005703/06	Dormant	1 000 000	758 556	2 292 500	38
27.	Avmin Limited	1933/004469/06	Investment	8	5	5	100
28.	Jesdene Limited	1946/022921/06	Investment	200	4	8	100
29.	Kingfisher Insurance Company Limited	1996/13783/06	Reinsurance	60 000	55 000	5 500 007	100
30.	Middle Witwatersrand (Western Areas) Limited	1993/000180/06	Investment	1 000	7	7	100
31.	Vallum Investments (Proprietary Limited	1945/020238/07	Dormant	210 000	210 000	105 000	100
32.	Avmin Namibia (Proprietary) Limited	Namibia	Prospecting	N$2	N$2	2	100
33.	Anglovaal Namibia (Proprietary) Limited	Namibia	Prospecting	N$2	N$2	2	100
34.	Avdale Namibia (Proprietary) Limited	Namibia	Prospecting	N$200	N$200	200	100
35.	Avmin (Zambia) Limited	Zambia	Prospecting	K2 000 000	K50 000	50 000	100
36.	Avmin Venture Limited	Zambia	Prospecting	K2 000 000	K50 000	50 000	100
37.	Konnoco (Zambia) Limited	Zambia	Prospecting	K2 000 000	K50 000	50 000	100
38.	Anglovaal Exploration Zambia Limited	Zambia	Prospecting	K2 000 000	K50 000	50 000	100
39.	Avmin Development Zambia Limited	Zambia	Prospecting	K2 000 000	K50 000	50 000	100
40.	Avco plc	The Democratic Republic of the Congo	Prospecting	US$10 000	US$10 000	6 000	60
41.	Avmin Tanzania Limited	Tanzania	To be deregistered	TShs 10m.	TShs 2 000	2	100
42.	Anglovaal Holdings Limited	1968/009249/06	To be deregistered	1	1	1	100
43.	Anglo Transvaal Finance Corporation (Proprietary) Limited	1959/001852/07	Awaiting deregistration	200 000	200 000	100 000	100
44.	Holdav (Proprietary) Limited	1969/003702/07	Awaiting deregistration	7	7	7	100
45.	Southern Registrars (Proprietary) Limited	1982/011781/07	Awaiting deregistration	4 000	100	100	100

Note:

All companies are incorporated in South Africa unless otherwise stated.

PRINCIPAL IMMOVABLE PROPERTY OWNED OR LEASED

ARM AND SUBSIDIARY COMPANIES

Principal immovable properties (owned or under lease)

Item	Company	Property description
1.	**ARM**	
1.1		Stand 1156 Marshalls, in extent 1 983 square metres (lease)
1.2		Portion 17 of the farm Vogelstruisfontein 231, in extent 243,58 hectares
1.3		Portion 18 of the farm Vogelstruisfontein 231, in extent 197,41 hectares
1.4		Remainder of Erf 137 Machadodorp, in extent 1 983 square metres
1.5	**Nkomati**	Erf 138, Machadodorp, in extent 2 974 square metres
1.6		Erf 228, Machadodorp, in extent 2 974 square metres
1.7		Remainder of Erf 344, Machadodorp, in extent 1 487 square metres
1.8		Portion 1 of Erf 385 Machadodorp, in extent 991 square metres
1.9		Portion 4 of Erf 386 Machadodorp, in extent 999 square metres
1.10		Erf 740, Machadodorp, in extent 2 974 square metres
1.11		Portion 6 of the farm Slaaihoek 540, in extent 56,66 hectares
1.12		Portion 2 (portion of portion 1) Uitkomst 541, in extent 25,00 square metres
1.13		Portion 2 of Erf 37 Waterval Boven, in extent 773 square metres
1.14		Portion 2 of Erf 68 Waterval Boven, in extent 1 002 square metres
1.15		Portion 10 of Erf 67 Waterval Boven, in extent 927 square metres
1.16		Erf 508 of Extension 2 Township JP Portion 1 025 square metres
1.17	**Two Rivers**	Portion 2 of the farm Dwarsrivier 372, in extent 1 017,75 hectares
2.	**Assmang**	
2.1		Remainder of the farm Beesthoek 448, in extent 1 541,97 hectares
2.2		Remainder of Portion 1 of the farm Beesthoek 448, 1 304,60 hectares
2.3		Portion 1 of the farm Belgravia, in extent 5,94 hectares
2.4		Remainder of the farm Belgravia, in extent 1 410,10 hectares
2.5		Farm Bruce 544, in extent 2 453,47 hectares
2.6		Remainder of the farm Dalmanutha 376, in extent 104,21 hectares
2.7		Portion 6 (of portion 3) of the farm De Kroon 363, in extent 13,19 hectares
2.8		Remainder of the farm Doornfontein 446, in extent 4 794,14 hectares
2.9		Portion 1 of the farm Dwarsrivier 372, in extent 1 436,14 hectares
2.10		Remainder of the farm Dwarsrivier 372, in extent 1017,75 hectares
2.11		Portion 1 of the farm Gloria 266, in extent 1 713,06 hectares

