UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 6-K

REPORT OF FOREIGN PRIVATE ISSUER PURSUANT TO
RULE 13a-16 OR 15d-16 UNDER THE SECURITIES
EXCHANGE ACT OF 1934

For August 14, 2003

Harmony Gold Mining Company Limited

Suite No. 1
Private Bag X1
Melrose Arch, 2076
South Africa
(Address of principal executive offices)

(Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F.)

Form 20-F **X** Form 40-F

(Indicate by check mark whether the registrant by furnishing the information contained in this form is also thereby furnishing the information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.)

Yes No **X**

This Report on Form 6-K is incorporated by reference into the registration statement on Form F-3 (file no. 333-13516) for Harmony Gold Mining Company Limited, filed on December 23, 2002, and into the prospectus that forms a part of that registration statement.

THIS CIRCULAR IS IMPORTANT AND REQUIRES YOUR IMMEDIATE ATTENTION

Action required

1. If you are in any doubt as to the action that you should take, please consult your stockbroker, banker, accountant, legal adviser or other professional adviser immediately.
2. If you have sold or otherwise disposed of all your shares in Harmony Gold Mining Company Limited ("Harmony"), this circular, together with the attached form of proxy (blue), should be handed to the purchaser of such shares, or to the stockbroker, banker or agent through whom the disposal was effected.
3. Certificated shareholders and shareholders who hold dematerialised shares and have elected "own name" registration in the sub-register through a Central Securities Depository Participant ("CSDP") who are unable to attend the general meeting of shareholders of Harmony, to be held at 09:00 on 1 September 2003 at the corporate office of Harmony, Randfontein Office Park, Corner Main Reef Road and Ward Avenue, Randfontein, but wish to be represented thereat, should complete and return the attached form of proxy (blue) in accordance with the instructions contained therein to the transfer secretaries of Harmony, Ultra Registrars (Pty) Limited, 11 Diagonal Street, Johannesburg, 2001 (PO Box 4844, Johannesburg, 2000) or Capita Registrars, The Registry, 34 Beckenham Road, Beckenham, Kent BR3 4TU, England, so as to be received by not later than 09:00 on 28 August 2003.
4. Shareholders who hold dematerialised shares through a CSDP or broker, other than those who have elected "own name" registration, and who wish to attend the general meeting must request their CSDP or broker to provide them with a Letter of Representation or should advise their CSDP or broker as to what action they wish to take. This must be done in terms of the agreement entered into between them and the CSDP or broker. Shareholders who have dematerialised their shares, other than those who have elected "own name" registration, must not complete and return the attached form of proxy.

Harmony

Harmony Gold Mining Company Limited

(Incorporated in the Republic of South Africa)
(Registration number 1950/038232/06)
Share code: HAR ISIN: ZAE000015228
("Harmony" or the "company")

CIRCULAR TO SHAREHOLDERS

relating to an authority for

- **the increase of Harmony's authorised ordinary share capital from 250 000 000 ordinary shares with a par value of 50 cents each to 350 000 000 ordinary shares with a par value of 50 cents each ("Harmony shares");**
- **the approval of the merger between Harmony and African Rainbow Minerals Gold Limited ("ARMgold"), the consideration for which will be discharged by the issue of up to 64 000 000 Harmony shares to ARMgold, in the ratio of 2 Harmony shares for every 3 ARMgold shares, to be implemented by way of a scheme arrangement proposed by Harmony between ARMgold and its shareholders, in terms of section 311 of the Companies Act, 1973 (Act 61 of 1973), as amended,**

and incorporating

- **information relating to Harmony as required for inclusion in a pre-listing statement in compliance with the Listings Requirements of the JSE Securities Exchange South Africa;**
- **a notice of a general meeting of shareholders; and**
- **a form of proxy for certificated and own name dematerialised shareholders.**

Financial adviser

JPMorgan
JPMorgan Chase Bank

Technical adviser

SRK Consulting
Engineers and Scientists

Attorneys

CLIFFE DEKKER

Sponsor

JPMorgan
J.P. Morgan Equities

Reporting accountants

PRICEWATERHOUSECOOPERS
PricewaterhouseCoopers Inc
Chartered Accountants (SA)

Date of issue of this circular: 7 August 2003

This circular contains "forward-looking statements" within them eaning of Section 27A of the Securities Act of 1933, as amended, and 21E of the Securities Exchange Act of 934, as amended, that are intended to be covered by the safe harbor created by such sections. All statements other than those of historical facts included in this presentation are forward-looking statements, including , without limitation, (i) estimates of future earnings, and the sensitivity of earnings to the gold and other metals prices; (ii) estimates of future gold and other metals production and sales, (iii) estimates of future cash costs; (iv) estimates of future cash flows, and the sensitivity of cash flows to the gold and other metals prices; (v) statements regarding future debt repayments; (vi) estimates of future capital expenditures; (vii) estimates of reserves, and statements regarding future exploration results and the replacement of reserves; and (viii) statements regarding modifications to the Company's hedge position. Where the Company expresses or implies an expectation or belief as to future events or results, such expectation or belief is expressed in good faith and believed to have a reasonable basis. However, forward-looking statements are subject to risks, uncertainties and other factors, which could cause actual results to differ materially from future results expressed, projected or implied by such forward-looking statements. Such risks include, but are not limited to, gold and other metals price volatility, currency fluctuations, increased production costs and variances in ore grade or recovery rates from those assumed in mining plans, as well as political and operational risks in the countries in which we operate and governmental regulation and judicial outcomes. For a more detailed discussion of such risks and other factors, see the Company's Annual Report on Form 20-F for the year ended June 30, 2002, which is on file with the Securities and Exchange Commission, as well as the Company's other SEC filings. The Company does not undertake any obligation to release publicly any revisions to any "forward-looking statement" to reflect events or circumstances after the date of this presentation, or to reflect the occurrence of unanticipated events, except as may be required under applicable securities laws.

Contents

	Page
Corporate information	Inside front cover
Important dates and times	3
Definitions	4
Circular to shareholders	
1. Introduction	7
2. Increase in authorised ordinary share capital	7
3. Background and rationale for the merger	8
4. Background and information on ARMgold	8
4.1 Introduction	8
4.2 Nature of business	8
4.3 Strategy and prospects	8
4.4 Litigation statement	9
4.5 Financial information on ARMgold	9
4.6 Details of any significant contracts	9
4.7 Material changes	9
5. The merger consideration and salient terms	9
6. Financial effects of the merger on Harmony and ARMgold	10
7. Conditions precedent	11
8. General meeting and shareholder approval	12
8.1 General meeting	12
8.2 Shareholder approvals	12
9. Exchange Control Regulations	12
10. Information on Harmony	12
10.1 Introduction	12
10.2 Nature of business	12
10.3 Strategy and prospects	13
11. Directorate	13
11.1 Directors	13
11.2 Appointment and remuneration of directors	15
11.3 Directors' interests in capital of Harmony	16
11.3.1 Details of Harmony shares held by directors	16
11.3.2 Details of share options held by directors	16
11.4 Directors' responsibility statement	17

		Page
12.	Share capital	17
12.1	Capitalisation	17
12.2	Voting rights and rights to dividends	17
12.3	Share issues, consolidation and sub-division of shares	18
12.4	Preferential rights over Harmony shares	18
12.5	Major shareholders	19
13.	Financial information of Harmony	19
13.1	Information relating to Harmony	19
13.2	Working capital	19
13.3	Borrowings and material loans	19
13.4	Material inter-company finance	20
13.5	Contingent liabilities and capital commitments	20
13.6	Details of materials loans by Harmony Group	20
14.	General	20
14.1	Litigation statement	20
14.2	Expenses	20
14.3	Experts consent	20
14.4	Corporate governance	20
14.5	Significant contracts	22
14.6	Acquisitions and disposals of property	22
15.	Documents available for inspection	22
Annexure 1	Extracts from the Memorandum and Articles relating to the directors of Harmony	23
Annexure 2	Report of the independent reporting accountants on the *pro forma* financial effects of the merger to the shareholders of Harmony	26
Annexure 3	*Pro forma* financial information of Harmony	28
Annexure 4	Historical financial information of Harmony	30
Annexure 5	Historical information of ARMgold	63
Annexure 6	Significant contracts of ARMgold	74
Annexure 7	Trading history of Harmony shares	76
Annexure 8	Competent Person's Report on Harmony	77
Annexure 9	Acquisitions and disposals of companies, businesses and properties	233
Annexure 10	Schedule of material loans to Harmony Group	235
Annexure 11	Schedule of material loans by Harmony Group	237
Annexure 12	Contingent liabilities and capital commitments	238
Annexure 13	Subsidiary operating companies incorporated in South Africa	239
Annexure 14	Details regarding inter-company finance	240
Annexure 15	Schedule of pending legal proceedings	241
Notice of general meeting		242
Form of proxy (blue)		Attached

Important dates and times

	2003
Last day to lodge forms of proxy for the general meeting to be received by 09:00 on	28 August 2003
Forms of proxy for the scheme meeting to be received by	29 August 2003
General meeting to be held at Harmony's corporate office, Randfontein Office Park, Corner of Main Reef Road and Ward Avenue, Randfontein, P.O. Box 2, Randfontein, 1760, South Africa, at 09:00 on	1 September 2003
Announcement regarding results of general meeting of shareholders released on SENS and other relevant exchanges on	1 September 2003
Scheme meeting to be held at 10:00 on	1 September 2003
Announcement regarding results of scheme meeting and declaration of ARMgold dividend released on SENS and other relevant exchanges on	1 September 2003
Announcement regarding results of general meeting published in the South African press on	2 September 2003
Court hearing to sanction the scheme on	9 September 2003
Expected announcement regarding results of scheme released on SENS and other relevant exchanges on	9 September 2003
Expected announcement regarding results of scheme published in the South African press on	10 September 2003
Last day to trade for ARMgold shareholders wishing to receive the consideration shares and the ARMgold dividend on	12 September 2003
Suspension of listing of ARMgold shares at commencement of trading on	15 September 2003
Consideration record date, being the date on which shareholders must be recorded in the register of ARMgold by 17:00 to receive the consideration shares on	19 September 2003
Operative date of the scheme at commencement of trading on	22 September 2003
Termination of listing of the ARMgold shares on the JSE at commencement of trading on	23 September 2003

Notes:

1. The definitions set out on pages 4 to 6 apply to the information on this page.
2. All times shown in this circular are South African local times.
3. Any change to the above dates and times will be advised by notification in the South African press and released on SENS and other relevant exchanges.
4. Copies of this circular may be obtained from:

   – Harmony;

   – Ultra Registrars (Pty) Limited; and

   – St James's Corporate Services Limited,

   at the addresses set out on the inside front cover.

Definitions

In this circular and its annexures, 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 and *vice versa*, words signifying one gender include the other genders, and references to a person include references to juristic persons and associations of persons and *vice versa;*
- all monetary values are in South African rands and cents unless otherwise stated; and
- all times indicated are South African local times.

"Act"	the Companies Act, 1973 (Act 61 of 1973), as amended;
"ADRs"	American Depository Receipts;
"ARMgold"	African Rainbow Minerals Gold Limited (registration number 1997/015869/06), incorporated in South Africa and listed on the JSE;
"ARMI"	African Rainbow Minerals and Exploration Investment (Proprietary) Limited (registration number 1997/020158/07), incorporated in South Africa;
"ARMgold shares"	ordinary shares having a par value of 0.1 cents each in the issued share capital of ARMgold;
"ARMgold shareholders"	holders of ARMgold shares;
"Articles"	the articles of association of Harmony;
"Avmin"	Anglovaal Mining Limited (registration number 1933/004580/06), incorporated in South Africa and listed on the JSE;
"board of directors" or "directors" or "board"	the board of directors of Harmony;
"business day"	any day, excluding Saturday and Sunday, on which banking institutions are generally open for normal banking business in Johannesburg;
"certificated shares"	Harmony shares which have not yet been dematerialised in terms of STRATE, title to which is represented by a share certificate or other document of title;
"certificated shareholders"	holders of certificated shares;
"circular"	this bound document, dated 7 August 2003, including the annexures, the attached notice of general meeting and form of proxy;
"completion date"	the date upon which the merger becomes effective;
"conditions"	the conditions precedent to which the merger is subject as reflected in paragraph 7;
"consideration shares"	up to 64 000 000 new Harmony shares, to be issued in the ratio of 2 Harmony shares for every 3 ARMgold shares as consideration for the merger, it being recorded that as at the last practicable date, based on the current number of ARMgold shares in issue and the agreed ratio, consideration shares shall mean 63 666 667 Harmony shares;

"CSDP"	a Central Securities Depository Participant as defined in section 91A of the Act;
"dematerialised shares"	Harmony shares which have been dematerialised through a CSDP or broker;
"dematerialised shareholders"	holders of dematerialised shares;
"Employee Share Schemes"	collectively, The Harmony (1994) Share Option Scheme, as amended, and The Harmony (2001) Share Purchase Scheme;
"Free Gold"	ARMgold/Harmony Freegold Joint Venture Company (Proprietary) Limited, the 50/50 incorporated joint venture with ARMgold, which has acquired the Tshepong, Matjhabeng, Bambanani, Joel and St. Helena mines as well as certain other surface operations;
"general meeting"	the general meeting of shareholders to be held at 09:00 on 1 September 2003 at Harmony's corporate office, Randfontein Office Park, Corner of Main Reef Road and Ward Avenue, Randfontein, PO Box 2, Randfontein, 1760;
"Harmony"	Harmony Gold Mining Company Limited (registration number 1950/038232/06), incorporated in South Africa and listed on the JSE, the LSE, Euronext Paris, Euronext Brussels, in the form of International Depository Receipts, and the NYSE in the form of ADRs;
"Harmony Group"	Harmony and its subsidiaries;
"Harmony shares"	ordinary shares with a par value of 50 cents each in the issued ordinary share capital of Harmony;
"Harmony shareholders" or "shareholders"	holders of Harmony shares from time to time;
"IDC"	Industrial Development Corporation of South Africa Limited;
"JSE"	the JSE Securities Exchange South Africa;
"Kalgold"	Kalahari Goldridge Mining Company Limited (registration number 1982/002818/07), incorporated in South Africa;
"last practicable date"	the last practicable date prior to finalisation of this circular, being 1 August 2003;
"LSE"	the London Stock Exchange plc;
"merger"	the acquisition by Harmony of the entire issued share capital of ARMgold, the consideration for which will be discharged by the issue of the consideration shares, which is to be implemented by means of the scheme or the substitute offer;
"merger agreement'	the agreement dated 22 July 2003 entered into between Harmony, ARMgold and ARMI in relation to the merger;
"NYSE"	the New York Stock Exchange;
"scheme"	the scheme of arrangement proposed by Harmony between ARMgold and the ARMgold shareholders in terms of section 311 of the Act;
"scheme meeting"	the scheme meeting convened by order of the High Court for purposes of considering and voting on the scheme which is expected to be held on 1 September 2003;

"SENS"	the Securities Exchange News Service;
"Simane"	Simane Security Investments (Pty) Limited;
"South Africa"	the Republic of South Africa;
"SRK"	Steffen, Robertson and Kirsten (South Africa) (Pty) Limited (registration number 1995/012890/07), incorporated in South Africa;
"SRP"	the Securities Regulation Panel;
"St. Helena"	the St. Helena Mine located in the south-western rim of the Witswatersrand Basin;
"STRATE"	STRATE Limited (registration number 1998/022248/06), incorporated in South Africa, and is the electronic clearing and share settlement system used by the JSE;
"substitute offer"	the implementation of the merger by means of an offer to ARMgold shareholders, which will be deemed to be made if the scheme fails as a result of the non-fulfilment of the conditions which specifically relate to the scheme; and
"transfer secretaries"	Ultra Registrars (Pty) Limited (registration number 2000/007239/07) in South Africa and Capita Registrars in England.

Harmony Gold Mining Company Limited

(Incorporated in the Republic of South Africa)
(Registration number 1950/038232/06)

Directors

Adam Fleming*#
Bernard Swanepoel
Ferdi Dippenaar
Frank Abbott
Ted Grobicki
John Smithies*#
Mike Pleming*#
Nolitha Fakude*#
Lord Renwick of Clifton KCMG*#
Simo Lushaba*#

*Independent
#Non-executive

Circular to shareholders

PART I

1. INTRODUCTION

On Friday, 2 May 2003, Harmony and ARMgold announced that they had reached agreement, in terms of a memorandum of understanding, regarding their proposed merger. It is intended that the merger will be implemented by means of a scheme of arrangement to be proposed by Harmony between ARMgold and ARMgold shareholders, in terms of section 311 of the Act, which will be subject to the fulfilment of the conditions.

Harmony will issue up to 64 000 000 new Harmony shares in consideration for the merger in the ratio of 2 Harmony shares for every 3 ARMgold shares held.

This circular sets out the details of the special resolution and ordinary resolutions that are required to be approved by Harmony shareholders to enable the merger to be implemented, including an increase in the authorised share capital of Harmony.

2. INCREASE IN AUTHORISED ORDINARY SHARE CAPITAL

In order to ensure that a sufficient number of Harmony shares are available for issue for the purposes of implementation of the merger and future share issuances, the board of directors propose that the authorised ordinary share capital of Harmony be increased to 350 000 000 Harmony shares from the current authorised ordinary share capital of 250 000 000 Harmony shares. The special resolution providing for such increase is contained in the attached notice of general meeting. The effect of the special resolution is to increase the authorised ordinary share capital of Harmony from R125 million to R175 million.

PART II

3. BACKGROUND AND RATIONALE FOR THE MERGER

In November 2001, Harmony and ARMgold formed a 50/50 joint venture, Free Gold, that acquired certain gold mines and related surface operations and assets from Anglogold Limited, with effect from 1 January 2002. At the same time, Harmony and ARMgold entered into a co-operation agreement for a period of twelve months, to jointly explore opportunities for the acquisition and establishment of gold mining and related businesses and the acquisition and exploitation of mineral rights within South Africa.

Since that time, Harmony and ARMgold have worked together pursuing various opportunities, including the acquisition of the St Helena mine, through Free Gold, and the acquisition of 34,5% of the issued shares in Avmin through a newly formed joint venture company. The investment in Avmin was primarily to obtain a foothold in Avgold Limited, a company with significant growth opportunities.

The two companies have similar management structures with reduced management and decision-making levels. Both the companies have proven skills and expertise to turn loss-making and marginal mines into highly profitable operations.

The two large joint ventures the companies have entered into, coupled with their similar management styles and their proven ability to work together, as evidenced by the successes achieved in Free Gold, contributed to the decision to merge the two companies.

It is intended that the merged company will trade under the name Harmony, with conspicuous and distinctive emphasis on the letters "ARM" to include ARMgold's identity in the merged company. Following the merger, the enlarged Harmony will become the fifth largest gold producer in the world and the largest unhedged South African gold producer. It will also be truly representative of the new South Africa with historically disadvantaged South Africans holding in excess of 19% of its issued share capital and participating in excess of 26% of the operations.

The new Harmony will own operating mines in all the major gold producing regions of South Africa. It is also expected to realise synergies in the Free State in the short term, by consolidating the region into one operating unit, thereby optimising the use of infrastructure and exploitation of the ore bodies, which should deliver enhanced return for shareholders.

The merger will result in the best practices developed by both companies being incorporated in the current operations, and will create exciting opportunities for growth that will be to the benefit of the shareholders of both Harmony and ARMgold.

To date the proposed merger has been well received by the market and institutional shareholders of both companies and the merged company should be in an even better position to raise funds and to explore and exploit further growth opportunities in the industry.

4. BACKGROUND INFORMATION ON ARMGOLD

4.1 Introduction

ARMgold was incorporated in 1997 and was listed on the JSE in May 2002. Its registered address is ARM House, 29 Impala Road, Chislehurston, Johannesburg, 2196.

4.2 Nature of business

ARMgold has become South Africa's fourth largest gold producer and the tenth largest gold producer worldwide. ARMgold has achieved its stated objective of producing in excess of one million attributable ounces of gold in 2003.

ARMgold has been involved in a successful joint venture, Free Gold, with Harmony since January 2002. In addition to Free Gold, ARMgold operates mines in the Orkney and Welkom areas.

4.3 Strategy and prospects

ARMgold has developed a "We Do It Better" philosophy that has enabled ARMgold to establish a successful track record of turning around previously loss-making and under-performing shafts, making them profitable and competitive.

Since its successful listing on the JSE in May 2002, ARMgold has been a model company for black economic empowerment in the mining sector.

4.4 Litigation statement

There are no legal or arbitration proceedings (including any such proceeding that are pending or threatened of which ARMgold is aware) that may have or have had in the recent past (being the 12 month period immediately prior to the date of this circular) a material effect on the financial position of ARMgold or any of its subsidiaries.

4.5 Financial information on ARMgold

All financial information on ARMgold is set out in Annexure 5.

4.6 Details of any significant contracts

ARMgold's significant contracts are reflected in Annexure 6.

4.7 Material changes

Apart from the acquisition, jointly with Harmony, of a 34,5% interest in Avmin, there have been no material changes in the financial or trading position of ARMgold and its subsidiaries since the last annual financial statements were published.

5. THE MERGER CONSIDERATION AND SALIENT TERMS

The merger consideration

As consideration for the merger, Harmony will issue the consideration shares to ARMgold shareholders.

The merger ratio is 2 Harmony shares for every 3 ordinary ARMgold shares held. The ratio of Harmony shares to ARMgold shares was calculated with reference to the 30-day volume weighted average traded ordinary share prices of Harmony and ARMgold prior to the final negotiation of the terms of the merger.

In addition:

- prior to the completion date, ARMgold has the right to declare and pay a cash dividend of 500 cents per ARMgold share to ARMgold shareholders recorded as such on a date prior to the completion date, provided that it shall be entitled to increase the amount of such dividend if the circumstances envisaged below arise;
- Harmony shall be entitled, at any time prior to the date which is not less than 7 days prior to the date of the scheme meeting, to declare and pay any cash dividend to Harmony shareholders recorded as such on any day prior to the completion date, provided that, upon declaration of such dividend, ARMgold shall be entitled to increase the amount of the dividend it is obliged to declare and pay as aforesaid by an amount equal to two-thirds of the dividend declared per Harmony share or 100 cents per ARMgold share, whichever is the greater.

Harmony has undertaken in favour of ARMgold as follows:

- it will not declare and pay any dividend during the period reckoned from 7 days prior to the scheme meeting and the completion date; and
- insofar as it is lawfully able, its next dividend following the completion date will be:
  - not less than 150 cents per Harmony share, so as to ensure that each ARMgold shareholder who receives consideration shares pursuant to the merger will, together with the dividend which ARMgold is obliged to declare, receive a minimum dividend of 600 cents per ARMgold share acquired from him;
  - declared and paid as soon as possible after the completion date.

The aggregate number of Harmony shares to be issued in terms of the merger is expected to represent approximately 35% of the issued ordinary share capital of Harmony. The Harmony consideration shares will rank *pari passu* in all respects with the existing issued Harmony shares.

The resolution in terms of which this authority will be granted (ORDINARY RESOLUTION NUMBER 1) is contained in the attached notice of general meeting.

Salient terms

Harmony and ARMgold have further agreed that, following implementation of the merger, it is their intention to give effect to the following regarding Harmony's board and executive management:

- ARMgold and Harmony intend to integrate their respective boards and executive teams in an effective manner so as to retain their respective strengths and attributes, particularly ARMgold's strong empowerment credentials and Harmony's international profile and global reach;
- with that objective in mind, ARMgold and Harmony intend to reorganise the board of directors so that on or as soon as possible after the completion date the board will conform with the following requirements:
  - it will consist of not more than 19 (nineteen) directors, of whom not more than 8 (eight) will be executive directors;
  - it will include 10 (ten) directors who will be nominated by ARMgold, of whom not more than 4 (four) will be executive directors;
  - any resignations from the present board which are necessary to permit the appointment of ARMgold's nominees will be obtained; and
  - Mr Patrice Motsepe will be appointed non-executive chairman of the board for a period of at least 3 (three) years from the completion date.
- In order to retain in Harmony the significant empowerment credentials present in and identified with ARMgold following the completion date, Mr Patrice Motsepe's functions and responsibilities as the non-executive chairman of Harmony will be broader and more extensive than those normally allocated to a non-executive chairman.

The identities of the directors nominated to the board of directors by ARMgold are as follows:

Executive directors

A J Wilkens
P Taljaard
W M Gule
D V Simelane

Non-executive directors

P T Motsepe
Dr M M M M Bakane-Tuoane
M W King
C M L Savage
Dr R V Simelane
Dr S P Sibisi

Subject to Harmony having procured the appointment of ARMgold's nominees to the board of directors as aforesaid, ARMI has undertaken to exercise the votes attaching to its ARMgold shares in favour of the scheme at the scheme meeting or to accept the substitute offer as the case may be.

ARMI has undertaken to Harmony that it will not dispose of any of the consideration shares received by it pursuant to the implementation of the merger for a period of 6 months reckoned from the completion date.

6. FINANCIAL EFFECTS OF THE MERGER ON HARMONY AND ARMGOLD

The table below sets out the illustrative financial effects of the merger based on the unaudited financial information of Harmony for the nine months ended 31 March 2003. The effect of the Avmin acquisition or the acquisition of 11,5% of the issued share capital of Avgold Limited is not included in the table below. These financial effects are for illustrative purposes only and may not give a true picture of Harmony's financial position and future results.

	Harmony before merger[1]	Harmony after merger	% Change
Basic earnings per share (cents)[2]	635	645	1,6
Headline earnings per share (cents)2	622	657	5,6
Net asset value per share (cents)[3]	4 850	5 858	20,8
Net tangible asset value per share (cents)[3]	4 850	5 274	8,7
Weighted average number of shares in issue	175 850 256	239 516 923	
Number of shares in issue	184 163 265	247 829 932	

Notes:

1. The Harmony before merger financial information was extracted from Harmony's published quarterly reports for the nine-month period ended 31 March 2003.
2. The basic and headline earnings per share effects are based on the assumption that the merger was effective 1 July 2002.
3. The net asset and net tangible asset value per share effects are based on the assumption that the merger was effective 31 March 2003.
4. Earnings and headline earnings per share after the merger are after the following adjustments:
   (a) the consolidation of ARMgold's earnings and headline earnings for the nine months ended 31 March 2003, after adjusting for the after tax effect of the lower interest earned during the period as the result of the payment of a special dividend of 500 cents per ARMgold share, assumed to have been paid at the beginning of the period;
   (b) the fair value adjustment, arising on the merger, is amortised over the lives of the mines, resulting in a charge of R105,9 million for the nine months period (after tax);
   (c) goodwill, arising from the merger, is amortised over a period of 17 years and results in a charge of R65,1 million for the nine month period; and
   (d) amortisation of the goodwill arising on the merger is reversed for determination of headline earnings.
5. Net asset and tangible asset values per share after the merger are after the following adjustments:
   (a) the consolidation of ARMgold's assets and liabilities, at fair value, as at 31 March 2003, after adjusting for the payment of a special dividend of 500 cents per ARMgold share;
   (b) the issue of 63 666 667 shares at R87,75 per share as consideration.

7. CONDITIONS PRECEDENT

7.1 The implementation of the scheme is conditional, *inter alia*, upon:

- the passing of the special resolution and ordinary resolutions set out in the notice of general meeting attached to this circular by the Harmony shareholders at the general meeting, to enable Harmony to propose and implement the scheme;
- the approval of the scheme by ARMgold shareholders at the scheme meeting;
- the sanctioning of the scheme by the High Court of South Africa in accordance with the requirements of the Act;
- the registration of the High Court's Order sanctioning the scheme by the Registrar of Companies in accordance with the requirements of the Act;
- the obtaining of all rulings and approvals required from any regulatory authorities and from the JSE and the SRP;
- the JSE approving the listing of the consideration shares on the JSE; and
- the completion date occurring by no later than 31 December 2003

7.2 The implementation of the substitute offer, which will be deemed to be made if the scheme fails as a result of the non-fulfilment of the conditions which specifically relate to the scheme, is conditional upon:

- the passing of the special resolution and ordinary resolutions set out in the notice of general meeting attached to this circular by the Harmony shareholders at the general meeting, to enable Harmony to propose and implement the substitute offer;
- offerees holding at least 90% (or such lesser percentage as Harmony may determine) of the ARMgold shares accepting the substitute offer;
- the registration of the Harmony shares comprising the substitute offer consideration in the United States of America if and to the extent required by the Securities Exchange Commission; and
- the substitute offer becoming unconditional by 31 December 2003.

The condition that the completion date of the scheme occurs by no later than 31 December 2003, or the substitute offer becomes unconditional by no later than 31 December 2003, as the case may be, is capable of waiver or extension by agreement between Harmony and ARMgold.

8. GENERAL MEETING AND SHAREHOLDER APPROVAL

8.1 General meeting

Attached to this circular is a notice of a general meeting of Harmony shareholders to be held at Harmony's corporate office, Randfontein Office Park, Corner Main Reef Road and Ward Avenue, Randfontein, at 09:00 on 1 September 2003. The general meeting will be held for the purposes of considering the special resolution required to increase Harmony's authorised share capital and the ordinary resolutions required to approve the merger. Certificated shareholders and dematerialised shareholders who have "own name" registration and who are unable to attend the general meeting and who wish to be represented thereat are requested to complete and return the attached form of proxy (blue) to the transfer secretaries, by not later than 09:00 on 28 August 2003.

Dematerialised shareholders who do not have "own name" registrations and who wish to attend the general meeting must request their CSDP or broker to provide them with a Letter of Representation or must instruct their CSDP or broker to vote by proxy on their behalf in terms of the agreement entered into between the shareholder and their CSDP or broker.

8.2 Shareholder approvals

In accordance with the JSE Listings Requirements, the merger is subject to approval by ordinary resolution passed by a majority of Harmony shareholders present or represented by proxy and entitled to vote at the general meeting.

The increase in authorised ordinary share capital is subject to approval by special resolution passed by at least 75% of Harmony shareholders, present or represented by proxy and entitled to vote at the general meeting of which not less than 21 clear days' notice will be given and at which not less than 25% of the total votes of all Harmony shareholders entitled to attend and vote are present or represented.

9. EXCHANGE CONTROL REGULATIONS

In terms of the Exchange Control Regulations of the Republic of South Africa:

- the share certificates of non-resident shareholders issued by the transfer secretaries in South Africa will be endorsed "Non-Resident";
- new share certificates, dividend and residual cash payments based on emigrants' shares controlled in terms of the Exchange Control Regulations will be forwarded to the Authorised Dealer in foreign exchange controlling their blocked assets. The election by emigrants for the above purpose must be made through the Authorised Dealer in foreign exchange controlling their blocked assets; and
- dividend and residual cash payments due to non-residents are freely transferable from South Africa.

PART III

10. INFORMATION ON HARMONY

10.1 Introduction

Harmony was incorporated in South Africa on 25 August 1950. The names, dates and places of incorporation of Harmony's operating subsidiaries are reflected in Annexure 13. Brief particulars of alterations of Harmony's capital over the last 3 years are reflected in paragraph 12.3. The primary listing of Harmony's shares is on the JSE. The Harmony shares are also listed on the LSE and Euronext Paris and are quoted on Euronext Brussels in the form of International Depository Receipts and on the NYSE in the form of ADRs.

10.2 Nature of business

Harmony is a gold miner and producer with an international diversified portfolio of gold mining projects in South Africa, Canada, Australia, and Russia. 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 Witswatersrand basin of South Africa. The deep level gold mines located in this basin include

the Free State operations and the operations of Free Gold in the Free State Province, the Evander gold mine in Mpumalanga Province and the Randfontein and Elandskraal mines on the West Rand goldfields in Gauteng Province. In addition, Harmony and ARMgold have recently jointly acquired a 34,5% shareholding in Avmin and Harmony has acquired an 11,5% shareholding in Avgold Limited.

Harmony's international operations are held under Harmony Gold (Australia) (Pty) Ltd and comprise the wholly-owned New Hampton Goldfields Limited and Hill 50 Limited, a 31,8% shareholding in the Bendigo Mining NL operation, a 32,5% interest in Highland Gold Mining Limited, a 21% interest in High River Gold Mines Limited, as well as an 87% interest in Abelle Limited.

10.3 Strategy and prospects

Harmony is a growth oriented company in the gold production business and is distinguished by the focused operational and management philosophies which it employs throughout the organisation. Its growth strategy is focused on building a leading international gold mining company through acquisitions, organic growth, and focused exploration.

Since undergoing a change in management in 1995, Harmony has employed a successful strategy of growth through a series of acquisitions and through the evolution and implementation of a simple set of management systems and philosophies, which Harmony refers to as the "Harmony Way", and which it believes is unique in the South African gold mining industry. A significant component of the success of Harmony's strategy to date has been its ability to acquire under performing mining assets, mainly in South Africa, and within a relatively short time frame, to transform these mines into cost-effective production units.

Harmony is managed according to the philosophy that Harmony shareholders have invested in Harmony in order to hold a growth stock that will also participate in movements in the gold price. Accordingly, Harmony has consistently maintained a policy of not hedging its future gold production.

11. DIRECTORATE

11.1 Directors

The current functions, nationalities and addresses of the directors of Harmony are set out below:

Name	Function	Address
A R Fleming (British)	Non-executive Chairman	Harmony Corporate Office, Randfontein Office Park, Corner of Main Reef Road and Ward Avenue, Randfontein, PO. Box 2, Randfontein, 1760, South Africa
Z B Swanepoel (South African)	Chief Executive	Harmony Corporate Office, Randfontein Office Park, Corner of Main Reef Road and Ward Avenue, Randfontein, PO Box 2, Randfontein, 1760, South Africa
F Abbott (South African)	Financial Director	Harmony Corporate Office, Randfontein Office Park, Corner of Main Reef Road and Ward Avenue, Randfontein, PO Box 2, Randfontein, 1760, South Africa
T S A Grobicki (South African)	Executive Director	Harmony Corporate Office, Level 1, 10 Ord Street, West Perth, WA, 6005
F Dippenaar (South African)	Marketing Director	Harmony Corporate Office, Randfontein Office Park, Corner of Main Reef Road and Ward Avenue, Randfontein, PO Box 2, Randfontein, 1760, South Africa
V N Fakude (South African)	Non-executive Director	1st Floor Block C, Sandhurst Office Park, Corner Katherine Street and Rivonia Road, Sandton, PO Box 781220, Sandton, 2146
Lord Renwick of Clifton KCMG (British)	Non-executive Director	JPMorgan plc., 125 London Wall, London EC2Y 6A J, United Kingdom

Name	Function	Address
D S Lushaba (South African)	Non-executive Director	522 Impala Road, Glenvista, 2058, PO Box 1127, Johannesburg, 2000
M F Pleming (South African)	Non-executive Director	30 Hydewoods, Townshend Road, Hyde Park, 2196
J G Smithies (South African)	Non-executive Director	Point House, Eastford, Knysna 6570, PO Box 930, Knysna, 6570

Further details on the executive directors of Harmony are as follows:

Zacharias Bernardus Swanepoel (42), BSc (Mining Engineering), B Com(Hons), Chief Executive and a director. Mr. Swanepoel has been a director of Harmony and its Chief Executive since February 1995. Mr. Swanepoel has approximately 20 years of experience in the mining industry. Prior to joining Harmony he was General Manager of the Beatrix Mine within the Gengold Group Limited.

Frank Abbott (48), BCom, CA (SA), MBL, Chief Financial Officer and a director. Mr. Abbott has been a director of Harmony since 1994 and Chief Financial Officer since October 1997. He retired by rotation and was duly re-elected at the annual general shareholders' meeting held on 16 November 2002. Mr. Abbott has approximately 22 years' experience in financial management. Prior to joining Harmony he was Financial Director of Randgold & Exploration Company Limited from 1994 to 1997.

Ferdinand Dippenaar (42), BCom, BProc, MBA, Marketing Director. Mr. Dippenaar has been a director of Harmony since June 1997. He retired by rotation and was duly re-elected at the annual general shareholders' meeting held on 16 November 2002. Mr. Dippenaar has approximately 16 years' commercial and financial experience. He was Managing Director of The Grootvlei Proprietary Mines Limited and East Rand Proprietary Mines Limited from 1996 to 1997. Prior to 1996, Mr. Dippenaar served as Project Leader for the East Rand companies of Randgold & Exploration Company Limited in 1995 and Financial Manager of Beatrix Gold Mines Limited in 1994.

Thaddeus Steven Anthony Grobicki (53), BSc (Hons) (Geology), MSc (Minerals Exploration), Executive Officer for offshore operations and a director. Mr. Grobicki has been a director of Harmony since 1994 and an Executive Director since October 1999. Mr. Grobicki has approximately 25 years' experience in the mining industry. He was a Chief Executive Officer of West Rand Consolidated Mines Limited and Kalgold until July 1999. In March 2002, he was appointed Chairman of the Board of Directors of Hill 50 Limited.

Further details on the non-executive directors of Harmony are set out below:

Adam Richard Fleming (54), Non-executive Chairman of the Board and an independent director. Mr. Fleming has been a director and the Chairman of Harmony since 14 October 1999. His current term will expire at Harmony's next annual general shareholders' meeting, currently scheduled for 14 November 2003, at which time he will be eligible for re-election. Mr. Fleming was the Non-executive Chairman of West Rand Consolidated Mines Limited and of Kalgold before the acquisition of these companies by Harmony.

Victoria Nolitha Fakude (39) BA (Hons) (Psychology, Education and English), Non-executive Director and an independent director. Ms. Fakude has been a director of Harmony since September 2002. She has completed executive training programs at the Harvard Business School and Carl Duisberg Gesellschaft, and been the Managing Director of the Black Management Forum, or BMF, since 2001. Her role as Managing Director of the BMF involves stakeholder and relationship management with BMF members, corporate members, government and other organisations.

Lord Robin William Renwick of Clifton (64), KCMG, Non-executive Director and an independent director. Lord Renwick has been a director of Harmony since October 1999. He retired by rotation and was duly re-elected at the annual general shareholders' meeting held on 16 November 2002. Lord Renwick was in the diplomatic service, *inter alia* as British ambassador to Pretoria and Washington, until his retirement in 1997. He is currently chairman of Fluor Limited and is a director of several public companies, including British Airways Plc., Compagnie Financière Richemont AG, BHP Billiton Plc, Fluor Corporation, SABMiller Plc and Fleming Family and Partners.

Dugmore Simosezwes Lushaba (37) BSc (Advanced Biochemistry), MBA, Non-Executive Director and an independent director. Mr. Lushaba has been a director of Harmony since October 2002. He is Chief Executive Officer of Rand Water Limited and has completed courses in industrial marketing, strategic capability, executive development and corporate governance.

Michael Frank Pleming (66), Pr Eng, FIMM, Non-executive Director and an independent director. Mr. Pleming has been a director of Harmony since September 1998. He retired by rotation and was duly re-elected at the annual general shareholders' meeting held on 16 November 2001. Mr. Pleming has approximately 30 years mining and approximately 14 years' mining investment experience. He is also a director of Impala Platinum Holdings Limited.

John Gabriel Smithies (57), BSc (Mining Engineering) (Chemistry), Non-executive Director and an independent director. Mr. Smithies has been a Director of Harmony since April 2002. Mr. Smithies has approximately 29 years experience in the mining industry. From 1973-1976 he worked in the gold division of Union Corporation Limited. From 1976-2001, he held various positions at Impala Platinum Holdings Limited, including consulting engineer from 1996-1999, Operations Director from 1999-2000, and Chief Executive Officer from 2000-2001.

11.2 Appointment and remuneration of directors

The Articles provide that the board of directors must consist of not less than four nor more than 20 directors at any time. The board of directors currently consists of ten directors.

The Articles provide that the longest serving one-third of directors retire from office at each annual general meeting of Harmony. Retiring directors normally make themselves available for re-election and can be re-elected at the annual general meeting at which they retire. Officers of Harmony, who are also directors, retire as directors in terms of the Articles, but their service as officers is regulated by standard industry employment agreements.

The directors, under the chairmanship of Adam Fleming, meet on a quarterly basis. They are mandated to effect key decisions that ensure that they retain proper direction and full control of Harmony and monitor executive management.

Extracts from the Memorandum of Association and the Articles concerning the directors are set out in Annexure 1.

The remuneration of directors for the year ended 30 June 2002 was as follows:

	Directors' fees R'000	Salaries and benefits R'000	Retirement Contributions R'000	Bonuses paid during the year R'000	Total R'000
Executives:					
F Abbott	–	977	81	2 000	3 058
F Dippenaar	–	923	75	2 000	2 998
T S A Grobicki	–	1 279	115	2 000	3 394
Z B Swanepoel	–	1 597	150	3 000	4 747
Total executive		4 776	421	9 000	14 197
Non-executives:					
A R Fleming	100	–	–	–	100
A M Edwards	100	–	–	–	100
M F Pleming	100	–	–	–	100
R W Renwick	100	–	–	–	100
G S Sibiya	100	–	–	–	100
J G Smithies					
Total non-executive	500	–	–	–	500
Total	500	4 776	421	9 000	14 697

Remuneration is not expected to change as a result of the transaction.

All the directors have confirmed in terms of Schedule 21 of the Listings Requirements of the JSE 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 convicted in any jurisdiction of any criminal offence 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.

11.3 Directors' interests in capital of Harmony

11.3.1 Details of Harmony shares held by directors at 31 March 2003 are set out below:

	31 March 2003					
	Beneficial		Non beneficial			
	Share schemes	%	Held directly	%	Held indirectly	%
F Abbott	–	–	–	–	–	–
F Dippenaar	–	–	–	–	–	–
T S A Grobicki	–	–	10 000	0,003	30 000	0,01
Z B Swanepoel	–	–	–	–	–	–
A R Fleming	–	–	–	–	4 600 000	1,84
A M Edwards	–	–	–	–	–	–
M F Pleming	–	–	–	–	–	–
V N Fakude	–	–	–	–	–	–
D S Lushaba	–	–	–	–	–	–
J G Smithies	–	–	–	–	–	–

11.3.2 Details of share options held by directors at 31 March 2003 are set out below:

	Number of options	% of total option in issue	Issue date	Issue price (Rands)	Expiry date
F Abbott	73 400	0,57	20/11/2001	49,60	20/11/2011
F Dippenaar	20 000	0,16	31/01/2001	35,40	31/01/2010
	73 400	0.57	20/11/2001	49,60	20/11/2011
T S A Grobicki	98 000	0,76	21/09/1999	22,90	21/09/2009
	40 000	0,31	31/01/2000	35,40	31/01/2010
	131 000	1,02	20/11/2001	49,60	20/11/2011
Z B Swanepoel	13 350	0,10	31/01/2000	35,40	31/01/2010
	128 800	1,00	20/09/2001	49,60	20/09/2011
A R Fleming	–	–	–	–	–
A M Edwards	–	–	–	–	–
M F Pleming	–	–	–	–	–
J G Smithies	–	–	–	–	–
V N Fakude	–	–	–	–	–
D S Lushaba	–	–	–	–	–

None of the directors or, to the knowledge of Harmony, their families, had any interest, direct or indirect, in any transaction during the last financial year or in any proposed transaction with any company in the Harmony Group that has affected or will materially affect Harmony or its investment interests or subsidiaries.

None of the directors or any associate of such director is currently or has been at any time during the past fiscal year indebted to Harmony.

11.4 Directors' responsibility statement

The directors, whose names appear in paragraph 11.1 of this circular, collectively and individually, accept full responsibility for the accuracy of the information given, insofar as it relates to Harmony, 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 this circular false or misleading, and that they have made all reasonable enquiries to ascertain such facts.

12. SHARE CAPITAL

12.1 Capitalisation

All the Harmony shares in issue rank *pari passu* with each other and are fully paid. Any variation of rights attaching to such shares will require a special resolution of shareholders in general meeting in accordance with the Articles.

Details of Harmony's shareholders' equity before and after giving effect to the issue of consideration shares are detailed as follows:

		At 31 March 2003	
		Actual	***Pro forma***
Authorised ordinary share capital			
Ordinary shares	(millions)	250	350
	R millions	125	175
Issued ordinary share capital			
Ordinary shares	(millions)	184	248
	R millions	92	124
Share premium (additional paid-in capital)	R millions	6 760	12 314
Retained earnings	R millions	2 480	2 480
Other	R millions	(400)	(400)
Total shareholders' equity	R millions	8 932	14 518

The authorised, but unissued Harmony shares have been placed under the control of the directors of Harmony until the next annual general meeting of shareholders, subject to the provision of section 221 of the Act. The new authorised but unissued Harmony shares will be placed under the control of the directors.

12.2 Voting rights and rights to dividends

At a general meeting of Harmony, subject to any restrictions as to voting to which any Harmony shareholder or Harmony share may be subject, every Harmony shareholder who is present in person or in a representative capacity shall, on a show of hands, have one vote, irrespective of the number of Harmony shares the shareholder holds or represents. On a poll, every Harmony shareholder shall have one vote for every Harmony share held.

Harmony in general meeting or the board of directors may from time to time declare a dividend to be paid in proportion to the number of Harmony shares held. No dividend shall be declared except out of the profits of Harmony. Dividends are declared payable to Harmony shareholders recorded in the register as such at a date subsequent to the date of the declaration of the dividend or the date of confirmation of the dividend, whichever is the later, as determined by the board of directors. Any dividend declared may be paid and satisfied, either in whole or in part, by the distribution of specific assets as the board of directors may at the time of declaring the dividends determine and direct.

All unclaimed dividends may be retained by Harmony and may be invested or otherwise utilised by the board of directors for the benefit of the Company until claimed. Any dividend unclaimed after a period of twelve years may be declared forfeited to Harmony.

12.3 Share issues, consolidation, and sub-division of shares

On 31 April 2000, Harmony had 106 708 609 ordinary shares in issue. Since that date, the following changes have occurred in Harmony's issued share capital:

12.3.1 between 17 March 2000 and 30 June 2000, 14 909 631 Harmony shares were issued to the holders of ordinary shares, Share Warrants to Bearer and options in respect of ordinary shares issued by Randfontein Estates Limited, or Randfontein, at an imputed issue price of R37,77 per Harmony share, in accordance with the offer made to Randfontein shareholders;

12.3.2 1 000 000 Harmony shares were placed with certain institutional shareholders at a market-related cash subscription price of R38,00 per Harmony share on 16 August 2000 under a general authority to issue shares for cash;

12.3.3 1 189 700 Harmony shares were placed with certain institutional shareholders at a market-related cash subscription price of R37,00 per Harmony share on 4 September 2000 under a general authority to issue shares for cash;

12.3.4 1 012 000 Harmony shares were placed with certain institutional shareholders at a market-related cash subscription price of R35,31 per Harmony share on 8 February 2001 under a general authority to issue shares for cash;

12.3.5 500 000 Harmony shares were placed with certain institutional shareholders on 5 April 2001 at a market-related subscription price of R40,03 under a general authority to issue shares for cash;

12.3.6 800 000 Harmony shares were placed with certain institutional shareholders on 26 April 2001 and a further 200 000 Harmony shares were placed with certain institutional shareholders on 30 April 2001 at market-related subscription prices of R38,19 and R38,06 per share, respectively, both under a general authority to issue shares for cash;

12.3.7 8 500 000 Harmony shares were issued to international investors on 30 April 2002 for a subscription (including premium) of R139,65 (US$13,20) per Harmony share;

12.3.8 Harmony entered into an agreement with Simane and the IDC on behalf of Simane, pursuant to which Simane and the IDC subscribed for, respectively, 222 222 Harmony shares and 10 736 682 Harmony shares at R36,00 per Harmony share.

12.3.9 10 958 904 Harmony shares were issued on 4 February 2002, pursuant to the conversion of 10 958 904 convertible redeemable preference shares, at a conversion price of R41,50 per preference share, held by the IDC on behalf of Simane;

12.3.10 8 000 000 Harmony shares were issued on 29 January 2003 for a subscription price (including premium) of R136,00 per Harmony share, in terms of a general authority to issue shares for cash; and

12.3.11 6 960 964 Harmony shares were issued on 21 January 2003 for a subscription price of R92,75 per Harmony share, in exchange for a 11,5% stake in Avgold Limited

The issues in 12.3.1 to 12.3.11 were all made at a price above the par value of 50 cents per Harmony share. The premium in all cases was allocated to additional paid-in capital account of the shareholders' equity of Harmony.

12.4 Preferential rights over Harmony shares

12.4.1 Employee Share Schemes

Harmony has a share option scheme for its employees that, as at 31 March 2003, had a total of 4 887 700 (1994) and 8 000 000 (2001) Harmony shares reserved for issuance thereunder. The maximum number of share options that may be outstanding at any time under the employee share option scheme is equal to 10% of the outstanding Harmony shares then in issue. The exercise price of

each option granted under the scheme is set at the closing market price of Harmony's ordinary shares on the JSE on the day prior to the date of grant. Each option remains open for acceptance for 10 years after the date of grant, subject to the terms of the employee share option scheme.

12.4.2 Listed warrants in respect of Harmony shares

All of the warrants previously issued by Harmony have been exercised. The warrants entitled the holder to purchase, on any business day on or before 29 June 2003, one ordinary share at the rand public offering price per ordinary share or the U.S. dollar equivalent. The price paid for the warrant was R43,00 per warrant.

12.5 Major shareholders

At the date of issue of this circular, the following shareholders beneficially held more than 5% of the issued ordinary share capital of Harmony.

Name of shareholder	Number of shares (million)	Percentage shareholding
Bank of New York	78,4	42,6
JP Morgan Chase Bank	11,3	6,13
JP Morgan (Pty) Limited	10,9	5,97
Simane Security Investments (Pty) Limited	10,9	5,95

Harmony has no controlling shareholder, as the shares held by Bank of New York are held on behalf of shareholders who participate in Harmony's ADR program.

13. FINANCIAL INFORMATION ON HARMONY

13.1 Information relating to Harmony

13.1.1 Financial information relating to Harmony is set out in Annexure 4.

13.1.2 Annexure 2 contains the accountant's report on Harmony

13.1.3 Annexure 7 sets out the trading history of Harmony shares on the JSE since 1 June 2000.

13.1.4 There have been no material changes with regards to the financial or trading position of Harmony since the quarter ended 31 March 2003.

