Mupane Gold Project

Independent Technical Report on the Mupane Gold Mine

Prepared by MSA Geoservices (Pty) Ltd on behalf of: Carlaw Capital III Corp.

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Table of Contents

Appendix 1

List of Tables

List of Figures

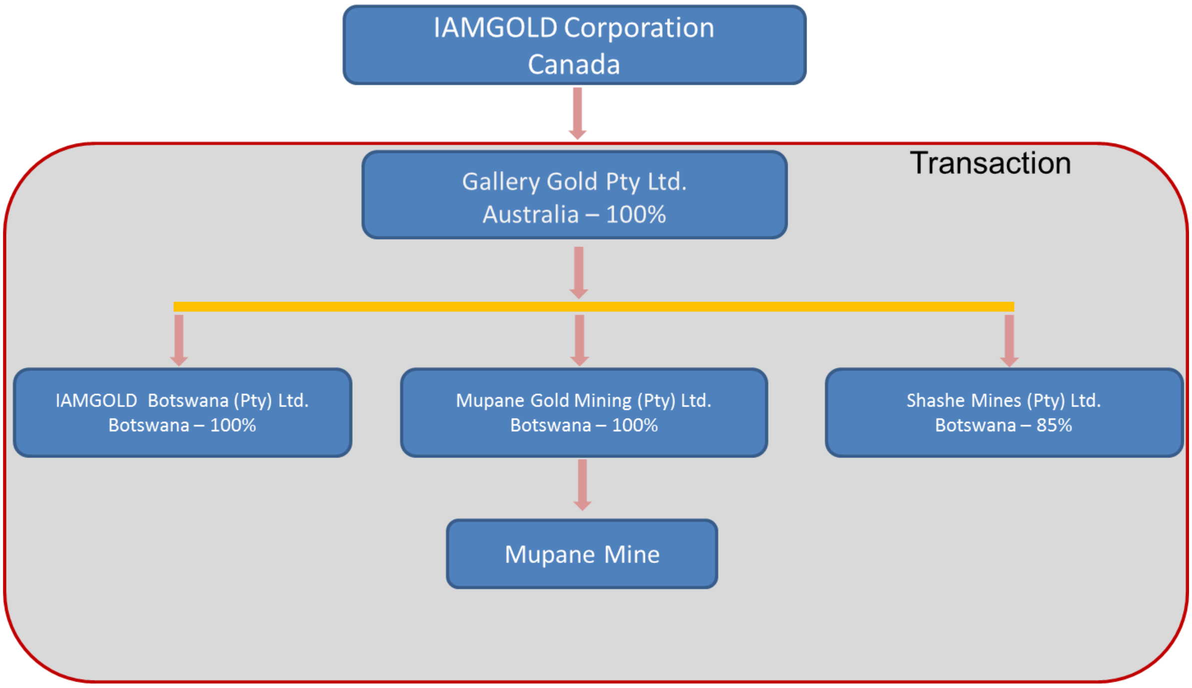
List of Appendices

1 SUMMARY

The Mupane Gold Mine is an operating gold mining venture owned by IAMGOLD Corporation (IAMGOLD) and situated in the Northeastern Province of Botswana, in southern Africa. Botswana has among the highest economic growth and literacy rates in Africa, and has remained stable since independence from Britain in 1966.

The mine has been in operation since 2004 and produced over 468 000 oz of gold up to the end of 2010 at an average grade of 2.19 g/t Au. It currently has a mining plan to mid-2013 based on NI43-101 compliant mineral reserves.

The corporate ownership structure of the mine is as follows:



Carlaw Capital III Corp. (Carlaw) intends to acquire the mine from IAMGOLD through its subsidiary Galane Gold Mines Ltd, by acquiring 100% of Gallery Gold (Pty) Ltd (Gallery Gold) for a net price of USD 33.5 million. The share purchase agreement was signed on 6th May 2011. The main assets of Gallery Gold are as follows:

- 100% of Mupane Gold Mining (Pty) Ltd. (MGM). MGM is a Botswana registered company which owns three mining licenses (ML87/3, ML2003/26L and ML2010/95L) and a prospecting license (section 4.1). It also owns the treatment plant and associated infrastructure.

- 85% of Shashe Mines (Pty) Ltd. (SM). SM is a Botswana registered company. The other 15% of SM is owned by the Botswana Government.

- 100% of IAMGOLD Botswana (Pty) Ltd. This is a Botswana registered company which was previously used as a vehicle for IMG's exploration activities in Botswana. It holds the mining license ML94/2L.

The mine produced 57 000 oz of gold in 2010. The gold is exported as doré bars to Rand Refineries Ltd in South Africa, from where it is sold.

The mine is situated on the Tati Greenstone Belt, a NNW-striking belt of Archaean metavolcanic, metasedimentary and intrusive rocks up to 20km in width and striking over 65km.

Mining activity is conventional open pit mining exploiting the Tau, Kwena and Tholo deposits in the immediate vicinity of the processing plant, and the remote Signal Hill, Molomolo and Golden Eagle gold deposits.

The Mupane processing plant uses conventional carbon-in-leach ("CIL") processing to recover gold and produce gold bullion after grinding in a two stage circuit with one semi-autogenous grind ("SAG") mill and one ball mill. The plant has been designed at a nominal throughput of 1.2 million tonnes per annum for oxide ores. For primary (sulphide) ores, a combination of flotation and CIL processing is used at a designed nominal throughput of 1.0 million tonnes per annum.

Mineral Resources and Mineral Reserves

The mineral resources as at 31 December 2010 were as follows (100% basis):

MINERAL RESOURCES		Measured			Indicated			Measured + Indicated*			Inferred**		
Deposit	Cut-off grade Au g/t	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
Kwena	0.8	97	1.41	4	254	1.58	13	351	1.51	17	47	2.00	3
Golden Eagle	0.9				1 805	1.98	115	1 805	1.98	115	68	3.21	7
Molomolo	0.9	8	2.52	1	113	1.83	7	121	2.06	8	7	1.89	
Signal Hill	0.9	521	2.21	37	549	2.10	37	1 070	2.15	74	173	2.27	13
Tau	0.8	579	3.22	60	810	2.98	78	1 389	3.09	138	47	2.93	4
Tawana					122	1.80	7	122	1.78	7			
Tholo	0.8				161	2.03	11	161	2.13	11	584	2.72	51
Stockpiles		745	1.20	29				745	1.21	29			
Total		**1 950**	**2.09**	131	**3 814**	**2.19**	**268**	**5 764**	**2.15**	**399**	**926**	**2.62**	**78**

*UNCONSTRAINED

**CONSTRAINED WITHIN A USD 1000 PIT SHELL

Mineral reserves have been defined by Whittle analysis of the measured and indicated mineral resources, assuming a gold price of USD 1 200 per oz. However, the pit shells themselves were designed in 2008 with an assumed gold price of USD 850 per oz. Significant upside potential therefore exists to increase the pit shells based on the current elevated gold price. Exploration drilling is underway to define the mineral resources at depth.

The mineral reserves as at 31 December 2010 were as follows (100% basis):

MINERAL RESERVES		Proven			Probable			Total		
Deposit	Cut-off grade Au g/t	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
Kwena	0.8	9	1.55		80	1.61	4	89	1.61	4
Golden Eagle	0.9				677	1.87	41	677	1.87	41
Signal Hill	0.9	521	2.02	34	353	2.04	23	874	2.03	57
Molomolo	0.9	8	2.35	1	62	2.20	4	70	2.22	5
Stockpiles		745	1.20	29				745	1.20	29
Total		**1 283**	**1.55**	**64**	**1 172**	**1.91**	**72**	**2 455**	**1.72**	**136**

Financial Analysis

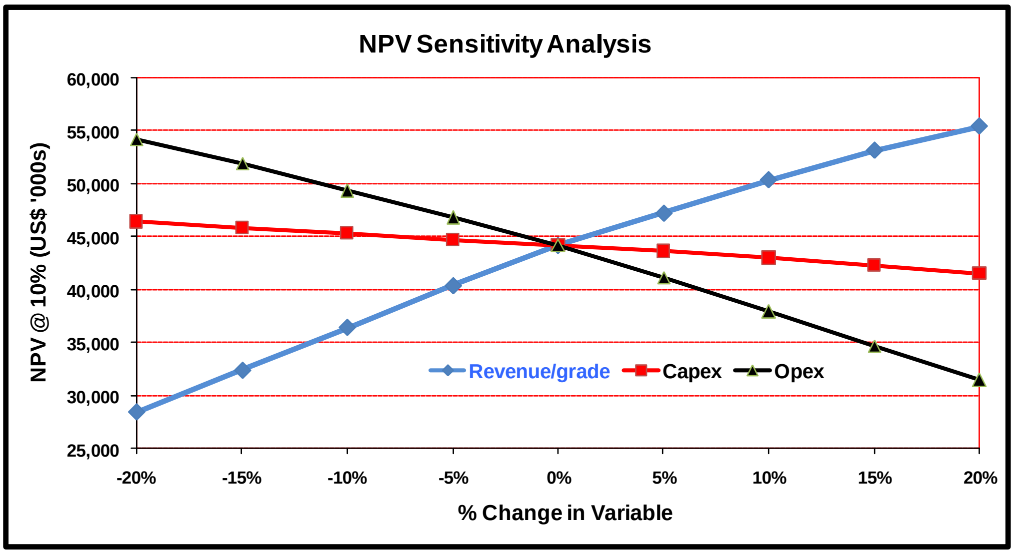
MSA has produced a cash flow model using cost parameters based on the current mine plan. The outputs of the cash flow model are as follows:

PROJECT (100%) from May 2011		
Real	Disc Rate	US$ '000s
NPV's	0.0%	50 531
	5.0%	47 176
	8.0%	45 354
	10.0%	44 210
	12.0%	43 118
	15.0%	41 571
	20.0%	39 212
	IRR=	**No IRR**
NPV's are at 1 January 2011		

From an investor's perspective, and based on a net acquisition price of USD 33.5 million (as per the sales agreement), the outputs of the cash flow model are as follows:

PROJECT (100%) from May 2011		
INVESTOR RETURN		
Real	Disc Rate	US$ '000s
NPV's	0.0%	23 146
	5.0%	20 063
	8.0%	18 406
	10.0%	17 372
	12.0%	16 390
	15.0%	15 009
	20.0%	12 923
	IRR=	**76.7%**
NPV's are at 1 January 2011		

The project is profitable and is most sensitive to changes in the gold price or grade.



A number of risks and opportunities have been identified on the mine.

Risks

The current mineral reserve will be fully depleted in mid-2013. The addition of further mineral reserves in the short term is an urgent priority. Additional mineral reserves could potentially derive from an increase in depth of the existing pit shells. The current high gold price creates the opportunity to significantly deepen the current open pits. However, this will require that the mineral resources at depth are identified to the 'indicated' confidence level (at least), before a revised Whittle shell can be produced based on a higher gold price. It would also involve a capital expenditure of pre-stripping prior to mining of the additional mineral reserve. MGM has budgeted USD 2.5 million for exploration work in 2011.

There also exists a potential risk related to recoveries. The current plant design for the recovery of gold from primary sulphide ore is based on sample test work conducted during feasibility. The parameters used in the plant design might not be optimal for the actual sulphide ores now being mined. There is currently ongoing test work being conducted at COREM (Canada) involving all present and future feed material to address this.

The project is exposed to the volatility of the Botswana Pula relative to the USD. However, the project will remain profitable even with a significant strengthening of the Pula against the USD.

The future gold price may be regarded as a risk or an opportunity, depending upon whether it decreases or increases over the life of mine. However, the gold price is currently at its highest ever level and all independent forecasts viewed by MSA expect the gold price to fall by between 12% and 40% over the next four years.

Mupane is unusual in that to calculate a net closure liability it is assumed that income from salvage and sale of redundant equipment will cover the cost. This is not standard industry practice and creates a risk that there may be an ultimate shortfall. The closure plan and its methodology are otherwise robust.

The project draws electrical power from the Botswana power grid, which in turn draws some of its supply from ESKOM, the parastatal electricity supplier in South Africa. The project is therefore potentially impacted by changes in the power supply provided by ESKOM. ESKOM has given notice of price increases of 25% per annum commencing in 2011. This will have an effect on the cost of power supply to the mine. The financial model suggests that the project can absorb these cost increases and remain profitable.

The project draws water from a pump station constructed on the Shashe Dam, approximately 30km from the process plant. Botswana is an arid country and water throughput has been restricted occasionally due to water shortage. There is a risk that production could be severely affected by drought. There is a project currently underway to tap into a nearby mines raw water supply to supplement Mupane's needs by an additional 1 000 m^3/day which combined with the current line supply capacity will be sufficient for operational needs plus provide partial supply redundancy.

Opportunities

The high current gold price remains a very good opportunity for the mine. The high revenues currently being generated can help fund ongoing exploration to expand the existing mineral resources. New mineral resources may potentially be defined beneath and adjacent to the existing resources, and within the new PL.

Plant availabilities have ranged from 3% to 5% below budget targets indicating an opportunity to increase throughput with improvement in availability. The below budget availability has been due largely to the lack of electrical diagrams to assist with fault-finding, and periodic water shortages. All of the observed issues impacting on plant availability can be addressed relatively easily.

MSA recommends that focus is placed on exploration work to develop the mineral resources, and on completion of metallurgical testwork to optimise the plant for recovery of primary sulphide ores, as the mine transitions from processing mainly oxide ore, to a mix of oxide and sulphide ores.

Recommendations

MSA's review of the Mupane Gold Mine makes the following recommendations:

- The mine is profitable and it is recommended that mining should continue until reserves are depleted, particularly in view of the very high current gold price.
- The mineral reserves need to be complemented by new reserves urgently. This may be achieved either through a new Whittle analysis of current resources or by

exploration for new resources. A total budget (funded out of Mupane operational cash flow) of USD1.8 million has been made available for exploration drilling during 2011 in the 400 x 50 m area immediately south of the Tholo pit to confirm the down-dip extension of the Tholo orebody.

- The ongoing metallurgical test work to optimise processing of sulphide ore is a necessary project and should be completed with urgency. The cost benefit of implementing any changes recommended by the test work should be examined prior to implementing any changes.
- Plant availability issues should be addressed.
- Mine closure funding should be revisited based on the validity of the current funding plan.

2 INTRODUCTION AND TERMS OF REFERENCE

2.1 Scope of Work

The MSA Group (MSA) has been commissioned by Carlaw Capital III Corp. (Carlaw) to provide an independent technical report (ITR) on the Mupane Gold Mine in the Northeastern Province of Botswana. This ITR has been prepared to comply with disclosure and reporting requirements set forth in the TSX Venture Exchange (TSX-V) Corporate Finance Manual, Canadian National Instrument 43-101 (Standards of Disclosure for Mineral Projects) and related Companion Policy 43-101CP and Form 43-101F1, of January 2005 (the Instrument) and the Mineral Resource and Reserve classifications adopted by CIM Council in August 2000. This report may be included in future equity financing plans by Carlaw to fund development work for the Mupane Gold Project.

All monetary figures expressed in this report are in United States of America dollars (USD) unless otherwise stated.

2.2 Principal Sources of Information

This report is primarily based on information provided by IAMGOLD Corporation (IAMGOLD). The mineral resources and mineral reserves reflected in this report are based on the Mupane Gold Mine Mineral Reserve Report prepared by IAMGOLD and dated 31 December 2010. MSA has produced its own financial model based on these mineral reserves to derive a discounted cash flow model, undertake a sensitivity analysis and determine a net present value for the mine.

2.3 Qualifications, Experience and Independence

MSA is an exploration and resource consulting and contracting firm which has been providing services and advice to the international mineral industry and financial institutions since 1983. This ITR has been compiled by Mr Justin Glanvill, Mr Joel Mungoshi, Dr Markus Reichardt and Mr John Sexton. Peer review has been undertaken by Mr Robert Croll.

Mr Glanvill is a professional geologist with 13 years' industry experience with a number of multinational mining and exploration companies and in a variety of commodities. He has worked on gold projects in South Africa and elsewhere. He is an Associate Consulting Geologist with MSA, a registered professional scientist with South African Council for Natural Scientific Professions (SACNASP), a Member of the Geological Society of South Africa (MGSSA) and the Geostatistical Association of South Africa. Mr Glanvill has the appropriate relevant qualifications, experience, competence and independence to act as a ‘qualified person’ as that term is defined in NI43-101. Mr Glanvill’s certificate as a ‘qualified person’ is attached in Section 24 of this ITR.

Mr Joel Mungoshi is a metallurgical engineer with 23 years’ industry experience with a number of multinational mining and exploration companies and in a variety of commodities. He has worked on gold projects in South Africa and elsewhere. He is a Member of the Southern African Institute of Mining and Metallurgy. Mr Mungoshi has the appropriate relevant qualifications, experience, competence and independence to act as a ‘qualified person’ as that term is defined in NI 43-101. Mr Mungoshi’s certificate as a ‘qualified person’ is attached in Section 24 of this ITR.

Peer review has been undertaken by Mr Robert Croll, who is a professional mining engineer and a Qualified Valuator as that term is defined by the Special Committee Of The Canadian Institute Of Mining, Metallurgy and Petroleum on Valuation of Mineral Properties (CIMVAL), with over 35 years’ experience in mining and valuation of mineral projects within Africa and elsewhere internationally. Mr Croll is a Fellow of the South African Institute of Mining and Metallurgy.

Neither MSA, nor the authors of this ITR, have or have had previously, any material interest in Carlaw or the mineral properties in which Carlaw has an interest. Our relationship with Carlaw is solely one of professional association between client and independent consultant. This ITR is prepared in return for professional fees based upon agreed commercial rates and the payment of these fees is in no way contingent on the results of this ITR.

2.4 Current Personal Inspection

A site visit was made during the period 6 to 8 April 2011 to the Mupane Gold Mine by Mr Justin Glanvill BSc. (Hons.) Dip. Eng. PrSciNat, and a ‘qualified person’ as that term is defined in NI43-101. A visit was made to all of the operating open pits, the treatment plant, the waste dumps, an R/C drill rig undertaking sampling work, the sample assay laboratory and data management section.

3 RELIANCE ON OTHER EXPERTS

MSA assumed that all of the information and technical documents reviewed and listed in the "References" section of this report are accurate and complete in all material aspects. While MSA carefully reviewed all of this information, MSA has not concluded any extensive independent investigation to verify their accuracy and completeness.

MSA has obtained copies of Mining Leases ML87/3, ML94/2, ML2003/26L and ML2010/95L and PL040/2011 as evidence that the licences are valid and in good standing.

The information and conclusions contained herein are based on information available to MSA at the time of preparation of this report.

Carlaw has warranted that a full disclosure of all material information in its possession or control has been made to MSA. Carlaw has agreed that neither it nor its associates will make any claim against MSA to recover any loss or damage suffered as a result of MSA's reliance upon the information provided by Carlaw for use in preparation of this report. Carlaw has also indemnified MSA against any claim arising out of the assignment to prepare this report, except where the claim arises as a result of proved wilful misconduct or negligence on the part of MSA. This indemnity is also applied to any consequential extension of work through queries, questions, public hearings or additional work required arising from MSA's performance of the engagement.

Carlaw has reviewed draft copies of this report for factual errors. Any changes made as a result of these reviews did not involve any alteration to the conclusions made. Hence the statements and opinions expressed in this document are given in good faith and in the belief that such statements and opinions are not false and misleading at the date of this report.

MSA reserves the right to, but will not be obligated to, revise this report and conclusions thereto if additional information becomes known to MSA subsequent to the date of this report.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Area and Demarcation of Licences

The project comprises four Mining Leases (MLs):

- ML87/3 (Shashe ML) valid until 8 September 2012.
- ML94/2L (Signal Hill ML) valid until 6 November 2015.
- ML2003/26L (Mupane ML) valid until 4 September 2013.
- ML2010/95L (Molomolo ML) valid until 28 December 2014.

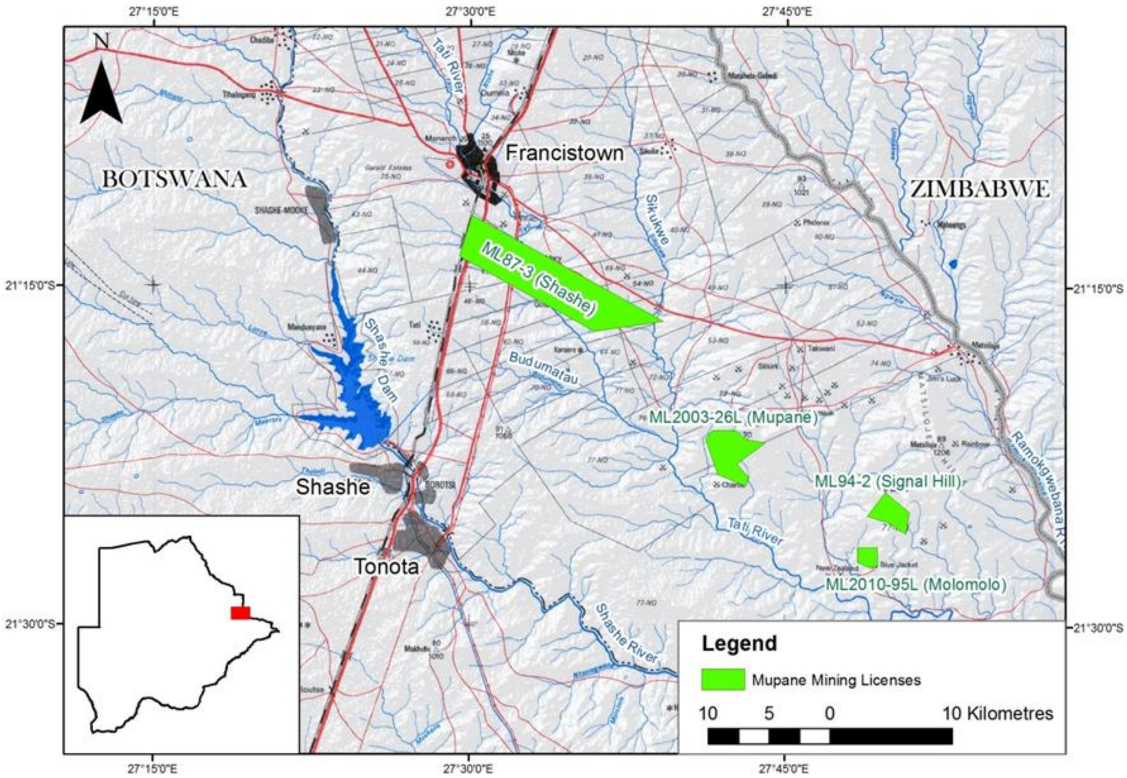
Payments in respect to the above Mining Leases for the 2011-2012 period have been made.

The corner points of the MLs are presented in Table 4-1 and shown in Figure 4-1.

Table 4-1
Corner points and areas of mining licenses (UTM coordinates, UTM zone 35S)

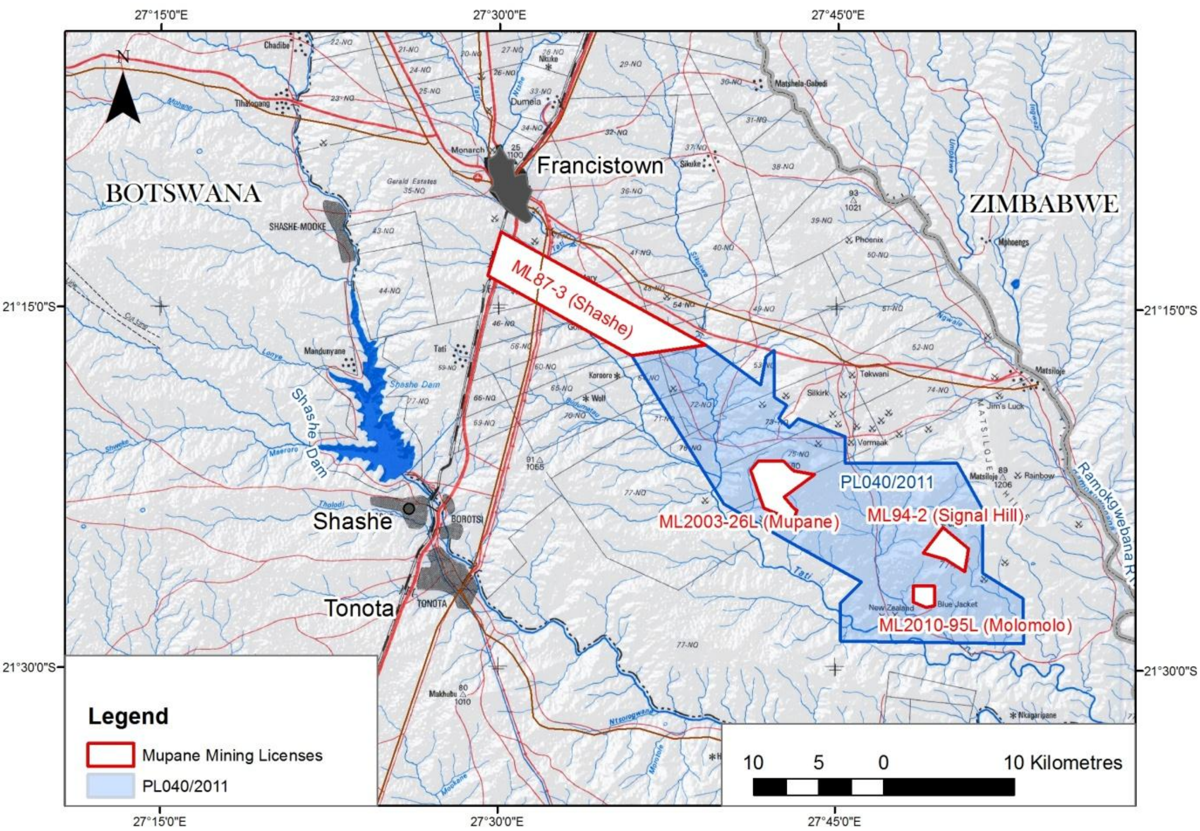
ML	Point	South	East	Area (ha)
Shashe ML87/3	A	552043.00	7655856.00	5 256
	B	567704.00	7647261.00	
	C	562068.00	7646363.00	
	D	551022.00	7652569.00	
Signal Hill ML94/2L	A	585940.00	7633430.00	566
	B	587900.00	7631780.00	
	C	587630.00	7630040.00	
	D	586170.00	7631000.00	
	E	584420.00	7631460.00	
Mupane ML2003/26L	A	571763.23	7638499.52	1 178
	B	573750.00	7638500.00	
	C	574483.01	7637752.20	
	D	576080.73	7637485.64	
	E	573755.97	7635753.61	
	F	574746.45	7634754.24	
	G	574506.40	7634103.27	
	H	572205.26	7634912.91	
	I	571171.25	7637799.12	
Molomolo ML2010/95L	A	583644.03	7628744.08	248
	B	585307.11	7628744.08	
	C	585307.10	7627236.75	
	D	584657.01	7627086.58	
	E	583644.13	7627516.03	

Figure 4-1
Locality of the Mupane Mine Mining Licenses



In addition to these four MLs, Mupane Gold Mine has recently been granted Prospecting License (PL)040/2011 valid for a period of three years until March 31 2014 (Figure 4-2). The PL is 271.4km^2 in extent and requires the holder to undertake an exploration programme which includes soil sampling, geological mapping, trenching and reverse circulation drilling and to spend BWP 600 000 over three years (approximately USD 95 000).

Figure 4-2
Locality of the Mupane PL040/2011



4.2 Surface Rights

IAMGOLD report that surface rights within the mining areas are owned by Mupane Gold Mining (Pty) Ltd. Existing landowners within the PL (mostly farmers, or communal agricultural land) retain their surface rights.

4.3 Issuer's Interest

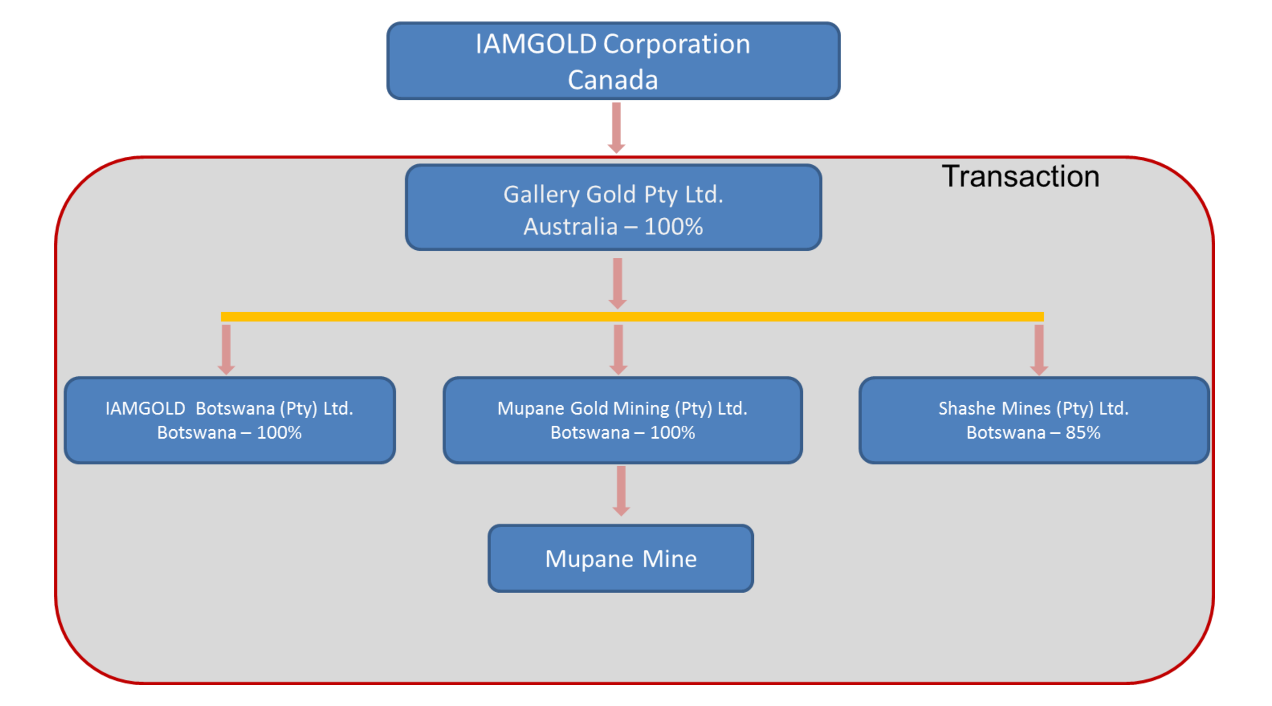
The property assets that are the subject of this ITR comprise the assets of Gallery Gold (Pty) Ltd. (Gallery Gold). Gallery Gold is an Australian registered company that was previously listed on the ASX. It was acquired by IAMGOLD Corporation (IMG) on 22 March 2006 and was subsequently delisted. It was maintained by IMG as a holding company. The current corporate structure of Gallery Gold is illustrated in Figure 4-3

Corporate Structure of IAMGOLD Corporations' Botswana Assets. The major assets of Gallery Gold are as follows:

- 100% of Mupane Gold Mining (Pty) Ltd. (MGM). MGM is a Botswana registered company which owns three mining licenses (ML87/3, ML2003/26L and ML2010/95L) and a prospecting license (section 4.1). It also owns the treatment plant and associated infrastructure.
- 85% of Shashe Mines (Pty) Ltd. (SM). SM is a Botswana registered company. The other 15% of SM is owned by the Botswana Government. SM was the original owner of ML87/3, which was subsequently re-issued to MGM.
- 100% of IAMGOLD Botswana (Pty) Ltd. This is a Botswana registered company which was previously used as a vehicle for IMG's exploration activities in Botswana. It holds the mining license ML94/2L.

IMG holds 100% of the shares of Gallery.

Figure 4-3
Corporate Structure of IAMGOLD Corporations' Botswana Assets



Carlaw Capital III Corp. (Carlaw) was incorporated under the *Business Corporations Act* (Ontario) on October 24, 2007 and is classified as a Capital Pool Company as defined in the Policy 2.4 of the TSX Venture Exchange (the Exchange). Carlaw completed its initial public offering on July 10, 2008 and its common shares were listed on the Exchange and began trading on July 14, 2008. On October 19, 2010, the Carlaw's listing transferred to the NEX under the symbol "CW.H".

Carlaw has no assets other than cash and cash equivalents, other receivables and other assets. The principal business of Carlaw is to identify and evaluate opportunities for the acquisition of an interest in assets or businesses and, once identified and evaluated, to negotiate an acquisition or participation subject to acceptance by the Exchange so as to complete a qualifying transaction in accordance with the policies of the Exchange.

On May 6, 2011, Galane Gold Mines Ltd. (Galane), entered into a purchase agreement with IMG to acquire, subject to the fulfilment of certain conditions, all of the issued and outstanding shares in the capital of Gallery Gold.

On May 9, 2011, Carlaw announced that it entered into a letter of intent with Galane, pursuant to which Carlaw will acquire all of the issued and outstanding common shares in the capital of Galane (the Proposed Transaction). When completed, the Proposed Transaction will constitute Carlaw's qualifying transaction pursuant to the policies of the Exchange.

4.4 Royalties

The mine pays a royalty to the Government of Botswana on gold produced. The royalty is calculated as follows. The fine oz of gold and silver (as determined by the refinery) are multiplied by the spot price (London Market Bullion Association) of the metals on the day of shipment to the refinery multiplied by 5%. The USD are converted to pula based on the exchange rate on the day of the shipment to the refinery.

4.5 Environmental Liabilities

As of financial year end 2010 (31 December 2010), an asset retirement/ mine closure liability of USD 6.35 million (or approximately Botswana Pula 40.4 million) arises from the impacts and disturbances associated with mining on site.

There are no other liabilities or land-use restrictions on the lease area other than those created by mining.

4.6 Permits

IAMGOLD has warranted that all permits required for mining are valid and in place as stated in the share purchase agreement.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Access

The Mupane Prospect is located about 30 kilometres south east of the town of Francistown, population 300 000. Transport to Mupane is by private vehicles or staff buses (Figure 4-1).

The best access is via the tarred Francistown-Matsiloje road. Alternative access is possible on the all-weather old Francistown-Matsiloje gravel road. Road distance is about 50 kilometres. A private airfield is located on a farm which comprises the south east portion of the Mupane mining lease.

5.2 Climate and Vegetation

The climate of the Mupane and Signal Hill area is characterised as sub-tropical to semi-arid with average annual rainfall between 400 and 500 mm . Rainfall is concentrated in the period September to March. Evaporation at 2000 mm per annum exceeds rainfall. The prevailing wind direction is easterly.

Temperatures range between 23° and 33° Celsius during the year with the highest temperatures recorded between October and January, and the coldest in July when minimum temperatures between 3° and 15° occur and occasional frost is possible.

The tenement exhibits pronounced variations in local species composition and geomorphological features. The majority of the area is covered in shrub savannah or Mopani Woodland, interposed by small pockets of *acacia* or riverine woodland. No rare or endangered species were identified as resident on site during the baseline, or subsequent studies.

Neither the climate nor the vegetation of the area impose any restrictions in terms of operating season.

5.3 Local Resources and Infrastructure

The mine is connected to the Botswana national power grid and obtains its water from the Shashe Dam located west of Francistown. Further water may be sourced from the Tati water pipeline (also sourced from the Shashe Dam) which has additional capacity.

Power interruptions due to supply issues with South Africa may pose a minor threat to production, but disruptions are not expected to necessitate the acquisition of self-generating capacity.

Francistown is a reasonably large town (second largest in Botswana) with a population of around 90 000. The city is a major transport hub. A railway line links the city with Harare in Zimbabwe via Bulawayo. The same line links Francistown with Gaborone in the south. Surfaced roads link the city to Lobatse in the south, and Ramokgwebana in the north, and to Kazungula via Nata (http://en.wikipedia.org/wiki/Francistown, April 2011).

The city is served by Francistown Airport, a domestic airport with two runways located around 2 kilometres from the city. In 2003, it had a total passenger throughput of 29,223. Currently, another airport is under construction. It has a larger capacity and is expected to replace the current airport (http://en.wikipedia.org/wiki/Francistown, April 2011).

The area was the centre of one of Africa's first gold rushes and has a strong history of mining and there is a ready pool of skilled, semi-skilled and experiences staff available both locally and from the greater Southern African Development Community (SADC).

6 HISTORY

The Tati area was the site of the earliest European gold discovery in Southern Africa, by Carl Mauch in 1866. Incomplete records and estimates indicate that from 1866 to 1963 over 200 000 oz of gold were produced from mines in the Francistown area. Over sixty abandoned mines and prospects have been recorded (Baldock, 1977). The abandoned gold mines and other gold occurrences were investigated by Sedge Botswana (Anglo American Corporation) in 1969-71 but no mine development ensued. Falconbridge Explorations Botswana undertook the next stage of evaluation between 1977 and 1982, when most attention was focussed on the Map-Nora and Golden Eagle areas (now Shashe group of mines) and on the Last Hope area (now Signal Hill). In the late 1980's the Shashe area, southeast of Francistown, was acquired by Phelps Dodge Incorporated (as Shashe Mines (Pty) Ltd), who recommenced underground gold mining at the Map-Nora area. In 1991 Phelps Dodge divested of the project, its interests being taken up by Francis Prospecting. Francis re-opened the Monarch gold mine (underground) and established an open cut mine at Golden Eagle (Shashe area). The mining operations were not profitable and mining ceased in 1994.

In 1994, Gallery Gold Botswana (Pty) Ltd entered into a joint venture with Francis Prospecting and began to consolidate mineral tenement holdings in the Tati belt. Since 1996, Gallery conducted systematic exploration, primarily for gold. Although previously known as a gold occurrence, the significance of the Mupane prospect was revealed by soil sampling in 1998.

At the Signal Hill area, which had been the site of historic antimony workings in the 1920's 1930, gold mineralisation was recognised by a Seltrust/Falconbridge joint venture in 1982. In 1989 Seltrust's interest was acquired by Mosetse Investments (Pty) Ltd and, in 1991, Sigmor Mines (Pty) Ltd was ceded the rights of Falconbridge. The prospect subsequently underwent a series of changes of ownership, culminating with a mining lease being held by Sigmor Mines (Pty) Ltd. Gallery entered an option-to-purchase agreement with Sigmor and that option was exercised in June 2002. (Hellman and Schofield, 2003)

On March 22, 2006, IAMGOLD completed a business transaction with Gallery Gold through which IAMGOLD became the 100% owner of Mupane Gold Mine.

6.1 Mupane

There are no historic gold workings in the Mupane area. Two hand-dug trenches across the Mupanipani Hills (southwest from Area 2) are attributed to work carried out by the Tati Territory Exploration Company in the 1950's (Nhiwatiwa, 2002). SEDGE (Anglo American) and Goldfields have both conducted mineral exploration in the Tati

Greenstone Belt but neither mentions exploration in the Mupani area (Molyneux, 1971; Sheeran, 1986).

In 1987, Falconbridge Explorations Botswana (FEB) conducted soil sampling for gold and base metals. A regional 500m x 50m reconnaissance survey was followed up with a 80 m x 40 m sampling grid over the Mupanipani-Dinokwe hills. Rock chip sampling was also conducted over the ironstone ridges. A total of 4 086 soil samples and 17 rock chip samples were collected.

This work clearly identified areas of anomalous gold in soils associated with the ironstone ridges. FEB concluded that the relatively low levels of gold were not worthy of further evaluation. (Hellman and Schofield, 2003)

6.2 Signal Hill

Preliminary investigations of the Last Hope area (now Signal Hill, see Figure 4-1) involving mapping and trenching were conducted in 1982 by Falconbridge Explorations Botswana (FEB). Two diamond drill holes were completed on the B Zone but failed to intersect significant gold values (Blaine et al, 1990). A joint venture agreement was concluded with Seltrust in 1984 and while subsequent work concentrated on the A Zone, the joint venture also undertook reconnaissance soil sampling and mapping throughout the Mupanipani and Dinokwe Hills areas and areas surrounding Signal Hill. Work at A Zone comprised 5 011 metres of trenching, 6 254 metres of percussion drilling in 88 holes and 5 778 metres of diamond drilling in 37 holes. In September 1989 Seltrust was sold to Rio Tinto who elected to dispose of their interest in the Signal Hill project. That interest was taken up by a consortium of Seltrust management staff and a junior exploration company under the banner of Motetse Investments. In 1990 Falconbridge undertook a feasibility study based upon an estimated oxide mineral resource of 1.1 Mt grading at 2.09 g/t at A Zone (0.5 g/t cut-off grade, 12 g/t top cut, 2.58 g/cc bulk density). An optimised pit outline contained 542 000 tonnes averaging 2.55 g/t (Blaine et al, ibid).

In 1991 the Falconbridge-Motetse joint venture undertook infill drilling and trenching at A Zone, exploration drilling and trenching at B and F zones, new resource estimates, metallurgical test work, pit optimisation and design, a capital expenditure scoping study and financial evaluations (Anon, 1992).

In late 1991 Falconbridge's interest was ceded to Sigmor Mines (Pty) Ltd who undertook a study of the economic viability of a proposed mine and heap leaching operation at Signal Hill (Anon, 1993).

Further brief evaluations of the Signal Hill deposits and possible mining development options were undertaken in 1995 and 1996 but these did not involve any significant additional fieldwork or sampling (Neuhoff, 1995; Rogoyski, 1996).

In 1997 Sigmor Mines engaged Steffen, Robertson, Kirsten (SRK) to undertake a mine planning study of the Signal Hill deposits (SRK, 1997). Again, that work did not involve any fieldwork or sampling additional to that previously completed by Falconbridge (Hellman & Schofield 2003).

7 GEOLOGICAL SETTING

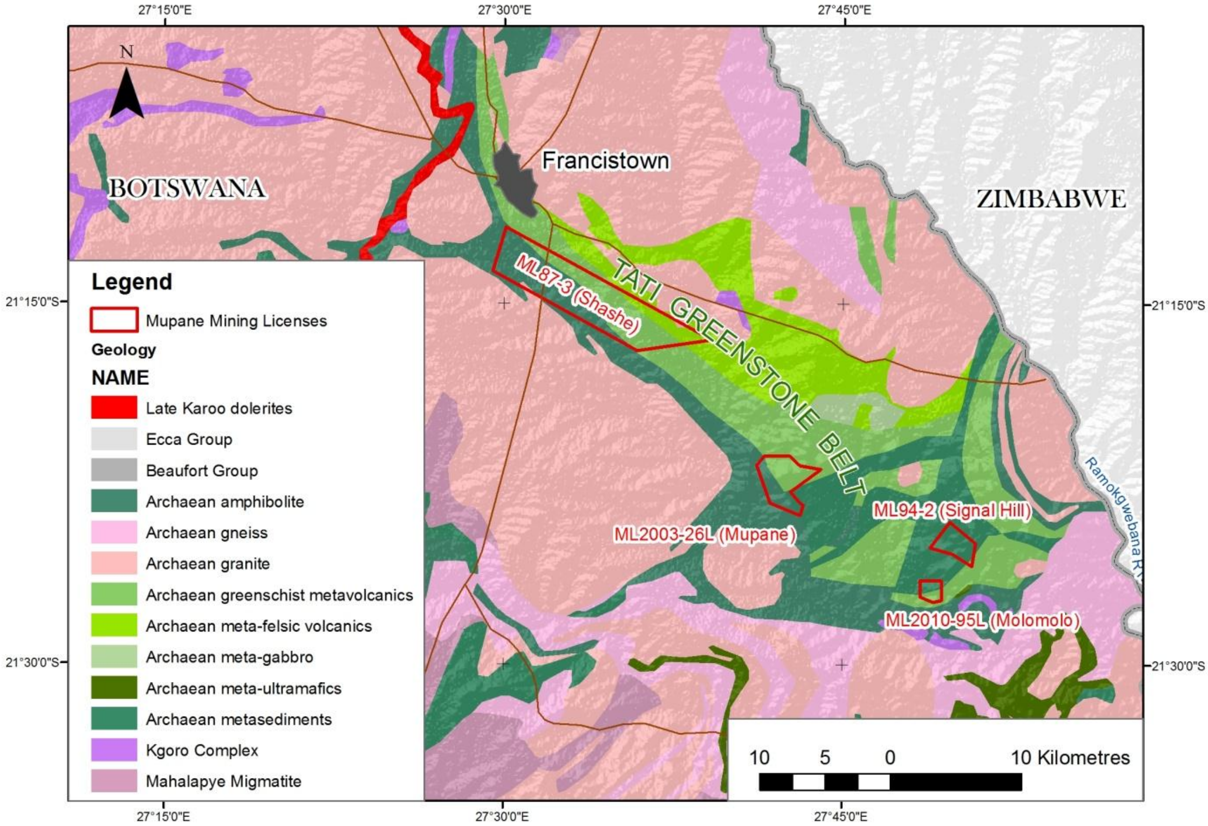
7.1 Regional Geology

The Mupane Gold Deposit lies within the Tati Greenstone Belt (TGB) which comprises a NNW striking group of Archaean metavolcanic, metasedimentary and intrusive igneous rocks trending over 65km strike length and up to 20 km width (Figure 7-1). Mason's (1970) subdivision of the belt into five formations has subsequently been modified by other workers. From youngest to oldest the succession may be summarised as:

- Last Hope Formation: Dominantly fine- to medium-grained metasedimentary rocks, arkose and poorly sorted conglomerates occupying the central portion of the Tati Belt. Gold mineralisation at Signal Hill occurs in this formation.
- Penhalonga Formation: "Quartz/amphibole/feldspar/carbonate" schist describes as metamorphosed siltstones, wackes and polymictic conglomerates, possibly with a significant volcanogenic component. Banded ironstone, which forms the ridge at Signal Hill, occurs at the top of the formation. All the Mupane gold deposits, except Signal Hill, occur in this formation.
- Lady Mary Formation: Ultramafic schist with concordance of serpentinite bodies, amphibolites and lesser meta-sediments. Banded ironstone units of this formation make up the Matsiloje Hills.