Item	Company	Property description
	Assmang	
2.12		Farm King 561, in extent 2 419,32 hectares
2.13		Remainder of the farm McCarthy 559, in extent 762,42 hectares
2.14		Portion of the farm (Pro Rata) Mokaning, in extent 558,78 hectares
2.15		Remainder of the farm Mokaning (Mokaning B), in extent 279,39 hectares
2.16		Portion Mokaning C of the farm Mokaning, in extent 558,78 hectares
2.17		Farm Mkulu 265, in extent 2 033,28 hectares
2.18		Portion 1 of the farm Nchwaning 267, in extent 85,65 hectares
2.19		Portion 3 of the farm Nchwaning 267, in extent 427,42 hectares
2.20		Portion 4 of the farm Olynfontein 475, in extent 2 701,08 hectares
2.21		Portion 1 of the farm Santoy, in extent 13,05 hectares
2.22		Remainder of portion 4 (of 1) of the farm Santoy 364, in extent 6,11 hectares
2.23		Portion 9 (of 2) of the farm Schoongezicht 364, in extent 295,36 hectares
2.24		Remainder of Portion 3 (Leeuspruitdrift) of the farm Schoonezicht, in extent 364 295,36 hectares
2.25		Sub 95 of the farm Uitkomst & Doornrug 852, in extent 33,74 hectares
2.26		Sub 217 of the farm Uitkomst & Doornrug 852, in extent 35,88 hectares
2.27		Sub 40 of the farm Uitkomst & Doornrug 852, in extent 58,72 hectares
2.28		Sub 43 of the farm Uitkomst & Doornrug 852, in extent 438,04 hectares
2.29		Sub 219 of the farm Uitkomst & Doornrug 852, in extent 10,58 hectares
3.	**Kalplats**	
3.1		Portion 11 (a portion of Portion 6) of the farm Groot Gewaagd 270, in extent 60,2565 hectares
3.2		Portion 10 (a portion of Portion 1) of the farm Groot Gewaagd 270, in extent 7 504 square metres
4.	**ARM Platinum**	
4.1		Farm Hendriksplaats 281 KT Mpumalanga province, in extent 2910,0489 hectares
4.2		Portion 1 of the farm Onverwacht 292 KT Mpumalanga province, in extent 770,8788 hectares
4.3		Remainder of the farm Onverwacht 292 KT Mpumalanga province, in extent 2367,5600 hectares

CORPORATE GOVERNANCE

The ARM Group has strong commitments to a wide range of Corporate Governance practices. The directors of ARM are ultimately accountable to shareholders and have a responsibility, both collectively and individually, to ensure that a high standard of Corporate Governance is maintained.

King Code of Corporate Practice and Conduct

The board of ARM is committed to maintaining the standards of integrity, accountability and openness advocated in the King Report on Corporate Governance for South Africa 2002 ("King II Report") and believes that in all material matters the Company has complied with the stipulated requirements.

The directors endorse and, since 1 July 2001, have applied the Code of Corporate Practice and Conduct set out in the King Reports I and II.

Board of directors

ARM has a unitary board of 12 directors. The members comprise an executive chairman, non-executive deputy chairman, eight independent non-executive directors and two non-executive directors. Their respective diverse skills and expertise are reflected in paragraph 3.1.

The directors have adopted a Board Charter and a Code of Ethics. The Board Charter governs the conduct of the board as to strategic planning and performance, capital funding and financial matters, operational matters, legislation compliance, appointment and removal of directors and matters pertaining to board committees. The chairman is responsible for the attainment of the strategic objectives set by the board and ensuring that its policies are adhered to. Further, the board has expressly included in its Charter and those for its various committees regular reviews thus ensuring their continued relevance. Corporate Governance is consistently applied and promoted throughout the Group by these means.