13.1.5 *Pro forma* financial effects are set out in Annexure 3.

13.1.6 A competent person's report on the mining assets of Harmony is reflected in Annexure 8.

13.2 Working capital

The directors are of the opinion that the working capital available to the Harmony Group, including ARMgold, is sufficient for its present requirements, that is for the next 12 months from date of issue of this circular.

13.3 Borrowings and material loans

The board of directors may raise, borrow or secure the payment of any sums of money for the purposes of Harmony as they see fit. However, the aggregate principal amount outstanding in respect of monies raised, borrowed or secured by Harmony and any of its subsidiaries may not exceed R40 million or the aggregate from time to time of the issued and paid-up capital of Harmony, together with the aggregate of the amount standing to the credit of all distributable and non-distributable reserves, the share premium account and the share premium accounts of Harmony's subsidiaries, whichever is the greater, except with the consent of the Harmony shareholders in general meeting.

The borrowing powers of Harmony have never been exceeded. The details of material loans to Harmony are reflected in Annexure 10.

No loan capital is outstanding.

13.4 Material inter-company finance

All details regarding inter-company finance are set out in Annexure 14.

13.5 Contingent liabilities and capital commitments

Details of contingent liabilities and capital commitments are reflected in Annexure 12.

13.6 Details of material loans by Harmony Group

Details of material loans made by Harmony Group are reflected in Annexure 11.

PART V

14. GENERAL

14.1 Litigation statement

Save as indicated in Annexure 15, the Harmony Group is not a party to any legal or arbitration proceedings (including any pending or threatened proceedings of which Harmony is aware) that may have or have had in the recent past, a material effect on the Harmony Group's financial position.

14.2 Expenses

The costs and expenses of the merger payable by Harmony are currently estimated at approximately R20 million.

14.3 Experts consent

PricewaterhouseCoopers Inc. and SRK Consulting have given, and have not withdrawn, their consent to the inclusion of their names and reports in this circular in the form and context in which they appear.

14.4 Corporate Governance

Harmony is committed to effective corporate governance and endorses the Code of Corporate Practices and Conduct contained in the King II Report on Corporate Governance. All the key principles underlying the King recommendations have been reflected in Harmony's corporate governance structures. These are reviewed from time to time to take into account corporate changes and international developments with regard to corporate governance. Harmony fully subscribes to the principles of fairness, integrity, accountability and transparency. Harmony is committed to an open governance process, through which its employees, shareholders and stakeholders can be assured that the organisation is managed ethically, according to sound and effective risk management and in compliance with best international practices. The underpinning principles of Harmony's corporate governance practices rest upon the three cornerstones of an effective and efficient organisation, namely: day-to-day management processes, a long-term strategic planning process and effective transformation processes.

Board of directors and board committees

Harmony has a unitary board structure. The board comprises 10 directors, of whom six are independent directors, one of whom is the chairman, and four are executive directors. The non-executive and independent directors are of sufficient calibre and number for their views to carry significant weight in the board's decisions. In addition, the roles of chairman and chief executive are not vested in the same person. The board of directors meets on a quarterly basis and has a fiduciary duty to act in good faith with due diligence and care, in the best interests of Harmony and all its stakeholders. It is responsible for guiding and reviewing corporate strategy, monitoring performance, and determining policies and procedures to ensure the integrity of the company's risk management and internal controls.

All directors have access to the advice and services of the company secretary. They are also entitled to seek independent professional advice regarding the affairs of Harmony at the company's expense. The company secretary is responsible to the board for ensuring that procedures and applicable statutes and regulations are complied with. The board has established a number of committees in which non-executives play an active role and which operate within defined terms of reference laid down by the board.

The board of directors exercises control over the operations of the Company through a structured approach via the following:

Audit Committee

The Audit Committee comprises three independent non-executive directors, being M F Pleming (Chairman), J G Smithies and D S Lushaba. The Audit Committee meets periodically with Harmony's external and independent internal auditors and executive management to review accounting, auditing and financial reporting matters so as to ensure that an effective control environment in Harmony is maintained. The committee also monitors proposed changes in accounting policy, reviews the internal audit function and discusses the accounting implications of major transactions. The committee operates in accordance with written terms of reference confirmed by the board.

Health Safety and Environmental Audit Committee

The Health Safety and Environmental ("HSE") Committee comprises three independent non-executive directors, namely J G Smithies (Chairman), M F Pleming and V N Fakude. This committee meets periodically with executive management to review Harmony's policies, practices and standards. The committee monitors HSE performance and makes recommendation to the board where particular attention is required. The committee operates in accordance with specific terms of reference confirmed by the board.

Remuneration Committee

The Remuneration Committee comprises three independent non-executive directors, namely A R Fleming (Chairman), M F Pleming, and J G Smithies. The committee, in consultation with management where necessary, meets at least once a year and ensures that Harmony's directors and senior executives are fairly rewarded for their individual contributions to Harmony's overall performance, as well as determining the remuneration policy pertaining to all employees.

Insider trading

Employees and directors are prohibited from dealing in Harmony shares during price sensitive periods. In line with regulatory and governance requirements, they must furthermore disclose their own and the dealings of their concert parties in Harmony shares to the company secretary.

Risk management and internal control

Harmony's operations are subject to the provisions of numerous South African Acts of law and the regulations promulgated thereunder, the principal acts being the Minerals Act and the Mine Health and Safety Act. The provisions of these Acts and regulations ensure that extensive and well-managed risk control initiatives are an integral part of Harmony's operations. The Harmony board, through its Audit Committee, retains risk management control through the final review of key risk matters affecting Harmony, and is responsible for facilitating risk assessments to determine the material risks to which the company may be exposed and for evaluating the strategy for managing those risks.

The focus of risk management is on identifying, assessing, managing and monitoring all known forms of risk. Harmony endeavours to minimise operating risk by ensuring that the appropriate infrastructure, control systems and people are in place throughout its business units. Key policies and procedures employed in managing operating risk involve segregation of duties, transaction authorisation, monitoring and financial and managerial reporting. Financial risks are managed within predetermined procedures and constraints. Compliance is measured through regular reporting against these standards, internal audit checks and external audit verification. Risk control with regard to numerous potential loss exposures, such as the health and safety of Harmony's workers and third parties, the protection of assets, the prevention of business interruption losses, the safeguarding of the environment, and the minimisation of exposure to civil and criminal litigation, are integral aspects of Harmony's operations.

Internal controls comprise methods and procedures adopted by management to assist in achieving the objectives of safeguarding assets, preventing and detecting errors and fraud, ensuring the accuracy and completeness of accounting records and preparing reliable financial statements. The internal audit function

has been outsourced to an independent accounting firm and serves the board and management by performing independent evaluations of the adequacy and effectiveness of the company's controls, financial reporting mechanisms and records, information systems and operations.

The board of directors, operating through its Audit Committee, oversees the financial reporting process and is satisfied that the controls systems are adequate for this purpose.

Integrated sustainability

The role of the stakeholders in the sustainability of Harmony is recognised. In this regard, programmes and involvement in projects have been initiated addressing areas in which meaningful contributions can be made. Stakeholder relationships are strengthened through adherence to a formal code of ethics.

14.5 Significant contracts

Save for the merger agreement and agreements relating to the acquisitions and disposals of companies, businesses and properties set out in Annexure 9, Harmony has not entered into any contract, other than in the ordinary course of business, within the period of two years immediately preceding the date of this circular which is or may be material to Harmony. In addition, Harmony has not entered into any contract which contains provisions, in terms of which there are any obligations or entitlements, which are material to Harmony.

14.6 Acquisitions and disposals of property

Details of the acquisitions and disposals of companies, businesses and properties by Harmony over the past 3 years are reflected in Annexure 9.

15. DOCUMENTS AVAILABLE FOR INSPECTION

Copies of the following documents will be available for inspection during normal business hours at the registered office of Harmony and at the office of St James's Corporate Services Limited:

- a signed copy of this circular;
- the Memorandum of Association and the Articles;
- the merger agreement;
- the significant contracts relating to ARMgold referred to in paragraph 4.6;
- the written consents of advisers to Harmony to the publication of their names in this circular in the form and context in which they appear;
- copies of service agreements with directors;
- the Competent Person's Report;
- the audited annual reports of Harmony for the three financial years ended 30 June 2002; and
- report of PricewaterhouseCoopers Inc. on the *pro forma* financial information of Harmony.

Signed by Frank Abbott and Ferdi Dippenaar on 5 August 2003 on behalf of the directors.

Harmony Gold Mining Company Limited

Extracts from the Memorandum and Articles relating to the directors of Harmony

APPOINTMENT, QUALIFICATION, REMUNERATION OF DIRECTORS AND BORROWING POWERS OF THE COMPANY AS THEY MAY BE EXERCISED BY THE DIRECTORS

Extracts from the Articles of Association of Harmony:

1. Qualification of directors

"80. Directors shall not be required to hold any shares in the Company to qualify them for appointment as directors."

2. Remuneration of directors

"85. The directors shall be entitled to such remuneration as may be determined from time to time by the Company in general meeting or by a quorum of disinterested directors. In addition, the directors shall be entitled to all reasonable expenses in travelling to and from meetings of the directors."

"86. If any director be called upon to perform extra services or to make any special exertions in going or residing abroad, or otherwise, for any of the purposes of the Company, the Company in general meeting or a quorum of disinterested directors may determine the remuneration to be paid to any such director for such extra services or special exertions. Such remuneration may be so determined either by way of a salary or a fixed sum or a percentage of profits or otherwise and such remuneration may be either in addition to, or in substitution for any other remuneration determined under article 85. The Company may also refund to such director all reasonable expenses incurred by him while acting in the course of the business of the Company."

3. Disclosure of interests

"88.(a) Save as set out in sub-paragraph (d), a director shall not vote in respect of any contract or arrangement in which he is interested (and if he shall do so his vote shall not be counted) nor shall he be counted for the purpose of any resolution regarding the same, in the quorum present at the meeting, but this shall not apply to any of the following matters:

(i) Any arrangement for giving to him any security or indemnity in respect of money lent by him or obligation undertaken by him for the benefit of the Company.

(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 for which he himself has assumed responsibility in whole or in part under a guarantee or indemnity or by the deposit of a security.

(iii) Any contract by him to subscribe for or underwrite shares or debentures of the Company.

(iv) Any contract or arrangement with any other company in which he is interested in shares representing no more than one per cent of either any class of the equity share capital, or the voting rights of that company.

(v) Any such scheme or fund as is referred to in Article 146, which relates both to directors and to employees or a class of employees and does not accord to any director as such any privilege or advantage not generally accorded to the employees to which such scheme or fund relates.

(vi) Any contracts, transactions or dealings of any nature whatsoever between the Company and any other company:

(a) which is its subsidiary, where the director's interest in the contract, transaction or dealing is only by virtue of the other company being a subsidiary of the Company; or

(b) in which it is a shareholder or is otherwise interested, where the director's interest in the contract, transaction or dealing is only by virtue of the Company being a shareholder of or otherwise interested in the other company; or

(c) which is its holding company, where the director's interest in the contract, transaction or dealing is only by virtue of the other company being the Company's holding company; or

(d) which is a subsidiary of its holding company, where the director's interest in the contract, transaction or dealing is only by virtue of the other company being a subsidiary of the Company's holding company; or

(e) in which its holding company is a shareholder or is otherwise interested, where the director's interest in the contract, transaction or dealing is only by virtue of the Company's holding company being a shareholder or otherwise interested in the other company."

"88.(b) The provisions of this Article may by the Company in general meeting at any time be suspended or relaxed to any extent and either generally or in respect of any particular contract, arrangement or transaction and any particular contract, arrangement or transaction carried out in contravention of this Article may be ratified by the Company in general meeting. Notwithstanding the provisions of article 58, any decision by the Company in general meeting in terms of this article 88(b) shall be decided by a 75% (seventy five percent) majority of votes."

"88.(c) A director, notwithstanding his interest may be counted in the quorum present at any meeting whereat he or any other director is appointed to hold any office or place of profit under the Company or whereat the directors resolve to exercise any of the rights of the Company (whether by the exercise of voting rights or otherwise) to appoint or concur in the appointment of a director to hold any office or place of profit under any other company or whereat the terms of any such appointment as hereinbefore mentioned are considered or varied, and he may vote on any such matter other than in respect of his own appointment or the arrangement or variation of the terms thereof."

4. Borrowing powers

"124. Subject to articles 125 and 127 the directors may from time to time at their discretion raise or borrow or secure the payment of any sum or sums of money for the purposes of the Company as they see fit, and in particular may pass mortgage bonds or issue debentures or debenture stock of the Company whether unsecured or secured by all or any part of the property of the Company, whether present or future."

"125. Where the Company is a listed company and is not a subsidiary of a listed company, the directors shall so restrict the borrowing of the Company and exercise all voting and other rights or powers of control exercisable by the Company in relation to its subsidiary companies (as regards subsidiary companies in so far as by such exercise they can procure) and that the aggregate principal amount outstanding in respect of monies so raised, borrowed or secured by the Company and any of its subsidiary companies for the time being (hereinafter referred to as "the Group"), as the case may be, exclusive of inter-company borrowings, shall not except with the consent of the Company in general meeting, exceed R40 000 000 (forty million Rand) or the aggregate from time to time of the issued and paid-up capital of the Company, together with the aggregate of the amounts standing to the credit of all distributable and non-distributable reserves (including minority interests in subsidiary companies and provision for deferred taxation), any share premium accounts of the Company and its subsidiaries certified by the Company's auditors and as attached to or forming part of the last annual financial statements of the Company or of the Group, as the case may be, which shall have been drawn up to be laid before the Company in general meeting at the relevant time, whichever is the greater; provided that no such sanction shall be required to the borrowing of any monies intended to be applied and actually applied within 90 (ninety) days in the repayment (with or without any premium) of any monies then already borrowed and outstanding and notwithstanding that such new borrowing may result in the abovementioned limit being exceeded."

"126. For the purposes of article 125 "borrowings" shall:

(a) without limitation, include monetary guarantees executed by the Company or by any controlled company or subsidiary of the Company other than:

(i) guarantees in respect of the borrowing of moneys, where the amount of such borrowing is already included in the aggregate referred to in article 125;

(ii) guarantees of the obligations of any subsidiary where such obligations arise from acts which, if they had been performed by the Company as principal, would not constitute borrowings within the meaning of this Article;

provided that where the guarantees have been executed to secure bank overdraft or other facilities, of a variable nature, such guarantees shall only be deemed to be borrowings to the extent to which such overdraft or other facilities are used from time to time;

(b) not include any borrowing by the Company from any of its subsidiaries or by any of its subsidiaries from the Company or from any other of its subsidiaries."

"127. In the event that the Company is a subsidiary of a listed holding company, the total amount owing by the Company in respect of monies so raised, borrowed or secured shall not exceed the amount authorised by its listed holding company."

"128. No lender or person dealing with the Company shall be obliged to see or enquire whether the restrictions imposed by articles 125 and 127 are observed."

"129. Debentures, debenture stock, bonds and other instruments of debt may be issued at par or at a discount or at a premium, and with any special privileges as to redemption, surrender and drawings, provided that no special privileges as to allotment of shares or stock, attending and voting at general meetings, appointment of directors or otherwise shall be given save with the sanction of the Company in general meeting."

5. Appointment of directors and managing directors

"79. The directors shall have power at any time to appoint any eligible person as a director, either to fill a casual vacancy, or as an addition to the Board, but the total number of the directors shall not at any time exceed the maximum number fixed. Any director so appointed shall hold office only until the next following annual general meeting of the Company and then shall be eligible for election."

"110. The directors may from time to time appoint one or more of their body to any executive office in the Company, and may from time to time remove or dismiss the person or persons so appointed and appoint another person or persons in his or their place or places. Every such appointment shall be made by a quorum of disinterested directors. No director shall be appointed to any such office for a period in excess of 5 (five) years at any one time."

"111. If a director is appointed to any executive office in the Company the contract under which he is appointed may provide that he shall not for a period of 5 (five) years or for the period during which he continues to hold that office, whichever period is the shorter, be subject to retirement by rotation. In such case he shall not be taken into account in determining the retirement of directors by rotation. Notwithstanding the foregoing, where the Company is a listed company the number of directors who may be appointed to an executive office on the condition that they shall not be subject to retirement by rotation shall not equal or exceed one-half of the total number of the directors at the time of such appointment."

"112. The remuneration of executive directors appointed in terms of article 110 shall from time to time be fixed by a quorum of disinterested directors or by the Company in general meeting."

"113. The directors may from time to time entrust to and confer upon a managing director or other executive director for the time being such of the powers exercisable under these Articles by the directors as they may deem fit, and 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."

"114. A person appointed to an executive office in terms of article 110 shall be subject to the like provisions relating to vacation of office as the other directors of the Company, and if he ceases to hold the office of director from any cause he shall ipso facto cease to hold such executive office."

Report of the independent reporting accountants on the *pro forma* financial effects of the merger to the shareholders of Harmony

"The Directors
Harmony Gold Mining Company Limited
PO Box 2
Randfontein
1760

25 July 2003

Report of the independent reporting accountants on the unaudited pro forma financial information relating to the proposed merger with ARMgold

INTRODUCTION

Harmony Gold Mining Company Limited ("Harmony") has reached agreement for a merger with African Rainbow Minerals Gold Limited ("ARMgold"). It is intended that the merger will be implemented by means of a scheme of arrangement to be proposed by Harmony between ARMgold and its shareholders in terms of section 311 of the Companies Act.

We report on the unaudited *pro forma* financial effects and balance sheet ("the *pro forma* financial information") set out in paragraph 6 and Annexure 3, respectively, of the circular to Harmony shareholders to be dated on or about 7 August 2003 ("the Circular").

The unaudited *pro forma* financial information has been prepared for illustrative purposes only to provide information on how the merger would have impacted on the financial position and results of Harmony. Because of their nature, the unaudited *pro forma* financial information may not give a fair reflection of Harmony's financial position after the merger, nor the effect on future earnings.

At your request, and for purposes of the merger, we present our report on the unaudited *pro forma* financial information of Harmony in compliance with the Listings Requirements of the JSE Securities Exchange South Africa ("JSE").

RESPONSIBILITIES

The directors of Harmony are solely responsible for the preparation of the unaudited *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 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 the published quarterly results of Harmony for the three quarters ended 31 March 2003, 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 Harmony.

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 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 in terms of section 8.29 of the JSE Listings Requirements.

Yours faithfully

PricewaterhouseCoopers Inc.
Chartered Accountants (SA)
Registered Accountants and Auditors

Sunninghill"

Pro forma financial information of Harmony

The unaudited *pro forma* balance sheet of Harmony has been prepared for illustrative purposes only to provide information on how the merger would have impacted on the financial position of Harmony. Because of its nature, the unaudited *pro forma* balance sheet may not give a fair reflection of Harmony's financial position after the merger

The report thereon of PricewaterhouseCoopers Inc. is set out in Annexure 2 of this circular.

	Harmony before merger R'million Note 1	ARMgold before merger R'million Note 2	Dividend adjustment R'million Note 3	Specific issue of shares in consideration of merger R'million Note 4	Harmony after merger R'million
BALANCE SHEET					
ASSETS					
Non-current assets	10 361	1 571	–	4 819	16 751
Tangible assets	8 986	1 571	–	3 371	13 928
Intangible assets	–	–	–	1 448	1 448
Investments	1 375	–	–	–	1 375
Current assets	3 899	2 575	(471)	–	6 003
Inventories	449	–	–	–	449
Trade and other receivables	322	178	–	–	500
Cash and cash equivalents	3 128	2 397	(471)	–	5 054
Total assets	14 260	4 146	(471)	4 819	22 754
EQUITY AND LIABILITIES					
Ordinary shareholders' interest	8 932	2 249	(471)	3 808	14 518
Outside shareholders' interest	–				–
Total shareholders' interest	8 932	2 249	(471)	3 808	14 518
Long-term borrowings	2 015	529	–	–	2 544
Deferred taxation	851		–	1 011	1 862
Deferred financial liabilities	491				491
Long-term provisions	686	248	–	–	934
Current liabilities	1 285	1 120	–	–	2 405
Trade and other payables	1 008	1 120	–	–	2 128
Taxation	272	–	–	–	272
Shareholders for dividends	5	–	–	–	5
Total equity and liabilities	14 260	4 146	(471)	4 819	22 754
Shares in issue ('000)	184 163	–	–	–	247 830
Net asset value per shares (cents)	4 850	–	–	–	5 858
Net tangible asset value per share (cents)	4 850	–	–	–	5 274

Notes:

1. Extracted from Harmony's published quarterly report for the period ended 31 March 2003.
2. Extracted from ARMgold's published quarterly report for the period ended 31 March 2003.

3. The net asset value per share has been adjusted to take account of a special dividend of 500 cents per ARMgold share before the merger. This dividend is a condition of the merger and will be paid prior to the completion date.

4. The purchase price was calculated as 95 500 000 ARMgold shares at R58,50 per share on the date of the transaction (based on a Harmony share price of R87,75 at close of business on 22 July 2003, being the most recent share price). The difference between the purchase price of R5 587 million and the net asset value at 31 March 2003 of R2 249 million, as well as the decrease in the net asset value due to the special dividend payment, is R3 808 million. After the deferred tax gross up of R1 011 million the total fair value adjustment of R4 819 million was allocated as follows:
   - R3 371 million to tangible assets; and
   - R1 448 million to intangible assets.

Historical financial information of Harmony

The following information was extracted from the audited company financial statements for the years to 30 June 2002, 30 June 2001, 30 June 2000 and the unaudited quarterly for 9 months to March 2003.

Harmony income statement

R'million	Unaudited 9 months ended 31 March 2003	Audited Year ended 30 June 2002	Audited Year ended 30 June 2001	Audited Year ended 30 June 2000
Revenue	**7 152**	**7 806**	**4 495**	**2 996**
Cash operating costs	(4 962)	(5 215)	(3 822)	(2 535)
Cash operating profit	**2 190**	**2 591**	**673**	**461**
Income from associates	24	–	–	–
Interest and dividends	–	138	45	63
Other income – net	141	94	81	54
Employment termination and restructuring costs	(35)	(83)	(36)	(1)
Corporate, administration and other expenses	(90)	(78)	(19)	(12)
Exploration expenditure	(80)	(61)	(27)	(16)
Marketing and benefication development	–	(89)	(38)	(12)
Profit/(Loss) of sale of listed investments	469	46	(11)	16
Interest paid	(182)	(230)	(114)	(20)
Cash profit	**2 437**	**2 328**	**554**	**533**
Depreciation and amortisation	(403)	(308)	(237)	(136)
(Provision)/Reversal of provision for rehabilitation costs	(34)	(20)	52	2
Gain/(Loss) on financial instruments	210	48	58	54
Gain on listed investments	(523)	595	–	(9)
Foreign exchange losses	(49)	–	–	–
Impairment of assets	–	(362)	(215)	–
(Provision)/Reversal of provision for former employees' post-retirement benefits	–	(2)	17	25
Profit before tax	**1 638**	**2 279**	**229**	**469**
Tax	(520)	(583)	(111)	(86)
Net profit before minority interests	**1 118**	**1 696**	**118**	**383**
Minority interests	–	(16)	(3)	(19)
Net profit	**1 118**	**1 680**	**115**	**364**
Basic earnings per share (cents)		1 094	112	435
Fully diluted earnings per share (cents)		1 017	108	425
Basic headline earnings per share (cents)		1 316	254	382
Fully diluted headline earnings per share (cents)		1 223	246	373
Interim dividends per share (cents)		75	50	50
Proposed final/final dividends per share (cents)		425	70	70
Total dividends per share (cents)		500	120	120

Harmony balance sheet

	Unaudited at 31 March 2003 R'million	Audited at 30 June 2002 R'million	Audited at 30 June 2001 R'million	Audited at 30 June 2000 R'million
ASSETS				
Non-current assets	**10 361**	**11 502**	**5 996**	**4 259**
Property, plant and equipment	8 986	9 433	5 424	3 738
Investments	1 375	1 778	572	425
Investment in associate	–	291	–	–
Investments in subsidiaries	–	–	–	–
Other assets	–	–	–	47
Restricted cash	–	–	–	49
Current assets	**3 128**	**2 574**	**2 258**	**932**
Inventories	–	448	300	189
Receivables	–	685	799	215
Cash and cash equivalents	3 128	1 441	1 159	528
Total assets	**13 489**	**14 076**	**8 254**	**5 191**
EQUITY AND LIABILITIES				
Ordinary shareholders' interest	**8 932**	**7 963**	**4 594**	**2 875**
Share capital	–	85	72	49
Share premium	–	5 462	3 727	2 021
Options issued	–	–	69	69
Non-distributable reserves	–	88	54	(16)
Retained earnings	–	2 328	672	752
Non-current liabilities	**4 043**	**4 232**	**2 420**	**1 299**
Long-term borrowings	–	1 771	1 212	316
Preference shares	–	–	6	–
Deferred taxation	–	770	368	330
Deferred financial liability	–	971	397	272
Provision for environmental rehabilitation	–	711	427	356
Provision for post-retirement benefits	–	9	8	25
Minority interests	–	–	2	–
Current liabilities	**514**	**1 881**	**1 240**	**1 017**
Accounts payable and accrued liabilities	–	1 648	1 083	926
Income and mining taxes	–	228	50	17
Shareholders for dividends	–	5	107	74
Total equity and liabilities	**13 489**	**14 076**	**8 254**	**5 191**

Harmony cash flow statement

R'million	Unaudited 9 months ended 31 March 2003	Audited year ended 30 June 2002	Audited year ended 30 June 2001	Audited year ended 30 June 2000
Cash flow from operations				
Cash generated from operations		2 436	473	298
Interest and dividends received		138	45	19
Interest paid		(230)	(114)	(20)
Income and mining tax paid		(88)	(30)	(8)
Net cash inflow from operating activities	**1 687**	**2 256**	**374**	**289**
Cash flows from investing activities				
Net increase in amounts invested in environmental trusts		(61)	(6)	(5)
Decrease in short-term investments		–	–	65
Cash cost to close Randfontein Hedges		(250)	–	–
Restricted cash		–	50	(50)
Cash held by subsidiaries on acquisition		154	–	64
Cash paid for Randfontein		–	–	(349)
Cash paid for West Rand Cons and Kalgold		–	–	–
Cash paid for New Hampton mines		–	(229)	(6)
Cash paid for Elandskraal mines		(210)	(1 053)	–
Cash paid for Free Gold Mines		(900)	–	–
Cash paid for Hill 50 mines		(1 419)	–	–
Investment in associate acquired		(292)	–	–
Investment in Highland Gold acquired		(188)	–	–
Loan repaid by Khumo Bathong		90	–	–
Proceeds on disposal of listed investments		158	–	–
Increase in other non-current investments		(156)	(64)	24
Proceeds on disposal of mining assets		34	87	70
Additions to property plant and equipment		(733)	(422)	(158)
Foreign currency translation adjustments		105	–	–
Net cash utilised in investing activities	**(228)**	**(3 668)**	**(1 532)**	**(345)**
Cash flow from financing activities				
Long term borrowings raised – net		335	468	353
Preference shares issued		–	6	–
Ordinary shares issued net of expenses		1 580	1 435	37
Dividends paid		(221)	(120)	(81)
Net cash generated by financing activities	**228**	**1 694**	**1 789**	**309**
Net increase in cash and cash equivalents	**1 687**	**282**	**631**	**253**
Cash and equivalents at beginning of period	1 441	1 159	528	275
Cash and equivalents at end of period	**3 128**	**1 441**	**1 159**	**528**

Harmony statement of changes in equity

	Number of ordinary shares issued	Number of options issued	Share capital R'million	Share premium R'million	Harmony listed options issued R'million	Retained earnings R'million	Non-distributable reserves R'million	Total R'million
Harmony								
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 marked-to-market Due 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 reserve	–	–	–	–	–	–	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**
Currency translation reserve								(489)
Net earnings								1 118
Issue of share capital								1 305
Dividend paid								(965)
Balance – 30 March 2003								8 932

1. Accounting policies

Basis of preparation

The annual financial statements are prepared on the historical cost basis except for certain financial instruments, which are carried at fair value. The Group's accounting policies as set out below have been consistently applied, and comply with the accounting standards issued by the International Accounting 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 Accounting 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 long lived assets 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.

Consolidation

Consolidated entities

The consolidated financial information includes the financial statements of Harmony, its subsidiaries, its proportionate interest in joint ventures and its interests in associates. A company in which Harmony has, directly or indirectly, through subsidiary undertakings, a controlling interest is classified as a subsidiary undertaking. The results of any subsidiary or joint venture acquired or disposed of during the year are consolidated from the date power of control was acquired and up to the date power of control ceased. Any excess or deficit of the purchase price, when compared to the net book value of the subsidiary acquired, is attributed to mineral property interests and amortised in terms of Harmony's accounting policies unless a permanent diminution in the value of the assets occurs, in which case it is written-off. Inter-company profits, transactions and balances have been eliminated.

Investments in associates

An associate is an entity, other than a subsidiary, in which the Group has a material long-term interest and in respect of which Harmony exercises significant influence over operational and financial policies, normally owning between 20% and 50% of the voting equity.

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's share of the associates' profit or loss for the period. Harmony'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.

Investments in joint ventures

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

Foreign currencies

Foreign entities

For self sustaining foreign entities, assets and liabilities are translated using the closing rates at year-end, and income statements are translated at average rates. Differences arising on translation are taken directly to shareholders' equity, until the foreign entity is sold or 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 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 Harmony. 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 net income.

Financial instruments

Financial instruments are initially measured at cost. 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 revaluation and other reserves in 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 investment, are transferred to retained earnings.

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.

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. Bullion on hand and gold in process represents production on hand after the smelting process in the case of deep level mines and in the case of open pit operations placement on heap leach pads. It is valued using the weighted average cost method. Costs included are average production costs at the relevant stage of production and relevant administration costs. Net realisable value is the estimated selling price in the ordinary course of business.

Receivables

Accounts receivable are stated at the gross invoice value, adjusted for payments received and an allowance for doubtful debt, 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

Derivatives 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, Harmony designates it for accounting purposes as either:

– a hedge of the fair value of a recognised asset or liability (fair value hedge);
– a hedge of a forecasted transaction (cash flow hedge);
– a hedge of a net investment in a foreign entity; or
– a derivative to be marked-to-market.

Certain derivative transactions, however, while providing effective economic hedges under Harmony'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 recorded directly in equity. Amounts deferred in equity are included in the income statement in the same periods during which the hedged firm commitment of forecasted transaction affects net profit or loss.

Hedges of net investments 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 International Accounting Standards are deferred until settlement, under these contracts Harmony must physically deliver a specified quantity of gold at a future date at a specified price and to the contracted counter party. Changes in the fair value of derivatives which are not designated as hedges or do not qualify for hedge accounting are recognised in the income statement.

Harmony formally documents all relationships between hedging instruments and hedged items, as well as its risk management objectives and strategy for undertaking various hedge transactions. This process includes linking derivatives as hedges to specific assets and liabilities or to specific firm commitments or forecasted transactions. Harmony also formally assesses, both at the hedge inception and on an ongoing basis, whether the derivatives that are used in hedging transactions are highly effective in offsetting changes in fair values or cash flows of hedged items.

Borrowings

Borrowings are recognised at amortised cost, comprising original debt less principal payments and amortisations.

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 is 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 recorded at cost. 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 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

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. Other non-mining fixed assets are depreciated by straight-line over estimated useful lives of two to five years.

Impairment

The recoverability of the carrying value of the long-term assets of Harmony, which include development costs are annually compared to the net book value 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 Harmony'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 assets' recoverable amount. The revised carrying amounts are amortised in line with Harmony's 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 amortisation, 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 Harmony'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 Harmony'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 Harmony'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 Harmony'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 Harmony 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

Harmony 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 and tax losses 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.

Pension plans and other employee benefits

Pension plans

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

Medical plans

Harmony provides medical cover to current employees and certain retirees through one fund.

The medical accounting costs for the defined benefit plan are assessed using the projected unit credit method. The health care 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. No contributions are made for employees retiring after 30 June 1996. A liability for retirees and their dependents prior to this date is accrued in full based on regular actuarial valuations.

Equity compensation benefits

Harmony 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 hedging transactions 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 Harmony.

Dividend income

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

Dividends declared

Dividends paid are recognised when declared by the board of directors. Dividends are payable in South African Rands. 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.

Comparatives

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

2. CASH OPERATING COSTS

R'million	2002	2001
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	2 458	2 388
Stores and materials	1 101	912
Water and electricity	475	457
Changes in inventory	(23)	(68)
Other	1 204	133
	5 215	3 822

3. INCOME BEFORE TAX

R'million	2002	2001
The following have been included in income before tax:		
Professional fees	32	18
Auditors' remuneration	5	2
Fees – current year	2	1
Fees – other services	3	1

4. OTHER INCOME – NET

R'million	2002	2001
Profit on sale of property, plant and equipment	21	80
Foreign exchange gains	99	9
Other (expenditure)/income – net	(26)	(8)
	94	81

5. EMPLOYMENT TERMINATION AND RESTRUCTURING COSTS

R'million	2002	2001
Free State	16	–
Randfontein and Elandskraal	36	34
Evander	2	1
Kalgold	–	1
Australian operations	32	–
Bissett mine	(3)	–
	83	36

The closure of Virginia 2 shaft and Harmony 4 in the Free State resulted in certain excess labour, which could not be accommodated on the other shafts, becoming surplus and made redundant. Elandskraal continued the process of restructuring, which was started in the previous year, which lead 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 lead to certain restructuring and employment termination costs being incurred. The Bissett mine was placed on care and maintenance at 30 June 2001, due to the mining operations being uneconomic at gold prices at the time. As restructuring has been completed, over-provision on restructuring have been reversed.

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

6. PROFIT/(LOSS) ON SALE OF LISTED INVESTMENTS

R'million	2002	2001
Profit/(Loss) on sale of listed investments	46	(11)

As part of the initial public offering of ArmGold, Harmony subscribed to 2 860 000 shares at R38,67 per share. These shares were subsequently disposed of.

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.

7. GAIN ON LISTED INVESTMENTS

R'million	2002	2001
Gain on mark-to-market of listed investments	595	–

The gain on the mark-to-market of listed investments is due to the reclassification of Harmony's investment in Aurion Gold to a trading security from a strategic security. This reflected a change in the Group's intentions regarding the Aurion Gold investment from a strategic, long term investment to a non-core investment. As a result of the reclassification, Harmony recorded a gain in 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. Subsequent to year-end these shares were disposed of.

8. IMPAIRMENT/(REVERSAL OF IMPAIRMENT) OF ASSETS

R'million	2002	2001
Free State operations	63	(43)
Randfontein operations	12	(12)
Evander operations	–	(11)
Bissett operations	–	(149)
New Hampton operations	(437)	–
	(362)	(215)

The current higher Rand gold price has resulted in significantly more economically mineable reserves being available at some of the older 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.

Harmony completed the redevelopment programme at New Hampton's Big Bell underground mine during the year. Production have indicated however that the grade is significantly less than expected. Therefore it has 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 has 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 Free State were closed and the remaining net book value written -off during the prior 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 reflected the excess of 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-generated unit level (the shaft) and represents the value in use. Discount rates of 11,5% for the South African operations and 10% for the Australian operations were used in the calculations of the recoverable amount.

9. TAXATION

R'million	2002	2001
Current income and mining taxes	(265)	(63)
Deferred income and mining taxes	(318)	(48)
Total income and mining taxation (expense)/benefit	(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. Tax on 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 Company's income tax provision to differ from the estimated effective mining rate of 29%ˆ (2001: 20.5%) were:

R'million	2002	2001
Tax on net income at estimated mining statutory rate	(659)	(26)
Valuation allowance raised against deferred tax assets	53	(75)
Non-taxable income/additional deductions	40	(4)
Difference between non-mining tax rate and estimated mining statutory rate on non-mining income	(17)	(6)
Income and mining tax (expense)/benefit	(583)	(111)

Deferred income and mining tax liabilities and assets on the balance sheet as of 30 June 2002 and 30 June 2001, relate to the following:

Deferred income and mining tax liabilities		
Depreciation and amortisation	1 257	653
Product inventory not taxed	33	35
Other	198	30
Gross deferred income and mining tax liability	1 488	718
Net deferred income and mining tax assets	(718)	(350)
Deferred financial liability	(238)	(55)
Unredeemed capital expenditure	(416)	(250)
Provisions, including rehabilitation accruals	(34)	(98)
Tax losses	(30)	(15)
Valuation allowance	–	68
	770	368
The Group's net deferrred tax liability is made up as follows:		
Deferred tax assets	(243)	–
Deferred tax liabilities	1 013	368
	770	368

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

10. MINORITY INTERESTS

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 April 24, 2001 to Khuma Bathong. This 10% participation interest in Elandskraal had been disposed of in the prior year, and minority interest had subsequently been separately accounted for.

11. EARNINGS PER SHARE

	2002 R'million	2001 R'million
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	1 680	115
Weighted average number of ordinary shares in issue	153 509 862	102 997 239
Basic earnings per share (cents)	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	153 509 862	102 997 239
Adjustments for share options	7 346 070	3 348 123
Adjustments for warrants in issue	4 361 156	–
Weighted average number of ordinary shares for diluted earnings per share	165 217 088	106 345 362
Fully diluted earnings per share (cents)	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	1 680	115
Profit on sale of property, plant and equipment	(21)	(80)
Net impairment of assets	362	215
Other	–	11
Headline earnings	2 021	261
Basic headline earnings per share (cents)	1 316	254
Fully diluted headline earnings per share (cents)	1 223	246

12. DIVIDENDS DECLARED

	2002 R'million	2001 R'million
As a result of adopting IAS 10 (revised), dividends now relate to those declared in the current financial year. The final dividend proposed for this financial year was only approved after the balance sheet date.		
Dividends declared		
Interim dividend no. 74 of 75 cents per share (2001: 50 cents)	119	51
Final dividend (2001: 70 cents per share)	–	101
	119	152
Under the previous accounting policy, the dividends proposed would have been as follows:		
Dividends proposed		
Final dividend no. 75 proposed of 425 cents per share (2001: Nil)	719	–
Dividend cover based on total declared and proposed (times)		
Based on attributable income	2,0	0,8
Based on headline earnings	2,4	1,7

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

13. PROPERTY, PLANT, AND EQUIPMENT

	2002 R'million	2001 R'million
Mining properties, mine development costs and mine plant facilities	9 285	5 273
Other non-mining assets	148	151
	9 433	5 424

Mining properties, mine development costs and mine plant facilities

	2002 R'million	2001 R'million
Cost at beginning of year	8 771	6 614
Acquired through the purchase of subsidiaries	3 843	1 751
Additions	735	411
Disposals	(22)	(5)
Foreign currency translation adjustments	1 060	–
	14 387	8 771
Accumulated depreciation and amortisation at beginning of year	3 498	2 972
Acquired through the purchase of subsidiaries	515	93
Impairment of fixed assets	355	202
Disposals	(8)	(2)
Foreign currency translation adjustments	447	
Charge	295	233
	5 102	3 498
Net book value	9 285	5 273

Other non-mining assets

	2002 R'million	2001 R'million
Cost at beginning of year	189	177
Additions	6	12
Disposals	(3)	–
Foreign currency translation adjustments	1	–
	193	189
Accumulated depreciation and amortisation at beginning of year	38	33
Disposals	(3)	–
Foreign currency translation adjustments	2	–
Charge for the year	8	5
	45	38
Net book value	148	151
Total net book value	9 433	5 424

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

14. NON-CURRENT INVESTMENTS

	2002 R'million	2001 R'million
Listed investments		
Investments in listed shares (a)	988	320
Other investments		
Investment in Highland Gold Limited (b)	188	–
Unlisted investments and loans (c)	26	23
Amounts contributed to environmental trust funds (d)	487	193
Loan to Harmony Share Trust (e)	89	36
	790	252
Total non-current investments	1 778	572

(a) Listed investments consist 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. 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 (2001: R320 million). Subsequent to year end this investment was disposed of to Placer Dome (refer to note 34). Dividends received during the year from Aurion Gold amounted to R11 million.

(b) The company has 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 of a producing gold mine together with projects and potential projects at various stages of development.

(c) Unlisted investments comprise of various industry related investments and loans, which have been valued at book value by the directors. The directors of the Company perform independent valuations of the investments on an annual basis to ensure that no permanent diminution in the value of the investments has occurred. Dividends received from these investments amounted to R2 million in the financial year.

(d) The environmental trust funds are irrevocable trusts under the Group's control. The monies in the trusts are invested primarily in interest bearing short-term and other investments and opproximate their fair value.

(e) A loan of R89 million was made to the Harmony Share Trust to acquire 2 716 600 shares for employees participating in the Harmony Share Option Scheme. Refer to note 29 for details on the share option scheme.

15. INVESTMENT IN ASSOCIATE AND SUBSIDIARIES

	2002 R'million	2001 R'million
Listed investment in associate		
Shares, at cost	292	–
Share of results before tax	(14)	–
Costs capitalised	14	–
Net share of results of associate	–	–
Exchange differences	(1)	–
Closing carrying amount	291	–

Valued by the directors at book value.

As at 30 June 2002 the Group held 294 222 437 shares in Bendigo Mining NL, a company incorporated in Australia. The investment represent a 31,8% interest in a single project gold company, listed on the Australian Stock Exchange. The company is developing into 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. All pre-production costs are capitalised. The market value of this investment as determined by closing prices on the Australian Stock Exchange at the close of business and closing exchange rates amounted to 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.

The Group's interest of 31,8% in the summarised balance sheet of the associate is as follows:

	2002 R'million	2001 R'million
Capital and reserves	79	–
Non-current liabilities	2	–
	81	–
Fixed assets	6	–
Net current assets	75	–
	81	–

16. INTEREST IN JOINT VENTURE

The Group has a 50% interest in a joint venture with ARMgold Limited, the ARMgold/Harmony Freegold Joint Venture Company (Pty) 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 approximately R2 831 million and took operational control of these assets on 3 January 2002. The following amounts represent the 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:

	2002 R'million	2001 R'million
Property, plant and equipment	1 079	–
Investments	229	–
Current assets	571	–
	1 879	–
Non-current interest-bearing borrowings	517	–
Non-current intergroup borrowings	907	–
Deferred income and mining taxes	(213)	–
Provision for environmental rehabilitation	200	–
Provision for post-retirement benefits	1	–
Current liabilities	181	–
	1 593	–
Net assets	286	–
Profit before taxation	422	–
Taxation	(136)	–
Profit after taxation	286	–
Operating cash flows	525	–
Investing cash flows	(922)	–
Financing cash flows	900	–
Total cash flows	503	–
Proportionate interest in joint venture commitments	14	–

There are no contingencies relating to the Group's interest in the joint venture. The number of employees in the joint venture was 13 734 at year-end.

Freegold has announced that it has reached an agreement in principal with Goldfields Limited to acquire the assets of St Helena gold mine for a gross sale consideration of R120 million. In addition the joint venture company will pay a royalty of 1% of revenue to Goldfields from the effective date for a period of 48 months. The agreement is subject to the fulfilment of certain conditions precedent. Thereafter implementation of the agreement will be subject to the obtaining of all necessary regulatory consents and approvals by 31 October 2002. It is expected that this deal will be concluded after year-end.

17. INVENTORIES

	2002 R'million	2001 R'million
Gold in-process	286	195
Stores and materials at average cost	162	105
	448	300

18. RECEIVABLES

	2002 R'million	2001 R'million
Value-added tax	92	103
Trade receivables	103	70
Amount owing relating to share issue	–	292
Interest and other	490	334
	685	799

19. SHARE CAPITAL AND SHARE PREMIUM

	2002 R'million	2001 R'million
Share capital		
Authorised		
250 000 000 (2001: 250 000 000) ordinary shares of 50 cents each		
10 958 904 (2001: 10 958 904) redeemable convertible preference shares of 50 cents each		
Issued		
169 247 349 (2001: 144 553 291) ordinary shares of 50 cents each		
Ordinary shares of 50 cents each at 1 July 2001	72	49
Issued in terms of the share option scheme	2	2
Issued for cash to repay debt	4	21
Conversion of preference shares	6	–
Warrants converted	1	–
Balance at 30 June 2002	85	72
Share premium	5 462	3 727

The unissued shares are under the control of the directors until the forthcoming Annual General Meeting. The directors report and note 29 set out details in respect of the share option scheme.

The Company 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 16 November 2001. The general authority is subject to the Listings Requirements of the JSE and the Companies Act of South Africa, as amended.

20. HARMONY LISTED OPTIONS AND WARRANTS

	2002 R'million	2001 R'million
For the acquisition of Vermeulenskraal Noord, 1 125 000 warrants were issued at a fair value of South African Rand 10 per warrant on 3 December 1996	–	11
For the acquisition of Lydex, 6 418 855 warrants were issued at a fair value of South African 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 South African R5,70 per warrant on 6 June 1998	–	0
	–	69

The options were exercisable at a price of South African R60,00, at which time they could have been converted into ordinary shares of the Company, on or before July 31, 2001. None of the options were exercised and they lapsed.

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 will entitle its holder to purchase, on any business day on or before 28 June 2003, one ordinary share at South African R43,00. As at 30 June 2002, 1 013 554 options were exercised, leaving a balance of 8 013 946 options still to be exercised. These warrants are traded on the JSE.

21. NON-DISTRIBUTABLE RESERVES

	2002 R'million	2001 R'million
Foreign exchange translation reserve	64	(19)
Mark-to-market of listed investments	–	86
Mark-to-market of financial instruments	47	(18)
Other	(23)	4
	88	54

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

The mark to market of listed investments consisted of listed shares in AurionGold held by the Company as a strategic interest. Subsequently this investment was reclassified as a trading security, from an strategic investment, to reflect a change in the Company'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. Subsequent to year-end this interest was sold as described in note 34.

The mark-to-market of financial instruments relate to the currency hedge taken out in Harmony and to the movement in the derivative instruments of Randfontein which qualified for hedge accounting, in the prior year. Refer to note 30 for detail on financial instruments.

22. BORROWINGS

Long-term borrowings

	2002 R'million	2001 R'million
Unsecured		
Senior unsecured fixed rate bonds (a)	1 200	1 200
Fair value adjustment	(21)	9
Less: Amortised discount and bond issue costs	(20)	(25)
Total unsecured long-term borrowings	1 159	1 184
Secured		
BAE Systems Plc (b)	37	28
BOE loan (c)	500	–
Less: Short term portion	(125)	–
	375	–
Anglo Gold (d)	516	–
Less: Short-term portion	(316)	–
	200	–
Total secured long-term borrowings	612	28
Total long-term borrowings	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 Rand 1 200 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 indebtness 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 for amortisation of the bond issue costs.

(b) The loan from BAE Systems Plc is a US dollar denominated term loan of 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 loans made by Harmony to the Free Gold 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 Lydex. The loan is repayable in full on 23 April 2006 by way of eight semi-annual capital installments 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 a agreement with Anglogold Limited to purchase its Free Gold assets for R2 832 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 is payable five business days before Anglogold is 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 2002 was R516 million, which was proportionately consolidated.

Other borrowings

The level of the Company's borrowing powers, as determined by its Articles of Association, is such that, taking into account the obligations as at 30 June 2002, the Company will have unrestricted access to loan financing for its reasonably foreseeable requirements. At year end, total borrowings amounted to R2 212 million.

23. PREFERENCE SHARES

Harmony entered into an agreement with Simane Security Investments (Pty) Limited ("Simane"), a South African empowerment group, and the Industrial Development Corporation of South Africa Limited ("IDC") on behalf of Simane, pursuant to which, subject to the fulfilment of certain specified conditions, Simane and the IDC subscribed for, respectively, 222 222 Harmony ordinary shares and 10 736 682 Harmony ordinary shares at R36,00 per share.

Under the agreement, the IDC also subscribed for 10 958 904 redeemable convertible preference shares at a price equal to their par value of Rand 0,50 each. The preference shares could be converted into ordinary Harmony shares for a period of 5 years from their issue at the payment of an additional R41,50 per preference share. During January and February 2002, all of the preference shares were converted into ordinary shares, leaving Simane with a stake of 6,4% in the Company.

24. DEFERRED FINANCIAL LIABILITY/(ASSET)

	2002 R'million	2001 R'million
Mark-to-market of speculative financial instruments at year-end	84	390
Amount owing on close out of derivatives	–	22
Mark-to-market of hedging financial instruments at year-end	887	(15)
	971	397

The Randfontein hedge book was closed during the year at a net cost of R135 million after tax. The balance currently provided relates to the Hill 50 hedge book, acquired with the acquisition of Hill 50, as well as the remaining portion of the New Hampton hedge book. These hedge books have been restructured as normal sales. The financial liability will be reflected in the income statement as gold is delivered into the contracts. Refer to note 30 for more detail on the financial instruments outstanding.

25. PROVISION FOR ENVIRONMENTAL REHABILITATION

	2002 R'million	2001 R'million
Provision raised for future rehabilitation		
Opening balance	427	356
Acquisition of subsidiaries	264	123
Charge to income statement	20	(52)
Closing balance	711	427

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

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

	2002 R'million	2001 R'million
Opening balance	193	124
Transferred from other trust funds	222	55
Interest accrued	23	13
Contributions made	50	3
Reimbursement of costs incurred	(1)	(2)
Closing balance	487	193
Future net obligations	598	462

The 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.

26. PROVISION FOR POST-RETIREMENT BENEFITS

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 current year.

	2002 R'million	2001 R'million
The amounts recognised in the balance sheet are as follows:		
Present value of unfunded obligation	9	8
The amounts recognised in the income statement are as follows:		
Interest cost	2	3
Additional liability raised – Elandskraal	1	–
Benefits paid	3	–
Net actuarial gains	(5)	(20)
	1	(17)
The movement in the liability recognised in the balance sheet is as follows:		
At beginning of year	8	25
Total expenses as above	1	(17)
At end of year	9	8
The principal actuarial assumptions used for accounting purposes were:		
Discount rate	12%	–
Assumed medical subsidy inflation	0%– 7%	–

27. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

	2002 R'million	2001 R'million
Trade payables	263	220
Short-term portion of long-term borrowings	441	–
Short-term borrowings	36	78
Payroll and leave liabilities	408	253
Other (including accrued liabilities)	500	532
	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.