Rocks have been metamorphosed to lower-mid amphibolite (garnet-amphibole) facies throughout the belt. Several tonalite-granodiorite plutons intrude the belt and a swarm of Proterozoic dolerite dykes (the Karoo dyke swarm) trends WNW across the belt (Hellman and Schofield, 2003).

Figure 7-1
Regional Geological Map

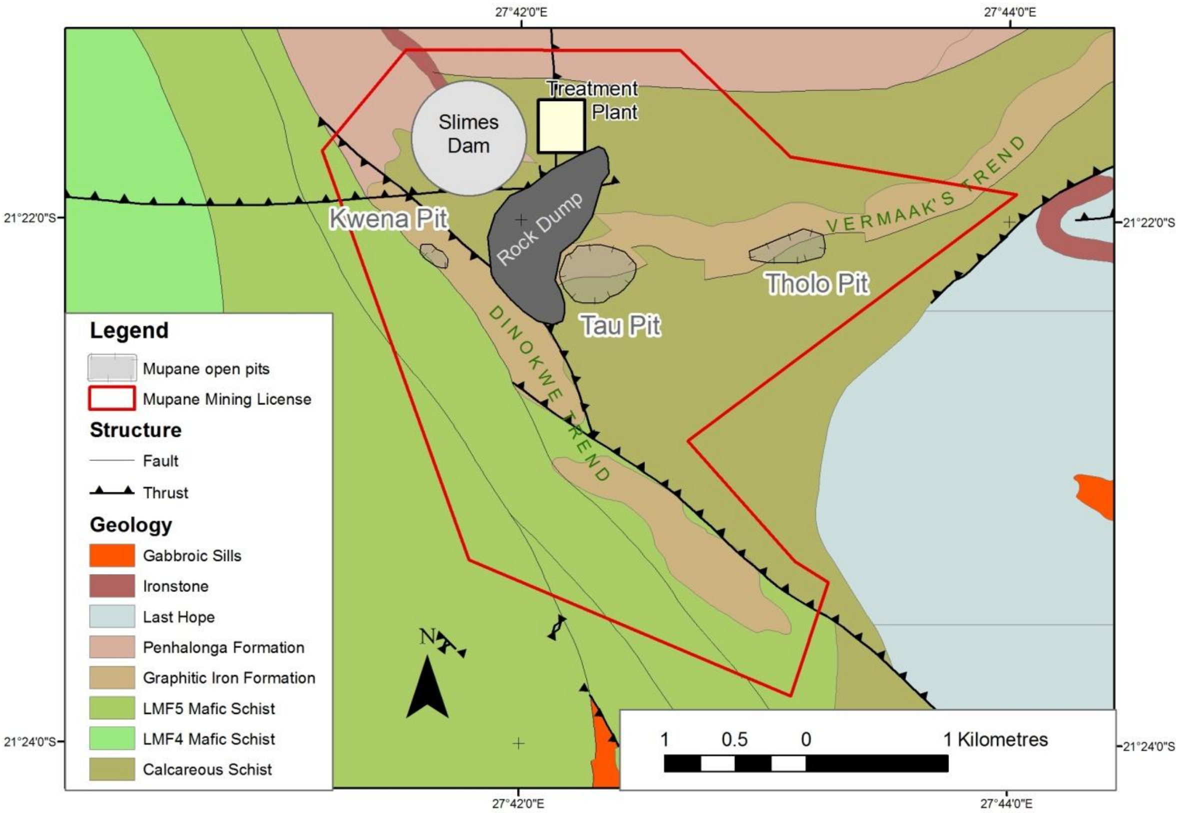


7.2 Local Geology

The Mupane deposits are located in an area known as the Mupanipani Hills, ridges formed by outcrops of banded siliceous and graphitic iron formation (GIF). These units of so-called 'iron formation' are hosted by a sequence of metasediments, including coarse grained carbonate bearing conglomerates, para-amphibolites, marbles, metapelites and minor orthoamphibolites. The host rocks are all variably schistose depending on the abundance of micaceous components (Tomkinson and Putland 2006).

The iron formation describes what is most likely to be a disrupted antiform closing to the west. The northern limb of the antiform is known as the Vermaaks Trend; the southern limb forms the Dinokwe Trend (Figure 7-2; Hellman & Schofield 2003).

Figure 7-2
Geological Map of the Mupane Mining Lease showing the Dinokwe Trend, and the Tau, Tholo and Kwena open pits



The ferruginous chert-pelite unit hosting the mineralisation show clear alteration history. The protolith for most of the material appears to have been a variably carbonaceous pelite/semi-pelite unit. During diagenesis this unit underwent several major transformations the most important of which involved large scale replacement by fine grained cherty silica. A slightly later stage of fine grained Fe carbonate replacement was followed by a period of static thermal metamorphism. During this metamorphism, reaction between the carbonate and the surrounding chert resulted in the growth of gruneritic amphibole. Following this phase of metamorphism the cherty units were subject to further deformation, brittle ductile shearing, and the development of the open spaces which became filled with coarse grained late stage Fe-rich carbonate. Continued brecciation and further phase of silica flooding with the associated precipitation of gold, pyrite, arsenopyrite, pyrrhotite and minor sphalerite and galena, resulted in the mineralisation currently being exploited (Tomkinson and Putland 2006).

7.3 Deposit Geology

The geology of the properties and the style of the gold mineralisation varies between the various deposits.

7.3.1 Mupane ML

7.3.1.1 Tau

Tau was the largest gold deposit identified at Mupane. The reserves were depleted in 2009. It consists of two GIF-hosted lenses of gold mineralisation, termed the northern and the southern lenses which merge at between 80 m and 140 m depth to form a single ore lenses. The mineralisation has been modelled into fifteen zones, termed ORE-11 and ORE-13 to ORE-26.

The deposit has an east-west strike length of 377m and has been defined to a maximum depth of 400 m. The ore zones vary in width between 3 m and 60 m and dips to the south at 45^o to 65^o. The Tau deposit is hosted within a quartz-biotite/amphibolite-schist, minor garnet schists and a conglomerate unit. The western end of the mineralisation is truncated by a dolerite dyke, which is a part of the Karoo dyke swarm, and may be a remobilisation of the dyke along and pre-existing fault/shear. The grunerite associated with the amphibolite schist had weathered to form Nontronite clays in parts of the oxide/transitional zone.

Figure 7-3
Photograph of the eastern wall of the Tau open pit. Bench heights are 15m

7.3.1.2 Tholo

The Tholo deposit is hosted by two banded iron formation (BIF) units that dip south, at about 45^o, striking east-west. The northern BIF is tightly folded and consists of five measured folds with limbs dipping between 45° towards SW and 45° towards SE with the fold axes plunging to the south. The two BIF units merge between 574 500E and 574 570E and consequently the ore zone width extends out to 35m. The BIF units are hosted within a quartz-muscovite-schist unit and minor quartzbiotite schist. A 15 m to 20 mo wide dolerite dyke also strikes east-west through the schist, south of the ore zone. The reserves were depleted in 2009.

7.3.1.3 Kwena

Mining at Kwena commenced in 2009. The geological information gathered to date has come from exploration and RC chip logging. The mineralisation is hosted by a BIF unit within amphibolite schist. The deposit has a strike length of 500 m and dips to the southwest at 65 ^{o} to 75^o. It is typically 2.5 m to 20 m wide. The area of the deposit has been well defined to an approximate vertical depth of 50 meters; while the south-west area has been drilled at depth of 100 to 150m to reach the mineralisation that extend, at least, 150 m in depth.

7.3.1.4 Tawana (previously known as area 1E)

Tawana deposit is located to the northeast of the Tau pit and presents the same kind of geology and mineralisation. The latest drilling campaign was completed in 2007.

The geological model was produced using the latest drilling information which gives a good indication of the relationship between the dykes and mineralisation.

7.3.2 Signal Hill and Molomolo MLs

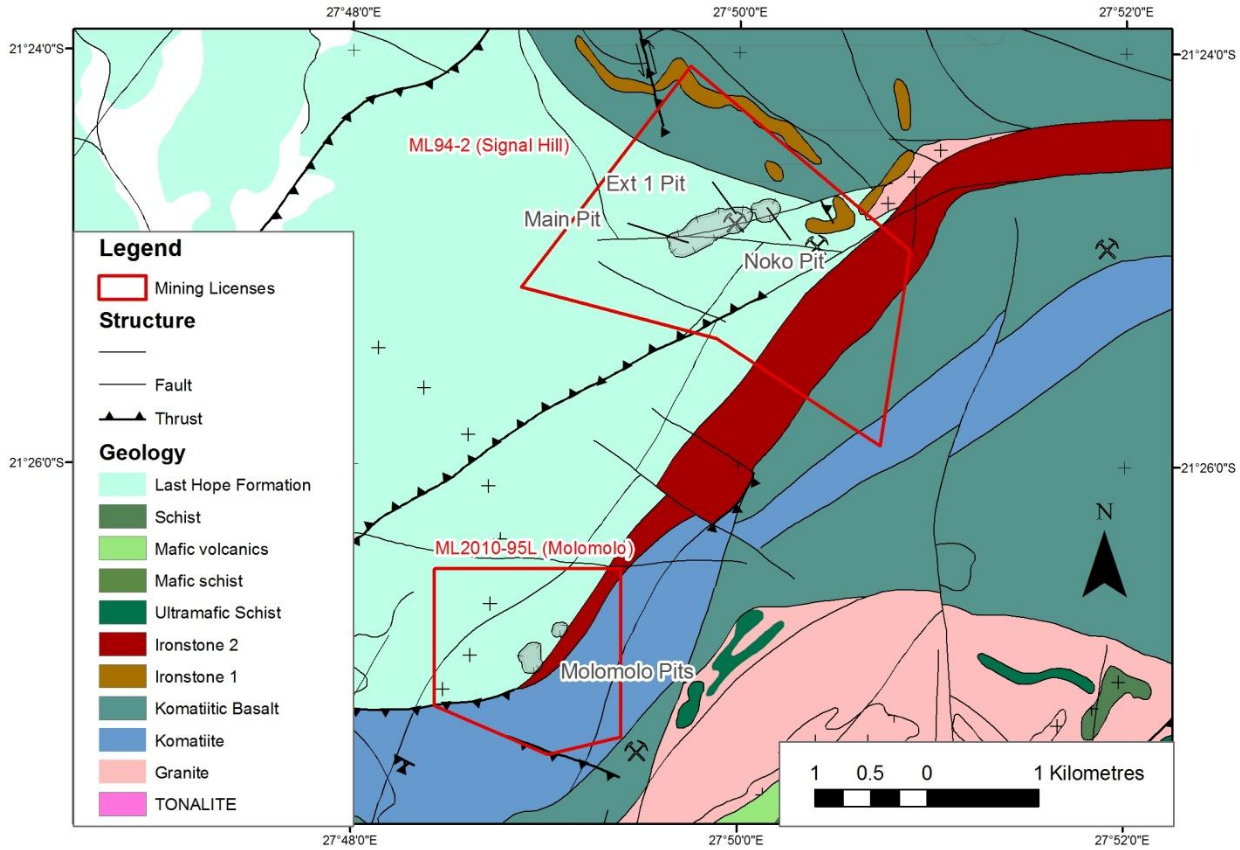
7.3.2.1 Signal Hill

Rocks of the Penhalonga and overlying Last Hope formations outcrop in the Signal Hill area. The Penhalonga Formation is present in the southeast and the northeast of the area where it consists of a succession of foliated metadacite to metarhyolite units overlain by siliceous iron formation (Blaine et al, 1990).

The Last Hope Formation, which underlies the central part of the area, comprises a sequence of poorly bedded arkose units with, in places, well developed cross-bedding, inter-bedded with poorly bedded conglomerates. A few shale units have also been recognised.

Gold mineralisation occurs in a number of areas, known from surface sampling and drilling. The four areas of interest, in the present evaluation, are F Zone (mining completed in 2009), West Zone (mining completed in 2010), B Zone (mining completed in 2010) and A Zone (currently being mined).

Figure 7-4
Location map of the open pits in the Signal Hill and Molomolo MLs



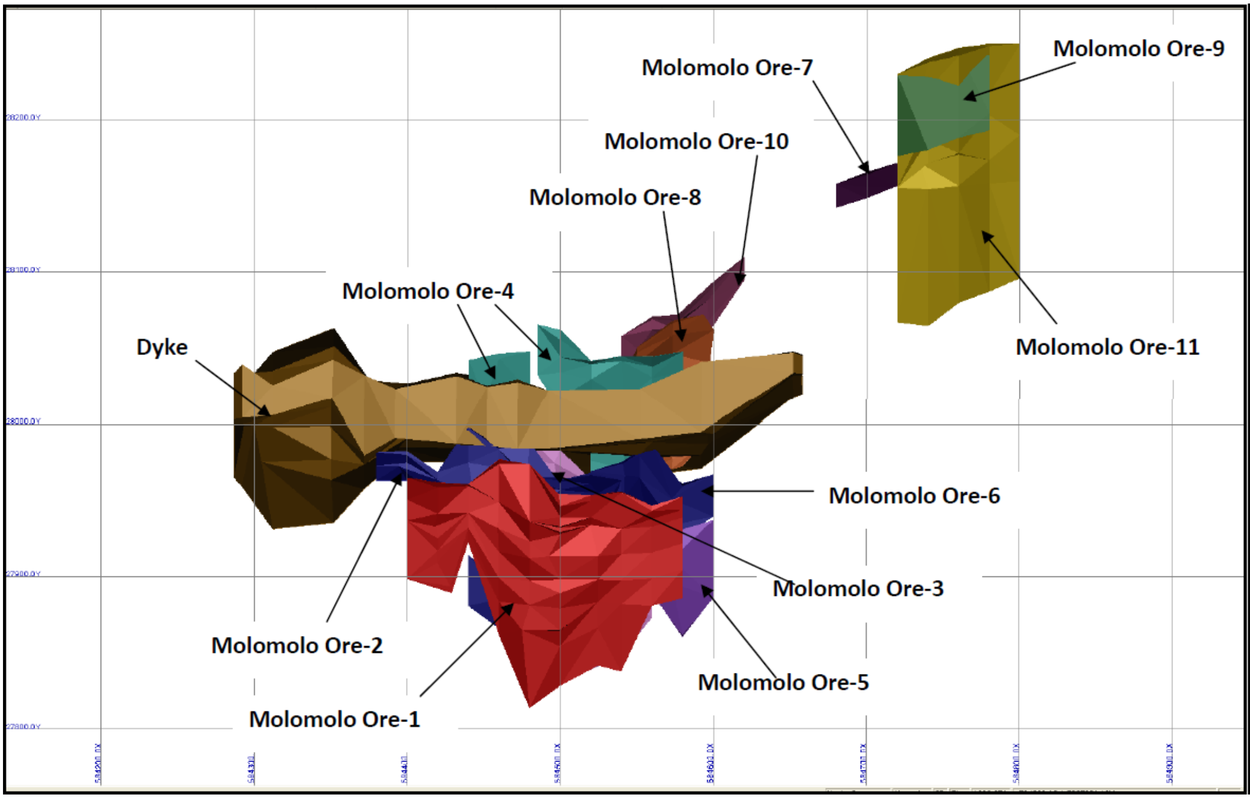
7.3.2.2 **Molomolo**

The Molomolo deposit is located to the south of Signal Hill Figure 7-4) and the mineralisation and geology is similar to Signal Hill. The geological model was produced using the latest drilling information which gives a good indication of the relationship between the dykes (light brown) and mineralisation zones (Figure 7-5).

There are three main mineralized areas, all are currently being mined.

Figure 7-5
Mineral Resource model of the Molomolo deposit in plan view.

The grid lines are 100m apart.



7.3.3 Shashe ML

7.3.3.1 <u>Golden Eagle</u>

Wall rocks at Golden Eagle are broadly subdivided into two units:

- "Western Amphibolite", a strongly foliated, fine to medium-grained green amphibolite with minor chlorite and talc developed on foliation planes.
- "Eastern Amphibolite", a dark grey-green coarse-grained foliated amphibolite with intercalated carbonate lenses.

The host rocks for mineralisation comprise a series of "ore schists' comprising various proportions of amphibole, biotite, chlorite, sericite, talc, silica and, in places, garnet. Contacts between the host schist and the bounding amphibolite are gradational and the schists are thought to be alteration products of the amphibolites. The distribution of lenses of talc schist throughout the mine area suggests that foliation may have developed at a significant angle to primary lithological layering.

Altered and mineralised schists are intensely deformed, exhibiting a mylonitic fabric that parallels the regional NW-SE foliation and dips 50^{o} to 70^{o} toward the south-west. A well-developed mineral stretching lineation, best defined by rodding of talc schists, plunges at 50^{o} to 70^{o} toward N 140 W.

Potentially economic gold mineralisation is best developed in three shoots that plunge parallel to the mineral stretching lineation: the Martial, Bateleur and Falcon lodes (Figure 7-6). Lowergrade gold values occur throughout the “ore schists”. Each of the lodes comprises a siliceous core containing, in decreasing order of abundance, arsenopyrite, pyrite and pyrrhotite. Pyrite and pyrrhotite normally appear to be early sulphide phases, occurring as contorted stringers and veinlets. Away from siliceous zones, silica, sulphides and micas decrease while proportions of carbonate, chlorite and amphibole increase. The mineralized zones are traversed by numerous faults, some of which cross-cut foliation. Un-mineralized, boudinaged quartz veins are locally associated with these structures.

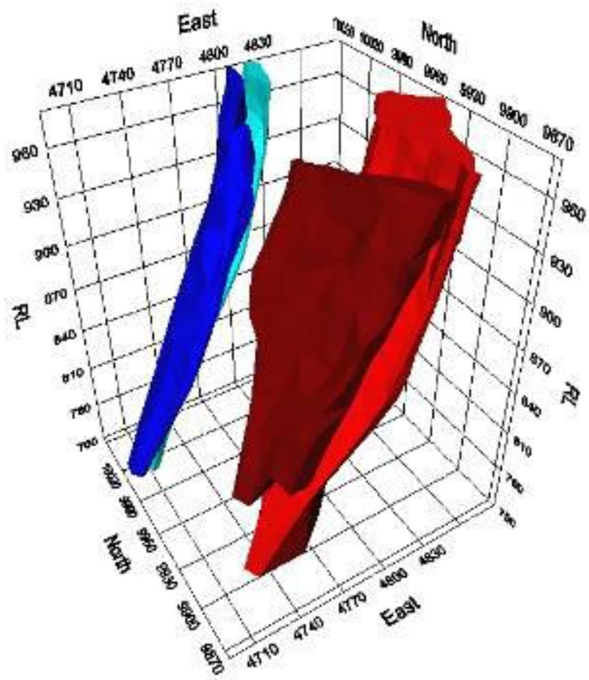
The Martial lode is subdivided into footwall (north) and hangingwall (south) shoots separated by a 5 m to 6 m thick zone of amphibole-biotite-chlorite schist displaying a strong L-mylonite fabric defined by rodding of biotite. The mylonite is devoid of significant gold grades. Two main ore types have been described: a quartz-biotite-chlorite cataclasite containing 5-15 per cent coarse-grained sulphides forming a matrix to siliceous clasts, and a biotite-rich mylonite with patchy finer-grained sulphides (Hellman and Schofield 2004).

The Bateleur lode has been subdivided into two sections based on mineralogy and texture: a narrow siliceous mylonite in the hangingwall and a wider “contorted zone” in the footwall. The siliceous mylonite consists of quartz, biotite, chlorite and lesser amphibole and exhibits a pervasive mineral lineation. The “contorted zone” comprises a biotite-chlorite mylonite characterised by tight, small-scale folds with hinges paralleling the south-west plunging lineation fabric. Contacts between the two lode types are interdigitated.

The geology of the Falcon lode is not well understood. It is less well developed than the Martial and Bateleur lodes. Its southern limit is probably constrained by a dolerite dyke.

Ore microscopy has identified an assemblage of opaque minerals comprising, in order of decreasing abundance, arsenopyrite, pyrrhotite, ilmenite, chalcopyrite, pyrite, pentlandite and gold. Most gold grains are intimately associated with arsenopyrite, being located on fractures within arsenopyrite grains or at the contacts between arsenopyrite and pyrrhotite grains. A lesser proportion of gold is hosted by silicate gangue minerals. Gold grain size is reportedly predominantly less than 100 microns (Hellman and Schofield 2004).

Figure 7-6
Mineral resource model of the Golden Eagle deposit looking Northeast



8 DEPOSIT TYPE

The Tati Greenstone Belt (TGB) hosts numerous small scale nickel and gold deposits.

The nickel deposits consist almost entirely of disseminated to semi massive sulphide bodies hosted by a series of late stage troctolitic intrusive bodies on the northeastern edge of the greenstone belt.

The belt has been extensively prospected in the past due to the abundance of numerous small scale narrow quartz vein hosted gold deposits. These deposits are all clearly related to late stage, high level brittle shear zones developed within the volcanics and sediments of the belt.

The deposits were generally refractory in the fresh sulphides and contained significant amounts of arsenopyrite and some stibnite although the gold is principally hosted within pyrite and to a lesser extent pyrrhotite (i.e. Map-Nora Lodes). The alteration associated with the mineralisation varies depending on the host rocks but typically consists of biotite, muscovite, chlorite, carbonate and ubiquitous quartz either as veins or silicification. Very few of these deposits appear to have developed significant magnitude to be worthwhile propositions for modern gold mining.

In style the gold mineralisation conforms to the Archaean Lode Gold or Orogenic Gold style of mineralisation. They all appear to have formed late in the history of the belt and closely resemble mineralisation seen in the Archaean greenstone belts of Canada, South America and Australia.

9 MINERALISATION

Mineralisation is a “disseminated-style’ in well-bedded, silicified quartz-rich parts of the graphitic iron formation (GIF) at Tau and Tholo and partly silicified graphitic schists at Kwena. This style of mineralisation is unlike that of most Achaean gold deposits being a broad siliceous zone. Mineralisation is not dominated by discrete veins and the deposit lacks sharply-bounded loads. The mineralized parts are however distinctive due to the silicification of the GIF.

Gold mineralisation is interpreted to be synchronous with D2 schistosity and before crenulation cleavage (D3). A second folding event is associated with the prominent D2 schistosity and overprinted by crenulation cleavage. The D3 crenulation cleavage is post-peak metamorphism and retrogression.

The ore zone at Tau lies within the GIF unit. In comparison to unmineralized GIF, mineralized GIF is substantially altered. The addition of silica, remobilized silica, carbonate, wallrock fragmentation and the addition of vein quartz and sulphides have in large part overprinted the original features of the GIF. Mineralized GIF is highly siliceous and carbonated, highly deformed with the graphitic units strongly sheared. Deformation is ductile, with a very minor brittle component, mostly fracturing, and specifically fracturing of arsenopyrite. Minor vein quartz are brecciated, sheared and incorporate much of the GIF wallrock. Arsenopyrite is the most visual sulphide phase, and gold mineralisation is sulphidation of wallrock by this phase. The highest gold grades are associated with visual arsenopyrite- as inclusions, within fractured arsenopyrite, but also within pyrrhotite, the silicates and rarely in magnetite. Gold is typically 10 to 40 microns. The non-sulphide mineralogy of gold ores comprises mostly quartz, carbonate, amphibole, graphite, chlorite±biotite (Vearncombe & Vearncombe 2002).

10 EXPLORATION

10.1 History

In 1994 Gallery Gold Limited purchased the then operating Monarch Gold Mine in the TGB on the outskirts of the north eastern Botswana city of Francistown. The Company conducted small scale mining operations at Monarch and then at the nearby Golden Eagle deposit until mid-1998.

In 1996, following an analysis of gold endowment of other greenstone belts in the Zimbabwe Craton the company recognized that the TGB was grossly underrepresented in historical gold production and current gold resources. Further, despite numerous known historical gold workings, it was apparent that the district had seen little modern gold exploration and the company was able to secure a valuable land position over 90% of the belt.

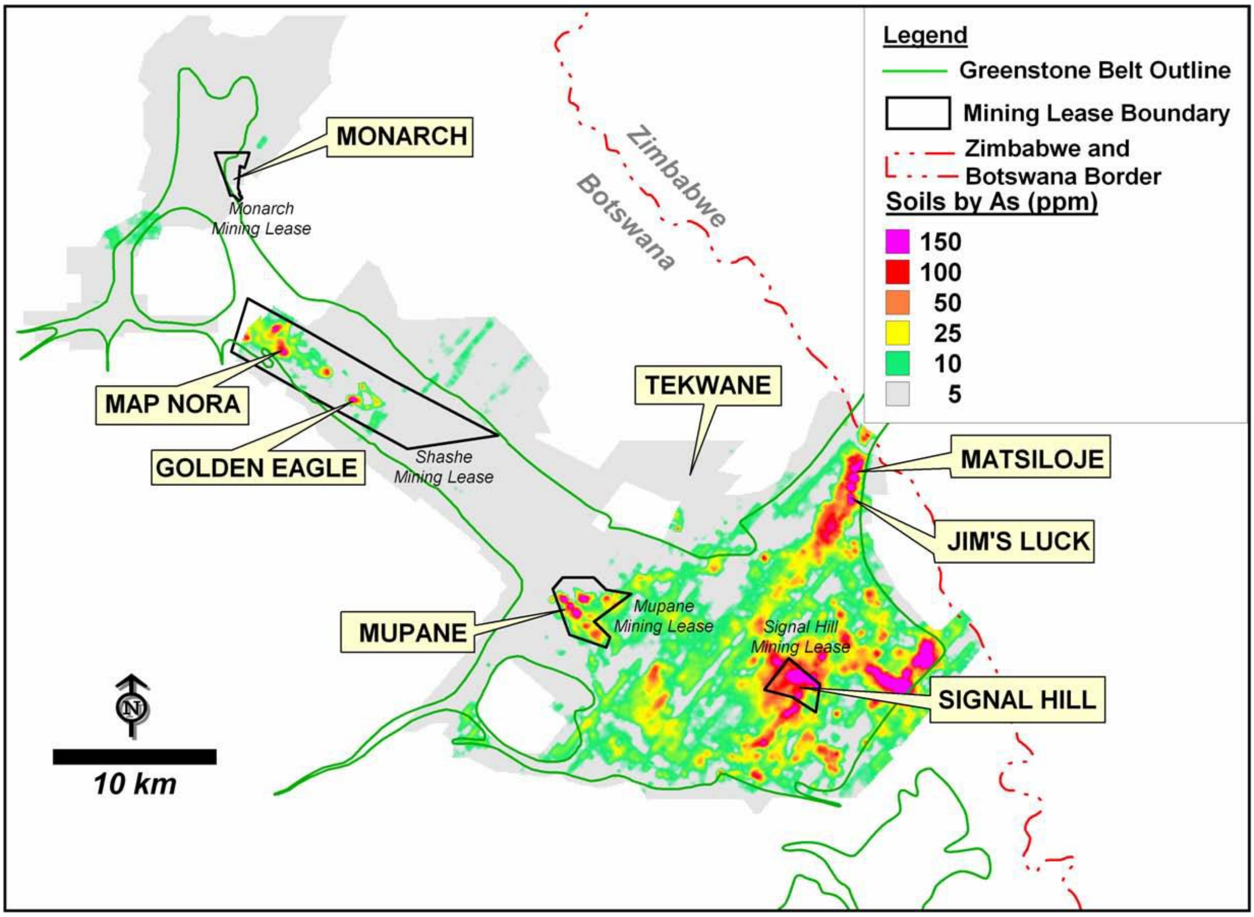
Gallery Gold completed a high resolution, 19 900 line-kilometre aeromagnetic and radiometric program in late 1996. A structural analysis based on this geophysical data and consideration of known geologic data suggested a large number of attractive targets and this encouraged the company to proceed with regional exploration for gold.

The bulk of the TGB is covered by shallow in situ soils and orientation studies indicated that soil geochemistry was an ideal exploration medium. Reconnaissance soil sampling on a handheld GPS controlled 400 m x 40 m pattern commenced in mid-1997 and by late 2000 coverage was complete over the entire greenstone sequence within the company's tenements. This involved the collection of some 38 880 samples which were sent to Genalysis laboratories in Perth for gold, arsenic, and base metal assay.

Gold-in-soil anomalies resulting from this first pass sampling were followed up with 100 m x 25 m spaced infill sampling on grids controlled by Differential Geographical Positioning System (DGPS). These samples were collected and analyzed with the same methodology as the reconnaissance sampling. The infill sample grids are the basis of subsequent geologic mapping, prospecting, ground geophysics, and drilling activities.

Figure 10-1

Map showing the geochemical soil sampling anomalies defined by the Gallery Gold sampling programs



The reconnaissance soil geochemical work quickly defined several new and prominent anomalies together with a large number of anomalies associated with old workings (Figure 10-1).

One of these new anomalies was a 4 km x 5 km gold-arsenic-copper-zinc anomaly in the Mupanipani Hills (Figure 10-2 to Figure 10-6). Follow up trenching in 1998 led to the discovery of high grade, bedrock-hosted gold mineralisation over approximately 6.5 km of strike. Initial reverse circulation percussion drilling in mid-1999 intersected ore grade gold mineralisation in several sub-areas and it became apparent the prospect had the potential to host a major gold resource.

Following the initial work, Gallery Gold completed four phases of drilling totalling 20 170 m in 155 holes and excavated some 8 480 metres in 48 trenches prior to decision to mine.

Figure 10-2

Map showing the geochemical soil sampling points and geology of the Mupane Gold Mine

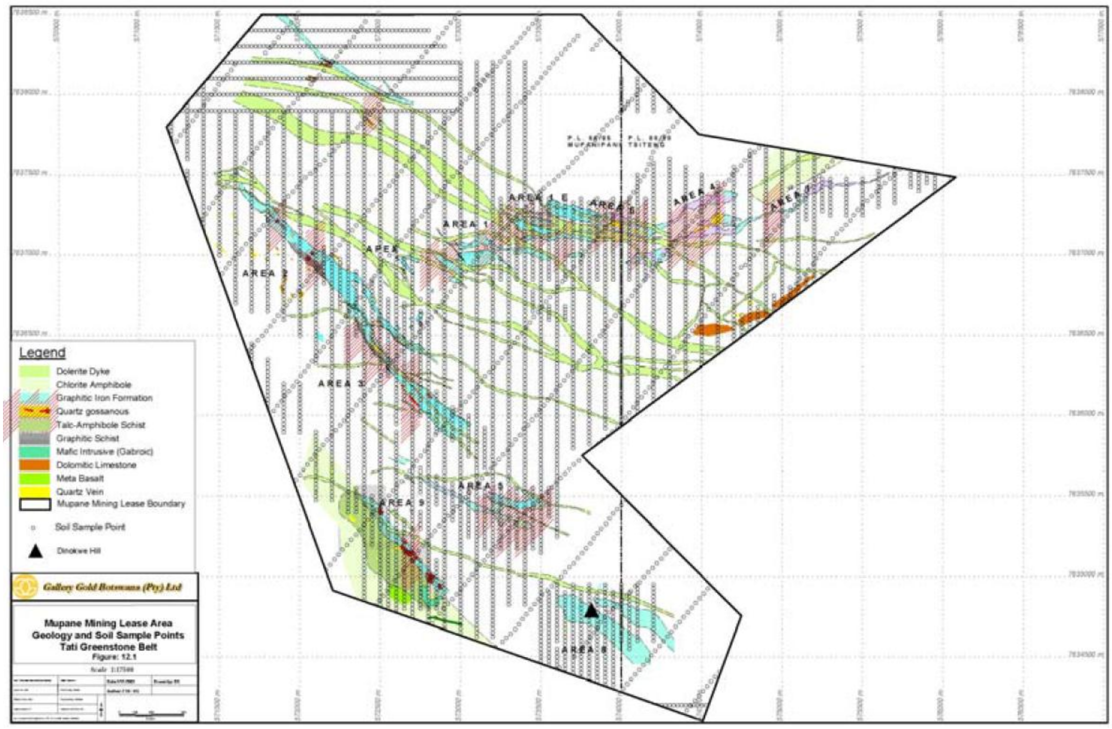


Figure 10-3

Map showing the geochemical soil sampling anomalies (As) defined by the Gallery Gold sampling of the Mupane Gold ML

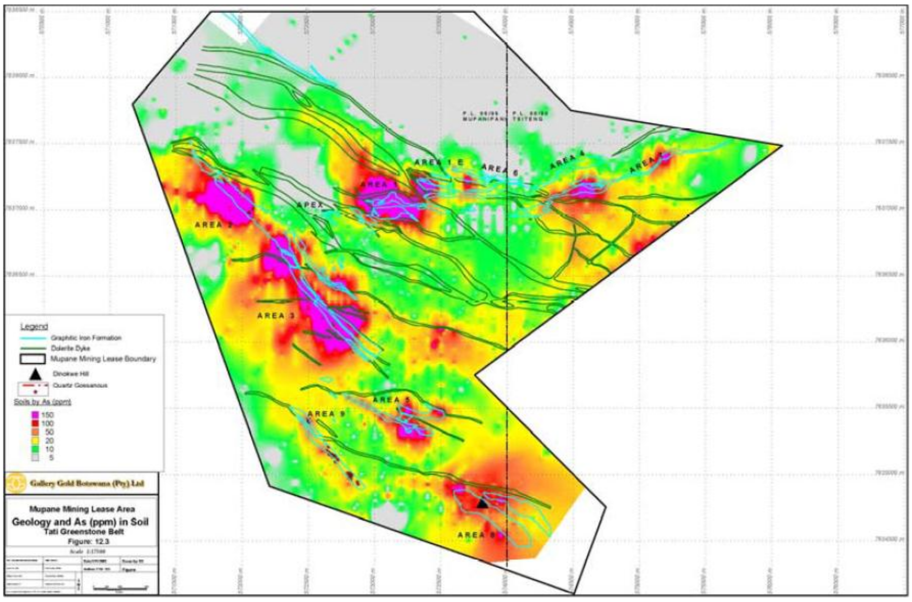


Figure 10-4

Map showing the geochemical soil sampling anomalies (Pb) defined by the Gallery Gold sampling of the Mupane Gold ML

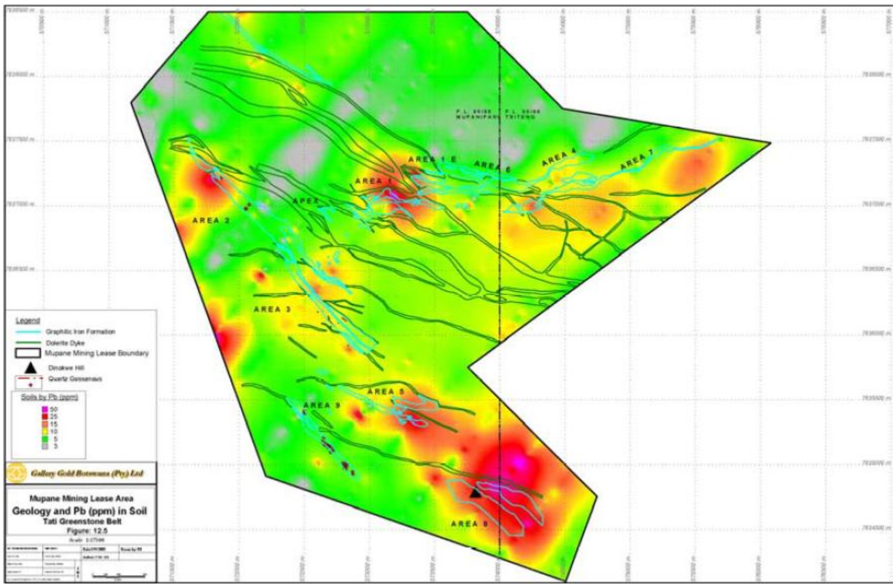


Figure 10-5

Map showing the geochemical soil sampling anomalies (Ni) defined by the Gallery Gold sampling of the Mupane Gold ML

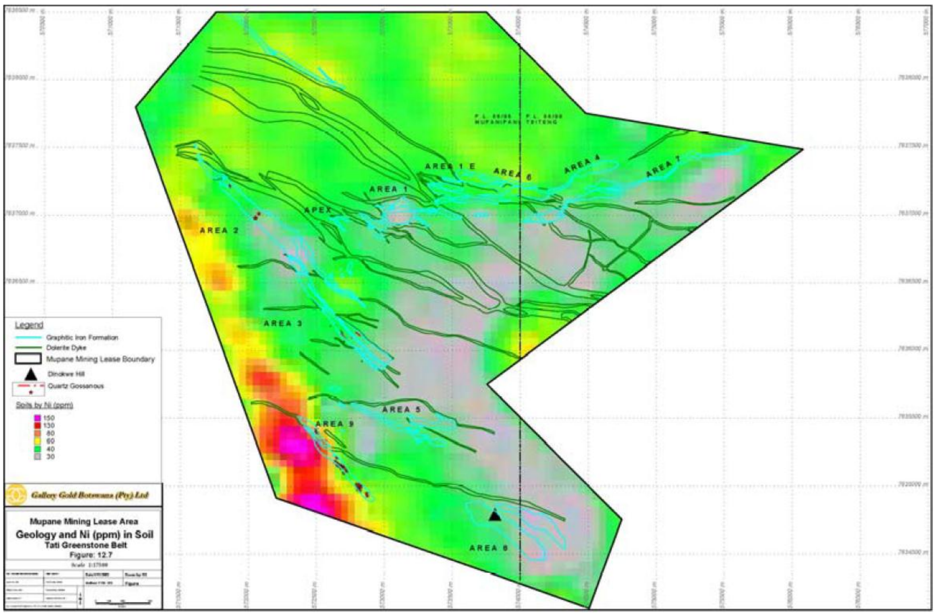


Figure 10-6

Map showing the locations of the initial resource drilling on the Mupane ML

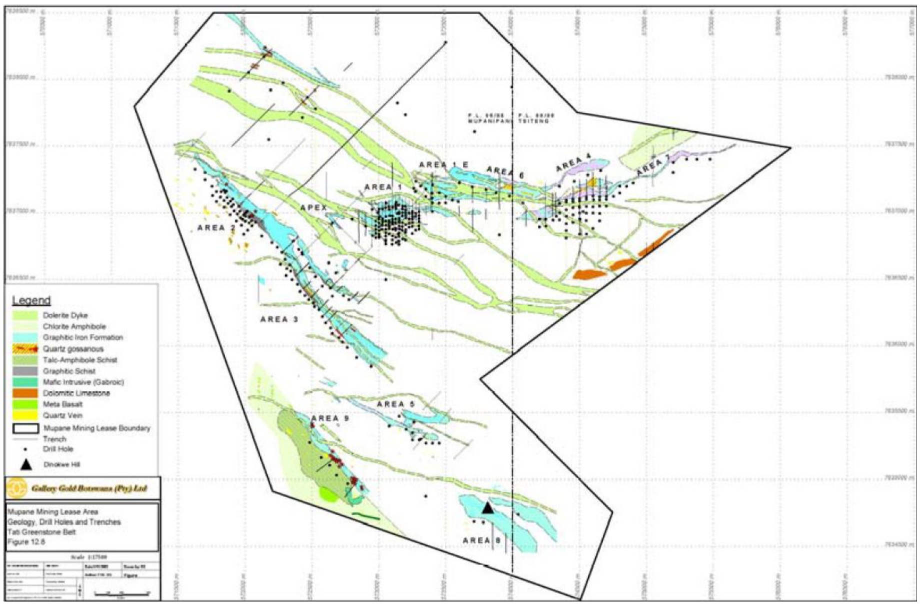
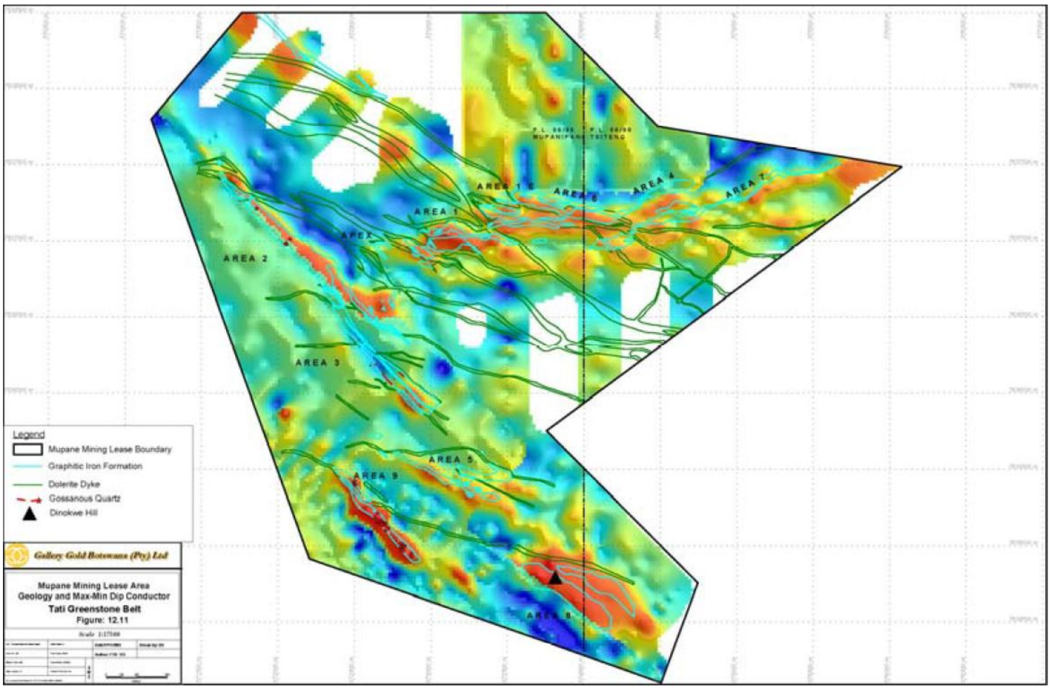


Figure 10-7
Map showing the geology of the Mupane ML, superimposed on Horizontal Loop Electromagnetic (HLEM) Max-Min conductor data



10.2 Current Exploration

A total budget (funded out of Mupane operational cash flow) of USD1.8 million has been made available for exploration drilling in the 400 x 50 m area immediately south of the Tholo pit.to confirm the down-dip extension of the Tholo orebody.

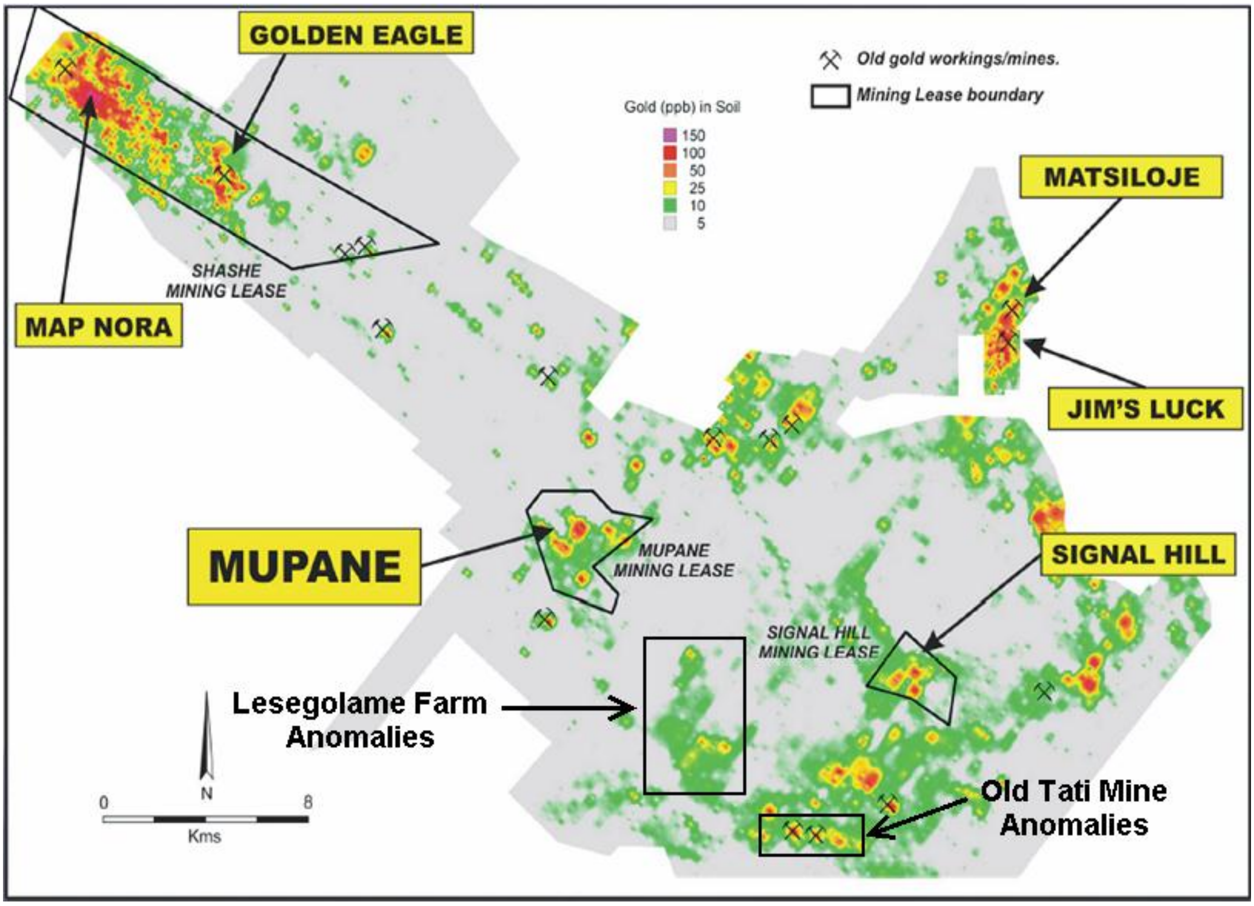
In total for 2011, there has been 2 818 m of RC dump sterilisation drilling at Golden Eagle and 610m RC drilling at Tholo for further ore resource definition (V. Atkinson, Pers. Com., 2011).