All directors are entitled to seek independent professional advice about the affairs of the Company at its expense. Members have access to the advice of the Group Company Secretary.

Board Committees

The directors of the Company appoint both executive and non-executive members to the various committees. The non-executive directors play an active role, particularly in the capacity of chairmen of most committees. The committees meet at defined times during the year and provide the board with an effective communication forum. The delegation of authority to committees does not mitigate the board's responsibility for discharge of its duties to the Company's stakeholders.

Audit Committee

The members of this committee comprise three independent non-executive directors, one of whom is the chairman. The chairman of the Company and chief financial officer (to be appointed) attend these meetings by invitation.

The main responsibilities of this committee include the safeguarding of the Company's assets and shareholders' investments, the maintenance of high standards of records and systems of internal control as well as the monitoring of standards of Corporate Governance. The committee reviews all significant transactions that do not form part of the Company's normal business as well as related party transactions entered into by the Company. In addition, the committee pursues the objective of ensuring that effective policies and practices are adopted in the preparation of public financial information. The committee conducts reviews of audits of expenditure, and major business risks that are undertaken by both internal and external auditors. It examines the respective plans and reports of the auditors to ensure effectiveness. The external and internal auditors have unrestricted access to the Audit Committee.

Nominations Committee

This committee was established on 11 September 2002 by the board and held its inaugural meeting on 15 January 2003. The appointment of the chairman of the Company as chairman of the committee was proposed and ratified by the board. Apart from the chairman there are three other non-executive members and independent non-executive directors.

The committee's function is to ensure that the board will have an appropriate skills and experience mix amongst its members having regard to ARM's activities in Africa. The committee will investigate the background of potential directors prior to appointment to a seat on the board to ensure that such persons have no legal impediment to assuming such a role and they are of the calibre, credibility and with the necessary skills and experience to bring independent judgement to bear on matters before the board. The process will ensure that the selection process will be both formal and transparent.

Remuneration Committee

Four directors comprise this committee, being both non-executive and independent non-executive directors, one of the latter who will be the committee's chairman and the chairman of the Company. The manager: Human Resources, attends all meetings and has direct access to all committee members. Individuals withdraw from meetings when matters personally affecting them are discussed.

This committee is tasked, by its Charter, to ensure the payment of appropriate levels of remuneration to directors and senior management of the Company. The committee determines broad policy for individual remuneration and benefits to maintain a compensation policy that is both competitive and equitable. The committee authorises the granting of scheme shares and/or share options to incentive scheme participants in accordance with the Anglovaal Mining Share Incentive Scheme's trust deed.

Risk Committee

The committee is chaired by a non-executive director and has as its members the chief financial officer (to be appointed) and both non-executive and independent non-executive directors.

The committee's responsibilities and that of the management risk committee are:

- the main strategic and significant business risks facing the Group are identified together with attendant controls/management assurance;
- the total process of risk management is effectively designed, implemented and monitored;
- the process is integrated into the day-to-day activities of the Group; and
- ongoing consultations occur between the Board Risk and the Audit Committees.

The Management Risk Committee reports to the Board Risk Committee, which meets regularly during the year to co-ordinate and monitor the Group's risk initiatives. Professional advisers attend these meetings and provide assurance that the risk initiatives are appropriately focused. The services of independent risk engineering consultants have been engaged to grade each operation against international risk standards for the management of fire, security, engineering, commercial, crime, environmental, contingency planning and mining to monitor whether these standards are met. The committee is also responsible for ensuring that appropriate financial and insurance mechanisms comprehensively protect the Group against catastrophe risk.

The management at each of the Group's operations and at head office have identified, in conjunction with professional advisers and the agreement of the relevant risk committees, all significant risks that exist in the Group and have documented control measures and responsibility for dealing with these risks.

Sustainable Development Committee

The committee comprises independent non-executive directors and the Company's chairman. The vice president: Sustainable Development, attends these meetings by invitation.