28. EMPLOYEE BENEFITS

	2002 R'million	2001 R'million
Number of permanent employees:		
Harmony Free State	12 644	14 671
Evander	7 384	6 909
Kalgold	222	229
Randfontein	7 455	9 700
Elandskraal	7 559	7 200
Australian operations	309	169
Bissett	6	208
Exploration	20	13
	35 599	39 099
Free Gold Joint venture (50%)	6 867	–
Total	42 466	39 099
Aggregate earnings:		
The aggregate earnings of employees including directors were:		
Salaries and wages and other benefits	1 780	1 667
Retirement benefit costs	191	123
Medical aid contributions	40	31
	2 011	1 821

29. EMPLOYEE BENEFIT PLANS

PENSION AND PROVIDENT FUNDS: The Group contributes to several pension and provident funds governed by the Pension Funds Act, 1946, for the employees of its South African subsidiaries. The pension funds are multi-employer industry plans. The 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) funds 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 8% of gross salary and wages for the 2002 year.

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

POST-RETIREMENT BENEFITS OTHER THAN PENSIONS: Skilled workers in South Africa participate in the Minemed medical scheme, as well as other medical schemes. The Group contributes to these schemes on behalf of current employees and retired employees who retired prior to 31 December 1996 (Minemed scheme). The Group's contributions to these schemes on behalf of retired and current employees amounted to R40 million and R31 million for 2002 and 2001, respectively.

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 current 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 SA "a mf" tables and a medical inflation rate of 0% to 7%.

Randfontein had a liability to certain retirees and their dependants who retired prior to 30 September 1991 in terms of the JCI medical scheme. During the June 2001 year an agreement was reached with these retirees whereby they were transferred to the Minemed medical scheme and the provision was therefore reversed in June 2001.

SHARE OPTION SCHEME: The Company 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 the Company'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, 5 968 200 shares have been offered to participants leaving a balance of 2 031 800. In addition a total of 3 108 800 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 the Company 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 at 30 June 2000	6 899 000	–
Share options granted during year	1 728 400	–
Share options exercised during year	(2 835 700)	20,89
Balance at 30 June 2001	5 791 700	–
Share options granted during year	5 968 200	–
Share options exercised during year	(2 682 900)	26,88
Balance at 30 June 2002	9 077 000	–

The number of shares held by the Harmony Share Trust at year end amounted to 2 185 200 (2001: 1 158 800).
The following table summarises the status of share options outstanding at 30 June 2002:

Grant date	Number of options	Option price Rand
2 December 1997	18 500	11,70
31 August 1998	5 000	19,50
21 September 1999	1 268 800	22,90
23 February 1999	18 000	25,75
15 November 2000	584 500	27,20
31 January 2000	752 600	35,40
24 April 2001	461 500	36,50
20 November 2001	5 968 100	49,60
	9 077 000	30,00

30. 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 hold or 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. In order to secure loan facilities, there have been instances where Harmony has made use of commodity contracts (all of which have subsequently expired). In addition, a significant proportion of Randfontein Estate's, New Hampton and Hill 50's production was already hedged when acquired by Harmony. The inherited Randfontein hedge which had previously been treated as speculative was closed out during the year at a cost of R250 million (US$22 million). The Group's remaining commodity contracts relate to a portion of both New Hampton's and Hill 50`s production. These contracts were restructured towards the end of the year to normal purchase, normal sale agreements where we will physically deliver a specified quantity of gold at a future date, subject to the pricing arrangements described below.

The Harmony Group's commodity contracts by type as at 30 June 2002

		Maturity scheduled for delivery in							
		2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**Total**
Normal sales contracts									
Forward Sales Agreements									
Ounces	*1	425 792	229 000	205 000	187 500	125 000	100 000	100 000	1 372 292
A$/ounce		514	522	524	523	514	518	518	519
Variable price sales contracts (with "caps")									
Ounces	*2	62 425	175 500	130 000	40 000	–	–	–	407 925
A$/ounce		545	544	512	552	–	–	–	535
Variable price sales contracts (with "floors")									
Ounces	*3	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

***1** The Group must deliver into these agreements at the prices indicated.

***2** The Group must deliver its production into these agreements subject to the capped price indicated in the table above.

***3** The Group must deliver its production into these agreements subject to the floor price indicated in the table above.

The contracts are treated as normal purchase, normal sales contracts. The mark-to-market of these contracts was a negative R913 million (US$88 million) as at 30 June 2002 based on independent valuations provided by Standard Risk and Treasury Management Services (Pty) Ltd (SRTMS). The value was based on a gold price of US$316 (A$557) per ounce, exchange rates of R/US$10.39 and US$/A$0.57 and prevailing market interest rates and volatilities at the time.

Foreign currency sensitivity

In the ordinary course of business, Harmony enters into transactions denominated in foreign currency (primary US dollars). In addition, the 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 year, it entered into monthly forward sales agreements totalling US$90 million, at an average of R/US$11.76 maturing over the period July to December 2002. These contracts were entered into to preserve the revenue streams for the Free State operations.

These contracts are accounted for as cash flow hedges and are recorded in each period in reserves and subsequently reclassified to revenue on the contract expiry date.

The mark-to-market value of the transactions making up the positions was a positive R47 million (US$5 million) as at 30 June 2002, the valuation was based on an exchange rates of R/$10.42 and the prevailing interest rates and volatilities at the time.

Concentration of credit risk

Financial instruments, which subject the Company to significant concentrations of credit risk, consist principally of cash and equivalents, short-term investments and various derivative financial instruments. The Group's financial instruments do not represent a concentration of credit risk because the Group deals 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 counter party is managed by setting exposure limits, which are reviewed regularly. The Group's debtors and loans are regularly monitored and assessed, and 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. 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	2010
Ounces	1 906 500	1 879 000	1170 000	1 170 000	900 000	675 000	675 000	–
Lease rate received	1,0%	1,0%	1,2%	1,2%	1,0%	1,1%	1,1%	–

The above instruments are all treated as speculative. The mark-to-market of the above contracts was a negative R84 million (US$8 million) as at 30 June 2002, based on valuations provided by independent treasury and risk management experts.

The Group has interest rate swap agreements to change R600 million of its R1,2 billion fixed rate bond to variable rate debt. The interest rate swap runs over the term of the loan 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 R21 million (US$2 million) as at 30 June 2002.

In the ordinary course of business, the 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 and cash and equivalents are a reasonable estimate of the fair values because of short-term maturity of such instrument. 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 that the bonds, approximates fair value as they are subject to market-based rates. The carrying value of the bond approximates their market value at 30 June 2002.

31. CASH GENERATED FROM/(UTILISED IN) OPERATIONS

	2002 R'million	2001 R'million
Reconciliation of profit before taxation to cash generated from operations:		
Income before taxation	2 279	229
Adjustments for:		
Interest and dividends received	(138)	(45)
Interest paid	230	114
Loss/(Profit) on sale of other assets and listed investments	(46)	7
Profit on sale of mining assets	(21)	(80)
Depreciation and amortisation	308	237
Impairment of assets	362	215
Gain on financial instruments	(46)	(140)
Mark-to-market of listed investments	(595)	–
Net (decrease)/increase in provision for environmental rehabilitation	20	(52)
Net decrease/(increase) in provision for former employees' post-retirement benefits	2	(17)
Other non cash transactions	(4)	(2)
Effect of changes in operating working capital items:		
Receivables	127	(274)
Inventories	(93)	(82)
Accounts payable and accrued liabilities	51	363
Cash generated by operations	2 436	473

32. 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 for the years ended 30 June 2002 and 30 June 2001:

The minorities' share in the profits of Elandskraal.

(b) Acquisitions of subsidiaries/businesses

(i) For the year ended 30 June 2002

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

	2002 R'million
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'million
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'million
Inventories	54
Accounts receivable	29
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)

(ii) For the year ended 30 June 2001

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

	2002 R'million
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, the Company had acquired a majority shareholding in New Hampton and during the period to 30 June 2001 increased its shareholding such that as at 30 June 2001, the Company had acquired 100% of the issued share capital of New Hampton. The aggregate fair value of the assets acquired and liabilities assumed were:

	2002 R'million
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 30 June 2001**

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

	2002 R'million
Property, plant and equipment	107
Stores	7
Total sales price	114
Paid for by way of receivables	(114)

33. COMMITMENTS AND CONTINGENCIES

	2002 R'million	2001 R'million
Capital expenditure commitments		
Contracts for capital expenditure	33	123
Authorised by the directors but not contracted for	267	199
	300	322

This expenditure will be financed from existing cash resources.

Contingent liabilities		
Guarantees and suretyships	5	
Environmental guarantees	82	
	87	

34. SUBSEQUENT EVENTS AFTER BALANCE SHEET DATE

(a) On 27 May 2002, Harmony announced that it had entered into a pre-acceptance agreement with Placer Dome, whereby it agreed to accept Placer Dome's offer for its 9,8% holding in AurionGold. The Company has subsequently accepted Placer Dome's increased, final and unconditional offer on 29 July 2002, which included an Australian $0,35 cash payment per AurionGold share held. Harmony held 43 350 992 shares in AurionGold which were converted into 7 586 422 shares in Placer Dome.

(b) Refer to note 16 for the proposed acquisition of the St Helena assets by Free Gold.

35. GEOGRAPHICAL AND SEGMENT INFORMATION

The primary reporting format of the Company 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 the Free Gold joint venture have been included from 3 January 2002 and Hill 50 from 1 April 2002.

Segmental information includes the results of operations of Elandskraal and New Hampton 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 and Free Gold. The Free State, Randfontein, Kalgold, Evander and Elandskraal are specific gold producing regions within South Africa. The Bissett mine is located in Canada and the New Hampton and Hill 50 mines are located primarily in Western Australia. The Company 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.

The segmental split on a geographical basis is:

Year ended 30 June 2002

	Free State (South Africa) R'million	Evander (South Africa) R'million	Kalgold (South Africa) R'million	Randfontein (South Africa) R'million	Elandskraal (South Africa) R'million	FreeGold Joint Venture (South Africa) R'million	New Hampton (Australia) R'million	Hill 50 (Australia) R'million	(*) Other R'million	Total R'million
Profit and loss										
Revenue	1 829	1 191	179	1 628	1 365	918	493	185	18	7 806
Production 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)	(51)	(36)	(30)	(25)	(44)	(3)	(308)
– Impairment	63	–	–	12	–	–	(437)	–	–	(362)
– Mark to market of listed investment	–	–	–	–	–	–	–	–	595	595
– Financial instruments	10	–	–	(121)	–	–	46	113	–	48
Operating profit 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 year before minority interest	438	291	79	215	276	286	(380)	121	370	1 696
Kilograms 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 previous financial year, and clean-up results amounting to R18 million revenue (257kg) 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'million	Evander (South Africa) R'million	Kalgold (South Africa) R'million	Randfontein (South Africa) R'million	Elandskraal (South Africa) R'million	New Hampton (Australia) R'million	Bissett (Canada) R'million	Other R'million	Total R'million
Profit and loss									
Revenue	1 431	952	103	1 479	283	137	108	2	4 495
Production 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)
– Financial instruments	–	–	–	43	–	15	–	–	58
Operating profit/(loss) before tax	(135)	282	(12)	219	37	(1)	(187)	26	229
Taxation expense	8	(76)	–	(31)	(16)	–	–	4	(111)
Net profit/(loss) for year before minority interest	(127)	206	(12)	188	21	(1)	(187)	30	118
Kilograms 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.

Historical information of ARMgold

ARMgold income statement

R'000	Unaudited 3 months ended 31 March 2003	Audited 12 months ended 31 December 2002	Audited 12 months ended 31 December 2001	Audited 12 months ended 31 December 2000
Revenue	**718 480**	**3 537 791**	**1 181 947**	**1 090 791**
Cost of sales	560 069	2 052 703	(911 119)	(937 542)
Profit from metals mined	**158 411**	**1 485 088**	**270 828**	**153 249**
Corporate, administration and other expenditure	14 145	(37 965)	(26 455)	(21 704)
Tribute expenditure	–	–	(53 653)	(124 828)
Profit from operations	**144 266**	**1 447 123**	**190 720**	**6 717**
Net non-mining income	6 652	31 258	6 000	–
Net finance income	49 560	69 790	19 325	10 333
Profit before tax	**200 478**	**1 548 171**	**216 045**	**17 050**
Tax	74 924	(565 588)	(83 574)	(3 225)
Net profit attributable to ordinary shareholders	**125 554**	**982 583**	**132 471**	**13 825**
Profit on sale of mining assets	(5 466)	(8 351)	–	–
Profit on redemption of long-term debt	–	–	(21 000)	–
Headline earnings	**120 088**	**974 232**	**111 471**	**13 825**
Earnings per share (cents)	131,47	1 222,43	264,94	27,65
Headline earnings per share (cents)	125,75	1 212,05	222,94	27,65
Diluted earnings per share (cents)	131,47	1 222,43	264,94	27,65
Dividends per share (cents)	–	3,60	40 000	–

ARMgold balance sheet

R'000	Unaudited 31 March 2003	Audited 31 December 2002	Audited 31 December 2001	Audited 31 December 2000
Assets				
Non-current assets	**1 868 659**	**1 855 116**	**101 172**	**101 935**
Property, plant and equipment	1 095 700	1 103 286	77 219	81 767
Investments and loans	362 423	354 185	18 268	7 280
Deferred taxation	112 500	143 917	–	–
Restricted cash	298 036	253 728	5 685	5 685
Long-term receivables	–	–	–	7 203
Current assets	**2 277 524**	**2 049 232**	**200 945**	**205 718**
Inventories	34 749	26 502	10 833	6 895
Accounts receivable	143 378	135 687	78 217	54 009
Cash and cash equivalents	2 099 397	1 884 185	111 895	144 814
Short-term portion of deferred tax	–	2 858	–	–
Total assets	**4 146 183**	**3 904 348**	**302 117**	**307 653**
Equity and liabilities				
Capital				
Ordinary share capital	96	96	50	50
Share premium	1 132 454	1 132 454	–	–
Retained income	1 116 732	991 178	8 613	76 142
Ordinary shareholders' interest	**2 249 282**	**2 123 728**	**8 663**	**76 192**
Non-current liabilities	**777 671**	**745 826**	**51 079**	**97 366**
Long-term borrowings	529 305	503 963	–	51 786
Deferred taxation	–	–	9 539	395
Rehabilitation and closure cost obligations	247 253	240 750	41 540	45 185
Provision for post-retirement liability	1 113	1 113	–	–
Current liabilities	**1 119 230**	**1 034 794**	**242 375**	**134 095**
Accounts payable	334 519	282 089	144 971	124 296
Short-term portion of borrowings	452 288	450 695	30 786	–
Current tax liability	332 423	302 010	66 618	9 799
Total equity and liabilities	**4 146 183**	**3 904 348**	**302 117**	**307 653**
Weighed number of shares in issue ('000)	95 500	80 379	50 000	50 000
Net asset value per share (cents)	2 355,27	2 642,14	17,33	152,38
Net tangible asset value per share (cents)	2 355,27	2 642,14	17,33	152,38

ARMgold cash flow statement

Cash flow statements

R'000	Notes	Unaudited 3 months ended 31 March 2003	Audited 12 months ended 31 December 2002	Audited 12 months ended 31 December 2001	Audited 12 months ended 31 December 2000
Cash generated from operating activities					
Cash receipts		710 789	3 525 656	1 157 739	1 081 500
Cash paid to suppliers and employees		(490 961)	(1 898 820)	(964 849)	(1 013 566)
Cash generated by operations	1	219 828	1 626 836	192 890	67 934
Net finance income		45 811	81 158	17 859	10 333
Normal taxation paid	2	(5 921)	(81 031)	(17 611)	(6 991)
Dividends paid	3	–	(12 196)	(187 822)	–
Net cash inflow from operating activities		**259 718**	**1 614 767**	**5 316**	**71 276**
Cash flows from investing activities					
Acquisition of businesses	4	–	(960 000)	–	–
Mining and other fixed assets acquired		(23 805)	(115 201)	(39 716)	(14 795)
Proceeds on disposal of mining assets		–	11 469	3 800	54
Costs of acquisitions capitalised		–	(1 881)	–	–
Movement in investments		(8 232)	(75 149)	–	(2)
Movement in long-term receivables		–	–	7203	1 097
Net increase in investment in Rehabilitation Trust Fund		(6 503)	(21 583)	(9 522)	(2 858)
Net cash outflow from investing activities		**(25 540)**	**(1 162 345)**	**(38 235)**	**(16 504)**
Cash flow from financing activities					
Proceeds from shares issued – net of expenses		–	1 132 454	–	–
Movement in long-term borrowings		25 342	435 457	–	–
Net cash inflow from financing activities		**25 342**	**1 567 911**	**–**	**–**
Net movement in cash and cash equivalents		**259 520**	**2 020 333**	**(32 919)**	**54 772**
Cash and cash equivalents at beginning of period		**2 137 913**	**117 580**	**150 499**	**95 727**
Cash and cash equivalents at the end of period		**2 397 433**	**2 137 913**	**117 580**	**150 499**

Notes to cash flow statements:

R'000	Unaudited 3 months ended 31 March 2003	Audited 12 months ended 31 December 2002	Audited 12 months ended 31 December 2001	Audited 12 months ended 31 December 2000
1. CASH GENERATED FROM OPERATIONS				
Profit before taxation	200 478	1 548 171	216 045	17 050
Adjusted for non-cash items:				
– Amortisation and depreciation	31 391	121 171	40 464	37 850
– Profit on sale of mining assets	(5 466)	(8 351)	–	–
– Proceeds on loan waived	–	–	(21 000)	–
– Provision for irrevocable loans and debtors		–	15 000	–
– Movement in gold inventory	(1 564)	(7 216)	–	–
– Bad debts		275	–	–
– Movement in provision for post-retirement benefits		1 113	(3 645)	2 151
– Movement in environmental rehabilitation obligation	6 502	14 101	–	–
Adjustment for:				
Net finance income	(49 569)	(69 790)	(19 325)	(10 333)
Operating profit before working capital changes	181 772	1 599 474	227 539	46 718
Working capital changes				
– Movement in accounts receivable	(7 691)	(56 672)	(39 208)	(9 291)
– Movement in inventories	(6 683)	(8 453)	(3 938)	2 571
– Movement in accounts payable	52 430	92 487	8 497	27 936
Cash generated from operations	**219 828**	**1 626 836**	**192 890**	**67 934**
2. TAXATION PAID				
Charge as per the income statement	(74 924)	(565 588)	(83 574)	(3 225)
Liability – previous period	(302 010)	(66 618)	(9 799)	451
Liability – current period	332 423	302 010	66 618	9 799
Movement in deferred tax liability	38 590	249 165	9 144	(14 016)
Taxation paid	**(5 921)**	**(81 031)**	**(17 611)**	**(6 991)**
3. DIVIDENDS PAID				
Charge as per the statement of changes in equity	–	–	(200 000)	–
Capitalisation issue of 18 000 000 ordinary shares of R0,001 each	–	(18)	–	–
Shareholders for dividends at beginning of period	–	(12 178)	–	–
Shareholders for dividends at end of period	–	–	12 178	–
Dividends paid	**–**	**(12 196)**	**(187 822)**	**–**

R'000	Audited 12 months ended 31 December 2002	Audited 12 months ended 31 December 2001	Audited 12 months ended 31 December 2000
4. ACQUISITION OF BUSINESSES			
With effect from 1 January 2002, Free Gold purchased the Free Gold assets and liabilities from Anglogold for R2 741 million of which R1 370,5 million relates to ARMgold's 50% portion. The aggregate fair value of the assets acquired and liabilities assumed were as follows:			
Environmental trust fund	221 936	–	–
Property, plant and equipment	978 359	–	–
Accounts payable and accrued liabilities	(58 633)	–	–
Long-term borrowings	(158 590)	–	–
Deferred tax	387 457	–	–
Total purchase price	**1 370 529**	**–**	**–**
Paid for by way of borrowings	(470 529)	–	–
Paid for by cash	(900 000)	–	–
Cash and cash equivalents at acquisition	**–**	**–**	**–**
With effect from 30 October 2002, Free Gold purchased the St Helena assets and liabilities from Gold Fields for R120 million of which R60 million relates to ARMgold's 50% portion. The aggregate fair value of the assets acquired and liabilities assumed were as follows:			
Environmental trust fund	17 250	–	–
Property, plant and equipment	54 879	–	–
Accounts payable and accrued liabilities	1 073	–	–
Long-term borrowings	(23 772)	–	–
Deferred tax	18 022	–	–
Total purchase price	**67 452**	**–**	**–**
Paid for by way of borrowings	(7 452)	–	–
Paid for by cash	(60 000)	–	–
Cash and cash equivalents at acquisition	**–**	**–**	**–**

ARMgold statement of changes in equity

R'000	Share capital	Share premium	Retained income	Total
Audited movements				
Balance at 31 December 1999	50	–	62 317	62 367
Net income for the year	–	–	13 825	13 825
Balance at 31 December 2000	50	–	76 142	76 192
Net income for the year	–	–	132 471	132 471
Dividends paid	–	–	(200 000)	(200 000)
Balance at 31 December 2001	50	–	8 613	8 663
Net income for the year	–	–	982 583	982 583
Dividends paid	–	–	(18)	(18)
Share premium raised during the period	–	1 209 973	–	1 209 973
Expenditure written-off against share premium	–	(77 519)	–	(77 519)
Shares issued during the period	46	–	–	46
Balance at 31 December 2002	96	1 132 454	991 178	2 123 728
Unaudited movements				
Net income for the period	–	–	125 554	125 554
Balance at 31 March 2003	96	1 132 454	1 116 732	2 249 282

Accounting policies

Basis of preparation

The financial statements are prepared according to the historical cost accounting convention. The Group's accounting policies set out below are consistent in all material respects with those applied in the previous years, except for the adoption of South African Standard AC 133: Financial Instruments: Recognition and Measurement.

Use of estimates

The preparation of the financial statements in conformity with South African Statements of Generally Accepted Accounting Practice requires 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. Actual results could differ from those estimates.

Consolidation

The Group financial statements incorporate the financial statements of the company and its proportionate interest in joint ventures.

The financial statements for joint ventures are prepared for the same reporting period as the holding company, using the same accounting policies.

A joint venture is an entity in which the Group holds a long-term interest and which is jointly controlled by the Group and one or more other ventures under a contractual arrangement. The 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 Group and is no longer consolidated from the date on which joint control is ceased. Under this method, the 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 Group companies have been eliminated.

Goodwill

Where an investment in a subsidiary or joint venture is made, any excess of the purchase price over the fair value of the attributable mineral reserves and the net assets is recognised as goodwill. Goodwill that represents resources is amortised on a systematic basis, which recognises the depletion of resources over the lesser of the life of the mine or 20 years. Goodwill in respect of subsidiaries and proportionately consolidated joint ventures is disclosed as an intangible asset in the balance sheet.

The carrying amount of goodwill is reviewed on a regular basis and written-down for impairment where the recoverable amount exceeds the carrying amount.

Foreign currencies

Foreign currency transactions are accounted for at the rates of exchange ruling at the date of the transaction. Monetary assets and liabilities are translated at year-end exchange rates unless hedged by forward exchange contracts, in which case the rates specified in such forward contracts are used. Gains and losses arising on settlement of such transactions, and from the translation of foreign currency monetary assets and liabilities arising from such transactions, are recognised in the income statement, except when deferred in equity as qualifying cash flow hedges.

Revenue recognition

Revenue is recognised to the extent that it is probable that the economic benefits will flow to ARMgold and the revenue can be reliably measured. The following criteria must also be present:

– Revenue from the sale of gold and silver is recognised when the risks and rewards of ownership and title passes to the buyer of the products.
– Interest income is recognised as it accrues (taking into account the effective yield on the asset), unless collectability is in doubt.
– Dividend income is accrued when ARMgold's right to receive payment, is established.

Exploration expenditure

Exploration expenditure is expensed as incurred. When a decision is taken that a mining venture is capable of commercial production, all further pre-production expenditure is capitalised. Expenditure incurred to evaluate and develop new ore bodies, to define mineralisation in existing ore bodies, to establish or expand productive capacity and, expenditure designed to maintain productive capacities, are capitalised until commercial levels of production are achieved.

Property, plant and equipment

Mining assets

Mining assets, including mineral and surface rights, ore reserves, mine development costs and mine plant facilities, are recorded at cost less accumulated amortisation and impairments.

Mine development costs

Mine development costs include expenditure incurred to develop new ore bodies, to define further mineralisation in existing ore bodies and to expand the capacity of the mine.

Mine development and pre-production costs are capitalised until the ore body is brought into production. Mine development costs relating to major programmes to expand production capacities at existing mines, are capitalised. Mine development costs in the ordinary course to maintain production, are expensed as incurred.

Undeveloped properties

Undeveloped properties, upon which the Group has not performed sufficient exploration work to determine whether significant mineralisation exists, are carried at original cost. Where the directors consider that there is little likelihood of the properties being exploited, or the value of the exploitable right has diminished below cost, a write-down is affected against exploration expenditure.

Borrowing costs

Interest costs on borrowings to finance the construction of mining assets, property, plant and equipment, requiring a substantial period of time to prepare for their intended future use, are capitalised during the period that is required to prepare the asset for its intended use and until the asset achieve commercial levels of production. All other borrowing costs are expensed.

Non-mining assets

Land is recorded at cost and is not depreciated as it is deemed to have an unlimited life. Buildings and non-mining assets are shown at cost less accumulated depreciation and any impairment losses.

Amortisation and depreciation

Mining assets

Mining assets (includes mineral property, mineral and surface rights, ore reserves, exploration costs, mine development costs, capitalised interest and mine plant facilities) are amortised using the units-of-production method based on estimated economically recoverable proven and probable ore reserves. Proven and probable ore reserves reflect estimated quantities of economically recoverable reserves, which can be recovered in the future from known mineral deposits. Amortisation begins on new mining ventures from the date on which the mine produces commercial quantities.

Non-mining assets

Non-mining assets are depreciated on the straight-line method to write-off the cost of each asset to their residual values over their estimated useful lives, as follows:

Office equipment	
Vehicle	5 years
Computer equipment	3 years

Impairment property, plant and equipment

Management, on a continuous basis, reviews the recoverability of the carrying amounts of mining and non-mining assets of ARMgold. When the carrying amount of an asset is greater than its recoverable amount, an allowance is made for impairment.

Investments

During the period under review, ARMgold adopted AC 133 and classified its investments into the following categories: trading, held-to-maturity and available-for-sale. Investments that are acquired principally for the purpose of generating a profit from short-term fluctuations in price are classified as trading investments and included in current assets. Investments with fixed maturity, that the management has the intent and ability to hold to maturity, are classified as held-to-maturity and are included in non-current assets. Investments intended to be held for an indefinite period of time, which may be sold in response to needs for liquidity or changes in interest rates, are classified as available-for-sale and are included in non-current assets, unless management has the express intention of holding the investment for less than 12 months from the balance sheet date, or unless they will need to be sold to raise operating capital, in which case they are included in current assets. Management determines the appropriate classification of its investments at the time of the purchase and re-evaluates such designation on a regular basis.

All purchases and sales of investments are recognised on the trade date, which is the date that ARMgold commits to purchase or sell the asset. Cost of purchase includes transaction costs. Trading and available-for-sale investments are subsequently carried at fair value, whilst held-to-maturity investments are carried at amortised cost using the effective yield method. Realised and unrealised gains and losses arising from changes in the fair value of trading investments and of available-for-sale investments, are included in the income statement in the period in which they arise.

Listed investments, other than investments in subsidiaries and joint ventures, are subsequently measured at fair value, which is calculated by reference to the quoted selling price at the close of business on the balance sheet date.

Unlisted investments are classified as available for sale financial assets and are measured at fair value.

Changes in the fair values of the investments are recognised in the income statement.

On disposal of an investment, the difference between the net disposal proceeds and the carrying value is charged or credited to the income statement.

At each reporting date, the Group reviews its investments for declines that are other than temporary. Unrealised losses that are other than temporary would be realised in the income statement.

Investment in rehabilitation trust fund

Annual contributions are made to the ARM Environmental Rehabilitation Trust Fund, created in accordance with South African statutory requirements, to fund the estimated cost of rehabilitation during and at the end of the life of the Group's mines. Interest earned on funds paid to the environmental trust fund is accrued and credited to the income statement on an annual basis. The funds that have been paid into the trust fund, plus the growth in the trust fund, are shown as an asset on the balance sheet.

Short-term investments

Short-term investments consist of similar investments to cash and cash equivalents, but mature in periods greater than three months but less than twelve months and are classified as available-for-sale financial instruments.

Short-term investments are measured at fair value and the changes in fair value are recognised in the income statement.

Inventories

In-process metal on hand is stated at the lower of cost and net realisable value. The cost is based on the weighted average production costs. Production costs includes raw materials used, direct labour, other direct costs and related production overheads, which includes amortisation, but excludes interest expenses.

Stores and material are valued at the lower of cost and net realisable value on a first-in, first-out basis. The cost is based on the supplier's cost and includes delivery charges. Obsolete, redundant and slow-moving stock is identified and written-down to economic or realisable values.

Net realisable value is the estimate of the selling price, in the ordinary course of business, less the cost of completion and selling expenses.

Trade and other receivables

Trade and other receivables are carried at net realisable value. Estimates are made for doubtful debts based on a review of all outstanding amounts at year-end. Irrecoverable amounts are written-off during the year in which they are identified.

Cash and cash equivalents

Cash and cash equivalents are defined as cash in hand, demand deposits, and short-term, highly liquid, investments, with a maturity of less than three months at the date of purchase, readily convertible to known amounts of cash and subject to insignificant risk of changes in value.

Environmental expenditure

ARMgold provides for future rehabilitation cost on the full liability method, which is based on ARMgold's environmental management plans, in compliance with the current environmental and regulatory requirements. Under this method the estimated future cost of repairing past damage and other related shut down costs are provided for in full as soon as the commitment is incurred. The estimates are reviewed annually to take the effect of inflation and other changes into account and are discounted using rates that reflect the time value of money. Annual increases in the provision are charged to income and relate to increases in costs due to the change in the present value of the provision, inflationary increases and changes in estimates. The present value of additional environmental disturbances created is capitalised to mining asset with a corresponding increase in the rehabilitation provision.

The rehabilitation asset is amortised in terms of ARMgold's accounting policy for mining assets (refer accounting policy on "Property, plant and equipment").

Based on current environmental regulations and known rehabilitation requirements, management has included its best estimate of these obligations in its rehabilitation requirements. It is however possible that this estimate could change as a result of changes in regulations or cost estimates. Ongoing rehabilitation and environmental costs are charged to the income statement in the period in which it is incurred. Rehabilitation projects undertaken, included in the estimates, are charged to the provision as incurred. Gains from the expected disposal of assets are not taken into account when determining the provision for environmental rehabilitation.

Deferred taxation

Deferred taxation is provided in full, using the liability method, on all temporary differences at the balance sheet date between the tax bases of assets and liabilities and their carrying values in the financial statements.

Under this method, ARMgold is required to make provision for deferred income taxes by applying an estimated future tax rate to the difference between the tax values and carrying amounts of assets and liabilities at the balance sheet date. The estimated tax rate is the rate at which the directors estimate any deferred tax liabilities and assets will be realised, and is based on current legislation. Tax losses are only recognised to the extent that they are considered to be recoverable.

Deferred tax assets are only recognised to the extent that it is probable that the temporary differences will reverse in the foreseeable future and future taxable profit will be available against which the temporary differences can be utilised.

The carrying amount of deferred tax assets is reviewed at each balance sheet date and reduced to the extent that it is no longer probable that sufficient future taxable profit will be available to allow all or part of the deferred tax asset to be utilised.

Pension obligations

Independent defined benefit and defined contribution funds provide pension and other benefits to all ARMgold's permanent employees.

The expected costs of defined post-retirement benefits are assessed in accordance with the advice of qualified actuaries. Contributions to the relevant funds, including cost of improved benefits or experience adjustments, are charged to income over the service lives of employees entitled to those benefits. Contributions to defined contributions funds are charged against income, as incurred.

Other post-retirement obligations

Except for those mentioned above, ARMgold does not supply any other employee benefits that will result in post-retirement obligations.

Financial liabilities

Financial liabilities, other than trading financial liabilities and derivatives, are measured at amortised cost, being the original obligation less principal payments and amortisations. Trading financial liabilities and derivatives are measured at fair value.

Provisions

Provisions are recognised when ARMgold has a present legal or constructive obligation as a result of past events, 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 annual leave and holiday leave allowances

Employee entitlements to annual leave and holiday leave allowances are recognised when they accrue to employees. A provision is made for the estimated liability for unused annual leave and holiday leave allowances as a result of services rendered by employees up to the balance sheet date.

Leases

Leases where a significant portion of the risks and rewards of ownership are retained by the lessor, are classified as operating leases. Payments made under operating leases are charged to the income statement on a straight-line basis over the period of the operating lease

Financial instruments

Financial instruments recognised on the balance sheet include trade and other receivables, loans, cash and bank balances, investments, trade and other payables, and borrowings. Financial instruments are initially measured at cost, including transaction costs, when ARMgold becomes a party to their contractual arrangements. The subsequent measurement of financial instruments is dealt with in the accounting policies of trade and other receivables, cash and cash equivalents, investments, financial liabilities and derivative instruments.

Derivative instruments

AC 133 requires that derivative instruments be treated as follows:

– Commodity based ("normal purchase or normal sale") contracts that meet 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 on the balance sheet as either a financial asset or financial liability, and recorded at fair value. When ARMgold enters into cash flow hedges, the effective portion of fair value gains or losses are recognised in equity until the underlying transaction occurs, then the gains or losses are recognised in earnings or included in the initial measurement of the asset or liability. The ineffective portion of fair value gains and losses is recorded in earnings in the period to which they relate.
– 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 earnings 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.

Business segments

Based on risks and returns, the directors consider that the primary reporting format is by business segment. The directors consider that there is only one business segment, being mining, relating to the extraction and production of gold. Therefore the disclosures for the primary segment have already been given in these financial statements.

Significant contracts of ARMgold

1. On 15 January 1998, ARMgold concluded a Sale of Assets Agreement with Anglogold Limited ("Anglogold") in terms of which ARMgold, with effect from 27 January 1998, acquired Shafts Numbers 1 and Numbers 3 to 7 as well as certain associated assets, mining leases, mineral rights and certain movable assets and surface rights permits in respect of the Vaal River Operations in Orkney, North West Province. The purchase price for the Vaal Reefs Sale Assets was R38,2 million, which ARMgold has since paid in full.

2. On 27 July 2001, ARMgold concluded a Sale of Assets Agreement with Anglogold in terms of which ARMgold acquired Shaft No. 2 of the Vaal River Operations, in Orkney, North West Province. This agreement replaced the Tributing Agreement under which ARMgold had been mining Shaft No. 2 on a tribute basis.

3. On 5 February 1999, ARMgold and Anglogold concluded an agreement in respect of the supply of services, which agreement is deemed to have commenced on 27 January 1998. This agreement continues indefinitely for so long as ARMgold conducts mining operations at Shafts Numbers 1 to 7 at Vaal Reefs, Orkney, North West Province.

4. On 5 February 1999, ARMgold concluded a Toll Ore Processing Agreement with Anglogold, which agreement is deemed to have commenced on 27 January 1998. Anglogold for cannot terminate this agreement for so long as ARMgold conducts mining operations at any of the Orkney operations, unless ARMgold breaches the agreement and fails to remedy the breach.

5. On 18 March 1999, ARMgold concluded a Transport of Bullion Agreement with Anglogold, which agreement is deemed to have commenced on 27 January 1998. The agreement continues indefinitely subject to either party having the right to cancel the agreement on 60 days' notice. The agreement also terminates when Anglogold ceases to produce bullion for ARMgold in terms of the Toll Ore Processing Agreement referred to above. In terms of the agreement, Anglogold transports by helicopter or other means, the bullion produced pursuant to the Toll Ore Processing agreement to Rand Refinery for a fee of R18 000 per month.

6. On 17 September 1998, ARMgold concluded a Sale of Assets Agreement with Anglogold in terms of which ARMgold acquired portions of the mining lease area, surface rights permits, movable assets, excluding the major rotating equipment, and all other assets relating to the mining and associated operations of Free State Consolidated Mines Limited at the Western Holdings Mine Shafts Numbers 1 to 4 and Numbers 6 and 7.

7. A Memorandum of Co-operation Agreement was concluded between ARMgold and Harmony on 13 October 2001 and endured for a period of 12 months from such date. In terms of the agreement, ARMgold and Harmony agreed to negotiate the Joint Venture Agreement in respect of their relationship as regards Free Gold and to refer to each other all gold mining opportunities that each wished to pursue in South Africa. Such gold mining opportunities exclude the exploitation or expansion of the parties' existing gold mining and related assets.

8. On 24 December 2001, ARMgold concluded a Sale of Business Agreement with Anglogold, Free Gold and Harmony, which agreement was implemented with an effective date of 1 January 2002. In terms of the agreement, certain gold mines and related assets and surface operations in the Free State were acquired by Free Gold.

   The purchase price is payable by Free Gold (50% of which is the responsibility of ARMgold) is as follows:

   – R1,8 billion plus interest of R54,9 million that was paid on 23 April 2002;
   – R400 million is payable on 1 January 2005; and
   – tax payable by Anglogold resulting from the sale of the Free Gold Assets is payable five business days before Anglogold is obliged to make any such tax payments. This amount has now been paid.

9. On 24 December 2001, Free Gold and Anglogold concluded a Sale of Property Agreement. The assets purchased in terms of this agreement are the immovable properties used in connection with the businesses purchased in terms of the Free Gold Sale of Business Agreement referred to above. The purchase price in respect of these immovable properties is included in the purchase price as set out in the Free Gold Sale of Business Agreement.

10. On 5 April 2002, ARMgold and Harmony (collectively, the “shareholders”) and Free Gold entered into a Joint Venture Agreement governing the relationship of the shareholders as shareholders of Free Gold.

11. In terms of an agreement reached on 22 April 2003, ARMgold and Harmony jointly acquired a 34,5% shareholding in Avmin for a consideration of R1,7 million.

Trading history of Harmony shares

The high, low and closing prices of Harmony shares on the JSE, and the volumes traded, since 31 July 2000, were as follows:

	High (cents)	Low (cents)	Close (cents)	Volume
Quarter ended				
31 August 2000	3 900	3 300	3 670	8 610 069
30 November 2000	3 700	2 600	3 525	12 946 300
28 February 2001	4 700	3 080	3 860	12 254 756
31 May 2001	5 100	3 615	4 690	20 690 449
31 August 2001	4 920	3 850	4 900	22 217 718
30 November 2001	9 9700	4 800	7 850	38 280 991
28 February 2002	13 360	7 000	12 740	59 093 052
31 May 2002	18 730	11 000	14 200	86 643 890
31 August 2002	18 150	10 350	16 700	78 034 135
30 November 2002	16 520	11 550	14 700	61 230 817
28 February 2003	15 620	8 650	9 760	68 846 490
31 May 2003	11 750	7 100	9 850	102 654 014
Month ended				
30 June 2002	17 400	12 000	14 200	30 361 439
31 July 2002	17 100	10 350	11 810	32 404 342
31 August 2002	15 200	10 400	14 850	15 174 230
30 September 2002	18 150	14 400	16 700	30 455 563
31 October 2002	16 520	11 910	13 500	20 341 047
30 November 2002	15 600	11 550	11 799	15 492 925
31 December 2002	15 800	11 560	14 700	25 396 845
31 January 2003	15 620	13 100	13 100	24 945 829
28 February 2003	13 600	10 540	11 050	23 470 805
31 March 2003	11 390	8 650	9 760	20 429 856
30 April 2003	9 850	7 100	7 700	19 952 328
31 May 2003	11 070	7 900	10 539	62 449 097
30 June 2003	11 750	9 600	9 850	20 252 589
Trading day				
1 July 2003	10 280	9 950	10 250	1 642 970
2 July 2003	10 480	10 150	10 350	1 010 884
3 July 2003	10 470	10 150	10 350	782 947
4 July 2003	10 255	10 000	10 165	679 761
7 July 2003	10 050	9 620	9 688	1 759 006
8 July 2003	10 000	9 600	9 900	1 343 626
9 July 2003	9 950	9 700	9 700	664 135
10 July 2003	9 675	9 330	9 400	1 421 818
11 July 2003	9 575	9 360	9 456	856 481
14 July 2003	9 800	9 400	9 551	1 206 263
15 July 2003	9 900	9 275	9 275	1 234 498
16 July 2003	8 990	8 400	8 400	6 975 720
17 July 2003	8 690	8 475	8 580	4 410 245
18 July 2003	8 600	8 370	8 420	1 806 711
21 July 2003	8 699	8 381	8 699	2 390 159
22 July 2003	8 850	8 640	8 775	1 777 358
23 July 2003	8 900	8 650	8 900	2 146 532
24 July 2003	9 060	8 850	9 060	2 440 559
25 July 2003	9 400	9 070	9 270	1 053 470

AN INDEPENDENT COMPETENT PERSON'S REPORT ON CERTAIN MINING ASSETS OF HARMONY GOLD MINING COMPANY LIMITED AND AFRICAN RAINBOW MINERALS GOLD LIMITED

Prepared for:

HARMONY GOLD MINING COMPANY LIMITED AND AFRICAN RAINBOW MINERALS GOLD LIMITED

Prepared by:

Steffen, Robertson and Kirsten
(South Africa) (Proprietary) Limited
SRK House, 265 Oxford Road
Illovo, Johannesburg
Gauteng Province
Republic of South Africa

Tel: +27-(0)11-441 1111
Fax: +27-(0)11-441 1139

July 2003

Contents

Section	Description	Page
1.	INTRODUCTION	87
1.1	Background	87
1.2	Requirement for the CPR	88
1.3	CPR Structure	88
1.4	Limitations and Reliance on Information	89
1.4.1	Disclaimers and Cautionary Statements for US Investors	89
1.5	Basis of Valuation of the Mining Assets	89
1.5.1	Technical-Economic Appraisal	89
1.5.2	Technical-Economic Models	90
1.5.3	LoM Plans	90
1.6	Qualifications of Consultant	91
2.	MINING ASSETS	92
2.1	Introduction	92
2.2	Companies and Operating Structures	92
2.2.1	Harmony	92
2.2.2	ARMgold	94
2.3	Overview of the Mining Assets	96
2.3.1	Free Gold Operations	96
2.3.2	Harmony Free State Operations	97
2.3.3	ARMgold Welkom Operations	99
2.3.4	West Wits Operations	100
2.3.5	Evander Operations	101
2.3.6	ARMgold Orkney Operations	102
2.3.7	Kalgold Operation	104
2.3.8	International Operations – Harmony Australian Operations	104
2.3.9	International Operations – Harmony Canadian Operations	106
2.4	Significant Exploration Properties	106
2.4.1	Harmony	106
2.5	Mining Authorisations and Mining Leases	107
2.5.1	South African Law: Current Status	107
2.5.2	South African Law: The Minerals and Petroleum Resources Development Act	107
2.5.3	South African Law: Prospecting Permits	108
2.5.4	South African Law: Mining Authorisations	108
2.5.5	Australian Law	109
2.5.6	Harmony: Current Status	109
2.5.7	ARMgold: Current Status	110

Section		Description	Page
3.		GEOLOGY	112
3.1		Introduction	112
3.2		Witwatersrand Basin Geology	112
	3.2.1	Free State Goldfield	113
	3.2.2	West Rand Goldfield	115
	3.2.3	Far West Rand Goldfield	115
	3.2.4	Evander Goldfield	116
	3.2.5	Klerksdorp Goldfield	116
3.3		Deposit Geology	117
	3.3.1	Free Gold Operations	117
	3.3.2	Harmony Free State Operations	119
	3.3.3	ARMgold Welkom Operations	121
	3.3.4	West Wits Operations	121
	3.3.5	Evander Operations	123
	3.3.6	ARMgold Orkney Operations	123
	3.3.7	Kalgold Operations	124
	3.3.8	Harmony Australian Operations	124
	3.3.9	Harmony Canadian Operations	125
	3.3.10	Exploration Potential	126
4.		MINERAL RESOURCES AND MINERAL RESERVES	126
4.1		Introduction	126
4.2		SRK Review Procedures	126
4.3		Mineral Resource and Mineral Reserve Estimation Methodology	127
	4.3.1	Quality and Quantity of Data	127
	4.3.2	Block Definition	129
	4.3.3	Grade and Tonnage Estimation	129
	4.3.4	Classification	130
	4.3.5	Selective Mining Units	131
	4.3.6	Grade Control and Reconciliation	131
	4.3.7	Reserve Estimation	131
4.4		International Operations	133
	4.4.1	Mineral Resource and Mineral Reserve Estimation Methodology	133
	4.4.2	Quality and Quantity of Data	133
	4.4.3	Block Definition	134
	4.4.4	Grade and Tonnage Estimation	134
	4.4.5	Grade Control and Reconciliation	134
	4.4.6	Reserve Estimation	135
4.5		SRK Mineral Resource and Mineral Reserve Statements	135
	4.5.1	Free Gold Operations	136
	4.5.2	Harmony Free State Operations	137

Section		Description	Page
	4.5.3	ARMgold Welkom Operations	138
	4.5.4	West Wits Operations	139
	4.5.5	Evander Operations	140
	4.5.6	ARMgold Orkney Operations	141
	4.5.7	Kalgold Operation	142
	4.5.8	Harmony Australia Operations	143
	4.5.9	Harmony Canadian Operations	144
	4.5.10	Harmony	144
	4.5.11	ARMgold	145
4.6		Mineral Resource and Mineral Reserve Potential	145
5.		MINING	145
5.1		Introduction	145
5.2		Mine Planning	145
5.3		Overview of Mining Operations	146
	5.3.1	Free Gold Operations	146
	5.3.2	Harmony Free State Operations	148
	5.3.3	ARMgold Welkom Operations	149
	5.3.4	West Wits Operations	150
	5.3.5	Evander Operations	152
	5.3.6	ARMgold Orkney Operations	153
	5.3.7	Kalgold Operation	154
	5.3.8	Harmony Australian Operations	155
	5.3.9	Harmony Canadian Operations	156
5.4		Contribution to LoM Production	157
6.		METALLURGY	158
6.1		Introduction	158
6.2		Processing Facilities	158
	6.2.1	Free Gold Operations	158
	6.2.2	Harmony Free State Operations	159
	6.2.3	West Wits Operations	160
	6.2.4	Evander Operations	161
	6.2.5	Kalgold Operations	162
	6.2.6	Harmony Australian Operations	162
6.3		Sampling, Analysis, Gold Accounting and Security	163
6.4		Plant Clean-Up	163
7.		TAILINGS	164
7.1		Introduction	164
7.2		Free Gold Operations	164
7.3		Harmony Free State Operations	165

Section	Description	Page
7.4	West Wits Operations	165
7.5	Evander Operations	165
7.6	Kalgold Operation	166
7.7	Harmony Australian Operations	166
7.8	Mining Assets – LoM Tailings Deposition Assessment	166
8.	ENGINEERING INFRASTRUCTURE AND CAPITAL PROJECTS	167
8.1	Introduction	167
8.2	Engineering Infrastructure of the Mining Assets	167
8.3	LoM Capital Expenditure Programmes	168
9.	HUMAN RESOURCES	169
9.1	Introduction	169
9.2	Legislation	169
9.3	Organisational Structures and Operational Management	170
9.4	Recruitment, Training, Productivity Initiatives and Remuneration Policies	170
9.5	Industrial Relations	171
9.6	Productivity Assumptions	171
9.7	Separation Liability	172
10.	HEALTH AND SAFETY	172
10.1	Introduction	172
10.2	Legislation	173
10.3	Statistics	173
10.4	Health and Safety Management	174
10.5	Future Considerations	175
11.	ENVIRONMENTAL	175
11.1	Introduction	175
11.2	South African Legislation and Compliance	175
11.2.1	Legislation and Environment	175
11.2.2	Compliance	176
11.3	Australian Legislation and Compliance	177
11.3.1	Harmony Australian Operations	177
11.3.2	Harmony Canadian Operations	177
11.4	Environmental Policy and Management	177
11.4.1	Harmony	177
11.4.2	ARMgold	178
11.5	Environmental Issues	178
11.5.1	Free Gold Operations	178
11.5.2	Harmony Free State Operations	178
11.5.3	ARMgold Welkom Operations	179
11.5.4	West Wits Operations	179

Section	Description	Page
11.5.5	Evander Operations	179
11.5.6	ARMgold Orkney Operations	179
11.5.7	Kalgold Operation	180
11.5.8	Harmony Australian Operations	180
11.5.9	Harmony Canadian Operations	181
11.6	Liabilities and Risks	181
12.	TECHNICAL-ECONOMIC INPUT PARAMETERS	182
12.1	Introduction	182
12.2	Basis of Valuation and Technical-Economic Parameters	182
12.3	Technical-Economic Parameters	183
12.3.1	Harmony	188
12.3.2	ARMgold	189
12.4	Special Factors	190
12.4.1	General Risks and Opportunities	190
12.4.2	Operational Specific Risks and Opportunities	191
13.	MINING ASSETS VALUATION	192
13.1	Introduction	192
13.2	Basis of Valuation of the Mining Assets	192
13.3	Limitations and Reliance on Information	192
13.4	Valuation Methodology	193
13.5	Post-Tax Pre-Finance Cash Flows	194
13.6	Net Present Values and Sensitivities	207
13.6.1	Free Gold Tax Entity	207
13.6.2	Joel Tax Entity	208
13.6.3	Harmony Free State Operations	208
13.6.4	ARMgold Welkom Operations	209
13.6.5	Randfontein Tax Entity	210
13.6.6	Evander Tax Entity	211
13.6.7	ARMgold Orkney Tax Entity	211
13.6.8	Kalgold Tax Entity	212
13.6.9	Mt. Magnet and Cue Tax Entity	213
13.6.10	South Kalgoorlie Tax Entity	214
13.6.11	Harmony	214
13.6.12	ARMgold	215
14.	SUMMARY EQUITY VALUATION AND CONCLUDING REMARKS	216
14.1	Summary Equity Valuation	216
14.2	Concluding Remarks	217
GLOSSARY, ABBREVIATIONS AND UNITS		218
APPENDIX 1 – Other investments		230