10.3 Planned Exploration Work and Data Review

According to the Mine Geologist, Vince Atkinson the following exploration and data gathering for generation of exploration targets is planned:

- First task will be to concentrate on finding the original soil sampling data showing gold, arsenic and antimony anomalies. Figure 10-8 illustrates the gold anomaly on Johnson's Farm (Lesegolame Farm Anomalies), which has an associated arsenic anomaly. Once the data has been located, the anomalies will then need to be located within the farm areas. Additional mapping of the areas is planned with, if needed, trenching in order to aid the location of the source of the gold anomalies. Once the anomalies have been located additional RC drilling should then occur.

Figure 10-8
Map showing Geochemical anomalies on and adjacent to the Mupane properties



- In addition to the Johnson's farm anomalies there are various anomalies in the Old Tati Mine area. Many of these have been drilled and existing reports will need to be reviewed to see if there are any undrilled anomalies.

- Reviewing of drill data on the fringes of the existing pits needs to be undertaken. It would appear that the western extension of Tau pit, beyond the various dykes, has had very few holes drilled into the potentially mineralised extension. Further drilling may be warranted in this area, once a proper evaluation of all the existing data has been done.

- Similarly, the area to the east of Tholo needs to be re-examined. A brecciated zone on surface may indicate a synstral fault, and if this is the case, a search for mineralisation needs to be done on the other side of the fault, taking into account the direction of the faults throw. This search needs to be done in conjunction with reviewing the regional geochemical results for the area.

11 DRILLING

11.1 2006 Drilling on Mupane Prospect

A total of 44 292 m of drilling in 361 holes were completed in five phases from July 1999 to June 2003 (Table 11-1). The program involved 131 reverse circulation percussion holes and 24 diamond drill holes. The program was designed to establish whether the Mupane Prospect had the potential to host a major open-pitable gold deposit (+500 000 oz.).

Table 11-1
Table summarising the types and quantum of drilling on the Mupane prospect up to 2006

Description	Number of holes	Total metres
Diamond Drill Hole (DDH)	15	1 640
Diamond Drill Hole Wedge (DDH-WED)	4	174
Open Hole Percussion (OH)	7	518
Pre-Collared Diamond Drill Hole (PC-DDH)	26	5 852
Reverse Circulation Drill Hole (RC)	309	36 108
Total	**361**	**44 292**

True widths for the down-hole intersections were estimated to be 80% – 85% of the reported lengths. All RC samples were 1 m in length while DDH samples were a nominal 1 m length with lithological control. The average width of the orebody is 25 m.

11.2 2009 Drilling

The following summary statistics were compiled from the geological drillhole database for 2009 between 01/01/2009 and 31/12/2009 inclusive. Table 11-2gives a summary of metres drilled for each deposit or project (Dec, 2009, Tech Report).

Table 11-2
Table summarising the total metres drilled during 2009

Data Set	No of Holes	Hole Type	Total Metres	Deposit	Prospect	License
GEG	1	RC	13	Golden Eagle	GE	ML2003/26L
KWG	15	RC	1 159	Kwena	MP	ML2003/26L
SAG	209	RC	9 735	A-Zone	SH	ML2003/26L
SFG	46	RC	1 724	F-Zone	SH	ML2003/26L
THG	398	RC	1 662	Tholo	MP	ML2003/26L
Total	**669**		**14 293**			

11.3 Drilling Methods

During the site visit two drilling methods were observed. Reverse Circulation for exploration and resource determination as well as Blast Hole drilling for in-pit mining grade control and short-term mine planning.

No data is available on the amount of drilling completed on all the prospects at this time.

11.3.1 Blast Hole Drilling

Direct observation of the blast hole drilling was not made during the site visit but it is understood that the blast holes are laid out in a manner such that the casting of the ore is minimised with 5 m blasts typically drilled within ore-zones and 10 m blasts in waste. Blast holes are either 115 mm or 127 mm with attempts being made to standardise the drilling on 127 mm

The ore blast holes are sampled on 2.5 m increments with the collar position of the blast holes laid out using differential GPS survey and the hole depths checked prior to charging.

Figure 11-1
Blast hole drilling in the Kwena open pit.

11.3.2 Reverse Circulation Drilling

The RC drilling is performed by a contractor (RA Longstaff) using a 5 ¼” THOR 5000 drill mounted on a 6x4 Mercedes Benz Truck, with the compressor being a trailer mounted 1070 IR 350 CFM (Figure 11-2). RC hole capability reported as a maximum of 300m.

Set-up of the rig and sighting of the exploration holes was not observed during the site visit, however it is understood that differential GPS survey is used to locate the collar once the hole has been complete.

Set-up of the rig is the responsibility of the Mine geologist and is based on targeted interceptions of the ore body at depth.

Currently there is drilling below the water table, but dry samples are being obtained with water accumulating during rod changes being blown out prior to drilling.

Figure 11-2
Exploration RC drilling adjacent to Tholo open pit. Photo looking south.

All RC chip samples are collected at 1.0 m down holes intervals from the cone splitter into calico bags and weighed before they were sent to the lab for analysis (Figure 11-3). The cone-splitter generates an ‘A’ and a ‘B’ sample with the ‘A” sample sent for analysis and the ‘B’ sample sent to the core-yard for open air storage.

There is some concern around the validity of the sample splitter being used. The two fixed cutters are incorrectly shaped and do not give an equal probability of being sampled to every particle. Essentially the sample splitter may be inducing random error and possibly bias through delimitation and segregation errors. Further review of this splitter is required.

All samples were analyzed regardless of whether they were collected from the mineralized zone or not, unless they were from the dyke zones which are known to not be mineralized (Dec,2010, Tech Report).

All current logging is handwritten onto prepared data sheets that have predefined intervals for insertion of standards, blanks and duplicates. It would appear from the site visit that there is no geologist on the rig with samplers responsible for the collection, splitting of the samples and collecting of the chip sample for logging. No evidence of logging at the rig was observed.

Figure 11-3
The collected RC sample being fed through a cone-splitter to generate an 'A' and 'B' sample. The 'A' sample is sent to the laboratory for analysis. The ‘B’ sample is retained for future reference.

The following summary statistics were compiled from the database for 2010 between 01/01/2010 and 31/12/2010 inclusive. Table 11-3 gives a summary of metres drilled for each deposit or project. (Dec 2010, Tech Report).

Table 11-3
Table summarising RC drilling undertaken during 2010

Data Set (Deposit Name)	Number of Holes	Hole Type	Total Metres	Deposit	Prospect	Mining Lease
GEG	206	RC	7 979	Golden Eagle	GE	
KWG	0	RC	0	Kwena	MP	
SAG	12	RC	1 750	A-Zone	SH	
TAG	5	RC	704	F-Zone	MP	
THG	17	RC	1 685	Tholo	MP	

11.3.3 Diamond Drilling

As far as can be determined there has been no recent diamond core drilled at any of the projects. However, historically, all RC pre-collar samples were analyzed and the core was put in core trays and logged before it was cut and halved, and samples of half core sent to the laboratory for analysis. Only the mineralized areas (and the adjacent zones) of the core are sent to the Laboratory for analysis. Core is usually sampled every 1.0 m (Dec 2010, Tech Report)

11.4 Density Measurements

Updated density measurements have recently been completed by the geology department. The methodology and results are detailed below in this extract from a report generated by Vince Atkinson, consulting geology to Gallery Gold in March 2010.

11.4.1 Background

In order to check the various tonnages of rock being taken to the crusher it was felt that the densities of the rocks should be checked. Therefore Signal Hill ore was collected off the ROM pad, and various lithologies collected from the Kwena Pit as it was the only pit currently being mined. Samples of waste were collected from:

- the quartz sericite schist to the south west of the pit, near the ramp;
- white quartz veins between the above schist and the ore;
- the dark grey quartzite to the north east of the pit, with carbonate veining, and;
- the grey green chloritic amphibolite to the north-east of the ore horizon.

Two ore types were collected, the first being the typical ferruginous siliceous BIF, and the second type being the weathered limonitic banded BIF.

11.4.2 Methodology

The various grab samples were broken into single rock fragments weighing roughly 300 g to 600 g. The rocks were weighed dry, using an OHAUS triple beam balance (Figure 11-4). They were then weighed in water, being suspended below the triple beam balance by thin fishing line (Figure 11-5). The difference between the dry and wet weights was then divided into the dry weight so as to give the Specific Gravity of the rocks. These measurements are shown in Appendix 2. Each different lithological unit was averaged in order to get an overall density for that particular rock type.

Figure 11-4
Dry sample weighing using an OHAUS triple beam balance

Figure 11-5
Wet sample weighing, with rock suspended in water beneath the triple beam balance

Figure 11-6 White Quartz from the waste / ore contact in the Kwena open pit.

Figure 11-7 **Quartz sericite schist waste from southwestern part of Kwena open pit**

Figure 11-8 **Carbonate veined grey quartzite from north east side of the Kwena open pit.**


Figure 11-9
Ferruginous Banded Iron Formation (BIF) ore from the Kwena open pit

Figure 11-10
Silicified and oxidized BIF ore from the Kwena open pit

Figure 11-11
Oxidized ore from the Signal Hill deposit

11.5 Downhole Survey

In the past (up to 2006) EZ-Shot cameras were used. However due to the magnetic nature of the country rock and, in some cases, survey within drill rods, only declinations were measured. No recent downhole surveys have been conducted.

11.6 Downhole Geophysical Logging

There are no downhole geophysical data available.

12 SAMPLING METHOD AND APPROACH

This section details the sampling methods observed during the April 2011 site visit conducted by MSA.

It must be noted that there is only limited drilling taking place with sterilisation drilling having been completed on the Golden Eagle prospect as well as deeper RC drilling on the Tholo pit as well as ongoing blast hole sampling on the operating Kwena and Signal Hill pits.

12.1 RC and Blast Hole Sampling

RC drill samples were originally collected at one metre down-hole intervals, weighed and then split to approximately 2 kg using multiple passes through a single-tier Jones riffle splitter. This has since been changed to a single pass through a 1 or 2 cutter cone splitter. A sample ticket book system was used to provide cross checks between sample numbers and hole number and depth. (2006 Ni43-101)

12.2 Diamond Core Sampling

Diamond drill core was logged as whole core and marked for sampling in one metre intervals or to significant geological/mineralisation contacts. Core to be assayed was half-sawn using a diamond saw. For RC drilling, a ticket book system was used to reliably track samples (2006 Ni43-101)

No diamond core drilling or sampling was observed during the site visit and the veracity of the methods detailed in the various technical reports cannot be determined.

13 SAMPLE PREPARATION, ANALYSES AND SECURITY

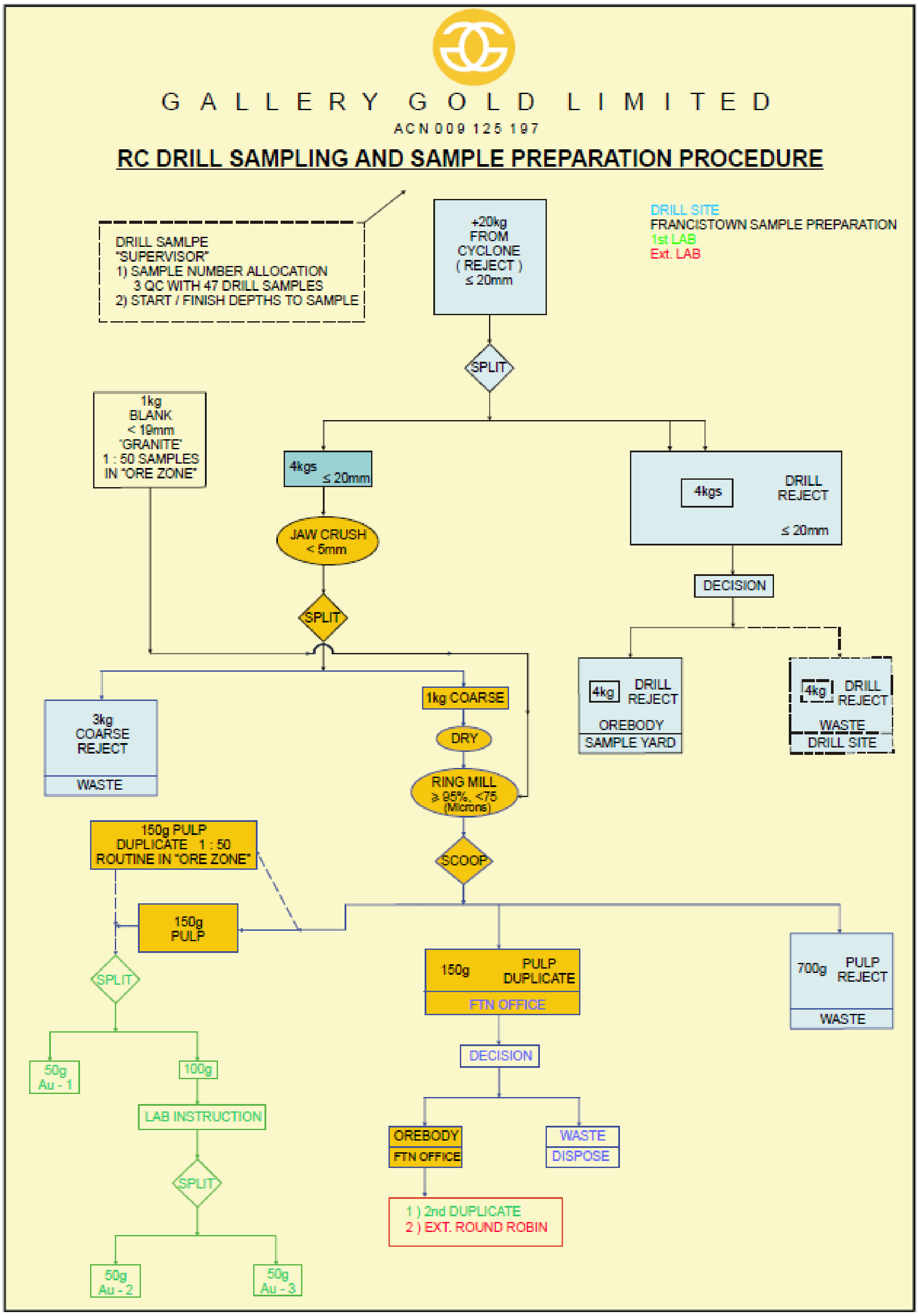
13.1 Sample Preparation

The approximately 2 kg RC samples is dried, crushed to -4mm (if necessary), split twice to approximately 800 g and pulverized to greater than 90% passing 75 microns (Analytical procedure SP01, Mupane Gold Mine).

- A sample batch arrives and is sorted into numerical order. The position of blanks and standards and pulp duplicates is noted by the presence of different colour cards.
- Each sample is crushed in the jaw crusher to sub 5 mm. The jaw crusher is cleaned after each sample with the compressed air gun.
- Each crushed sample is riffle split down to a 1 kg sample. The excess is returned to the original sample bag. The riffle is cleaned, as are trays and hoods with the air gun after each sample.
- Each 1 kg sample is dried in an aluminium tray for typically 12 hours overnight.
- After drying, each sample is ground in the LM2 ring mill for typically 4 to 6 minutes to >90% -75 microns.
- Each sample is removed and 2 x 150 g pulps are scooped out. One 150 g is sent for analysis, the other becomes an archival pulp duplicate stored on site. The remaining ±600 g is placed in a new bag and stored with the coarse residue.
- The grinding bowl is cleaned with the air gun as is the machinery.
- 500 g of blank is ground for 2 minutes in the ring mill and discarded.
- Grinding bowl and equipment is air blasted.
- At the start and end of the day a blank is run through each grinding bowl. A 150 g sample is extracted and stored.

A flow sheet for the sample prep procedure is shown in Figure 13-1.

Figure 13-1
The RC drill sampling procedure



13.2 Sample Analysis

Sample analysis is completed by the onsite laboratory using conventional 50 g Fire Assay with Acid digest AAE finish.

13.3 Sample Security

There were no samples being processed by the laboratory during the visit so it was not possible to follow the flow of geological samples through the sample preparation and analysis process.

It is understood that the sample number assigned by the samplers is retained throughout the process and follows the samples through to final AAE finish.

There is however no LIMS system in place with all values (mass etc) being manually recorded on data sheets. The final results are then passed to the laboratory manager for capture and final calculation prior to being dispatched to geology and metallurgy.

13.4 Laboratory Certification

The Mupane Mine onsite lab is not certified. It does however take part in a number of round-robins to test the internal lab QAQC:

- Locally – Botswana Bureau of Standards (quarterly)
- Australian Laboratory Services (ALS) – Monthly, mineral ore samples: 20 participating laboratories
- Geostats PTY LTD - Bi-annually (April & October), Mineral ore and carbon samples: 161 participating laboratories

ALS Chemex (Johannesburg laboratory) has been used as an external referee laboratory for a limited number of samples and is SANAS certified for all chemical analysis associated with the determination of gold.

13.5 Statement of Opinion on the Sample Preparation, Security and Analysis

Within the constraints of the site visit and the restricted exposure to all aspects of the sampling process as well as the veracity of the information contained in the various technical reports and the 2006 NI 43-101 report, the following statements and points can be made:

- The lack of a LIMS system and linked mass balances is a point of concern, mainly due to possible transcription errors.
- The laboratory is running low on space necessitating the use of the Scale room as a prep-area for acid digestion and metallurgical titrations.
- The lab partakes in 3 round-robins, but is not certified with the concerns that go with the lack of certification i.e. international best practice and appropriate internal QAQC.
- The storage of the pulps and the coarse rejects in a unsecured container and outside in the core yard is of great concern as these samples have now been compromised
- The lack of referee labs is also of concern
- In general though the lab and the sampling process appears to be reasonable and acceptable. More work on the quality of the laboratory work is however required.

14 DATA VERIFICATION

QAQC procedures and assaying protocols are in place for all sampling and drilling operations on site and these are continuously being revised to maintain high standards in the quality of samples submitted and assays reported. Information for 2010 was compiled and analysed using Maxwell DataShed software. Pertinent comments on data used have been made in accordance with circumstances that prevailed during the year.

Since the 2010 Technical report was issued there has been a set-back in the functioning of the QA system. The Datashed database's QAQC reporting system is not functioning and the data clerk is doing a manual, visual and non-graphical assessment of the QC returns.

14.1 Quality Assurance

Sample control is maintained by use of sample submission sheets where all the details of the job number are documented and filed at the lab and in the geology department. This control is used to track any samples to and from the laboratory. Detailed standard operating procedures for sample preparation, fire assay and Leachwell Au analysis have been documented and are currently in use. The laboratory quality control results are reported periodically.

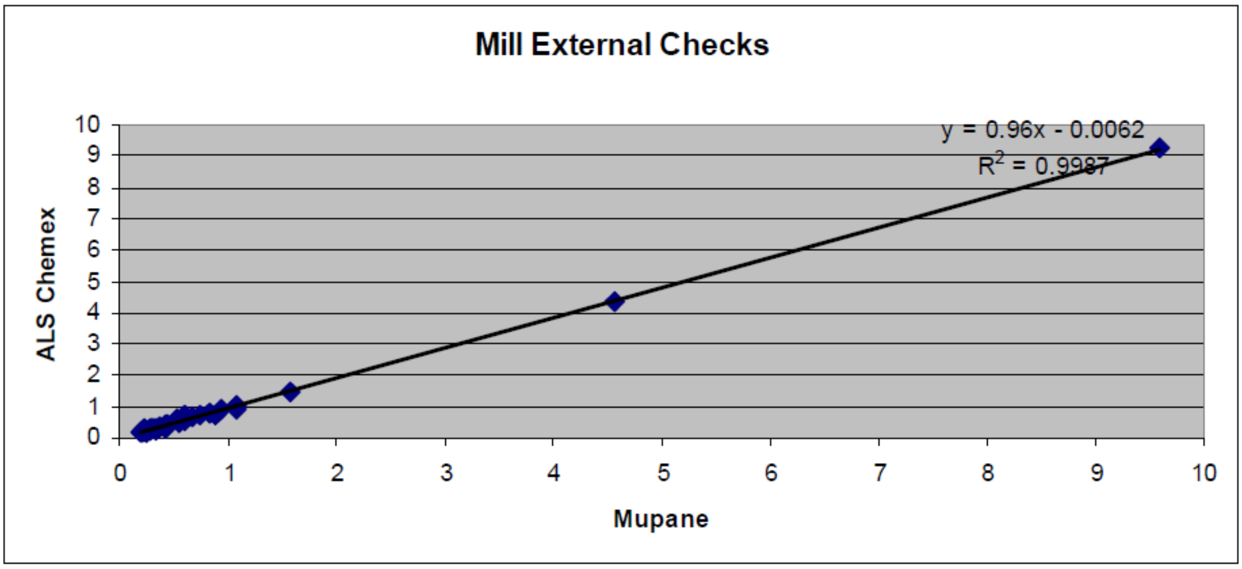
14.2 Quality Control

Internal and external pulp checks are carried out routinely in order to maintain the highest possible standard controls. The local laboratory is being used for all the grade control and resource assays. Assay methods used at Mupane is either Leachwell (Grade Control) or Fire Assay (Resource Drilling).

14.2.1 External Checks

The quality of the assay results generated by the Mupane lab is assessed on a monthly basis, using an external laboratory. In November 2010, some mill samples were sent to ALS Chemex in South Africa. Results show that the percent difference on means, average and absolute average were 5.7%, 6.2% and 11.0% respectively. The plot of samples is shown in Figure 14-1.

Figure 14-1
QAQC plot of external pulp check analyses



14.2.2 Analytical blanks and standards

In 2010, lab's performance continued to be monitored through the use of analytical blanks and standard reference material (SRM). The local quarry material with gold values less than the detection limit was used for blank samples. A total of 70 blanks were submitted to the lab by geology department in 2010.

The average grade reported by the lab was 0.07 g/t. Assays higher than 0.1 g/t as potential contamination accounted for 9% of assays presented; this was higher than the previous year by 3%. It is still a low figure and cases presented would have been avoided as observed high values was a lot more to do with staff poor practices, e.g. a 2.9 g/t standard was submitted as a blank, skewing the average substantially. Contamination is therefore still under control at Mupane.

In view of SRM, quality control graphs show that a lot of mix ups of standards in some batches were a problem. However, most of the batches performed very well. Table 14-1 shows the statistics of the SRM assay results.

Table 14-1 Statistical summary of standard reference material assay in 2010							
Gold Standards			Number of Samples	Calculated Values			
Standard Code	Value (ppm)	Standard Deviation		Mean Gold (ppm)	Standard Deviation	Coefficient of Variation	Mean Bias
Blank	0	0	70	0.07	0.31	4.43	0.00%
ST39/0042	0.802	0.037	62	0.90	0.63	0.71	10.89%
ST02/0043	1.65	0.085	66	1.60	0.35	0.22	-2.18%
ST48/0044	2.90	0.095	79	2.55	0.84	0.33	-11.96%

These standards are produced from Mupane ore material by African Mineral Standards (South Africa). They have all participated in the round robin exercise and reflect the average grades as recommended. The local laboratory is able to reproduce these results as shown in Tables 14-1 and Figures 14-2 and 14-3.

Figure 14-2
Laboratory analyses during 2010 of blank samples from RC drilling

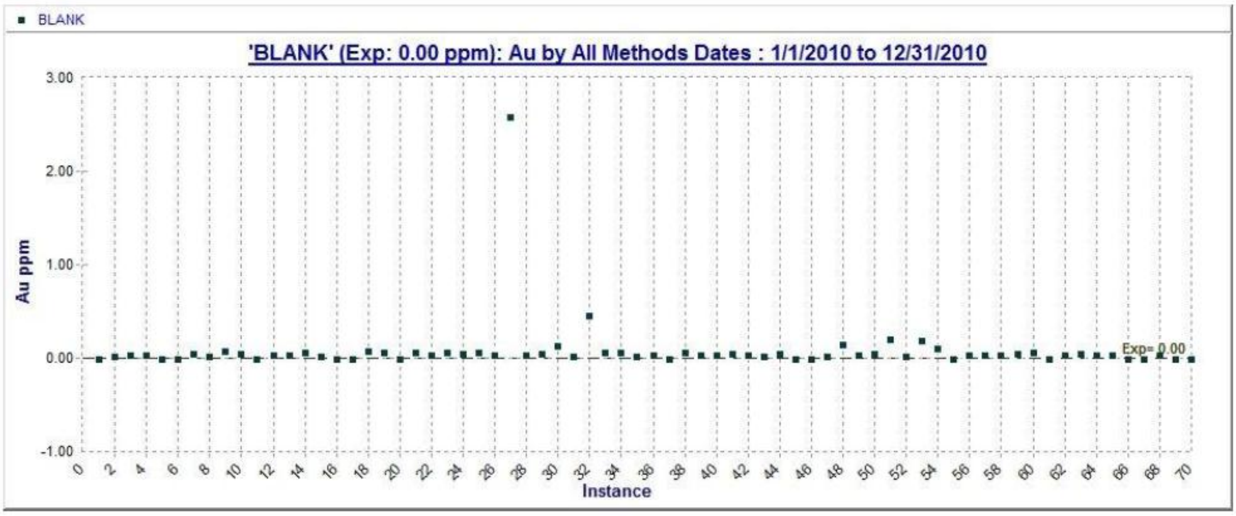
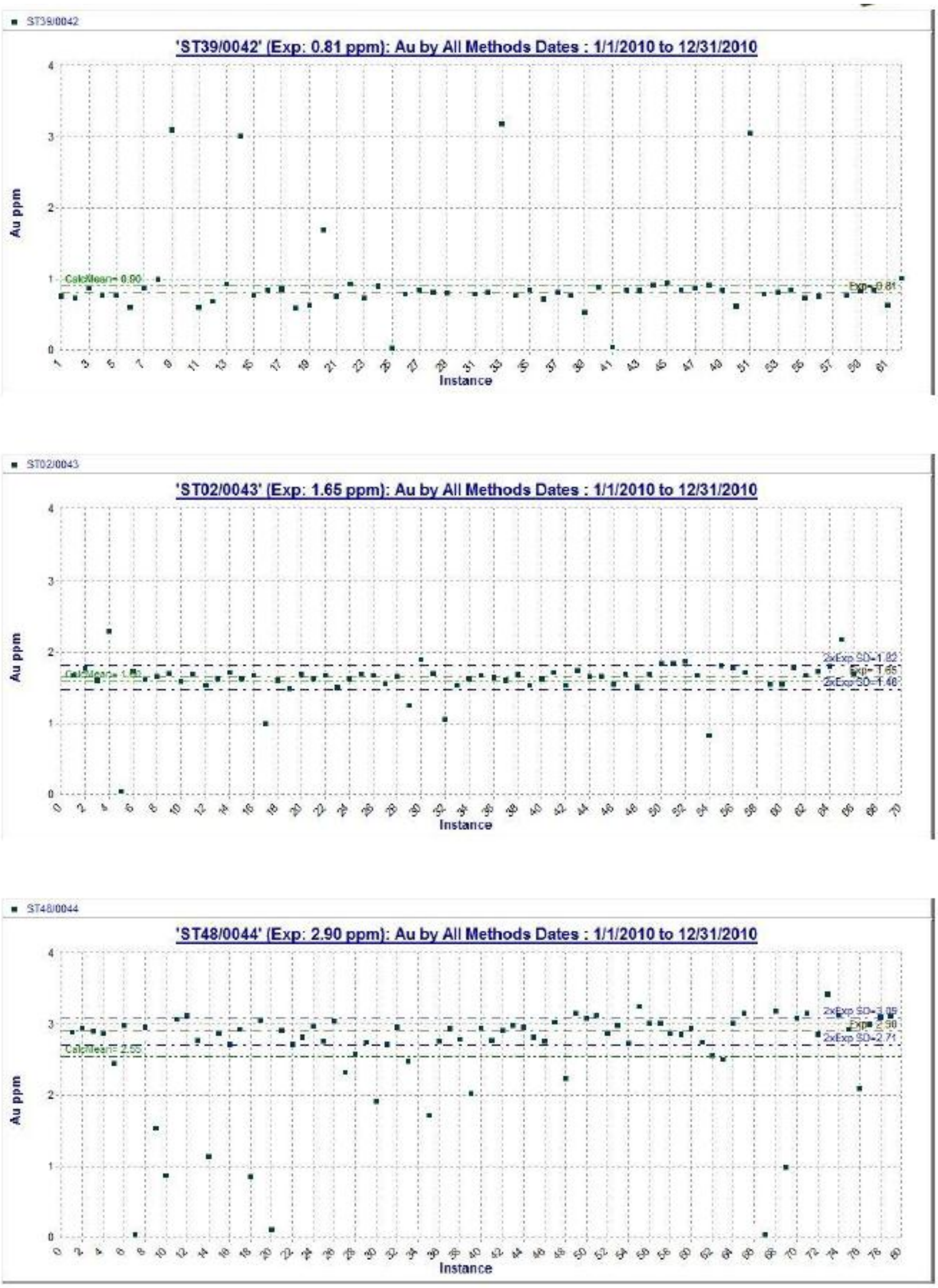


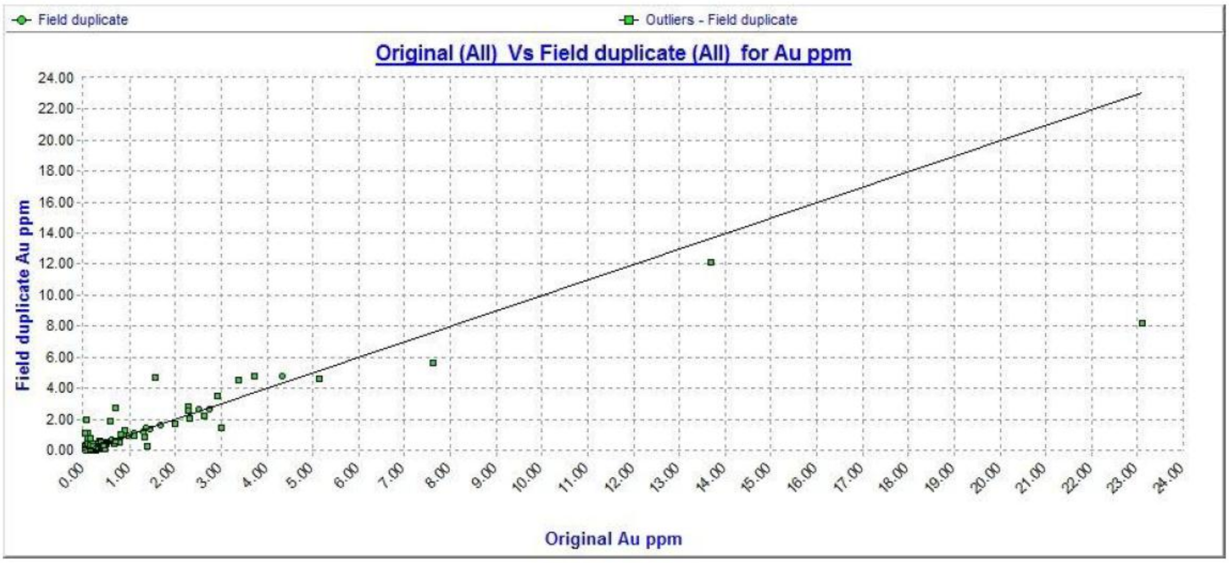
Figure 14-3
Analytical results of standards during 2010



14.2.3 Field duplicates

Field duplicates are systematically being taken and routinely being re-assayed to check if the sampling and splitting on the field is done properly and if the lab can reproduce similar results for the majority of the samples. In 2010, results showed a very good correlation, except for a few outliers. Figure 14-4 below shows the results of the samples. There is a low bias between the first and the duplicate assay.

Figure 14-4
Chart of duplicate analyses during 2010



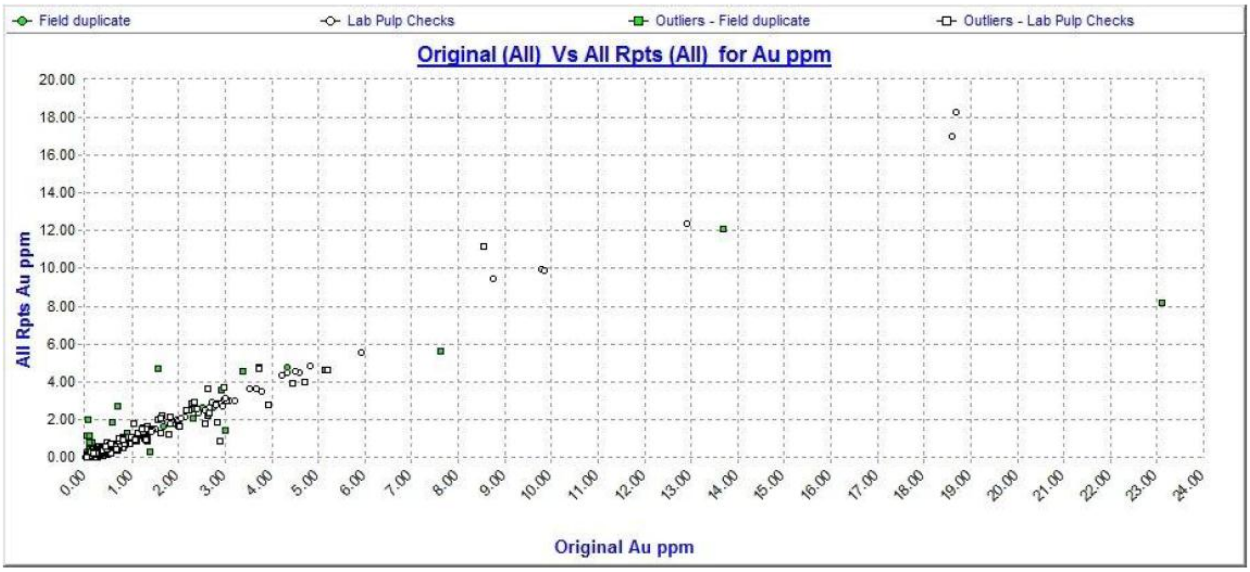
14.2.4 Pulp duplicates

Internal laboratory checks include pulp repeats. These are done on a routine basis by using two assays from the same pulps. The graph below shows all repeat assays done in 2010.

There are some outliers that should be understood from the lab preparation stages (Figure 14-5).

Figure 14-5

Chart of laboratory pulp repeat analyses conducted during 2010



14.3 Overall Interpretation of QAQC Program

There are a number of points that need to be raised from the review of the QAQC reports and processed:

- Seems that staff errors account for a number of the errors in the blanks and standards. Base on site visit, there appears to be insufficient supervision of the sampling crew when compiling the sample batches for submission to the laboratory.

- Any batch with a returned standard value more than 2 standard deviations from the standard mean must be re-run. From the limited information that is available it would appear that there are a number of batches that fall into this category. This raises concerns around the reliability of the mine laboratory and validity or accuracy of the handwritten logsheets and manual data capture processes at all staged from logging to geological data capture and laboratory reporting.

- If the technical report is to be understood, only a restricted number of samples from a narrow time window were sent to a referee lab for analysis. While external checks are required, it is best to have a more regular submission of pulp and field duplicates to provide continual feedback on the accuracy and precision of the mine lab

- The QAQC program and the results are currently reasonable but there is a need for some improvement, not least of which is a working QAQC database reporting system and more referee lab analysis.

15 ADJACENT PROPERTIES

The following descriptions are extracted from documentation provided by the Northern Lights Exploration Company (Pty) Ltd (Northern Lights). The information has not been independently verified by MSA. The following information is also not necessarily indicative of the style or grade of mineralisation within the various Mupane Mine projects and ore bodies.

Northern Lights acquired the 190 km^2 Prospecting Licence Number 211/2010 on 01 October 2010, valid for 3 years and renewable for 2 further, 2 year periods, giving a total of 7 years (to 30 Sept 2017), subject to satisfactory conduct and the relinquishment of 50% of the ground at each renewal. The Licence covers the Eastern extremity of the TGB in Botswana (Figure 15-1).

In addition the Company has applied for two other Prospecting Licences:

- A small, 3 km^2 area as an extension of PL 211/2010 to cover the Tekwane Gold in soil anomaly, and;
- A large, 1 000 km^2 application in the Francistown area, the most important portions of which are already in the Company's possession via two Deeds of Cession of Mineral Rights from IAMGold (Botswana) (Pty) Ltd. The new PL application will consolidate this ground holding and will supersede the Deeds.

Figure 15-1

Simplified Geology of the Tati Greenstone Belt showing the locations of adjacent mining licenses and applications

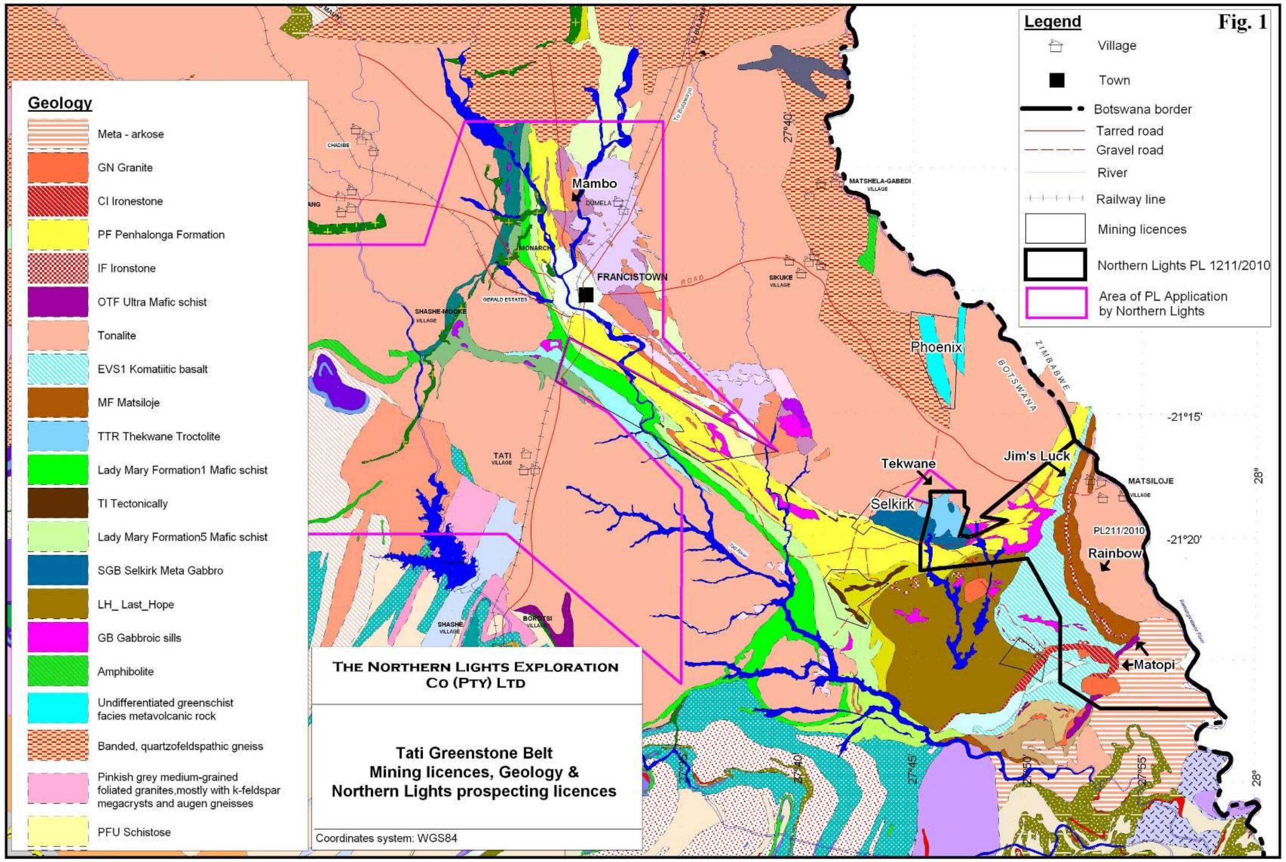
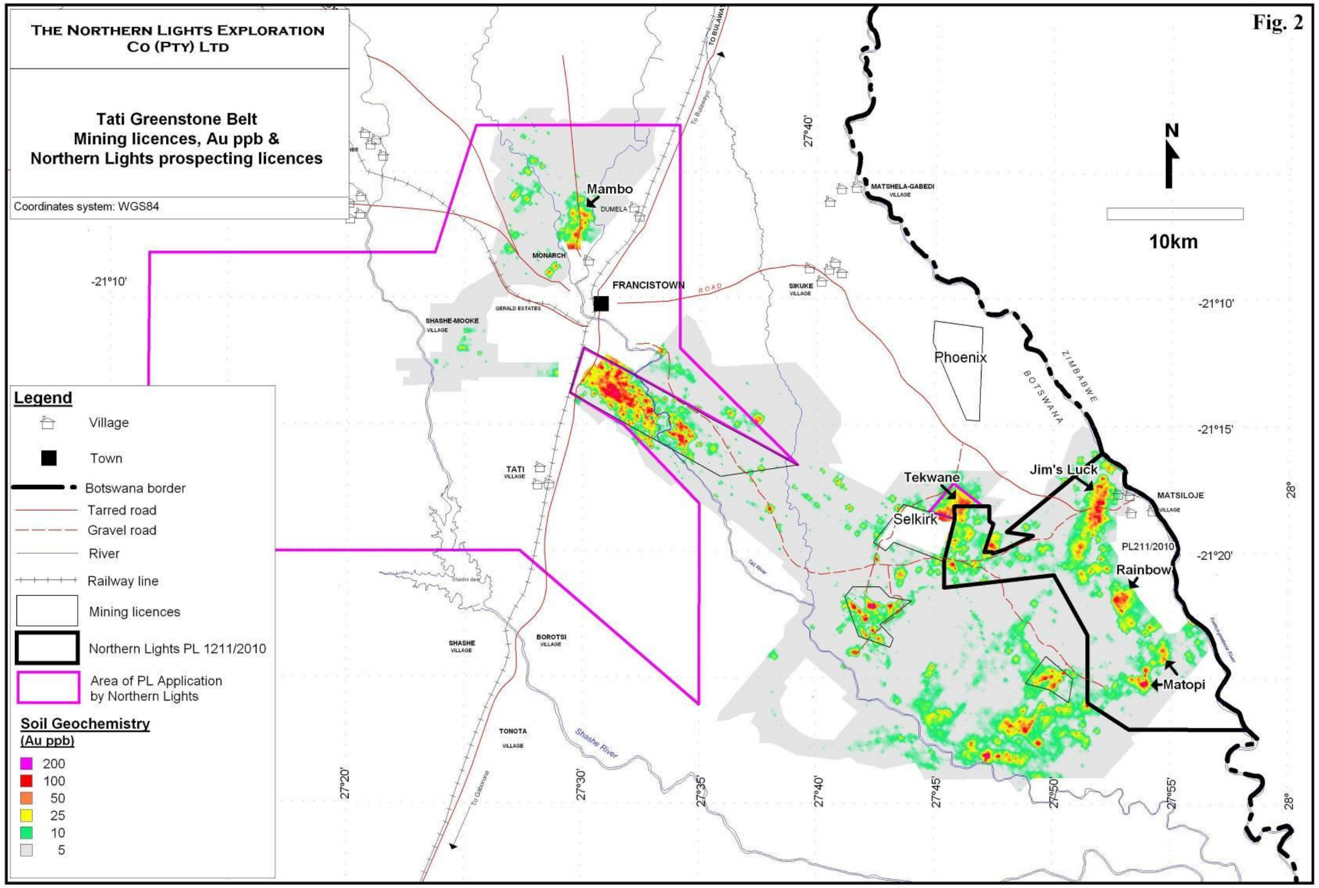


Figure 15-2

Map of the Tati Greenstone Belt showing mining licenses and applications adjacent to the Mupane Gold Mine



15.1 Prospecting Licence 211/2010 (Matsiloje).

This Licence has 5 separate Projects; Jim's Luck, Rainbow, Matopi, Tekwane Ni/Pt, and Tekwane Gold. The latter is only partly covered by the Licence, the balance being covered by the new application (Figure 15-2).

The Licence covers the full 20km of strike of the Matsiloje Ironstone mountains in Botswana. There are co-incident 5km to 7km long Gold and Arsenic in soil anomalies at both the Jim's Luck and the Matopi Projects and these are in turn co-incident with lack of magnetism in the Banded Ironstones. At Rainbow, there are 2km long co-incident Gold and Arsenic-in-soil anomalies, while at Tekwane there is gold a anomaly over a block measuring 2.5km x 1.5km. The Tekwane Ni/Pt Project is separate from the Gold Project and will not be dealt with in this report.

15.2 Jim's Luck.

The Archaean Matsiloje Formation forms the arcuate, generally North – South striking, Matsiloje Mountains and is made up predominantly of mafic volcanics with subordinate chemical sediments – the Banded Iron Formations (BIF) which form the resistive rocks making up the mountain ridge.

The gold mineralisation at Jim's Luck is located within two parallel distinctive BIF units, some 50m apart:

- The more deformed, Eastern Banded Carbonate Chert.
- The less deformed, Western Banded Magnetic Chert.

The former appears to be more prospective for gold mineralisation and has attracted the majority of the exploration attention to date. The latter will therefore require some attention to bring it to the same level, especially at the current gold price.

The whole area is cross-cut by the ubiquitous, roughly East-West striking, younger dolerite dykes.