Safety and health matters are considered at every board meeting of directors. The board's and the committee's primary focus is:

Safety. Evaluation of safety policy and Group statistics and performance. This evaluation incorporates the comparison of Group results against benchmarks provided by other international mining companies and operations and the meeting of statutory and regulatory compliance requirements. Group safety objectives take cognisance of these benchmarks.

The fundamental approach within the Group towards safety is the active participation of all employees and contractors in the attainment of "target zero, zero tolerance". This philosophy requires a structured approach together with training programmes that have been devised and implemented at the operations. The approach has the full accountability and empowerment of appropriately appointed persons and embraces risk assessment and management, the review of safety performance, in which the evaluation and analysis of accident statistics are prominent features. Safety fora have been established at the operations.

Occupational health. Evaluation of information from operations against set objectives relative to statutory and regulatory compliance and those areas of specific interest to ARM. Areas of concern include mangaruom, occupational lung diseases and noise-induced hearing loss.

There is an ongoing process embracing medical examinations on appointment and cessation of employment and thorough regular testing coupled with occupational diseases prevention programmes at all operations.

Environment. Evaluation of reports from operations against statutory and regulatory requirements. Approval of funds voted to meet legislation requirements.

ARM actively manages its environmental management responsibilities by having independent audits undertaken every second year. The second audit cycle was completed during the 2003 financial year. The Group's aim is to minimise the negative effects of our mining activities on the environment by monitoring, ongoing rehabilitation and by the provision of adequate funding for operation closure and post-closure maintenance.

HIV/AIDS. A comprehensive strategy has been devised to hinder the spread of this disease at ARM's operations. Monitoring and evaluation against this strategy receives urgent attention. Those affected are being counselled and assisted.

These elements are enshrined in the Sustainable Development Charter.

A Group Sustainable Development Committee, comprising senior managers assists the board committee. This committee meets quarterly.

A preferential procurement policy has been developed and approved by the board.

Employment equity

The Company has initiated a process for the development of employees, in compliance with the Employment Equity Act, in 2003. This process is intended to address the existing equity imbalances as soon as possible.

ARM established a Transformation Committee chaired by the chairman of the board of directors to define targets and the strategy, for meaningful transformation. The committee meets regularly to consider the assessment of national and industry demographics and Group profiles and Group succession plans to identify positions pledges for Employment Equity replacements and Group targets were identified per level.

Treasury Committee

ARM's revenues are sensitive to current fluctuations because all of ARM's revenues are generated using metal prices denominated in US dollars, while most of the costs are incurred in rand. Depreciation of the rand against the US dollar increases ARM's revenue when translated into rand, thereby increasing the operating margin. Conversely, appreciation of the rand against the US dollar, decreases revenues when translated into rand. Accordingly, the effect on profitability of any change in the value of the rand against the US dollar can be substantial.

ARM has not actively hedged future commodity revenues for the commodities that it produces against price fluctuations.

The management of the abovementioned risks is conducted under the auspices of the Treasury Committee chaired by the chief financial officer (to be appointed) The committee meets fortnightly.

The committee operates within clearly defined parameters set by the board.

Group internal audit

The Group internal audit department operates with full authority of the directors. The head of this department reports functionally to the chairman of the Audit Committee and has unrestricted access to the chairman of the board, and other members of the Audit Committee. The internal audit department performs a variety of activities that ultimately result in an examination and evaluation of the effectiveness of all operating sectors of the Group's business. Through this

process, operating and business risks are highlighted and the systems of operating and financial controls are monitored. All issues are brought to the attention of the Audit Committee, the directors and members of the Executive and Risks Committees and external auditors.

Code of Ethics

The Company is committed to the highest standards of integrity, behaviour and ethics in dealing with all its stakeholders. All directors and employees are required to maintain the highest ethical standards to ensure that the Company's business practices are conducted in a reasonable manner, in good faith and in the interests of the Company.

The Company in the furtherance of ensuring that the Code of Ethics is adhered to has established and enforces regulations and disciplinary procedures in this regard.

The Company enforces closed periods prior to the publication of its interim and final results which extends from 15 days before the end of a reporting period or the financial year until the day of publication of the results in the press. Where appropriate, dealing is also restricted during sensitive periods where major transactions are being negotiated and a public announcement is imminent. These restrictions also apply to other listed companies within the Group.

All directors and designated officers are required to obtain written approval prior to dealing in the Company's securities. Similar provisions apply to directors of other listed companies within the Group.