Table of tables

Table No.	Description	Page
Table 1.1	Base Case Macro-Economic Parameters	90
Table 2.1	Harmony: company development	93
Table 2.2	Harmony: salient historical and forecast operating statistics	94
Table 2.3	ARMgold: company development	95
Table 2.4	ARMgold: salient historical and forecast operating statistics	95
Table 2.5	Free Gold operations: salient operating statistics	96
Table 2.6	Free Gold Operations: salient historical and forecast operating statistics	97
Table 2.7	Harmony Free State Operations: salient operating statistics	98
Table 2.8	Harmony Free State Operations: salient historical and forecast operating statistics	98
Table 2.9	ARMgold Welkom Operations: salient operating statistics	99
Table 2.10	ARMgold Welkom Operations: salient historical and forecast operating statistics	99
Table 2.11	West Wits Operations: salient operating statistics	100
Table 2.12	West Wits Operations: salient historical and forecast operating statistics	101
Table 2.13	Evander Operations: salient operating statistics	102
Table 2.14	Evander Operations: salient historical and forecast operating statistics	102
Table 2.15	ARMgold Orkney: salient operating statistics	103
Table 2.16	ARMgold Orkney: salient historical and forecast operating statistics	103
Table 2.17	Kalgold Operation: salient operating statistics	104
Table 2.18	Kalgold Operation: salient historical and forecast operating statistics	104
Table 2.19	Harmony Australian Operation: salient operating statistics	105
Table 2.20	Harmony Australian Operation: salient historical and forecast operating statistics	105
Table 2.21	Harmony Canadian Operation: salient historical and forecast operating statistics	106
Table 2.22	Harmony – South African Operations land holdings	109
Table 2.23	Harmony – Australian Operations	110
Table 4.1	Free Gold Operations: assumed modifying factors	132
Table 4.2	Harmony Free State Operations: assumed modifying factors	132
Table 4.3	ARMgold Welkom Operations: assumed modifying factors	133
Table 4.4	West Wits Operations: assumed modifying factors	133
Table 4.5	Evander Operations: assumed modifying factors	133
Table 4.6	ARMgold Orkney Operations: historical and assumed modifying factors	133
Table 4.7	Free Gold Operations: Mineral Resource and Mineral Reserve statement	136
Table 4.8	Free Gold Operations: Mineral Resource, Mineral Reserve and LoM plan sensitivity	137
Table 4.9	Harmony Free State Operations: Mineral Resource and Mineral Reserve statement	137
Table 4.10	Harmony Free State Operations: Mineral Resource, Mineral Reserve and LoM plan sensitivity	138
Table 4.11	ARMgold Welkom Operations: Mineral Resource and Mineral Reserve statement	138
Table 4.12	ARMgold Welkom Operations: Mineral Resource, Mineral Reserve and LoM plan sensitivity	139
Table 4.13	West Wits Operations: Mineral Resource and Mineral Reserve statement	139
Table 4.14	West Wits Operations: Mineral Resource, Mineral Reserve and LoM plan sensitivity	140
Table 4.15	Evander Operations: Mineral Resource and Mineral Reserve statement	140

Table No.	Description	Page
Table 4.16	Evander Operations: Mineral Resource, Mineral Reserve and LoM plan sensitivity	141
Table 4.17	ARMgold Orkney Operations: Mineral Resource and Mineral Reserve statement	141
Table 4.18	ARMgold Orkney Operations: Mineral Resource, Mineral Reserve and LoM plan sensitivity	142
Table 4.19	Kalgold Operations: Mineral Resource and Mineral Reserve statement	142
Table 4.20	Harmony Australia Operations – Mt. Magnet & Cue: Mineral Resource and Mineral Reserve statement	143
Table 4.21	Harmony Australia Operations – South Kalgoorlie: Mineral Resource and Mineral Reserve statement	143
Table 4.22	Harmony Canadian Operations: Mineral Resource and Mineral Reserve statement	144
Table 4.23	Harmony: Mineral Resource and Mineral Reserve statement	144
Table 4.24	ARMgold: Mineral Resource and Mineral Reserve statement	145
Table 5.1	Mining Assets: contribution to LoM plan production	157
Table 6.1	Mining Assets: clean-up gold estimates	164
Table 7.1	Mining Assets: LoM Tailings Storage Facility Assessments	167
Table 8.1	Mining Assets: estimated capital expenditures	169
Table 9.1	Mining Assets: historical and 2004 forecast	170
Table 9.2	Productivity: Historical and assumed productivity initiatives	171
Table 9.3	Mining Assets: separation costs	172
Table 10.1	Mining Assets: historical safety statistics	174
Table 10.2	Companies: historical safety statistics	174
Table 11.1	Liabilities	182
Table 12.1	Free Gold Tax Entity: total assumed TEPs	184
Table 12.2	Joel Tax Entity: total assumed TEPs	184
Table 12.3	Harmony Free State Tax Entity: total assumed TEPs	185
Table 12.4	ARMgold Welkom Tax Entity: total assumed TEPs	185
Table 12.5	Randfontein Tax Entity: total assumed TEPs	186
Table 12.6	Evander Tax Entity: total assumed TEPs	186
Table 12.7	ARMgold Orkney Tax Entity: total assumed TEPs	187
Table 12.8	Kalgold Tax Entity: total assumed TEPs	187
Table 12.9	Harmony Australia – Mt. Magnet & Cue Tax Entity: total assumed TEPs	187
Table 12.10	Harmony Australia – South Kalgoorlie Tax Entity: total assumed TEPs	187
Table 12.11	Harmony: total assumed TEPs	188
Table 12.12	ARMgold: total assumed TEPs	189
Table 13.1	Free Gold Tax Entity: TEM in ZAR nominal terms	195
Table 13.2	Joel Tax Entity: TEM in ZAR nominal terms	196
Table 13.3	Harmony Free State Tax Entity: TEM in ZAR nominal terms	197
Table 13.4	ARMgold Welkom Tax Entity: TEM in ZAR nominal terms	198
Table 13.5	Randfontein Tax Entity: TEM in ZAR nominal terms	199
Table 13.6	Evander Tax Entity: TEM in ZAR nominal terms	200
Table 13.7	ARMgold Orkney Tax Entity: TEM in ZAR nominal terms	201
Table 13.8	Kalgold Tax Entity: TEM in ZAR nominal terms	202
Table 13.9	Mt. Magnet & Cue Tax Entity: TEM in ZAR nominal terms	203
Table 13.10	South Kalgoorlie: TEM in ZAR nominal terms	204

Table No.	Description	Page
Table 13.11	Harmony: TEM in ZAR nominal terms	205
Table 13.12	ARMgold: TEM in ZAR nominal terms	206
Table 13.13	Free Gold Tax Entity: variation of NPV with discount factors	207
Table 13.14	Free Gold Tax Entity: NPV – single parameter sensitivity	207
Table 13.15	Free Gold Tax Entity: NPV – twin parameter sensitivity at 14.5% discount	207
Table 13.16	Joel Tax Entity: variation of NPV with discount factors	208
Table 13.17	Joel Tax Entity: NPV – single parameter sensitivity	208
Table 13.18	Joel Tax Entity: NPV – twin parameter sensitivity at 14.5% discount	208
Table 13.19	Harmony Free State Tax Entity: variation of NPV with discount factors	208
Table 13.20	Harmony Free State Tax Entity: NPV – single parameter sensitivity	209
Table 13.21	Harmony Free State Tax Entity: NPV – twin parameter sensitivity at 14.5% discount	209
Table 13.22	ARMgold Welkom Tax Entity: variation of NPV with discount factors	209
Table 13.23	ARMgold Welkom Tax Entity: NPV – single parameter sensitivity	209
Table 13.24	ARMgold Welkom Tax Entity: NPV – twin parameter sensitivity at 14.5% discount	210
Table 13.25	Randfontein Tax Entity: variation of NPV with discount factors	210
Table 13.26	Randfontein Tax Entity: NPV – single parameter sensitivity	210
Table 13.27	Randfontein Tax Entity: NPV – twin parameter sensitivity at 14.5% discount	210
Table 13.28	Evander Tax Entity: variation of NPV with discount factors	211
Table 13.29	Evander Tax Entity: NPV – single parameter sensitivity	211
Table 13.30	Evander Tax Entity: NPV – twin parameter sensitivity at 14.5% discount	211
Table 13.31	ARMgold Orkney Tax Entity: variation of NPV with discount factors	211
Table 13.32	ARMgold Orkney Tax Entity: NPV – single parameter sensitivity	212
Table 13.33	ARMgold Orkney Tax Entity: NPV – twin parameter sensitivity at 14.5% discount	212
Table 13.34	Kalgold Tax Entity: variation of NPV with discount factors	212
Table 13.35	Kalgold Tax Entity: NPV – single parameter sensitivity at 14.5% discount	212
Table 13.36	Kalgold Tax Entity: NPV – twin parameter sensitivity at 14.5% discount	213
Table 13.37	Harmony Australia Mt. Magnet & Cue Tax Entity: variation of NPV with discount factors	213
Table 13.38	Mt. Magnet & Cue Tax Entity: NPV – single parameter sensitivity	213
Table 13.39	Mt. Magnet & Cue Tax Entity: NPV – twin parameter sensitivity at 14.5% discount	213
Table 13.40	South Kalgoorlie Tax Entity: variation of NPV with discount factors	214
Table 13.41	South Kalgoorlie Tax Entity: NPV – single parameter sensitivity	214
Table 13.42	South Kalgoorlie Tax Entity: NPV – twin parameter sensitivity at 14.5% discount	214
Table 13.43	Harmony: variation of NPV with discount factors	214
Table 13.44	Harmony: NPV – single parameter sensitivity	215
Table 13.45	Harmony: NPV – twin parameter sensitivity at 14.5% discount	215
Table 13.46	ARMgold: variation of NPV with discount factors	215
Table 13.47	ARMgold: NPV – single parameter sensitivity	215
Table 13.48	ARMgold: NPV – twin parameter sensitivity at 14.5% discount	216
Table 14.1	Harmony: Summary Equity Valuation	216
Table 14.2	ARMgold: Summary Equity Valuation	217

Table of figures

Figure No.	Description	Page
Figure 2.1	Mining Assets – location	111
Figure 12.1	Harmony: assumed LoM recovered gold	188
Figure 12.2	Harmony: assumed LoM tonnes milled	189
Figure 12.3	ARMgold: assumed LoM recovered gold	190
Figure 12.4	ARMgold: assumed LoM tonnes milled	190

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 Harmony Gold Mining Company Limited ("Harmony") and African Rainbow Minerals Gold Limited ("ARMgold") to prepare an independent competent person's report ("CPR") on certain mining assets (the "Mining Assets") of Harmony and ARMgold (the "Companies").

The Mining Assets of Harmony include:

- a 50% interest in ARMgold/Harmony Free Gold Joint Venture Company (Proprietary) Limited ("Free Gold");
- 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");
- a 100% interest in Harmony Gold (Australia) Pty 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 ("Harmony Free State"). Ownership of these assets is held at the Harmony level; and
- 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").

In addition Harmony holds interests in wholly-owned, joint venture and associate companies through direct and indirect subsidiaries, which comprise dormant companies, exploration companies, investment holding companies, management service companies, marketing companies, benefication companies, mineral rights holding companies and property holding companies.

The Mining Assets of ARMgold include:

- a 50 % interest in Free Gold;
- a 100% interest in ARMgolds' mining operations situated in Orkney, South Africa ("ARMgold Orkney"); and
- A 100% interest in ARMgolds' mining operations situated in Welkom, South Africa ("ARMgold Welkom").

All assets incorporating operating mines and exploration assets for which the Companies, collectively, hold less than 100% and/or do not have legal rights to disclose information, other than that already reported in the public domain, have been excluded from the collective term Mining Assets in this report. Specifically the assets, which are not reported upon in this CPR, include:

- a 34.5% 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"),
  - 42% of Avgold Limited ("Avgold") which operates the Target gold mine ("Target") located in the Free State Province, South Africa,
  - 41.3% of Two Rivers Platinum (Proprietary) Limited ("Two Rivers") which is currently developing a platinum mining operation located in Mpumalanga Province, South Africa,
  - 75% of the Nkomati nickel mine ("Nkomati") located in Mpumalanga Province, South Africa;

- Harmony's 32.5% interest in Highland Gold Mining Limited ("Highland Gold"), a company listed on the Alternative Investment Market ("AIM") of the London Stock Exchange plc ("LSE") which owns, operates and has various interests in gold mining assets in the Russian Federation;
- Harmony's 21% interest in High River Gold Mines Limited ("High River"), a company listed on the Toronto Stock Exchange ("TSE"), Canada which has gold mining assets in the Russian Federation, Canada and West Africa;
- Harmony's 31.8% interest in Bendigo Mining NL ("Bendigo") a company listed on the Australian Stock Exchange ("ASX") which owns a single gold development project in Australia; and
- Harmony's 87% interest in Abelle Limited ("Abelle") 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.

Appendix 1 to this report includes brief technical summaries of these assets, which have been reproduced from public domain information. As SRK has not had access to either the underlying information or supporting data no opinion is provided herein.

1.2 Requirement for the CPR

SRK has been informed that Harmony and ARMgold have reached an agreement, in terms of a merger agreement, regarding their proposed merger (the "Merger"). It is intended that the merger will be implemented by means of a Scheme of Arrangement (the "Scheme") to be proposed by Harmony, between ARMgold 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. These audited TEPs have also been provided to the Companies' financial advisers.

1.3 CPR Structure

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 not quoted on an attributable basis:

- ARMgold/Harmony Free Gold Joint Venture Company (Pty) Limited ("Free Gold Tax Entity");
- the tax entity within which Joel is assessed ("Joel Tax Entity");
- Harmony Free State ("Harmony Free State Tax Entity");
- ARMgold Welkom ("ARMgold Welkom Tax Entity");
- Randfontein Estates Limited ("Randfontein Tax Entity");
- Evander Gold Mines Limited ("Evander Tax Entity");
- ARMgold Orkney ("ARMgold Orkney Tax Entity");
- Kalahari Goldridge Mining Company Limited ("Kalgold Tax Entity"); and
- Harmony Gold (Australia) (Pty) Limited comprising:
  - Mt. Magnet & Cue Tax Entity,
  - 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 entities. All entries included within this CPR (including text, tables and other data) are not quoted on an attributable basis and are grouped into the following operations:

- Free Gold Operations;
- Harmony Free State Operations;
- ARMgold Welkom;
- West Wits Operations (including Randfontein, Elandsrand and Deelkraal);
- Evander Operations;
- ARMgold Orkney;
- Kalgold Operation; and
- International Operations, sub-divided into Harmony Australian Operations and Harmony Canadian Operations.

1.4 Limitations and Reliance on Information

SRK's opinion is effective 1 July 2003 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.

The achievability of Life-of-Mine ("LoM") plans, budgets and forecasts are neither warranted nor guaranteed by SRK. The forecasts as reported upon 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.

1.4.1 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 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.

1.5 Basis of Valuation of the Mining Assets

1.5.1 Technical-Economic Appraisal

The technical-economic appraisals reported herein have been determined according to the following:

- inspection visits to surface and underground operations, processing facilities, surface structures and associated infrastructure at each of the Mining Assets during May and June 2003;
- access to key mine Business Units ("BU") and head office personnel for discussion and enquiry;

– 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; and
– an examination of historical information and results made available by the Companies in respect of the Mining Assets in support of, in particular, the forecasts contained in the LoM plans and one-year budgets.

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 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. Given the generally extensive history of the Mining Assets and geological investigations undertaken by the Companies, SRK has not independently verified the underlying data, including sampling and assay data.

1.5.2 Technical-Economic Models

In complying with Section 12.14 of the JSE Listings Requirements, specifically the non-technical requirements of 12.14(b), SRK has obtained certain inputs to the technical-economic models (the "TEMs") for each of the Mining Assets, *inter alia,* from the Companies' Financial Advisors. These inputs, as described in Section 13, are duly acknowledged by SRK. Further, in reproducing the results of the TEMs, SRK provides assurances to the directors of the Companies that the technical-economic inputs of the Mining Assets as provided to and reviewed by SRK (Sections 12.14(b)(i, ii, iii, v, vi and vii)), including operating costs, capital expenditure and production profiles, are accurately incorporated into the TEMs. SRK also duly acknowledges the Companies' 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.

For the purpose of establishing the TEMs, the Companies' Financial Advisors have provided, *inter alia,* various macro-economic parameters to enable derivation of assumed expenditures in nominal ZAR. For the purpose of this report, the inputs represent Financial Years ending 30 June and commencing 1 July.

Further, all assumed costs, unless otherwise stated, including total operating and capital expenditures are quoted in 1 January 2004 terms. The nominal exchange rate in Table 1.1 is calculated using purchase price parity ("PPP").

Table 1.1 Base Case Macro-Economic Parameters

Parameter	Units	2004	2005	2006	2007	2008
Gold Price – Nominal	(US$/oz)	350	357	364	371	379
	(ZAR/kg)	93,000	98,580	104,495	110,764	117,410
	(AUS$/oz)	547	567	581	595	610
RSA PPI	(%)	6.00%	6.00%	6.00%	6.00%	6.00%
AUS PPI	(%)	2.50%	2.50%	2.50%	2.50%	2.50%
US PPI	(%)	2.00%	2.00%	2.00%	2.00%	2.00%
Nominal Exchange Rate – PPP	(US$:ZAR)	8.26	8.59	8.93	9.28	9.64
	(US$:AUS$)	1.49	1.50	1.51	1.51	1.52
	(AUS$:ZAR)	5.54	5.73	5.92	6.12	6.33

1.5.3 LoM Plans

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 of US$350/oz and macro-economic factors as defined in Table 1.1 above.

1.6 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 judgement 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 MacDonald MSc, MBL, C.Eng., Pr.M., MIMMM, MISRM;
- 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, B. Eng., 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 Boylett, C.Eng, MA (Met.), MSAIMM, MIMMM;
- Michael Harley, Pr. Sci Nat., MSAIMM, MAusIMM, PhD;
- Michael McWha Pr.Sci Nat., FGSSA, MSAIMM, BSc Hons;
- Mike Warren, MAuSIMM, BSc (Mining), MBA;
- Neal Rigby, C. Eng, MIMM. MAIME, PhD;
- Peter Munro, MAuSIMM, B. Appl. Sc., B. Comm, B. Econ;
- Peter Theron, Pr. Eng, MSAICE, BSc., GDEm;

– 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, MSAIMM, BSc (Mining), MBA; and
– William Schoeman, Pr. Eng, MSAIME, BSc.Eng (Mech).

The collective group of companies defined earlier as SRK has prepared this report. In this context and as considered by various international exchanges, SRK the Company is the Competent Person, which takes ultimate responsibility for this report. Notwithstanding this statement and in compliance with Section 12.3 of the JSE Listings Requirements, the following should be noted:

– the Competent Person with overall responsibility for the compilation of this CPR is Mr. H. G. Waldeck, Pr. Eng 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 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.

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:

– for Harmony: The information with respect to the Mineral Resources and Mineral Reserves has been prepared under the direction of 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; and
– for ARMgold: The information with respect to the Mineral Resources and Mineral Reserves has been prepared under the direction of Mr. Chris Lerm, Pr. MS, GDE, FIMSSA, MIMSA, MSc. Mr Lerm is the Strategic Planning Leader for ARMgold and Competent Person for Mineral Resource and Mineral Reserve accounting. He has 24 years' experience in gold mining evaluation and is registered with the South African Council for Professional and Technical Surveyors ("PLATO"). Mr. Lukas Korff also assisted Mr. Chris Lerm. Mr Korff has 24 years' experience in the gold mining industry.

2. MINING ASSETS

2.1 Introduction

This section gives a brief overview of the Companies and Mining Assets, property description, mining methods, operating results, location and historical development. Specifically where reference is made to legal compliance within the regulatory environment in which the Companies operation, SRK has placed reliance on the Companies and their respective legal advisors.

2.2 Companies and Operating Structures

2.2.1 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 International Depository Receipts ("IDR") traded on the Brussels Bourse, and an American Depositary Shares ("ADS") programme on the New York Stock Exchange ("NYSE").

Harmony, either through wholly-owned subsidiaries or joint venture agreements, manages and operates BUs, comprising operating and developing mines in three countries, comprising underground, open-pit and surface reclamation operations. In addition, Harmony's exploration programme targeting gold and PGEs extends its country presence through direct and indirect subsidiaries to 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, benefication 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 six reporting entities: Free State Operations (excluding Free Gold), Evander Operations, Randfontein Operations, Elandskraal Operations, Kalgold Operations and Free Gold Operations. International Operations are 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 2.1 gives the recent historical development of Harmony to date. By measure of attributable annual gold production Harmony is ranked 6th and by attributable total cash costs ranked 13th 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 2.2 gives attributable historical and forecast operating statistics for Harmony from 2001 through to 30 June 2004, inclusive, with figures reported on a financial year basis.

Table 2.1 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.

Date	Activity
October, 2002	Joint acquisition by Free Gold of St Helena BUs from Gold Fields Limited, for a gross sale consideration of ZAR120m.
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.
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 Clidet No 454 (Pty) Limited, a 50-50 JV between harmony and ARMgold of 34.5% of the shares of Avmin for a consideration of ZAR1,888m in which Harmony and ARMgold each have 50%.

Table 2.2 Harmony: salient historical and forecast operating statistics[(1), (2)]

Statistic	Units	2001	2002	2003[(3)]	2004[(4)]
Production					
Area Mined	(m^2)	2,027,043	2,286,395	2,444,772	2,816,196
Tonnes Milled	(kt)	17,074	22,934	31,752	27,513
Yield	(g/t)	3.9	3.6	3.4	3.5
Gold Production	(koz)	2,140	2,668	3,431	3,089
Development	(m)	128,625	152,006	167,041	139,808
Productivity					
TEC	(No.)	43,448	46,873	46,074	41,164
Centares	(m^2/TEC/month)	3.9	4.8	5.5	5.7
Milling	(t/TEC/month)	32	41	57	56
Gold Production	(g/TEC/month)	125	147	193	194
Health and Safety					
Fatalities	(No.)	26	37	29	–
Fatality Rate	(per mmhrs)	0.28	0.35	0.27	–
LTIFR	(per mmhrs)	28	23	23	–
Expenditures					
Cash Operating Costs	(ZARm)	3,822	5,215	7,425	6,746
Capital Expenditure	(ZARm)	424	735	763	1,104
Cost Performance					
Cash Operating Costs	(ZAR/t)	224	227	234	245
	(ZAR/kg)	57,419	62,853	69,577	70,221
Capital Expenditure	(ZAR/t)	25	32	24	40
	(ZAR/kg)	6,370	8,859	7,152	11,492

(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) 2003 incorporates actual results to Q3 and forecast results for Q4 ending June 2003.

(4) 2004 comprises forecasts for the first year of the current LoM plans.

2.2.2 ARMgold

ARMgold is a public listed company on the JSE. Table 2.3 gives the recent historical development of ARMgold to date. By measure of attributable annual gold production ARMgold is ranked 10th and by attributable total cash costs ranked 7th in terms of the world's gold mining companies. ARMgold states its core business as that directly associated with a gold company whose activities include exploration for, development of and operation of gold mines.

ARMgold's Mining Assets are managed via the Joint Venture and the ARMgold Sandton Office, which manages the Orkney Operations and Welkom Operations, which are in turn sub-divided into various BUs. ARMgold provides managerial and operational support from an Operations Office situated in Orkney, North West Province, South Africa.

Table 2.3 ARMgold: company development

Date	Activity
1994	Future Mining (Pty) Limited was formed and entered into a contractual agreement to undertake mining activities for Vaal Reefs Exploration and Mining Company at BU No. 8 at the Vaal Reef Complex.
November, 1997	African Rainbow Minerals and Exploration (Pty) Limited was registered.
January, 1998	Acquisition of six mining BUs (BUs No's 1 to 7, excluding No. 2) situated in Orkney area, from Vaal Reefs Exploration and Mining Company Limited for a consideration of ZAR38.2m.
September, 1998	Acquisition of six mining BUs (No's 1 to 7, excluding No. 5) and a gold plant in the Welkom area from Free State Consolidated Gold Mines Operations Limited ("Free State Consolidated") for a consideration of ZAR28m.
July, 2001	Acquisition of the Orkney BU No. 2 from Anglogold Limited for a consideration of ZAR10m.
December, 2001 (effective date 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.
October, 2002	Acquisition by Free Gold of St. Helena from Gold Fields Limited for a gross sale consideration of ZAR120m.
May, 2003	Announcement of merger with Harmony.
May, 2003	Announcement of an acquisition by a new joint venture company between ARMgold and Harmony of 34.5% of the issued share capital of Avmin for a consideration of ZAR844m.

Table 2.4 gives the historical and forecast attributable operating statistics for ARMgold from 2001 through to 30 June 2004, inclusive.

Table 2.4 ARMgold: salient historical and forecast operating statistics

Statistic	Units	2001	2002[1]	2003[2]	2004[3]
Production					
Area Mined	(m^2)	421,523	400,752	899,729	1,018,153
Tonnes Milled	(kt)	2,400	3,352	7,023	7,049
Yield	(g/t)	6.8	5.1	4.6	4.4
Gold Production	(koz)	524	546	1,047	993
Development	(m)	8,240	13,773	34,174	21,207
Productivity					
TEC	(No.)	8,071	15,321	15,675	14,445
Centares	(m^2/TEC/month)	4.4	4.4	4.8	5.9
Milling	(t/TEC/month)	25	36	37	41
Gold Production	(g/TEC/month)	168	185	173	178
Health and Safety					
Fatalities	(No.)	14	9	3	–
Fatality Rate	(per mmhrs)	0.63	0.29	0.12	–
LTIFR	(per mmhrs)	26	16	15	–
Expenditures					
Cash Operating Costs	(ZARm)	875	949	2,065	2,141
Capital Expenditure	(ZARm)	40	46	123	263

Table 2.4 ARMgold: salient historical and forecast operating statistic (continued)

Statistic	Units	2001	2002[1]	2003[2]	2004[3]
Cost Performance					
Cash Operating Costs	(ZAR/t)	364	283	294	304
	(ZAR/kg)	53,681	55,897	63,414	69,349
Capital Expenditure	(ZAR/t)	17	14	17	37
	(ZAR/kg)	2,437	2,708	3,767	8,524

(1) 2002 comprises six months to 30 June 2002.

(2) 2003 incorporates actual results to Q3 and forecast results for Q4 ending June 2003.

(3) 2004 comprises forecasts for the first year of the current LoM plans.

2.3 Overview of the Mining Assets

2.3.1 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 2.5 gives the salient operating statistics and Table 2.6 gives the historical and forecast operating statistics for Free Gold Operations from 1 January 2001 through to 30 June 2004 inclusive. Note that 2001 is reported on a calendar year, 2002 comprises six months to 30 June 2002, and 2003 comprises nine-months actual results to March 2003 and three-months forecast results to June 2003. 2004 is reported as the twelve-month forecast to June 2004.

Table 2.5 Free Gold operations: salient operating statistics

Production Unit	Design Capacity (ktpm)	Operating Capacity 2004 (ktpm)	Life (years)	Classification
Business Units				
Tshepong BU	165	147	16	long-life
Bambanani BU	195	134	8	medium-life
West BU	80	19	4	short-life
Eland BU	70	36	3	short-life
Kudu & Sable BU	120	22	4	short-life
Nyala BU	280	22	7	medium-life
Joel North and South BU	350	44	11	long-life
Phakisa BU	150	80	8	medium-life
St. Helena	335	48	5	medium-life
Total Hoisting Capacity	**1,745**	**473**	**18**	**long-life**
Surface Sources	300	296	4	short-life
Processing Plants				
FS1 Plant	420	402	18	long-life
FS2 Plant	300	300	4	short-life
Joel Plant	150	72	11	long-life
St. Helena	100	93	3	short-life
Total Processing Capacity	**970**	**867**	**18**	**long-life**

Table 2.6 Free Gold Operations: salient historical and forecast operating statistics

Statistic	Units	2001	2002	2003	2004
Production					
Area Mined	(m^2)	1,045,758	395,496	974,682	1,173,912
Tonnes Milled	(kt)	8,479	4,371	9,371	9,546
Yield	(g/t)	4.4	4.0	3.8	4.1
Gold Production	(koz)	1,199	558	1,155	1,259
Development	(m)	41,455	19,324	48,768	30,727
Productivity					
TEC	(No.)	20,368	14,722	15,478	17,211
Centares	(m^2/TEC/month)	4.3	4.5	5.2	5.7
Milling	(t/TEC/month)	35	49	50	46
Gold Production	(g/TEC/month)	153	197	193	192
Health and Safety					
Fatalities	(No.)	11	10	1	–
Fatality Rate	(per mmhrs)	0.35	0.24	0.05	–
LTIFR	(per mmhrs)	17	15	15	–
Expenditures					
Cash Operating Costs	(ZARm)	2,409	883	2,167	2,612
Capital Expenditure	(ZARm)	58	32	113	380
Cost Performance					
Cash Operating Costs	(ZAR/t)	284	202	231	274
	(ZAR/kg)	64,619	50,879	60,300	66,038
Capital Expenditure	(ZAR/t)	7	7	12	40
	(ZAR/kg)	1,555	1,827	3,131	9,698

2.3.2 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 BU's in 1998 and Masimong BU in 1998.

Table 2.7 gives the salient operating statistics and Table 2.8 gives the historical and forecast operating statistics for Harmony Operations from 1 January 2001 through to 30 June 2004 inclusive. Note that 2003 comprises nine-months actual results to March 2003 and three-months forecast results to June 2003. 2004 is reported as the twelve-month forecast to June 2004.

Table 2.7 Harmony Free State Operations: salient operating statistics

Production Unit	Design Capacity (ktpm)	Operating Capacity 2004 (ktpm)	Life (years)	Classification
Business Units				
Harmony No. 2 BU	227	46	5	medium-life
Harmony No. 3 BU	90	–	–	non-operational
Harmony No. 4 BU	146	–	–	non-operational
Merriespruit No. 1 BU	129	35	9	medium-life
Merriespruit No. 3 BU	197	60	9	medium-life
Virginia No. 2 BU	103	–	–	non-operational
Unisel BU	137	61	11	long-life
Saaiplaas No. 3 BU	176	25	10	long-life
Brand No. 2 BU	120	–	–	non-operational
Brand No. 3 BU	120	41	5	medium-life
Brand No. 5 BU	151	0	3	short-life
Masimong Complex	**149**	**109**	**15**	long-life
– No. 4 BU		30	10	long-life
– No. 5 BU		80	15	long-life
Total Hoisting Capacity	**1,745**	**378**	**15**	long-life
Surface Sources	200	197	13	long-life
Processing Plants				
Central Plant	240	240	11	long-life
Virgina Plant	180	162	9	medium-life
Saaiplaas Plant	220	222	15	long-life
Total Processing Capacity	**640**	**624**	**15**	long-life

Table 2.8 Harmony Free State Operations: salient historical and forecast operating statistics

Statistic	Units	2001	2002	2003	2004
Production					
Area Mined	(m^2)	721,709	738,793	807,334	917,293
Tonnes Milled	(kt)	5,289	4,536	5,351	7,487
Yield	(g/t)	4.0	4.2	3.5	2.9
Gold Production	(koz)	686	612	606	692
Development	(m)	50,027	51,188	58,272	26,513
Productivity					
TEC	(No.)	15,668	12,776	12,219	12,896
Centares	(m^2/TEC/month)	3.8	4.8	5.5	5.9
Milling	(t/TEC/month)	28	30	36	48
Gold Production	(g/TEC/month)	114	124	129	139
Health and Safety					
Fatalities	(No.)	9	8	2	–
Fatality Rate	(per mmhrs)	0.26	0.27	0.07	–
LTIFR	(per mmhrs)	35	26	24	–
Expenditures					
Cash Operating Costs	(ZARm)	1,385	1,351	1,500	1,617
Capital Expenditure	(ZARm)	120	95	130	63
Cost Performance					
Cash Operating Costs	(ZAR/t)	262	298	280	216
	(ZAR/kg)	64,883	70,978	79,619	75,162
Capital Expenditure	(ZAR/t)	23	21	24	8
	(ZAR/kg)	5,622	4,991	6,912	2,925

2.3.3 *ARMgold Welkom Operations*

The ARMgold 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 five underground mining BUs: BU No. 1; BU No. 2; 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 2.9 gives the salient operating statistics and Table 2.10 gives the historical and forecast operating statistics for ARMgold Welkom Operations from 1 January 2001 through to 30 June 2004, inclusive. Note that 2001 is reported on a calendar year, 2002 comprises six months to 30 June 2002, and 2003 comprises nine-months actual results to March 2003 and three-months forecast results to June 2003. 2004 is reported as the twelve-month forecast to June 2004.

Table 2.9 ARMgold Welkom Operations: salient operating statistics

Production Unit	Design Capacity (ktpm)	Operating Capacity 2004 (ktpm)	Life (years)	Classification
Business Units				
No. 1 BU	68	25	3	short-life
No. 2 BU	54	6	2	short-life
No. 3 BU	55	5	3	short-life
No. 4 BU	55	4	2	short-life
No. 6 BU	68	9	3	short-life
No. 7 BU	68	24	8	medium-life
Total Hoisting Capacity	**368**	**72**	**8**	**medium-life**

Table 2.10 ARMgold Welkom Operations: salient historical and forecast operating statistics

Statistic	Units	2001	2002	2003	2004
Production					
Area Mined	(m^2)	73,178	38,065	104,571	173,703
Tonnes Milled	(kt)	340	224	575	861
Yield	(g/t)	5.1	4.9	3.4	3.5
Gold Production	(koz)	56	35	63	96
Development	(m)	1,296	1,483	5,168	96
Productivity					
TEC	(No.)	1,492	1,786	2,092	2,007
Centares	(m^2/TEC/month)	4.1	3.6	4.2	7.2
Milling	(t/TEC/month)	19	21	23	36
Gold Production	(g/TEC/month)	97	102	78	124
Health and Safety					
Fatalities	(No.)	4	2	1	–
Fatality Rate	(per mmhrs)	0.92	0.35	0.27	–
LTIFR	(per mmhrs)	17	12	13	–
Expenditures					
Cash Operating Costs	(ZARm)	144	101	201	241
Capital Expenditure	(ZARm)	10	7	28	–
Cost Performance					
Cash Operating Costs	(ZAR/t)	425	449	349	280
	(ZAR/kg)	82,737	92,093	102,745	80,927
Capital Expenditure	(ZAR/t)	28	33	49	–
	(ZAR/kg)	5,444	6,778	14,508	–

2.3.4 West Wits Operations

The West Wits Operations principally comprise Elandsrand, Deelkraal, Cooke 1, Cooke 2, Cooke 3, and Doornkop and the non-operational Randfontein No.4 BU. Elandsrand and Deelkraal 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 and Doornkop 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 Elandsrand and Deelkraal area dates from 1930, leading to large-scale production by the 1940s whilst exploration, development and production history in the Cooke and Doornkop areas dates back to 1889.

Table 2.11 gives the salient operating statistics and Table 2.12 gives the historical and forecast operating statistics for West Wits Operations from 1 January 2001 through to 30 June 2004, inclusive. Note that 2003 comprises nine-months actual results to March 2003 and three-months forecast results to June 2003. 2004 is reported as the twelve-month forecast to June 2004.

Table 2.11 West Wits Operations: salient operating statistics

Production Unit	Design Capacity (ktpm)	Operating Capacity 2004 (ktpm)	Life (years)	Classification
Business Units				
Elandsrand BU	331	128	19	long-life
Deelkraal BU	187	46	6	medium-life
Cooke 1 BU	176	53	5	medium-life
Cooke 2 BU	187	64	16	long-life
Cooke 3 BU	265	85	16	long-life
Cooke 4 BU	149	–	–	non-operational
Doornkop BU	50	39	19	long-life
Total Hoisting Capacity	**1,345**	**415**	**19**	**long-life**
Surface Sources	200	188	6	medium-life
Processing Plants				
Elandsrand Plant	190	156	19	long-life
Deelkraal Plant	135	94	6	medium-life
Cooke Plant	280	235	19	long-life
Doornkop Plant	220	172	2	short-life
Total Processing Capacity	**825**	**657**	**19**	**long-life**

Table 2.12 West Wits Operations: salient historical and forecast operating statistics

Statistic	Units	2001	2002	2003	2004
Production					
Area Mined	(m^2)	870,966	946,311	803,624	889,064
Tonnes Milled	(kt)	6,991	8,078	7,914	7,444
Yield	(g/t)	3.8	4.0	3.5	3.8
Gold Production	(koz)	846	1,038	879	920
Development	(m)	47,738	59,155	56,015	68,886
Productivity					
TEC	(No.)	17,640	16,907	15,162	12,250
Centares	(m^2/TEC/month)	4.1	4.7	4.4	6.0
Milling	(t/TEC/month)	33	40	43	51
Gold Production	(g/TEC/month)	124	159	150	195
Health and Safety					
Fatalities	(No.)	12	20	20	–
Fatality Rate	(per mmhrs)	0.32	0.47	0.54	–
LTIFR	(per mmhrs)	24	23	23	–
Expenditures					
Cash Operating Costs	(ZARm)	1,400	1,963	1,896	1,901
Capital Expenditure	(ZARm)	115	262	179	335
Cost Performance					
Cash Operating Costs	(ZAR/t)	200	243	240	255
	(ZAR/kg)	53,187	60,819	69,335	66,409
Capital Expenditure	(ZAR/t)	16	32	23	45
	(ZAR/kg)	4,369	8,117	6,542	11,693

2.3.5 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 2.13 gives the salient operating statistics and Table 2.14 gives the historical and forecast operating statistics for Evander Operations from 1 January 2001 through to 30 June 2004 inclusive. Note that 2003 comprises nine-months actual results to March 2003 and three-months forecast results to June 2003. 2004 is reported as the twelve-month forecast to June 2004.

Table 2.13 Evander Operations: salient operating statistics

Production Unit	Design Capacity (ktpm)	Operating Capacity 2004 (ktpm)	Life (years)	Classification
Business Units				
Evander No. 2 BU	69	44	10	long-life
Evander No. 3 BU	20	–	–	long-life
Evander No. 5 BU	94	25	10	long-life
Evander No. 7 BU	106	42	11	long-life
Evander No. 8 BU	147	58	15	long-life
Evander No. 9 BU	83	16	4	short-life
Total Hoisting Capacity	**517**	**185**	**15**	**long-life**
Surface Sources	–	–	–	–
Processing Plants				
Kinross Plant	198	202	15	long-life
Winkelhaak Plant	72	71	10	long-life
Total Processing Capacity	**270**	**273**	**15**	**long-life**

Table 2.14 Evander Operations: salient historical and forecast operating statistics

Statistic	Units	2001	2002	2003	2004
Production					
Area Mined	(m^2)	434,368	403,543	346,473	422,883
Tonnes Milled	(kt)	2,481	2,352	2,135	2,428
Yield	(g/t)	5.7	5.5	5.2	5.1
Gold Production	(koz)	458	415	354	396
Development	(m)	30,861	32,002	28,371	29,045
Productivity					
TEC	(No.)	8,805	8,639	8,261	6,631
Centares	(m^2/TEC/month)	4.1	3.9	3.5	5.3
Milling	(t/TEC/month)	23	23	22	31
Gold Production	(g/TEC/month)	135	125	111	155
Health and Safety					
Fatalities	(No.)	5	6	4	–
Fatality Rate	(per mmhrs)	0.27	0.33	0.23	–
LTIFR	(per mmhrs)	22	24	33	–
Expenditures					
Cash Operating Costs	(ZARm)	693	723	801	891
Capital Expenditure	(ZARm)	69	98	99	105
Cost Performance					
Cash Operating Costs	(ZAR/t)	279	307	375	367
	(ZAR/kg)	48,628	55,960	72,638	72,384
Capital Expenditure	(ZAR/t)	28	42	46	43
	(ZAR/kg)	4,842	7,585	8,996	8,505

2.3.6 ARMgold Orkney Operations

The ARMgold 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") of Anglogold.

Table 2.15 gives the salient operating statistics and Table 2.16 gives the historical and forecast operating statistics for ARMgold Orkney Operations from 1 January 2001 through to 30 June 2004, inclusive. Note that 2001 is reported on a calendar year, 2002 comprises six months to 30 June 2002, and 2003 comprises nine-months actual results to March 2003 and three-months forecast results to June 2003. 2004 is reported as the twelve-month forecast to June 2004.

Table 2.15 ARMgold Orkney: salient operating statistics

Production Unit	Design Capacity (ktpm)	Operating Capacity 2004 (ktpm)	Life (years)	Classification
Business Units				
No. 1 BU	137	–	–	non-operational
No. 2 BU	142	35	3.0	short-life
No. 3 BU	130	22	4.0	short-life
No. 4 BU	160	36	5.0	medium-life
No. 5 BU	110	–	–	non-operational
No. 6 BU	135	18	8.0	medium-life
No. 7 BU	135	7	8.0	medium-life
Total Hoisting Capacity	**949**	**118**	**8.0**	**medium-life**

Table 2.16 ARMgold Orkney: salient historical and forecast operating statistics

Statistic	Units	2001	2002	2003	2004
Production					
Area Mined	(m^2)	348,345	164,939	307,817	257,494
Tonnes Milled	(kt)	2,060	942	1,763	1,415
Yield	(g/t)	7.1	7.6	7.2	5.9
Gold Production	(koz)	468	232	407	267
Development	(m)	6,944	2,628	4,622	5,747
Productivity					
TEC	(No.)	6,579	6,174	5,845	3,833
Centares	(m^2/TEC/month)	4.4	4.5	4.4	5.6
Milling	(t/TEC/month)	26	25	25	31
Gold Production	(g/TEC/month)	184	194	180	181
Health and Safety					
Fatalities	(No.)	10	7	2	–
Fatality Rate	(per mmhrs)	0.56	0.48	0.27	–
LTIFR	(per mmhrs)	28	24	17	–
Expenditures					
Cash Operating Costs	(ZARm)	730	407	781	594
Capital Expenditure	(ZARm)	30	23	38	21
Cost Performance					
Cash Operating Costs	(ZAR/t)	355	432	443	420
	(ZAR/kg)	50,195	56,450	61,768	71,455
Capital Expenditure	(ZAR/t)	15	24	22	15
	(ZAR/kg)	2,076	3,152	3,011	2,496

2.3.7 *Kalgold Operation*

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 2.17 gives the salient operating statistics and Table 2.18 gives the historical and forecast operating statistics for Kalgold Operations from 1 January 2001 through to 30 June 2004, inclusive. Note that 2003 comprises nine-months actual results to March 2003 and three-months forecast results to June 2003. 2004 is reported as the twelve-month forecast to June 2004.

Table 2.17 Kalgold Operation: salient operating statistics

Production Unit	Design Capacity (ktpm)	Operating Capacity 2004 (ktpm)	Life (years)	Classification
Business Units				
Processing Operations	135	131	4.3	short-life

Table 2.18 Kalgold Operation: salient historical and forecast operating statistics

Statistic	Units	2001	2002	2003	2004
Production					
Waste Tonnes Mined	(kt)	8,542	7,323	7,685	9,210
Tonnes Milled	(kt)	959	961	1,089	1,584
Yield	(g/t)	1.6	2.0	2.2	1.8
Gold Production	(koz)	49	62	76	93
Stripping Ratio	(t_{waste}:t_{ore})	8.9	7.6	7.1	5.8
Productivity					
TEC	(No.)	453	444	511	481
Milling	(t/TEC/month)	176	180	178	275
Gold Production	(g/TEC/month)	282	363	385	499
Health and Safety					
Fatalities	(No.)	–	–	–	–
Fatality Rate	(per mmhrs)	–	–	–	–
LTIFR	(per mmhrs)	7	13	4	–
Expenditures					
Cash Operating Costs	(ZARm)	98	130	159	220
Capital Expenditure	(ZARm)	33	25	49	0.9
Cost Performance					
Cash Operating Costs	(ZAR/t)	102	135	146	139
	(ZAR/kg)	63,844	67,218	67,336	76,423
Capital Expenditure	(ZAR/t)	34	26	36	1
	(ZAR/kg)	21,498	12,927	16,796	324

2.3.8 *International Operations – Harmony Australian Operations*

The two main operating groups of Harmony Australia are the Mt Magnet and Cue Operations, and the South Kalgoorlie Operations. Mt Magnet and 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 2.19 gives the salient operating statistics and Table 2.20 gives the historical and forecast operating statistics for Harmony Australia Operations from 1 January 2001 through to 30 June 2004, inclusive. Note that 2003 comprises nine-months actual results to March 2003 and three-months forecast results to June 2003. 2004 is reported as the twelve-month forecast to June 2004.

Table 2.19 Harmony Australian Operation: salient operating statistics

Production Unit	Design Capacity (ktpm)	Operating Capacity 2004 (ktpm)	Life (years)	Classification
Business Units				
Mount Magnet and Cue Plant	495	208	7.3	medium-life
Jubilee Plant	110	98	3.0	short-life
New Celebration Plant	138	42	0.3	short-life
Total	**743**	**348**	**7.3**	**medium-life**

Table 2.20 Harmony Australian Operation: salient historical and forecast operating statistics

Statistic	Units	2001	2002	2003	2004
Production					
Tonnes Milled	(kt)	1,088	4,782	7,103	3,798
Yield	(g/t)	1.6	1.6	2.2	2.9
Gold Production	(koz)	56	253	504	355
Productivity					
TEC	(No.)	882	882	831	831
Milling	(t/TEC/month)	103	452	712	381
Gold Production	(g/TEC/month)	164	743	1,571	1,108
Health and Safety					
Fatalities	(No.)	–	–	–	–
Fatality Rate	(per mmhrs)	n/a	0.00	0.00	–
LTIFR	(per mmhrs)	n/a	15	2	–
Expenditures					
Cash Operating Costs	(ZARm)	135	608	1,219	727
Capital Expenditure	(ZARm)	18	233	179	358
Cost Performance					
Cash Operating Costs	(ZAR/t)	124	127	172	191
	(ZAR/kg)	77,990	77,265	77,799	63,631
Capital Expenditure	(ZAR/t)	17	49	25	94
	(ZAR/kg)	10,399	29,610	11,427	31,360

2.3.9 International Operations – 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 2.21 gives the historical operating statistics for Harmony Canadian Operations from 1 July 2001 through to 30 June 2003 inclusive. For 2003, there was no production due to suspension of mining operations in the previous year.

Table 2.21 Harmony Canadian Operation: salient historical and forecast operating statistics

Statistic	Units	2001	2002	2003	2004
Production					
Tonnes Milled	(kt)	266	39	–	–
Yield	(g/t)	5.2	6.6	–	–
Gold Production	(koz)	44	8	–	–
Productivity					
TEC	(No.)	n/a	n/a	–	–
Milling	(t/TEC/month)	n/a	n/a	–	–
Gold Production	(g/TEC/month)	n/a	n/a	–	–
Health and Safety					
Fatalities	(No.)	–	–	–	–
Fatality Rate	(per mmhrs)	n/a	–	–	–
LTIFR	(per mmhrs)	37	32	–	–
Expenditures					
Cash Operating Costs	(ZARm)	111	9	3	–
Capital Expenditure	(ZARm)	49	–10	–	–
Cost Performance					
Cash Operating Costs	(ZAR/t)	417	231	–	–
	(ZAR/kg)	80,552	35,019	–	–
Capital Expenditure	(ZAR/t)	184	–256	–	–
	(ZAR/kg)	35,559	–38,911	–	–

2.4 Significant Exploration Properties

2.4.1 Harmony

Harmony has three significant exploration properties: namely Poplar, Rolspruit and Kalplats.

The Poplar Project considers the greenfields 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. Harmony has recently (March 2003) completed a feasibility study, which assesses two distinct options:

– Greenfields Option: the installation of a twin shaft system from surface; and

– Brownfields 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 of some 15m to 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. In 2003 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 in place.

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 supercede 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

The Act addresses both prospecting and mining. Prospecting 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.

2.5.4 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 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.

2.5.6 Harmony: Current Status

Harmony currently classifies their land holding position into four main categories, existing mining authorisation, area for which extensions have been applied for, 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 2.22 Harmony – South African Operations land holdings[1]

Tax Entity	Existing Mining Authorization (Ha)	Extension Application (Ha)	Contiguous Mineral Rights (Ha)	Non-Contiguous Mineral Rights (Ha)
Free Gold and Joel	21,204	9,162	4,877	24,484
Randfontein	24,266		3,006	572
Evander	36,898	2,262	2,837	1,462
Harmony Free State	22,583	1,815	3,256	4,094
Kalgold	615	3,810		
Total	**105,566**	**17,049**	**13,975**	**30,612**

(1) Evander excludes prospecting rights granted of 162,237Ha.