Old workings (early 1900's) are present and there is also a fines dump of some 8 000 tonnes at unknown grade. In the 1980's Gold Fields of South Africa examined the property and drilled diamond core holes MH 1 to 4 under the old Jim's Luck mine located on the Western Magnetic Cherts with intersections of 5 m grading at 3.66 g/t, and 2.95m at 1.70 g/t.

Mineral Holdings Botswana then held the ground entering a JV with Cardia of Australia who earned a majority and subsequently did a JV with Gallery Gold in the late 1990's. This led to the excavation of 28 trenches for 1 935 m and the drilling of 32 RC holes for approximately 2 000 m. IAMGOLD then did a detailed drill-out of the Jim's Luck property to the South of the main road in the mid 2000's, drilling 118 RC holes for 11 170 m and 7 diamond holes for 1 212 m.

Available results of these programs show that there are two wide, high grade 'shoots' of limited strike length:

- The North Zone (30m strike) with an average width of 6.8 m grading 4.65 g/t.
- The South Zone (50m strike) with an average width of 6.6 m grading 4.28 g/t.

The overall dimensions that can be interpreted from available drill data show that gold mineralisation is continuous over a strike length of 830m, including the higher grade shoots, and this averages 5.63 m grading 3.04 g/t.

These averages are indicative of the presence of something of the order of 100,000ozs of Gold over the 830m of strike as an open-pitable Resource from surface, and there are no known metallurgical problems.

In addition, it is important to note the following:

- There is continuous known low grade gold mineralisation over a strike length of some 2 000 m that cannot be properly evaluated due to the temporary paucity of data.
- There is a further 1 500 m of strike on the northern extension of Jim's Luck (the so called Matsiloje mine area) that also suffers from data shortage, but is known to be mineralized. RC drill intersections that have been located are: 2 m grading 2.69 g/t; 3 m grading 1.3 g/t; 3 m grading 1.23 g/t; 12 m grading 1.42 g/t; 1 m grading 1.01 g/t; 6 m grading 3.45 g/t; 2 m grading 0.53 g/t; and 1 m grading 2.48 g/t.
- The Western Banded Magnetic Chert constitutes a parallel strike of similar length (i.e. 3.5 km) and has not been drill tested even though it hosts the old Jim's Luck Gold Mine. Cored hole intersections that have been located are 0.72 m grading 0.9 7g/t; 2.95 m grading 1.70 g/t; 5.00 m grading 3.66 g/t; and RC drill intersections are : 2.00 m grading 3.14 g/t; 10.00 m grading 1.14 g/t (including 3.00 m grading 1.91 g/t); and 8.00 m grading 0.92 g/t (including 3.00 m grading 1.42 g/t)

The Jim's Luck Project then hosts in excess of 6 km of strike of prospective ironstone lithologies of which 830 m has been drilled in detail and, while this is may constitute the best mineralisation, it is known that low grade mineralisation exists over most, if not all, of the balance of this overall strike.

Therefore the Jim's Luck Project constitutes a 0.5 million oz + exploration target, and production could commence relatively quickly from the drilled out portions.

15.3 Rainbow.

These old underground workings are located some 7 km to the South of Jim's Luck, or 8 km South of Matsiloje Village, and to the immediate east, or footwall, of the Matsiloje BIF's forming the mountains (Figure 15-2). The gold is contained in shear-hosted, discontinuous lenses and anastomosing quartz veins in a variety of strongly carbonated felsic to intermediate schists. Gold mineralisation is apparently not associated with the BIF units.

Previous operators / explorers include:

- Tributors from 1939 to 1953, mined to 80 m below surface in places at reported grades of 50 to 60g/t.
- Sedge (Anglo American) in 1968. Two surface holes
- Morex 1984 to 1989. Three surface holes, 21 underground holes. Limited production.
- Falconbridge 1988 to 1991. 12 surface holes, 5 underground holes, 47 surface trenches, IP and Magnetic surveys. Limited production.
- All operators had problems with recoveries.

According to IAMGOLD, there are two areas worth exploring further: 20 RC holes, for 2 000 m on zones that have not been properly explored or exploited. There is potential that these could yield in the region of 50 000 oz of gold from a combination of open pit and limited underground mining.

15.4 Matopi.

Mapopi was a new discovery by Gallery in 1997, located 6 km south of Rainbow, or 13 km south of Matsiloje village. Gold mineralisation is confined in ultramafic and mafic rocks located at the southern end of the BIF and Matsiloje mountains and not associated with the BIF's. The discovery was by way of 550 m x 200 m gold in soil anomaly with associated arsenic at >100ppb.

Gallery excavated 14 trenches with a cumulative length of 1 374 m and drilled 9 RC holes totaling 1 036 m. While grades from the trenches were in the range 0.20 to 0.40 g/t, the mineralisation was continuous over widths from 30 m to 80 m. Drilling yielded results of 35 m grading 0.85g/t, including 4 m grading 2.25g/t; 20 m grading 1.20 g/t; 41 m grading 0.86 g/t, including 16 m grading1.85 g/t; and 42 m grading 0.55 g/t, including 14 m grading 1.22g/t.

The Matopi soil anomaly is located on the side of a hill which slopes to the south and the dip of the low grade gold mineralisation intersected in the drilling is parallel to the hill slope. IAMGOLD is of the opinion that this mineralisation may be supergene in nature and that there potentially exists a shear hosted body of better grade upslope. This would invoke a NE striking body located along the northern (upslope) edge of the soil anomaly which was missed by the initial work and would be intersected, if present, by a planned 15 hole, 1,500 metre RC drill program.

15.5 Tekwane Gold

The area was applied for as part of PL211/2010, but there is an overlap with an application by Tati Nickel Mining (Pty) Ltd, so it was not granted as part of 211/2010. Northern Lights Exploration and Tati Nickel have met on this issue and have agreed as per the configuration in Figure 15-1 and Figure 15-2. This has been conveyed to the Department of Geological Survey and it is apparent that they will recommend same to the Minister. So it is likely to be a separate, small Prospecting Licence.

This project is based on a gold in soil anomaly and falls only partly within Prospecting Licence 211/2010. However, in Figure 15-2 it can be seen that the anomaly covers nearly 4 km^2 and is possibly the best gold in soil anomaly in the southern half of the greenstone belt. The anomaly is caused by the presence, over some 5 km^2, of an auriferous quartz rubble layer in the soil profile. The underlying lithology is a porphyritic felsic volcanic suite of unknown origin. There are a number a small gold in quartz vein deposits in the area and it is felt that this anomaly could be caused by a low grade 'stock- work system' that has remained undiscovered despite some fairly detailed work having been done on the rubbles. Indeed it has never been adequately explored or explained.

15.6 Prospecting Licence under application in the Francistown area.

The "centre of gravity" of this application is the old Monarch Mine located just to the North of the Francistown City limits. This was the biggest historic producer of gold by far, some 240 000 oz of gold of the roughly 400 000 oz total historical production. This was extracted by underground mining from surface to 200 m vertical depth. Gold mineralisation, and the strong structure hosting it, continues at depths below 200 m as shown by drilling conducted by Monarch Goldfields (precursor to Gallery Gold and IAMGOLD) in 1995/1996.

In addition to potential underground Resources, there is the old Monarch Mine fines dump comprising approximately 500 000 tonnes of material grading 1.4 g/t, for some 20 000 oz.

To the North of the Monarch Mine are the old Mambo workings. These workings are shallow and have not been re-examined in any detail. Gallery Gold covered the area with their 400 m x 40 m regional soil sampling work, and then with 100 m x 25 m follow up sampling. Good anomalies were yielded over an area 3 km x 1.5 km and these were never followed up. There is good potential for economic gold in quartz, shear hosted mineralisation.

The Orapa Road anomalies comprise the "Selolwe", "Gerald", and "Mooke" groups, which are all located along a major 20 km long fault system to the west of Francistown. The fault was identified in a regional aeromagnetic survey in 1996 and gold in soil anomalies are developed sporadically along its length, which were identified by the Gallery Gold regional programs in 1996/1997, and which were never followed up.

The Orapa Road anomalies potentially constitute a classic case of gold ‘leakage’ up and along a strong structural system where subtle soil anomalies may be indicative of significant gold mineralisation at depth.

16 MINERAL PROCESSING AND METALLURGICAL TESTING

Detailed metallurgical test work was conducted on the various Mupane ore types, pre mine development, in 2003 at Ammtec Laboratory in Australia and managed by Metallurgical Design and Management (Australia) Pty Limited. The test work incorporated communition, gravity concentration, flotation, cyanide leaching, carbon kinetics, arsenic precipitation, cyanide destruction, and thickening and slurry viscosity measurements. The results of the test work are reported in the Bankable Feasibility study report of the project.

Samples for BFS metallurgical testing were supplied from the following ore bodies associated with the Mupane Gold Project:

- Tau primary (RC samples and diamond core)
- Tau oxide (RC samples)
- Kwena oxide (RC samples)
- Tolo oxide (RC samples)
- Signal Hill oxide (RC samples)

As the Tau ore resource represented in excess of 80% of the planned Mupane gold production, at that time, preliminary test work to define the process flow sheet was based on “Master Composite” samples of the Tau oxide and Tau primary ores. The process flow sheet developed was then used to test variability within the ore bodies on individual samples.

16.1 Summary of Past Test Work Results

A summary of the test work and results conducted is presented as follows:

16.1.1 Mupane Geology and Mineralisation

The host rocks at Mupane, defined as Graphitic Iron Formations (GIF) consist of fine grained quartz-amphibole-carbonate-graphite originating from fine grained clastic sediments. The host rock sequence has been metamorphosed to mid to upper Amphibolite facies. The GIF unit varies in width between 10 to 90 metres and have a plus 10 km strike length of which 6.5 km was determined to be anomalous in gold based on soil sampling, trenching and drilling results. The GIF is oxidised to depth of about 50 m to 70 m below surface (oxide ore) , with a narrow transition zone of about 10 m thick below which the gold mineralisation is characterised by arsenopyrite and pyrrhotite as the dominant sulphides with higher gold grades continuing at depth (primary ore).

16.1.2 Comminution

The primary ore was determined to be significantly more competent than the oxide ore and therefore comminution circuit design calculations were based on the primary ore. On the basis of flotation and cyanide leach test work, it was determined that the optimum primary grind size (P80) for the primary ore was 106 micron. Test work data indicated that a SAG/ball mill circuit provided the best design basis for the Mupane primary ore. Design was based around a nominal annual throughput of 1.0 Mt/a. Considering the lower grade of the oxide ore, a nominal annual throughput of 1.2 Mt/a was selected. This allowed a final product sizing (P80) from the selected circuit of approximately 79 micron. This was consistent with cyanide leach test work which indicated increasing gold recovery with decreasing grind size (P80) to around 75 micron.

16.1.3 Pre-concentration and Leach Test work

Preliminary results indicated that there was little coarse gold in the Mupane ores with gold typically less than 10 to 20 µm in size. Recoveries of gold to gravity concentrate appeared to be associated with the recovery of high specific gravity mineralisation in the ores carrying gold. For the primary ores the heavy mineral component includes arsenopyrite, pyrrhotite and pyrite, and for the oxide ores, the oxidation products of these minerals magnetite, haematite, goethite and arseniosiderite. Preliminary leach test work for the feasibility study therefore included the pre-concentration of gold by flotation for primary ores samples as well as continued work with gravity concentration on both the primary and oxide ore types.

During the development of the process flow sheet it became obvious that there was significant variation in gold recovery, particularly in the primary samples, with some areas providing poor recovery of gold using gravity concentration, regrind and cyanide leach. For these samples flotation and regrind provided a significant improvement in recovery and hence a circuit utilising flotation, regrind and leaching of concentrates and flotation tailings was selected for primary ores.

For oxide ores, primary grinding followed by whole ore leaching was selected.

16.1.4 Cyanide Leaching

For the primary ore it was determined that leaching of reground flotation concentrate followed by combined leaching of the resultant residues and flotation tailing for 24 hours, generally provided gold extractions in excess of 90%. Total oxide leach time was determined as approximately 29 hours. For the primary ore, cyanide and lime consumption was determined to be moderate to high with a relatively high oxygen demand. For the oxide ore, the cyanide and lime consumption was generally moderate, although the Kwena oxide ore exhibited a very high lime consumption averaging 7 kg/t.

16.1.5 Variability Testing

A large number of samples were tested to determine the overall recovery for each of the Mupane ore bodies. Results were variable with some primary ore samples indicating a degree of refractory gold in samples. These ores generally fell outside the pit shell at depth, or results were shown to be in error on subsequent diagnostic leaching. Results were weighted on the basis of metres of drilling represented. The overall predicted gold recovery for each of the ores is shown in the table below.

Table 16-1
Predicted gold recovery from different ores based on metallurgical testwork

Ore Source	Mill Feed Grade (g/t Au)	Estimated Recovery % Au
Tau - oxide	2.80	90.2
Tau – primary/transition	4.00	91.6
Tolo - oxide	2.49	87.4
Kwena - oxide	1.82	90.9
Signal Hill - oxide	2.69	82.4
Total	**3.42**	**90.4**

16.1.6 Thickening Test work

Thickening test work did not indicate any particular difficulties with satisfactory underflow densities at low to moderate flocculant consumption for both ore types.

16.1.7 Tailings Detoxification Circuit

The selected process route for cyanide destruction and arsenic precipitation is ferric sulphate addition. For both ore types, moderate additions of ferric sulphate resulted in arsenic levels lower than 1.0 mg/L. However, the primary ore sample indicated a relatively high level of free cyanide remaining in the detoxified tailings at 3.0 mg/L as well as very high levels of thiocyanate.

16.2 Summary of recent Test Work

Preliminary test work on a low grade low sulphur sample (probably oxide ore, although this is not explicitly stated) of has been carried out by COREM of Québec.

The fact that the new metallurgical test work has not been completed on sulphide ore and therefore not analysed the floatation component of the ore processing is a risk. The new test work does confirm the previous oxide test work.

16.2.1 Sample Characterisation

Samples of Golden Eagle ore were sent to COREM and characterized by chemical analysis. The assay results are presented in the following table

Element	Au	Fe	S	Cu	Pb	Zn	SiO2	Al2O3	MgO	CaO	K2O	TiO2	MnO	P2O5	Ni
Grade (%)	0.41 ppm	7.03	0.28	<0.01	<0.02	<0.2	49.4	13.7	5.66	9.9	1.56	0.81	0.2	0.11	<0.01

- The ore is low Au grade with 0,41 ppm compared to what was presented in previous report (3.7 - 3.9 ppm)
- Sulifide content is low at 0,28 S %.
- Base metals are also under detection limit.

16.2.2 Cyanidation Test Work

Cyanidation testwork were conducted in 2 steps

1. Determination of Cyanide dosage. Bottle cyanidations were conducted on 500 g samples in 750 ml NaCN solutions. Samples with p80 of 106 µm were leached with 500, 1000, 1500 and 2000 g NaCN/t.

The following was noted:

- Au concentration in residual solid is close or under detection limit. However, reconciled feed grade is mostly higher than assayed feed grade. Thus a tendency to overestimate the tailing grade is expected.
- Au recovery for all dosage of NaCN is higher than 88 and assumed higher 90 % after 48 hours
- Cyanidation is slow and requires 48 hours of leaching.
- A dosage of 500 g/t is sufficient for the recovery of gold

2. Determination of optimal P80

Bottle cyanidation were conducted on 500 g samples in 750 ml NaCN solution 4 samples with p80 of 75, 106, 106 and 125 µm were leached at 500 g/t of NaCN.

The following is noted:

- All test have provided 90 % recovery
- Final taillings grade is higher for test with p80 of 125 µm probably due to a nugget effect. However, recovery is still high at 90 %

- 48 hours of cyanidation time is necessary at all p80 to complete the gold dissolution.

16.2.3 Conclusion

- The Au content of the ore is 0,41 ppm
- The ore has low grade base metal (Cu, Pb, Zn below detection limit) and Sulfur (2800 ppm)
- Gold is readily leached at a p80 of 125 µm and with a dosage of 500 g/t NaCN
- Long cyanidation time is required (48 hours)

16.2.4 Recommendations

- Past tests have demonstrated that Lead Nitrate addition could improve the leaching kinetics. It is recommended to conduct leaching test with Lead nitrate addition in order to try to decrease leaching time under 24 hours and NaCN dosage under 500 g/t
- Provided ore seems low grade compared to actual planned feed of the circuit. Presented results should be confirmed on a new ore sample.
- Test on sample at p80 of 125 µm has shown a higher Au tailings grade due to high head grade. Result on this size distribution should be conducted again. Moreover, since kinetic is similar for all tested size distribution, a higher p80 than 125 µm could be convenient and should be tested.

16.3 Process Plant Description

The Mupane gold plant design was based on well understood and proven technology with the flow sheet consisting of the following:

The flow sheet consists of:

- Crushing.
- Grinding.
- Flotation (for primary ore).
- Cyanide leach/carbon adsorption.
- Carbon desorption.
- Gold recovery.
- Cyanide detoxification and arsenic precipitation.
- Tailings disposal.
- Reagent mixing, storage and distribution.
- Water and power supply.
- Other services.

A block process flow diagram of the plant is shown below. The plant was designed at nominal throughput rates of 1.0 Mtpa (125 tph) for primary ore and 1.2 Mtpa (150 tph) for oxide of ore at a mill availability of 91.3 % (8,000 h/a).

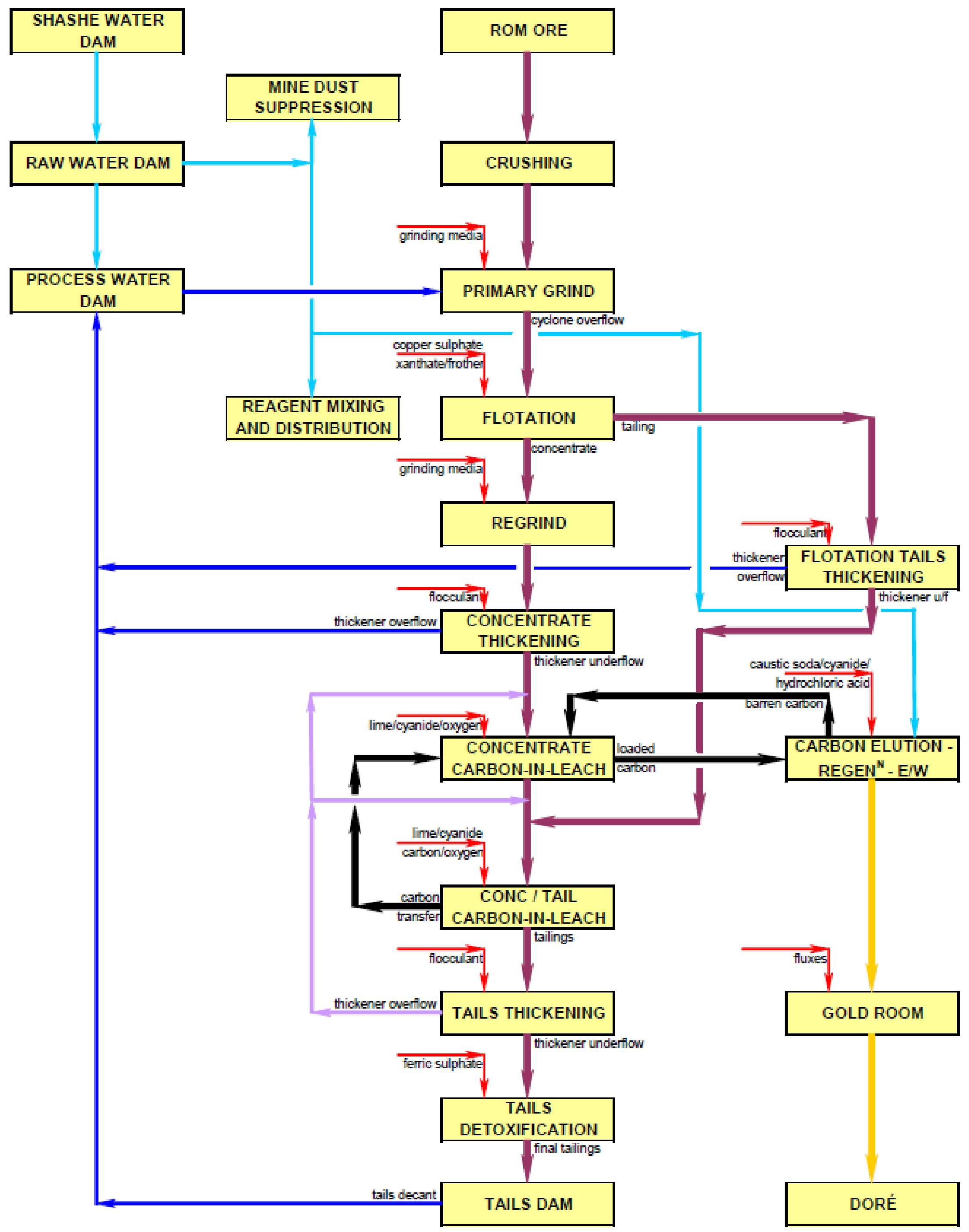
16.3.1 Plant Equipment

Basic installed equipment for the plant includes the following:

- 48" x 36" Kobelco Single Toggle Jaw Crusher operated with a CSS <100mm, @250 tph
- 21ft x 13ft Harding SAG mill with a 2500KW DC motor
- 13ft x 17ft Allis Chalmers Ball mill with a 1550KW AC motor

- 9ft x 14ft regrind mill with a 450KW AC motor
- Simple rougher/scavenger flotation circuit, 6 cells at 40m^3. Designed to treated 139 dry t/hr at 34% solids feed
- Conventional CIL circuit, 6 tanks @ 850m3 fitted with carbon retaining screens. Retention time 24 hrs at 150 tph and 52% solids
- Pressure Zadra elution circuit, 8m^3 elution vessel designed for 1 x 4t elution per day.

Figure 16-1
Process flow block diagram



17 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

The mineral resource estimation has been reviewed by Justin Glanvill. Mr Glanvill is a BSc Honours Graduate from the University of Natal, Durban (1997) and holds a Graduate Diploma in Engineering (primary focus on Geostatistics) from the University of the Witwatersrand. He is currently working on his MSc (Eng) in resource estimation at the University of the Witwatersrand.

He is a Professional Natural Scientist, validated by the South African Council for Natural Scientific Professions (Registration Number 40164/07). He is also an associate consultant of The MSA Group. His review of the mineral resource was undertaken in return for professional fees, the payment of which were in no way contingent on the results of the review.

The resource and reserve values have not been changed since the last values were released in December 2010.

17.1 Commentary on Resource Estimation

The competent person has not been able to fully verify the data or methodology used in the generation of the IAMGold resource. This review is solely reliant on the contents of the Mupane Mineral Reserve report dated December 2010 and the April 2011 site visit.

The following overview addresses each component of the mineral resource and mineral reserve estimate and highlights possible shortcomings identified.

17.1.1 Data

The data used for the mineral resource estimation is stored in a DATASHED database that is maintained on site by a single Data Clerk. The drilling data (both RC and Blast Hole) is captured from the hand written log sheets into an EXCEL template that is then imported into the locally stored DATASHED database. The import process has basic validations to ensure that missing intervals, zero length entries, gaps and overlaps are dealt with. There is no review of the captured data by the logging geologist with the only validation taking place during regular visits by a database specialist or when the data is being used for bench plans or mineral resource estimation.

The validation routines followed by the resource modeller cannot be commented on but it is assumed that gaps, overlaps, zero length entries and negative values are tested for.

17.1.2 Sample Compositing

It is noted that sample compositing of 2.5m is applied to the sample data. The reason for the selection of a 2.5m composite could be verified. In MSA's view it is not appropriate given that the sample length for RC and diamond drilling is 1m and the use of a 2.5m composite results in sample splitting and therefore an artificial reduction in the data variance. This would then impact the estimation process.

MSA recommends that whole integer multiples of the sample length are more appropriate.

17.1.3 Data Capping

Data capping refers to the practice of reviewing the data distributions (normally cumulative frequency distributions) and then capping or removing the sporadically distributed high grade values above a maximum threshold value. Typically the number of samples adjusted is limited to around 1% of the total data set.

In the case of the various Mupane estimations high assay values have been capped rather than cut, which is in line with best practice. However, the capping does seem to have been unusually aggressive with a large number of samples being affected This has the potential to undervalue the orebodies especially if the number of samples adjusted becomes statistically significant. However, it would seem that this effect is somewhat reduced by the use of a conditionally biased local estimate which would be negatively affected by retained high grade values.

17.1.4 Orebody Solids

It appears from the data observed, that the orebody solids have been constructed using a grade halo approach where a solid is constructed around samples with a grade of >0.3g/t. It is not known whether the solids were constructed around composited or raw data. Compositing of samples may increase the modelled volume slightly.

17.1.5 Block Modelling

Rotated block models have been produced which is beneficial as it reduces the possibility for induced anisotropy in the estimate by aligning the ore blocks to the primary orientation of the ore zones. However, it is MSAs opinion that the block sizes are too small. Blocks of this size (4x4x2.5) result in strong conditional bias and local estimates. This can result in reconciliation and planning problems. A more appropriate and acceptable blocks size would be half the drill spacing in the X-Y plane and a multiple of the sample length in the Z. This would probably be on the order of 10x5x5 (X-Y-Z) with the long side aligned with the strike of the orebody.

17.1.6 Estimation and Estimation Parameters

Inverse-Distance (IPD) estimation has been applied as an estimation method because it is apparently not possible to generate functional variograms for an unbiased linear estimator such as Ordinary Kriging.

The maximum number of samples per borehole has been limited in order to minimise the conditional bias by including samples away of the estimation point thereby providing a smoother and more global estimate.

The reasoning behind the number of samples and size of the search ellipse has not been explained and may not be fully appropriate to the orebody. The undulose nature of the orebodies can result in grades being extrapolated across gaps within the same zone. The possibility of unfolding the modelled zones or the use of a dynamic search ellipse (which would follow the local contours of the orebody) may be more appropriate.

17.1.7 Classification

Data density and search volumes have been used as the primary determinant in classification of the mineral resource into Measured, Indicated or Inferred. This tends to ignore the quality of the estimate. However, without the aid of derived values on which to base the classification methodology (for example from an Unbiased Linear estimator such as Ordinary Kriging) the use of these parameters is reasonable. Reconciliation figures for the last five years support the use of the classification method, at least up to the Indicated level.

17.1.8 Resources and Reserves

The mineral reserves have been defined by Whittle optimisation of the indicated and measured mineral resources using a gold value of USD 1 200 per oz. This is an appropriate figure. The increase in the gold price since this Whittle optimisation was done has been off-set by an increase in the cost per ounce due to a drop in grade during 2010.

The reconciliation data indicate that the long-term resource models underestimate the internal dilution but that the mining dilution is around 35%. Changes to the blast hole layout, improved short term planning and changes to loading in the pit could help reduce this very high level of dilution.

17.2 Database

For the purpose of this report, Gemcom software (Gems 6.2.2 version) was used to model all mineralized zones, create surfaces and interpolation profiles, including search ellipses designed in order to build the block models. To calculate the mineral inventory (resources/reserves) for each of the deposits, Surpac software (Surpac 6.1.3 version) was used.

Since June 2007, a Datashed database is used at the mine site to store all drilling information. Before that time, drilling information was stored in an Access Database. To import the data in a Jet4 type Gemcom database, ".csv" files are created and imported in a different Gems project for each of the deposits. The Gems database stores the project exploration data in a structured series of related tables (or workspaces) and is used to first produce cross- sections and plans with geological information, display drilling information modelling of the zones and resource/reserve estimation.

Data validation has been conducted in Datashed and Micromine at the mine site, and then in Gems Access Database during the most recent update. After validation by the resource geologist, the data was transferred into a dedicated workspace.

Surpac volumetric tools were used for volumetric calculations for each mineral resource and mineral reserve classification.

17.3 Treatment of High Grade Results

2.5m composites generated from the assay results table with assay grade over 0.3 g/t are constrained within ore zones solid limits. Poorly representative composites, missing assays and composites smaller than 1.25 m, such as composites created at the end of a solid interval or at the bottom of a hole, are not taken into consideration for resource estimation. Gold grade statistics from the set of composites are calculated and presented in the Deposit Parameters and Description section. The statistics are used to identify high grade values (outliers) that will be limited during the evaluation of resources through a capped value and during interpolation. During the interpolation, when the search ellipse reaches a composite with a grade higher than the High Grade Limit (HG limit lower than the grade value) defined previously, its value is reduced to the High Grade Limit and then incorporated in the resource estimations.

In some cases, when a composite grade exceeds the High Grade Transition Limit during the interpolation, the search ellipse axis ranges are cut in half. This way, high grades are confined into a more restricted search volume. The detailed limit parameters applied on each search ellipse are shown in Appendix 1.

17.4 Solids Modelling Methodology

The current resource estimates for the Mupane Gold Mine were produced using the 2009 block models created with the aid of Gemcom Software. This study includes a total of 10 individual Block Models named for the following deposits (Tau – Kwena – Tholo – AZone – BZone – FZone – WestZone – Tawana – Golden Eagle – Molomolo). Each deposit has its own database containing drilling information, polylines, surfaces and mineralized solids.

Modelling of the 3D mineralized envelopes as well as the block model resource estimation was performed using Gems version 6.2.2.

The interpretation was produced using polylines and tie- lines on 20 m thick sections and then checking on plan views to avoid unexpected changes of direction, and to ensure lateral continuity. The extension of the mineralized zones was restricted to a maximum of

20 m away from the closest drill hole information. Solids and drill holes intersections were then verified on sections to avoid any missing mineralized intervals inside the solids and to exclude waste zones from the solids. The minimum width was set to 3 m (true width) based on prior experience for this type of mineralisation.

Polylines were assembled with tie-lines to create multiple 3D solids. The minimum grade included inside the solids is 0.3 g Au/t.

17.5 Density Data

The density data used for the resource estimations was not available for review.

In situ bulk density samples were taken from each weathering type using diamond drill hole cores. The density measurements were performed using the coated wax method. An average of the density results was then calculated with the previous years' compiled results. The dry densities used in the resource estimates are stated in each deposits description parameters.

New density determinations (completed in 2011) using grab samples have been completed and are outlined in Appendix 2.

17.6 Dilution Values

Due to the nature of the ore bodies, dilution is unavoidable. In some cases (notably Kwena and Golden Eagle) internal dilution is prominent. In areas where the ore body is narrow (e.g. some areas in A-Zone) external dilution occurs. In calculating the reserve statement, a dilution factor of 20% was used for all the deposits, with the exception of Golden Eagle, where a dilution factor of 30% is used. These figures are based on reconciliation.

17.7 Interpolation method and parameters

Interpolations of grades in the block models are done using the inverse distance square method (ID2) with anisotropic distances. In all deposits, geological and mineralized contacts are considered as hard boundaries to avoid smearing gold grades from a mineralized zone to another or into the host rock. For all pits, anisotropic search ellipses are used and set according to the orientation and dip of the mineralized zones. Occasionally, more than one oriented ellipse was designed to fit the different shapes and orientations of the zones in a single deposit.

The parameters set to estimate gold grade in the block models are shown in detail in Appendix 1. During the interpolation process, the rock code for each block is derived from the rock code block model. Then the database scans the composites data set for composites associated to the same rock code and located within the limits of the search ellipse.

The grade evaluation is done using composites from a point area and is performed in three (3) different cumulative steps, corresponding to the level of confidence (measured, indicated and inferred).

17.8 Resource Classification for each deposit

Within all of the deposits, the mineral resources are classified as Measured, Indicated or Inferred. Detailed parameters used in the calculation of each resource and each resource category are presented in Appendix 1.

17.9 Recovery factors

During 2010 a mine call factor of 96% was achieved. During the previous years a mine call factors in excess of 100% were achieved. For this reason no ore recovery factors have been applied to the resource model.

17.10 Mineral Resource Statement

In order to compare the December 31 2009 Mineral Reserves/Resources statement with December 31 2010, Measured and Indicated resources were estimated unconfined by Whittle shells, while the Inferred resources were calculated confined within the USD 1200/oz Whittle shells. All resources were also estimated confined within the USD 1200/oz Whittle shells. Therefore, two different resources tables are presented in this report (measured, indicated and inferred confined and measured and indicated unconfined and inferred confined). In terms of resources, there is a decrease of 58 000 oz in the measured and indicated resources (unconfined) or 27 000 oz (confined) compare to December 31 2009 which was of 457 000 oz (unconfined). For inferred resources, the change is a decrease of 3 000 oz (confined) from December 31 2009 which was 81 000 oz.

Measured and indicated resources are quoted unconfined and confined at variable cutoffs depending of the deposits.

IAMGOLD owns a 100% interest in all deposits at the Mupane Gold Mines, other than the Golden Eagle deposit, in which it indirectly owns an 85% interest. Table 9.4 shows IAMGOLD's attributable resources as at December 31, 2010.

The first set of tables (Table 17-1 and table 17-2; 100% basis and Attributable) reports Measured and Indicated resources as unconfined and Inferred resources as confined (within a whittle shell using USD 1 200 per ounce), and presents a comparison with the December 31 2009 resources, as presented in the December 31, 2009 mineral reserve report.

Table 17.1
Comparison table for Mineral Resources (100% basis) Measured and Indicated unconfined and Inferred confined

Mineral Resources as of December 31, 2009 (1000 USD /oz)

		Measured			Indicated			Measured + Indicated (unconstrained)			Inferred (confined in 700 USD shell)		
Deposit	Cutoff Au (g/t)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
Kwena	0.9	262	1.87	16	285	1.68	15	547	1.76	31	128	1.99	8
Golden Eagle	1.0	-	-	-	1 680	2.07	112	1 680	2.07	112	58	3.33	6
Molomolo	1.0	26	2.96	2	171	2.19	12	197	2.21	14	16	2.33	1
Signal Hill	1.0	776	2.26	56	756	2.10	51	1 532	2.17	107	130	2.76	12
Tau	1.0	543	3.36	59	757	3.13	76	1 300	3.32	135	2	1.98	-
Tawana	0.9	-	-	-	191	2.22	13	191	2.12	13	36	3.18	4
Tholo	0.9	-	-	-	153	2.10	10	153	2.03	10	548	2.81	50
Stockpiles		921	1.18	35			-	921	1.18	35	-	-	-
Grand Total		2 528	2.07	168	3 993	2.25	289	6 521	2.18	457	918	2.74	81

Mineral Resources as of December 31, 2010 (1200 USD/oz)

		Measured			Indicated			Measured + Indicated (unconstrained)			Inferred (confined in 1000 USD shell)		
Deposit	Cutoff Au (g/t)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
Kwena	0.8	97	1.41	4	254	1.58	13	351	1.51	17	47	2.00	3
Golden Eagle	0.9				1 805	1.98	115	1 805	1.98	115	68	3.21	7
Molomolo	0.9	8	2.52	1	113	1.83	7	121	2.06	8	7	1.89	-
Signal Hill	0.9	521	2.21	37	549	2.10	37	1 070	2.15	74	173	2.27	13
Tau	0.8	579	3.22	60	810	2.98	78	1 389	3.09	138	47	2.93	4
Tawana					122	1.80	7	122	1.78	7			
Tholo	0.8				161	2.03	11	161	2.13	11	584	2.72	51
Stockpiles		745	1.20	29				745	1.21	29	-	-	-
Grand Total		1 950	2.09	131	3 814	2.19	268	5 764	2.15	399	926	2.62	78

Difference (Dec 2010 - Dec 2009)

		Measured			Indicated			Measured + Indicated (unconstrained)			Inferred		
Deposit		Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
Kwena		(165)	(0.46)	(12)	(31)	(0.10)	(2)	(196)	(0.26)	(14)	(81)	0.01	(5)
Golden Eagle		-	-	-	125	(0.09)	3	125	(0.09)	3	10	(0.12)	1
Molomolo		(18)	(0.44)	(1)	(58)	(0.36)	(5)	(76)	(0.15)	(6)	(9)	(0.44)	(1)
Signal Hill		(255)	(0.05)	(19)	(207)	-	(14)	(462)	(0.02)	(33)	43	(0.49)	1
Tau		36	(0.14)	1	53	(0.15)	2	89	(0.14)	3	45	0.95	4
Tawana		-	-	-	(69)	(0.42)	(6)	(69)	(0.33)	(6)	(36)	(3.18)	(4)
Tholo		-	-	-	8	(0.07)	1	8	0.09	1	36	(0.09)	1
Stockpiles		(176)	0.02	(6)	-	-	-	(176)	0.03	(6)	-	-	-
Grand Total		(578)	0.02	(37)	(179)	-0.07	(21)	(757)	-0.03	(58)	8	-0.12	(3)

Table 17.2
Comparison table for Mineral Resources (Attributable) MI-unconfined and Inferred

Mineral Resources as of December 31, 2009 (1000 USD /oz)

			Measured			Indicated			Measured + Indicated (unconstrained)			Inferred (confined in 700 USD shell)		
IMG Share	Deposit	Cutoff Au (g/t)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
100.0%	Kwena	0.9	262	1.87	16	285	1.68	15	547	1.76	31	128	1.99	8
85.0%	Golden Eagle	1.0	-	0.00	-	1 428	2.07	95	1 428	2.07	95	49	3.33	5
100.0%	Molomolo	1.0	26	2.96	2	171	2.19	12	197	2.21	14	16	2.33	1
100.0%	Signal Hill	1.0	776	2.26	56	756	2.10	51	1 532	2.17	107	130	2.76	12
100.0%	Tau	1.0	543	3.36	59	757	3.13	76	1 300	3.32	135	2	1.98	-
100.0%	Tawana	0.9	-	0.00	-	191	2.22	13	191	2.12	13	36	3.18	4
100.0%	Tholo	0.9	-	0.00	-	153	2.10	10	153	2.03	10	548	2.81	50
100.0%	Stockpiles		921	1.18	35	-	0.00	-	921	1.18	35	-	-	-
	Grand Total		2 528	2.07	168	3 741	2.25	272	6 269	2.18	440	909	2.74	80

Mineral Resources as of December 31, 2010 (1200 USD/oz)

			Measured			Indicated			Measured + Indicated (unconstrained)			Inferred (confined in 1000 USD shell)		
IMG Share	Deposit	Cutoff Au (g/t)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
100.0%	Kwena	0.8	97	1.41	4	254	1.58	13	351	1.51	17	47	2.00	3
85.0%	Golden Eagle	0.9	-	0.00	-	1 534	1.98	98	1 534	1.98	98	58	3.21	6
100.0%	Molomolo	0.9	8	2.52	1	113	1.83	7	121	2.06	8	7	1.89	-
100.0%	Signal Hill	0.9	521	2.21	37	549	2.10	37	1 070	2.15	74	173	2.27	13
100.0%	Tau	0.8	579	3.22	60	810	2.98	78	1 389	3.09	138	47	2.93	4
100.0%	Tawana	0.0	-	0.00	-	122	1.80	7	122	1.78	7	-	0.00	-
100.0%	Tholo	0.8	-	0.00	-	161	2.03	11	161	2.13	11	584	2.72	51
100.0%	Stockpiles		745	1.20	29	-	0.00	-	745	1.21	29	-	0.00	-
	Grand Total		1 950	2.09	131	3 543	2.20	251	5 493	2.16	382	916	2.61	77

Difference (Dec 2010 - Dec 2009)

			Measured			Indicated			Measured + Indicated (unconstrained)			Inferred		
IMG Share	Deposit		Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
100.0%	Kwena		(165)	(0.46)	(12)	(31)	(0.10)	(2)	(196)	(0.26)	(14)	(81)	0.01	(5)
85.0%	Golden Eagle		-	-	-	106	(0.09)	3	106	(0.09)	3	9	(0.12)	1
100.0%	Molomolo		(18)	(0.44)	(1)	(58)	(0.36)	(5)	(76)	(0.15)	(6)	(9)	(0.44)	(1)
100.0%	Signal Hill		(255)	(0.05)	(19)	(207)	-	(14)	(462)	(0.02)	(33)	43	(0.49)	1
100.0%	Tau		36	(0.14)	1	53	(0.15)	2	89	(0.14)	3	45	0.95	4
100.0%	Tawana		-	-	-	(69)	(0.42)	(6)	(69)	(0.33)	(6)	(36)	(3.18)	(4)
100.0%	Tholo		-	-	-	8	(0.07)	1	8	0.09	1	36	(0.09)	1
100.0%	Stockpiles		(176)	0.02	(6)	-	-	-	(176)	0.03	(6)	-	-	-
	Grand Total		(578)	0.02	(37)	(198)	-0.06	(21)	(776)	-0.02	(58)	7	-0.13	(3)

The second set of tables (100% basis and Attributable) presents all the December 2010 resources (Measured, Indicated and Inferred) constrained within a Whittle shell using USD 1 200 per ounce, and compares it to the December 2009 resource (Measured, Indicated and Inferred) constrained within a Whittle shell using USD 1 000 per ounce.

Table 17.3
Comparison table for Mineral Resources (100% basis) December 2010 Resources confined

Mineral Resources as of December 31, 2009 (1000 USD /oz) - All resources constrained within 1000 USD shell

		Measured			Indicated			Measured + Indicated (unconstrained)			Inferred (confined in 700 USD shell)		
Deposit	Cutoff Au (g/t)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
Kwena	0.9	233	1.94	14	171	1.86	10	404	1.85	24	128	1.99	8
Golden Eagle	1.0	-	-	-	604	2.20	43	604	2.20	43	58	3.33	6
Molomolo	1.0	25	3.01	2	110	2.56	9	135	2.53	11	16	2.33	1
Signal Hill	1.0	730	2.31	54	542	2.27	40	1 272	2.30	94	130	2.76	12
Tau	1.0	363	3.29	38	109	2.84	10	472	3.16	48	2	1.98	-
Tawana	0.9	-	-	-	102	2.74	9	102	2.74	9	36	3.18	4
Tholo	0.9	-	-	-	109	2.28	8	109	2.28	8	548	2.81	50
Stockpiles		921	1.18	35			-	921	1.18	35	-	-	-
Grand Total		2 272	1.96	143	1 747	2.30	129	4 019	2.11	272	918	2.74	81

Mineral Resources as of December 31, 2010 (1200 USD/oz) - undilute

		Measured			Indicated			Measured + Indicated (unconstrained)			Inferred (confined in 1000 USD shell)		
Deposit	Cutoff Au (g/t)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
Kwena	0.8	51	1.50	2	85	1.38	5	136	1.71	7	47	2.00	3
Golden Eagle	0.9				731	2.08	49	731	2.08	49	68	3.21	7
Molomolo	0.9	7	2.74	1	59	2.43	5	66	2.46	6	7	1.89	-
Signal Hill	0.9	501	2.23	36	321	2.30	24	822	2.26	60	173	2.27	13
Tau	0.8	491	3.19	50	367	2.94	35	858	3.08	85	47	2.93	4
Tawana													
Tholo	0.8				120	2.21	9	120	2.21	9	584	2.72	51
Stockpiles		745	1.20	29			-	745	1.20	29	-	-	-
Grand Total		1 795	2.04	118	1 683	2.35	127	3 478	2.19	245	926	2.62	78

Difference (Dec 2010 - Dec 2009)

		Measured			Indicated			Measured + Indicated (unconstrained)			Inferred		
Deposit		Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
Kwena		(182)	(0.44)	(12)	(86)	(0.03)	(5)	(268)	(0.14)	(17)	(81)	0.01	(5)
Golden Eagle		-	-	-	127	(0.12)	6	127	(0.12)	6	10	(0.12)	1
Molomolo		(18)	(0.27)	(1)	(51)	2.43	(4)	(69)	2.46	(5)	(9)	1.89	(1)
Signal Hill		(229)	(0.08)	(18)	(221)	0.03	(16)	(450)	(0.04)	(34)	43	(0.49)	1
Tau		128	(0.10)	12	258	0.10	25	386	(0.08)	37	45	0.95	4
Tawana		-	2.74	-	(102)	(0.31)	(9)	(102)	(0.28)	(9)	(36)	(1.29)	(4)
Tholo		-	-	-	11	(0.07)	1	11	(0.07)	1	36	(0.09)	1
Stockpiles		(176)	0.02	(6)	-	-	-	(176)	0.02	(6)	-	-	-
Grand Total		(477)	0.08	(25)	(64)	0.05	(2)	(541)	0.09	(27)	8	-0.13	(3)

Table 17.4
Comparison table for Mineral Resources (Attributable) December 2010 Resources

Mineral Resources as of December 31, 2009 (1000 USD /oz)

			Measured			Indicated			Measured + Indicated (unconstrained)			Inferred (confined in 700 USD shell)		
IMG Share	Deposit	Cutoff Au (g/t)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
100.0%	Kwena	1	233	1.94	14	171	1.86	10	404	1.85	24	128	1.99	8
85.0%	Golden Eagle	1.5	-	0.00	-	513	2.20	37	513	2.21	37	49	3.33	5
100.0%	Molomolo	1.1	25	3.01	2	110	2.56	9	135	2.53	11	16	2.33	1
100.0%	Signal Hill	1.1	730	2.31	54	542	2.27	40	1 272	2.30	94	130	2.76	12
100.0%	Tau	1.3	363	3.29	38	109	2.84	10	472	3.16	48	2	1.98	-
100.0%	Tawana	1.0	-	0.00	-	102	2.74	9	102	2.74	9	36	3.18	4
100.0%	Tholo	1.0	-	0.00	-	109	2.28	8	109	2.28	8	548	2.81	50
100.0%	Stockpiles		921	1.18	35		0.00	-	921	1.18	35	-	0.00	-
	Grand Total		2 272	1.96	143	1 656	2.30	123	3 928	2.10	266	909	2.74	80
														346

Mineral Resources as of December 31, 2010 (1200 USD/oz) - undiluted

			Measured			Indicated			Measured + Indicated (unconstrained)			Inferred (confined in 1000 USD shell)		
IMG Share	Deposit	Cutoff Au (g/t)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
100.0%	Kwena	0.8	51	1.50	2	85	1.38	5	136	1.71	7	47	2.00	3
85.0%	Golden Eagle	0.9	-	0.00	-	621	2.08	42	621	2.08	42	58	3.21	6
100.0%	Molomolo	0.9	7	2.74	1	59	2.43	5	66	2.46	6	7	1.89	-
100.0%	Signal Hill	0.9	501	2.23	36	321	2.30	24	822	2.26	60	173	2.27	13
100.0%	Tau	0.8	491	3.19	50	367	2.94	35	858	3.08	85	47	2.93	4
100.0%	Tawana		-	0.00	-	-	0.00	-	-	-	-	-	0.00	-
0.0%	Tholo	0.8	-	0.00	-	120	2.21	9	120	2.21	9	584	2.72	51
100.0%	Stockpiles		745	1.20	29	-	0.00	-	745	1.20	29	-	0.00	-
	Grand Total		1 795	2.04	118	1 573	2.37	120	3 368	2.19	238	916	2.61	77
														315

Difference (Dec 2010 - Dec 2009)

			Measured			Indicated			Measured + Indicated (unconstrained)			Inferred		
IMG Share	Deposit		Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
100.0%	Kwena		(182)	(0.44)	(12)	(86)	(0.03)	(5)	(268)	(0.14)	(17)	(81)	0.01	(5)
85.0%	Golden Eagle		-	-	-	108	(0.12)	5	108	(0.13)	5	10	(0.12)	1
100.0%	Molomolo		(18)	(0.27)	(1)	(51)	(0.13)	(4)	(69)	2.46	(5)	(9)	(0.44)	(1)
100.0%	Signal Hill		(229)	(0.08)	(18)	(221)	0.03	(16)	(450)	(0.04)	(34)	43	(0.49)	1
100.0%	Tau		128	(0.10)	12	258	0.10	25	386	(0.08)	37	45	0.95	4
100.0%	Tawana		-	-	-	(102)	(2.74)	(9)	(102)	(0.28)	(9)	(36)	(3.18)	(4)
100.0%	Tholo		-	-	-	11	(0.07)	1	11	(0.07)	1	36	(0.09)	1
100.0%	Stockpiles		(176)	0.02	(6)	-	-	-	(176)	0.02	(6)	-	-	-
	Grand Total		(477)	0.09	(25)	(83)	0.06	(3)	(560)	0.09	(28)	7	-0.13	(3)

17.11 Mineral Reserves

17.11.1 Economic Parameters & Cut-Off Grades

Pit optimization was performed using the Lerch-Grossman algorithm using Whittle software. This technique generates a series of optimal pits given the geological block models, operating costs, recoveries, geotechnical constraints and gold prices. The optimal pit chosen is normally one which maximizes the discounted and undiscounted cash flow at the given economic parameters. The pit design process is iterative. After the theoretical pit is obtained, additional constraints are added such as minimum mining widths. Practical mining access ramps are also included. The process is repeated until a stable design is obtained.