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 has an approved mining license for its 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 2.23 Harmony – Australian Operations

Tax Entity	Prospecting (No)	Exploration (No)	Mining (No)	Miscellaneous Licence (No)
Mt. Magnet and Cue	30	9	153	9
South Kalgoorlie	85	33	70	16
Total	**115**	**42**	**223**	**25**

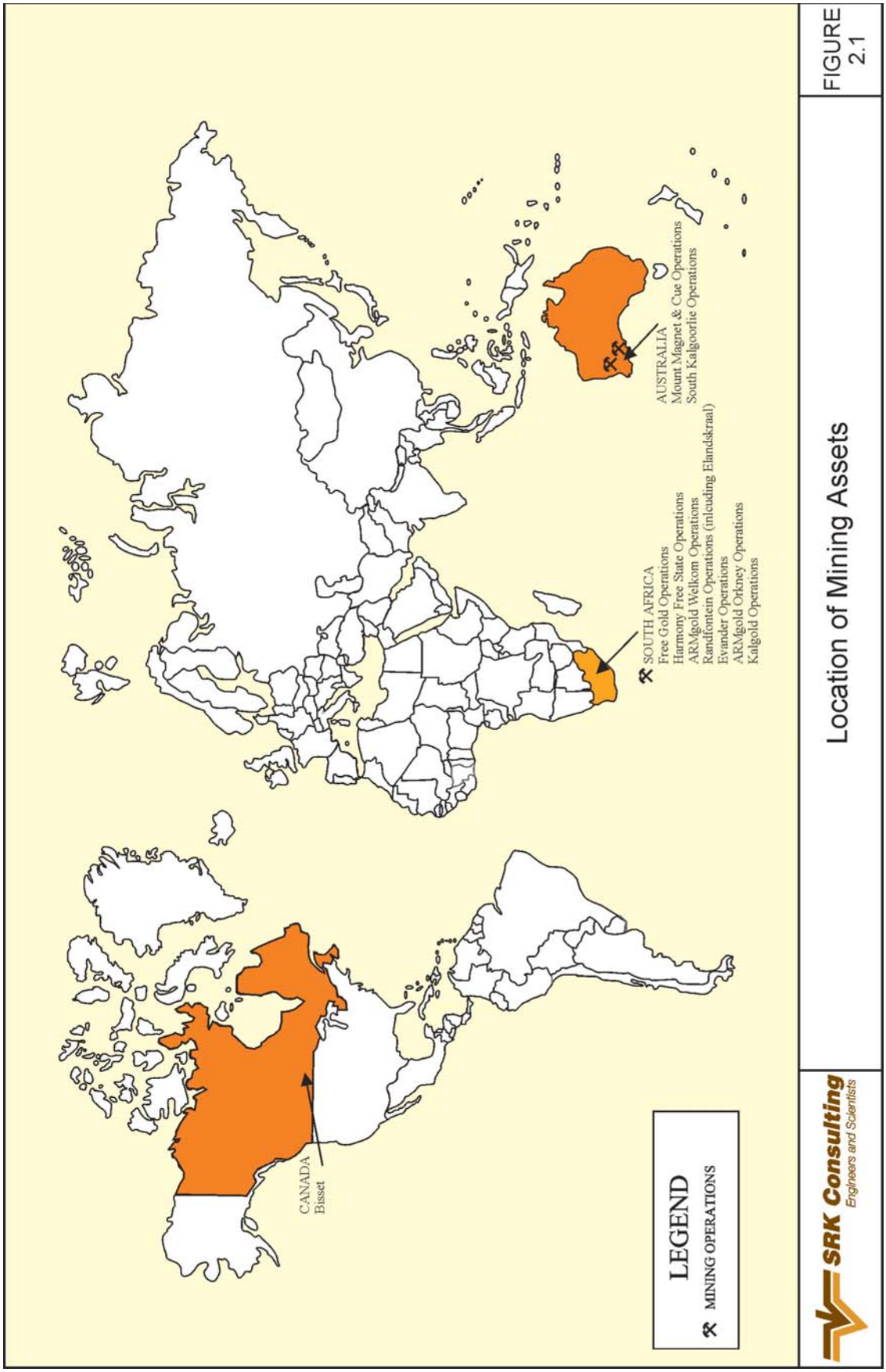
2.5.7 ARMgold: Current Status

In addition to that stated for Free Gold Operations in Section 2.5.6 ARMgold holds various freehold properties, mining rights, mineral rights and mining authorisations for both the ARMgold Orkney and ARMgold Welkom Operations.

Being effectively lease bound, ARMgold'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.

Figure 2.1 Mining Assets – location



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 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 Achaean, Proterozoic and Mesozoic volcanic and sedimentary rocks. The Witwatersrand Basin sediments themselves are considered to be of the order of 2,700 to 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 characteristic of basin margin features within certain areas.

Numerous dykes and sills of diabasic or doleritic composition are developed within the Witwatersrand Basin. These are associated with several separate events including the extrusion of the Achaean Ventersdorp Lavas and the overlying Mesozoic Karoo Volcanic Suite and the emplacement of the Proterozoic Bushveld and Pilanesberg igneous complexes to the north.

The gold generally occurs in native form, often spatially associated with pyrite and carbon. The main gangue components within the reef are quartz pebbles and sand, pyrite, chromite, zircon, spinel, arsenopyrite, pyrrhotite, cobaltite, leucoxene and uraninite. Pyrite and gold within the reefs display a variety of forms, some obviously indicative of detrital transport within the depositional system and others suggesting crystallisation within the reef itself.

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 modelling 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 western margin of the Free State Goldfield is characterised by steeply dipping to overturned Central Rand Group sedimentary rocks associated with the low-angle Rheedersdam Thrust Fault. Unconformity relationships in upper Central Rand Group rocks indicate that this reverse faulting influenced sedimentation of the Elsburg Formation.

The Odendaalsrus section is further dissected by a series of north-trending normal faults of late Klipriviersburg age, generally dipping to the west between 30° and 50° with down-throws to the west of the order of 200m to 500m. This results in loss of mineralised ground across the fault zone of as much as 750m, although the composite nature of these fault zones gives rise to the potential for the existence of economic blocks of reef within the deformation zone.

From west to east the most important faults in the Odendaalsrus section are the Uitkyk, the Eureka, the Dagbreek, the Stuurmanspan-Arrarat and the De Bron. Many of these normal faults also display a dextral strike-slip component.

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 and the Elsburg 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. The Basal Reef is the primary reef exploited at Bambanani, Tshepong, Unisel, Masimong, Eland, Kudu & Sable and Nyala Business Units.

The Basal Reef occurs at the base of the Harmony formation unconformably overlying the Welkom Formation and represents reworking and redeposition of sedimentary fans in the Welkom Formation. The Basal Reef is commonly divided into three units or facies: the Black Chert Facies, the Steyn Facies and the Lorraine Facies. All are deposited on the same unconformity surface, but are slightly different in age, with the Lorraine Facies being the oldest and the Steyn Facies the youngest. The different facies are derived from different sources and consequently have different pebble assemblages and characteristics.

The Black Chert Facies is found in the central and northern area of the Free State Goldfield and is often eroded, reworked, and overlain towards the south by the Steyn Facies. Palaeocurrent directions for the Black Chert Facies are predominantly to the east. The Black Chert Facies generally consists of a basal scour with a thin (>50cm) conglomerate lag grading into a sandy quartzite and the total Basal Reef Package varies in thickness from 30cm to 1m. Gold mineralisation is frequently associated with kerogen seams developed within the reef. The Black Chert Facies is oligomictic with clasts comprising mainly vein and smoky quartz (81%), chert (18%) and quartzite (1%).

The Steyn Facies is found in the southern area of the Free State Goldfield with palaeocurrent directions to the north, northeast and east depending on position within the fan. The Steyn Facies consists of a basal scour surface with a robust conglomerate lag grading into a pebbly quartzite, with lags and some

pebble bands developed. The basal conglomerate is much thicker than in the Black Chert Facies and often constitutes 50% of the total Basal Reef Package, which is generally up to 2m thick. Kerogen seams are seldom preserved although small fragments may be present in the matrix. The Steyn Facies is polymictic with pebbles of white and smoky vein quartz (41%), chert (21%), quartzite (14%), shale (21%) and minor amounts of schist and porphyry (3%).

The Lorraine Facies is found in the far north of the Free State Goldfield and its depositional environment is believed to have been a low energy, distal braid plain gently dipping to the south. It is characterised by a thin lag in shallow channels, often only 10cm thick, and predominantly white vein quartz pebbles with very little kerogen present. The channels are overlain by sand deposited as flow energy dropped and the Basal Reef Package is generally less than 50cm.

The Saaiplaas Reef is a very minor contributor to economic production in the Free State but bears an unusual relation to the Basal Reef, which can be significant for geological interpretation and resource estimation of the Basal Reef. The Saaiplaas Reef is a component of the lowermost quartzite member of the Harmony Formation, which overlies the Basal Reef package. Where the Saaiplaas Reef channels down through the Basal Reef it reworks the Basal Reef while diluting the grade. The reworked product of this mixing may carry economic grades in places, particularly close to Saaiplass channel edges, but is generally not economic.

The Saaiplaas Reef, while well mineralised in places, does not develop the thickness or lateral continuity of the Basal Reef. Local stope grades may be as high as 12g/t, but average stoping grades over areas significant for mining are generally in the range of 2g/t to 3g/t.

The Middle Reef, which is an inpersistent cherty and/or quartz-pebble conglomerate unit within the Middling Quartzite of the Harmony formation, is exploited at the St Helena Bus, albeit in relatively small quantities.

The Leader Reef is developed throughout the Free State Goldfield, with an estimated coverage of 200km^2, and has been a significant mining target, particularly in mines towards the south at Harmony Freestate Operations and St. Helena BU. The Leader Reef unconformably overlies the Harmony formation with thickness typically being between 1m and 3m. The Leader Reef has been interpreted to consist of two, separate, coalescing placers. The Alma placer is an oligomictic placer and the older of the two, existing as remnants beneath the younger, polymictic Bedelia placer. Although the coverage of the Leader Reef is sheet-like over its extent, individual conglomerates are lenticular and limited in extent. Channels range from a few to as much as 200m wide. Gold mineralisation is essentially confined to clast-supported conglomerate facies.

The ‘B’ Reef lies at the base of the Spes Bona member of the Aandenk Formation and is restricted to discrete, steep-walled channels incised into the underlying silt/shale member of the Dagbreek Formation. Overbank facies of ‘B’ Reef are scattered and poorly mineralised single pebble lag. The channels are between 20m and 200m wide and may be up to 2m thick. Within the channels the ‘B’ Reef is characterised by scattered local scours within the channel floor, filled with dark-grey, oligomictic conglomerate overlain by polymictic conglomerates and arenites with a more argillaceous matrix.

Significant gold mineralisation within the ‘B’ Reef exists only within the channels and is usually associated with abundant kerogen. On the low-angled sides of asymmetrical channels, the sediment may thin to a lag, consisting predominantly of heavy minerals often having in-situ gold grades in excess of 500g/t. Observations made where the ‘B’ Reef has been extensively mined suggest that only some 35% of the pre-‘B’ Reef Dagbreek surface contains ‘B’ Reef channels.

The ‘A’ Reef is one of the more significant of the Aandenk Reefs, which consist of a variety of locally developed, generally impersistent and variably mineralised conglomerates found at various stratigraphic locations within the Aandenk Formation. Several have been found to be economically important for individual mines or BUs including the Beatrix Reef mined at Beatrix and the Kalkoenkrantz Reef mined at Oryx. The ‘A’ Reef is highly channelised and consists of up to four unconformable bands of mature, oligomictic conglomerates and pebbly siliceous quartzites interbedded with argillaceous quartzites. As with the ‘B’ Reef, significant gold mineralisation is confined to the channels, however, ‘A’ Reef channels are generally more persistent and predictable than ‘B’ Reef channels.

The Elsburg Reefs are restricted to Loraine in the northern Free State Goldfield, which has been a significant historic producer with over 13Mt of ore mined at an average recovered grade of 13.6g/t Au. The Elsburg Formation represents the last phase of reworking of placer minerals in the Free State Goldfield and consists of a series of high-energy, fan conglomerates developed from reworked underlying sediments. A total of 18 different placer units have been exploited within the Elsburg placers, the most persistent and economically significant of which are the EA1, EA3, EA8 and EA12. These reefs are mostly siliceous and oligomictic, indicative of greater, sorting and consequent concentration of heavy minerals. The Elsburg Reef is very impersistent down-slope with only the proximal facies having economic mineralisation.

The Beatrix Reef conglomerates are found throughout the Joel, Unisel and Bambanani area and generally have multiple basal degradation and internal scour surfaces, often thinning to a single pebble lag on paleo-topographic highs. The Beatrix-VS5 Composite Reef represents a reworking 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.

3.2.2 West Rand Goldfield

The Cooke and Doornkop BUs 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 open syncline dips in a south-southwesterly direction and the western limb in an east-southeasterly 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 southeastwards 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 downthrow 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 not 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 northeastern extent of the basin is poorly drilled because of the depth to the Kimberley Reef and because of the generally poor grades encountered to the north. The geological structure there has been inferred from two-dimensional seismic survey lines.

The Kimberley Reef is the basal conglomerate of the Evander Quartzite Formation and varies from an oligomictic conglomerate, dominated by vein-quartz clasts and chert fragments with minor orthoquartzite fragments and silicified shale clasts, interbedded with orthoquartzitic sand to a single pebble lag with flyspeck carbon on the bottom contact. The Kimberley Reef unconformity transgresses over 200m of the underlying stratigraphy, with the youngest footwall rocks in the east and the oldest to the west. The Kimberley Reef is present from fairly shallow depths (400m to 600m) in the extreme southeast and northwest going down to 2,700m in the north. The Kimberley Reef in the Evander Basin is characterised by strongly developed payshoots, the most prominent being a northwesterly direction. The Kimberley Reef in the Evander Basin is characterised by a strong footwall control on reef development (primarily poor reef development above the Kimberley Shale) and by strongly developed payshoots.

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 exceed 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 steeplyly 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 currently economically viable.

The Vaal Reef is situated above an angular unconformity, there were two main sources of sedimentary material, from the east and west. It comprises a series of oligomictic conglomerates and quartzite packages. Gold is present throughout the reef horizon, however it is mostly concentrated close to the basal contact where carbon commonly occurs as thin seams.

Gold mineralisation in the VCR is largely associated with pyrite and also with lesser flyspeck carbon. The VCR exhibits a weak tendency to bottom loading, as significant gold is contributed by internal scour surfaces, which may occur throughout the reef horizon. This relatively even vertical distribution of gold results in a correlation between total gold content and reef thickness. Consequently the thicker and more robust terrace facies results in a higher accumulation at the planned stoping widths than the thinner slope and terrace facies.

The Elsburg Reefs are only exploited in conjunction with the overlying VCR where they sub-crop against it. This sub-crop forms a northeast trending band, south of and sub-parallel to the Buffelsdoorn Fault. The Elsburg Reefs comprise a series of conglomeratic sequences separated by finer-grained ortho-quartzites and grits as part of a wedge. The sedimentological characteristics of the Elsburg Reefs in the region of the sub-outcrop are similar with those exhibited by the VCR.

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 quality and basis for the geological models has to be taken into account when looking in particular at the quantity of the Companies Indicated Mineral Resource and the Life of Mine plans being projected into the Inferred Mineral Resource areas.

3.3.1 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 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 as a basis 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 microthrusting, which is thought to encourage fluid flow into the reef and evidence 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 BU 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 has always been found to be low grade.

The whole package dips at angles of between 25° and 45° to the east and is generally 1m to 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 subcrops 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 paleo-topographic highs. The Beatrix-VS5 Composite Reef represents a reworking 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 unaffected 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 BUs and Nyala BU are contiguous to the south and west of Tshepong BU and Basal Reef is mined almost exclusively at these shafts. 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 paleo-topographic slope, which controlled the nature of sedimentation and subsequent mineralisation potential.

The Basal Reef is particularly carbonaceous at Eland BU, Kudu & Sable BUs, 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 BUs 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 focussed on exploiting the Basal Reef shaft pillar.

The St Helena BUs 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 BU 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 a lesser extent 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.

3.3.2 Harmony Free State Operations

Mining in the area 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 and Unisel, 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 BUs 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 4 and the 'B' Reef at Masimong BU No.5. At Masimong BU No.4 and Saaiplaas BU No.3 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 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 BU No.4 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 upthrow 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 1-15m 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 subdivided 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 and16m 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. The vertical throw of faults averages 60m. 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.

3.3.3 ARMgold Welkom Operations

The ARMgold 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 BUs, Nyala BU and Tshepong BU.

The Basal Reef is the main reef exploited at ARMgold Welkom Operation. In addition to the Basal Reef, No.6 BU also exploits the Leader Reef, laying 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 subcrops 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.

3.3.4 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. This complicated pattern of stacked sub-cropping reefs, the syndepositional tectonics, the structural and depositional history of the goldfield is still not fully understood but the individual orebodies have detailed grade models to 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 southeasterly trending shoots (palaeo-depressions) 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 BU. 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 BU.

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 Elandsrand BU, 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 subcrop 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, however structural mapping of footwall haulages and crosscuts and on reef raises, winzes, drives and stopes. In contrast at Deelkraal BU, 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.

3.3.5 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 generally are consistent with thrust movement into the basin. Throws of up to 150m have been encountered within the mine workings. 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 No.6 BU 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.

3.3.6 ARMgold Orkney Operations

The ARMgold 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 held by ARMgold 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 ARMgold 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 No.3 BU, No.6 BU and No.7 BU 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 ARMgold. 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 No.6 BU and 7 BU, 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.

3.3.7 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.

3.3.8 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 northsouth 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 ultramafic 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.

3.3.9 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 stockworks. Gold mineralisation occurs in both sets of veins but is enriched at the intersection of the two vein types.

3.3.10 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 exisiting property boundaries within South Africa. Some potential does however exist for the Free Gold, Evander and Harmony Austraila Operations:

- 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 Harmony and ARMgold 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 and presents a SRK Mineral Resource and Mineral Reserve statement. as appropriate. In addition this section sets out SRK's view regarding the potential for proving up of further Mineral Resources and Mineral Reserves at the Mining Assets.

4.2 SRK Review Procedures

SRK has not re-estimated the Mineral Resource and Mineral Reserve estimates as calculated by the Companies for each of the Mining Asset. SRK has, however, undertaken sufficient check calculations and, where appropriate, made necessary adjustments to the estimates to derive the statements presented herein and incorporated into the respective LoM plans.

The tables given in this section present SRK's 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.

Harmony and ARMgold currently report Mineral Resources and Mineral Reserves in accordance with the SAMREC Code.

SAMREC terminology and guidelines are broadly applied with the following proviso. Resource estimates are categorised according to distance from current mining faces within geozones that are primarily defined by the grade characteristics of the orebody rather than purely by a geological model. Generally the Measured and Indicated Mineral Resource estimates are more conservatively derived 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 planning, nor does it impact on the long-term potential for the operations with large Inferred Mineral Resources based on sound geological models. But 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 audited 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;
- all Mineral Reserves, except where noted, are based on a gold price of US$350/oz and ZAR:US$ exchange rate of 8.26 (ZAR93,000/kg);
- all Mineral Resources and Mineral Reserves are quoted at 1 July 2003;
- 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 those 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 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 considers 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 Mineral Resources and Mineral Reserve Estimation Methodology

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.

Given the similar nature of the majority of the South African Mining Assets, the following sub-section summarises the general techniques commonly used by Harmony and ARMgold for estimation.

4.3.1 Quality and Quantity of Data

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.

None of the assay laboratories carry any accreditation. However Performance Laboratories who are the assayists for the Evander and West Wits operations are in the process of applying for ISO17025 accreditation.

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 its 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 the Companies SAMREC compliant Mineral Resource and Reserve statements.

At Free Gold Operations, Joel uses a newly established computerised system, utilising a 3D 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. Bamabanani 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 Witwaterand gold deposits. At all these operations all survey data and sampling information is captured digitally and stored in electronic database.

4.3.2 Block Definition

Once the geological structure of an area and Reef have been defined, the resource can be 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 30 metre-mining blocks; development will be blocked out for 10 metres. 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

Resource estimation techniques at the Mining Assets follow the same basic principles, however different computer software packages are employed by the different companies.

At all of the following operations, Kudu and Sable BUs, Nyala BU, Eland BU and St Helena BU data capture and estimation is paper based.

Statistics: Where data is captured digitally each mine uses its defined geozones to sub-divide the Reef data into discrete data 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 and interpolated.

Data are checked and validated and any extreme values investigated to ensure there are no transcription errors and the data validated. Despiking and grade cutting techniques are used on some of the secondary Reef data to assist with further statistical and geostatistical studies.

Geostatistics: 'Point' variograms are constructed 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 comprised of 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.

Kriging: 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 estimate of the Indicated model are restricted by two times the range with a minimum of two sample points. In general the Sitchel-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.

Block Listing: 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 to access 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 on 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.

ARMgold's operations, Eland BU, Kudu & Sable BUs, 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

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 according to the Harmony "franchise rules". Measured Mineral Resources are blocked out to 30 metres or against structures and payshoots and are adjacent to sampled stoping. Indicated Mineral Resources are blocked out to 60 metres from sampled stoping and within geozones. Inferred Mineral Resources are within large blocks defined by facies, structure and the mining lease boundaries.

SRK consider 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

The choice of Selective Mining Units ("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

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 BFs 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. BF's 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 Shaft Call Factor ("SCF"), which multiplied with the Plant Call Factor ("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

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 BU separately. All factors relate solely to underground resources and primarily utilise Block Factor ("BF"), Mine Call Factor ("MCF"), Stoping Width ("SW") and Milling Width ("MW"). The block factor is a correction factor used to account for historical variance between the insitu estimate of the mining block and the average block grade post-sampling during block depletion. The mine call factor 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 stoping width is the average in-stope mining width achieved during extraction. Finally the milling width 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 supplying 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.

Table 4.1 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 and 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 4.2 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%	75%	201	265
Masimong No. 4 BU	100%	78%	139	179
Masimong No. 5 BU	100%	78%	131	168

Table 4.3 ARMgold 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 4.4 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%	70%	244	366

Table 4.5 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 4.6 ARMgold Orkney Operations: historical and 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 Operations

4.4.1 Mineral Resources and Mineral Reserve Estimation Methodology

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 and is 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.

4.4.2 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

QA/QC procedures and Harmony normally performs ongoing data validation procedures when completing the geological modelling and resource estimation. In terms of underground sludge drillholes a check analysis is performed for every 20 sludge holes drilled or sludge samples taken. All current sampling takes place under geological control and, where applicable, older geological codes are converted to newer codes.

4.4.3 Block Definition

At the underground operations detailed high-quality 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 drilling and, if available, earlier open hole 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. Mineral Resource modelling procedures are well documented and include a system showing comprehensive listings of all the relevant estimation and block model parameters.

4.4.4 Grade and Tonnage Estimation

Mineral Resource estimation procedures were traditionally based on polygonal methods only but all current resource models are preferably estimated using ordinary block kriging or by using inverse distance methods. When using inverse distance methods for open-pits inverse distance squared or inverse distance cubed methods are used. It should be recognised that 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 open-pits considerable nugget effects occur, dense sampling grids are needed 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 reliable 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.

4.4.5 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 appear to reconcile reasonably well over longer periods but that gold grades, in places, appear to be over-estimated as well as under-estimated as is to be expected from inverse distance resource methods. 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.

4.4.6 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 Reserves are further confirmed in places by infill drilling though it is understood that Harmony include confidence factors in financial evaluation to account for areas of lower confidence in Inferred Reserves.

4.5 SRK 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. Note that this is an approximation 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.

Mineral Resources and Mineral Reserve statements as presented herein differ from that 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. SRK has reported Mineral Resources at in-situ cut-off grades which are reflective of current parameters at each of the individual BUs;
- Mineral Reserve statements include only those Measured and Indicated Mineral Resources modified to produce Mineral Reserves and planned for extraction in LoM Plans;

In considering the following Mineral Resource and Mineral Reserve statements SRK note the following:

- With respect to the classification of Mineral Reserves SRK considers that at the majority of the South African operations that the boundary between Indicated Mineral Resources and Inferred Mineral Resources is conservatively defined and that for primary reef units reclassification would 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 Probable Mineral Reserves. SRK has on a high level basis and reported as the Proven and Probable NPV (Section 14) , determined the relative impact on value should mining operations extract only the currently defined Mineral Reserves. This assessment assumes that all LoM plans mine Inferred Mineral Resources during the latter part of the operation. 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 presented by the Companies base case projections;
- 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. Conversion in this instance is dependent upon a1l modifying factors inclusive, of Mine Call Factors, Dilution, extraction and other planning considerations. In certain instances, specifically where this grouping of Mineral Resources contains a high portion of remnant pillars, only a relatively small proportion of this Mineral Resource grouping is currently planned for extraction. Where this is the case (Freegold 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 convert 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 also render portions of these Mineral Resources to be excluded from the Mineral Resource base on technical grounds;

– 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 has been reviewed by SRK on a desk top basis alone. SRK, however note that the operation is currently under care and maintenance with no near term intent to recommence operations.

4.5.1 Free Gold Operations

Table 4.7 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)	18,241	7.9	4,637	– u/g (1)	30,447	12.6	12,372
				– u/g (2)	507	11.0	179
– s/f (1)	2,694	0.5	44	– s/f (1)	2,694	0.5	44
Subtotal	**20,935**	**7.0**	**4,681**	**Subtotal**	**33,647**	**11.6**	**12,595**
Probable				**Indicated**			
– u/g (1)	45,216	6.9	10,037	– u/g (1)	63,355	10.5	21,391
				– u/g (2)	1,237	7.2	287
– s/f (1)	9,664	0.8	256	– s/f (1)	12,066	0.8	292
Subtotal	**54,880**	**5.8**	**10,293**	**Subtotal**	**76,659**	**8.9**	**21,970**
Total Reserves	**75,815**	**6.1**	**14,974**	**Total**	**110,306**	**9.7**	**34,565**
Inferred in LoM							
– u/g (1)	7,475	6.5	1,572	– u/g (1)	122,126	9.1	35,551
				– u/g (2)	83,508	4.8	12,986
Subtotal	**7,475**	**6.5**	**1,572**	**Subtotal**	**205,634**	**7.3**	**48,538**
Total in LoM Plan	**83,290**	**6.2**	**16,546**		**315,940**	**8.2**	**83,102**

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 4.8 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 4.8 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)	96,409	215,905	**315,940**	371,103	558,645	988,626	1,203,888	1,245,773
Grade	(g/t)	9.1	9.0	**8.2**	7.6	5.4	3.5	3.1	3.1
Metal	(koz)	28,278	62,609	**83,102**	90,350	90,421	111,100	120,916	123,182
Mineral Reserves – Total									
Tonnage	(kt)	33,970	55,976	**75,815**	82,428	189,251	365,977	370,009	371,623
Grade	(g/t)	8.5	7.4	**6.1**	5.9	2.8	1.6	1.6	1.6
Metal	(koz)	9,319	13,333	**14,974**	15,534	16,916	18,800	19,002	19,068
LoM Plan – Total									
Tonnage	(kt)	34,815	60,799	**83,290**	91,064	198,439	375,568	389,200	391,229
Grade	(g/t)	8.6	7.4	**6.2**	5.9	2.9	1.7	1.7	1.7
Metal	(koz)	9,577	14,506	**16,546**	17,237	18,671	20,587	21,031	21,116

4.5.2 Harmony Free State Operations

Table 4.9 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)	13,897	4.6	2,039	– u/g (1)	25,664	7.5	6,195
				– u/g (2)	981	7.6	239
– s/f (1)	13,412	0.4	151	– s/f (1)	13,412	0.4	151
Subtotal	**27,309**	**2.5**	**2,190**	**Subtotal**	**40,057**	**5.1**	**6,586**
Probable				**Indicated**			
– u/g (1)	12,100	4.6	1,797	– u/g (1)	15,413	7.3	3,636
				– u/g (2)	174	7.3	41
– s/f (1)	6,729	0.6	131	– s/f (1)	6,729	0.6	131
Subtotal	**18,829**	**3.2**	**1,927**	**Subtotal**	**22,317**	**5.3**	**3,808**
Total Reserves	**46,138**	**2.8**	**4,118**	**Total**	**62,374**	**5.2**	**10,394**
Inferred in LoM							
– u/g (1)	19,193	4.5	2,781	– u/g (1)	37,980	6.3	7,645
				– u/g (2)	22,423	6.0	4,348
Subtotal	**19,193**	**4.5**	**2,781**	**Subtotal**	**60,403**	**6.2**	**11,992**
Total in LoM Plan	**65,331**	**3.3**	**6,899**		**122,777**	**5.7**	**22,386**

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 4.10 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 4.10 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)	6,055	32,807	**122,777**	199,934	318,105	649,268	824,718	1,000,645
Grade	(g/t)	14.1	7.4	**5.7**	5.3	4.7	3.3	2.9	2.5
Metal	(koz)	2,747	7,850	**22,386**	33,803	47,604	69,328	76,800	80,449
Mineral Reserves – Total									
Tonnage	(kt)	2,468	14,953	**46,138**	57,175	74,920	173,091	256,819	262,342
Grade	(g/t)	8.1	4.5	**2.8**	2.7	2.7	1.5	1.1	1.1
Metal	(koz)	640	2,143	**4,118**	4,971	6,451	8,142	9,242	9,445
LoM Plan – Total									
Tonnage	(kt)	2,563	16,947	**65,331**	98,465	130,048	268,140	357,699	374,268
Grade	(g/t)	8.0	4.4	**3.3**	3.2	3.4	2.0	1.6	1.6
Metal	(koz)	662	2,424	**6,899**	10,210	14,385	17,471	18,823	19,339

4.5.3 ARMgold Welkom Operations

Table 4.11 ARMgold 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]	1,780	4.4	249	– u/g [1]	1,806	9.2	531
				– u/g [2]	5,825	9.1	1,700
Subtotal	**1,780**	**4.4**	**249**	**Subtotal**	**7,630**	**9.1**	**2,231**
Probable				**Indicated**			
– u/g [1]	1,690	3.2	175	– u/g [1]	1,585	5.8	297
				– u/g [2]	4,935	7.8	1,232
Subtotal	**1,690**	**3.2**	**175**	**Subtotal**	**6,520**	**7.3**	**1,529**
Total Reserves	**3,470**	**3.8**	**424**	**Total**	**14,151**	**8.3**	**3,760**
Inferred in LoM							
				– u/g [2]	1,307	7.1	298
Subtotal				**Subtotal**	**1,307**	**7.1**	**298**
Total in LoM Plan	**3,470**	**3.8**	**424**		**15,458**	**8.2**	**4,058**

In addition to the stated Mineral Resources and Mineral Reserves, over the LoM period ARMgold 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 4.12 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 4.12 ARMgold 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)	4,527	9,285	**15,458**	23,949	47,625	52,866	65,516	80,476
Grade	(g/t)	12.2	9.5	**8.2**	6.8	5.4	5.1	4.5	3.9
Metal	(koz)	1,777	2,840	**4,058**	5,274	8,235	8,722	9,423	10,048
Mineral Reserves – Total									
Tonnage	(kt)	716	2,433	**3,470**	3,719	3,893	4,003	4,117	4,128
Grade	(g/t)	5.6	4.2	**3.8**	3.7	3.6	3.5	3.5	3.5
Metal	(koz)	130	328	**424**	443	452	457	460	460
LoM Plan – Total									
Tonnage	(kt)	716	2,433	**3,470**	3,719	3,893	4,003	4,117	4,128
Grade	(g/t)	5.6	4.2	**3.8**	3.7	3.6	3.5	3.5	3.5
Metal	(koz)	130	328	**424**	443	452	457	460	460

4.5.4 West Wits Operations

Table 4.13 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)	12,068	6.3	2,452	– u/g (1)	15,046	10.0	4,857
				– u/g (2)	10,435	9.8	3,288
– s/f (1)	440	2.7	38	– s/f (1)	729	2.4	55
Subtotal	**12,508**	**6.2**	**2,489**	**Subtotal**	**26,209**	**9.7**	**8,201**
Probable				**Indicated**			
– u/g (1)	14,574	8.2	3,833	– u/g (1)	18,947	11.7	7,143
				– u/g (2)	5,540	9.1	1,624
– s/f (1)	3,681	0.8	95	– s/f (1)	7,990	0.7	176
Subtotal	**18,255**	**6.7**	**3,928**	**Subtotal**	**32,477**	**8.6**	**8,943**
Total Reserves	**30,763**	**6.5**	**6,417**	**Total**	**58,687**	**9.1**	**17,144**
Inferred in LoM							
– u/g (1)	39,712	6.1	7,734	– u/g (1)	66,724	8.3	17,744
				– u/g (2)	3,063	4.4	430
Subtotal	**39,712**	**6.1**	**7,734**	**Subtotal**	**69,787**	**8.1**	**18,174**
Total in LoM Plan	**70,475**	**6.2**	**14,151**		**128,474**	**8.6**	**35,318**

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 4.14 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 4.14 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)	24,869	63,526	**128,474**	378,282	602,871	929,647	1,072,178	1,153,731
Grade	(g/t)	14.6	10.6	**8.6**	4.5	3.7	2.9	2.7	2.6
Metal	(koz)	11,695	21,662	**35,318**	55,083	70,839	85,688	93,709	98,095
Mineral Reserves – Total									
Tonnage	(kt)	9,929	21,793	**30,763**	54,546	64,791	74,682	82,000	86,432
Grade	(g/t)	10.3	7.7	**6.5**	4.2	4.0	3.7	3.5	3.3
Metal	(koz)	3,298	5,415	**6,417**	7,410	8,279	8,833	9,155	9,308
LoM Plan – Total									
Tonnage	(kt)	16,230	37,327	**70,475**	133,984	189,641	236,265	270,723	285,008
Grade	(g/t)	9.8	7.5	**6.2**	4.3	3.7	3.3	3.1	3.0
Metal	(koz)	5,101	8,949	**14,151**	18,535	22,612	25,172	26,855	27,354

4.5.5 Evander Operations

Table 4.15 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)	4,030	5.7	740	– u/g (1)	5,494	10.7	1,898
				– u/g (2)	854	11.2	307
Subtotal	**4,030**	**5.7**	**740**	**Subtotal**	**6,348**	**10.8**	**2,205**
Probable				**Indicated**			
– u/g (1)	34,929	7.5	8,440	– u/g (1)	37,159	14.2	16,926
				– u/g (2)	12,889	11.4	4,744
				– s/f (2)	210,398	0.3	2,259
Subtotal	**34,929**	**7.5**	**8,440**	**Subtotal**	**260,446**	**2.9**	**23,929**
Total Reserves	**38,959**	**7.3**	**9,180**	**Total**	**266,795**	**3.0**	**26,134**
Inferred in LoM							
– u/g (1)	4,559	5.4	786	– 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	**4,559**	**5.4**	**786**	**Subtotal**	**62,093**	**9.9**	**19,777**
Total in LoM Plan	**43,518**	**7.1**	**9,966**		**328,887**	**4.3**	**45,912**

Table 4.15 includes 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 4.16 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 4.16 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									
Tonnage	(kt)	4,792	61,666	**328,887**	358,594	398,696	437,200	459,655	526,397
Grade	(g/t)	17.5	12.0	**4.3**	4.5	4.5	4.4	4.4	4.2
Metal	(koz)	2,694	23,885	**45,912**	51,572	57,796	62,345	64,957	71,061
Mineral Reserves – Total									
Tonnage	(kt)	2,614	12,866	**38,959**	42,349	49,850	59,223	73,992	82,016
Grade	(g/t)	9.2	8.0	**7.3**	7.0	6.4	5.6	4.9	4.6
Metal	(koz)	774	3,324	**9,180**	9,520	10,198	10,756	11,732	12,064
LoM Plan – Total									
Tonnage	(kt)	3,054	16,032	**43,518**	52,655	64,598	77,357	93,736	102,418
Grade	(g/t)	9.1	7.6	**7.1**	6.4	5.7	5.0	4.5	4.2
Metal	(koz)	892	3,939	**9,966**	10,826	11,810	12,559	13,611	13,968

4.5.6 ARMgold Orkney Operations

Table 4.17 ARMgold 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]	5,181	4.8	802	– u/g [1]	6,729	6.8	1,471
				– u/g [2]	17,294	8.4	4,655
Subtotal	**5,181**	**4.8**	**802**	**Subtotal**	**24,023**	**7.9**	**6,126**
Probable				**Indicated**			
– u/g [1]	1,192	5.9	227	– u/g [1]	1,308	10.2	428
				– u/g [2]	95,932	3.6	11,219
Subtotal	**1,192**	**5.9**	**227**	**Subtotal**	**97,240**	**3.7**	**11,647**
Total Reserves	**6,373**	**5.0**	**1,029**	**Total**	**121,263**	**4.6**	**17,773**
Inferred in LoM							
				– u/g [2]	1,041	8.3	279
Subtotal				**Subtotal**	**1,041**	**8.3**	**279**
Total in LOM Plan	**6,373**	**5.0**	**1,029**		**122,304**	**4.6**	**18,052**

In addition to the stated Mineral Resources and Mineral Reserves, over the LoM period ARMgold 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 4.18 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 4.18 ARMgold 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)	10,946	38,358	**122,304**	154,375	212,191	295,541	310,596	337,424
Grade	(g/t)	11.2	7.2	**4.6**	4.2	3.8	3.4	3.4	3.3
Metal	(koz)	3,940	8,824	**18,052**	20,938	25,682	32,659	33,577	36,218
Mineral Reserves – Total									
Tonnage	(kt)	1,265	3,873	**6,373**	7,849	18,685	22,247	24,594	28,091
Grade	(g/t)	7.6	6.0	**5.0**	4.6	2.8	2.6	2.5	2.3
Metal	(koz)	308	744	**1,029**	1,160	1,661	1,856	1,953	2,087
LoM Plan – Total									
Tonnage	(kt)	1,265	3,873	**6,373**	7,849	18,685	22,247	24,594	28,091
Grade	(g/t)	7.6	6.0	**5.0**	4.6	2.8	2.6	2.5	2.3
Metal	(koz)	308	744	**1,029**	1,160	1,661	1,856	1,953	2,087

4.5.7 Kalgold Operation

Table 4.19 Kalgold 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**			
– s/f [(1)]	1,010	1.2	38	– s/f [(1)]	1,113	1.3	45
– o/p [(1)]	5,762	2.3	421	– o/p [(1)]	13,211	2.1	909
				– o/p [(2)]	11,334	1.1	413
Subtotal	**6,772**	**2.1**	**459**	**Subtotal**	**25,658**	**1.7**	**1,367**
Probable				**Indicated**			
				– o/p [(2)]	4,485	1.5	217
Subtotal				**Subtotal**	**4,485**	**1.5**	**217**
Total Reserves	**6,772**	**2.1**	**459**	**Total**	**30,143**	**1.6**	**1,584**
Inferred in LoM							
				– o/p [(2)]	14,804	1.8	851
Subtotal				**Subtotal**	**14,804**	**1.8**	**851**
Total in LoM Plan	**6,772**	**2.1**	**459**		**44,947**	**1.7**	**2,435**

4.5.8 *Harmony Australia Operations*

Table 4.20 Harmony Australia Operations – Mt Magnet and Cue: 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)	375	4.7	57	– u/g (1)	4,035	3.8	499
– s/f (1)	1,458	1.0	45	– s/f (1)	3,341	1.0	108
– o/p (1)				– o/p (1)	144	2.8	13
Subtotal	**1,834**	**1.7**	**102**	**Subtotal**	**7,520**	**2.6**	**620**
Probable				**Indicated**			
– u/g (1)	3,943	5.6	706	– u/g (1)	8,960	5.6	1,603
– s/f (1)	1,236	0.9	37	– s/f (1)	1,330	0.9	38
– o/p (1)	1,116	2.8	100	– o/p (1)	18,014	2.3	1,311
Subtotal	**6,295**	**4.2**	**843**	**Subtotal**	**28,304**	**3.2**	**2,952**
Total Reserves	**8,129**	**3.6**	**945**	**Total**	**35,823**	**3.1**	**3,572**
M + I + INF in LoM				**Inferred**			
– u/g (1)	2,927	6.7	628	– u/g (1)	10,310	5.5	1,834
– o/p (1)	3,796	2.0	241	– o/p (1)	10,798	1.9	663
Subtotal	**6,723**	**4.0**	**870**	**Subtotal**	**21,108**	**3.7**	**2,497**
Total in LoM Plan	**14,852**	**3.8**	**1,815**		**56,932**	**3.3**	**6,069**

Table 4.21 Harmony Australia Operations – South Kalgoorlie: 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)	816	4.7	124	– u/g (1)	1,375	4.8	212
– s/f (1)	462	0.8	12	– s/f (1)	2,482	1.0	78
– o/p (1)	105	2.1	7	– o/p (1)	2,870	2.4	224
Subtotal	**1,383**	**3.2**	**143**	**Subtotal**	**6,727**	**2.4**	**514**
Probable				**Indicated**			
– u/g (1)	720	4.3	99	– u/g (1)	1,753	4.0	226
– s/f (1)				– s/f (1)	937	0.7	22
– o/p (1)	1,183	2.4	91	– o/p (1)	35,849	1.7	1,987
Subtotal	**1,903**	**3.1**	**190**	**Subtotal**	**38,539**	**1.8**	**2,234**
Total Reserves	**3,286**	**3.2**	**333**	**Total**	**45,266**	**1.9**	**2,749**
M + I + INF in LoM				**Inferred**			
– u/g (1)	277	4.9	43	– u/g (1)	3,174	3.4	343
– o/p (1)	271	1.9	17	– o/p (1)	45,991	1.3	1,888
Subtotal	**548**	**3.4**	**60**	**Subtotal**	**49,341**	**1.4**	**2,235**
Total in LoM Plan	**3,834**	**3.2**	**394**		**94,607**	**1.6**	**4,984**

4.5.9 *Harmony Canadian Operations*

Table 4.22 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					**2,105**	**8.4**	**569**

4.5.10 *Harmony*

Table 4.23 Harmony: 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]	40,307	6.0	7,730	– u/g [1]	67,371	9.2	19,973
				– u/g [2]	12,523	9.7	3,924
– s/f [1]	18,129	0.5	306	– s/f [1]	22,424	0.6	460
				– s/f [2]			
– o/p [1]	5,866	2.3	428	– o/p [1]	16,225	2.2	1,146
				– o/p [2]	11,334	1.1	413
Subtotal	**64,303**	**4.1**	**8,464**	**Subtotal**	**129,876**	**6.2**	**25,916**
Probable				**Indicated**			
– u/g [1]	88,874	7.0	19,894	– u/g [1]	114,665	11.0	40,431
				– u/g [2]	19,222	10.6	6,552
– s/f [1]	16,479	0.7	390	– s/f [1]	23,020	0.7	513
				– s/f [2]	210,398	0.3	2,259
– o/p [1]	2,299	2.6	191	– o/p [1]	53,862	1.9	3,298
				– o/p [2]	4,485	1.5	217
Subtotal	**107,652**	**5.9**	**20,475**	**Subtotal**	**425,652**	**3.9**	**53,271**
Total Reserves	**171,954**	**5.2**	**28,939**	**Total**	**555,528**	**4.4**	**79,187**
M + I + INF in LoM				**Inferred**			
– u/g [1]	70,405	5.6	12,758	– u/g [1]	197,534	8.0	51,114
				– u/g [2]	110,578	7.2	25,503
– s/f [1]				– s/f [1]	176	0.7	4
				– s/f [2]	1,290	0.3	13
– o/p [1]	4,067	2.0	258	– o/p [1]	56,789	1.4	2,551
				– o/p [2]	14,804	1.8	851
Subtotal	**74,473**	**5.4**	**13,017**	**Subtotal**	**381,170**	**6.5**	**80,036**
Total in LoM Plan	**246,427**	**5.3**	**41,956**		**936,699**	**5.3**	**159,223**

4.5.11 ARMgold

Table 4.24 ARMgold: 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)	16,081	6.5	3,370	– u/g (1)	23,758	10.7	8,188
				– u/g (2)	23,372	8.6	6,445
– s/f (1)	1,347	0.5	22	– s/f (1)	1,347	0.5	22
Subtotal	**17,428**	**6.1**	**3,392**	**Subtotal**	**48,477**	**9.4**	**14,655**
Probable				**Indicated**			
– u/g (1)	25,489	6.6	5,421	– u/g (1)	34,571	10.3	11,420
				– u/g (2)	101,485	3.9	12,595
– s/f (1)	4,832	0.8	128	– s/f (1)	6,033	0.8	146
Subtotal	**30,321**	**5.7**	**5,549**	**Subtotal**	**142,090**	**5.3**	**24,161**
Total Reserves	**47,750**	**5.8**	**8,940**	**Total**	**190,567**	**6.3**	**38,815**
M + I + INF in LoM				**Inferred**			
– u/g (1)	3,737	6.5	786	– u/g (1)	61,063	9.1	17,776
				– u/g (2)	44,102	5.0	7,070
Subtotal	**3,737**	**6.5**	**786**	**Subtotal**	**105,165**	**7.3**	**24,845**
Total in LoM Plan	**51,487**	**5.9**	**9,726**	**341,668**	**295,732**	**6.7**	**63,661**

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 consider 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, and secondary reefs at the West Wits Operations;
- exploration into the Jeannette area 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 form 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 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. Beyond the three-year period, LoM projections are developed on a factorised depletion of the available resources.

In conjunction with the above, a detailed (one-year) operating and capital cost budget is subsequently projected, and where appropriate modified 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 planning 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 infrastrure and associated additional maintenance costs. Labour (contributing between 40% and 50% of the total costs) has been assessed taking a view on the achieveable productivity over the LoM period. Consumables have been split into a fixed and variable component and projected forward on that basis driven by cost drivers such as development meters and stoping area (accounting for variation in stoping width).

5.3 Overview of Mining Operations

5.3.1 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 three-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, St Helena BUs, Eland BU, Kudu and 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 BU (62°C) to the minimum value at Joel BU (35.6°C). 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 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: Phakisa 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 effect additional rock hoisting to 55L via 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 in the second quarter of 2004.

Bambanani BU: Bambanani'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 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 are small scale and focused on Basal Reef pillars and some mining of the Leader Reef.

Eland BU, Kudu and Sable BUs and Nyala BU: The Eland BU and Nyala BU are interlinked on a number of levels and have connections with Tshepong BU, ARMgold 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 BUs comprise 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 Leader Reef 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 ARMgold Welkom BUs led to an elevated risk of fire and an increase in illegal mining activity. 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 a level of collusion, policing these 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.

Future execution of mining operations at Free Gold Operations, as planned, is dependent upon:

- minimising the risk of further underground fires at Bambanani and West 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, which will enable access to ore from the deeper levels,
  - the completion of the Phakisa Project;
  - the completion of the upgrade to the Nyala shaft 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's North shaft;
- continuation of infrastructure rehabilitation programmes, specifically to address ventilation conditions and orepass integrity at Bambanani. Development waste is hoisted with mined ore;
- continued vigilance with respect to minimising seismic activity, specifically with respect to:
  - remnant extraction at Bambanani; 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.

5.3.2 Harmony Free State Operations

Harmony Free State Operations comprise a complex of nine mature operating mines: Brand BU No. 1/3, Brand BU No. 5, Harmony BU No. 2, Merriespruit BU No. 1, Merriespruit BU No. 3, Masimong BU No. 4, Masimong BU No. 5, Saaiplaas BU No. 3 and Unisel BU No. 1, which are managed as individual business units. Collectively Harmony Free State Operations will continue for 15 years, thus classifying Harmony Free State Operations 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 No.3 BU is transported underground to Brand No.1 BU 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 two-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 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 increases to the primary infrastructure requirements are required and development of the new raise lines is anticipated in the next 2 to 3 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 audited the mining practice the high extraction ratio still presents a risk to the planned extraction.

Future mining operations at Harmony Free State Operations are dependent upon:

- 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.

5.3.3 ARMgold Welkom Operations

ARMgold 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 ARMgold 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 ARMgold 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 ARMgold Welkom Operations is undertaken by variations on conventional narrow reef mining methods including breast and "undercut" mining. The latter is utilised by ARMgold 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 No.1 BU, 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 No.1 BU is conducted directly by ARMgold Welkom Operations, while at all other BUs contractors undertake mining and reclamation activities. Mine ventilation systems at ARMgold 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 ARMgold 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 ARMgold 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 ARMgold Welkom Operations include those typically associated with remnant mining operations and the influence of the weak Khaki Shale.

Mining on the Basal Reef at ARMgold Welkom Operations is characterized 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.

Future mining operations at ARMgold Welkom Operations are dependent upon:

– minimising the impacts of illegal miners and potential fire risks; and
– minimising economic risk through further cost control.

5.3.4 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 been 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 and South Reef at Doornkop BU. Access to the reef horizons including men, material and production is from surface shafts. Mining operations at the Elandsrand 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 between 50% and 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 two-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 of old gold 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 BU; 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 4 and 5 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 BU 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.

Future mining operations at West Wits Operations are dependent upon:

– 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 Elandsrand BU 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.

5.3.5 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 unit sand the Rolspuit and Poplar Projects. Operations at the Evander No.3 BU have been 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 both in virgin areas and through the extraction of various remnants and pillars. The proportion of remnant to virgin mining varies between 30% and 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 of old gold 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 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 greenfields development through installation of a twin shaft system to some 1,200m below surface to access ore some 20km from the existing Evander Operations. The level of this study is considered, by SRK, 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.

Future mining operations at Evander Operations are dependent upon:

- 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.

5.3.6 ARMgold Orkney Operations

ARMgold 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 July 2002, principally due to depletion of reserves and for seismic reasons. These operations have a combined life of eight years, thus classifying ARMgold 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 ARMgold 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. ARMgold 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 ARMgold Orkney Operation's management implementing waste separation.

ARMgold 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 ARMgold Orkney Operations ARMgold 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 ARMgold 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 ARMgold 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 ARMgold 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.

Future mining operations at ARMgold Orkney Operations are dependent upon:

- 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 BU No. 6 and BU No. 7 are operating; and
- continuation of and adherence to the current agreements between ARMgold 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 do not consider there to be any other significant opportunities at Orkney Operations.

5.3.7 Kalgold Operation

Kalgold Operations comprise an open-pit mine that has a life of 4.3 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 for five-years from 2001 and the contractor is reimbursed on a rate per cubic meter basis. 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. A steepening of the high-wall is planned through 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.

Future mining operations at Kalgold Operations are dependent upon:

– 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.

5.3.8 Harmony Australian Operations

Harmony Australian Operations comprises 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 7.3-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 range between 60° and 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 then 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 results in underground production remaining 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.

Future mining operations at Mt. Magnet & Cue and South Kalgoorlie are dependent upon:

– the management of production, cost, safety and dilution aspects at the Mt Magnet underground operations at the deeper mining levels experienced at this operation; and
– the identification and replenishment of sufficient open-pit reserves at the Mt Magnet & Cue and South Kalgoorlie open-pit operations.

5.3.9 Harmony Canadian Operations

Harmony Canadian Operations were closed in 2001 due to economic reasons. Mining was conducted by underground methods between depths of 1,200m to 1,500m below surface at some 1,000tpd. Mining was focused on two steeply dipping quartz veins where mineralisation was present and concentrated at points of the intersection of the two veins. Long-hole drilling and shrinkage stoping methods were practiced at the mine, however the mine is currently on care and maintenance and no production is currently planned to take place.