The economic parameters used in the optimization process are shown on the Table 17.5. In this context, oxide and fresh rock have different optimization parameters. For geotechnical pit wall design criteria, the slopes vary in oxide and fresh rock. An incremental ore haulage cost was included in the optimization process because of the different ore haulage distance for each pit.

Table 17.5
Optimization table used to calculate the cut-off grades

Cost assumptions for the end of December 2010 reserve report at Mupane Gold Mine

Pit (max depth)	Mining Costs at pit rim (USD/t mined)	Mining Costs midway (USD/t mined)	Mining Costs pit bottom (USD/t mined)	Extra Ore haulage (USD/ t ore)	Mining Costs Oxide (USD/t mined)	Mining Costs Fresh (USD/t mined)	G&A costs Fresh (USD/ t ore)	G&A costs Oxide (USD/ t ore)	Recovery Oxide (%)	Recovery Fresh (%)	Minimum tails oxide (g/t)	Minimum tails fresh (g/t)
Golden Eagle (80m)		USD 3.14		USD 4.27	USD 18.81	USD 21.49	USD 5.34	USD 5.34	88.0%	85%	0.15	0.22
Kwena (85m)		USD 2.52		USD -	USD 18.81	USD 21.49	USD 5.34	USD 5.34	88.0%	85%	0.15	0.22
Molomolo (30m)	USD 2.12			USD 3.89	USD 18.81		USD 5.34		88.0%		0.15	
Signal Hill A (75m)	UDS 2.12	UDS 2.12	USD 2.12	USD 3.35	USD 18.81	USD 21.49	USD 5.34	USD 5.34	88.0%	85%	0.15	0.22
Signal Hill F (75m)	USD 2.12			USD 3.35	USD 18.81		USD 5.34		88.0%		0.15	
Tau (200m)	USD 2.26	USD 2.49	USD 2.83	USD -		USD 21.49		USD 5.34		85%		0.22
Tholo (120m)		USD 2.52		USD -	USD 18.81	USD 21.49	USD 5.34	USD 5.34	88.0%	85%	0.15	0.22
Stockpiles				USD -	USD 18.81	USD 21.49	USD 5.34	USD 5.34	88.0%	85%	0.15	0.22

17.11.2 Recovery

The estimated recovery for ore is shown in Table 17.6. The recovery shown in the table reflects the recovery expected at cut-off, not the average recovery expected for the deposit.

Table 17.6
Costs associated with each of the deposits

	Golden Eagle	Kwena	Molomolo	Signal Hill	Tau	Tholo
	Anticipated LOM costs	Anticipated LOM costs	Anticipated LOM costs	Anticipated LOM costs	Anticipated LOM costs	Anticipated LOM costs
Haul + Process + G&A (USD/t)	31.10	26.83	28.04	27.50	26.83	26.83
Gold Price (USD/oz)	1 200	1 200	1 200	1 200	1 200	1 200
Gold Price (USD/g)	35.58	38.58	38.58	38.58	38.58	38.58
Recovery (%)	85%	85%	88%	88%	85%	85%
Cal cut-off grade (g/t)	0.91	0.76	0.85	0.85	0.76	0.76
Use cut-off grade (g/t)	0.90	0.80	0.90	0.90	0.80	0.80
Implied tails grade (g/t)	0.22	0.22	0.15	0.15	0.22	0.22

17.11.3 Metal Prices

The reserve estimates are all based on a gold price of USD 1 200 per ounce with sensitivity analysis done on a low price of USD 800 and a high price of USD 1 500 per ounce with USD 100 increments.

17.11.4 Pit Design and History

Kwena

The name Kwena is derived from the word Crocodile in Setswana. Mining commenced at Kwena during mid-year 2009. The pit is approximately 1.3 kilometres from the ROM pad (straight line) and approximately 1.6 kilometres via the haul road.

Golden Eagle

Mining has not yet commenced at Golden Eagle. Pit designs comprise both Golden Eagle and Kite zone (North East). The pits are approximately 19 kilometres from the Mupane ROM (straight line) and approximately 25km via the haul road.

Signal Hill

Mining commenced at Signal Hill in October 2008. The Signal Hill area includes West zone, A-zone (main, Ext1 and Noko), B-zone and Molomolo. The pits are approximately 25km from the Mupane ROM (haul road). A-zone Ext1 was mined out during 2010.

Molomolo

The Molomolo main pit is 30m deep (highest elevation at 925m and deepest elevation of 915m). The second pit is 20m deep.

Tawana

The name Tawana is derived from the word lion cub in Setswana. The pit is situated on the North East side of now depleted Tau pit. Mining commenced at Tawana during mid-year 2009. The pit was mined out during 2010.

The Tawana pit is 60m deep (highest elevation at 995m and deepest elevation of 935 meter).

17.11.5 Reserve Estimation Results

All the reserve estimations in this report come from the pits as designed by IAMGOLD personnel. The cut-offs from each pit differs slightly due to haulage distances to the mill and also due to material differences.

For this report all measured resources have been classified as proven reserves and all Indicated resources have been classified as Probable reserves. All low-grade and high-grade (ore) stockpiles are classified as Proven reserves.

There is a total of 1.7 million tonnes of ore material yet to be mined in pits and 0.7 million tonnes on stockpiles. Table 17.7 (100% basis) and Table 17.8 (attributable to IAMGOLD) show the breakdown of the mineral reserves for the Mupane operation.

Table 17.7
Breakdown of the mineral reserves for the Mupane Operation (100% basis)

MUPANE - MINERAL RESERVES (100%)

Mineral Reserves as of December 31, 2010 (1200 USD /oz)

		Proven			Probable			Total		
Deposit	**Cutoff Au (g/t)**	**Tonnes (000)**	**Au (g/t)**	**Au (000 oz)**	**Tones(000)**	**Au (g/t)**	**Au (000 oz)**	**Tones(000)**	**Au (g/t)**	**Au (000 oz)**
Kwena	0.8	9	1.55	-	80	1.61	4	89	1.61	4
Golden Eagle	0.9	-		-	677	1.87	41	677	1.87	41
Signal Hill	0.9	521	2.02	34	353	2.04	23	874	2.03	57
Molomolo	0.9	8	2.35	1	62	2.20	4	70	2.22	5
Stockpiles		745	1.20	29	-	-	-	745	1.20	29
Grand Total		1 283	1.55	64	1 172	1.91	72	2 456	1.72	136

	Ore	Waste	Total	
Deposit	**Tonnes (000)**	**Tonnes (000)**	**Tonnes (000)**	**Strip Ratio (W/O)**
Kwena	89	254	343	2.9
Golden Eagle	677	3 074	3 751	4.5
Signal Hill	874	6 817	7 691	7.8
Molomolo	70	311	381	4.4
Stockpiles	745	-	745	-
Grand Total	2 455	10 456	12 911	4.3

Table 17.8
Breakdown of the mineral reserves for the Mupane Operation (Attributable)

MUPANE - MINERAL RESERVES (ATTRIBUTABLE)

Mineral Resources as of December 31, 2010 (1200 USD /oz)

			Proven			Probable			Total		
IMG Share	Deposit	Cutoff Au (g/t)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tones(000)	Au (g/t)	Au (000 oz)	Tones(000)	Au (g/t)	Au (000 oz)
100%	**Kwena**	0.8	9	1.55	-	80	1.61	4	89	1.61	4
85%	**Golden Eagle**	0.9	-	-	-	575	1.87	35	575	1.87	35
100%	**Signal Hill**	0.9	521	2.02	34	353	2.04	23	874	2.03	57
100%	**Molomolo**	0.9	8	2.35	1	62	2.20	4	70	2.22	5
100%	**Stockpiles**		745	1.20	29	-	-	-	745	1.20	29
	Grand Total		1 283	1.55	64	1 070	1.92	66	2 353	1.72	130

17.12 Mineral Reserve Statement

December 31 2010 mineral reserves were estimated using a gold price of USD 1 200 per ounce while the December 31 2009 mineral reserves were produced on a gold price of USD 850 per ounce. In-situ gold reserves plus stockpiled ore decreased by 705 000 tonnes or 69 000 oz (-33.7%) compared to the January 2010 mineral reserves which published 205 000 oz of gold. Mining activities were completed at Tawana. Although there is still minable ore in Kwena, mining was stopped during 2010 as the pit moved from oxides to sulphides and the plant only required oxide ore. However, mining activities increased substantially at the Signal Hill oxide deposits where West zone, B-zone and A-zone Extension1 were mined out. The net change in oz from 2009 to 2010 was negative by 69 000 oz. The explanation of these changes is outlined below;

- 63 000 oz were depleted from mining and milling (from Tawana, Kwena, Signal Hill (A-zone, A-zone Ext1, Noko, B-zone and West Zones) deposits as well as stockpiles.
- 6 000 oz were depleted from the Molomolo deposit (not in reserve before).
- Molomolo obtained a mining license and the material remaining during 2010 was added to reserves (+ 5 000 oz).
- Golden Eagle reserves remained unchanged. The positive gains due to a higher gold price and lower cut-off grade were eroded by higher costs.
- The Signal Hill reserve was overstated during the December 2009 reserve report and was consequently corrected (-11 000 oz).

Factors that influenced the Mupane Gold Mine ("MGM") reserves positively between 2009 and 2010 were the change of gold price from USD 850 per ounce as at December 31 2009 to USD 1 200 per ounce as at December 31 2010. This resulted in higher revenue as well as lower cut-off grades. However, the positive gain was mostly eroded by increased costs. The only reserve increase was noted at Molomolo with its inclusion into reserves following the obtainment of the mining license. Decreases in reserves were observed for Kwena (-79%), Tawana (-100%) and Signal Hill (-45%). Ore stockpiles also decreased by 17% compared to December 31 2009, standing at 745 000 tonnes averaging 1.20 g Au/t for 29 000 oz as at December 31 2010.

Table 17.9
Comparison Mineral Reserve - Dec 2009 versus Dec 2010 (100% Basis)

Mineral Reserves as of December 31, 2009 (850 USD /oz)

		Proven			Probable			Total		
Deposit	Cutoff Au (g/t)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
Kwena	1.0	172	2.13	12	111	1.95	7	283	2.06	19
Golden Eagle	1.2	-	-	-	551	2.31	41	551	2.31	41
Signal Hill	1.1	723	2.41	56	610	2.38	47	1 333	2.40	103
Tawana	1.0	-	-	-	72	2.97	7	72	2.97	7
Stockpiles		921	1.18	35	-	-	-	921	1.18	35
Grand Total		1 816	1.76	103	1 344	2.36	102	3 160	2.02	205

Mineral Reserves as of December 31, 2009 (1200 USD /oz)

		Proven			Probable			Total		
Deposit	Cutoff Au (g/t)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
Kwena	0.8	9	1.55	-	80	1.61	4	89	1.61	4
Golden Eagle	0.9	-		-	677	1.87	41	677	1.87	41
Signal Hill	0.9	521	2.02	34	353	2.04	23	874	2.03	57
Molomolo	0.9	8	2.35	1	62	2.20	4	70	2.22	5
Stockpiles		745	1.20	29	-	-	-	745	1.20	29
Grand Total		1 283	1.55	64	1 172	1.91	72	2 456	1.72	136

Difference (Dec 2010 - Dec 2009)

		Proven			Probable			Total		
Deposit	Cutoff Au (g/t)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
Kwena		(163)	(0.58)	(12)	(31)	(0.34)	(3)	(194)	(0.45)	(15)
Golden Eagle		-	-	-	126	(0.44)	-	126	(0.44)	-
Signal Hill		(202)	(0.39)	(22)	(257)	(0.34)	(24)	(459)	(0.37)	(46)
Tawana		-	-	-	(72)	(2.97)	(7)	(72)	(2.97)	(7)
Molomolo		8	2.35	1	62	2.20	4	70	2.22	5
Stockpiles		(176)	0.02	(6)	-	-	-	(176)	0.02	(6)
Grand Total		(533)	(0.21)	(39)	-172	(0.45)	(30)	(705)	(0.29)	(69)

Table 17.10
Comparison Mineral Reserve - Dec 2009 versus Dec 2010 (Attributable)

Mineral Reserves as of December 31, 2009 (850 USD /oz)

			Proven			Probable			Total		
IMG Share	Deposit	Cutoff Au (g/t)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tonnes (000)	Au (g/t)	Au (000 oz)
100%	Kwena	1.0	172	2.13	12	111	1.95	7	283	2.09	19
85%	Golden Eagle	1.5	-	0.00	-	468	2.31	35	468	2.31	35
100%	Signal Hill	1.1	723	2.41	56	610	2.38	47	1 333	2.40	103
100%	Tawana	1.1	-	0.00	-	72	2.97	7	72	3.02	7
100%	Stockpiles		921	1.18	35	-	-	-	921	1.18	35
	Grand Total		1 816	1.76	103	1 261	2.36	96	3 077	2.01	199

Mineral Reserves as of December 31, 2009 (1200 USD /oz)

			Proven			Probable			Total		
IMG Share	Deposit	Cutoff Au (g/t)	Tonnes (000)	Au (g/t)	Au (000 oz)	Tones(000)	Au 9g/t)	Au (000 oz)	Tones(000)	Au (g/t)	Au (000 oz)
100%	Kwena	0.8	9	1.55	-	80	1.61	4	89	1.61	4
85%	Golden Eagle	0.9	-	-	-	575	1.87	35	575	1.87	35
100%	Signal Hill	0.9	521	2.02	34	353	2.04	23	874	2.03	57
100%	Molomolo	0.9	8	2.35	1	62	2.20	4	70	2.22	5
100%	Stockpiles		745	1.20	29	-	-	-	745	1.20	29
	Grand Total		1 283	1.55	64	1 070	1.92	66	2 353	1.72	130

Difference (Dec 2010 - Dec 2009)

			Proven			Probable			Total		
IMG Share	Deposit		Tonnes (000)	Au (g/t)	Au (000 oz)	Tones(000)	Au 9g/t)	Au (000 oz)	Tones(000)	Au (g/t)	Au (000 oz)
100%	Kwena		(163)	(0.58)	(12)	(31)	(0.34)	(3)	(194)	(0.48)	(15)
85%	Golden Eagle		-	-	-	107	(0.44)	-	107	(0.44)	0
100%	Signal Hill		(202)	(0.39)	(22)	(257)	(0.34)	(24)	(459)	(0.37)	(46)
100%	Tawana		-	-	-	(72)	(2.97)	(7)	(72)	(3.02)	(7)
	Molomolo		8	2.35	1	62	2.20	4	70	2.22	5
100%	Stockpiles		(176)	0.02	(6)	-	-	-	(176)	0.02	(6)
	Grand Total		(533)	(0.21)	(39)	(191)	(0.45)	(30)	(724)	(0.29)	(69)

Table 17.11
Sensitivity table for Resources (100% basis)

Gold Price USD/oz	Ore Tonnes (000)	Grade g/t	Gold Ounces (000)
USD 800	2 210	2.33	166
USD 900	2 996	2.43	235
USD 1,000.00	3 668	2.34	276
USD 1,100.00	4 331	2.31	321
USD 1,200.00	4 959	2.29	365
USD 1,300.00	5 670	2.27	415
USD 1,400.00	6 351	2.23	455
USD 1,500.00	6 875	2.22	490

Table 17.12

Sensitivity table for Resources (Attributable)

Gold Price USD/oz	Ore Tonnes (000)	Grade g/t	Gold Ounces (000)
USD 800	2 170	2.33	163
USD 900	2 948	2.43	230
USD 1,000.00	3 601	2.34	271
USD 1,100.00	4 231	2.31	314
USD 1,200.00	4 830	2.29	356
USD 1,300.00	5 518	2.28	404
USD 1,400.00	6 155	2.23	442
USD 1,500.00	6 654	2.22	76

Sensitivities were calculated using Whittle shells based on measured, indicated and inferred resources and do not consider the practicality of the pushback.

Sensitivity analysis showed that the Tholo deposit is very sensitive to gold price varying from 3 000 oz at a USD 800 gold price to 68 000 oz at a USD 1500 gold price. Tau also indicated significant potential, varying from 29 000 oz to 129 000 oz. Kwena varied from 6 000 oz at a USD 800 gold price to 40 000 oz at a USD 1 500 gold price. A full pushback could be considered at a gold price of around USD 1 400 and above (Table 17.13 and Table 17.14).

Table 17.13
Sensitivity results (100% Basis)

(100% Basis)							
$/Oz	Deposit	Tonne ('000)	Grade	Oz ('000)	TOTAL		
800	Kwena	84	2.18	6			
	Golden Eagle	265	2.63	22			
	Molomolo	51	2.93	5			
	Signal Hill	504	2.90	47			
	Tau	491	3.32	52			
	Tawana	20	3.82	2			
	Tholo	50	2.12	3			
	Stockpiles	745	1.20	29	2,210	2.33	166
900	Kwena	121	2.05	8			
	Golden Eagle	323	2.56	27			
	Molomolo	63	2.67	5			
	Signal Hill	600	2.75	53			
	Tau	545	3.23	57			
	Tawana	30	3.30	3			
	Tholo	569	2.74	52			
	Stockpiles	745	1.20	29	2,996	2.43	235
1,000	Kwena	223	1.89	14			
	Golden Eagle	444	2.38	34			
	Molomolo	86	2.50	7			
	Signal Hill	843	2.47	67			
	Tau	652	3.15	66			
	Tawana	38	3.00	4			
	Tholo	637	2.69	55			
	Stockpiles	745	1.20	29	3,668	2.34	276
1,100	Kwena	319	1.83	19			
	Golden Eagle	669	2.24	48			
	Molomolo	97	2.37	7			
	Signal Hill	972	2.39	75			
	Tau	805	3.14	81			
	Tawana	42	2.84	4			
	Tholo	682	2.66	58			
	Stockpiles	745	1.20	29	4,331	2.31	321
1,200	Kwena	422	1.79	24			
	Golden Eagle	858	2.17	60			
	Molomolo	114	2.21	8			
	Signal Hill	1,121	2.31	83			
	Tau	937	3.19	96			
	Tawana	54	2.66	5			
	Tholo	708	2.63	60			
	Stockpiles	745	1.20	29	4,959	2.29	365
1,300	Kwena	519	1.76	29			
	Golden Eagle	1,011	2.12	69			
	Molomolo	122	2.17	9			
	Signal Hill	1,312	2.25	95			
	Tau	1,089	3.19	112			
	Tawana	96	2.18	7			
	Tholo	776	2.61	65			
	Stockpiles	745	1.20	29	5,670	2.27	415
1,400	Kwena	658	1.72	36			
	Golden Eagle	1,306	2.08	87			
	Molomolo	138	2.05	9			
	Signal Hill	1,417	2.22	101			
	Tau	1,162	3.17	119			
	Tawana	106	2.10	7			
	Tholo	819	2.56	67			
	Stockpiles	745	1.20	29	6,351	2.23	455
1,500	Kwena	732	1.71	40			
	Golden Eagle	1,471	2.06	98			
	Molomolo	164	1.97	10			
	Signal Hill	1,531	2.19	108			
	Tau	1,285	3.13	129			
	Tawana	115	2.04	8			
	Tholo	832	2.54	68			
	Stockpiles	745	1.20	29	6,875	2.22	490

Table 17.14
Sensitivity results (attributable)

$/Oz	Deposit	Tonne ('000)	Grade	Oz ('000)	TOTAL		
800	Kwena	84	2.18	6			
	Golden Eagle	225	2.24	19			
	Molomolo	51	2.93	5			
	Signal Hill	504	2.90	47			
	Tau	491	3.32	52			
	Tawana	20	3.82	2			
	Tholo	50	2.12	3			
	Stockpiles	745	1.20	29	2,170	2.33	163
900	Kwena	121	2.05	8			
	Golden Eagle	275	2.18	23			
	Molomolo	63	2.67	5			
	Signal Hill	600	2.75	53			
	Tau	545	3.23	57			
	Tawana	30	3.30	3			
	Tholo	569	2.74	52			
	Stockpiles	745	1.20	29	2,948	2.43	230
1,000	Kwena	223	1.89	14			
	Golden Eagle	377	2.02	29			
	Molomolo	86	2.50	7			
	Signal Hill	843	2.47	67			
	Tau	652	3.15	66			
	Tawana	38	3.00	4			
	Tholo	637	2.69	55			
	Stockpiles	745	1.20	29	3,601	2.34	271
1,100	Kwena	319	1.83	19			
	Golden Eagle	569	1.90	41			
	Molomolo	97	2.37	7			
	Signal Hill	972	2.39	75			
	Tau	805	3.14	81			
	Tawana	42	2.84	4			
	Tholo	682	2.66	58			
	Stockpiles	745	1.20	29	4,231	2.31	314
1,200	Kwena	422	1.79	24			
	Golden Eagle	729	1.84	51			
	Molomolo	114	2.21	8			
	Signal Hill	1,121	2.31	83			
	Tau	937	3.19	96			
	Tawana	54	2.66	5			
	Tholo	708	2.63	60			
	Stockpiles	745	1.20	29	4,830	2.29	356
1,300	Kwena	519	1.76	29			
	Golden Eagle	859	1.80	59			
	Molomolo	122	2.17	9			
	Signal Hill	1,312	2.25	95			
	Tau	1,089	3.19	112			
	Tawana	96	2.18	7			
	Tholo	776	2.61	65			
	Stockpiles	745	1.20	29	5,518	2.28	404
1,400	Kwena	658	1.72	36			
	Golden Eagle	1,110	1.77	74			
	Molomolo	138	2.05	9			
	Signal Hill	1,417	2.22	101			
	Tau	1,162	3.17	119			
	Tawana	106	2.10	7			
	Tholo	819	2.56	67			
	Stockpiles	745	1.20	29	6,155	2.23	442
1,500	Kwena	732	1.71	40			
	Golden Eagle	1,250	1.75	83			
	Molomolo	164	1.97	10			
	Signal Hill	1,531	2.19	108			
	Tau	1,285	3.13	129			
	Tawana	115	2.04	8			
	Tholo	832	2.54	68			
	Stockpiles	745	1.20	29	6,654	2.22	476

17.13 Reconciliation

17.13.1 Reconciliation with Grade Control

The reconciliation between grade control model and mine/mill production is compiled by the geology department on a monthly basis. Reconciliation of grade control versus the mill is done by following several steps;

1. All trucked information is recorded into a table that shows estimated tonnes and grade for each block to each finger. No dilution is applied to this figure;

2. Fingers are not to exceed 30 000 tonnes in size, once a finger has been milled completely the finger is 'zeroed' and ready to be dumped upon again;

3. ROM blending is determined at the daily production meeting with a sheet showing this blend supplied to the ROM loader on a daily basis. This will set material types and grade for next 24 hours;

4. The loads tipped are allocated against specific locations. Truck loads delivered at the ROM pad are captured into a table;

5. Grade for the day is determined from the blocks loaded from the flitch plans and the grade accordingly assigned;

6. These numbers can then be used to estimate the tonnes and grade of material that is fed during the month.

The Table 17.15 presents the data for the last four years (up to December 31 2010).

Table 17.15
Grade Reconciliation between Grade control and mill

	Monthly Processing Data				Production Data (truck tallies)			Reserve Ounces	Mine Call Factor
	Actual Dry Tonnes	Actual Head Grade	Ounces (in Situ)	Total Ounces Recovered	Predicted Tonnes	Predicted Grade	Predicted Ounces		
Jan-10	75,187	1.80	4347	3,918	64,629	2.06	4,277	7,838	55%
Feb-10	90,856	1.76	5151	4,377	94,347	1.88	5,708	4,118	125%
Mar-10	84,371	2.04	5524	4,765	121,332	1.57	6,135	5,882	94%
Apr-10	88,959	1.63	4663	3,474	85,589	1.82	5,005	3,862	121%
May-10	100,390	1.82	5882	4,838	124,100	1.89	7,539	5,380	109%
Jun-10	89,241	1.97	5657	4,763	132,506	1.75	7,468	5,364	105%
Jul-10	82,571	2.25	5967	5,197	134,042	2.12	9,153	5,350	112%
Aug-10	100,545	1.92	6205	5,383	138,372	1.92	8,524	7,153	87%
Sep-10	132,008	1.39	5881	5,021	133,740	1.68	7,210	6,438	91%
Oct-10	90,563	1.87	5438	4,666	108,053	1.85	6,413	6,627	82%
Nov-10	75,124	2.22	5352	4,687	124,755	1.38	5,534	3,662	146%
Dec-10	112,932	1.78	6457	5,934	137,229	1.63	7,175	7,696	84%
TOTAL 2010	**1,122,747**	**1.84**	**66,525**	**57,023**	**1,398,693**	**1.78**	**80,142**	**69,369**	**96%**
TOTAL 2007	811,417	3.45	90,002	89,876	753,080	3.68	96,003	96,068	94%
TOTAL 2008	1,076,646	3.49	120,893	101,559	915,192	3.62	125,308	105,134	115%
TOTAL 2009	899,383	2.16	62,500	50,990	822,657	2.23	67,656	54,698	114%
TOTAL 07-10	**3,910,193**	**2.70**	**339,920**	**299,448**	**3,889,622**	**2.83**	**369,109**	**325,269**	**105%**

Table 17.15 shows that in 2010, the Grade Control (RCGC and blast hole sampling) model driving the flitch plans underestimated the reconciled mill feed head grade by about 3% and overestimated the oz by about 20%. According to the grade control model, the tonnage fed to the crusher is 25% more than the reconciled mill feed. This is either the result of an over measurement of survey volumes and truck tallies or a under measurement of the tonnage that is processed by the plant.

At the end of December 2010, the Mine Call factor, comparing reconciled mill feed oz with the block model oz, was 96% for the year. In the 2010 report the 2009 block models were used to calculate the reserve oz whereas the 2007 to 2009 reports used the MIK models.

17.13.2 Reconciliation between Resource Models and Grade Control

The reconciliation between the grade control production data and the block models are presented in the Table 17.16

Table 17.16
Mupane resource models vs. reconciled Grade control model (Mill) at a 1.1Au g/t cut-off

	Grade Control Model (Truck Tallies)			Block Model (2009) and stockpile adjustments		
Months	Tonnes	Grade	Ounces	Tonnes	Grade	Ounces
Jan-10	64,629	4.03	4,277	115,873	2.10	7,838
Feb-10	94,347	2.18	5,708	65,006	1.97	4,118
Mar-10	121,332	3.06	6,135	99,915	1.83	5,882
Apr-10	85,589	1.87	5,005	80,429	1.49	3,862
May-10	124,100	2.04	7,539	68,555	2.44	5,380
Jun-10	132,506	3.71	7,468	62,926	2.65	5,364
Jul-10	134,042	2.56	9,153	67,440	2.47	5,350
Aug-10	138,372	2.13	8,524	106,545	2.09	7,153
Sep-10	133,740	0.52	7,210	99,308	2.03	6,438
Oct-10	108,053	2.14	6,413	99,832	2.06	6,627
Nov-10	124,755	1.96	5,534	64,802	1.76	3,662
Dec-10	137,229	2.18	7,175	102,222	2.34	7,696
TOTAL 2010	**1,398,693**	**1.78**	**80,142**	**1,032,851**	**2.09**	**69,369**
Mine Call Factor applied (-4% on Grade)	**1,398,693**	**1.59**	**76,856**	**1,032,851**	**2.09**	**69,369**
Grade Control vs Block Model	**100%**	**100%**	**100%**	**135%**	**76%**	**111%**

According to the truck tallies and survey measured volumes there was 35% more material moved to the ROM pad than estimated from the block models. This is an indication that the average dilution for 2010 was 35%. It is also evident that the grade control expected feed grade is 24% lower than the expected grade from the block models. Furthermore, the grade control oz are 11% more than the block model, after the mine call factor was applied. This is an indication that blast hole sampling does pick up and compensate for the internal dilution, but not the external dilution.

It is also important to compare the economic cut-off (0.7 g Au/t). Table 17.17 includes the tonnage and grade produced for the material between 0.7 g Au/t and 1.1 g Au/t.

Table 17.17
Mupane Mine Grade control model vs. block model at 0.7 g Au/t cut-off

	Grade Control Model (Truck Tallies)			Block Model 2009		
Cut off	Tonnes	Grade	Ounces	Tonnes	Grade	Ounces
>1.1g/t	1,398,693	1.78	80,142	1,032,851	2.09	69,369
>0.7g/t <1.1g/t	224,057	0.78	5,640	210,785	0.89	6,022
TOTAL	**1,622,750**	**1.64**	**85,782**	**1,243,636**	**1.89**	**75,392**
Mine Call Factor applied (-4% on Grade)	**1,622,750**	**1.47**	**82,265**	**1,243,636**	**1.89**	**75,392**
Reconcilliation vs Actual Production	**100%**	**100%**	**100%**	**130%**	**78%**	**109%**

Table 17.17 shows that, for a cut-off grade of 1.1 g Au/t, the 2009 block models underestimate the tonnage and overestimate the grade. It does not consider internal dilution. However, external dilution is excessive and can be controlled by the mine.

The December 2009 block models show a 9% discrepancy with the grade control model, in terms of oz of gold, at ore material higher than 0.7 g Au/t. This number is an indication of the external dilution.

17.13.3 Stockpiles

At the end of December 2010 a total of about 6.802 million tonnes of ore had been mined from the open pits at Mupane since 2005 compared to 5.855 million tonnes of ore in 2009. Of this, 6.057 million tonnes of ore, compared to 4.934 in 2009, had been processed with the balance stockpiled for later treatment. The majority of this stockpiled material (94%) is consider low-grade and will be processed when higher grade material is exhausted (Table 17.18).

In this report, LG2 and the Signal Hill sub-grade stockpiles are not reported in the overall stockpile balances (and in the reserves) as it is mineralised waste (0.78 g Au/t) and currently classified as uneconomic under the current cost structure. This material may become economic at a later date, which is why it is stockpiled separately to ore and waste. At the end of December 2010, 1.4 million tonnes of subgrade material were stockpiled at 0.78 g Au/t (approximately 36 000 oz).

The stockpile balances and description are shown in below.

Table 17.18
Reconciled stockpile figure for the Mupane Mine in 2010

	Closing Stocks End of December 2009			Addition/Rehandle			Closing Stocks End of December 2010		
	Dry Tonnes	Grade (g/t)	Cont. Au (oz)	Dry Tonnes	Grade (g/t)	Cont. Au (oz)	Dry Tonnes	Grade (g/t)	Cont. Au (oz)
Oxide - HG Ore	41,216	2.10	2,783	(39,215)	2.12	(2,677)	2,001	1.65	106
Sulphide - HG Ore	31,384	1.62	1,635	10,769	1.53	529	42,153	1.60	2,164
Oxide - LG Ore	613,365	1.07	21,100	(147,039)	0.88	(4,156)	466,327	1.13	16,944
Sulphide - LG Ore	234,853	1.25	9,438	-		-	234,853	1.25	9,438
Total Ore	**920,818**	**1.18**	**34,956**	**(175,484)**	**1.12**	**(6,304)**	**745,334**	**1.20**	**28,652**

18 PRODUCTION PROPERTY TECHNICAL AND ECONOMIC STUDIES

18.1 Mineral Reserve

On 31 December 2010, Mupane Gold Mining (Pty) Ltd. produced a Mineral Reserve Report based on a gold price of USD 1 200/oz from within the confines of the open pit designs. The cut-off from each pit differs slightly due to haulage distances to the mill and also due to material differences.

The location of the open pits is shown in Figure 18-1. These open pits form the basis of a life-of-mine (LoM) plan that is supported by the Mineral Reserve estimates. Processing of the run-of-mine (ROM) ore is through the existing processing plant located on the Mupane property (Figure 18-1). Two different contractors assist with hauling ore from Signal Hill to the treatment plant. One uses ten Scania 35t rear dumper trucks whilst the other uses ten Scania 40t side dumpers.

Figure 18-1
Map of the Mupane property showing the location of the open pits

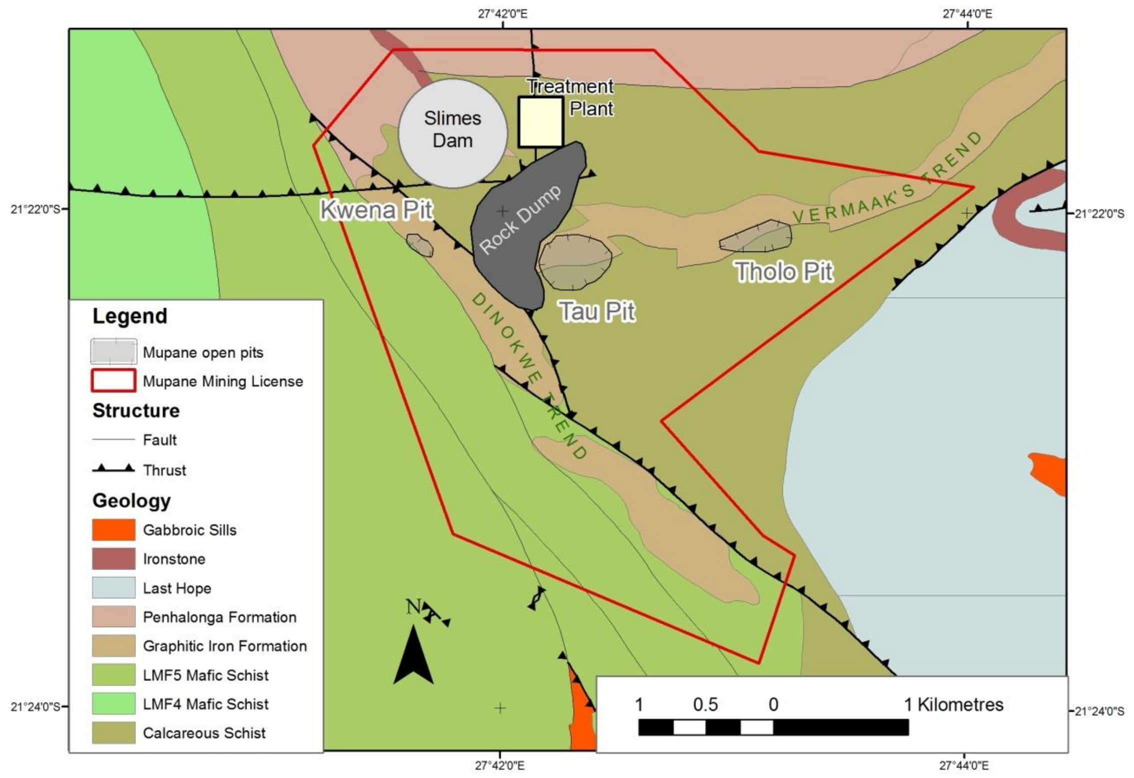


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Figure 18-2

Map of the Signal Hill and Molomolo properties showing the location of the open pits

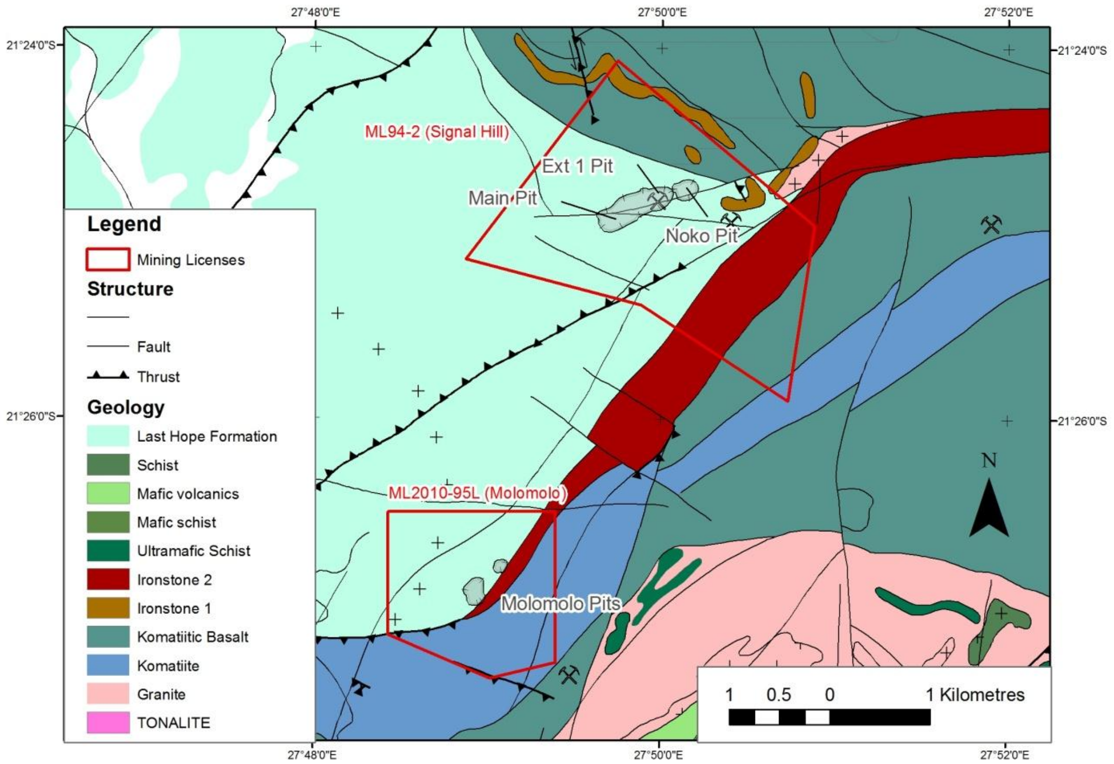
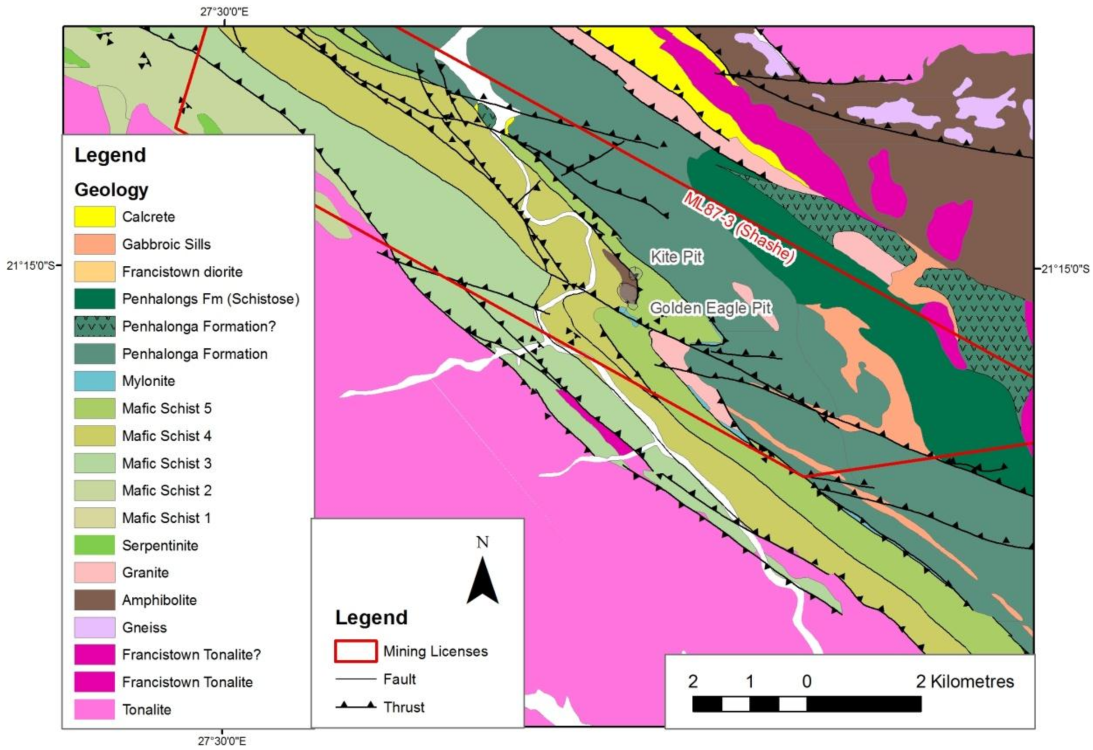


Figure 18-3

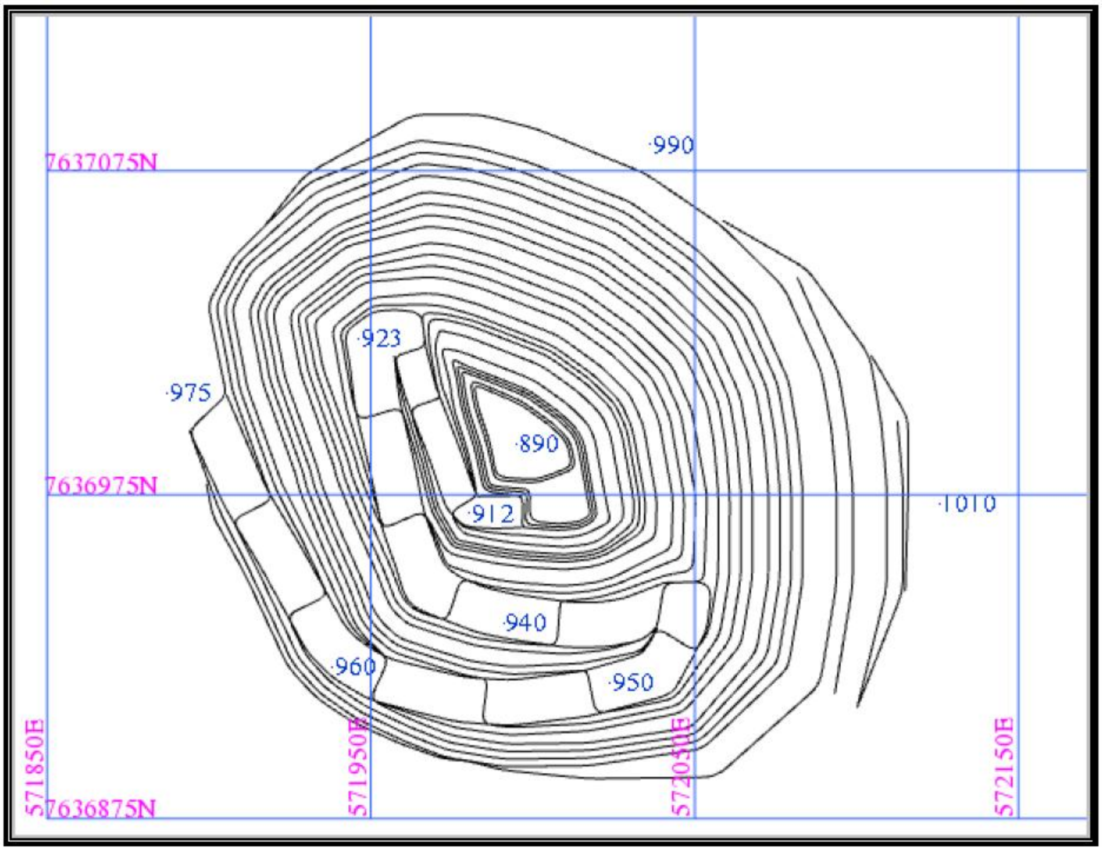
Map of the Shahse property showing the location of the open pits



The Kwena open pit (Figure 18-4), which was started during 2009, is approximately 1.3 km from the ROM pad (straight line) and about 1.6 km via the haul road. It is expected to be 120 m deep when depleted. It is understood that mining stopped during 2010 as the digging moved from oxides to sulphides.