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.

Table 5.1 Mining Assets: contribution to LoM plan production

MINING ASSETS	Tonnage (kt)	Grade (g/t)	Content (koz)
Total Free Gold Operations			
LoM Ore ug	71,020	7.1	16,257
LoM Vamping	892	4.5	129
LoM SS	12,358	0.8	300
Total to Plant	84,270	6.2	16,686
Total Harmony Free State Operations			
LoM Ore ug	45,190	4.6	6,617
LoM Vamping	1,431	3.3	152
LoM SS	20,141	0.4	282
Total to Plant	66,761	3.3	7,051
Total ARMgold Welkom Operations			
LoM Ore ug	3,470	3.8	425
LoM Vamping	31	2.5	2
Vamping	97	4.8	15
Total to Plant	3,598	3.8	442
Total West Wits Operations			
LoM Ore ug	66,354	6.6	14,019
LoM Reclamation	93	6.0	18
LoM Vamping	5,621	5.2	938
LoM SS	4,121	1.0	133
Total to Plant	76,190	6.2	15,108
Total Evander Operations			
LoM Ore ug	17,568	5.9	3,338
LoM Vamping	1,525	6.2	305
LoM SS	1,648	0.9	49
Total to Plant	20,740	5.5	3,691
Total ARMgold Orkney Operations			
LoM Ore ug	6,373	5.0	1,029
LoM Reclamation	59	3.7	7
LoM Vamping	31	3.0	3
Total to Plant	6,463	5.0	1,039
Total Kalgold Operations			
LoM Ore op	5,762	2.3	421
LoM SS	1,010	1.2	38
Total to Plant	6,772	2.1	459
Total Mt. Magnet & Cue Operations			
LoM Ore ug	7,246	6.0	1,391
LoM Ore op	4,912	2.2	341
LoM SS	2,694	0.9	82
Total to Plant	14,852	3.8	1,814

Table 5.1 Mining Assets: contribution to LoM plan production (continued)

MINING ASSETS	Tonnage (kt)	Grade (g/t)	Content (koz)
Total South Kalgoorlie Operations			
LoM Ore ug	1,813	4.6	267
LoM Ore op	1,559	2.3	115
LoM SS	462	0.8	12
Total to Plant	3,834	3.2	394

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 thirteen operating plants in South Africa with a combined milling and treatment capacity of 2,570ktpm and 2,670ktpm, 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.

6.2.1 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 420ktpm. It is proposed to increase mill throughput to 402ktpm through the addition of steel ball grinding media, at which stage leach / CIP becomes limiting. 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.

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. FS1 plant is projected to be in use until 2022 when underground operations cease.

FS2 Plant is largely dedicated to the treatment of surface sources, although it does toll treat reef on behalf of ARMgold Welkom Operations and also processes ore from Eland BU, Kudu & Sable. 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 300ktpm when processing reef and waste. 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 recoveries of approximately 95%, waste 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 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 semiautogenously. Current operating capacity, including waste, is approximately 72ktpm with the potential to increase to 135ktpm. Projected reef and waste 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 93ktpm processing reef and waste. St Helena 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 a 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.

6.2.2 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 mines 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. 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.

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. Central Plant is planned to be in use until 2014 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.

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. 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 waste rock. SRK consider these recoveries to be achieveable.

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. Saaiplaas Plant is planned to be in use until 2018 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.

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 162ktpm processing reef and waste. 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.

6.2.3 West Wits Operations

Ore 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. 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.

Generally the plant is in excellent condition both mechanically and structurally and subject to adequate ongoing maintenance should meet the LoM requirements. Elandsrand Plant is required until 2023 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.

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. 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 however 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 at Doornkop Plant is added to the CIL circuit for further loading and loaded carbon at 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. Projected reef recoveries of 96% to 97% 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. The Cooke Plant is planned to be used until 2022 when underground operations cease.

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. In line with recent performance, recoveries are projected at approximately 90%.

The plant is required until the final quarter of 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, providing that routine maintenance is sustained, SRK consider the plant is in adequate condition to meet the requirements of the LoM projections.

6.2.4 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. Projected reef recoveries of 96% to 97% are in line with recent achievements.

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, providing that increased maintenance is undertaken and sustained, SRK consider the plant is in adequate condition to meet the requirements of the LoM projections.

Winkelhaak Plant and Kinross Plant are planned to be used until 2013 and 2018, respectively and are planned to operate close to capacity. Some ZAR6m has been budgeted in the next financial year to cover the needed repairs, however the plant will still need to be better maintained if planned operations are to be met when running at full capacity.

6.2.5 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, however a third ball mill and additional leach tanks are currently being commissioned, which should on increase capacity to 135ktpm. 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.

6.2.6 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 is planned to discontinue operation during the third quarter of 2003. Big Bell Plant presently processes underground and open-pit ore. 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 hydroclones, cyanide leach enhanced by oxide 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, smelting and tailings disposal.

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.

6.3 Sampling, Analysis, Gold Accounting and Security

Generally 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 is 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. At a collective tax entity level, however 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.

6.4 Plant Clean-Up

There are two aspects to gold lock up that need to be considered. First 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. The following factors affect the quantity of gold that is eventually recovered: plant age; process treatment route installed; plant layout and detailed design features; plant housekeeping during operations; 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)
Free Gold Operations	103
Harmony Free State Operations	22
ARMgold Welkom Operations	0
West Wits Operations	76
Evander Operations	19
ARMgold Orkney Operations	0
Kalgold Operations	1
Mt. Magnet & Cue Operations	0
South Kalgoorlie Operations	0
Total	**217**
Harmony	**167**
ARMgold	**50**

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 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 ARMgold 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 93.3Mt. The total remaining capacity at 30 June 2003, is projected at some 130.7Mt, 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 to 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.

7.3 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 66.8Mt. The remaining capacity at 30 June 2003, is projected at some 69.6Mt, 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.

7.4 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 28.4Mt. The remaining capacity at 30 June 2003, is projected at some 40.3Mt, 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 47.8Mt. The remaining capacity at 30 June 2003, is projected at some 68.7Mt, which is adequate to meet the overall requirements of the LoM plan. The rate of rise 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.

7.5 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 20.7Mt. The remaining capacity at 30 June 2003, is projected at some 36.0Mt, which is adequate to meet the overall requirements of the LoM plan. A high rate of rise 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.

7.6 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 6.2Mt. The remaining capacity at 30 June 2003, is projected at some 7.0Mt, 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.

7.7 Harmony Australian Operations

Checker Plant unthickened tailings is pumped to one of two operating tailing storage facilities. Both use 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 underdrain 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 Mount 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 14.2Mt. Cell No.3 of the current tailings storage facility, at 30 June 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 unthickened tailings are pumped to separate operating tailings storage facilities. Both use 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 0.2Mt. The remaining capacity of the tailings dams, at 30 June 2003, is adequate to meet the overall requirements of the LoM plan.

The current LoM plan for Jubilee requires a total placement of some 3.7Mt. The remaining capacity of the tailings dams at 30 June 2003, is projected at some 5.7Mt 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.

7.8 Mining Assets – 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: LoM Tailings Storage Facility Assessments

Operations	LoM Deposition	Available Capacity	Surplus/Shortfall
Free Gold Operations			
FS1 Plant and Active Dams	64.15	86.27	34%
FS2 Plant and Active Dams	14.40	25.59	78%
St Helena Plant and Active Dams	2.47	5.10	106%
Subtotal Free Gold Operations	**81.02**	**116.96**	**44%**
Joel Operations			
Joel Plant and Active Dams	12.29	13.72	12%
Subtotal Joel Operations	**12.29**	**13.72**	**12%**
Harmony Free State Operations			
Central Plant and Active Dams	23.99	23.26	-3%
Virginia Plant and Active Dams	11.99	26.27	119%
Saaiplaas Plant and Active Dams	30.78	20.05	-35%
Subtotal Harmony Free State Operations	**66.76**	**69.58**	**4%**
West Wits Operations			
Cooke Plant and Active Dams	44.27	15.88	-64%
Doornkop Plant and Active Dams	3.49	52.87	1414%
Elandsrand Plant and Active Dams	24.14	22.25	-8%
Deelkraal Plant Active Dams	4.28	18.04	321%
Subtotal West Wits Operations	**76.19**	**109.04**	**43%**
Evander Operations			
Kinross Plant and Active Dams	20.74	26.77	29%
Subtotal Evander Operations	**20.74**	**26.77**	**29%**
Kalgold Operation			
Kalgold Plant and Active Dams	6.77	7.02	14%
Subtotal Kalgold Operations	**6.77**	**7.02**	**14%**
International Operations			
Checker Plant and Active Dams	14.85	14.17	–
Big Bell Plant and Active Dams	na	na	na
Jubilee Plant and Active Dams	3.71	5.70	54%
New Celebration Plant and Active Dams	**0.13**	**0.13**	**–**

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 include cross-cut haulages, footwall haulage levels and declines / inclines. Infrastructure required for ore flow and services including 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 minor 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 and where necessary, remedial action, the current infrastructure is considered 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 costs, 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 valution, 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 Sections 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 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 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,
  - shaft pillar mining at Nyala BU following associated modification to the shaft hoisting installation;
- **At Harmony Free State Operations**

  The Masimong expansion project at BU No.5 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 ARMgold 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,
  - 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 greenfields 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 ARMgold 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)
Free Gold Operations	1,946
Harmony Free State Operations	401
ARMgold Welkom Operations	–
West Wits Operations	1,902
Evander Operations	608
ARMgold Orkney Operations	44
Kalgold Operations	1
M.t Magnet and Cue Operations	227
South Kalgoorlie Operations	36
Total	**5,165**
Harmony	**4,148**
ARMgold	**1,017**

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 projected LoM manpower (Total Employees Costed "TEC") for the Mining Assets.

Table 9.1 Mining Assets: historical and 2004 forecast

Mining Operations	2001 (No.)	2002 (No.)	2003 (No.)	2004 (No.)
Free Gold Operations	20,368	14,722	15,478	17,211
Harmony Free State Operations	15,668	12,776	12,219	12,896
ARMgold Welkom Operations	1,492	1,786	2,092	2,007
West Wits Operations	17,640	16,907	15,162	12,250
Evander Operations	8,805	8,639	8,261	6,631
ARMgold Orkney Operations	6,579	6,174	5,845	3,833
Kalgold Operations	453	444	511	481
Harmony Australia Operations	882	882	831	831
Total	**71,887**	**62,330**	**60,398**	**56,139**
Harmony	**53,632**	**47,009**	**44,723**	**41,694**
ARM	**18,255**	**15,321**	**15,675**	**14,445**

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 56,139 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, 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 ARMgold's "We do it better" 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 Productivity: historical and assumed productivity initiatives

Statistic		2001	2002	2003	2004
Centares					
Free Gold Operations	(m^2/TEC/month)	4.3	4.5	5.2	5.7
Harmony Free State Operations	(m^2/TEC/month)	3.8	4.8	5.5	5.9
ARMgold Welkom Operations	(m^2/TEC/month)	4.1	3.6	4.2	7.2
West Wits Operations	(m^2/TEC/month)	4.1	4.7	4.4	6.0
Evander Operations	(m^2/TEC/month)	4.1	3.9	3.5	5.3
ARMgold Orkney Operations	(m^2/TEC/month)	4.4	4.5	4.4	5.6
Tonnes Milled					
Free Gold Operations	(t/TEC/month)	35	49	50	46
Harmony Free State Operations	(t/TEC/month)	28	30	36	48
ARMgold Welkom Operations	(t/TEC/month)	19	21	23	36
West Wits Operations	(t/TEC/month)	33	40	43	51
Evander Operations	(t/TEC/month)	23	23	22	31
ARMgold Orkney Operations	(t/TEC/month)	26	25	25	31
Kalgold Operations	(t/TEC/month)	176	180	178	275
Harmony Australia Operations	(t/TEC/month)	103	452	712	635

Table 9.2 Productivity: historical and assumed productivity initiatives (continued)

Gold Production		2001	2002	2003	2004
Free Gold Operations	(g/TEC/month)	153	197	193	192
Harmony Free State Operations	(g/TEC/month)	114	124	129	139
ARMgold Welkom Operations	(g/TEC/month)	97	102	78	124
West Wits Operations	(g/TEC/month)	124	159	150	195
Evander Operations	(g/TEC/month)	135	125	111	155
ARMgold Orkney Operations	(g/TEC/month)	184	194	180	181
Kalgold Operations	(g/TEC/month)	282	363	385	499
Harmony Australia Operations	(g/TEC/month)	164	743	1,571	1,108

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 in place at ARMgolds' operations and it's managements' intention 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 is estimated at approximately ZAR895m of which some ZAR682m is attributable to Harmony and ZAR213m is attributable to ARMgold. These have 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 Mining Assets: separation costs

Tax Entities	Terminal Separation Benefits Liability (ZARm)
Free Gold	200
Joel	18
Harmony Free State	188
ARMgold Welkom	32
Randfontein	272
Evander	104
ARMgold Orkney	72
Kalgold	8
Mt. Magnet & Cue	0
South Kalgoorlie	0
Total	**895**
Harmony	**682**
ARMgold	**213**

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, including risk management and safety and health measures.

10.2 Legislation

Various regulatory bodies and mining and labour legislation govern health and safety in South Africa. 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 summarized 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 South African 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 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;
- 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
Fatalities			
Free Gold	11	10	1
Harmony Free State	9	8	2
ARMgold Welkom	4	2	1
Randfontein	12	20	20
Evander	5	6	4
ARMgold Orkney	10	7	2
Kalgold	–	–	–
Harmony Australian Operations	–	–	–
Fatality Rate			
Free Gold	0.35	0.24	0.05
Harmony Free State	0.26	0.27	0.07
ARMgold Welkom	0.92	0.35	0.27
Randfontein	0.32	0.47	0.54
Evander	0.27	0.33	0.23
ARMgold Orkney	0.56	0.48	0.27
Kalgold	–	–	–
Harmony Australian Operations	n/a	–	–
LTIFR			
Free Gold	17	15	15
Harmony Free State	35	26	24
ARMgold Welkom	17	12	13
Randfontein	24	23	23
Evander	22	24	33
ARMgold Orkney	28	24	17
Kalgold	7	13	4
Harmony Australian Operations	n/a	15	2

Table 10.2 companies: historical safety statistics

Statistics	2001	2002	2003
Fatalities			
Harmony	26	37	29
ARMgold	14	9	3
Fatality Rate			
Harmony	0.28	0.35	0.27
ARMgold	0.63	0.29	0.12
LTIFR			
Harmony	28	23	23
ARMgold	26	16	15

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 Health and Safety policies the Companies are broadly aligned and state that the Companies will endeavour to:

- 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;
– actively participate in the Environmental Management Programmes and compliance with the requirements of its' Nuclear Licence; and
– 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 Harmony indicate that the cost of addressing the disease at Harmony's operations may peak at approximately 2% of the total cost of production, which equate to approximately US$4/oz. At current levels of infection and taking cognisance of remedial action taken, the net cost has been estimated by Harmony at approximately US$1.20/oz. This cost has not been included into the Tax Entities for purposes of valuation, as presented in Section 13.

Measured against the Ontario benchmarks for fatality rates of 0.15/mmhrs LTIFR of 7.5/mmhrs both 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; 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 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, 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 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 development and operation, which are generally defined in the form of objectives, principles and key design criteria, whilst 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 whilst individual operations are materially compliant, strict compliance can seldom be demonstrated. 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 Services ("SARS"). Based on South Africa'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 (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 life of a mine. 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.

11.2.2 Compliance

- Environmental Management Programme: All EMPs at the various operations, apart from the EMPs at the West Wits Operations' Randfontein No.4 BU, the Kalgold Operation and the Evander Operations' Evander No.10 BU have been approved. The Randfontein No.4 BU and the Kalgold Operations' EMPs have been submitted for approval. Operations at Evander Operations 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 Operations No.10 BU will be incorporated into existing EMPs and accounted for in the Evander Operations closure liability.

  In several instances the Environmental Management Program Reports ("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 licenses. 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 licenses. Harmony Free State Operations submitted its water use license application in 2002 and to date no license has been received. West Wits Operations is operating, in agreement with the DWAF, under their original water permits and are anticipating the issue of a temporary water use license by July 2003;

- 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. 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") and have been issued to all operations apart from the Free Gold Operations' St Helena, which to date not been received; and
- Waste Disposal Sites: Permitted waste disposal sites are operated at the West Wits Operations' Elandsrand BU and Deelkraal BU and Free Gold Operations' Joel and St Helena BUs. Unlicensed sites are being used at a second site at Elandsrand BU and at Evander Operations No.8 BU. The Evander Operations 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 Australian 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 and Resources ("DIR") (formerly Department of Minerals and Energy) using the Notice of Intent 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 Department of Environmental Protection for activities such as construction and operation of tailings storage facilities and hypersaline bore fields.

Commitments made within the Notice of Intent 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 term, it may be revoked, temporarily or permanently, should Harmony Canadian Operations fail to comply with its terms. As the operation is currently on care and maintenance the environmental aspects were not reviewed in detail.

11.4 Environmental Policy and Management

11.4.1 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 responsibly 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; and
– 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.

11.4.2 ARMgold

ARMgold has an environmental policy statement in which the company commits to sustainable development with regards to human health, the natural environment and economic prosperity through its exploration, mining, processing and future closure activities. ARMgold specifically commits to the following:

– environmental management as a core corporate activity with appropriate policies, programmes, practices and financial provision;
– company integration of policies, programmes and practices with the introduction of appropriate instruments for monitoring and control;
– continuous improvement of environmental performance taking cognisance of technical, scientific and economic developments;
– liaise with the public and Government to ensure effective and equitable measures to protect the environment with due regard to social aspects; and
– ensure that employees, contractors and suppliers comply with ARMgold corporate environmental requirements and co-operatively identify opportunities and improvements.

11.5 Environmental Issues

11.5.1 Free Gold Operations

The decontamination of the Joint Metallurgical Scheme ("JMS") presents a significant risk to the Free Gold Operations. This incorporates liabilities associated with disturbed ground associated with discountinued processing facilities. Investigations have been undertaken to determine the extent of contamination and decontamination options but no firm costing has been undertaken and as such currently represents an unquantified risk. In the context of the total liability of the Free Gold Operations this risk is not however considered to be material.

At Joel BU the location of the tailings dam, across a watercourse, represents a potential liability but 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 recirculated to the process water system.

Water pollution is a significant risk in the Dankbaar/Brakpan Complex area where farmers are being exposed to severe 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 it to begin mid-July 2003. Willow Valley Chicken, located to the east of Bambanani BU and west of Harmony Free State Operations' Saaiplaas BU, have complained about contamination of groundwater used by the farm. Further investigations are being undertaken to determine the extent and source of contamination, however the issue remains an environmental risk.

11.5.2 Harmony Free State Operations

Water management at Harmony Free State Operations, due to the presence of several mining operations in the region, is a complicated matter. 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 surface water management. From a groundwater perspective the Unisel and De Kroon pollution plumes have been identified and present a liability to the 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.

11.5.3 ARMgold Welkom Operations

Groundwater pollution has been identified at the ARMgold Welkom tailings dam. A mitigating factor is that the Sale Agreement of the facility to ARMgold from Anglogold indemnifies ARMgold from pollution that occurred prior to the purchase. Currently ARMgold is actively maintaining an enlarged cut-off trench at the facility to reduce the potential to contribute to further contamination.

The current discharge from shafts at ARMgold Welkom Operation is 2.4Mlpd. The water is managed in Free Gold's water management system and a requirement for water treatment by ARMgold Welkom Operations is considered to be unlikely.

11.5.4 West Wits Operations

Mine decant water was recently discovered at West Wits Operations discharging to the Tweelopies East Spruit. Uncertainty currently exists as to the origin, and any associated liability. The mine decants 11Mlpd. West Wits Operations have commissioned an independent hydrogeological study to investigate this issue, however no conclusive findings are as yet available. Potential treatment methods include the Paques method, gypCIX or reverse osmosis, which have capital costs ranging from ZAR4.5m/Ml to R8 million/Ml. To date, the cost of managing the mine decant water has been in the order of ZAR10m. It is expected that a future decant will also occur some 2km east of the currant decant but the quantities and any costs associated with this decant have not currently been estimated.

With regard to rehabilitation an area of concern are the sinkholes that have formed in the vicinity of Randfontein No.4 BU. Randfontein has a ZAR300m insurance policy underwritten by Lloyds of London in the event that a claim is made against the mine. To date no claim has been made. There are a number of sinkholes that have not been filled that remain a liability and risk to the mine. This is not however considered to be material in the context of the total liability associated with the West Wits Operations.

Radiation has been detected in the Deelkraal process dam. The NNR has required that the dam be rehabilitated. It has been proposed that the dam sediment be reprocessed, however, heavy rains during the past summer have not enabled the dam to be drained and the rehabilitation to take place. As such the contamination remains a liability. Uranium concentrate at West Wits Operations is being stored while approval for its transport to VRO where it will be processed is awaited from the NNR.

With effect from 10 June 2003, the Placer Dome Western Areas Joint Venture ("PDWAJV") took over pumping operations at Randfontein 4 BU, insofar as it now conducts the pumping operations itself for its own account. The PDWAJV is to continue pumping at approximately 75Mlpd indefinitely until such time as it no longer has a need to pump. At such time Harmony will be advised accordingly and will incur additional pumping costs of approximately ZAR54m per annum. Accordingly the operating expenditures for Randfontein assume the continuation of the agreement with PDWAJV.

11.5.5 Evander Operations

At the Evander operation groundwater pollution has been detected in the vicinity of tailings dams. Analysis of Sasol boreholes has, however suggested that the pollution plume is not extensive. An item of concern is the diversion of clean water from Leeuwpan, which is Evander Operations' evaporation facility, to achieve compliance with the NWA Regulation 407. A cut-off trench has been suggested to bring the management of the facility into compliance. Return water dams at Evander pose a risk as several do not comply with the requirement to accommodate a 1:50 year flood and are located within 1:50 year floodlines. The result of the current situation could be pollution events exposing the operation to a liability.

11.5.6 ARMgold Orkney Operations

SRK has been informed by the Companies that ARMgold is indemnified against historical pollution problems as formed part of the Sale Agreement with VRO and any liabilities are therefore limited to the physical constraint of the shaft surface area.

In the Black Reef area ARMgold may have some liability as a result of the limited exploration undertaken in the area and their acceptance of some responsibility by virtue of the submission and approval of the EMPR for prospecting, as well as reported rehabilitation measures undertaken. Anticipated activities in the area could relate to the need for additional rehabilitation (possibly including measures for the treatment of contaminated areas) and the need to flatten the slopes of excavations. Much of this contamination is probably the result of the proximity of VRO Western Tailings complex near to the area, rather than the operations of ARMgold.

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 ARMgold. 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 ARMgold has been operating. Any incremental impact due to the operations of ARMgold over a relatively short period is unlikely to be material.

11.5.7 Kalgold Operation

Initial vegetation attempts have proved difficult at the Kalgold tailings dam. Solutions to the current problem are being investigated to ensure that EMP commitments are met. If no successful method is forthcoming there will be a risk of having to implement alternative rehabilitation methods such as cladding, which will be more expensive.

Through monitoring programmes it is apparent that groundwater contamination is extending from the plant, heap leach pad tailings dam fine drains and return water dams toward the open-pit which currently contains the pollution to the site. Should the extent of the contamination increase significantly it could result in a limited cost liability to the operation.

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 positioning of the diversion.

11.5.8 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 for historic exploration programmes. 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.

11.5.9 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. Annual operating costs for continuation of the care and maintenance is of the order of ZAR2.76m and is represented as part of the overall unallocated expenditures for Harmony.

11.6 Liabilities and Risks

The Mining 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. Risks identified, which will require environmental management measures in addition to routine practices with potentially significant cost implications, are considered below for each of the Mining Assets.

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.

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 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.

Based on the items identified above and discussions with Harmony and ARMgold, SRK has estimated that the total Environmental Liability for the Mining Assets is 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 above estimate of environmental liability excludes any potential resale or salvage values, which may be realised during the rehabilitation process.

Table 11.1 Liabilities

Tax Entities	Total Liability (ZARm)	Trust Fund (ZARm)	Outstanding Liability (ZARm)	Closure Date (Financial Year)
Free Gold	680	537	143	2023
Joel	18	18	0	2014
Harmony Free State	370	65	305	2018
ARMgold Welkom	33	23	10	2011
Randfontein	362	206	156	2023
Evander	120	49	70	2018
ARMgold Orkney	25	15	10	2011
Kalgold	13	1	12	2007
Mt. Magnet & Cue	95	0	95	2010
South Kalgoorlie	69	0	69	2006
Bisset	11	0	11	Not operating
Total	**1,796**	**915**	**881**	
Harmony	1,389	599	790	
ARMgold	407	316	91	

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 and have been supplied to the Companies and their respective Financial Advisors to derive the revenue and cost inputs. Key aspects associated with the generation of the TEPs and their derivation 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 its 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 generally include an inflation adjusted cost, based on the previous financial year's performance, with certain modifications for 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;
– 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: which is 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. 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 costs 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 which have been provided to the Companies and their respective Financial Advisors for deriving cash flow projections, 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 12.10 for each Tax Entities, and Table 12.11 and Table 12.12 report the Companies attributable TEPs. 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 all future operating profits resulting from the Doornkop BU is paid by Harmony to its Joint Venture partner. SRK has included the cash injection of ZAR140m into the companies net cash/debt position and the profit share of 16% as a cash cost item under overhead category for Doornkop BU.

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 Free Gold Tax Entity: total assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004	1,180	2,417	380	2,796
2005	1,281	2,566	462	3,027
2006	1,245	2,388	200	2,588
2007	1,214	2,058	70	2,128
2008	1,193	1,803	140	1,943
2009	1,081	1,763	100	1,863
2010	1,087	1,799	60	1,859
2011	934	1,594	100	1,694
2012	736	1,203	100	1,303
2013	728	1,203	80	1,283
2014	685	1,166	60	1,226
2015	657	1,096	20	1,116
2016	637	1,092	20	1,112
2017	612	1,080	20	1,100
2018	568	1,049	10	1,059
2019	449	1,017	10	1,027
2020	268	491	10	501
2021	291	491	–	491
2022	268	493	–	493
2023	268	507	–	507
Total	**15,381**	**27,275**	**1,841**	**29,116**

Table 12.2 Joel Tax Entity: total assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004	79	203	–	203
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	–	171
2012	74	171	–	171
2013	69	175	–	175
2014	23	91	–	91
Total	**800**	**1,875**	**105**	**1,980**

Table 12.3 Harmony Free State Tax Entity: total assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004	692	1,638	63	1,700
2005	700	1,638	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	636	20	656
2015	173	391	10	401
2016	164	382	–	382
2017	160	377	–	377
2018	172	411	–	411
Total	**6,675**	**15,475**	**401**	**15,877**

Table 12.4 ARMgold Welkom Tax Entity: total assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004	96	243	–	243
2005	110	308	–	308
2006	89	270	–	270
2007	24	66	–	66
2008	24	66	–	66
2009	24	66	–	66
2010	24	66	–	66
2011	24	70	–	70
Total	**413**	**1,156**	**–**	**1,156**

Table 12.5 Randfontein Tax Entity: total assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004	920	1,912	335	2,246
2005	885	1,856	332	2,189
2006	827	1,741	280	2,020
2007	893	1,717	353	2,070
2008	1,000	1,827	225	2,052
2009	1,097	2,023	129	2,152
2010	997	1,742	37	1,779
2011	1,006	1,753	30	1,783
2012	989	1,728	30	1,758
2013	974	1,718	30	1,748
2014	959	1,721	25	1,746
2015	870	1,608	20	1,628
2016	756	1,454	20	1,474
2017	675	1,322	15	1,337
2018	521	1,038	15	1,053
2019	495	1,027	15	1,042
2020	262	533	10	543
2021	271	559	–	559
2022	188	410	–	410
2023	33	67	–	67
Total	**14,619**	**27,754**	**1,902**	**29,656**

Table 12.6 Evander Tax Entity: total assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004	396	900	105	1,005
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	620	30	650
2012	232	546	30	576
2013	224	545	20	565
2014	148	340	20	360
2015	86	202	–	202
2016	86	202	–	202
2017	86	202	–	202
2018	102	231	–	231
Total	**3,581**	**8,113**	**608**	**8,721**

Table 12.7 ARMgold Orkney Tax Entity: total assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004	267	595	21	616
2005	230	595	13	608
2006	186	534	3	538
2007	113	379	3	382
2008	95	332	2	334
2009	32	128	1	129
2010	31	133	1	134
2011	31	161	1	162
Total	**986**	**2,857**	**44**	**2,901**

Table 12.8 Kalgold Tax Entity: total assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004	93	224	1	225
2005	89	211	–	211
2006	81	196	–	196
2007	82	156	–	156
2008	31	51	–	51
Total	**376**	**838**	**1**	**839**

Table 12.9 Harmony Australia – Mt. Magnet and Cue Tax Entity: total assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004	234	86	45	131
2005	301	91	50	142
2006	305	88	43	131
2007	290	81	37	119
2008	274	75	26	101
2009	159	59	13	71
2010	77	32	8	40
2011	20	18	4	22
Total	**1,661**	**530**	**227**	**756**

Table 12.10 Harmony Australia – South Kalgoorlie Tax Entity: total assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004	124	50	19	69
2005	117	48	12	60
2006	122	52	5	57
Total	**364**	**150**	**36**	**186**

12.3.1 Harmony

Table 12.11 Harmony: total assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004	3,089	6,119	758	6,877
2005	3,159	6,070	754	6,823
2006	3,090	5,851	572	6,424
2007	2,869	5,237	558	5,795
2008	2,847	5,026	431	5,457
2009	2,629	4,847	291	5,138
2010	2,448	4,555	150	4,704
2011	2,304	4,427	146	4,573
2012	2,130	4,134	132	4,266
2013	1,948	3,769	112	3,881
2014	1,740	3,325	95	3,420
2015	1,458	2,750	40	2,790
2016	1,325	2,585	30	2,615
2017	1,226	2,441	25	2,466
2018	1,080	2,204	20	2,224
2019	719	1,536	20	1,556
2020	396	779	15	794
2021	417	804	–	804
2022	322	656	–	656
2023	166	321	–	321
Total	**35,362**	**67,435**	**4,148**	**71,583**

Figure 12.1 Harmony: assumed LoM recovered gold

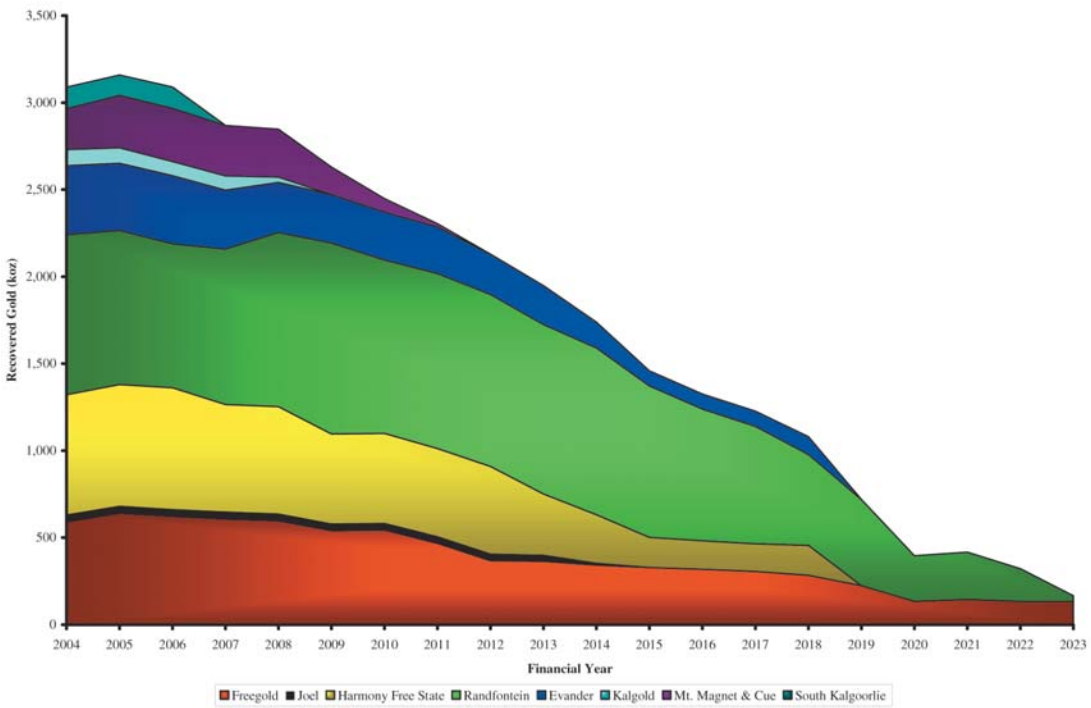
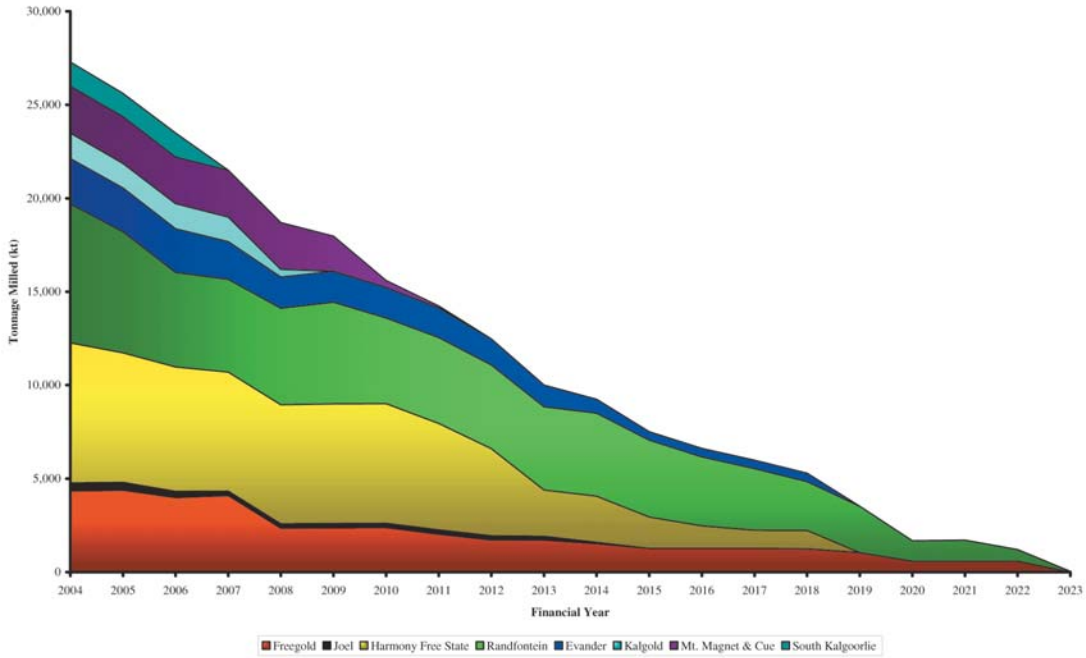


Figure 12.2 Harmony: assumed LoM tonnes milled



12.3.2 ARMgold

Table 12.12 ARMgold: total assumed TEPs

Financial Year	Recovered Gold (koz)	Total Working Costs (ZARm)	Capex (ZARm)	Total (ZARm)
2004	993	2,148	211	2,358
2005	1,020	2,280	258	2,538
2006	937	2,089	121	2,210
2007	783	1,563	43	1,606
2008	754	1,386	77	1,463
2009	635	1,162	56	1,218
2010	636	1,184	36	1,220
2011	560	1,113	51	1,164
2012	405	687	50	737
2013	398	689	40	729
2014	354	628	30	658
2015	328	548	10	558
2016	318	546	10	556
2017	306	540	10	550
2018	284	525	5	530
2019	224	509	5	514
2020	134	245	5	250
2021	145	245	–	245
2022	134	246	–	246
Total	**9,484**	**18,588**	**1,017**	**19,605**

Figure 12.3 ARMgold: assumed LoM recovered gold

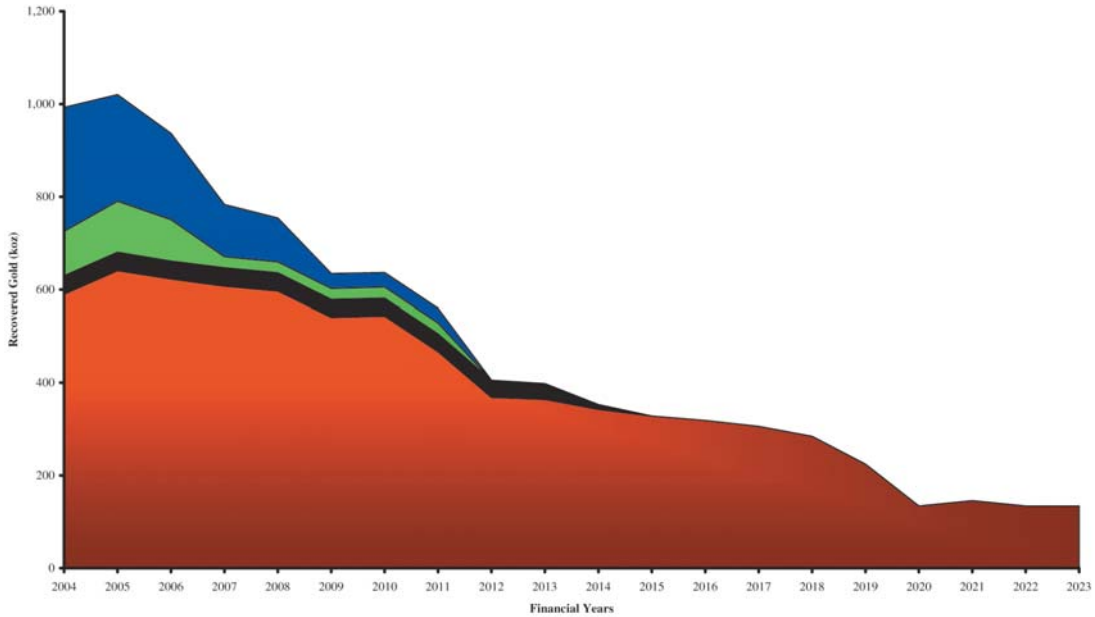
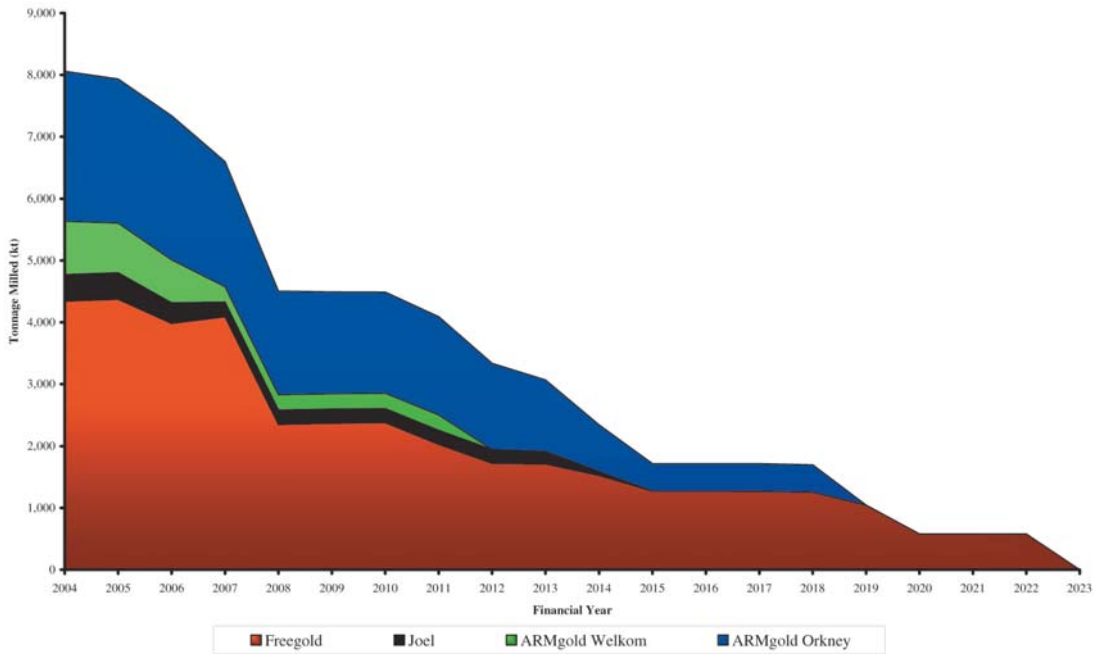


Figure 12.4 ARMgold: assumed LoM tonnes milled



12.4 Special Factors

12.4.1 General Risks and Opportunities

The Mining Assets are subject to certain inherent risks associated with gold mining, 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;

- the relative strength of the US dollar, the currency in which gold prices are generally quoted;
- 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 at 1 July 2003; and
- mining risks including 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 and 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 unquantified opportunity is the beneficial application of new technology.

12.4.2 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:

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 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 ARMgold Orkney Operations;
- A degree of risk associated with underground fires at Bambanani BU and ARMgold 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 ARMgold and VRO. The various agreements incorporate arrangements for toll processing, shared services and rights of access.

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 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 current 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 Business Units 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, as described in Section 13, 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 Advisors;
- incorporated the gold price forecasts as included in Section 1;
- determined a Base Case nominal discount factor of 14.5% which has been uniformly applied;
- relied upon the Companies and their Financial Advisors for all accounting inputs as required for the generation of the TEMs;
- relied upon the Companies and their respective Financial Advisors, 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;
- reported a discounted cash flow ("DCF") valuation, dated 1 July 2003 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 subsequent 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.

13.4 Valuation Methodology

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,
  - the total working costs stated in 1 January 2004 real 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 real 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, including RSA CPI, RSA PPI, US PPI and resulting Base Case exchange rates quoted against the US$ 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 (Free Gold Tax Entity, Joel Tax Entity, Harmony Free State Tax Entity, ARMgold Welkom Tax Entity, Randfontein Tax Entity, Evander Tax Entity, ARMgold Orkney Tax Entity, Kalgold Tax Entity, Mt. Magnet & Cue Tax Entity and South Kalgoorlie Tax Entity). In South African 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: $y=46-(230/x)$, 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. In the case of Harmony Free State tax entity the applicable formula is expressed as $y=37-(185/x)$. The capital expenditure (excluding the cost incurred to acquire and explore mineral rights) is fully deductible against mining income;
- the calculation of tax liabilities for the Harmony Australian Operations is based on a fixed 25% of operating profit post assessed losses and unredeemed capital expenditure;
- 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 the proposed South African mineral royalties;
- 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 Harmony and ARMgold. 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 30 June 2003;
  - 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 ZAR80m per annum for Harmony and ZAR49m per annum for ARMgold. These amounts are projected in constant amounts for ten-years and presented at a nominal discount factor of 14.5%;

- the assessed losses ("AL") and unredeemed capital expenditure ("UC") for the Tax Entities at 30 June 2003 are as follows:
  - Free Gold Tax Entity: AL ZAR40m, UC ZAR 870m,
  - Joel Tax Entity: AL ZAR0m, UC ZAR74m,
  - Harmony Free State Tax Entity; AL ZAR0m, UC ZAR0m,
  - ARMgold Welkom Tax Entity: AL ZAR104m, UC ZAR0m,
  - Randfontein Tax Entity: AL ZAR0m, UC ZAR408m,
  - Evander Tax Entity: AL ZAR0m, UC ZAR0m,
  - ARMgold Orkney Tax Entity: AL ZAR0m, UC ZAR0m,
  - Kalgold Tax Entity: AL ZAR17m, UC ZAR 237m,
  - Mt. Magnet & Cue Tax Entity: AL ZAR99.7m, UC ZAR0m,
  - South Kalgoorlie Tax Entity: AL ZAR0m, UC ZAR0m;
- 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 Base Case nominal discount factor of 14.5%. The range of discount factors is provided in each of the valuation tables;
- 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 30 June 2003, there were 184.2 million shares in issue for Harmony and 95.5 million shares in issue.

13.5 Post-Tax- Pre-Finance Cash Flows

Tables 13.1 through 13.10 inclusive, present the ungeared nominal cash flows for Free Gold Tax Entity, Joel Tax Entity, Harmony Free State Tax Entity, ARMgold Welkom Tax Entity, Randfontein Tax Entity, Evander Tax Entity, ARMgold 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 Harmony and ARMgold. 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.