Figure 18-4
Bench plan of the Kwena open pit.

North is up and the gridlines are 100m apart. Figures in blue indicate elevation above sea level.



The Signal Hill area, which includes Molomolo (Figure 18-5), West Zone, A-Zone, Main, Ext1 and Noko (Figure 18-6) and B-Zone, is about 25 km from the Mupane ROM via the haul road. Mining of the open pits started in October 2008, with mining of the A-Zone Ext1 being completed during 2010. It is noted that mining activities from the oxide deposits in this area have increased substantially in the past few months.

Figure 18-5

Bench plan of the Molomolo open pits, Signal Hill area.

North is up and the gridlines are 100m apart. Figures in blue indicate elevation above sea level.

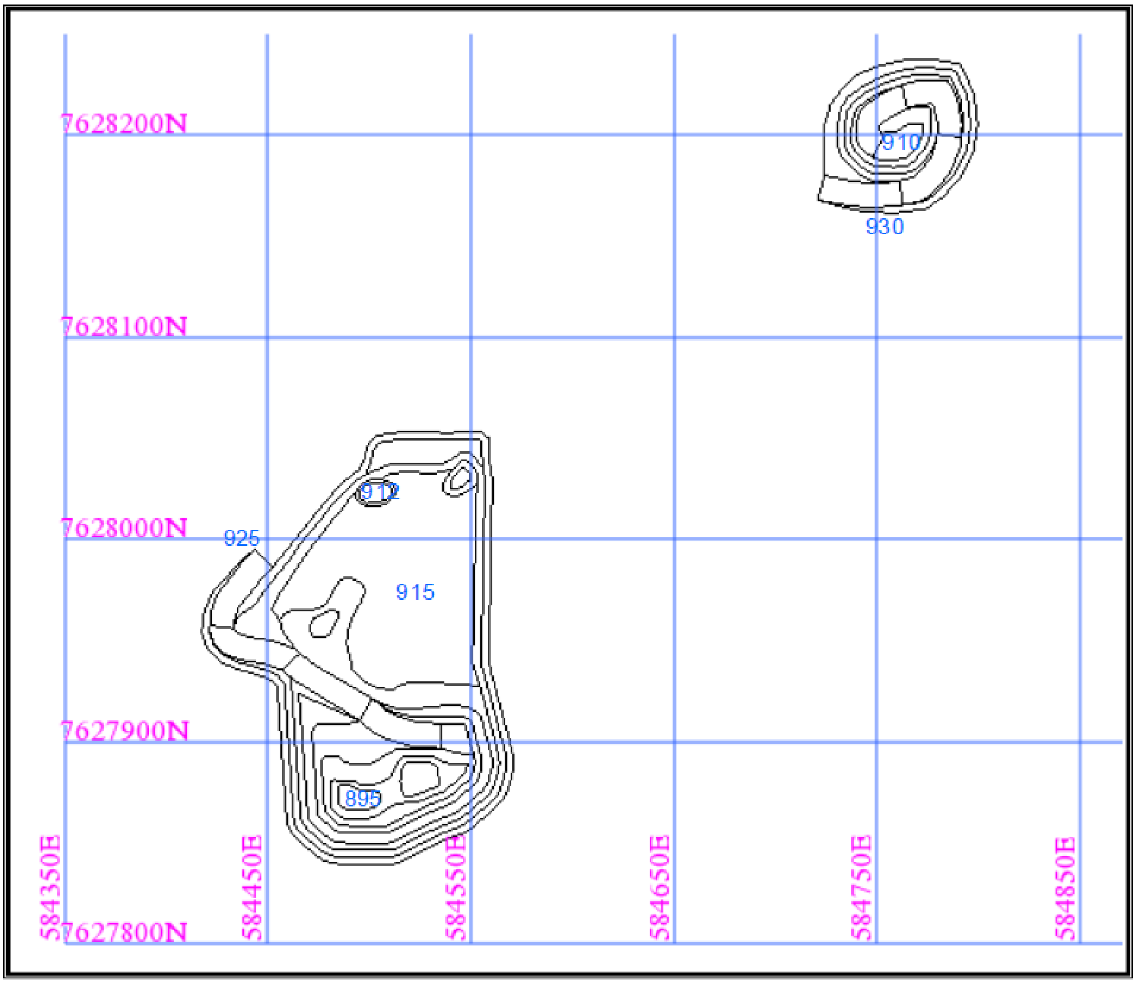
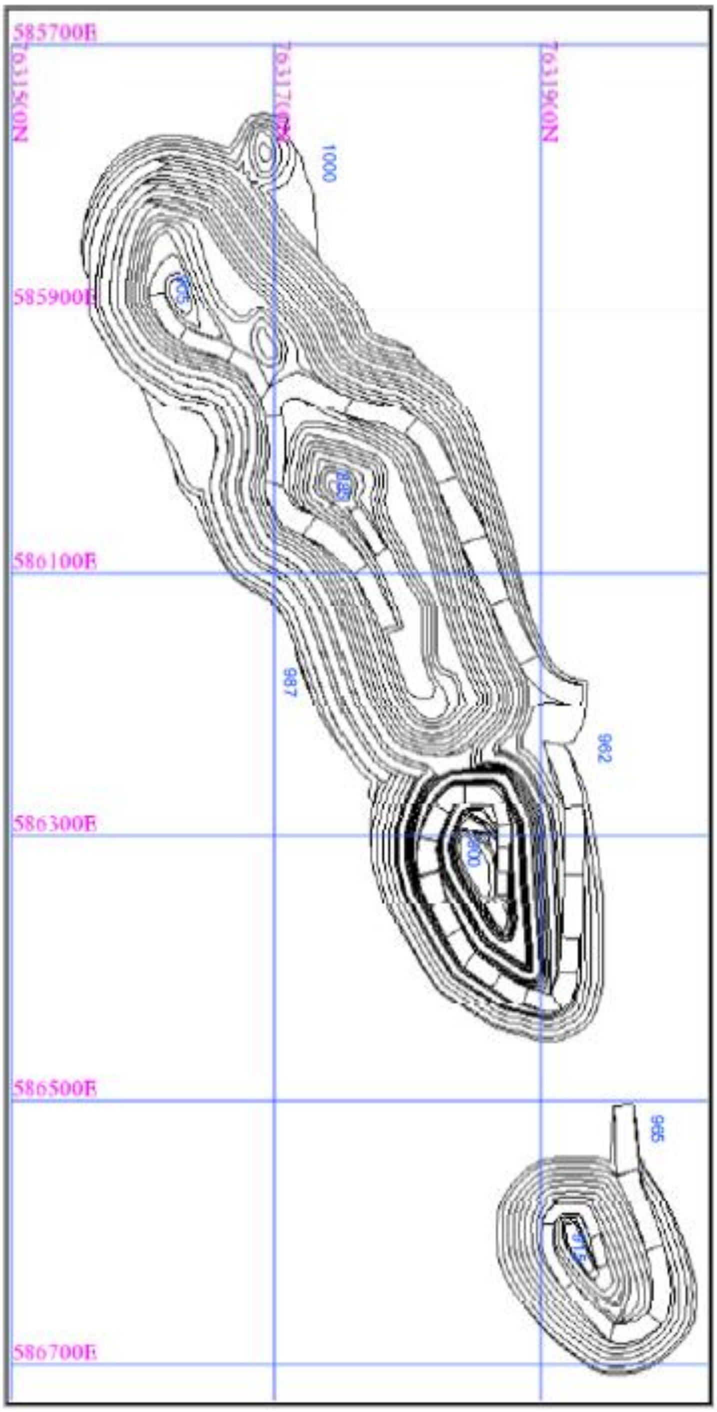


Figure 18-6

Bench plan of the A-Zone open pits (Main pit, Ext1 and Noko from north to south).

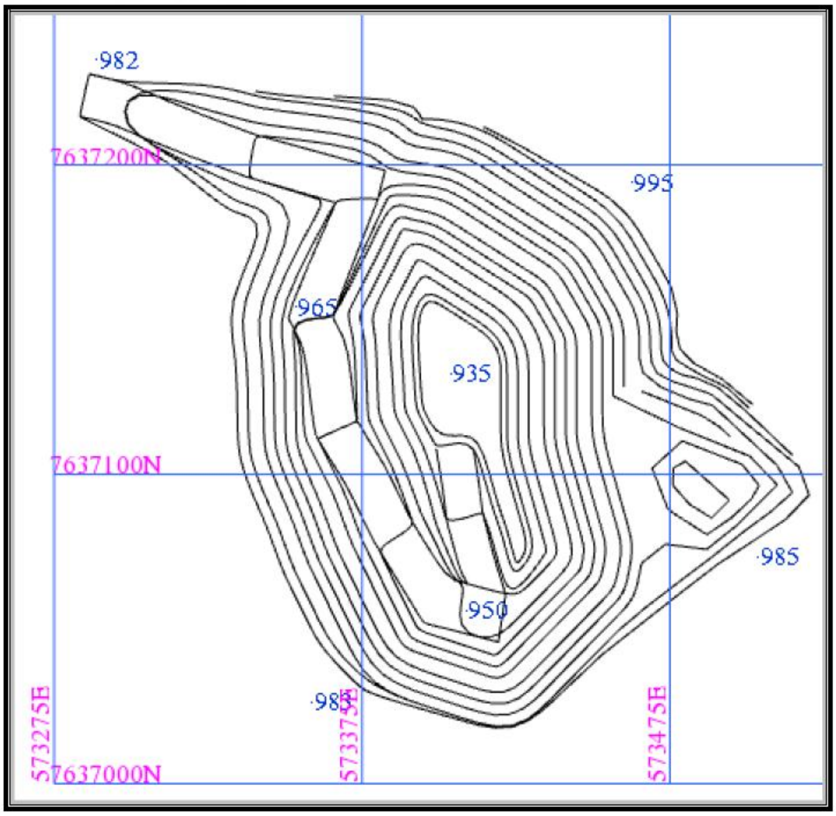
North is up and the gridlines are 100m apart. Figures in blue indicate elevation above sea level.



The 60 m deep Tawana open pit (Figure 18-7) pit is situated on the North East side of the now depleted Tau pit.

Figure 18-7
Bench plan of the Tawana open pit.

North is up and the gridlines are 100m apart. Figures in blue indicate elevation above sea level.

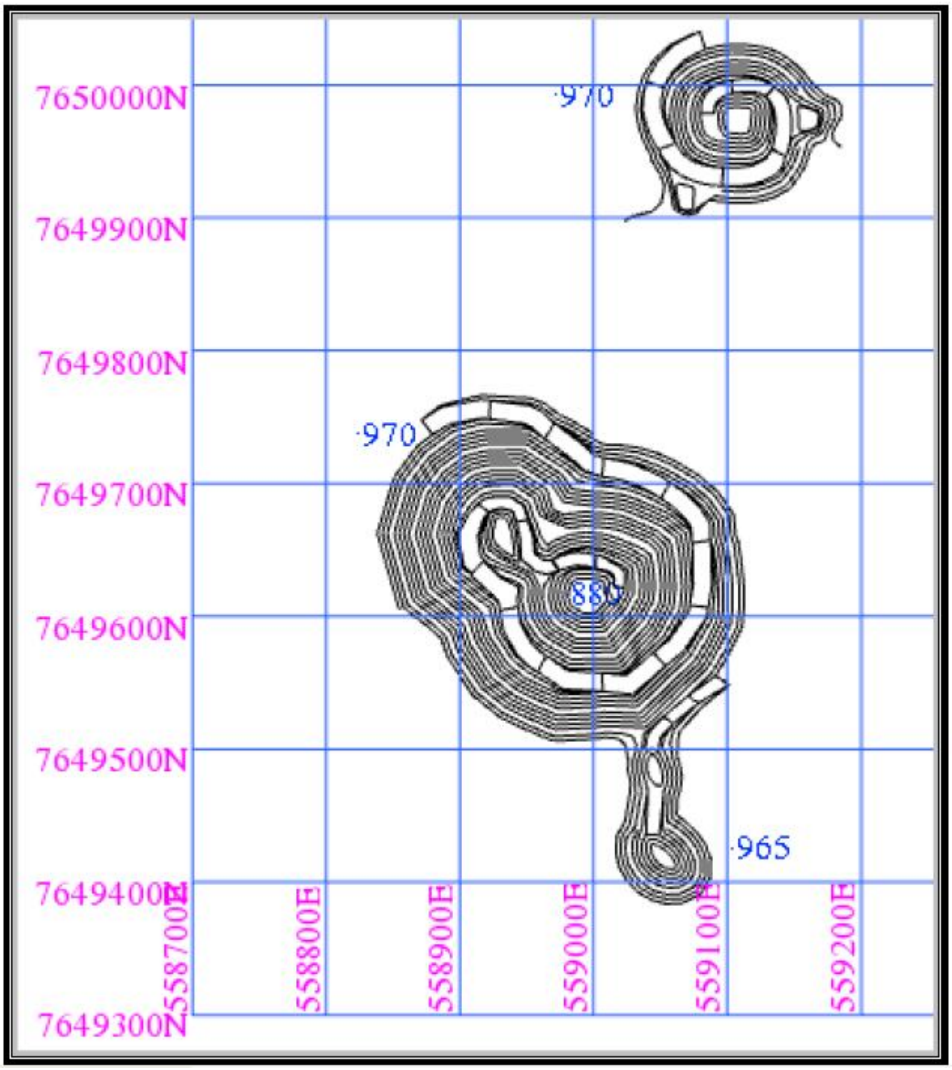


The Golden Eagle area comprises both the Golden Eagle and Kite planned open pits (Figure 18-8). Open pit designs are available for both pits and when mining starts the ore will also need to be hauled for about 25 km to the Mupane plant.

Figure 18-8

Bench plan of the Golden Eagle and Kite open pits.

North is up and the gridlines are 100m apart. Figures in blue indicate elevation above sea level.



18.2 Mining

A review of the following reports has been undertaken:

- Feasibility study documentation with respect to the Mining Assets completed in 2003.
- Both the 31 December 2009 and 31 December 2010 Mineral Reserve Reports and cost information.
- January 2006 Mupane technical report.

Commentary is provided on MSA's opinion of the mining process, geotechnics, and on certain areas of risk or opportunity that may impact on future mining operations.

18.2.1 Mining Process

The deposits lend themselves to a selective mining approach that uses 5m benches removed in two phases of 2.5 m each. This is referred to as 'flitching and it helps to manage ore loss and dilution.

Delineation of the ore zones and associated grades is determined by grade control drilling using an RC rig. Where RC information is absent or widely spaced, blast-hole sampling is practiced. Assaying is done on the mine with results then being used to create the ore blocks.

Ore blocks are digitally adjusted for blast movement using blast vector indicators and then marked-out over the ore zones. These zones are separated from the waste and delivered to the mill or stockpiled depending on the gold grade.

The ore is marked on the rock using appropriate coloured PVC 'flagging' tape and then painted using ordinary PVA style white paint. Mining at Mupane is not dissimilar to the controls and processes at other similar open pit operations in Southern Africa and is considered to be well managed an executed.

18.2.2 Mining Equipment and Personnel

The operations are adequately staffed and equipped.

Mupane mine owns a fleet of eleven Komatsu ADT400 haul trucks, one Komatsu PC1250 excavator, one Komatsu PC450 excavator, one Pantera 1100 and one Pantera 1500 drill rigs. The latter machines drill 2.5 m x 2.5 m blast patterns with 127 mm diameter holes, which are loaded with explosives and stemming lengths adjusted to contain vertical blast movement. The firing sequence is such that the blast movement is along the strike of the ore zone to minimize dilution.

A contractor using thirteen Kumatso ADT400 haul trucks, one Hitachi EX1200 excavator, one Komatsu PC800 excavator and one Komatsu PC450 excavator assists with the mining at Signal Hill. The contractor also uses one Jun-Jin 1300E drill rig and an Atlas Copco ECM 720 drill rig. A second drilling contractor is used to cover any production shortfall.

18.2.3 Mining Infrastructure

There is more than sufficient existing mine infrastructure in the area, with local workshops for mechanical and equipment engineering services. There also appears to be available spare capacity in the processing plant.

18.2.4 Rock Engineering

The open pit wall design parameters for the various pits were derived principally from results obtained from the MRMR classification system, with cognizance being taken of rock mass defect orientation measurements. Wall designs incorporate 15 m vertical height benches, mined at face angles ranging from 550 to 700, separated by 5 m to 6 m wide berms. Inter-berm angles (measured between adjacent berm crests within walls, neglecting haul roads) achieved by mining to these parameters range from around 400 (in weathered rock) to 550 (in fresh rock).

Photographs taken on site confirm a mostly stable geotechnical environment but some form of local may be required to maintain local stability.

18.2.5 Mine Planning

Whittle analysis uses the Lerch-Grossman algorithm to generate a series of optimal pits from the latest geological block models together with suitable operating cost, recovery, geotechnical and gold price assumptions. An optimal pit, which is normally one which maximizes cash flow at the given assumptions, is then selected for further design. Oxide and fresh rock have different optimization parameters. For geotechnical pit wall design criteria, the slopes vary in oxide and fresh rock. An incremental ore haulage cost has been included in the optimization process because of the different ore haulage distances for each pit. The economic parameters used in the optimization process are shown in Table 17.5.

The open pit design process is iterative, with additional constraints added such as minimum mining widths and practical mining access ramps, until a stable design is obtained. This is a standard approach.

18.2.6 Dilution

Dilution is well managed in MSA's opinion. Internal dilution is most prominent in deposits where the ore body is narrow (e.g. at Kwena). Dilution factors are applied to manage this. A dilution factor of 20% has been used for planning of all mining, except at Golden Eagle, where a dilution factor of 30% was applied. MSA is of the opinion that increased levels of dilution present a risk as the mining mix changes.

18.2.7 Cost Assumptions

MSA has reviewed the cost assumptions used in Appendix 1 and compared them to data from similar operations. We believe the assumptions to be fair and reasonable. The haulage costs cater for the longer distances that now prevail as the centre of gravity of the mining operations move further away from the treatment facility. However, MSA believes that there may be room to improve on the operating cost component of the operation.

18.2.8 Recoverability

The estimated recovery for ore is presented in the Mupane Mineral Reserve estimate. A mine call factor of 96% was achieved during 2010 and mine call factors in excess of 100% were achieved for the previous years. Ore recovery factors were not applied to the resource model. After inspection MSA believes this to be reasonable.

18.2.9 Production and Mineral Reserve Reconciliation

The geology department reconciles between the grade control model and actual production on a monthly basis. The 2010 Mineral Reserves Report revealed that:

- The Grade Control (RCGC and blast hole sampling) model driving the flitch plans underestimated the reconciled mill feed head grade by about 3% and overestimated the ounces by about 20%. According to the grade control model, the tonnage fed to the crusher is 25% more than the reconciled mill feed. This is either the result of an over measurement of survey volumes and truck tallies or an under measurement of the tonnage that is processed by the plant.

- The Mine Call factor, comparing reconciled mill feed ounces with the block model ounces, was 96% for the year.

- There was 35% more material moved to the ROM pad than estimated from the block models. This is an indication that the average dilution for 2010 was 35%. It is also evident that the grade control expected feed grade is 24%

lower than the expected grade from the block models. Furthermore, the grade control ounces are 11% more than the block model, after the mine call factor is applied. This shows that blast hole sampling compensates for internal dilution, but not external dilution.

- The 2009 block models underestimated the tonnage and overestimated the grade at a cut-off grade of 1.1g/t. It did not consider dilution. There is a 9% discrepancy between the block model and the grade control model, in terms of gold content in material greater than 0.7g/t. The mine suggests that this discrepancy is an indication of the amount of external dilution.

18.3 Ore Processing

18.3.1 Recoverability

Ore processing commenced and the first gold poured occurred in November 2004. Full gold production was achieved in January 2005 and the project had its official opening in February 2005.

With the processing of predominantly oxide ore, high recoveries close to budget numbers were achieved as shown in the production statistics for December 2004 to September 2005 (Table 18-1).

Table 18-1
Table of gold recoveries during the first ten months of production

	Actual	Budget	Variance
Milled Tonnes (t)	862 544	1 000 893	-138 349
Gold produced (oz)	78 598	91 111	-12 513
Gold sold (oz)	74 772	91 111	-16 339
Head grade (g/t)	3.05	2.96	0.09
Recovery (%)	91.1	91.3	-0.20

Metallurgical recoveries for oxide material were slightly higher than anticipated.

In September 2005, the first transitional ore from Tau was processed. Unexpected viscosity problems in the leach circuit due to the presence of hydrous clays in the ore reduced recoveries to 80 – 85%. An improvement in system controls and work to improve the performance of the oxygen plant resulted in recoveries steadily increasing to approximately 90% in a blend of oxide and transitional ores.

Plant production figures in the subsequent years of 2007 to 2010 are shown in Table 18-2.

Table 18-2
Table of gold recoveries during the period 2007 to 2010

Metric	2007		2008		2009		2010	
	Actual	Budge t	Actual	Budge t	Actual	Budge t	Actual	Budget
Ore Mined (t) x 000	1 176	1 251	N/A	N/A	N/A	N/A	947	930
Ore Milled (t) x 000	899	1 156	1 076	1 297	899	1 248	1 123	1 074
Mill Head Grade (g/t)	3.39	3.15	3.51	3.14	2.16	2.40	1.84	1.84
Gold Recovery (%)	86.5%	87.0%	83.7%	87.2%	81.6%	83.6%	85.7%	87.0%
Plant Availability (%)	87.0%	N/A	91.0%	94.0%	86.0%	92.0%	N/A	N/A
Process Cost (USD/t)	15.69	N/A	16.03	11.89	18.37	11.52	17.27	18.69
Process Cost (USD/oz)	164	N/A	170	154	324	179	340	363
Total Cash cost (USD/oz)	551	373	379	351	682	345	920	832
Gold produced (oz) x 000	86.0	102.0	101.5	100.1	51.0	80.1	57.0	55.3

18.3.2 Process and Plant Capability-Status, Risks and Opportunities

18.3.2.1 **Recoveries**

Table 18-2 shows that plant recoveries have varied significantly in the range of 81.6 % to 86.5 % over the past four years. This is probably a result of the ore transitioning from oxide to primary sulphide ore and the associated ore characteristic changes.

No accurate records of historical tonnage splits between oxide and primary ores have been kept. However, it is known that during the past 5 years, ore has been mined from the Tau pit (oxide, transitional, sulphides), Tholo oxide, Tawana oxide, Kwena oxide and sulphides, and Signal Hill oxides. In the near future it is planned to mine the Golden Eagle sulphides with the aim of maintaining a 50/50 oxide/sulphide blend in the mill feed and a forecast recovery of 87.5 %.

Plant feed currently comprises approximately 70% oxides and 30% sulphides and the ramp up to a 50/50 blend is expected to commence from June 2011.

A potential risk related to recoveries is that the sample test work conducted during feasibility and the resultant parameters used in the plant design might not resolve the challenges presented by the new ore deposits to be mined. There is currently ongoing test work being conducted at COREM (Canada) involving all present and future feed material. The results of these studies were not available at the time of writing. Until the finding of these studies are reported and necessary changes made to the plant process, planned recoveries could be at risk as a result of the challenges presented by increasingly refractory ores.

18.3.2.2 **Head Grade**

Mill feed head grades have declined by almost 40% between 2005 and 2010. This is at least partly related to dilution challenges in the mining operation and the depletion of the reserves. The planned feed increase of the higher grade sulphide ore to the mill is expected to arrest the decline.

18.3.2.3 **Flotation**

The flotation circuit operated during the period of February 2006 to February 2009 when sulphide ore was treated. However, carbon fouling was experienced and the subsequent unacceptable soluble losses led to its discontinuation. Since then process changes, such as grinding in cyanide, incorporating the regrind mill into the circuit and using the flotation cells as additional leaching reactors have been on trial and it is expected that this will negate the necessity to operate the flotation circuit thus rendering it redundant. The fundamental process risk with the sulphide ores is that it appears as if there is no definitive process route that gives known recoveries consistently. Development research work on this is still in progress following discontinuation of the flotation circuit. If it is determined that flotation is required, upgrading of reagent pumps and dosing lines is all that is needed to allow the flotation circuit to operate effectively.

18.3.2.4 **Power and Water Availability to the Plant**

Power, which is supplied by the Botswana Power Corporation (BPC), has been reliable with occasional scheduled and unscheduled outages. Power is sourced via an overhead 66kV line linked to the Francistown - Tonata power line, approximately 23 km to the west of the mine site.

Raw water capacity is about 4 000 m^3/day and is pumped to site daily. Raw water for the process plant is sourced from a pump station constructed on the Shashe Dam, approximately 30km from the process plant. Water is pumped via a 225 mm polyvinyl chloride pipeline to a 3,700 m^3 raw water dam (HDPE lined earth dam) at the plant site. However, throughput has been restricted occasionally due to water shortage and in particular whilst treating oxides. There is a project currently underway to tap into a nearby mines raw water supply to supplement Mupane's needs by an additional 1 000 m^3/day.

18.3.2.5 **Plant Availability**

Plant availabilities have ranged from 3% to 5% below budget targets indicating an opportunity to increase throughput with improvement in availability.

MSA performed an analysis on the plant availability over the period May 2010 to March 2011 using the monthly production reports (Appendix 2). The plant is designed to treat 150 tph of oxide ore and 125 tph of sulphide ore, based on a design plant availability of 91.3%. The average plant availability over the last year was 85.5%. The major causes of not achieving the design availabilities were:

- The mill electrical diagrams are not adequate for maintenance and fault-finding purposes.
- Electrical maintenance of the mill is requires improvement.
- Water availability to sustain plant feed is not always sufficient.
- Plant throughput has been negatively impacted by an increase in the proportion of hard rock feed, and restricted SAG mill power draw.

The following recommendations are made by MSA.

- The mill electrical diagrams require redrafting in greater detail with fault-finding protocols included.
- An improved electrical maintenance program is required.
- The periodic shortage of water should be investigated and corrective actions identified such as increased storm water storage.

18.3.2.6 **Cyanide Consumption and Tailings Detoxification**

A high cyanide concentration of 2000 mg/L NaCN is required for the primary ores and high cyanide levels of up to 5.0 mg/L are recorded remaining in the detoxified tailings. These are risks from a high operating cost and environmental perspective respectively.

18.3.2.7 **Capital and Operating Cost**

The plant is in good condition and is well maintained. It has capacity to process the planned tonnages without significant capital expenditure requirements.

Process costs ($/ton) have been consistently above budget driven by input material and consumable inflationary pressures. While process costs per ton have been well contained within the range of $15 to $18 per ton over the 2007 to 2010 period, the resultant process cost contribution to the overall mine ($/oz) cash costs have almost doubled over the same period primarily as a result of declining head grades and recoveries. The escalation of the $/oz process cost remains a high risk unless the underlying causes can be addressed.

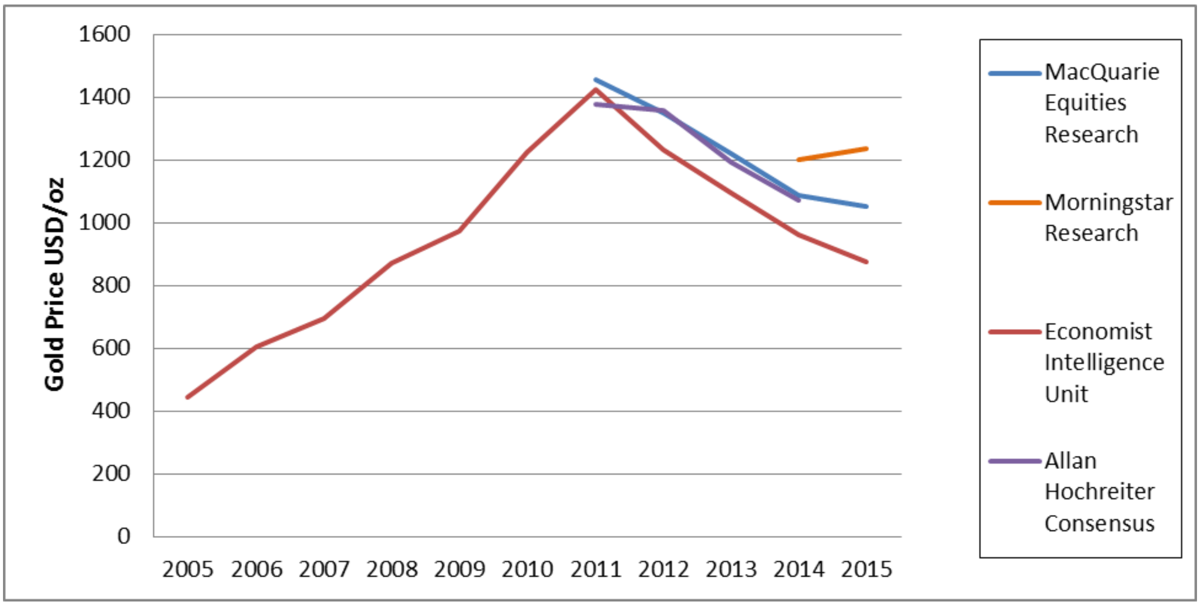
18.4 Market

Gold prices rose for most of 2010 and early 2011 and stands at over USD 1 500 per oz in April 2011. Jewellery consumption recovered in 2010 to grow by an estimated 7.8%, which, together with strong investor demand and a tight physical market, fuelled the rise in prices. Investor demand, both physical and speculative, is expected to continue to support record gold prices in 2011 as investors seek a "safe haven" in an environment of low interest rates and high inflationary pressures.

Forecasts beyond the middle of 2011 mostly suggest that the gold price will peak in 2011 and fall from 2012 to at least 2015. According to the Economist Intelligence Unit (EIU) the forecast tightening of monetary policy in 2012 will restrain economic growth and investment in gold, as will the forecast strengthening of the US dollar in 2011-12, which has historically moved inversely to the price of gold. As a result of these conflicting trends, the EIU forecasts that the gold price will peak during 2011, before the price starts to weaken markedly from the final quarter of the year. Given the dramatic increase in the level of investment in gold over the past two-and-a-half years, there is a risk of a sharp fall in gold prices in 2013, should investors judge that prices have peaked and that better returns are available elsewhere.

Figure 18-9 shows the rise in the gold price since 2005, and a collection of forecasts of the future fold price to 2015.

Figure 18-9
Chart of the gold price between 2005 and 2011, and forecast to 2015



18.5 Contracts

Table 18-3
Main contracts in place on the Mupane gold mine

Company	Inception	Expiry	Purpose
Rand Refinery Ltd	10/12/2010	10/12/2012	Gold and silver refining
Mintek	01/04/2011	31/03/2012	Drilling
Fourie Investments	01/06/2009	31/12/2011	Mining
Orica Limited	01/01/2009	31/12/2012	Explosives supply
Wildfire and Botsilica	01/12/2010	30/11/2011	Dozer and loader hire
Fraser Alexander	01/09/2009	31/08/2010	Tailings pond management
BME	01/09/2009	31/08/2011	Blasting
Engen	01/09/2009	31/08/2010	Fuel supply

A standard refining and sales agreement is currently in effect between Mupane Gold Mining (Pty) Ltd and Rand Refinery Ltd (RRL), a South Africa registered company. The agreement requires RRL to collect the gold doré from the mine premises, transport them to Johannesburg and refine the doré to produce gold and silver ingots. These are then delivered by RRL to purchasers according to sales agreements agreed by MGM, or they are sold directly by RRL.

In MSA's view, contracts in place on the mine are standard contracts which are normal for a mine of this kind and present no additional risk to the project.

18.6 Environmental Considerations

Tenement size is sufficient for all listed mining, and mining related infrastructure to operate.

An environmental management plan (EMP) was developed in 2003 but implementation was slow until 2007. Key areas of non-compliance have since been addressed and the mine operates air and water quality monitoring systems that cover all active and closed sites. This data now informs remedial or pro-active management actions, ensuring compliance with permit requirements.

IAMGold operates on the basis that cash flows provided by the Company's operations and expected from sale of residual equipment will be sufficient to meet asset retirement/ mine closure payment obligations of its operations. The asset retirement obligation / mine closure liability numbers for all IAMGold Corporate (HQ) sites are consolidated into one liability and IAMGold Corporate covers the liability through guarantees for that portion of the amounts deemed to be near- to medium term. The percentage of coverage and the interest rates which the guarantees attract varies.

On an annual basis Mupane Gold Mine reviews the asset retirement obligation/ mine closure liability; any adjustment to the provision is then booked as an additional liability or written off against the liability (the latter stems from continuous rehabilitation financed from its own bank account). When Mupane needs funds, it is done via a cash call from HQ. Mupane does not contribute to any closure trust or have any bank guarantees.

As of financial year end 2010 (31 December 2010), an asset retirement/ mine closure liability of USD 6.35 million (or approximately Botswana Pula 40.4 million) arises from the impacts and disturbances associated with mining on site.

On-going rehabilitation takes place with placement of salvaged topsoil and vegetative matter on newly disturbed areas or mine waste depositories or waste rock landforms. Rehabilitation has occurred since 2004 with 14% of disturbed area rehabilitated as of mid-2009. Formal classification and taxonomic monitoring of species rehabilitated areas began in April 2009. In addition limited targeted seeding of sections of mine waste depositories for trial purposes was done in 2007. A detailed closure plan was developed in 2009 and conforms to international best practice.

18.7 Financial Model

18.7.1 Mining Operations

On December 31 2010 the in-situ mineral reserves at MGM stood at 1.71 million tonnes averaging 1.95 g/t for 107 000 oz of gold. In addition there is also 745 000 t of ore material on stockpiles grading at 1.20 g/t for 29 000 oz. This gives a total of 2.455 million tonnes of ore at 1.72 g/t for 136 000 oz contained in mineral reserve for the Mupane Mine (100% basis). IAMGOLD owns a 100% interest in all deposits at the Mupane Gold Mine, except for Golden Eagle, in which it indirectly owns an 85% interest. Therefore, attributable reserves total 2.353 million tonnes of ore at 1.72 g/t for contained 130 000 oz.

The LOM, on which the economic analysis is based, mines a total of 1.8 Mt of ore but processes 2.041 Mt from current operations as there are 197 000 t on the LOM stockpile. A total of 785 000 t are processed from the low grade stockpile.

Table 18-4 shows the production schedule for the remaining LOM.

Table 18-4 Mine Production and Mill Feed Schedule						
Period	**Waste**	**Ore Mined**		**Mill Feed**		**Strip Ratio**
	Mt	**Mt**	**Grade g/t**	**Mt**	**Grade g/t**	
2011	7.709	1.545	1.75	1.080	1.75	4.99
2012	498	299	1.68	1.080	1.70	1.67
2013	0	0	0	666	1.14	-
TOTAL	**8 207**	**1 844**	**1.74**	**2 826**	**1.59**	**-**

Table 18-5 is a summary of planned Mupane gold production to 2013.

Table 18-5 Gold production	
Period	**Gold produced (oz)**
2011	52 832
2012	51 301
2013	21 237
TOTAL	**125 370**

18.7.2 Botswana Taxes

The Botswana tax system is administered by the Botswana Income Tax Act of 2006.

18.7.2.1 **Corporate Tax**

Precious metal companies are subject to a Variable Income Tax Rate (VITR) with a minimum of 25%. The tax is calculated as the higher of the standard company rate (25%) or the tax rate derived from the formula: 70-1500/x, where x (%) = taxable income/gross income.

18.7.2.2 **Mineral Royalty**

A royalty of 5% of gross metal value is applicable.

18.7.2.3 **Capital Allowances**

100% depreciation of capital expenditures is allowed.

18.7.2.4 **Tax Losses Carried Forward**

Unlimited carry forward of tax losses is allowed.

18.7.3 Capital and Operating Cost Estimates (Real Terms)

The capital cost estimates are shown in Table 18-6 over the LOM and closure costs. MSA considers it reasonable to fund these requirements out of operating cash flow, and this has been assumed in the financial model.

Table 18-6
Capital Cost Estimates

Cost Area	USD (millions)
Sustaining Capital	2.5
Restoration and closure costs	6.35
TOTAL	**8.85**

The operating cost estimates are shown in Table 18-7over the LOM.

Table 18-7
Operating Cost Estimates

Cost Area	USD millions	USD
Mining Cost	25.3	2.52/t mined
Processing	51.7	18.30/t milled
General and Administration	13.3	4.70/t milled
On-going Restoration	1.35	0.48/t milled
Total	**91.7**	

In addition to these costs, a transport, insurance and security fee of USD 1.74/oz and a refining charge of USD 0.73/oz is also applied.

18.7.4 Economic Analysis

The project is economically viable and provides a real net present value (NPV) at 10% of USD 49.64 million in 1 January 2011 money terms (assumed gold price of USD 1 400). An assessed tax loss of USD 50 million has been applied from May 2011 on conclusion of the takeover.

Table 18-8
Financial Model Inputs and Results

Description		
Material Processed – Annual million tonnes	Mtpa	1.08
Material Processed – Life-of-mine million tonnes	Mt	2.826
Mine Closure Capital (Real)	USD million	9.2
Stay in Business Capital (Real)	USD million	9.0
Operating Costs – Average over life-of-mine(Real)	USD/oz produced	731
Projected Mine Life	years	2.6
Inflation used for Escalation/De-escalation	% per annum	2.5
Gold price	USD/oz	1 400
Total Au produced	x 000 oz	125.4
IRR	%	n/a
NPV @ 10%	USD million	49.6

The project is most sensitive to metal prices and less sensitive to capital expenditure and operating costs. Table 18-8 provides a summary of selected financial inputs and the corresponding results. All costs are quoted in January 2011 United States Dollars.

The project is evaluated on a monthly basis from January 2011 to the end of life in August 2013. For the calculation of the NPV's, the time period has been shortened to start from May 2011 onwards.

18.7.5 Profitability of the Project

In terms of the underlying economic assumptions provided to MSA the results of the valuation of the project are as shown in Table 18-9. The NPV of the project at 10% discount rate is USD 49.6 million. There is no internal rate of return (IRR) indicated since this valuation is based on a zero investment. If a net acquisition cost of USD 33.5 million is applied (as per the purchase agreement), then the IRR of the project is 76.7% and the NPV at 10% discount rate becomes USD 17.37 million.

Table 18-9
Project NPVs based on different discount rates

PROJECT (100%) from May 2011		
Real	Disc Rate	US$ '000s
NPV's	0.0%	50 531
	5.0%	47 176
	8.0%	45 354
	10.0%	44 210
	12.0%	43 118
	15.0%	41 571
	20.0%	39 212
	IRR=	No IRR
NPV's are at 1 January 2011		

18.7.6 Sensitivity Analysis

The sensitivity chart, Figure 18-10 below, shows the NPV variation due to changes in revenue, capital and operating costs, holding all other inputs constant. Clearly, the project is most sensitive to metal prices.

Figure 18-11 shows the monthly and cumulative monthly project cash flows used in the evaluation.

Figure 18-10
NPV Sensitivity Analysis

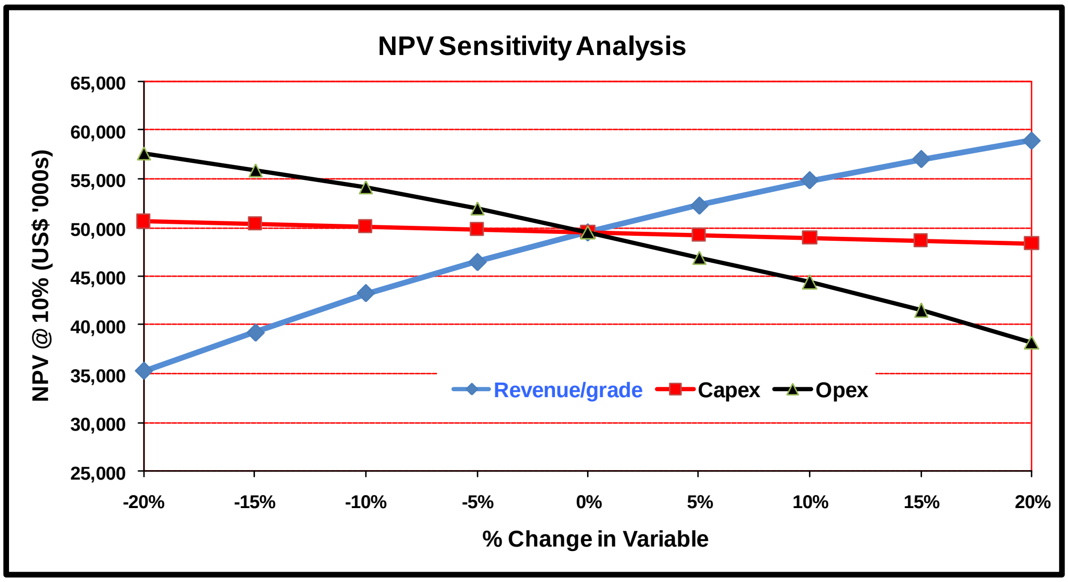


Figure 18-11
Monthly and cumulative cash flow

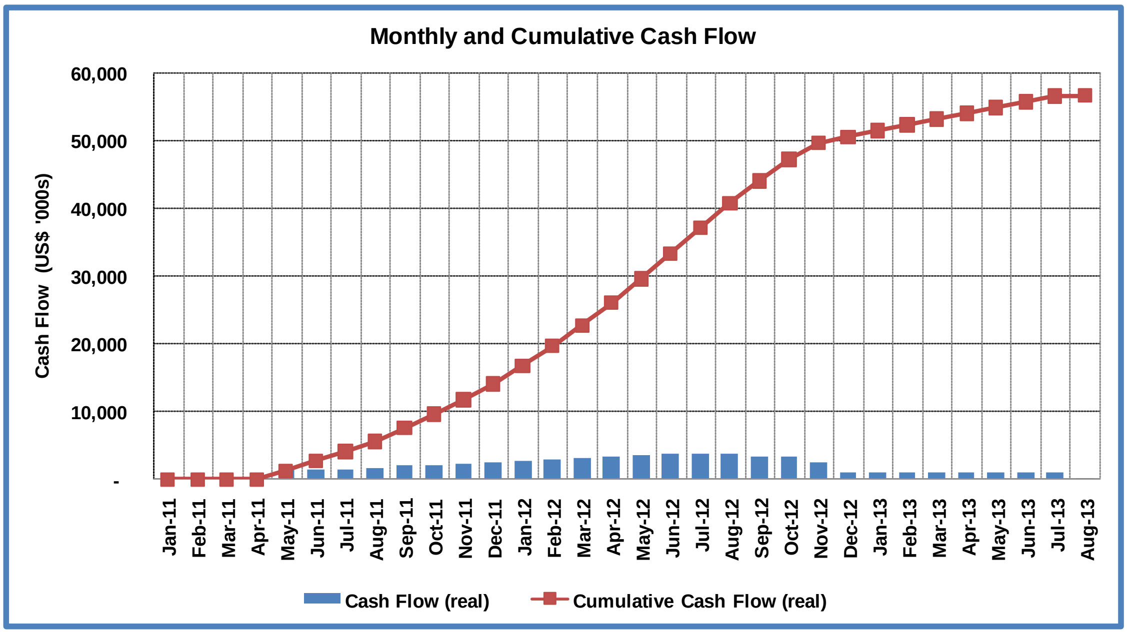


Table 18-10 is a matrix of gold price variation vs. Discount rate.

Table 18-10
Sensitivity of NPV's to Changes in Gold Price

NPV sensitivity to long term gold price and discount rate — **US$ '000s**

Discount rate	Long term gold price, $/oz							
	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800
0.0%	28,492	38,586	48,680	56,646	63,275	69,303	74,488	79,791
5.0%	26,513	35,938	45,364	52,889	59,164	64,883	69,815	74,845
8.0%	25,437	34,501	43,565	50,848	56,930	62,481	67,274	72,154
10.0%	24,762	33,600	42,437	49,568	55,528	60,971	65,677	70,464
12.0%	24,118	32,739	41,361	48,345	54,189	59,530	64,152	68,849
15.0%	23,205	31,521	39,837	46,614	52,291	57,487	61,989	66,559
20.0%	21,813	29,664	37,516	43,972	49,394	54,366	58,685	63,059

18.7.7 Mine Life

The mine has an operating life of 2.6 years.

19 OTHER RELEVANT INFORMATION

None.

20 INTERPRETATION AND CONCLUSIONS

The ongoing financial viability of the mine has been demonstrated by construction of a discounted cash flow model which demonstrates a healthy and positive NPV. However, a number of project risks and opportunities exist for the future of the mine.

20.1 Project Risks

20.1.1 Financial Risks

The project is exposed to the volatility of the Botswana Pula relative to the USD. However, the project will remain profitable even with a significant strengthening of the Pula against the USD.

The future gold price may be regarded as a risk or an opportunity, depending upon whether it decreases or increases over the life of mine. The gold price is currently at its highest ever level and all independent forecasts viewed by MSA expect the gold price to fall by between 12% and 40% over the next four years. Sensitivity analysis suggests that the project could absorb a 30% decrease in the gold price and remain profitable.

Mupane is unusual in that to calculate a net closure liability it is assumed that income from salvage and sale of redundant equipment will cover the cost. This is not standard industry practice and creates a risk that there may be an ultimate shortfall.