Table 13.1 Free Gold Tax Entity: TEM 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	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)	**78,584**	8,688	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)	**6.3**	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)	**15,856**	1,256	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)	**78,584**	8,688	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)	**6.3**	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)	**15,856**	1,256	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)	**15,280**	1,180	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)	**15,381**	1,180	1,281	1,245	1,214	1,193	1,081	1,087	934	736	728	685	657	637	612	568	449	268	291	268	268
Sales																						
Gold	(koz)	**15,381**	1,180	1,281	1,245	1,214	1,193	1,081	1,087	934	736	728	685	657	637	612	568	449	268	291	268	268
Commodity Prices																						
Gold Price	(US$/oz)	**404**	350	357	364	371	379	386	394	402	410	418	427	435	444	453	462	471	480	490	500	510
	(ZAR/kg)	**145,986**	93,000	98,580	104,495	110,764	117,410	124,455	131,922	139,838	148,228	157,122	166,549	176,542	187,134	198,362	210,264	222,880	236,253	250,428	265,454	281,381
Macro-Economics																						
Exchange Rates	(US$:ZAR)		8.3	8.6	8.9	9.3	9.6	10.0	10.4	10.8	11.2	11.7	12.1	12.6	13.1	13.6	14.2	14.7	15.3	15.9	16.5	17.2
RSA CPI	(%)		6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
USA PPI	(%)		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Financial – Nominal																						
Sales Revenue	**(ZARm)**	**69,840**	**3,413**	**3,926**	**4,045**	**4,183**	**4,358**	**4,183**	**4,460**	**4,062**	**3,395**	**3,557**	**3,549**	**3,606**	**3,706**	**3,776**	**3,718**	**3,112**	**1,968**	**2,266**	**2,211**	**2,344**
Total Working Costs	**(ZARm)**	**-42,757**	**-2,414**	**-2,742**	**-2,695**	**-2,477**	**-2,302**	**-2,340**	**-2,562**	**-2,374**	**-1,893**	**-2,039**	**-2,083**	**-2,086**	**-2,198**	**-2,303**	**-2,363**	**-2,383**	**-1,230**	**-1,341**	**-1,396**	**-1,536**
Mining	(ZARm)	**-34,830**	-1,891	-2,160	-2,086	-1,956	-1,928	-2,009	-2,141	-1,980	-1,602	-1,684	-1,720	-1,728	-1,819	-1,894	-1,935	-1,960	-982	-1,041	-1,103	-1,212
Processing	(ZARm)	**-3,171**	-230	-244	-241	-234	-131	-140	-149	-142	-131	-138	-136	-130	-138	-146	-154	-149	-123	-130	-138	-146
Overheads	(ZARm)	**-4,209**	-288	-308	-322	-193	-207	-200	-213	-223	-173	-184	-194	-205	-218	-231	-244	-258	-124	-131	-139	-153
Environmental	(ZARm)	**-263**	-7	-8	-8	-9	-9	-10	-10	-11	-11	-12	-13	-14	-14	-15	-16	-17	-18	-19	-20	-22
Terminal Separation Benefits	(ZARm)	**-319**			-25	-59	-1		-40	-42		-16	-24	-3	-9	-18	-23	-54			-6	
Net Change in Working Capital	(ZARm)	**34**	3	-23	-12	-26	-26	19	-10	23	24	-6	5	-5	0	1	9	55	16	-20	10	-3
Operating Profit	**(ZARm)**	**27,082**	**1,000**	**1,184**	**1,351**	**1,706**	**2,056**	**1,844**	**1,898**	**1,688**	**1,501**	**1,518**	**1,466**	**1,519**	**1,508**	**1,474**	**1,354**	**729**	**738**	**925**	**815**	**808**
Tax Liability	(ZARm)	**-9,445**		-96	-425	-650	-764	-690	-731	-614	-539	-554	-543	-599	-590	-571	-527	-253	-282	-374	-324	-318
Capital Expenditure	(ZARm)	**-2,318**	-380	-489	-225	-83	-177	-134	-85	-150	-159	-135	-107	-38	-40	-43	-23	-24	-25			
Final Net Free Cash	(ZARm)	**15,319**	**620**	**599**	**701**	**972**	**1,115**	**1,020**	**1,082**	**924**	**803**	**829**	**815**	**883**	**878**	**860**	**805**	**452**	**430**	**552**	**491**	**490**
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	**88,231**	65,648	68,089	68,444	63,109	61,037	69,889	74,008	80,713	83,212	88,565	96,247	101,058	109,815	119,262	131,991	169,502	147,468	143,875	165,695	181,491
Total Cash Costs	(ZAR/kg)	**88,231**	65,648	68,089	68,444	63,109	61,037	69,889	74,008	80,713	83,212	88,565	96,247	101,058	109,815	119,262	131,991	169,502	147,468	143,875	165,695	181,491
Total Working Costs	(ZAR/kg)	**89,375**	65,763	68,855	69,606	65,592	62,016	69,606	75,774	81,733	82,676	90,068	97,737	102,140	110,978	120,962	133,658	170,672	147,691	148,183	167,588	184,429
Total Costs	(ZAR/kg)	**94,221**	76,113	81,138	75,410	67,800	66,778	73,587	78,292	86,909	89,636	96,037	102,780	103,999	113,010	123,202	134,937	172,388	150,741	148,183	167,588	184,429

Table 13.2 Joel Tax Entity: TEM 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	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)	**5,686**	858	858	663	477	470	459	457	457	445	411	131									
Head Grade	(g/t)	**4.5**	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)	**830**	84	85	82	84	82	81	80	80	78	72	22									
Processing																						
Feed Tonnage	(kt)	**5,686**	858	858	663	477	470	459	457	457	445	411	131									
Feed Grade	(g/t)	**4.5**	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)	**830**	84	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)	**788**	79	80	78	80	79	77	76	76	74	69	21									
Clean-up Gold	(koz)	**2**											2									
Saleable Metal	(koz)	**790**	79	80	78	80	79	77	76	76	74	69	23									
Sales																						
Gold	(koz)	**790**	79	80	78	80	79	77	76	76	74	69	23									
Commodity Prices																						
Gold Price	(US$/oz)	**384**	350	357	364	371	379	386	394	402	410	418	427	435								
	(ZAR/kg)	**123,024**	93,000	98,580	104,495	110,764	117,410	124,455	131,922	139,838	148,228	157,122	166,549	176,542								
Macro-Economics																						
Exchange Rates	(US$:ZAR)		8.3	8.6	8.9	9.3	9.6	10.0	10.4	10.8	11.2	11.7	12.1	12.6								
RSA CPI	(%)		6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%								
USA PPI	(%)		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%								
Financial – Nominal																						
Sales Revenue	**(ZARm)**	**3,016**	**229**	**245**	**253**	**274**	**287**	**297**	**313**	**332**	**343**	**335**	**108**									
Total Working Costs	**(ZARm)**	**-2,492**	**-203**	**-201**	**-204**	**-213**	**-220**	**-231**	**-243**	**-258**	**-272**	**-294**	**-153**	**-2**								
Mining	(ZARm)	**-1,666**	-131	-126	-130	-150	-154	-159	-169	-179	-188	-195	-85									
Processing	(ZARm)	**-533**	-42	-44	-43	-42	-45	-47	-50	-53	-56	-58	-53									
Overheads	(ZARm)	**-268**	-30	-30	-31	-20	-21	-22	-23	-25	-26	-28	-14									
Environmental	(ZARm)																					
Terminal Separation Benefits	(ZARm)	**-30**						-2	0	-1	-2	-15	-10									
Net Change in Working Capital	(ZARm)	**6**	-1	0	-1	-1	0	-1	-1	0	2	10	-2									
Operating Profit	**(ZARm)**	**524**	**26**	**43**	**48**	**61**	**67**	**66**	**71**	**75**	**71**	**41**	**-45**	**-2**								
Tax Liability	(ZARm)	**-122**				-4	-18	-17	-19	-27	-25	-11										
Capital Expenditure	(ZARm)	**-123**		-32	-39	-12	-13	-13	-14													
Final Net Free Cash	**(ZARm)**	**279**	**26**	**12**	**9**	**45**	**36**	**35**	**38**	**48**	**46**	**30**	**-45**	**-2**								
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	**100,683**	82,254	80,497	84,415	85,421	89,731	95,761	101,854	107,967	116,683	131,833	236,431									
Total Cash Costs	(ZAR/kg)	**100,683**	82,254	80,497	84,415	85,421	89,731	95,761	101,854	107,967	116,683	131,833	236,431									
Total Working Costs	(ZAR/kg)	**101,650**	82,254	81,090	84,566	85,954	89,943	96,722	102,135	108,450	117,384	137,713	236,398									
Total Costs	(ZAR/kg)	**106,677**	82,254	93,887	100,832	90,766	95,114	102,331	108,108	108,450	117,384	137,713	236,398									

Table 13.3 Harmony Free State Tax Entity: TEM 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	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)	**66,761**	7,487	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)	**7,051**	735	746	742	657	655	552	551	539	527	370	289	182	172	167	167					
Processing																						
Feed Tonnage	(kt)	**66,761**	7,487	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)	**7,051**	735	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)	**6,654**	692	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)	**6,675**	692	700	701	619	617	518	517	507	504	353	279	173	164	160	172					
Sales																						
Gold	(koz)	**6,675**	692	700	701	619	617	518	517	507	504	353	279	173	164	160	172					
Commodity Prices																						
Gold Price	(US$/oz)	**388**	350	357	364	371	379	386	394	402	410	418	427	435	444	453	462	471				
	(ZAR/kg)	**128,363**	93,000	98,580	104,495	110,764	117,410	124,455	131,922	139,838	148,228	157,122	166,549	176,542	187,134	198,362	210,264	222,880				
Macro-Economics																						
Exchange Rates	(US$:ZAR)		8.3	8.6	8.9	9.3	9.6	10.0	10.4	10.8	11.2	11.7	12.1	12.6	13.1	13.6	14.2	14.7				
RSA CPI	(%)		6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%				
USA PPI	(%)		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%				
Financial – Nominal																						
Sales Revenue	**(ZARm)**	**26,651**	**2,001**	**2,146**	**2,278**	**2,133**	**2,254**	**2,004**	**2,123**	**2,205**	**2,323**	**1,724**	**1,447**	**950**	**954**	**984**	**1,126**					
Total Working Costs	**(ZARm)**	**-21,284**	**-1,638**	**-1,742**	**-1,848**	**-1,693**	**-1,834**	**-1,564**	**-1,665**	**-1,737**	**-1,870**	**-1,364**	**-1,131**	**-727**	**-767**	**-804**	**-932**	**31**				
Mining	(ZARm)	**-15,461**	-1,227	-1,306	-1,345	-1,255	-1,330	-1,132	-1,200	-1,260	-1,331	-1,003	-788	-532	-554	-582	-617					
Processing	(ZARm)	**-1,784**	-135	-135	-140	-143	-152	-162	-172	-168	-158	-96	-101	-60	-54	-52	-56					
Overheads	(ZARm)	**-3,328**	-255	-273	-283	-272	-288	-246	-261	-276	-293	-220	-173	-112	-118	-126	-133					
Environmental	(ZARm)	**-474**	-20	-22	-23	-24	-26	-27	-29	-31	-32	-34	-36	-39	-41	-43	-46					
Terminal Separation Benefits	(ZARm)	**-296**			-54	0	-39		0		-55	-29	-39		-2		-78					
Net Change in Working Capital	(ZARm)	**59**	0	-6	-3	1	0	3	-4	-2	0	17	8	15	2	0	-2	31				
Operating Profit	**(ZARm)**	**5,367**	**363**	**405**	**430**	**440**	**420**	**439**	**458**	**468**	**453**	**360**	**316**	**223**	**187**	**180**	**194**	**31**				
Tax Liability	(ZARm)	**-1,288**	-74	-96	-99	-104	-94	-108	-113	-115	-112	-88	-77	-58	-51	-48	-51					
Capital Expenditure	(ZARm)	**-523**	-63	-38	-49	-52	-52	-48	-45	-48	-35	-37	-36	-19								
Final Net Free Cash	**(ZARm)**	**3,556**	**226**	**271**	**282**	**284**	**274**	**283**	**299**	**305**	**306**	**235**	**203**	**146**	**135**	**132**	**143**	**31**				
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	**99,089**	75,162	78,737	81,113	86,694	92,174	95,632	101,421	108,090	113,725	120,142	122,288	130,706	142,481	153,249	150,491					
Total Cash Costs	(ZAR/kg)	**99,089**	75,162	78,737	81,113	86,694	92,174	95,632	101,421	108,090	113,725	120,142	122,288	130,706	142,481	153,249	150,491					
Total Working Costs	(ZAR/kg)	**102,513**	76,112	79,989	84,784	87,902	95,541	97,164	103,450	110,156	119,325	124,311	130,140	135,141	150,488	162,055	173,995					
Total Costs	(ZAR/kg)	**105,032**	79,037	81,720	87,052	90,623	98,237	100,156	106,271	113,207	121,563	127,699	134,263	138,668	150,488	162,055	173,995					

Table 13.4 ARMgold Welkom Tax Entity: TEM 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	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)	**3,598**	861	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)	**442**	102	118	95	25	25	25	25	25												
Processing																						
Feed Tonnage	(kt)	**3,598**	861	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)	**442**	102	118	95	25	25	25	25	25												
Metallurgical Recovery	(%)	**93%**	94%	93%	93%	93%	93%	93%	93%	93%												
Recovered Gold	(koz)	**413**	96	110	89	24	24	24	24	24												
Clean-up Gold	(koz)																					
Saleable Metal	(koz)	**413**	96	110	89	24	24	24	24	24												
Commodity Prices																						
Gold Price	(US$/oz)	**365**	**350**	**357**	**364**	**371**	**379**	**386**	**394**	**402**	**410**											
	(ZAR/kg)	**106,056**	**93,000**	**98,580**	**104,495**	**110,764**	**117,410**	**124,455**	**131,922**	**139,838**	**148,228**											
Macro-Economics																						
Exchange Rates	(US$:ZAR)		8.3	8.6	8.9	9.3	9.6	10.0	10.4	10.8	11.2											
RSA CPI	(%)		6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%											
USA PPI	(%)		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%											
Financial – Nominal																						
Sales Revenue	**(ZARm)**	**1,362**	**277**	**338**	**290**	**81**	**86**	**91**	**97**	**102**												
Total Working Costs	**(ZARm)**	**-1,318**	**-243**	**-325**	**-301**	**-79**	**-84**	**-89**	**-94**	**-105**	**0**											
Mining	(ZARm)	**-1,229**	-227	-304	-262	-77	-82	-87	-92	-98												
Processing	(ZARm)	**-45**	-14	-15	-16																	
Overheads	(ZARm)																					
Environmental	(ZARm)	**-13**	-1	-1	-1	-2	-2	-2	-2	-2												
Terminal Separation Benefits	(ZARm)	**-37**	0	-6	-25	-6																
Net Change in Working Capital	(ZARm)	**5**	1	2	0	0	0	0	0	0												
Operating Profit	(ZARm)	**43**	**34**	**13**	**-11**	**2**	**2**	**2**	**3**	**-2**	**0**											
Tax Liability	(ZARm)																					
Capital Expenditure	(ZARm)																					
Final Net Free Cash	(ZARm)	**43**	**34**	**13**	**-11**	**2**	**2**	**2**	**3**	**-2**	**0**											
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	**99,195**	80,927	93,090	100,103	105,644	111,983	118,702	125,824	133,374												
Total Cash Costs	(ZAR/kg)	**99,195**	80,927	93,090	100,103	105,644	111,983	118,702	125,824	133,374												
Total Working Costs	(ZAR/kg)	**103,038**	81,506	95,255	109,453	107,722	114,186	121,037	128,299	143,763												
Total Costs	(ZAR/kg)	**102,687**	**81,506**	**94,872**	**108,602**	**107,586**	**114,242**	**121,103**	**128,366**	**143,195**												

Table 13.5 Randfontein Tax Entity: TEM 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	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)	**76,190**	7,444	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)	**6.2**	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)	**15,108**	965	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)	**76,190**	7,444	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)	**6.2**	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)	**15,108**	965	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)	**14,543**	920	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)	**14,619**	920	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)	**14,619**	**920**	**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$/oz)	**407**	**350**	**357**	**364**	**371**	**379**	**386**	**394**	**402**	**410**	**418**	**427**	**435**	**444**	**453**	**462**	**471**	**480**	**490**	**500**	**510**
	(ZAR/kg)	**149,224**	**93,000**	**98,580**	**104,495**	**110,764**	**117,410**	**124,455**	**131,922**	**139,838**	**148,228**	**157,122**	**166,549**	**176,542**	**187,134**	**198,362**	**210,264**	**222,880**	**236,253**	**250,428**	**265,454**	**281,381**
Macro-Economics																						
Exchange Rates	(US$:ZAR)		8.3	8.6	8.9	9.3	9.6	10.0	10.4	10.8	11.2	11.7	12.1	12.6	13.1	13.6	14.2	14.7	15.3	15.9	16.5	17.2
RSA CPI	(%)		6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
USA PPI	(%)		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Financial – Nominal																						
Sales Revenue	**(ZARm)**	**67,851**	**2,662**	**2,714**	**2,687**	**3,076**	**3,653**	**4,247**	**4,091**	**4,375**	**4,559**	**4,759**	**4,968**	**4,778**	**4,403**	**4,162**	**3,410**	**3,428**	**1,929**	**2,113**	**1,550**	**285**
Total Working Costs	**(ZARm)**	**-44,477**	**-1,912**	**-1,969**	**-1,954**	**-2,072**	**-2,337**	**-2,731**	**-2,473**	**-2,618**	**-2,761**	**-2,910**	**-3,087**	**-3,039**	**-2,902**	**-2,806**	**-2,315**	**-2,454**	**-1,303**	**-1,511**	**-1,144**	**-160**
Mining	(ZARm)	**-31,631**	-1,361	-1,410	-1,446	-1,516	-1,697	-1,949	-1,826	-1,941	-2,029	-2,140	-2,256	-2,200	-2,068	-1,952	-1,624	-1,632	-899	-980	-646	-57
Processing	(ZARm)	**-3,521**	-230	-219	-159	-166	-180	-211	-159	-169	-176	-186	-196	-196	-191	-189	-175	-180	-134	-144	-193	-67
Overheads	(ZARm)	**-8,558**	-309	-325	-338	-353	-419	-490	-474	-508	-535	-560	-583	-598	-606	-579	-512	-515	-301	-321	-214	-17
Environmental	(ZARm)	**-278**	-8	-9	-9	-10	-10	-11	-11	-12	-12	-13	-14	-15	-16	-17	-19	-20	-21	-22	-23	-2
Terminal Separation Benefits	(ZARm)	**-588**	-2	-5	-3			-47		-5	-1	-2	-31	-44	-44	-82	-16	-114		-38	-94	-60
Net Change in Working Capital	(ZARm)	**99**	0	-1	2	-27	-31	-23	-3	-13	-7	-8	-5	14	23	13	31	8	52	-5	26	43
Operating Profit	**(ZARm)**	**23,373**	**750**	**745**	**733**	**1,005**	**1,316**	**1,516**	**1,618**	**1,726**	**1,798**	**1,849**	**1,849**	**1,739**	**1,501**	**1,355**	**1,095**	**974**	**626**	**602**	**406**	**125**
Tax Liability	(ZARm)	**-8,042**	-90	-57	-131	-198	-391	-521	-626	-673	-700	-718	-730	-673	-571	-513	-410	-353	-232	-229	-151	-74
Capital Expenditure	(ZARm)	**-2,326**	-335	-352	-314	-421	-285	-172	-52	-45	-48	-51	-45	-38	-40	-32	-34	-36	-25			
Final Net Free Cash	**(ZARm)**	**13,006**	**326**	**336**	**288**	**386**	**641**	**823**	**940**	**1,009**	**1,050**	**1,081**	**1,106**	**1,029**	**890**	**810**	**651**	**586**	**369**	**374**	**255**	**51**
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	**96,133**	66,409	70,967	75,570	73,285	73,785	77,645	79,283	83,693	89,075	95,278	101,760	110,612	121,780	129,662	142,521	151,324	163,431	171,302	180,382	140,083
Total Cash Costs	(ZAR/kg)	**96,133**	66,409	70,967	75,570	73,285	73,785	77,645	79,283	83,693	89,075	95,278	101,760	110,612	121,780	129,662	142,521	151,324	163,431	171,302	180,382	140,083
Total Working Costs	(ZAR/kg)	**98,038**	66,779	71,472	76,049	75,636	74,118	79,338	79,658	84,243	89,531	95,813	103,306	112,794	124,344	134,963	144,644	160,051	165,979	178,419	200,450	200,581
Total Costs	(ZAR/kg)	**99,602**	**74,822**	**81,118**	**84,344**	**86,005**	**80,912**	**82,568**	**78,071**	**83,181**	**88,236**	**94,420**	**101,405**	**109,794**	**120,786**	**130,633**	**139,795**	**156,208**	**157,289**	**173,087**	**234,385**	**444,013**

Table 13.6 Evander Tax Entity: TEM 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	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)	**20,740**	2,428	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)	**5.5**	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)	**3,691**	411	401	406	350	299	287	285	276	240	228	153	89	89	89	89					
Processing																						
Feed Tonnage	(kt)	**20,740**	2,428	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)	**5.5**	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)	**3,691**	411	401	406	350	299	287	285	276	240	228	153	89	89	89	89					
Metallurgical Recovery	(%)	**96%**	96%	96%	96%	96%	97%	96%	96%	96%	96%	97%	97%	97%	97%	97%	97%					
Recovered Gold	(koz)	**3,562**	396	386	392	338	288	277	275	266	232	221	148	86	86	86	86					
Clean-up Gold	(koz)	**19**										3					16					
Saleable Metal	(koz)	**3,581**	396	386	392	338	288	277	275	266	232	224	148	86	86	86	102					
Sales																						
Gold	(koz)	**3,581**	**396**	**386**	**392**	**338**	**288**	**277**	**275**	**266**	**232**	**224**	**148**	**86**	**86**	**86**	**102**					
Commodity Prices																						
Gold Price	(US$/oz)	**388**	350	357	364	371	379	386	394	402	410	418	427	435	444	453	462	471				
	(ZAR/kg)	**128,160**	93,000	98,580	104,495	110,764	117,410	124,455	131,922	139,838	148,228	157,122	166,549	176,542	187,134	198,362	210,264	222,880				
Macro-Economics																						
Exchange Rates	(US$:ZAR)		8.3	8.6	8.9	9.3	9.6	10.0	10.4	10.8	11.2	11.7	12.1	12.6	13.1	13.6	14.2	14.7				
RSA CPI	(%)		6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%				
USA PPI	(%)		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%				
Financial – Nominal																						
Sales Revenue	**(ZARm)**	**14,275**	**1,145**	**1,185**	**1,274**	**1,163**	**1,052**	**1,072**	**1,127**	**1,159**	**1,067**	**1,093**	**765**	**473**	**501**	**531**	**670**					
Total Working Costs	**(ZARm)**	**-11,203**	**-900**	**-903**	**-957**	**-879**	**-796**	**-838**	**-888**	**-931**	**-867**	**-919**	**-602**	**-375**	**-408**	**-433**	**-527**	**21**				
Mining	(ZARm)	**-7,922**	-672	-669	-701	-638	-576	-603	-636	-656	-608	-620	-407	-260	-276	-292	-310					
Processing	(ZARm)	**-1,005**	-71	-66	-70	-67	-66	-70	-74	-77	-75	-77	-54	-51	-54	-57	-77					
Overheads	(ZARm)	**-2,033**	-149	-155	-165	-162	-151	-159	-168	-175	-175	-182	-109	-65	-69	-73	-77					
Environmental	(ZARm)	**-109**	-5	-5	-5	-6	-6	-6	-7	-7	-7	-8	-8	-9	-9	-10	-11					
Terminal Separation Benefits	(ZARm)	**-171**	-4	-4	-12	-12	-1	-1	-3	-16	-5	-34	-31	-47								
Net Change in Working Capital	(ZARm)	**36**	-3	-4	5	4	1	-1	0	3	2	7	9	-1	-1	-5	21					
Operating Profit	**(ZARm)**	**3,072**	**245**	**282**	**317**	**284**	**256**	**234**	**239**	**227**	**200**	**173**	**163**	**97**	**93**	**98**	**143**	**21**				
Tax Liability	(ZARm)	**-729**	-38	-65	-74	-58	-57	-47	-59	-57	-45	-39	-41	-34	-31	-33	-50					
Capital Expenditure	(ZARm)	**-753**	-105	-83	-93	-99	-80	-78	-54	-45	-48	-34	-36									
Final Net Free Cash	(ZARm)	**1,590**	**102**	**135**	**150**	**127**	**120**	**109**	**126**	**125**	**107**	**101**	**86**	**63**	**62**	**65**	**92**	**21**				
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	**98,389**	72,384	74,065	76,762	82,513	88,441	96,605	102,647	109,607	119,228	126,390	123,996	140,216	148,629	157,547	145,792					
Total Cash Costs	(ZAR/kg)	**98,389**	72,384	74,065	76,762	82,513	88,441	96,605	102,647	109,607	119,228	126,390	123,996	140,216	148,629	157,547	145,792					
Total Working Costs	(ZAR/kg)	**100,901**	73,066	74,813	78,199	84,179	89,224	97,425	103,823	112,438	120,920	132,407	132,611	143,543	152,156	161,285	163,951					
Total Costs	(ZAR/kg)	**107,338**	**81,571**	**81,969**	**86,150**	**93,153**	**97,706**	**106,346**	**110,300**	**117,823**	**127,085**	**137,042**	**138,885**	**140,166**	**152,456**	**161,635**	**165,447**					

Table 13.7 ARMgold Orkney Tax Entity: TEM 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	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)	**6,463**	1,415	1,333	1,174	923	698	312	304	305												
Head Grade	(g/t)	**5.0**	6.2	5.7	5.2	4.0	4.4	3.4	3.4	3.4												
Contained Gold	(koz)	**1,039**	282	242	196	119	100	34	33	33												
Processing																						
Feed Tonnage	(kt)	**6,463**	1,415	1,333	1,174	923	698	312	304	305												
Feed Grade	(g/t)	**5.0**	6.2	5.7	5.2	4.0	4.4	3.4	3.4	3.4												
Feed Metal	(koz)	**1,039**	282	242	196	119	100	34	33	33												
Metallurgical Recovery	(%)	**95%**	95%	95%	95%	95%	95%	95%	95%	95%												
Recovered Gold	(koz)	**986**	267	230	186	113	95	32	31	31												
Clean-up Gold	(koz)																					
Saleable Metal	(koz)	**986**	267	230	186	113	95	32	31	31												
Sales																						
Gold	(koz)	**986**	267	230	186	113	95	32	31	31												
Commodity Prices																						
Gold Price	(US$/oz)	**364**	350	357	364	371	379	386	394	402	410											
	(ZAR/kg)	**104,603**	93,000	98,580	104,495	110,764	117,410	124,455	131,922	139,838	148,228											
Macro-Economics																						
Exchange Rates	(US$:ZAR)		8.3	8.6	8.9	9.3	9.6	10.0	10.4	10.8	11.2											
RSA CPI	(%)		6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%											
USA PPI	(%)		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%											
Financial – Nominal																						
Sales Revenue	**(ZARm)**	**3,207**	**773**	**705**	**605**	**389**	**346**	**125**	**128**	**136**												
Total Working Costs	**(ZARm)**	**-2,830**	**-595**	**-589**	**-529**	**-371**	**-331**	**-123**	**-133**	**-160**	**1**											
Mining	(ZARm)	**-2,242**	-492	-485	-414	-297	-247	-98	-102	-107												
Processing	(ZARm)	**-358**	-69	-69	-64	-53	-42	-19	-20	-21												
Overheads	(ZARm)	**-173**	-33	-33	-31	-26	-20	-10	-10	-11												
Environmental	(ZARm)	**-12**	-1	-1	-1	-1	-2	-2	-2	-2												
Terminal Separation Benefits	(ZARm)	**-72**		-6	-24	-1	-21		0	-20												
Net Change in Working Capital	(ZARm)	**27**	6	5	8	1	5	0	2	1												
Operating Profit	**(ZARm)**	**377**	**178**	**115**	**76**	**18**	**15**	**2**	**-5**	**-24**	**1**											
Tax Liability	(ZARm)	**-105**	-55	-31	-20																	
Capital Expenditure	(ZARm)	**-44**	-21	-13	-3	-3	-2	-1	-1	-1												
Final Net Free Cash	**(ZARm)**	**228**	**103**	**72**	**53**	**15**	**13**	**1**	**-5**	**-24**	**1**											
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	**90,445**	71,455	82,138	87,869	107,064	105,204	125,959	135,019	143,185												
Total Cash Costs	(ZAR/kg)	**90,445**	71,455	82,138	87,869	107,064	105,204	125,959	135,019	143,185												
Total Working Costs	(ZAR/kg)	**93,197**	71,600	83,223	92,227	107,825	112,755	127,567	136,827	165,695												
Total Costs	(ZAR/kg)	**93,738**	**74,096**	**84,211**	**91,940**	**106,540**	**112,898**	**122,994**	**137,567**	**164,964**												

Table 13.8 Kalgold Tax Entity: TEM 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	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)	**5,762**	1,363	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)	**421**	103	100	91	93	34															
Waste Mined	(kt)	**22,631**	9,210	7,376	4,838	1,182	25															
Stripping Ratio	(kt)	**3.9**	6.8	5.6	3.6	0.9	0.1															
Processing	(g/t)																					
Feed Tonnage	(koz)	**6,772**	1,584	1,584	1,581	1,584	439															
Feed Grade	(%)	**2.1**	2.2	2.1	2.0	2.0	2.5															
Feed Metal	(koz)	**459**	113	109	100	101	35															
Metallurgical Recovery	(koz)	**82%**	82%	82%	81%	81%	83%															
Recovered Gold	(koz)	**375**	93	89	81	82	29															
Clean-up Gold	(koz)	**1**					1															
Saleable Metal	(koz)	**376**	93	89	81	82	31															
Sales																						
Gold	(koz)	**376**	93	89	81	82	31															
Commodity Prices	(ZAR/kg)																					
Gold Price	(US$/oz)	**362**	**350**	**357**	**364**	**371**	**379**	**386**														
	(ZAR/kg)	**102,688**	**930,00**	**98,580**	**104,495**	**110,764**	**117,410**	**124,455**														
Macro-Economics																						
Exchange Rates	(US$:ZAR)		8.26	8.59	8.93	9.28	9.64	10.02														
RSA CPI	(%)		6.00%	6.00%	6.00%	6.00%	6.00%	6.00%														
USA PPI	(%)		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%														
Financial – Nominal																						
Sales Revenue	(ZARm)	**1,202**	**268**	**274**	**264**	**283**	**113**	**–**														
Total Working Costs	**(ZARm)**	**-910**	**-214**	**-224**	**-220**	**-190**	**-58**	**5**														
Mining	(ZARm)	**-514**	-140	-135	-127	-87	-25	–														
Processing	(ZARm)	**-369**	-78	-83	-87	-93	-28	–														
Overheads	(ZARm)	**-13**	**-3**	-3	-3	-3	-1	–														
Environmental	(ZARm)	**-13**	-3	-3	-3	-3	-1	–														
Terminal Separation Benefits	(ZARm)	**-10**	-1	–	–	–	-9	–														
Net Change in Working Capital	(ZARm)	**8**	–	-1	1	-4	7	5														
Operating Profit	(ZARm)	**292**	**44**	**50**	**45**	**93**	**55**	**5**														
Tax Liability	(ZARm)	**-12**	**–**	**–**	**–**	**–**	**-12**	**–**														
Capital Expenditure	(ZARm)	**-1**	**-1**	**–**	**–**	**–**	**–**	**–**														
Final Net Free Cash	(ZARm)	**278**	**43**	**50**	**45**	**93**	**43**	**5**														
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	**76,460**	76,423	79,291	85,855	71,548	56,684															
Total Cash Costs	(ZAR/kg)	**76,460**	76,423	79,291	85,855	71,548	56,684															
Total Working Costs	(ZAR/kg)	**78,462**	77,864	80,366	87,107	72,862	66,874															
Total Costs	(ZAR/kg)	**77,850**	**78,185**	**80,583**	**86,864**	**74,287**	**59,965**															

Table 13.9 Mt. Magnet & Cue Tax Entity: TEM 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
Production																						
Mining																						
RoM Tonnage	(kt)	**14,852**	2,497	2,497	2,497	2,497	2,503	1,887	378	98												
Head Grade	(g/t)	**3.8**	3.2	4.1	4.1	3.9	3.7	2.9	6.8	6.8												
Contained Gold	(koz)	**1,815**	258	327	332	317	300	176	83	21												
Processing																						
Feed Tonnage	(kt)	**14,852**	2,497	2,497	2,497	2,497	2,503	1,887	378	98												
Feed Grade	(g/t)	**3.8**	3.2	4.1	4.1	3.9	3.7	2.9	6.8	6.8												
Feed Metal	(koz)	**1,815**	258	327	332	317	300	176	83	21												
Metallurgical Recovery	(%)	**92%**	91%	92%	92%	92%	91%	90%	94%	94%												
Recovered Gold	(koz)	**1,661**	234	301	305	290	274	159	77	20												
Clean-up Gold	(koz)																					
Saleable Metal	(koz)	1,661	**234**	301	305	290	274	159	77	20												
Sales																						
Gold	(koz)	**1,661**	234	301	305	290	274	159	77	20												
Commodity Prices																						
Gold Price	(US$/oz)	**369**	**350**	**357**	**364**	**371**	**379**	**386**	**394**	**402**	**410**											
	(ZAR/kg)	**108,643**	**93,000**	**98,580**	**104,495**	**110,764**	**117,410**	**124,455**	**131,922**	**139,838**	**148,228**											
Macro-Economics																						
Exchange Rates	(US$:ZAR)		8.3	8.6	8.9	9.3	9.6	10.0	10.4	10.8	11.2											
	(US$:AUS$)		1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6											
	(ZAR:AUS$)		5.3	5.5	5.7	5.8	6.0	6.3	6.5	6.7	6.9											
RSA CPI	(%)		6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%											
USA PPI	(%)		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%											
AUS PPI	(%)		2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%											
Financial – Nominal																						
Sales Revenue	**(ZARm)**	**5,558**	**671**	**912**	**983**	**991**	**991**	**610**	**314**	**86**												
Total Working Costs	**ZARm)**	**-3,271**	**-456**	**-528**	**-526**	**-514**	**-499**	**-389**	**-226**	**-131**	**-2**											
Mining	(ZARm)	**-1,788**	-275	-313	-312	-294	-268	-169	-112	-44												
Processing	(ZARm)	**-1,307**	-157	-169	-177	-186	-197	-222	-110	-87												
Overheads	(ZARm)	**-63**	-6	-7	-7	-8	-8	-8	-9	-10												
Royalty	(ZARm)	**-139**	-17	-23	-25	-25	-25	-15	-8	-2												
Terminal Separation Benefits	(ZARm)																					
Net Change in Working Capital	(ZARm)	**27**	-16	-5	-1	-1	26	13	13	-2												
Operating Profit	**(ZARm)**	**2,287**	**216**	**384**	**456**	**477**	**493**	**220**	**88**	**-45**	**-2**											
Tax Liability	(ZARm)	**-285**	-2	-38	-61	-76	-86	-22														
Capital Expenditure	(ZARm)	**-1,367**	-239	-282	-256	-236	-174	-90	-57	-33												
Final Net Free Cash	(ZARm)	**635**	**-26**	**64**	**139**	**166**	**232**	**109**	**31**	**-78**	**-2**											
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	**61,737**	60,794	52,847	52,804	54,529	56,043	81,680	97,368	229,408												
Total Cash Costs	(ZAR/kg)	**61,737**	60,794	52,847	52,804	54,529	56,043	81,680	97,368	229,408												
Total Working Costs	(ZAR/kg)	**64,453**	63,119	55,311	55,416	57,298	58,978	84,792	100,666	232,904												
Total Costs	(ZAR/kg)	**82,181**	**86,536**	**79,556**	**75,714**	**76,065**	**72,126**	**87,525**	**110,379**	**246,870**												

Table 13.10 South Kalgoorlie: TEM 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	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)	**3,834**	1,301	1,246	1,287																	
Head Grade	(g/t)	**3.2**	3.2	3.2	3.2																	
Contained Gold	(koz)	**394**	135	127	132																	
Processing																						
Feed Tonnage	(kt)	**3,834**	1,301	1,246	1,287																	
Feed Grade	(g/t)	**3.2**	3.2	3.2	3.2																	
Feed Metal	(koz)	**394**	135	127	132																	
Metallurgical Recovery	(%)	**92%**	92%	92%	93%																	
Recovered Gold	(koz)	**364**	124	117	122																	
Clean-up Gold	(koz)																					
Saleable Metal	(koz)	**364**	124	117	122																	
Sales																						
Gold	(koz)	**364**	124	117	122																	
Commodity Prices																						
Gold Price	(US$/oz)	**357**	350	357	364	371																
	(ZAR/kg)	**98,657**	93,000	98,580	104,495	110,764																
Macro-Economics																						
Exchange Rates	(US$:ZAR)		8.3	8.6	8.9	9.3																
	(US$:AUS$)		1.6	1.6	1.6	1.6																
	(ZAR:AUS$)		5.3	5.5	5.7	5.8																
RSA CPI	(%)		6.00%	6.00%	6.00%	6.00%																
USA PPI	(%)		2.00%	2.00%	2.00%	2.00%																
AUS PPI	(%)		2.50%	2.50%	2.50%	2.50%																
Financial – Nominal																						
Sales Revenue	**(ZARm)**	**1,105**	**356**	**356**	**393**																	
Total Working Costs	**ZARm)**	**-829**	**-264**	**-270**	**-308**	**13**																
Mining	(ZARm)	**-531**	-167	-171	-193																	
Processing	(ZARm)	**-259**	-83	-84	-92																	
Overheads	(ZARm)	**-25**	-6	-7	-12																	
Royalty	(ZARm)	**-28**	-9	-9	-10																	
Terminal Separation Benefits	(ZARm)																					
Net Change in Working Capital	(ZARm)	**13**	0	-1	13																	
Operating Profit	**(ZARm)**	**275**	**92**	**85**	**85**	**13**																
Tax Liability	(ZARm)	**-20**		-5	-15																	
Capital Expenditure	(ZARm)	**-197**	-103	-66	-29																	
Final Net Free Cash	(ZARm)	**58**	**-11**	**15**	**41**	**13**																
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	**72,746**	66,663	72,613	79,070																	
Total Cash Costs	(ZAR/kg)	**72,746**	66,663	72,613	79,070																	
Total Working Costs	(ZAR/kg)	**75,212**	68,988	75,078	81,682																	
Total Costs	(ZAR/kg)	**83,889**	**87,561**	**85,157**	**82,125**																	

Table 13.11 Harmony: TEM 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
Production																						
Mining																						
RoM Tonnage	(kt)	**230,274**	27,291	25,609	23,491	21,495	18,702	17,977	15,603	14,232	12,480	10,004	9,251	7,507	6,613	5,988	5,291	3,523	1,681	1,711	1,204	621
Head Grade	(g/t)	**5.0**	3.7	4.1	4.3	4.4	4.9	4.7	5.1	5.2	5.5	6.3	6.1	6.3	6.5	6.6	6.4	6.6	7.6	7.6	7.6	7.5
Contained Gold	(koz)	**36,823**	3,277	3,338	3,258	3,020	2,948	2,743	2,551	2,399	2,210	2,019	1,800	1,510	1,372	1,270	1,089	744	410	419	295	150
Processing																						
Feed Tonnage	(kt)	**231,284**	27,513	25,869	23,727	21,759	18,731	17,977	15,603	14,232	12,480	10,004	9,251	7,507	6,613	5,988	5,291	3,523	1,681	1,711	1,204	621
Feed Grade	(g/t)	**5.0**	3.7	4.0	4.3	4.3	4.9	4.7	5.1	5.2	5.5	6.3	6.1	6.3	6.5	6.6	6.4	6.6	7.6	7.6	7.6	7.5
Feed Metal	(koz)	**36,860**	3,287	3,348	3,268	3,028	2,949	2,743	2,551	2,399	2,210	2,019	1,800	1,510	1,372	1,270	1,089	744	410	419	295	150
Metallurgical Recovery	(%)	**95%**	94%	94%	95%	95%	95%	95%	96%	96%	96%	96%	96%	97%	97%	97%	96%	97%	97%	97%	97%	97%
Recovered Gold	(koz)	**35,193**	3,089	3,151	3,090	2,867	2,809	2,619	2,448	2,304	2,125	1,946	1,734	1,458	1,325	1,226	1,051			12	36	21
Clean-up Gold	(koz)	**168**		7		2	38	11			4	3	4				29			12	36	21
Saleable Metal	(koz)	**35,361**	3,089	3,159	3,090	2,869	2,847	2,629	2,448	2,304	2,130	1,948	1,739	1,458	1,325	1,226	1,080	719	396	417	322	166
Sales																						
Gold	(koz)	**35,361**	3,089	3,159	3,090	2,869	2,847	2,629	2,448	2,304	2,130	1,948	1,739	1,458	1,325	1,226	1,080	719	396	417	322	166
Commodity Prices																						
Gold Price	(US$/oz)	**398**	350	357	364	371	379	386	394	402	410	418	427	435	444	453	462	471	480	490	500	510
	(ZAR/kg)	**98,657**	93,000	98,580	104,495	110,764	117,410	124,455	131,922	139,838	148,228	157,122	166,549	176,542	187,134	198,362	210,264	222,880	236,253	250,428	265,454	281,381
Macro-Economics																						
Exchange Rates	(US$:ZAR)		8.3	8.6	8.9	9.3	9.6	10.0	10.4	10.8	11.2	11.7	12.1	12.6	13.1	13.6	14.2	14.7	15.3	15.9	16.5	17.2
	(US$:AUS$)		1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
	(ZAR:AUS$)		5.3	5.5	5.7	5.8	6.0	6.3	6.5	6.7	6.9	7.2	7.4	7.7	7.9	8.2	8.5	8.8	9.1	9.4	9.7	10.0
RSA CPI	(%)		6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
USA PPI	(%)		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
AUS PPI	(%)		2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Financial – Nominal																						
Sales Revenue	**(ZARm)**	**153,070**	**8,925**	**9,673**	**10,027**	**9,875**	**10,386**	**10,172**	**10,042**	**10,021**	**9,818**	**9,521**	**9,008**	**8,004**	**7,712**	**7,565**	**7,064**	**4,984**	**2,913**	**3,246**	**2,656**	**1,457**
Total Working Costs	(ZARm)	**-104,600**	**-6,702**	**-7,107**	**-7,263**	**-6,679**	**-6,784**	**-6,803**	**-6,655**	**-6,763**	**-6,583**	**-6,359**	**-5,937**	**-5,185**	**-5,177**	**-5,194**	**-4,955**	**-3,594**	**-1,918**	**-2,181**	**-1,842**	**-928**
Mining	(ZARm)	**-76,095**	-4,853	-5,147	-5,233	-4,842	-4,936	-4,938	-4,929	-4,981	-4,863	-4,703	-4,354	-3,856	-3,807	-3,773	-3,519	-2,612	-1,390	-1,500	-1,197	-664
Processing	(ZARm)	**-10,096**	-889	-901	-868	-794	-711	-758	-613	-598	-503	-456	-446	-372	-368	-372	-385	-254	-196	-209	-263	-141
Overheads	(ZARm)	**-16,258**	-888	-938	-984	-903	-980	-1,014	-1,029	-1,094	-1,103	-1,067	-969	-877	-902	-893	-845	-644	-363	-387	-284	-94
Environmental	(ZARm)	**-1,006**	-40	-42	-45	-47	-48	-49	-52	-55	-59	-62	-66	-70	-74	-79	-83	-28	-30	-32	-34	-12
Royalty	(ZARm)	**-167**	-26	-32	-34	-25	-25	-15	-8	-2												
Terminal Benefits	(ZARm)	**-1,239**	-7	-9	-82	-42	-49	-49	-23	-42	-62	-80	-119	-45	-50	-91	-152	-141		-38	-97	-60
Net Change in Working Capital	(ZARm)	**262**	1	-39	-16	-26	-35	21	0	9	6	9	17	34	24	13	29	86	60	-15	32	42
Operating Profit	**(ZARm)**	**48,470**	**2,223**	**2,566**	**2,765**	**3,196**	**3,602**	**3,370**	**3,387**	**3,259**	**3,236**	**3,162**	**3,071**	**2,819**	**2,535**	**2,371**	**2,109**	**1,390**	**995**	**1,065**	**814**	**529**
Tax Liability	**(ZARm)**	**-15,160**	**-204**	**-308**	**-592**	**-763**	**-1,032**	**-1,051**	**-1,174**	**-1,165**	**-1,139**	**-1,127**	**-1,120**	**-1,064**	**-948**	**-880**	**-775**	**-479**	**-373**	**-415**	**-313**	**-235**
Capital Expenditure	**(ZARm)**	**-6,388**	**-1,035**	**-1,081**	**-874**	**-856**	**-685**	**-462**	**-258**	**-247**	**-210**	**-189**	**-170**	**-76**	**-60**	**-53**	**-45**	**-48**	**-38**			
Final Net Free Cash	**(ZARm)**	**26,922**	**984**	**1,177**	**1,299**	**1,577**	**1,885**	**1,857**	**1,955**	**1,847**	**1,886**	**1,846**	**1,781**	**1,679**	**1,526**	**1,437**	**1,289**	**863**	**584**	**650**	**500**	**296**
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	**93,149**	69,005	71,101	73,729	73,276	74,855	82,047	86,305	93,097	97,653	102,739	106,664	112,594	123,211	132,092	141,331	156,999	158,039	161,729	174,268	173,386
Total Cash Costs	(ZAR/kg)	**93,149**	69,005	71,101	73,729	73,276	74,855	82,047	86,305	93,097	97,653	102,739	106,664	112,594	123,211	132,092	141,331	156,999	158,039	161,729	174,268	173,386
Total Working Costs	(ZAR/kg)	**95,342**	69,762	71,945	75,409	74,549	76,227	83,431	87,401	94,491	99,474	105,089	110,080	115,130	126,215	136,531	148,340	164,566	160,464	167,105	187,281	187,320
Total Costs	(ZAR/kg)	**100,912**	80,526	83,336	84,677	84,430	84,352	88,828	90,792	97,802	102,556	108,059	112,919	116,048	127,090	137,601	148,833	162,860	158,660	168,272	184,127	179,228

Table 13.12 ARMgold: TEM 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
Production																						
Mining																						
RoM Tonnage	(kt)	**52,197**	7,049	6,938	6,184	5,500	3,530	3,157	3,159	2,807	1,945	1,915	1,591	1,270	1,270	1,269	1,252	1,044	580	580	580	580
Head Grade	(g/t)	**5.9**	4.7	4.8	4.9	4.6	6.6	6.5	6.5	6.4	6.7	6.7	7.1	8.3	8.0	7.7	7.3	6.9	7.4	7.4	7.4	7.4
Contained Gold	(koz)	**9,824**	1,054	1,078	982	816	743	657	659	580	419	412	364	338	328	316	293	232	138	138	138	138
Processing																						
Feed Tonnage	(kt)	**52,197**	7,049	6,938	6,184	5,500	3,530	3,157	3,159	2,807	1,945	1,915	1,591	1,270	1,270	1,269	1,252	1,044	580	580	580	580
Feed Grade	(g/t)	**5.9**	4.7	4.8	4.9	4.6	6.6	6.5	6.5	6.4	6.7	6.7	7.1	8.3	8.0	7.7	7.3	6.9	7.4	7.4	7.4	7.4
Feed Metal	(koz)	**9,824**	1,054	1,078	982	816	743	657	659	580	419	412	364	338	328	316	293	232	138	138	138	138
Metallurgical Recovery	(%)	**96%**	94%	95%	95%	96%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%
Recovered Gold	(koz)	**9,433**	993	1,020	937	781	717	635	636	560	405	398	353	328	318	306	284	224	134	134	134	134
Clean-up Gold	(koz)	**50**				2	37													12		
Saleable Metal	(koz)	**9,483**	993	1,020	937	783	754	635	636	560	405	398	353	328	318	306	284	224	134	145	134	134
Sales																						
Gold	(koz)	**9,483**	993	1,020	937	783	754	635	636	560	405	398	353	328	318	306	284	224	134	145	134	134
Commodity Prices																						
Gold Price	(US$/oz)	**397**	350	357	364	371	379	386	394	402	410	418	427	435	444	453	462	471	480	490	500	510
	(ZAR/kg)	**98,657**	93,000	98,580	104,495	110,764	117,410	124,455	131,922	139,838	148,228	157,122	166,549	176,542	187,134	198,362	210,264	222,880	236,253	250,428	265,454	281,381
Macro–Economics																						
Exchange Rates	(US$:ZAR)		8.3	8.6	8.9	9.3	9.6	10.0	10.4	10.8	11.2	11.7	12.1	12.6	13.1	13.6	14.2	14.7	15.3	15.9	16.5	17.2
	(US$:AUS$)		1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
	(ZAR:AUS$)		5.3	5.5	5.7	5.8	6.0	6.3	6.5	6.7	6.9	7.2	7.4	7.7	7.9	8.2	8.5	8.8	9.1	9.4	9.7	10.0
RSA CPI	(%)		6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
USA PPI	(%)		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
AUS PPI	(%)		2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Financial – Nominal																						
Sales Revenue	**(ZARm)**	**40,996**	**2,871**	**3,128**	**3,044**	**2,699**	**2,754**	**2,456**	**2,612**	**2,435**	**1,869**	**1,946**	**1,828**	**1,803**	**1,853**	**1,888**	**1,859**	**1,556**	**984**	**1,133**	**1,106**	**1,172**
Total Working Costs	(ZARm)	**-26,773**	**-2,146**	**-2,386**	**-2,280**	**-1,794**	**-1,675**	**-1,497**	**-1,629**	**-1,580**	**-1,081**	**-1,166**	**-1,118**	**-1,044**	**-1,099**	**-1,151**	**-1,182**	**-1,191**	**-615**	**-671**	**-698**	**-768**
Mining	(ZARm)	**-21,719**	-1,730	-1,932	-1,784	-1,427	-1,370	-1,269	-1,348	-1,284	-895	-939	-903	-864	-910	-947	-968	-980	-491	-520	-551	-606
Processing	(ZARm)	**-2,255**	-219	-228	-222	-191	-130	-113	-119	-118	-93	-98	-95	-65	-69	-73	-77	-74	-61	-65	-69	-73
Overheads	(ZARm)	**-2,411**	-192	-202	-207	-132	-134	-121	-128	-134	-100	-106	-104	-103	-109	-115	-122	-129	-62	-66	-70	-76
Environmental	(ZARm)	**-156**	-6	-6	-7	-7	-8	-8	-9	-9	-6	-6	-6	-7	-7	-8	-8	-9	-9	-10	-10	-11
Royalty	(ZARm)																					
Terminal Separation Benefits	(ZARm)	**-283**	0	-13	-61	-31	-21	-1	-20	-47	-1	-15	-17	-2	-4	-9	-11	-27			-3	
Net Change in Working Capital	(ZARm)	**52**	1	-5	1	-6	-12	15	-5	13	13	-2	7	-4	0	0	5	27	8	-10	5	-1
Operating Profit	**(ZARm)**	**14,223**	**725**	**742**	**764**	**904**	**1,079**	**960**	**982**	**855**	**788**	**780**	**711**	**759**	**754**	**737**	**677**	**364**	**369**	**463**	**408**	**404**
Tax Liability	**(ZARm)**	**-4,888**	**-55**	**-79**	**-232**	**-327**	**-391**	**-354**	**-375**	**-320**	**-282**	**-283**	**-272**	**-299**	**-295**	**-286**	**-264**	**-126**	**-141**	**-187**	**-162**	**-159**
Capital Expenditure	**(ZARm)**	**-1,265**	**-211**	**-273**	**-135**	**-51**	**-96**	**-74**	**-50**	**-76**	**-80**	**-68**	**-54**	**-19**	**-20**	**-21**	**-11**	**-12**	**-13**			
Final Net Free Cash	**(ZARm)**	**8,070**	**460**	**390**	**397**	**526**	**591**	**531**	**557**	**459**	**426**	**429**	**385**	**441**	**439**	**430**	**402**	**226**	**215**	**276**	**246**	**245**
Statistics – Nominal																						
Cash Operating Costs	(ZAR/kg)	**89,456**	69,349	74,441	75,984	71,854	69,664	76,118	80,593	88,270	86,284	92,290	100,371	101,059	109,816	119,263	131,992	169,504	147,469	143,876	165,696	181,492
Total Cash Costs	(ZAR/kg)	**89,456**	69,349	74,441	75,984	71,854	69,664	76,118	80,593	88,270	86,284	92,290	100,371	101,059	109,816	119,263	131,992	169,504	147,469	143,876	165,696	181,492
Total Working Costs	(ZAR/kg)	**90,946**	69,560	75,038	78,314	73,421	70,898	76,585	82,038	91,484	86,804	94,019	102,488	101,878	110,982	121,002	134,194	174,594	149,652	146,006	168,817	184,092
Total Costs	(ZAR/kg)	**95,057**	76,336	83,813	82,913	75,744	75,523	79,602	84,845	95,099	92,078	99,625	106,711	104,087	113,011	123,203	134,938	172,389	150,742	148,184	167,589	184,430

13.6 Net Present Values and Sensitivities

The following Tables present the Net Present Values ("NPV") of the real 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 Free Gold Tax Entity

Table 13.13 Free Gold Tax Entity: variation of NPV with discount factors

Discount Factor	NPV (ZARm)
6.0%	9,377
8.1%	8,093
11.3%	6,632
14.5%	**5,559**
16.6%	4,997
18.7%	4,526
21.9%	3,952

Table 13.14 Free Gold Tax Entity: NPV – single parameter sensitivity

Sensitivity Range Currency	-15% (ZARm)	-10% (ZARm)	-5% (ZARm)	0% (ZARm)	5% (ZARm)	10% (ZARm)	15% (ZARm)
Valuation at 6% Discount Factor							
Revenue	5,591	6,876	8,111	**9,377**	10,586	11,806	13,081
Total Working Cost	11,541	10,806	10,091	**9,377**	8,645	7,862	7,142
Capital	9,523	9,474	9,425	**9,377**	9,328	9,279	9,230
Valuation at 14.5% Discount Factor							
Revenue	3,198	4,008	4,774	**5,559**	6,295	7,038	7,833
Total Working Cost	6,898	6,440	6,000	**5,559**	5,104	4,601	4,149
Capital	5,673	5,635	5,597	**5,559**	5,522	5,484	5,446

Table 13.15 Free Gold Tax Entity: NPV – twin parameter sensitivity at 14.5% discount

NPV (ZARm)		-15%	-10%	-5%	0%	5%	10%	15%
		Revenue Sensitivity Range						
	-15%	4,647	5,409	6,145	6,898	7,681	8,412	9,142
	-10%	4,164	4,969	5,704	6,440	7,210	7,978	8,708
TWC Sensitivity	**-5%**	3,712	4,460	5,264	6,000	6,735	7,521	8,274
	0%	3,198	4,008	4,774	**5,559**	6,295	7,038	7,833
	5%	2,729	3,510	4,304	5,104	5,854	6,590	7,350
	10%	2,199	3,030	3,852	4,601	5,414	6,149	6,885
	15%	1,711	2,534	3,330	4,149	4,901	5,709	6,445

13.6.2 Joel Tax Entity

Table 13.16 Joel Tax Entity: variation of NPV with discount factors

Discount Factor	NPV (ZARm)
6.0%	211
8.1%	193
11.3%	169
14.5%	**150**
16.6%	139
18.7%	129
21.9%	116

Table 13.17 Joel Tax Entity: NPV – single parameter sensitivity

Sensitivity Range Currency	-15% (ZARm)	-10% (ZARm)	-5% (ZARm)	0% (ZARm)	5% (ZARm)	10% (ZARm)	15% (ZARm)
Valuation at 6% Discount Factor							
Revenue	-37	59	141	**211**	279	349	414
Total Working Cost	377	322	265	**211**	153	90	18
Capital	220	217	214	**211**	208	206	201
Valuation at 14.5% Discount Factor							
Revenue	-29	39	99	**150**	199	248	293
Total Working Cost	267	229	188	**150**	108	62	10
Capital	157	155	152	**150**	148	145	142

Table 13.18 Joel Tax Entity: NPV – twin parameter sensitivity at 14.5% discount

NPV (ZARm)		-15%	-10%	-5%	0%	5%	10%	15%
		Revenue Sensitivity Range						
	-15%	121	170	219	267	311	356	404
	-10%	78	131	179	229	276	320	365
TWC Sensitivity	**-5%**	30	88	141	188	238	285	329
	0%	-29	39	99	**150**	199	248	293
	5%	-92	-15	52	108	159	209	258
	10%	-154	-78	-2	62	117	167	217
	15%	-217	-140	-64	10	73	126	176

13.6.3 Harmony Free State Operations

Table 13.19 Harmony Free State Tax Entity: variation of NPV with discount factors

Discount Factor	NPV (ZARm)
6.0%	2,467
8.1%	2,205
11.3%	1,888
14.5%	**1,641**
16.6%	1,506
18.7%	1,389
21.9%	1,242

Table 13.20 Harmony Free State Tax Entity: NPV – single parameter sensitivity

Sensitivity Range Currency	-15% (ZARm)	-10% (ZARm)	-5% (ZARm)	0% (ZARm)	5% (ZARm)	10% (ZARm)	15% (ZARm)
Valuation at 6% Discount Factor							
Revenue	553	1,255	1,861	**2,467**	3,074	3,680	4,286
Total Working Cost	3,884	3,412	2,940	**2,467**	1,995	1,523	1,032
Capital	2,504	2,492	2,480	**2,467**	2,455	2,443	2,431
Valuation at 14.5% Discount Factor							
Revenue	344	826	1,234	**1,641**	2,049	2,456	2,864
Total Working Cost	2,597	2,278	1,960	**1,641**	1,323	1,004	669
Capital	1,668	1,659	1,650	**1,641**	1,632	1,624	1,615

Table 13.21 Harmony Free State Tax Entity: NPV – twin parameter sensitivity at 14.5% discount

NPV (ZARm)		-15%	-10%	-5%	0%	5%	10%	15%
		Revenue Sensitivity Range						
	-15%	1,374	1,781	2,189	2,597	3,004	3,412	3,819
	-10%	1,055	1,463	1,871	2,278	2,686	3,093	3,501
TWC Sensitivity	**-5%**	737	1,144	1,552	1,960	2,367	2,775	3,182
	0%	344	826	1,234	**1,641**	2,049	2,456	2,864
	5%	-159	456	915	1,323	1,730	2,138	2,545
	10%	-664	-36	565	1,004	1,412	1,819	2,227
	15%	-1,170	-542	86	669	1,093	1,501	1,909

13.6.4 ARMgold Welkom Operations

Table 13.22 ARMgold Welkom Tax Entity: variation of NPV with discount factors

Discount Factor	NPV (ZARm)
6.0%	41
8.1%	40
11.3%	39
14.5%	**38**
16.6%	38
18.7%	37
21.9%	37

Table 13.23 ARMgold Welkom Tax Entity: NPV – single parameter sensitivity

Sensitivity Range Currency	-15% (ZARm)	-10% (ZARm)	-5% (ZARm)	0% (ZARm)	5% (ZARm)	10% (ZARm)	15% (ZARm)
Valuation at 6% Discount Factor							
Revenue	-132	-74	-17	**41**	95	146	185
Total Working Cost	179	140	93	**41**	-15	-71	-127
Capital	41	41	41	**41**	41	41	41
Valuation at 14.5% Discount Factor							
Revenue	-104	-56	-9	**38**	84	126	159
Total Working Cost	154	121	82	**38**	-7	-53	-99
Capital	38	38	38	**38**	38	38	38

Table 13.24 ARMgold Welkom Tax Entity: NPV – twin parameter sensitivity at 14.5% discount

NPV (ZARm)		-15%	-10%	-5%	0%	5%	10%	15%
		Revenue Sensitivity Range						
	-15%	33	78	119	154	181	208	236
	-10%	-12	35	80	121	156	183	210
TWC Sensitivity	**-5%**	-58	-11	37	82	124	158	185
	0%	-104	-56	-9	**38**	84	126	159
	5%	-150	-102	-55	-7	40	85	128
	10%	-195	-148	-101	-53	-6	42	87
	15%	-241	-194	-146	-99	-51	-4	44

13.6.5 Randfontein Tax Entity

Table 13.25 Randfontein Tax Entity: variation of NPV with discount factors

Discount Factor	NPV (ZARm)
6.0%	7,658
8.1%	6,491
11.3%	5,164
14.5%	**4,195**
16.6%	3,692
18.7%	3,275
21.9%	2,773

Table 13.26 Randfontein Tax Entity: NPV – single parameter sensitivity

Sensitivity Range Currency	-15% ZAR	-10% ZAR	-5% ZAR	0% ZAR	5% ZAR	10% ZAR	15% ZAR
Valuation at 6% Discount Factor							
Revenue	4,111	5,356	6,473	**7,658**	8,784	9,886	10,988
Total Working Cost	9,699	9,021	8,340	**7,658**	6,945	6,174	5,349
Capital	7,808	7,758	7,708	**7,658**	7,606	7,549	7,491
Valuation at 14.5% Discount Factor							
Revenue	2,072	2,830	3,487	**4,195**	4,854	5,491	6,128
Total Working Cost	5,389	4,993	4,594	**4,195**	3,773	3,299	2,782
Capital	4,312	4,273	4,234	**4,195**	4,155	4,111	4,066

Table 13.27 Randfontein Tax Entity: NPV – twin parameter sensitivity at 14.5% discount

NPV (ZARm)		-15%	-10%	-5%	0%	5%	10%	15%
		Revenue Sensitivity Range						
	-15%	3,342	4,010	4,698	5,389	6,026	6,663	7,300
	-10%	2,943	3,611	4,299	4,993	5,635	6,273	6,910
TWC Sensitivity	**-5%**	2,521	3,234	3,900	4,594	5,245	5,882	6,519
	0%	2,072	2,830	3,487	**4,195**	4,854	5,491	6,128
	5%	1,537	2,365	3,072	3,773	4,459	5,101	5,738
	10%	1,009	1,816	2,569	3,299	4,021	4,696	5,347
	15%	325	1,221	2,013	2,782	3,543	4,230	4,915

13.6.6 Evander Tax Entity

Table 13.28 Evander Tax Entity: variation of NPV with discount factors

Discount Factor	NPV (ZARm)
6.0%	1,104
8.1%	987
11.3%	848
14.5%	**739**
16.6%	680
18.7%	629
21.9%	565

Table 13.29 Evander Tax Entity: NPV – single parameter sensitivity

Sensitivity Range Currency	-15% (ZARm)	-10% (ZARm)	-5% (ZARm)	0% (ZARm)	5% (ZARm)	10% (ZARm)	15% (ZARm)
Valuation at 6% Discount Factor							
Revenue	103	526	821	**1,104**	1,386	1,669	1,951
Total Working Cost	1,741	1,528	1,316	**1,104**	891	677	407
Capital	1,151	1,136	1,120	**1,104**	1,088	1,072	1,056
Valuation at 14.5% Discount Factor							
Revenue	60	348	549	**739**	930	1,121	1,312
Total Working Cost	1,167	1,025	882	**739**	597	453	271
Capital	776	764	752	**739**	727	715	703

Table 13.30 Evander Tax Entity: NPV – twin parameter sensitivity at 14.5% discount

NPV (ZARm)		-15%	-10%	-5%	0%	5%	10%	15%
		Revenue Sensitivity Range						
	-15%	595	786	977	1,167	1,358	1,549	1,740
	-10%	453	643	834	1,025	1,215	1,406	1,597
TWC Sensitivity	**-5%**	293	501	691	882	1,073	1,264	1,454
	0%	60	348	549	**739**	930	1,121	1,312
	5%	-203	133	401	597	788	978	1,169
	10%	-467	-129	205	453	645	836	1,026
	15%	-731	-393	-54	271	502	693	884

13.6.7 ARMgold Orkney Tax Entity

Table 13.31 ARMgold Tax Entity: variation of NPV with discount factors

Discount Factor	NPV (ZARm)
6.0%	216
8.1%	211
11.3%	205
14.5%	**199**
16.6%	195
18.7%	191
21.9%	185

Table 13.32 ARMgold Tax Entity: NPV – single parameter sensitivity

Sensitivity Range Currency	-15% ZAR	-10% ZAR	-5% ZAR	0% ZAR	5% ZAR	10% ZAR	15% ZAR
Valuation at 6% Discount Factor							
Revenue	-107	15	119	**216**	302	384	463
Total Working Cost	428	360	291	**216**	130	40	-66
Capital	218	217	217	**216**	215	214	213
Valuation at 14.5% Discount Factor							
Revenue	-63	37	120	**199**	269	336	402
Total Working Cost	370	315	259	**199**	131	59	-26
Capital	201	200	199	**199**	198	197	196

Table 13.33 ARMgold Tax Entity: NPV – twin parameter sensitivity at 14.5% discount

NPV (ZARm)		-15%	-10%	-5%	0%	5%	10%	15%
		Revenue Sensitivity Range						
	-15%	168	238	305	370	436	501	566
	-10%	100	178	248	315	381	447	512
TWC Sensitivity	**-5%**	24	110	188	259	326	391	457
	0%	-63	37	120	**199**	269	336	402
	5%	-156	-51	48	131	209	279	346
	10%	-256	-141	-38	59	141	219	290
	15%	-356	-241	-126	-26	70	151	230

13.6.8 Kalgold Tax Entity

Table 13.34 Kalgold Tax Entity: variation of NPV with discount factors

Discount Factor	NPV (ZARm)
6.0%	239
8.1%	227
11.3%	211
14.5%	**196**
16.6%	188
18.7%	180
21.9%	169

Table 13.35 Kalgold Tax Entity: NPV – single parameter sensitivity at 14.5% discount

Sensitivity Range Currency	-15% ZAR	-10% ZAR	-5% ZAR	0% ZAR	5% ZAR	10% ZAR	15% ZAR
Valuation at 6% Discount Factor							
Revenue	90	143	195	**239**	275	306	337
Total Working Cost	315	291	268	**239**	207	167	126
Capital	239	239	239	**239**	239	238	238
Valuation at 14.5% Discount Factor							
Revenue	69	114	158	**196**	229	257	286
Total Working Cost	267	245	223	**196**	168	134	99
Capital	196	196	196	**196**	196	196	196

Table 13.36 Kalgold Tax Entity: NPV – twin parameter sensitivity at 14.5% discount

NPV (ZARm)		-15%	-10%	-5%	0%	5%	10%	15%
		Revenue Sensitivity Range						
	-15%	174	207	239	267	298	325	351
	-10%	139	183	215	245	273	304	331
TWC Sensitivity	**-5%**	104	149	190	223	251	279	310
	0%	69	114	158	**196**	229	257	286
	5%	35	79	124	168	203	235	263
	10%	0	44	89	134	178	209	242
	15%	-35	10	54	99	143	186	218

13.6.9 Mt. Magnet & Cue Tax Entity

Table 13.37 Harmony Australia Mt. Magnet & Cue Tax Entity: variation of NPV with discount factors

Discount Factor	NPV (ZARm)
6.0%	516
8.1%	481
11.3%	434
14.5%	**392**
16.6%	367
18.7%	345
21.9%	314

Table 13.38 Mt. Magnet & Cue Tax Entity: NPV – single parameter sensitivity

NPV (ZARm) Currency	-15% ZAR	-10% ZAR	-5% ZAR	0% ZAR	5% ZAR	10% ZAR	15% ZAR
Valuation at 6% Discount Factor							
Revenue	2	178	348	**516**	676	837	998
Total Working Cost	799	705	610	**516**	417	316	215
Capital	676	623	569	**516**	462	409	355
Valuation at 14.5% Discount Factor							
Revenue	-15	124	259	**392**	518	644	771
Total Working Cost	613	539	466	**392**	315	235	155
Capital	526	481	437	**392**	348	303	259

Table 13.39 Mt. Magnet & Cue Tax Entity: NPV – twin parameter sensitivity at 14.5% discount

NPV (ZARm)		-15%	-10%	-5%	0%	5%	10%	15%
		Revenue Sensitivity Range						
	-15%	228	361	487	613	739	865	989
	-10%	148	283	413	539	666	792	917
TWC Sensitivity	**-5%**	68	204	339	466	592	718	844
	0%	-15	124	259	**392**	518	644	771
	5%	-104	43	179	315	445	571	697
	10%	-192	-42	100	235	370	497	623
	15%	-284	-131	17	155	290	424	550

13.6.10 South Kalgoorlie Tax Entity

Table 13.40 South Kalgoorlie Tax Entity: variation of NPV with discount factors

Discount Factor	NPV (ZARm)
6.0%	43
8.1%	40
11.3%	37
14.5%	**34**
16.6%	32
18.7%	30
21.9%	28

Table 13.41 South Kalgoorlie Tax Entity: NPV – single parameter sensitivity

Sensitivity Range Currency	-15% ZAR	-10% ZAR	-5% ZAR	0% ZAR	5% ZAR	10% ZAR	15% ZAR
Valuation at 6% Discount Factor							
Revenue	-80	-37	5	**43**	75	108	140
Total Working Cost	116	92	68	**43**	14	-16	-48
Capital	60	54	48	**43**	37	31	25
Valuation at 14.5% Discount Factor							
Revenue	-76	-37	0	**34**	63	92	120
Total Working Cost	100	78	56	**34**	9	-19	-47
Capital	50	45	39	**34**	29	23	18

Table 13.42 South Kalgoorlie Tax Entity: NPV – twin parameter sensitivity at 14.5% discount

NPV (ZARm)		-15%	-10%	-5%	0%	5%	10%	15%
		Revenue Sensitivity Range						
	-15%	9	42	71	100	128	157	185
	-10%	-18	17	49	78	106	135	164
TWC Sensitivity	**-5%**	-46	-9	26	56	85	113	142
	0%	-76	-37	0	**34**	63	92	120
	5%	-107	-66	-28	9	41	70	99
	10%	-138	-97	-56	-19	17	48	77
	15%	-169	-128	-87	-47	-10	25	55

13.6.11 Harmony

Table 13.43 Harmony: variation of NPV with discount factors

Discount Factor	NPV (ZARm)	Value per Share (ZAR)
6.0%	16,820	91.31
8.1%	14,574	79.12
11.3%	11,982	65.05
14.5%	**10,053**	**54.58**
16.6%	9,034	49.04
18.7%	8,176	44.39
21.9%	7,126	38.68

Table 13.44 Harmony: NPV – single parameter sensitivity

Sensitivity Range Currency	-15% ZAR	-10% ZAR	-5% ZAR	0% ZAR	5% ZAR	10% ZAR	15% ZAR
Valuation at 6% Discount Factor							
Revenue	7,556	10,888	13,830	**16,820**	19,703	22,562	25,446
Total Working Cost	22,513	20,613	18,719	**16,820**	14,870	12,817	10,662
Capital	17,310	17,146	16,983	**16,820**	16,655	16,484	16,312
Valuation at 14.5% Discount Factor							
Revenue	4,038	6,229	8,123	**10,053**	11,890	13,705	15,544
Total Working Cost	13,715	12,493	11,275	**10,053**	8,790	7,437	6,008
Capital	10,442	10,312	10,183	**10,053**	9,922	9,787	9,651

Table 13.45 Harmony: NPV – twin parameter sensitivity at 14.5% discount

NPV (ZARm)		-15%	-10%	-5%	0%	5%	10%	15%
		Revenue Sensitivity Range						
	-15%	8,105	9,977	11,842	13,715	15,550	17,354	19,157
	-10%	6,840	8,751	10,623	12,493	14,324	16,152	17,956
TWC Sensitivity	**-5%**	5,548	7,497	9,401	11,275	13,099	14,934	16,754
	0%	4,038	6,229	8,123	**10,053**	11,890	13,705	15,544
	5%	2,317	4,759	6,841	8,790	10,672	12,492	14,315
	10%	569	3,033	5,397	7,437	9,409	11,264	13,094
	15%	-1,317	1,234	3,662	6,008	8,049	9,976	11,841

13.6.12 ARMgold

Table 13.46 ARMgold: variation of NPV with discount factors

Discount Factor	NPV (ZARm)	Value per Share (ZAR)
6.0%	5,051	52.89
8.1%	4,395	46.02
11.3%	3,645	38.17
14.5%	**3,092**	32.37
16.6%	2,800	29.32
18.7%	2,556	26.76
21.9%	2,256	23.62

Table 13.47 ARMgold: NPV – single parameter sensitivity

Sensitivity Range Currency	-15% ZAR	-10% ZAR	-5% ZAR	0% ZAR	5% ZAR	10% ZAR	15% ZAR
Valuation at 6% Discount Factor							
Revenue	2,537	3,408	4,228	**5,051**	5,830	6,606	7,396
Total Working Cost	6,567	6,065	5,562	**5,051**	4,514	3,945	3,387
Capital	5,131	5,104	5,077	**5,051**	5,024	4,997	4,970
Valuation at 14.5% Discount Factor							
Revenue	1,417	2,004	2,548	**3,092**	3,599	4,105	4,624
Total Working Cost	4,107	3,771	3,434	**3,092**	2,729	2,337	1,955
Capital	3,154	3,134	3,113	**3,092**	3,071	3,050	3,029

Table 13.48 ARMgold: NPV – twin parameter sensitivity at 14.5% discount

NPV (ZARm)		-15%	-10%	-5%	0%	5%	10%	15%
		Revenue Sensitivity Range						
	-15%	2,585	3,106	3,605	4,107	4,614	5,093	5,575
	-10%	2,209	2,763	3,270	3,771	4,279	4,778	5,259
TWC Sensitivity	-5%	1,837	2,373	2,928	3,434	3,936	4,452	4,943
	0%	1,417	2,004	2,548	**3,092**	3,599	4,105	4,624
	5%	1,013	1,594	2,171	2,729	3,256	3,764	4,279
	10%	571	1,188	1,787	2,337	2,901	3,420	3,928
	15%	150	763	1,361	1,955	2,506	3,065	3,583

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 Harmony as at 01 July 2003, which has been provided to SRK by the Financial Advisors. The value per share stated also includes the Net cash position as at 30 June 2003, 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 14.5% discount factor over a ten-year period.

Table 14.1 Harmony: Summary Equity Valuation

Company/Tax Entity	LoM Valuation NPV @14.5% DCF (ZARm)	P&P Valuation NPV @14.5% DCF (ZARm)
HARMONY		
Wholly-owned		
Harmony Free State	1,641	1,101
Randfontein Estates Limited	4,195	2,722
Evander Gold Mining Company Limited	739	580
Kalahari Goldridge Mining Company Limited	196	196
Mt. Magnet	392	136
South Kalgoorlie	34	15
Joint Ventures		
ARMgold/Harmony Free Gold Joint Venture Company (Proprietary) Limited	2,780	2,681
ARMgold/Harmony Joel Joint Venture Company (Proprietary) Limited	75	45
Subtotal	**10,052**	**7,474**
Interests In Listed Entities		
Anglovaal	756	756
Abelle	1,053	1,053
Bendigo	279	279
High River	201	201
Highlands	840	840
Total Asset Valuation	**13,181**	**10,603**
Unallocated Corporate Expenses	-561	-561
Net (debt)/cash at 30 June 2003	-919	-919
Mark-to-market of Hedge Book	-284	-284
Equity Value	**11,417**	**8,839**
Shares in Issue (millions)	**184**	**184**
Value per Share (ZAR)	**62**	**48**

Table 14.2 ARMgold: Summary Equity Valuation

Company/Tax Entity	LoM Valuation NPV @14.5% DCF (ZARm)	P&P Valuation NPV @14.5% DCF (ZARm)
ARMgold		
Wholly-owned		
ARM Welkom	38	38
ARM Orkney	199	199
Joint Ventures		
ARMgold/Harmony Free Gold Joint Venture Company (Proprietary) Limited	2,780	2,681
ARMgold/Harmony Joel Joint Venture Company (Proprietary) Limited	75	45
Subtotal	**3,092**	**2,963**
Interests In Listed Entities		
Anglovaal	756	756
Total Asset Valuation	**3,848**	**3,719**
Unallocated Corporate Expenses	-332	-332
Net (debt)/cash at 30 June 2003	579	579
Equity Value	**4,095**	**3,966**
Shares in Issue (millions)	**96**	**96**
Value per Share (ZAR)	**43**	**41**

14.2 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.

Dr. Iestyn Humphreys,
Director,
SRK Consulting.

Dr. Mike Harley,
Director,
SRK Consulting.

Dr. Neal Rigby,
Director,
SRK Consulting.

Mr. H. G. Waldeck,
Director,
SRK Consulting.

GLOSSARY

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
Anglogold	Anglogold Limited
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	term describing sedimentary rocks with a modal grain size in the silt fraction
ARMgold	African Rainbow Minerals Gold Limited
ARMgold Orkney operations	a mining complex owned by ARMgold 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
ARMgold Welkom Operations	a mining complex owned by ARMgold 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
assay	the chemical analysis of mineral samples to determine the metal content
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
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	Bambanani Gold Mine
Bayesian	a statistical method that regards parameters of a population as random variables having known probability distribution
Bendigo	Bendigo Mining NL; a company listed on the ASX which owns a single gold development project in Australia
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
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
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
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
crosscut	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
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
dextral	right hand displacement on a fault plane
diabase	rock type of basaltic composition
dilution	waste which is unavoidably mined with ore
dip	angle of inclination of a geological feature/rock from the horizontal
distal	distant from source
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
drill-hole	method of sampling rock that has not been 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 activated carbon
epigenetic	feature being described had a separate genesis to the host material
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
fault	the surface of a fracture along which movement has occurred
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
gravimetric finish	the determination of the gold content after fire assay by measurement of the mass of the resultant gold prill
hangingwall	the overlying side of an orebody or slope
Harmony	Harmony Gold Mining Company Limited
Harmony Australian Operations	a group of assets owned by Harmony and located in Australia comprising Mt Magnet and Cue operations and South Kalgoorlie
Harmony Canadian Operations	the Bisset asset owned by Harmony and located in Canada
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.BU 3, 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
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 the TSE 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
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
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
Joint Venture	ARMgold's joint venture with Harmony
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
kriging	an interpolation method of assigning values from samples to blocks that minimises the estimation error
leaching	dissolution of gold from crushed and ground material
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
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
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, No. 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
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 Harmony owned exploration and mining assets comprising a 50% interest in the ARMgold / Harmony Free Gold Joint Venture Company (Proprietary) Limited ("Free Gold") and 100% interest in Randfontein Estates Limited Evander Gold Mining Company Limited Kalahari Goldridge Mining Company, Harmony Gold (Australia) Pty Limited, Harmony Gold (Canada) Inc, Harmony Free State and various Significant Exploration Properties
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
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
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
polymictic	describing clastic feel rock composed of more than one rock type
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 (FeS2)
pyrrhotite	iron sulphide mineral (Fe1-xS)
quartzite	metamorphic rock composed of quartz
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

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
sedimentary	pertaining to rocks formed by the accumulation of sediments, formed by the erosion of other rocks
sequential grid mining	mining method incorporating dip pillars and mined on a grid system
shaft	an opening cut downwards from the surface for transporting personnel, equipment, supplies, ore and waste
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 of 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
stope	underground void created by mining
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
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 by RMB as part of the Financial Model
the Financial Model	the financial model as developed by RMB
the Mine Health and Safety Act	the Mine Health and Safety Act, No. 29 of 1996
the Minerals Act	the Minerals Act 50 of 1991
thickening	process of concentrating solid particles in suspension

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
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
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
West Wits Operations	a complex owned by Harmony and located in the West Rand comprising Elandsrand, Deelkraal, Cooke BU No. 1, Cooke BU No. 2, Cooke BU No. 3 and Doornkop
Witwatersrand Basin	sedimentary basin in South Africa

ABBREVIATIONS

AARL	Anglo American Research Laboratory
ABET	Adult Basic Education and Training
ADS	American Depository Shares
AIM	Alternative Investment Market of the LSE
ARM	African Rainbow Minerals
ASAC	Anglo South Africa Capital (Proprietary) Limited
ASX	Australian Stock Exchange
BCF	Black Chert Facies
BF	Block Factor
BIF	Banded Ironstone Formation
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
CoP	Code-of-Practice
CPI	Consumer Price Index
CPR	Competent Person's Report
DCF	Discounted Cash Flow
DEP	The Australian Department of Environmental Protection
DIR	The Australian Department of Industry and Resources
DME	Department of Minerals and Energy
DRD	Durban Roodepoort Deep, Limited
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
GoS	Gold on Surface
HIV	Human Immunodeficiency Virus
IDR	International Depositary 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	Lorraine 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 Advisor
LTIFR	Lost Time Injury Frequency Rate
NYSE	New York Stock Exchange
MCF	Mine Call Factor
MF	Modifying Factors
MoU	Memorandum of Understanding
NNR	National Nuclear Regulator
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
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 Services
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) (Pty) 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
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
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$/oz	United Sates Dollar per ounce
ZAR	South African Rand
ZAR/kg	South African Rand per kilogram
ZARm	million South African Rand
ZAR/t	South African Rand per metric tonne
ZAR:US$	South African Rand per United States Dollar

Other investments

Anglovaal Mining Limited (34.5%)

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% interest in Avgold Limited ("Avgold") that wholly owns and operates the Target 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 41.3% 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;
- A 90% interest in Chambishi Metals plc ("Chambishi") a copper, cobalt producer located on the Copper Belt, Zambia; and
- A 75% 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 Lorraine 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 effected by a number of inclined conveyors to the shaft hoisting facilities at Lorraine 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 Kwa-Zulu 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 Ltd, 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") (33.7%) and a consortium managed by TISO Capital (Pty) Limited ("TISO") (up to 25%) which is investigating the development of a platinum mine at the farm Dwarsrivier. It is intended that Avmin and Implats will combine their interests into a new holding structure managed by Avmin with 75% of the projects's equity. It is expected that Two 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.

Chambishi is focused on extracting principally cobalt with secondary copper from a 20Mt dump resource. Planned production levels were achieved at the end of 2002 though this company is currently being disposed of. The transaction, announced 12 June 2003, is subject to final approvals by the South African Reserve Bank and the consent of the government of the Republic of Zambia, which is a shareholder in Chambishi.

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.

Highland Gold Mining Limited (32.5%)

Highland Gold Mining Limited ("Highland Gold") is listed on the LSE AIM has three projects in Russia, comprising:

- A 100% interest in the operating Mnogovershinnoe Gold Mine ("MNV") located in the Khabarovsk Territory of the Russian Federation;
- A 100% interest in the Darasun Gold Mine ("Darasun") located in the Chita Region of the Russian Federation; and
- An 81% interest in the Polymetallic Novoshirokinskoye Project ("NVK") located in the Chita Region of the Russian Federation.

Operations at MNV consist of both open-pit and underground mining of several high-grade fault controlled quartz vein gold orebodies. In 2002, it is reported that MNV produced 178koz of gold at cash operating costs of US$145/oz. MNV plans to increase production to 200koz per annum by 2004. With the current reserves this would give MNV at life of at least 12 years.

The Darasun operations were closed in 2000 but gold has historically been mined by open-pit and underground methods for over 100 years. The orebodies at Darasun occur as thin quartz-sulphide veins. Future prospects depend on compliance with the current mining licences and acquiring long-term licences over the whole deposit. Highland Gold has commissioned a feasibility study to consider the re-development of Darasun, which should be completed during 2003.

The NVK deposit occurs in a fault zone containing a number of en-echelon vein like orebodies with significant gold, silver, lead and zinc content. An extensive amount of infrastructure already exists at NVK including equipped haulages and shafts and a partially completed processing facility. Further technical studies on the re-development of NVK are expected to be completed during 2003.

High River Gold Mines limited (21%)

High River Gold Mines limited ("High River") is listed on the TSE and has two gold projects in production and two at the feasibility stage. The properties comprise:

- 50% direct interest in the New Britannia Mine ("NBM") located in Manitoba Province, Canada;
- A fully diluted 51% equity interest in Buryatzoloto located in Russia;
- A 100% interest in the Berezitovoye Project located in Russia; and
- An 80% interest in the Taparko gold project located in Burkina Faso, west Africa (the Burkina Faso Government holds the remaining 20%).

NBM is an underground gold mine that began production in 1995 and High River shares management responsibilities with the Kinross Gold Corporation, which is the mine operator. High River is responsible for the regional exploration programme. Gold production for 2002 was 107koz ounces at a total cash cost of US$206 per ounce.

Buryatzoloto owns 100% of the two operating underground gold mines, Zun-Holba and Irokinda, located in the Republic of Buryatia in southern Siberia, Russia. In 2002, total combined gold production from the Zun Holba and Irokinda mines was 153koz at a total cash cost of US$164 per ounce. Buryatzoloto is currently carrying out exploration drilling at both operations and exploring for new discoveries throughout the Republic of Buryatia.

In December 2002, High River purchased a 100% interest in the Berezitovoye Project, located in the Amur Region of southern Siberia, Russia. The Berezitovoye deposit is amenable to low-cost, open-pit mining.

The Taparko mining concession is some 1,204km2 and exploration is continuing to evaluate a number of additional gold zones along the Taparko structure and several anomalous areas outside the main structure. Potential exists for adding additional resources within the Taparko concession and adjacent properties. In May 2002, High River entered into an agreement with AXMIN Inc. to exchange data and share in the costs of a pre-feasibility study of a combined operation (Taparko and AXMIN's nearby Bouroum deposit). In January 2003, High River and AXMIN announced that the pre-feasibility study of a combined operation had commenced.

Bendigo Mining NL (31.8%)

Bendigo Mining NL ("Bendigo") is listed on the ASX and comprises the New Bendigo Gold Project that has tenements of approximately 450km2 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 (87%)

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 50% interest in the Morobe Project in Papua New Guinea with an option to acquire the balance;

– A 100% interest in the Wafi Project Papua New Guinea; and

– A 100% interest in the Gidgee Gold Mine, Western Australia.

The Morobe Project has four exploration licences covering an area of 966km2 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 990km2. 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 Ltd.; the Credo JV at Mt. Pleasant, Western Australia; and various other exploration projects in Australia.

Acquisitions and disposals of companies, businesses and properties

Local acquisitions

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 561 638 ounces of gold in the year ended 30 June 2002, which were included in Harmony's gold sales for fiscal 2002.
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 476 059 ounces of gold in fiscal 2002, which were included in Harmony's gold sales in fiscal 2002.
3. On 23 April 2002, the ARMgold/Harmony Freegold Joint Venture Company (Pty) 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 2002, sales from the Free Gold assets amounted to 1 143 243 ounces of gold and Harmony's interest in two months of these sales (reflecting the period from 1 May 2002 to 30 June 2002) totalled 104 005 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 million.
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.

Global acquisitions

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. 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. 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 operating results together within 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). New Hampton sold 191 521 ounces of gold in fiscal 2002, which were included in Harmony's gold sales for fiscal 2002, and Hill 50 sold 275 185 ounces of gold in fiscal 2002, three months of which, or 61 472 ounces, were included in Harmony's gold sales for fiscal 2002.
2. Harmony has also recently acquired equity interests in Bendigo Mining NL or Bendigo, a single project Australian gold mining development company, Highland Gold 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 and 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. Harmony acquired

ordinary shares representing approximately 31,8% of the outstanding share capital of Bendigo in December 2001, ordinary shares representing approximately 32,5% of the outstanding share capital of Highland Gold in May and June 2002 and ordinary shares representing approximately 21% of the outstanding share capital of High River in November 2002.

3. 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 87% of the shares in Abelle.

Schedule of material loans to Harmony Group

	At 31 March 2003 R'million	At 30 June 2002 R'million
Unsecured		
Senior unsecured fixed rate bonds (a)	1 200	1 200
Fair value adjustment	(2)	(21)
Less: Amortised discount and bond issue costs	(17)	(20)
Total unsecured long term borrowings	1 181	1 159
Secured		
BAE Systems Plc (b)	73	36
BOE loan (c)	438	500
Less: Short-term portion	(125)	(125)
	313	375
Anglo Gold (d)	497	516
Less: Short-term portion	(56)	(316)
	441	200
Goldfields Limited (e)	7	–
Less: Short-term portion	–	–
	7	–
Total secured long-term borrowings	834	612
Total long-term borrowings	2 015	1 771

1. 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 indebtness for borrowed money, without securing the outstanding bonds equally and ratably with such indebtedness, except for certain specified permitted encumbrances.

2. The loan from BAE Systems Plc is a US dollar denominated term loan of R73 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 draw down date and interest is repayable on a quarterly basis.

3. 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 (Pty) Limited and loans made by Harmony to Free Gold 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 Estates Limited, Evander Gold Mines Limited, Kalgold and Lydenburg Exploration Limited. The loan is repayable in full on 23 April 2006 by way of eight semi-annual capital instalments which became

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:

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

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

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

4. On 24 December 2001 Free Gold entered into a agreement with Anglogold to purchase certain mines and related surface operations and assets in the Free State 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, which has now been paid, was payable five business days before Anglogold is 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 31 March 2003 was R497 million, which was proportionately consolidated.

5. On 1 July 2002 Free Gold entered into a agreement with St Helena Gold Mines Limited to purchase its St Helena assets for approximately R135 million. A first payment of R120 million was payable on the date of fulfilment of the last of the conditions precedent, being 31 October 2002, at no interest charge. The balance of the consideration is payable by way of a 1% royalty on the net smelter revenues for 48 months, monthly in arrears within ten days after the end of each calendar month at no interest charge. Harmony's 50% portion of the outstanding loan balance at 31 March 2003 was R7 million, which was proportionately consolidated.

Schedule of material loans by Harmony Group

	At 31 March 2003 R'million	At 30 June 2002 R'million
Interest-bearing Loans		
Loans from Evander Gold Mines Limited to:		
Brendan Village CC	9,6	9,6
	9,6	9,6

Date of Loan: 30 June 1999.

Interest: 12% per annum.

Repayment terms: 120 equal monthly installments of R137 732,11 from 15 June 2003 (Date of registration of transfer of property sold)
Security: Portion 5 and Portion 2 of Farm Randfontein 130 I.S.

Interest free loans		
Loans from Harmony to:		
H Taute Pharmacy (Pty) Limited	1,3	1,3
	1,3	1,3

Date of loan: June, 1999.

Interest: Interest free.

Repayment terms: No fixed terms of repayment.

Security: Pharmacy stock sold by Harmony hospital.

Contingent liabilities and capital commitments

	At 31 March 2003 R'million	At 30 June 2002 R'million
Capital expenditure commitments		
Contracts for capital expenditure	25	33
Authorised by the directors but not contracted for	1 980	267
	2 006	300

This expenditure will be financed from existing cash resources.

Contingent liabilities		
Guarantees and suretyships	5	5
Environmental guarantees	107	82
	112	87

Subsidiary operating companies incorporated in South Africa

Companies	Reg. No.	Date of incorporation	Issued ordinary share capital R	Issued ordinary share capital R	% holdings	Effective date of becoming a subsidiary	Principal business
Lydenburg Exploration Limited	1988/001853/06	28/03/1988	14 264 132	42 792	100	27/03/1997	Exploration
Evander Gold Mines Limited	1963/006226/06	06/11/1963	39 271 599	39 272	100	01/07/1998	Gold mining
Randfontein Estates Limited	1889/000251/06	16/03/1889	99 410 000	19 882	100	01/03/2000	Gold mining
West Rand Consolidated Mines Limited	1903/001978/06	10/08/1903	17 967 476	17 967	100	01/10/1999	Investment holding
Harmony Gold (Management Services) (Pty) Limited	1999/004358/07	02/03/1999	1 000	1	100		Management services
Harmony Gold (Marketing) (Pty) Limited	1999/026547/07	30/11/1999	100				Marketing
INDIRECT SUBSIDIARIES							
Harmony Gold (Exploration) (Pty) Limited	1987/006530/07	18/12/1987	5 625	10	100		Exploration
Kalahari Goldridge Mining Company Limited	1982/002818/07	19/03/1982	122 709 500	1 275	100	01/10/1999	Gold mining
Evander Stone Holdings (Pty) Limited	1971/005180/07	28/04/1971	100			01/07/1998	Investment holding
Potchefstroom Gold Areas Limited	1985/004450/06	24/09/1985	42 035 456	8 407	100		Investment holding
Harmony Precision Casting Company (Pty) Limited	1998/010345/07	29/05/1998	358 000	358	100		Benefication
Portions 1 and 3 Wildebeesfontein (Pty) Limited	1989/005182/07	01/09/1989	1 000	2	100	27/03/1997	Holding of mineral rights
Remaining Extent and Portion 15 Wildebeesfontein (Pty) Limited	1989/005181/07	01/09/1989	1 000	1	90	27/03/1997	Holding of mineral rights
Trodex Platinum (Pty) Limited	1990/001971/07	05/04/1990	4 000	4	100	27/03/1997	Holding of mineral rights
Evander Township Limited	1955/003607/06	07/12/1955	1 340 000	1 340	100	01/07/1998	Property
Evander Township Development Limited	1899/001642/06	17/05/1899	250 000	3	100	01/07/1998	Property
Salt Holdings Limited	1948/031164/06	13/09/1948	59 800	60	100	01/07/1998	Property
JOINT VENTURE COMPANY – DIRECT							
ARMgold/Harmony Free Gold Joint Venture Company (Pty) Limited	2001/029602/07	11/12/2001	20 000	20	50	11/01/2002	Gold mining
Clidet W 454 (Pty) Limited	2002/032163/07	24/12/2002	2	2	50		Investment holding

#Indicates share capital of less than R1 000.

Details regarding inter-company finance

	At 31 March 2003 R'million	At 30 June 2002 R'million
INTEREST BEARING LOANS		
Loans from Harmony to:		
Randfontein Estates Limited	988	988
Armgold/Harmony Freegold Joint Venture Company (Pty) Limited	787	915
	1 775	1 903
INTEREST FREE LOANS		
Loans from Harmony Gold Mining Company to:		
Harmony Gold (Australia) (Pty) Limited	1 084	1 843
Harmony Precious Metals Services SAS	75	76
Harmony Gold (Canada) Inc.	16	10
Harmony Gold (Marketing) (Pty) Limited	48	46
West Rand Consolidated Mines Limited	1	5
	1 224	1 980
Loans to Harmony from:		
Evander Gold Mines Limited	178	320
Unisel Gold Mines Limited	92	92
Lydenburg Exploration Limited	31	42
Randfontein Estates Limited	490	492
	791	946

Schedule of pending legal proceedings

1. A claim brought by Harmony against the Placer Dome Western Areas Joint Venture for reimbursement of pumping costs.
2. 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.

Harmony Gold Mining Company Limited

Incorporated in the Republic of South Africa)
(Registration number 1950/038232/06)
("Harmony" or "the Company")

Notice of general meeting

Words and phrases defined in the circular of which this notice of general meeting forms part will have the same meanings herein.

Notice is hereby given that a general meeting of the shareholders of the Company will be held at 09:00 on 1 September 2003 at the office of Harmony, Randfontein Office Park, Corner Main Reef Road and Ward Avenue, Randfontein to consider and, if deemed fit, pass, with or without modifications, the special resolution and ordinary resolutions set out below:

1. SPECIAL RESOLUTION NUMBER 1

"Resolved that the authorised ordinary share capital of the Company be increased from R125 000 000 divided into 250 000 000 ordinary shares of 50 cents each to R175 000 000 million divided into 350 000 000 ordinary shares of 50 cents each by the creation of 100 000 000 new ordinary shares of 50 cents each ranking *pari passu* in all respects with the existing ordinary shares in the authorised share capital of the Company."

The reason for this special resolution is to create 100 000 000 new authorised ordinary shares of 50 cents each so as to ensure that the Company has sufficient shares to issue for the purposes of the merger and for further share issuances. The effect of this special resolution is to create 100 000 000 new ordinary shares and thereby increase the authorised ordinary share capital of the Company from R125 000 000 to R175 000 000.

2. ORDINARY RESOLUTION NUMBER 1

"Resolved that the proposal by the Company of the scheme, the making by the Company of the substitute offer, and the issue by the Company of the consideration shares, upon the terms and conditions contained in the circular of which the notice convening the general meeting at which this ordinary resolution number 1 will be proposed forms part, be and are hereby approved."

3. ORDINARY RESOLUTION NUMBER 2

"Resolved that, subject to the passing and registration of the special resolution to be proposed at the general meeting at which this ordinary resolution number 2 will be proposed, the directors of the Company be and are hereby authorised to allot and issue, after providing for the requirements of the Employee Share Schemes, all or any of the unissued ordinary shares of 50 cents each in the capital of the Company, created in terms of the special resolution referred to above, at such time or times to such person or persons or bodies corporate upon such terms and conditions as the directors of the Company may from time to time at their sole discretion determine, subject to the provisions of the Act and the Listings Requirements of the JSE."

4. ORDINARY RESOLUTION NUMBER 3

"Resolved that, subject to the passing and registration of the special resolution to be proposed at the general meeting at which this ordinary resolution number 3 will be proposed, the directors of the Company be and are hereby authorised to allot and issue all or any of the authorised but unissued ordinary shares of 50 cents each in the capital of the Company created in terms of the special resolution referred to above to such person or persons (defined as "the public" in the Listings Requirements of the JSE) and on such terms and conditions as the directors may, without restriction, from time to time, deem fit and when suitable opportunities arise, therefore subject to the following requirements of the Listings Requirements of the JSE:

(a) the authority shall be valid until the Company's next annual general meeting or 15 months from the date on which this resolution is passed, whichever is the earlier date;

(b) an announcement giving full details, including the effect on net asset value and earnings per share of the Company, shall be published at the time of any such issue representing, on a cumulative basis within one financial year, 5% or more of the number of shares in issue prior to the issue in question;

(c) issues in the aggregate in terms of this authority in any one financial year may not exceed 15% of the number of shares in the Company's issued share capital

(d) in determining the price at which an issue of shares will be made in terms of this authority, the maximum discount permitted shall be 10% of the weighted average traded price of the shares in question over the 30 business days prior to the date on which the price of the shares is determined or agreed by the directors of the Company."

The approval of a 75% majority of the votes cast by shareholders present or represented by proxy at the general meeting is required for this resolution to be effective.

5. ORDINARY RESOLUTION NUMBER 4

"Resolved that any one of directors of the Company be and is hereby authorised to sign all such documents and do all such things as may be necessary for or incidental to the implementation of the special and the ordinary resolutions to be proposed at the general meeting at which this ordinary resolution number 4 will be proposed."

VOTING AND PROXIES

Each shareholder of the Company who, being an individual, is present in person or by proxy, or being a company, is represented at the general meeting, is entitled to one vote on a show of hands. On a poll, each shareholder present in person or by proxy or represented shall have one vote for every share held by such shareholder. A shareholder entitled to attend and vote at the meeting may appoint one or more proxies to attend, speak and vote in his stead. A proxy need not be a shareholder of the Company.

Certificated shareholders and own name dematerialised shareholders who are unable to attend the general meeting but wish to be represented thereat must complete and return the attached form of proxy (blue) to the transfer secretaries of the Company, Ultra Registrars Proprietary (Pty) Limited or Capita Registrars to reach them by not later than 09:00 on 28 August 2003. The completion of a form of proxy will not preclude a Harmony shareholder from attending, speaking and voting at the general meeting to the exclusion of the proxy so appointed.

Dematerialised shareholders other than those who have elected "own name" registration who wish to attend the general meeting must request their Central Securities Depository Participant ("CSDP") or broker to provide them with a Letter of Representation or must instruct their CSDP or broker to vote by proxy on their behalf in terms of the agreement entered into between the shareholder and its CSDP or broker.

HARMONY GOLD MINING COMPANY LIMITED

Marian van der Walt
Secretary

7 August 2003

Harmony Gold Mining Company Limited

Incorporated in the Republic of South Africa)
(Registration number 1950/038232/06)
("Harmony" or "the Company")

Form of proxy for certificated and "own name" dematerialised shareholders

For use by certificated shareholders of Harmony ("shareholders") at a general meeting of the Company to be held at Harmony's corporate office, Randfontein Office Park, Corner Main Reef Road and Ward Avenue, Randfontein at 09:00 on 1 September 2003 ("the general meeting").

I/We _____

(NAME IN BLOCK LETTERS) _____

being the holder/s of [ ] shares in the Company, do hereby appoint

1. _____ or failing him/her

2. _____ or failing him/her

3. the chairman of the general meeting,

as my/our proxy to act for me/us and on my/our behalf at the general meeting which will be held for the purpose of considering and, if deemed fit, passing, with or without modification, the special and ordinary resolutions to be proposed thereat and at any adjournment thereof, and to vote for or against the resolutions and/or abstain from voting in respect of the shares registered in my/our name/s, in accordance with the following instructions (see note 2):

	Number of votes on a poll (one vote per share)		
	For	Against	Abstain
Special resolution number 1			
Ordinary resolution number 1			
Ordinary resolution number 2			
Ordinary resolution number 3			
Ordinary resolution number 4			

Signed at _____ on _____ 2003

Signature _____

Assisted by me (where applicable) _____

(Note: A shareholder entitled to attend and vote is entitled to appoint a proxy to attend, speak and vote in his/her stead. Such proxy need not also be a shareholder of the Company.)

Please read the notes on the reverse side hereof.

NOTES

1. A certificated or "own name" dematerialised shareholder may insert the name of a proxy or the names of two alternatives proxies of the certificated or "own name" dematerialised shareholder's choice in the space/s provided, with or without deleting "the chairman of the general meeting", but any such deletion must be initialled by the certificated or "own name" dematerialised shareholder. The person whose name appears first on the 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.

2. A certificated or "own name" dematerialised shareholder's instructions to the proxy must be indicated by the insertion of the relevant number of votes exercisable by that shareholder in the appropriate box provided. Failure to comply with the above will be deemed to authorise the proxy to vote or to abstain from voting at the general meeting as he/she deems fit in respect of all the certificated shareholders' votes exercisable thereat. A certificated or "own name" dematerialised shareholder or his/her proxy is not obligated to use all the votes exercisable by the shareholder or by his proxy, but the total of the votes cast and in respect of which abstention is recorded may not exceed the total of the votes exercisable by the certificated or "own name" dematerialised shareholder or by his/her proxy.

3. This duly completed form of proxy must be received by the Company's transfer secretaries, Ultra Registrars (Pty) Limited, 11 Diagonal Street, Johannesburg, 2001 (PO Box 4844, Johannesburg, 2000) or Capita Registrars, The Registry, 34 Beckenham Road, Beckenham, Kent BR3 4TU, England.

4. The completion and lodging of this form of proxy will not preclude the relevant certificated or "own name" dematerialised shareholder from attending the general meeting and speaking and voting in person thereat to the exclusion of any proxy appointed in terms hereof.

5. Documentary evidence establishing the authority of a person signing this form of proxy in a representative or other legal capacity must be attached to this form of proxy unless previously recorded by the Company's transfer secretaries or waived by the chairman of the general meeting.

6. Any alteration or correction made to this form of proxy must be initialled by the signatory/ies.

7. Dematerialised shareholders other than those with "own name" registration who wish to attend the general meeting must request their Central Securities Depository Participant ("CSDP") or broker to provide them with a Letter of Representation or they must instruct their CSDP or broker to vote by proxy on their behalf in terms of the agreement entered into between the shareholders and their CSDP or broker.

PRINTED BY INCE (PTY) LTD

Corporate information

Company secretary

Marian van der Walt
B.Com (Law) LLB; H Dip Tax; Dip (Ins Law)
Randfontein Office Park
Corner of Main Reef Road and Ward Avenue
Randfontein, 1759
(PO Box 2, Randfontein, 1760)

Registered office

Remaining extent of portion 3 of the farm
Harmony Farm 222
Private Road, Glen Harmony
Virginia, 9430

Sponsor

J.P. Morgan Equities Limited
(Registration number 1995/011815/06)
1 Fricker Road, corner Hurlingham Road
Illovo, 2196
(PO Box 934, Johannesburg, 2000)

Financial adviser

JPMorgan Chase Bank
1 Fricker Road, corner Hurlingham Road
Illovo, 2196
(PO Box 934, Johannesburg, 2000)

Attorneys

Cliffe Dekker Inc.
(Registration number 1998/018173/21)
1 Protea Place
Sandown, 2196
(Private Bag X7, Benmore, 2010)

Commercial bankers

ABSA Bank Limited
(Registration number 1986/004794/06)
2nd Floor, ABSA Towers North
180 Commissioner Street
Johannesburg, 2001
(PO Box 7735, Johannesburg, 2000)

Reporting accountants and auditors

PricewaterhouseCoopers Inc.
(Registration number 1998/012055/21)
2 Eglin Road
Sunninghill, 2157
(Private Bag X36, Sunninghill, 2157)

Transfer secretaries

In South Africa

Ultra Registrars (Pty) Limited
(Registration number 2000/007239/07)
11 Diagonal Street
Johannesburg, 2001
(PO Box 4844, Johannesburg, 2000)

In England

Capita Registrars
The Registry
34 Beckenham Road
Beckenham
Kent BR3 4TU

Competent Person

Steffen, Robertson and Kirsten (South Africa) (Pty) Limited
(Registration number 1995/012890/07)
SRK House
265 Oxford Road
Illovo, 2196
(PO Box 55291, Northlands, 2116)

United Kingdom secretaries

St James's Corporate Services Limited
6 St James's Place
London SW1A 1NP

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Dated: August 15, 2003

Harmony Gold Mining Company Limited

By: /s/ Frank Abbott

Name: Frank Abbott
Title: Chief Financial Officer