For the purposes of calculating the mine closure liability, the closure plan assumes that mining ceases in 2011, and processing a year later. Spending on mine closure would take place between 2011-2016. The financial quantum providing for closure thus does not cater for any impacts arising from approved mining and related activities after 2011. It may therefore be deemed incomplete.

The actual closure plan and its methodology are otherwise robust.

20.1.2 Infrastructure Risks

The project draws electrical power from the Botswana power grid, which in turn draws some of its supply from ESKOM, the parastatal electricity supplier in South Africa. The project is therefore potentially impacted by changes in the power supply provided by ESKOM. ESKOM has given notice of price increases of 25% per annum commencing in 2011. This will have an effect on the cost of power supply to the mine. The financial model suggests that the project can absorb these cost increases and remain profitable.

The project draws water from a pump station constructed on the Shashe Dam, approximately 30km from the process plant. Botswana is an arid country and water throughput has been restricted occasionally due to water shortage. There is a risk that production could be severely affected by drought. There is a project currently underway to tap into a nearby mines raw water supply to supplement Mupane's needs by an additional 1 000 m^3/day.

20.1.3 Technical Risks

The current mineral reserve will be fully depleted in mid-2013. The addition of further mineral reserves in the short term is an urgent priority. Additional mineral reserves could potentially derive from an increase in depth of the existing pit shells. The current high gold price creates the opportunity to significantly deepen the current open pits. However, this will require that the mineral resources at depth are identified to the 'indicated' confidence level (at least), before a revised Whittle shell can be produced based on a higher gold price. It would also involve a capital expenditure of pre-stripping prior to mining of the additional mineral reserve. MGM has budgeted USD 2.5 million for exploration in 2011.

There also exists a potential risk related to recoveries. The current plant design for the recovery of gold from primary sulphide ore is based on sample test work conducted during feasibility. The parameters used in the plant design might not be optimal for the actual sulphide ores now being mined. There is currently ongoing test work being conducted at COREM (Canada) involving all present and future feed material.

20.1.4 Geology and Resource estimation Risks

While in general the collection and storage of the geological data and the subsequent creation of the resource models is reasonable there are a number of areas of concern and therefore risk:

- The lack of a electronic data capture system and feed-back validation loop to the geologist on the geological logging is resulting in transcription errors, miss-labelling of samples and various other random errors which impact on the validity of the geological database
- The sample cone-splitter currently being used for generating the A and B samples does not adhere to accepted sampling practice. While it may be quick and easy to use, it could also be biasing the samples produced.
- The poor storage of the geological samples (core and RC chips) means that very little data validation of historical values can be performed as all samples must be considered compromised.

- The lack of a LIMS system and the manual transcription of results in the laboratory is of concern for the same reasons as with the geological data

- A non-functioning QAQC monitoring system means that very limited control can be exercised over the results produced by the laboratory with the QC window limited to a batch by batch manual review process only.

- A certified lab should be used either for all the samples or at least an appreciable percentage of the current samples should be sent to a referee lab to ensure accuracy and precision in the laboratory.

- The insertion of blanks, standards and duplicates should be randomised and not predefined as they are currently. This requirement fits in with the idea of more on-rig supervision of the sampling process by a qualified geologist.

- The drill sample compositing being used is not appropriate to the sample size of the primary geological data. Granted, the blast-hole samples are all 2.5m in length but because they are of a different diameter and assayed differently, these two data sets (geology/grade control) should not be mixed during resource estimation. The volume-variance issues that arise from this could impact on the accuracy of the resource model and therefore the planning and reconciliation.

- The block size of the resource model is arguably too small and could be aggravating the short term reconciliation issues though the generation of a conditionally biased local estimate.

The use of IPD is not recommended due to the conditional biased nature of any estimate generated by it. However, the lack of appropriate variograms or any other estimation technique means that it is reasonable and acceptable provided its limitations are understood.

20.1.5 Metallurgical Risks

The lack of additional test work on the processing of sulphide ore to resolve the problems with the floatation process stream is a risk as the oxide resource is steadily being depleted leaving sulphide ore which cannot be effectively treated in the plants current design specification.

20.2 Project Opportunities

The high current gold price remains a very good opportunity for the mine. The high revenues currently being generated can help fund ongoing exploration to expand the existing mineral resources. New mineral resources may potentially be defined beneath and adjacent to the existing resources, and within the new PL.

Plant availabilities have ranged from 3% to 5% below budget targets indicating an opportunity to increase throughput with improvement in availability. The below budget availability has been due largely to the lack of electrical diagrams to assist with fault-finding, and periodic water shortages. All of the observed issues impacting on plant availability can be addressed relatively easily.

Other opportunities include:

- Reduction of ore dilution;
- Use of the flotation circuit to increase plant capacity.

21 RECOMMENDATIONS

MSA's review of the Mupane Gold Mine makes the following recommendations:

- The mine is profitable and it is recommended that mining should continue until reserves are depleted, particularly in view of the very high current gold price.
- The mineral reserves need to be complemented by new reserves urgently. This may be achieved either through a new Whittle analysis of current resources or by exploration for new resources. The exploration programme on PL040/011 should be executed with urgency.
  - A total budget (funded out of Mupane operational cash flow) of USD1.8 million has been made available for exploration drilling in the 400 x 50 m area immediately south of the Tholo pit.to confirm the down-dip extension of the Tholo orebody.
  - In total for 2011, there has been 2 818 m of RC dump sterilisation drilling at Golden Eagle and 610m RC drilling at Tholo for further ore resource definition.
- The ongoing metallurgical test work to optimise processing of sulphide ore is a necessary project and should be completed with urgency. The cost benefit of implementing any changes recommended by the test work should be examined prior to implementing any changes.
- Plant availability issues should be addressed.
- Mine closure funding should be revisited based on the validity of the current funding plan.

22 REFERENCES

Atkinson, V. (2010) Rock Densities of various rocks collected from Mupane Mine on 18 March 2010, Internal Report for IAMGOLD, Mar 2010.

Atkinson, V. (2010) Personal Communication, Site Visit by MSA, April 2011.

Byron, C. (2010) Notes on the recently acquired, and recently applied for, Prospecting Licences on the Archaean Tati greenstone belt near Matsiloje and Francistown, Northeast Botswana., Company Memo, Northern Lights Exploration Company (PTY) LTD, November 2010.

Edwards, M.J. (2006) Model Parameters for Tau up-date – Internal Memorandum, August 2006.

Edwards, M.J. (2006) New Tau Block Model – Internal Memorandum, November 2006.

Edwards, M.J. (2006) Signal Hill Model – Internal memorandum, November 2007

Edwards, M.J. (2006) New Tau model – Internal memorandum, March 2007

Edwards, M.J. (2006) Mupane Gold Mine – Mineral reserve report December 31, 2006.

Hellman & Schofield Pty. Ltd. (2003) Estimates of Gold Resources at Mupane and Signal Hill Prospects, Botswana. Report to Gallery Gold Limited, March 2003.

Hellman & Schofield Pty. Ltd. (2004) Estimate of Recoverable Gold Resources at Golden Eagle Prospect, Botswana. Report to Gallery Gold Limited, April 2004

Hellman & Schofield Pty. Ltd. (2004) Golden Eagle “Factored RC” resource Model – Internal Memorandum to Gallery Gold, May 2004

Hellman & Schofield Pty. Ltd. (2004) Tau Resource up-date – Report for Gallery Gold Limited, June 2004.

Hellman & Schofield Pty. Ltd. (2005) Updated resource estimate for Tholo. Report for Gallery Gold Limited, January 2005.

Hellman & Schofield Pty. Ltd. (2005) Updated Resource Estimate for Kwena. Report for Gallery Gold Limited, March 2005.

Hellman & Schofield Pty. Ltd. (2007) Signal Hill Gold Resource Estimation, Draft 2. Report for AMGOLD Limited, February 2007.

Hellman & Schofield Pty. Ltd. (2007) Golden Eagle and Kite Gold Resource Estimation, Draft 1. Report for IAMGOLD Limited, February 2007.

Hill, R. (2006) Tholo South Drill Holes. – Internal Memorandum for IAMGOLD Exploration, December 2006.

Johnson, N. (2006) Ordinary Kriging block model of Gold for Mupane – Internal Report by Hellman and Schofield for IAMGOLD Limited, September 2006.

Johnson, N. (2006) Grade Control and Training November 2006. Report of site visit for Mupane Gold Mine, November 2006.

MDM Pty. Ltd. (2003) Gallery Gold Limited Mupane Gold Project, Bankable Feasibility Study. Report for Gallery Gold, May 2003.

Minenet Consulting Pty. Ltd. (2004) Gallery Gold Limited – Mupane Gold Project. Report to Gallery Gold Limited, July 2004.

Pilot Hole Pty. Ltd. (2005) Kwena: Deposit Optimisation. Report for Gallery Gold Limited, March 2005.

Pilot Hole Pty. Ltd. (2005) Technical Note – Kwena evaluations and Tholo design edits. Report for Gallery Gold Limited, July 2005.

Putland, L.J. (2006) Signal Hill: Project Preliminary Optimisation Study - Internal report, October 2006.

Putland, L. J. (2006) Golden Eagle Preliminary Optimisation Study – Internal report, November 2006.

Red Rock Engineering Pty. Ltd. (2004) Tau Resource June 2004. Revised Resource Mining Review Discussion Paper, June 2004

Rosebel Resource Team (2006) Rosebel Gold Mines N.V.: Mineral Reserve Report 2006. Report for Rosebel Gold Mines N.V., January 2006.

Stewart, M. (2006) Mupane. Gold Mine: Review of Grade Control. Report for Mupane Gold Mine, May 2006.

Tomkinson, M.J., & Putland, L.J. (2006) Technical Report on the Mupane Gold Project. NI 43-101 Report, January 2006.

Vearncombe, J, & Vearncombe S.(2002) Controls on Gold Mineralisation in the Arcuate Tati Greenstone Belt, Botswana: The Mupane, Gold Project. Report to Gallery Gold Limited, October 2002.

Vorster, J. and Sirois, R. (2011) Mupane - Mineral Reserve Report - December 2010. Internal Technical Document for IAMGold Limited, March 2011.

Widenbar, L. (2006) Signal Hill Resource Estimation, Sept-Oct 2006. Report for IAMGOLD October 2006.

Widenbar, L. (2006) Golden Eagle Project Resource Estimation, Sept-Oct 2006. Report for IAMGOLD October 2006.

Wikipedia, http://en.wikipedia.org/wiki/Francistown, Last viewed on 28 April 2011

23 DATE AND SIGNATURE PAGE

The undersigned, Justin Glanvill, contributed to sections 1 to 15 inclusive and sections 17, 19, 20 and 21 of this technical report, titled 'Independent Technical Report on the Mupane Gold Mine', with an effective date of 10th May 2011, in support of the public disclosure of technical aspects of the Mupane Gold Mine Property. The format and content of this report are intended to conform to Form 43-101F1 of National Instrument 43-101 of the Canadian Securities Administrators.

Signed,

……………………………………….

Name: Justin Glanvill BSc (Hons), GDE, MGSSA, Pr Sci. Nat

Date: 10 May 2011

The undersigned, Joel Mungoshi, am responsible for section 16 and contributed to section 18 of this technical report, titled 'Independent Technical Report on the Mupane Gold Mine', with an effective date of 10 May 2011, in support of the public disclosure of technical aspects of the Mupane Gold Mine Property. The format and content of this report are intended to conform to Form 43-101F1 of National Instrument 43-101 of the Canadian Securities Administrators.

Signed,

……………………………………….

Name: Joel Mungoshi

Date: 10 May 2011

The undersigned, John Sexton, contributed to sections 18 and 20 of this technical report, titled 'Independent Technical Report on the Mupane Gold Mine', with an effective date of 10th May 2011, in support of the public disclosure of technical aspects of the Mupane Gold Mine Property. The format and content of this report are intended to conform to Form 43-101F1 of National Instrument 43-101 of the Canadian Securities Administrators.

Signed,

……………………………………….

Name: John Sexton

Date: 10 May 2011

The undersigned, Markus Reichardt, contributed to sections 18 and 20 of this technical report, titled 'Independent Technical Report on the Mupane Gold Mine', with an effective date of 10th May 2011, in support of the public disclosure of technical aspects of the Mupane Gold Mine Property. The format and content of this report are intended to conform to Form 43-101F1 of National Instrument 43-101 of the Canadian Securities Administrators.

Signed,

……………………………………….

Name: Markus Reichardt

Date: 10 May 2011

The undersigned, Robert Charles Croll, contributed to section 18 of this technical report, and undertook peer review of the entire document titled ‘Independent Technical Report on the Mupane Gold Mine’, with an effective date of 10th May 2011, in support of the public disclosure of technical aspects of the Mupane Gold Mine Property. The format and content of this report are intended to conform to Form 43-101F1 of National Instrument 43-101 of the Canadian Securities Administrators.

Signed,

……………………………………….

Name: Robert Charles Croll

Date: 10 May 2011

24 CERTIFICATES

CERTIFICATE OF QUALIFIED PERSON

I, Justin Eric Glanvill BSc (Hons), GDE, MGSSA, Pr Sci. Nat, do hereby certify that:

1. I am a Consulting Geologist and Sole Member of Glanvill Geo Consulting cc at 139 John Adamson Drive, Roosevelt Park, Johannesburg.

2. I graduated with a B.Sc. Honours degree in Geology and Applied Geology, University of Natal, Durban in 1997. I obtained a Graduate Diploma In Engineering in Geostats from the University of the Witwatersrand in 2008. I am validated as a Professional Natural Scientist by the South African Council for Natural Scientific Professions (Registration Number 40164/07).

3. I am a Member of the Geological Society of South Africa and a Member of the Geostatistical Association of Southern Africa.

4. I have worked as a Geologist and Resource geologist for 13 years. I worked for Randfontein Estates limited from 1998 to 2000, African Computer Mining services and GMSI from 2000 to 2006, Caracle Creek International Mining Consultants from 2006 to 2008 and have headed Glanvill Geo Consulting cc since then. My relevant experience for the purposes of this Technical Report is:

    a. 13 Years of varied geological consulting work spanning multiple commodities in numerous mineralisation and hosting regimes. Work included logging, sampling, 3D modelling and resource estimation work as well as reviews and NI43-101 reporting.

    b. Graduate Diploma in Engineering with a specific focus on Geostatistics, geological modelling and Geological Risk.

5. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfil the requirements to be a “qualified person” for the purposes of NI43-101.

6. I am responsible for sections 1 to 15 inclusive and sections 17, 19, 20 and 21 of the technical report entitled “Independent Technical Report on the Mupane Gold Mine, Botswana” and dated 10 May 2011 related to the Mupane Gold Mine (the “Technical Report”). My most recent site visit was 6^{th} to 8^{th} April 2011.

7. As at the effective date of the Technical Report, to the best of my knowledge, information, and belief, sections 1 to 15 inclusive and sections 17, 19, 20 and 21 of the Technical Report contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

8. I am independent of the issuer as described in section 1.5 of NI 43-101.

9. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

10. I consent to the filing of this Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of this Technical Report.

11. I have not had prior involvement with the property that is the subject of the Technical Report.

Dated this 10th day of May 2010

……………………………………………….

Justin Eric Glanvill BSc (Hons), GDE, MGSSA, Pr Sci. Nat

CERTIFICATE OF QUALIFIED PERSON

I, Joel Mungoshi HND Met, BSc (Hons) Met Eng, MDP (Mining), MBL, MSAIMM, do hereby certify that:

1. I am a Consulting Metallurgical Engineer at Manhize Projects & Associates (Pty) Limited, 534 Carlswald North Estate, Midrand 1684, South Africa.

2. I graduated with a Higher National Diploma in Mineral Processing and Extractive Metallurgy from the Zimbabwe School of Mines in 1984 and went on to study for a B.Sc. Honours degree in Metallurgical Engineering at the University of Zimbabwe and graduated in 1991. I completed a Management Development Program (MDP) in Mining with the University of South Africa in 1995 and later a Masters in Business Leadership with the same institution in 2000.

3. I am a Member of the Southern African Institute of Mining and Metallurgy (membership number 701800).

4. I have 23 years of experience as a Metallurgical Technician and Metallurgical Engineer which relates to different commodities (base metals, gold, mineral sands, platinum and diamonds) and to different process areas (mineral processing, hydrometallurgy, and pyrometallurgy). I have held senior positions in this capacity and various roles in Research and Development, Operations Management, Project Management and New Business Development.

5. My relevant experience for the purposes of this Technical Report is summarised as follows:

Metallurgical Trainee Technician	Ministry of Mines Dept of Metallurgy - Zimbabwe 1982-1984
Metallurgical Technician	Ministry of Mines Dept. of Metallurgy - Zimbabwe 1985-1989
Research Metallurgist	Gencor Process Research – South Africa 1990-1990
Engineer In Training	Mintek – South Africa 1990-1991
Process Engineer	Mintek – South Africa 1991-1992
Senior Plant Metallurgist	Impala Platinum, Mineral Processes – South Africa 1992-1994
Slag Plant Manager	Impala Platinum, Mineral Processes – South Africa 1994-1995
Operations Manager	Impala Platinum, Mineral Processes – South Africa 1995-1997
Production Superintendent	Richards Bay Minerals – South Africa 1998-2001
Manager-Mine Services	Richards Bay Minerals – South Africa 2001-2003
Project Manager-Metallurgy	De Beers, Cullinan Diamond Mine – South Africa 2003-2004
Technical Manager/Snr. Technical Manager	Lonmin Platinum, Metallurgical Services – South Africa 2005-2005
Snr. Manager-Bus Development & Strategy	Lonmin Platinum, Head Office –South Africa 2005-2007
Executive Manager-New Projects)	Mvelaphanda Resources Ltd-South Africa –Jan 2007 to Oct 2009
Independent Consultant	Manhize Projects & Associates - Oct 2009 to date

   a. I co-authored a paper entitled "The Acidic Pressure Oxidation Pre-treatment of Refractory Gold Concentrates from the KweKwe Roasting Plant In Zimbabwe" based on my final year of study at the university of Zimbabwe and published in the Pergamon Minerals Engineering Elsevier journal.

   b. I have been involved in the development of various metallurgical process routes which include the BIOX process for refractory gold ores with Gencor Process Research, and process routes for South African UG-2 and the Zimbabwean Great Dyke platinum ores with Mintek.

6. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfil the requirements to be a “qualified person” for the purposes of NI43-101.

7. I am responsible for section 16 and contributed to section 18 of the technical report entitled “Independent Technical Report on the Mupane Gold Mine, Botswana” and dated 10th May 2011 related to the Mupane Gold Mine (the “Technical Report”). I have not visited the site.

8. As at the effective date of the Technical Report, to the best of my knowledge, information, and belief, sections 16 and 18 of the Technical Report contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

9. I am independent of the issuer as described in section 1.5 of NI 43-101.

10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

11. I consent to the filing of this Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of this Technical Report.

12. I have not had prior involvement with the property that is the subject of the Technical Report.

Dated this 10th day of May 2011

……………………………………………….

Joel Mungoshi HND Met, BSc (Hons) Met Eng, MDP (Mining), MBL, MSAIMM

CERTIFICATE OF QUALIFIED PERSON

I, Markus Tilman Reichardt, M.A; PhD (candidate) do hereby certify that:

1. I am a Principal Environmental Consultant (part-time) at MSA Environmental Services 20B Rothesay Avenue, Craighall Park, Johannesburg 2196 South Africa.

2. I graduated with a B.A (Hons.) Honours degree in History from Queen's University (Ontario, Canada) in 1987. I obtained an M.A. degree in History from Queen's University, (Ontario, Canada) in 1989, and am presently a PhD candidate in restoration ecology at the University of the Witwatersrand.

3. I have worked in various corporate and operational environmental, public policy and small business development roles for twenty years. Between 1990 and 2002 I worked for Anglo American Corporation of South Africa (Ltd), the last six years as Corporate Environmental Manager for AngloGold Ltd., from 2002-2004 as MD of SR&I (Pty) Ltd, the data provider for the Johannesburg Stock Exchange Socially Responsible Index. From 2004 to the present I head Reichardt & Reichardt a niche sustainability consultancy, and since 2009 I have been MD of the South African subsidiary of PE International AG, a global climate change consultancy. I have worked as Principal Environmental Consultant to MSA since 2009. My relevant experience for the purposes of this Technical Report is:

    a. 15 years (1996 -20100) as closure specialist working on metaliferous mine closure and related projects at all AngloGold mines in West,East and southern Africa, also Afrikander Lease, FRM Gold Mine Zimbabwe. Closure estimates for the following operations: Coal: Loopspruit Coal (SA) Base metals: Bong & Buchanan iron ore, Liberia ; Aluminum: BHPB Aluminum Smelter Closure Liability Estimates, Mozal and Hillside, Bayside Aluminum Smelters; Post-Closure Enterprise Development Strategy – GEM Diamonds Lesotho
    b. PhD thesis "The history of mine waste rehabilitation technology in southern Africa 1900s – 2000. (in progress).
    c. Quantification of Material Sustainability-related Risks for South African gold and platinum mining sectors (water, skills, safety & closure) as well as benchmarking company performance relative to peers for South African asset management clients.
    d. Lecturer and presenter in Mine Closure and Reclamation Project Management component of the Graduate Diploma of Engineering programme in the University of the Witwatersrand's School of Mining Engineering (2005–2008)

4. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI43-101") and certify that by reason of my education and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI43-101.

5. I contributed to sections 18 and 20 of the technical report entitled "Independent Technical Report on the Mupane Gold Mine, Botswana" and dated 10th May 2011 related to the Mupane Gold Mine (the "Technical Report"). I have not visited the site.

6. As at the effective date of the Technical Report, to the best of my knowledge, information, and belief, section 18 and 20 of the Technical Report contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

7. I am independent of the issuer as described in section 1.5 of NI 43-101.

8. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

9. I consent to the filing of this Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of this Technical Report.

10. I have not had prior involvement with the property that is the subject of the Technical Report.

Dated this 10th day of May 2011

Markus Reichardt M.A.; PhD (candidate)

CERTIFICATE OF QUALIFIED PERSON

I, John Francis Winchester Sexton, BSc, BCom, MBL, do hereby certify that:

1. I am an Associate Consultant at The MSA Group, 20B Rothesay Avenue, Craighall Park, Johannesburg South Africa.

2. I graduated with a BSc degree majoring in applied mathematics and physics from the University of the Witwatersrand, Johannesburg in 1971. I graduated with a BCom degree in finance and business administration from the University of the Witwatersrand, Johannesburg in 1974 and a MBL degree from the University of South Africa in 1978.

3. I have worked as a Mining Analyst for thirty six years. I worked for Rand Mines Limited from 1975 to 1984, Gold Fields of South Africa Limited from 1988 to 1998, and AngloGoldAshanti from 1998 to 2007. Since retiring in March 2007 from AngloGoldAshanti, I have worked as an independent consultant to AngloGoldAshanti, Mintails Limited and the MSA Group. My relevant experience for the purposes of this Technical Report is:

   36 years (1975-2011) as a mining analyst working on greenfields valuations, takeovers, mergers/acquisitions, due diligence reports, mine valuations, feasibility studies and mine expansion projects. The work covered metals/minerals such as gold, platinum, uranium, copper, zinc, coal, diamonds, fluorspar and iron ore. The countries in which the mines were located are: Australia, South America, Canada, North America, Ghana, the DRC, Tanzania, Egypt, Europe, Russia and South Africa.

4. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI43-101”) and certify that by reason of my education, and past relevant work experience, I fulfil the requirements to be a “qualified person” for the purposes of NI43-101.

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10. I have not had prior involvement with the property that is the subject of the Technical Report.

Dated this 10th day of May 2011

……………………………………………

John Francis Winchester Sexton BSc, BCom, MBL

CERTIFICATE OF QUALIFIED PERSON

I, Robert Charles Croll, do hereby certify that:

1. I am Head of Consulting at The MSA Group, 20B Rothesay Avenue, Craighall Park, Johannesburg, 2196.

2. I graduated with a BSc (Mining Engineering) degree from the University of the Witwatersrand in 1973 and a Master of Business Administration degree from the University of the Witwatersrand in 1977. In addition I have completed a Certificate Programme in Industrial Relations at the University of the Witwatersrand in 1987, a Graduate Diploma in Engineering at the University of the Witwatersrand in 1991, and an Advanced Management Programme at the University of Oxford in 2000.

3. I have over 35 years of experience in the Mining Industry and have worked in the field of mining valuations for the last 20 years.

4. I was elected as a Fellow of the South African Institute of Mining and Metallurgy on 20th July 1990.

5. I was the Chairman, for some 4 years, of the Committee that developed the South African Code for the Reporting of Mineral Asset Valuation (the SAMVAL Code).

6. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101.

7. I contributed to section 18 and undertook a peer review of the technical report titled "Independent Technical Report on the Mupane Gold Mine, Botswana" and dated 10th May, 2011 (the "Technical Report").

8. I have not had prior involvement with the property that is the subject of the Technical Report.

9. I have not visited the property.

10. As at the effective date of the Technical Report, to the best of my knowledge, information, and belief, section 18 of the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

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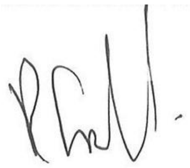
12. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

13. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 10th day of May, 2011.



…………………………………………….

Robert Charles Croll

GLOSSARY OF TECHNICAL TERMS

Alteration	Changes in the mineralogical composition of a rock as a result of physical or chemical processes such as weathering or penetration by hydrothermal fluids
Anastomosing	(Of veins) branching and closing to form a network
Anomaly (geochemical)	An above-average concentration of a chemical element in a sample of rock, soil, vegetation, stream, or sediment; indicative of nearby mineral deposit.
Archaean	Belonging to the geological period between about 2 500 and 4 000 million years ago
Arsenopyrite	A silvery-white mineral commonly occurring in lead and silver veins (FeAsS)
Basement	The rocks below a sedimentary platform or cover, or more generally any rock below sedimentary rocks or sedimentary basins that are metamorphic or igneous in origin.
Canaco	Canaco Resources Inc.
Cretaceous	A geologic period and system from circa 145 to 65 million years ago
Diorite	A grey to dark grey intermediate intrusive igneous rock composed principally of plagioclase feldspar (typically andesine), biotite, hornblende, and/or pyroxene.
Dyke	A type of sheet intrusion referring to any geologic body that cuts *discordantly* across pre-existing rocks
En echelon	(Of faults or veins) having a staggered parallel alignment
Felsic	Relating to an igneous rock composed mainly of pale-coloured minerals including feldspars and silica
Fire Assay	Lead collection fire assay using carefully selected fluxes specially formulated for the mineralogy of each sample type. Samples submitted for ppb detection of gold are fused in a dedicated low level furnace, the resultant prill digested and gold content determined typically by AAS.
Gangue	Uneconomic material that surrounds, or is closely mixed with ore
Georeference	Establishing location in terms of map projections or coordinate systems
Gneiss	A high grade metamorphic rock type characterized by a texture in which banding is caused by segregation of minerals, typically light and dark silicates.
Gossan	Intensely oxidized, weathered or decomposed rock, usually the upper and exposed part of an ore deposit or mineral vein
Granodiorite	An intrusive igneous rock with a quartz content of between 20 and 60% and a higher plagioclase than alkali feldspar content together with biotite and/or hornblende
Greenschist	A metamorphic rock comprising green minerals such as chlorite, epidote and actinolite in parallel orientation
Hydrothermal	Relating to or caused by a hot watery fluid
Hypogene	Primary mineralization
Intrusive	An igneous rock that formed from magma that cooled and solidified within the Earth's crust
Lithology	Rock type
Mafic	Relating to an igneous rock composed primarily of dark-coloured magnesium- and iron-rich minerals

Magnetic survey	Geophysical survey measuring the magnetic field intensity of rocks at various stations
Mesothermal	Formed at depth at a moderately-high temperature in the range 200-300°C
Metamorphic	Relating to changes at depth in the mineral and chemical composition and texture of a solid rock caused by heat, pressure, chemical environment and shear stress
Metasediment	A sedimentary rock that has shows evidence of having been subjected to metamorphism
Metasomatism	The chemical alteration of a rock by hydrothermal and other fluids
Metavolcanic	A volcanic rock that has shows evidence of having been subjected to metamorphism
Mineral Resource	A Mineral Resource is a concentration or occurrence of diamonds, natural solid inorganic material, or natural solid fossilized organic material including base and precious metals, coal, and industrial minerals in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge.
Mineralization	The process by which minerals are introduced into a rock resulting in the formation a mineral deposit
Neoproterozoic	A period of geological history at the end of the Proterozoic eon, dating from about 1 000 to 540 million years ago
Orogenic	Relating to the formation of structures such as folds and thrusts during a period of mountain-building
Pan-African	Relating to a collisional mountain-building event between about 750 and 550 million years ago
Pegmatite	A coarse-grained intrusive igneous rock composed of interlocking grains usually larger than 25mm in size; typically composed of quartz, feldspar and mica (granite composition)
Peneplain	An area of very low to no topographic relief formed through extensive lateral erosion down to a local base level
Pluton	An intrusive igneous rock (called a plutonic rock) body that crystallized from magma slowly cooling below the surface of the Earth.
Porphyritic	A igneous rock texture with larger mineral grains (phenocrysts) set in a matrix of samller grains
Porphyry	A variety of igneous rock consisting of large-grained crystals, such as feldspar or quartz, dispersed in a fine-grained feldspathic matrix or groundmass.
Precambrian	The span of geological time between formation of the Earth around 4500 Ma (million years ago) to the begnning of the Cambrian, around 542 Ma
Proterozoic	A period of geological history dating from about 2 500 to 540 million years ago, subdivided into the Palaeo-, Meso- and Neoproterozoic
Pyrite	A bronze- or yellow-coloured iron sulphide mineral (FeS_2) which commonly forms cubes
Pyrrhotite	A reddish-brown, sometimes magnetic iron sulphide mineral which has a defective crystal structure from which some ferrous ions are lacking ($Fe_{1-x}S$)

Qualified Person	An individual who is an engineer or geoscientist with at least five years of experience in mineral exploration, mine development or operation or mineral project assessment, or any combination of these; has experience relevant to the subject matter of the mineral project and the technical report; and is a member or licensee in good standing of a professional association.
Resistivity survey	A geophysical survey used to locate buried features by mapping differences in the way that rocks conduct an electric current.
Sinistral	Left lateral movement of blocks along a fault
Stockwork	A three-dimensional network of closely-spaced planar to irregular veins and veinltes, commonly forming a mineral deposit
Sulphide	A mineral containing sulphur with a metal or semi-metal, e.g. pyrite
Syntectonic	A geologic process or event occurring during tectonic activity
schist	A crystalline metamorphic rock having a foliated or parallel structure due to the recrystallisation of constituent minerals.
SAMREC	The South African code for the reporting of exploration results committee
strike	Horizontal direction or trend of a geological structure.
Tertiary (System)	The rocks formed between the end of the Cretaceous at 65 Ma and the start of the Quarternary at 1.7 Ma.
Tonne (t)	A metric tonne, 1,000 kg
tectonic	Pertaining to the forces involved in, or the resulting structures of, movement in the earth's crust.
ultramafic	Igneous rocks consisting essentially of ferromagnesian minerals with trace quartz and feldspar.
variogram	In spatial statistics, a graph which relates the variance of the difference in value between pairs of samples to the distance between them. Allows the weighting of a sample value in terms of its distance from the point where an estimate of sample value is required.

1 TAU DEPOSIT

1.1 Tau Block Model parameters

The Tau model is a standard type block model (rock code assignment using a volume threshold of 50%) with dimensions shown in Table 1-1. The model is oriented North-South/East-West and the mineralisation solids are mainly oriented East-West (90° towards the East) with a small zone oriented ~45°.

Table 1-1
Table of the Tau block model dimensions (UTM 35 South and AMSL)

	Number of blocks	*Size of Blocks (m)*	*Min. Coordinates*	*Max. Coordinates*
Columns	140	4	572 840	573 400
Rows	135	4	7 636 640	7 637 180
Levels	183	2.5	572.5	1 030
Origin	*Elevation:* 1,030m		*Easting:* 572 840	*Northing:* 7 636 640
Rotation	0°			

1.2 Tau Grade Capping

Grade capping analysis was performed on sample assays grouped by rock codes. Decile analysis shows capped values ranging between 10 g Au/t (zones 1500, 2300 and 2500) and 45 g Au/t (zone 1400) depending of the zone. The percentage of metal lost after capping, ranges between 1.08% (zone 2500) and 45.37% (zone 2300). No capping was necessary for zones 1800, 2100 and 2600. All information per zone is shown in Table 1-2.

Table 1-2
Table of the capping grades applied in different zones of the Tau block model

Zone's Name *Sept09_EvB	Rock Code	Average grade	Au grade capping	% of Metal removed	Assays capped/ Total assays
TAU_ORE-11	1100	2.85 g/t	30 g/t	13.7%	13 /1,287
TAU_ORE-13	1300	2.04 g/t	20 g/t	7.53%	59 /6,157
TAU_ORE-14	1400	4.45 g/t	45 g/t	1.9%	65 / 18,724
TAU_ORE-15	1500	1.21 g/t	10 g/t	8.44%	8 / 820
TAU_ORE-16	1600	1.84 g/t	18 g/t	12.82%	9 / 594
TAU_ORE-17	1700	2.98 g/t	30 g/t	8.32%	52 / 6,735
TAU_ORE-18	1800	2.73 g/t	-	-	0 / 64
TAU_ORE-19	1900	2.09 g/t	20 g/t	4.86%	19 / 1,989
TAU_ORE-20	2000	2.33 g/t	25 g/t	4.06%	8 / 1,177
TAU_ORE-21	2100	3.20 g/t	-	-	0 / 10
TAU_ORE-22	2200	2.25 g/t	20 g/t	19.27%	21 / 1,478
TAU_ORE-23	2300	2.89 g/t	10 g/t	45.37%	6 / 197
TAU_ORE-24	2400	1.74 g/t	15 g/t	3.31%	10 / 770
TAU_ORE-25	2500	1.13 g/t	10 g/t	1.08%	1 / 195
TAU_ORE-26	2600	0.68 g/t	-	-	0 / 300

1.3 Tau Resource Estimation

The Tau database includes 4,556 holes and 85,327 assays. Of this data, 41,540 assays were selected inside the zones and used to calculate the present resource estimations using 2.5-meter composites (with capped gold grades) for grade interpolation (using the ID2 weighting scheme in three passes). From this, 15,720 points were extracted in the Point Area.

Au_M:

First pass (RS_MEA): A block grade is estimated if, at least 4 composites from two different diamond drill holes (max. 2 composites per hole) are found within a 5x15x25m elliptical search. A minimum of 2 and a maximum number of 4 holes were used. 43,613 blocks were interpolated within this category and categorized as Measured. All blocks with the selected rock codes were interpolated.

Au_MI:

Second pass (RS_IND): A block grade is estimated if, at least 3 composites from two different diamond drill holes (max. 2 composites per hole) are found within a 5x30x50m elliptical search. Only blocks that have not been estimated by the first pass were interpolated. A minimum of 2 and a maximum number of 4 holes were used. 9,203 blocks were categorized as indicated.

Au_MII:

Third pass (RS_INF): A block grade is estimated if, at least 2 composites (max. 2 composites per hole) are found within a 10x50x75m elliptical search. Only blocks that have not been estimated by the two previous passes were interpolated. A minimum of 1 and a maximum number of 4 holes were used. 10,180 blocks were categorized as inferred.

The following Table 1.3 presents the minimum, maximum and average grades as well as the total number of blocks for each category.

Table 1.3
Minimum, Maximum and Average grades & total number of blocks for resource categories

	MEASURED	*MEASURED & INDICATED*	*MEASURED, INDICATED & INFERRED*
Min. grade (g Au/t)	*0.003*	*0.003*	*0.003*
Max. grade (g Au/t)	*36.268*	*36.268*	*36.268*
Average grade (g Au/t)	*3.185*	*3.040*	*2.955*
Number of blocks:	*43,613*	*52,816*	*62,970*

1.4 "3D" Solids and Surfaces

Fifteen Solids were created to define the mineralisation zones. Table 1.4 lists the surfaces and solids used for updating the block model along with their level of precedence in case that the solids overlap.

Table 1.4
Lists of all Mineralized zones & Surfaces - TAU

NAME	Creation Date (MM/DD/YY)	Preced.	Code	Type
TAU_ORE-11_Sept09_EvB	*09/30/09*	*3*	*1100*	*Geology*
TAU_ORE-13_Sept09_EvB	*10/01/09*	*1*	*1300*	*Geology*
TAU_ORE-14_Sept09_EvB	*09/30/09*	*2*	*1400*	*Geology*
TAU_ORE-15_Sept09_EvB	*10/01/09*	*5*	*1500*	*Geology*
TAU_ORE-16_Sept09_EvB	*09/30/09*	*6*	*1600*	*Geology*
TAU_ORE-17_Sept09_EvB	*09/30/09*	*7*	*1700*	*Geology*
TAU_ORE-18_Sept09_EvB	*09/29/09*	*8*	*1800*	*Geology*
TAU_ORE-19_Sept09_EvB	*09/30/09*	*9*	*1900*	*Geology*
TAU_ORE-20_Sept09_EvB	*09/30/09*	*10*	*2000*	*Geology*
TAU_ORE-21_Sept09_EvB	*09/30/09*	*11*	*2100*	*Geology*
TAU_ORE-22_Sept09_EvB	*10/01/09*	*12*	*2200*	*Geology*
TAU_ORE-23_Sept09_EvB	*09/30/09*	*13*	*2300*	*Geology*
TAU_ORE-24_Sept09_EvB	*09/30/09*	*14*	*2400*	*Geology*
TAU_ORE-25_Sept09_EvB	*09/29/09*	*15*	*2500*	*Geology*
TAU_ORE-26_Sept09_EvB	*09/30/09*	*16*	*2600*	*Geology*
Tau_Topo	*07/27/09*	-	-	*Topography*

1.5 Search Ellipses and Interpolation Profiles

All Search Ellipses parameters and Interpolation Profiles used to estimate a block are presented in the following Table 1.5.

Table 1.5
Search Ellipses and Interpolation Profiles parameters - TAU

TAU Search Ellipse & Interpolation Profiles	Profile name	Calculation Method	Blocks Update	Target codes	Search ellipse radii	Number of composites			Orientation*		
						Min.	Max.	Max/hole	Z	Y	Z
	RS_MEA MEASURED (Category 1)	ID^2 Anisotropic	Update blocks with the Selected rock codes	1100-1300 1400-1500 1600 -1700 1800-1900 2000-2100 2200-2300 2400-2500 2600	X: 5m Y: 15m Z: 25m	4	8	2	92°	+33°	0°
	RS_IND INDICATED (Category 2)	ID^2 Anisotropic	Update only blocks that have zero grades	1100-1300 1400-1500 1600 -1700 1800-1900 2000-2100 2200-2300 2400-2500 2600	X: 10m Y: 30m Z: 50m	4	8	2	92°	+33°	0°
	RS_INF INFERRED (Category 3)	ID^2 Anisotropic	Update only blocks that have zero grades	1100-1300 1400-1500 1600 -1700 1800-1900 2000-2100 2200-2300 2400-2500 2600	X: 10m Y: 50m Z: 100m	2	8	2	92°	+33°	0°

1.6 Mineralized zones

TAU was modelled into 15 mineralized zones oriented East-West (Table 1.6). The ore zones vary in width between 3 and 60m and dips between 45 ^{o} and 65 ^{o} to the south.

Table 1.6
Minimum, Maximum and Average grades & total number of blocks for resource categories

NAME	Creation Date (MM/DD/YY)	Preced.	Code	Type
TAU_ORE-11_Sept09_EvB	*09/30/09*	*3*	*1100*	*Geology*
TAU_ORE-13_Sept09_EvB	*10/01/09*	*1*	*1300*	*Geology*
TAU_ORE-14_Sept09_EvB	*09/30/09*	*2*	*1400*	*Geology*
TAU_ORE-15_Sept09_EvB	*10/01/09*	*5*	*1500*	*Geology*
TAU_ORE-16_Sept09_EvB	*09/30/09*	*6*	*1600*	*Geology*
TAU_ORE-17_Sept09_EvB	*09/30/09*	*7*	*1700*	*Geology*
TAU_ORE-18_Sept09_EvB	*09/29/09*	*8*	*1800*	*Geology*
TAU_ORE-19_Sept09_EvB	*09/30/09*	*9*	*1900*	*Geology*
TAU_ORE-20_Sept09_EvB	*09/30/09*	*10*	*2000*	*Geology*
TAU_ORE-21_Sept09_EvB	*09/30/09*	*11*	*2100*	*Geology*
TAU_ORE-22_Sept09_EvB	*10/01/09*	*12*	*2200*	*Geology*
TAU_ORE-23_Sept09_EvB	*09/30/09*	*13*	*2300*	*Geology*
TAU_ORE-24_Sept09_EvB	*09/30/09*	*14*	*2400*	*Geology*
TAU_ORE-25_Sept09_EvB	*09/29/09*	*15*	*2500*	*Geology*
TAU_ORE-26_Sept09_EvB	*09/30/09*	*16*	*2600*	*Geology*
Tau_Topo	*07/27/09*	-	-	*Topography*

The following figures (Figure 1-1 and Figure 1-2) identify all TAU mineralized zones.

Figure 1-1
TAU mineralised zones oriented East-West. Gridlines are 100m apart.

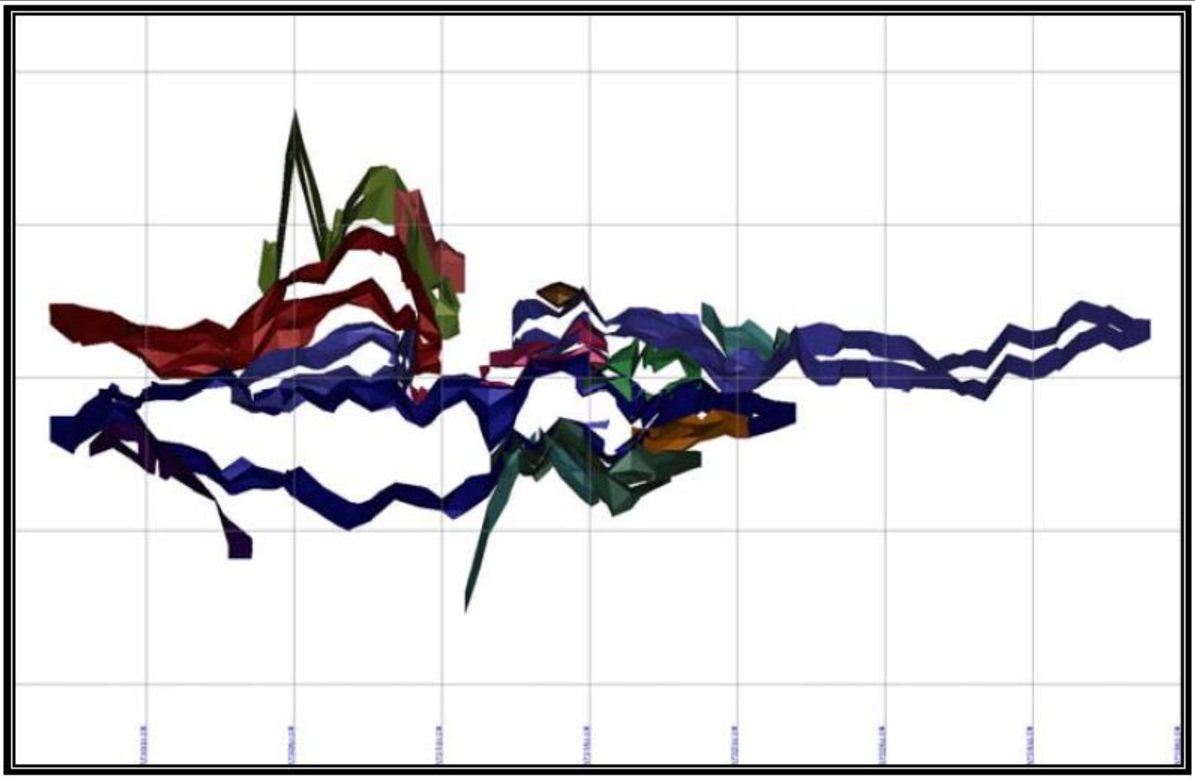
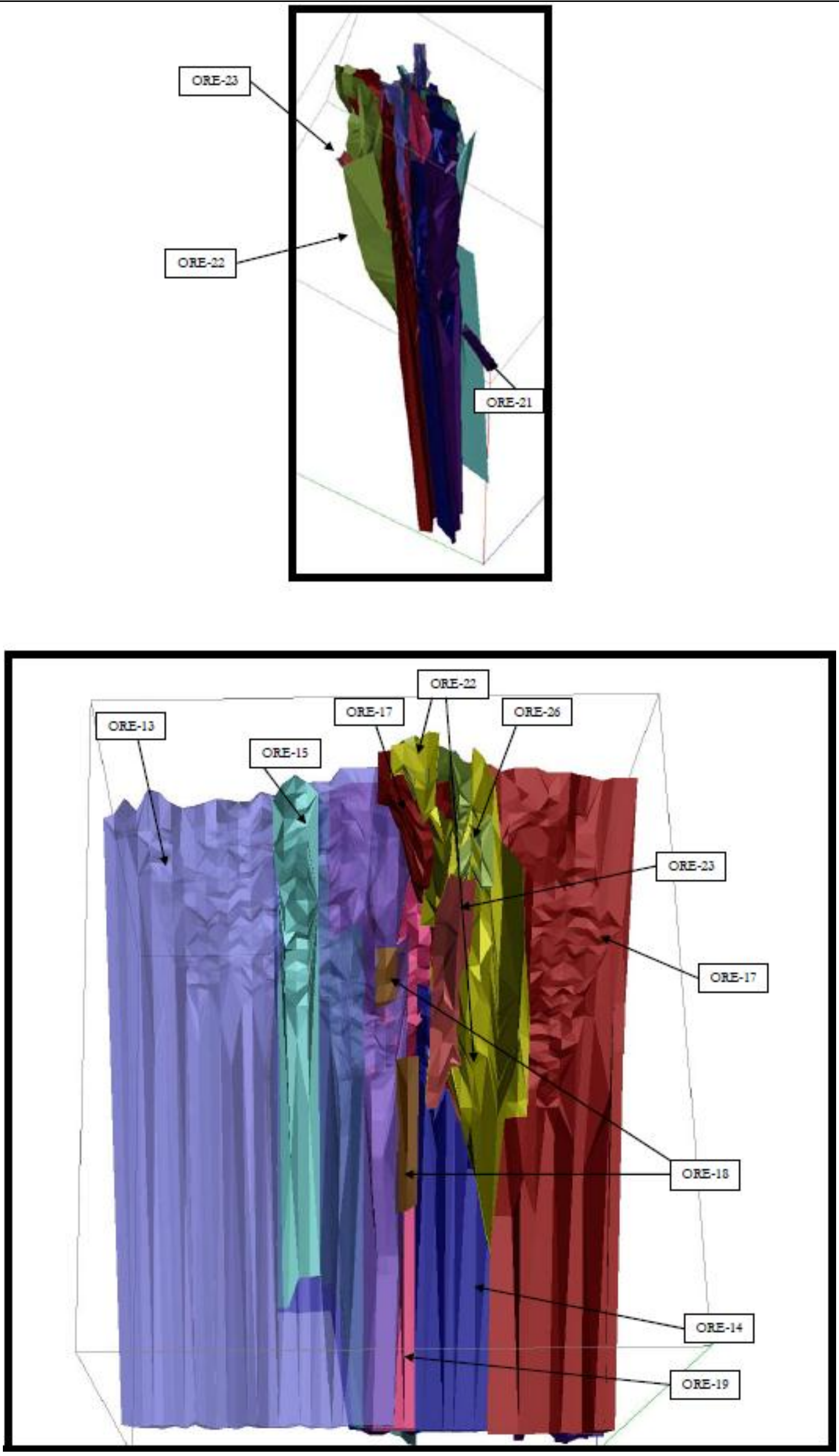


Figure 1-2
TAU mineralised zones identification



2 KWENA BLOCK MODEL

2.1 KWENA Block Model parameters

Kwena block model is a standard type (rock code assignment using a volume threshold of 50%) with dimensions shown in Table 2.1. The Kwena block model is oriented *North-South/East-West* and the mineralisation solids are oriented ~133° towards the *East.*

Table 2.1
KWENA Block model dimensions (UTM 35 South and AMSL)

	Number of blocks	Size of Blocks (m)	Min. Coordinates	Max. Coordinates
Columns	260	4	571 307	572 862
Rows	290	4	7 636 372	7 637 927
Levels	105	2.5	767.5	1030
Origin	Elevation: 1030m		Easting: 572 127.278	Northing: 7 636 372.722
Rotation	45°			

2.2 Grade Capping

Grade capping analysis was performed on sample assays grouped by rock codes. Decile analysis shows capped values ranging between 7 g Au/t (zone 500) and 20 g Au/t (zone 400) depending of the zone. The percentage of metal lost after capping ranges between 0.36% (zone 400) and 2.21% (zone 500). No capping was necessary for zones 100, 800 and 900. All information per zone is shown below in Table 2.2. Hard boundaries are used between zones while soft boundaries are used between alteration levels.

Table 2.2
Capping grades by zones - KWENA

Zone's Name	Rock Code	Average grade	Au grade capping	% of Metal removed	Assays capped/ Total assays
ORE-1_KWENA	100	1.14 g/t	-	-	0 / 495
ORE-3_KWENA ORE-7_KWENA	300-700	0.98 g/t	10 g/t	1.36%	3 / 1,313
ORE-4_KWENA	400	1.79 g/t	20 g/t	0.36%	2 / 1,852
ORE-5A_KWENA ORE-5B_KWENA ORE-5C_KWENA	500	0.73 g/t	7 g/t	2.21%	5 / 640
ORE-6_KWENA	600	0.84 g/t	10 g/t	0.98%	1 / 1,153
ORE-8_KWENA ORE-8B_KWENA ORE-9_KWENA	800-900	0.58 g/t	-	-	0 / 176

2.3 Resource Estimation

2.5 meter, equal-length composites (with capped gold grades) were used for grade interpolation using the inverse distance squared (ID2) weighting scheme in three passes. The 2.5m composites table includes 3 200 composites. From this, 2 894 point areas of 2.50m maximum length and 1.25m minimum length were saved in the Point Area Workspace under "PArea_Sept09_CompInt". This file was then used to interpolate all blocks inside each zone.

The database includes 452 holes divided as follow, in total, *16,276 assays* were compiled in the database and used to calculate the present resources calculation.

AU_RS (Au-cap):

First pass (MEA_KW): A block grade is estimated if at least 4 composites from two different diamond drill holes (max. 2 composites per hole) are found within a 2.5x15x15m elliptical search. A minimum of 2 and a maximum number of 4 holes were used. 7,533 blocks were interpolated within this category and categorized as Measured.

Second pass (IND_KW): A block grade is estimated if at least 3 composites from two different diamond drill holes (max. 2 composites per hole) are found within a 2.5x25x25m elliptical search. Only blocks that have not been estimated by the first pass were interpolated. A minimum of 2 and a maximum number of 4 holes were used. 5,824 blocks were categorized as Indicated.

Third pass (INF_KW): A block grade is estimated if at least 2 composites (max. 2 composites per hole) are found within a 5x50x50m elliptical search. Only blocks that have not been estimated by the two previous passes were interpolated. A minimum of 1 and a maximum number of 4 holes were used. 15,105 blocks were categorized as Inferred.

Table 2.3 presents the minimum, maximum and average grades as well as the total number of blocks for each category.

Table 2.3
Minimum, Maximum and Average grades & total number of blocks for resource categories

	MEASURED	*MEASURED + INDICATED*	*MEASURED + INDICATED + INFERRED*
Min. grade (g Au/t)	*0.013*	*0.013*	*0.001*
Max. grade (g Au/t)	*10.859*	*10.859*	*10.859*
Average grade (g Au/t)	*1.245*	*1.152*	*1.137*
Number of blocks:	*7,533 blocks*	*13,357 blocks*	*28,462 blocks*

2.4 "3D" Solids and Surfaces

Solids are saved in Triangulation Workspace *Kwena_Solids* and surfaces are saved in *Kwena_Surf* workspace. Table 2.4 below lists the surfaces and solids used for updating the block model along with their level of precedence, in case they overlap.

Table 2.4
List of all Mineralized zones & Surfaces – KWENA

NAME	Creation Date (MM/DD/YY)	Preced.	Code	Type
ORE-1_KWENA_Sept09_EvB	*09/10/09*	*1*	*100*	*Geology*
ORE-3_KWENA_Sept09_EvB	*09/11/09*	*3*	*300*	*Geology*
ORE-4_KWENA_Sept09_EvB	*09/10/09*	*2*	*400*	*Geology*
ORE-5A_KWENA_Sept09_EvB	*09/10/09*	*4*	*500*	*Geology*
ORE-5B_KWENA_Sept09_EvB	*09/10/09*	*4*	*500*	*Geology*
ORE-5C_KWENA_Sept09_EvB	*09/10/09*	*4*	*500*	*Geology*
ORE-6_KWENA_Sept09_EvB	*09/10/09*	*5*	*600*	*Geology*
ORE-7_KWENA_Sept09_EvB	*09/10/09*	*7*	*700*	*Geology*
ORE-8_KWENA_Sept09_EvB	*09/11/09*	*6*	*800*	*Geology*
ORE-8B_KWENA_Sept09_EvB	*09/11/09*	*9*	*800*	*Geology*
ORE-9_KWENA_Sept09_EvB	*09/10/09*	*8*	*900*	*Geology*
TOPOSurf_ KWENA_ Sept09_EvB	*09/11/09*	-	-	*Topography*
Oxide_Official_Billy	*09/12/08*	-	-	*Surface*
Sulphide_Official_Billy	*09/12/08*	-	-	*Surface*
Bottom_775_m_Sept09_EvB	*09/11/09*	-	-	*Surface*

2.5 Search Ellipses and Interpolation Profiles

All Search Ellipses parameters and Interpolation Profiles used to estimate a block are presented in the Table 2.5.

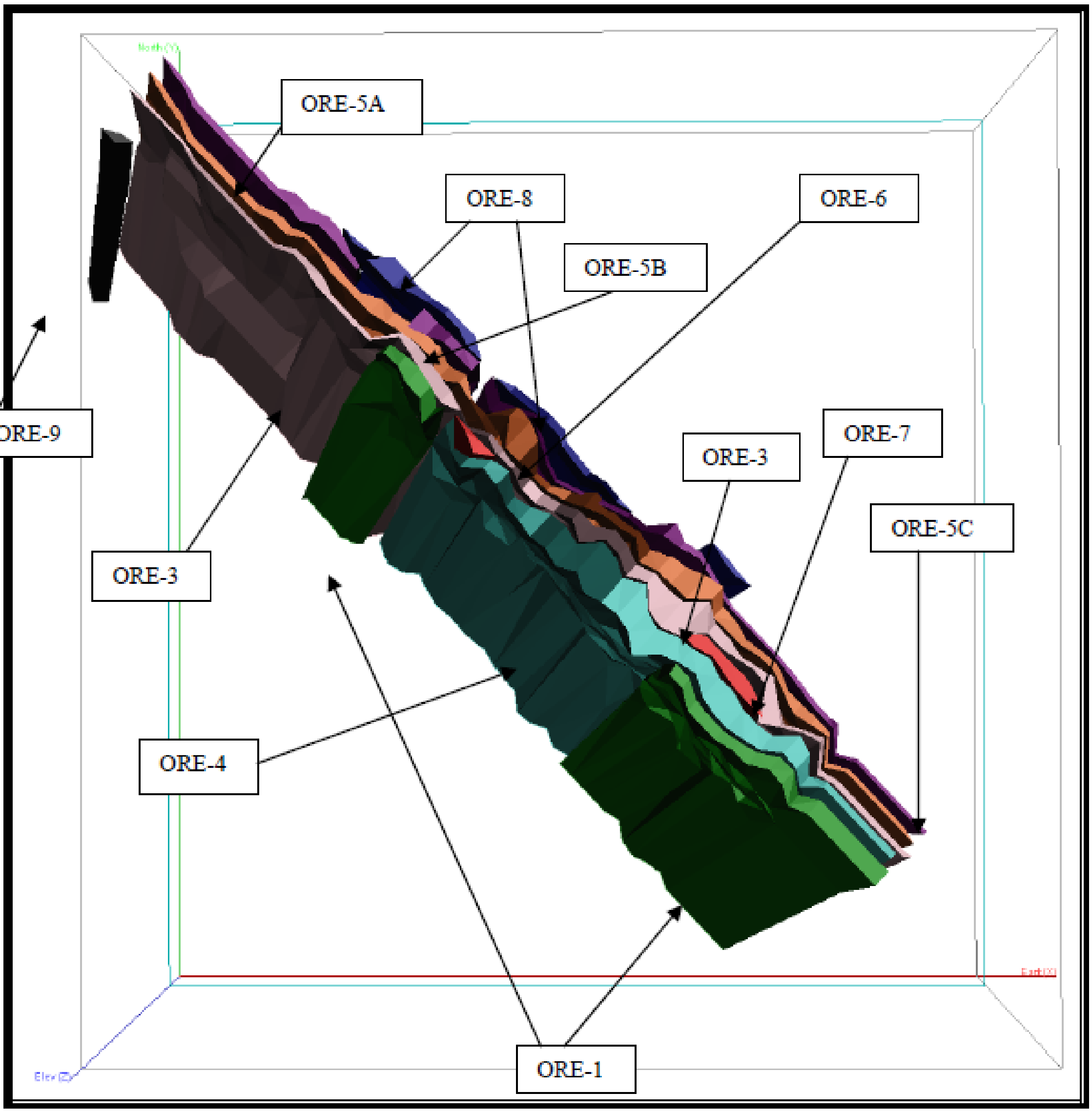
Table 2.5
Ellipses and Interpolation Profiles parameters - KWENA

KWENA Search Ellipse & Interpolation Profiles	Profile name & Category	Calculation Method	Blocks Update	Target Rock Codes	Search Ellipse radii	Number of composites			Orientation*		
						Min.	Max.	Max/hole	Z	Y	Z
	MEA_KW MEASURED (Category 1)	ID^2 Anisotropic	All blocks	100 300 400 500 600 700 800	X: 2.5m Y: 15m Z: 15m	4	8	2	0°	+20°	0°
	IND_KW INDICATED (Category 2)	ID^2 Anisotropic	Only zero grade blocks	100 300 400 500 600 700 800	X: 2.5m Y: 25m Z: 25m	3	8	2	0°	+20°	0°
	INF_KW INFERRED (Category 3)	ID^2 Anisotropic	Only zero grade blocks	100 300 400 500 600 700 800	X: 5m Y: 50m Z: 50m	2	8	2	0°	+20°	0°

2.6 Mineralized Zones

Kwena was modelled into 11 zones oriented north-west / south-east and dipping 65° to 67°, with width varying from 2.5m to 20 meters (Figure 2-1).

Figure 2-1
KWENA mineralized zones identification



3 GOLDEN EAGLE BLOCK MODEL

3.1 GOLDEN EAGLE Block Model parameters

The block model is a standard type (rock code assignment using a volume threshold of 50%) with dimensions shown in Table 3.1. The Golden Eagle block model and the mineralisation solids are oriented North-South.

Table 3.1
GOLDEN EAGLE Block model dimensions

	Number of blocks	*Size of Blocks (m)*	*Min. Coordinates*	*Max. Coordinates*
Columns	143	4	558 728	559 300
Rows	193	4	7 649 308	7 650 080
Levels	161	2.5	622.5	1025
Origin	*Elevation:* 1025*m*		*Easting:* 558 728	*Northing:* 7 649 308
Rotation	0°			

3.2 Grade Capping

Grade capping analysis was performed on sample assays grouped by rock codes. Decile analysis show capped values ranging between 10 g Au/t (zone 400 and 1000) and 20 g Au/t (zone 100) depending of the zone. The percentage of metal lost after capping, ranges between 0.45% (zone 1000) and 5.44% (zone 1200). No capping was necessary for zones 200, 300, 500, 600, 700, 800, 900, 1300, 1400, 1500 and 1600. All information per zone is shown on Table 3.2.

Table 3.2
Capping grades by zones – GOLDEN EAGLE

Zone's Name	Rock Code	Average grade	Au grade capping	% of Metal removed	Assays capped/ Total assays
ORE-1 (ORE-1A to H)_GoldenE_Jan10	100	1.86 g/t	20 g/t	1.6	3/761
ORE-2_ GoldenE_Dec09	200	1.10 g/t	/	/	0/53
ORE-3_ GoldenE_Jan10	300	2.14 g/t	/	/	0/197
ORE-4 (and ORE-4A)_ GoldenE_Jan10	400	1.11 g/t	10 g/t	0.67	1/244
ORE-5_ GoldenE_Jan10	500	1.57 g/t	/	/	0/30
ORE-6_ GoldenE_Jan10	600	0.61 g/t	/	/	0/74
ORE-7_ GoldenE_Jan10	700	0.84 g/t	/	/	0/105
ORE-8_ GoldenE_Jan10	800	1.55 g/t	/	/	0/20
ORE-9_ GoldenE_Jan10	900	0.84 g/t	/	/	0/65
ORE-10_ GoldenE_Jan10	1000	1.05 g/t	10 g/t	0.45	1/230
ORE-11A (and ORE-11B)_ GoldenE_Jan10	1100	1.55 g/t	15 g/t	2.01	5/816
ORE-12_ GoldenE_Jan10	1200	1.62 g/t	15 g/t	5.44	3/197
ORE-13(and ORE-13A)_ GoldenE_Jan10	1300	1.18 g/t	/	/	0/36
ORE-14_ GoldenE_Jan10	1400	1.31 g/t	/	/	0/137
ORE-15_ GoldenE_Jan10	1500	1.21 g/t	/	/	0/55
ORE-16_ GoldenE_Jan10	1600	2.78 g/t	/	/	0/18
ORE-18_ GoldenE_Jan10	1800	/	/	/	/
ORE-19_ GoldenE_Jan10	1900	/	/	/	/

3.3 Resource Estimation

2.5 meter, equal-length composites (with capped gold grades) were used for grade interpolation using the inverse distance squared (ID2) weighting scheme in two passes. One source of data (or “point area” in Gems terminology) containing 2,648 points was used to interpolate all blocks included within the zones.

AU_RS (Au-cap):

First pass (IND_RS): A block grade is estimated if at least 4 composites from two different diamond drill holes (max. 2 composites per hole are found within a 5x20x40m elliptical search. A minimum of 2 and a maximum number of 4 holes were used. 23,538 blocks were interpolated within this category and categorized as Indicated.

Second pass (INF_RS): A block grade is estimated if at least 2 composites (max. 2 composites per hole) are found within a 5x40x80m elliptical search. Only blocks that have not been estimated by the first pass were interpolated. A minimum of 2 and a maximum number of 4 holes were used. 17,682 blocks were categorized as Inferred.

3.4 "3D" Solids and Surfaces

Solids are saved in Triangulation Workspace *GE_Solids* and surfaces are saved in *GE_Surf* workspace. Table 3.3 lists the surfaces and solids used for updating the block model along with their level of precedence in case they overlap.

Table 3.3
Lists of all Mineralized zones & Surfaces at Golden Eagle

NAME	Creation Date (MM/DD/YY)	Preced.	Code	Type
ORE-1_GoldenE_Jan10_EvB	01/05/10	1	100	Geology
ORE-1A_ GoldenE_Jan10_EvB	01/05/10	2	100	Geology
ORE-1B_ GoldenE_Jan10_EvB	01/05/10	3	100	Geology
ORE-1C_ GoldenE_Jan10_EvB	01/05/10	4	100	Geology
ORE-1D_ GoldenE_Jan10_EvB	01/05/10	5	100	Geology
ORE-1E_ GoldenE_Jan10_EvB	01/05/10	6	100	Geology
ORE-1F_ GoldenE_Jan10_EvB	01/05/10	7	100	Geology
ORE-1G_ GoldenE_Jan10_EvB	01/05/10	8	100	Geology
ORE-1H_ GoldenE_Jan10_EvB	01/05/10	9	100	Geology
ORE-2_ GoldenE_Dec09_EvB	12/23/09	10	200	Geology
ORE-3_ GoldenE_Jan10_EvB	12/23/09	11	300	Geology
ORE-4_ GoldenE_Jan10_EvB	12/23/09	12	400	Geology
ORE-4B_ GoldenE_Jan10_EvB	01/05/10	29	400	Geology
ORE-5_ GoldenE_Jan10_EvB	01/05/10	13	500	Geology
ORE-6_ GoldenE_Jan10_EvB	12/23/09	14	600	Geology
ORE-7_ GoldenE_Jan10_EvB	12/23/09	15	700	Geology
ORE-8_ GoldenE_Jan10_EvB	12/23/09	16	800	Geology
ORE-9_ GoldenE_Jan10_EvB	01/05/10	17	900	Geology
ORE-10_ GoldenE_Jan10_EvB	01/05/10	18	1000	Geology
ORE-11A _ GoldenE_Jan10_EvB	01/05/10	19	1100	Geology
ORE-11B_ GoldenE_Jan10_EvB	01/05/10	20	1100	Geology
ORE-12_ GoldenE_Jan10_EvB	12/23/09	21	1200	Geology
ORE-13_ GoldenE_Jan10_EvB	01/05/10	22	1300	Geology
ORE-13A_ GoldenE_Dec09_EvB	12/23/09	28	1300	Geology
ORE-14_ GoldenE_Jan10_EvB	01/05/10	23	1400	Geology
ORE-15_ GoldenE_Jan10_EvB	01/05/10	24	1500	Geology
ORE-16_ GoldenE_Jan10_EvB	01/05/10	25	1600	Geology
ORE-18_ GoldenE_Jan10_EvB	01/05/10	26	1800	Geology
ORE-19_ GoldenE_Jan10_EvB	01/05/10	27	1900	Geology
TOPO Nov09 Mupane	11/26/09	-	-	Topography
OxideBas Feb2007 GoldenEagl	01/06/10*	-	-	Surface
TransBas Feb2007 GoldenEagl	01/06/10*	-	-	Surface
BottomS 650M Dec09_EvB	12/09/09			Surface

3.5 Search Ellipses and Interpolation Profiles

All Search Ellipses parameters and Interpolation Profiles used to estimate a block are presented in the following Table 3.4.

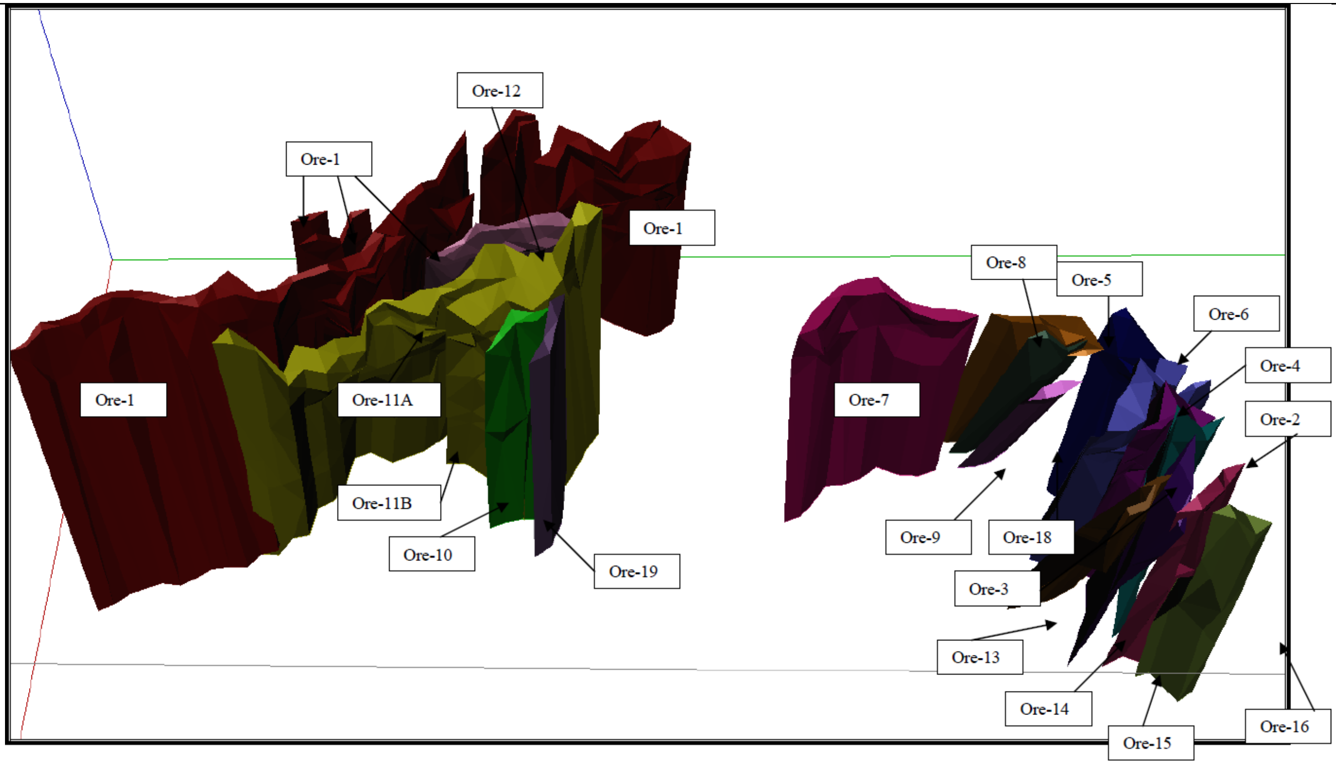
Table 3.4
Search Ellipses and Interpolation Profiles parameters – GOLDEN EAGLE

GOLDEN EAGLE Search Ellipse & Interpolation Profiles	Profile name & Category	Calculation Method	Blocks Update	Target Rock Codes		Search Ellipse radii	Number of composites			Orientation*		
							Min.	Max.	Max/ hole	Z	Y	Z
	NO MEASURED CATEGORY											
	IND_RS INDICATED (Category 2)	ID^2 Anisotropic	All blocks can be interpolated	*ALL:* *Ore-100* *Ore-200* *Ore-300* *Ore-400* *Ore-500* *Ore-600* *Ore-700* *Ore-800* *Ore-900*	*Ore-1000* *Ore-1100* *Ore-1200* *Ore-1300* *Ore-1400* *Ore-1500* *Ore-1600* *Ore-1800* *Ore-1900*	*X: 5m* *Y: 20m* *Z: 40m*	4	8	2	35°	+20°	0°
	INF_RS INFERRED (Category 3)	ID^2 Anisotropic	Only zero grade blocks can be interpolated	*ALL:* *Ore-100* *Ore-200* *Ore-300* *Ore-400* *Ore-500* *Ore-600* *Ore-700* *Ore-800* *Ore-900*	*Ore-1000* *Ore-1100* *Ore-1200* *Ore-1300* *Ore-1400* *Ore-1500* *Ore-1600* *Ore-1800* *Ore-1900*	*X: 5m* *Y: 40m* *Z: 80m*	2	8	2	35°	+20°	0°

3.6 Mineralized Zones

Golden Eagle was modelled into 29 zones (some of the zones were grouped) as shown in Figure 3-1.

Figure 3-1
GOLDEN EAGLE mineralized zones identification



4 THOLO BLOCK MODEL

4.1 THOLO Block Model parameters

Tholo block model is a standard type (rock code assignment using a volume threshold of 50%) with dimensions shown in Table 4.1. The THOLO block model and the mineralisation solids are oriented North-West / South-East.

Table 4.1
THOLO Block model dimensions (UTM 35S and AMSL)

	Number of blocks	*Size of Blocks (m)*	*Min. Coordinates*	*Max. Coordinates*
Columns	150	4	574 200	574 800
Rows	120	4	7 636 800	7 637 280
Levels	100	2.5	800	1050
Origin (Top level, SW corner)	*Elevation:* 1050*m*		*Easting:* 574 200	*Northing:* 7 636 800
Rotation	0°			

4.2 Grade Capping

Grade capping analysis was performed on sample assays grouped by rock codes. A grade capping of 30 g Au/t was chosen for the mineralized zone. All information is shown in Table 4.2.

Table 4.2
Capping grades by zones - THOLO

Zone's Name	*Rock Code*	*Au grade capping*
Tholo_THG1031	99	30 g Au/t

4.3 Resource Estimation

2.5 meter, equal-length composites (with capped gold grades) were used for grade interpolation using the inverse distance squared (ID2) weighting scheme in two passes. From the 2.5m composites table, a point area using composites between 1.25m and 2.50m of length was created and used to interpolate all blocks included in the mineralized zone. From the 4,664 composites, 4,250 points were saved in the point area workspace under "2_5MCMPRS".

The database includes 1,155 holes. From the 29 928 assays compiled in the database, 11 069 (1 meter) assays were included in the zone and used to calculate the present resources estimation.

Au_MI (Au-cap):

First pass (THG_IND): A block grade is estimated if at least 3 composites from two different diamond drill holes (max. 2 composites per hole) are found within a 12x15x5m elliptical search. Only blocks with the selected rock codes are interpolated. A minimum of 2 and a maximum number of 6 holes were used. 12 906 blocks were categorized as Indicated.

Au_MII (Au-cap):

Second pass (THG_INF): A block grade is estimated if at least 2 composites (max. 2 composites per hole) are found within a 25x50x10m elliptical search. Only blocks that have not been estimated by the previous pass were interpolated. A minimum of 1 and a maximum number of 6 holes were used. 11 822 blocks were categorized as Inferred.

Table 4.3 presents the minimum, maximum and average grades as well as the numbers of interpolated blocks for Tholo deposit.

Table 4.3
THOLO Minimum, Maximum and Average grades & Total number of interpolated blocks

	INDICATED	*INDICATED + INFERRED*
Min. grade (g Au/t)	*0.005*	*0.005*
Max. grade (g Au/t)	*14.175*	*14.175*
Average grade (g Au/t)	*1.543*	*1.608*
Number of blocks:	*12 906 blocks (MI)*	*24 728 blocks (MII)*

4.4 "3D" Solids and Surfaces

Solids and Surfaces are saved in Triangulation Workspace Tholo_Solids. Table 4.4 lists the surfaces and solids used for updating the block model along with their level of precedence in case the solids overlap.

Table 4.4
Lists of THOLO Mineralized zones & Surfaces

NAME	Creation Date (MM/DD/YY)	Preced.	Code	Type
Tholo_THG1031	*06/27/09*	*2*	*99*	*Geology*
Tholo_Dykes	*06/27/09*	*1*		*Geology*
EOM_June	*06/30/09*	-	-	*Topography*
*Oxide_*		-	-	*Surface*
*Sulphide_*		-	-	*Surface*
*Bottom_*		-	-	*Surface*

4.5 Search Ellipses and Interpolation Profiles

All parameters used to estimate a block are presented in Table 4.5.

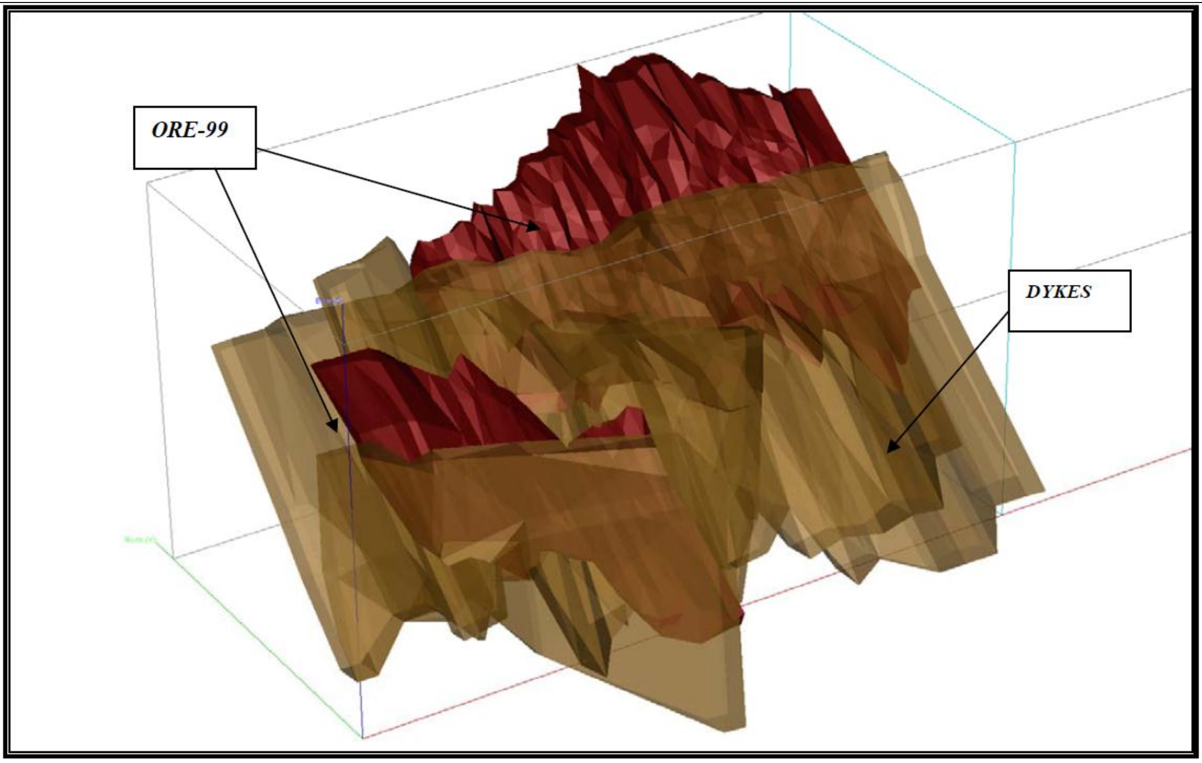
Table 4.5
Search Ellipses & Interpolation Profiles - THOLO

	Profile name & Category	Calculation Method	Blocks Update	Target Rock Codes	Search Ellipse radii		Number of composites			Orientation*		
					Grade under 10g/t	High Grade >10g/t	Min.	Max.	Max/hole	Z	Y	Z
THOLO Search Ellipses & Interpolation Profiles	THG_IND INDICATED (Category 2)	ID^2 Anisotropic	Update blocks that have the selected rock codes	99	X: 12m Y: 15m Z: 5m	X: 6m Y: 7.5m Z: 2.5m	3	12	2	-80°	+45°	0°
	THG_INF INFERRED (Category 3)	ID^2 Anisotropic	Update only blocks that have zero grades	99	X: 25m Y: 50m Z: 10m	X: 12.5m Y: 25m Z: 5m	2	12	2	-80°	+45°	0°

4.6 Mineralized Zones

Only one zone was modelled for THOLO (Figure 4-1).

Figure 4-1
THOLO Mineralized zone and Dykes



5 TAWANA BLOCK MODEL

5.1 TAWANA Block Model parameters

The block model is a standard type (rock code assignment using a volume threshold of 50%) with dimensions shown in Table 5.1. The model and the mineralisation solids are oriented North-West / South-East.

Table 5.1
TAWANA Block model dimensions (UTM35S and AMSL)

	Number of blocks	*Size of Blocks (m)*	*Min. Coordinates*	*Max. Coordinates*
Columns	95	4	573 157.574	573 652
Rows	80	4	7 636 895	7 637 390
Levels	70	2.5	845	1,020
Origin	*Elevation:* 1,020m		*Easting:* 573 157.574	*Northing:* 7 637 164.143
Rotation	-45°			

5.2 Grade Capping

Grade capping analysis was performed on sample assays grouped by rock codes. Only decile analysis was performed on assays and results show capped values of 20 g Au/t for zone 100 and 40 g Au/t for zone 200. The percentage of metal lost after capping and the number of assays capped in the database is shown in Table 5.2. No capping value was necessary for zone 400.

Table 5.2
Capping grades by zones - TAWANA

Zone's Name	*Rock Code*	*Average grade*	*Au grade capping*	*% of Metal removed*	*Assays capped/ Total assays*
ORE-1_TAWANA_Sept09_EvB	100	2.0 g/t	20 g/t	3.98%	4 / 204
ORE-2_TAWANA_Sept09_EvB	200	2.55 g/t	40 g/t	1.18%	2 / 130
ORE-3_TAWANA_Sept09_EvB	300		-	-	-
ORE-4_TAWANA_Sept09_EvB	400	0.79 g/t	-	-	0 / 37

5.3 Resource Estimation

2.5 meter, equal-length composites (with capped gold grades) were used for grade interpolation using the inverse distance squared (ID2) weighting scheme in three passes. The 2.5m composites table includes 184 composites. From this, 151 point areas of 2.50m maximum length and 1.25m minimum length were saved in the Point Area Workspace under "PArea_2.5mComps_Sept". This file was used to interpolate all blocks inside each zone.

The database includes 198 holes divided as follow:

- 127 Reverse Circulation Drill holes (named MPRC) totalling 16 992.47m;
- 28 RD (named MPRD) totalling 6 360.49m and;
- 43 Trenches (named MPTR) totalling 4 789.82m.

From the 378 assays, 151 composites were created and used to calculate the current resource estimation.

Au_M (Au-cap):

First pass (MEA_RS): A block grade is estimated if at least 5 composites from three different diamond drill holes (max. 2 composites per hole) are found within a 5x10x20m elliptical search. A minimum of 3 and a maximum number of 5 holes were used. 50 blocks were interpolated within this category. All blocks were transferred into the measured category.

Au_MI (Au-cap):

Second pass (IND_RS): A block grade is estimated if at least 3 composites from two different diamond drill holes (max. 2 composites per hole) are found within a 5x20x40m elliptical search. Only blocks that have not been estimated by the first pass were interpolated. A minimum of 2 and a maximum number of 5 holes were used. 2,628 blocks were categorized as Indicated.

Au_MII (Au-cap):

Third pass (INF_RS): A block grade is estimated if at least 2 composites (max. 2 composites per hole) are found within a 5x30x60m elliptical search. Only blocks that have not been estimated by the two previous passes were interpolated. A minimum of 1 and a maximum number of 5 holes were used. 1,829 blocks were categorized as Inferred.

Table 5.3 presents the minimum, maximum and average grades as well as the total number of blocks interpolated within each category.

Table 5.3
Minimum, Maximum and Average grades & Total number of blocks for resource categories

	INDICATED	*INDICATED + INFERRED*
Min. grade (g Au/t)	*0.051*	*0.045*
Max. grade (g Au/t)	*9.602*	*10.0*
Average grade (g Au/t)	*1.784*	*1.768*
Number of blocks:	*2,678 blocks*	*4,507 blocks*

5.4 "3D" Solids and Surfaces

Solids are saved in Triangulation Workspace Tau_Solids and surfaces are saved in Tau_Surf workspace. Table 5.4 is showing the list of the surfaces and solids used for updating the block model along with their level of precedence in case they overlap.

Table 5.4
Lists of all Mineralized zones & Surfaces at TAWANA deposit

Zone's NAME	Creation Date (MM/DD/YY)	Preced.	Code	Type
ORE-1_TAWANA_Sept09_EvB	*09/16/09*	*1*	*100*	*Geology*
ORE-2_TAWANA_Sept09_EvB	*09/16/09*	*2*	*200*	*Geology*
ORE-3_TAWANA_Sept09_EvB	*09/16/09*	*3*	*300*	*Geology*
ORE-4_TAWANA_Sept09_EvB	*09/16/09*	*4*	*400*	*Geology*
Tau_Topo	*07/27/09*	-	-	*Topography*
Tau_Oxide_Tr	*12/17/09*	-	-	*Surface*
Tau_Tr_Sulph	*12/17/09*	-	-	*Surface*

5.5 Search Ellipses and Interpolation Profiles

All parameters used to estimate a block are presented in **Table 5.5**.

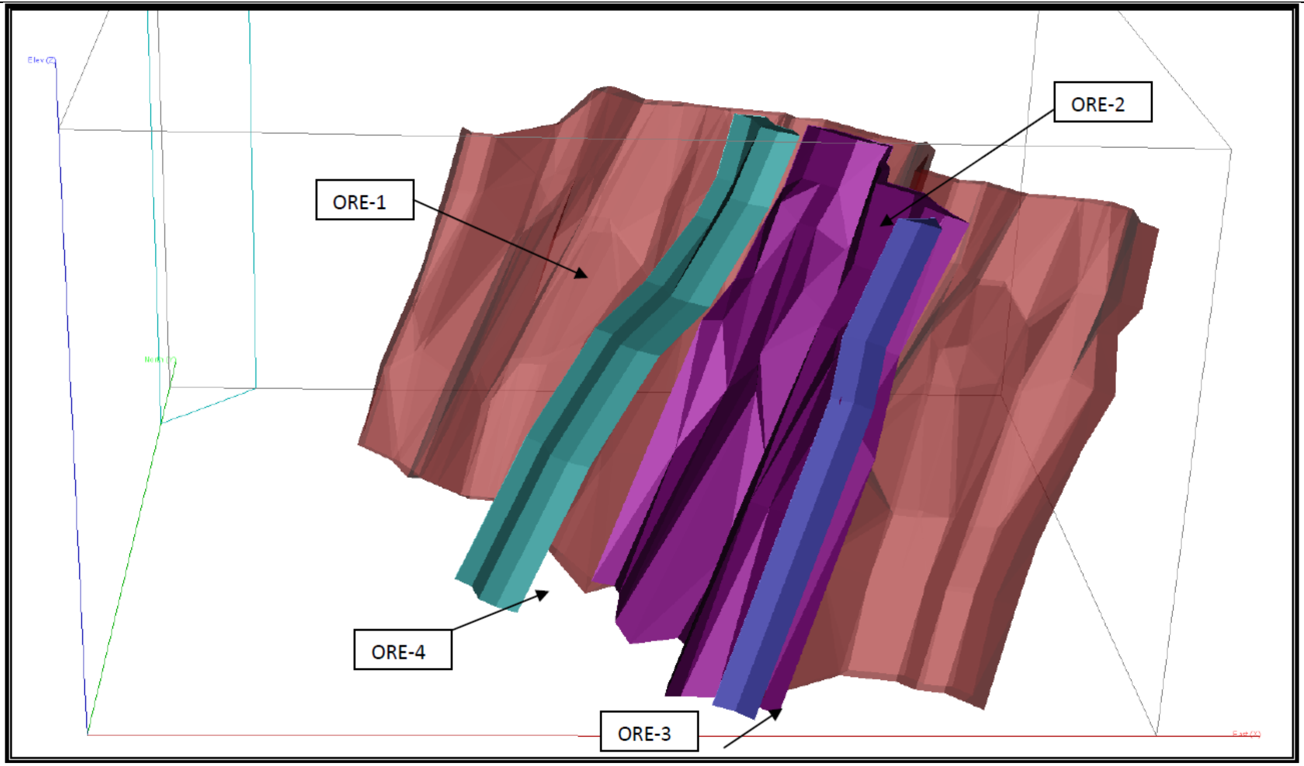
Table 5.5
Ellipses parameters and Interpolation Profiles - TAWANA

TAWANA Search Ellipse & Interpolation Profiles	Profile name & Category	Calculation Method	Blocks Update	Target Rock Codes	Search Ellipse radii	Number of composites			Orientation*		
						Min.	Max.	Max/hole	Z	Y	Z
	MEA_RS MEASURED (Category 1)	ID^2 Anisotropic	Blocks with selected RC	100 200 300 400	X: 5m Y: 10m Z: 20m	5	10	2	80°	+43°	12°
	IND_RS INDICATED (Category 2)	ID^2 Anisotropic	Only zero grade blocks	100 200 300 400	X: 5m Y: 20m Z: 40m	3	10	2	80°	+43°	12°
	INF_RS INFERRED (Category 3)	ID^2 Anisotropic	Only zero grade blocks	100 200 300 400	X: 5m Y: 30m Z: 60m	2	10	2	80°	+43°	12°

5.6 Mineralized Zones

Tawana was modelled into 4 zones (Figure 5-1).

Figure 5-1
Mineralized zones Identification – TAWANA



6 SIGNAL HILL - “A” ZONE BLOCK MODEL

6.1 SIGNAL HILL “A” Zone Block Model parameters

The block model is a standard type (rock code assignment using a volume threshold of 50%) with dimensions shown in Table 6.1. The A Zone block model is oriented North-South/East-West and the mineralisation solids are oriented ~75° South-West / North-East.

Table 6.1
Block model dimensions – A Zone SIGNAL HILL (UTM35S and AMSL)

	Number of blocks	***Size of Blocks (m)***	***Min. Coordinates***	***Max. Coordinates***
Columns	350	4	585 500	586 900
Rows	225	4	7 631 300	7 632 200
Levels	150	2.5	635	1010
Origin	*Elevation:* 1010*m*		*Easting:* 585 500	*Northing:* 7 631 300
Rotation	0°			

6.2 Grade Capping

Grade capping analysis was performed on sample assays grouped by rock codes. Decile analysis show capped values ranging between 4 g/t (zone 1100) and 25 g/t (zone 300) depending of the zone. The percentage of metal lost after capping, ranges between 8.04% (zone 700) and 22.42% (zone 1100). No capping was necessary for zones 100, 200, 400, 500, 800, 900 and 1000. All information per zone is shown on Table 6.2.

Table 6.2
Capping grades by zones – A Zone SIGNAL HILL

Zone's Name	Rock Code	Average grade	Au grade capping	% of Metal removed	Assays capped/ Total assays
AZone_ORE-1_Dec09	100	0.61 g/t	-	-	0 / 45
AZone_ORE-2_Dec09	200	1.00 g/t	-	-	0 / 64
AZone_ORE-3_Dec09	300	2.63 g/t	25 g/t	13.55	26 / 1475
AZone_ORE-4_Dec09	400	0.83 g/t	-	-	0 / 66
AZone_ORE-5_Dec09	500	0.78 g/t	-	-	0 / 85
AZone_ORE-6_Dec09	600	1.82 g/t	17 g/t	8.70	53 / 5505
AZone_ORE-7_Dec09	700	1.13 g/t	15 g/t	8.04	4 / 241
AZone_ORE-8_Dec09	800	1.63 g/t	-	-	0 / 19
AZone_ORE-9_Dec09	900	0.52 g/t	-	-	0 / 46
AZone_ORE-10_Dec09	1000	0.44 g/t	-	-	0 / 92
AZone_ORE-11_Dec09	1100	0.53 g/t	4 g/t	22.42	1 / 60

6.3 Resource Estimation

2.5 meter, equal-length composites (with capped gold grades) were used for grade interpolation using the inverse distance squared (ID2) weighting scheme in three passes for each model profiles. From the composites 2.5m table, a point area (in Gems terminology) using composites over 1.25m length was created and used to interpolate all blocks include in each zone.

The database includes 887 holes and includes 31 082 assays from which 8 000 assays were intersected by the mineralized zones and used to calculate the present resources calculation. In total, 3 158 data were saved in the Point Area Workspace under "Parea_2.5m_Dec09".

Au_M (Au-cap):

First pass (MEA_RS): A block grade is estimated if at least 5 composites from three different diamond drill holes (max. 2 composites per hole) are found within a 5x10x20m elliptical search. A minimum of 3 and a maximum number of 6 holes were used. 11 113 blocks were interpolated within this category and categorized as Measured.

Au_MI (Au-cap):

Second pass (IND_RS): A block grade is estimated if at least 4 composites from two different diamond drill holes (max. 2 composites per hole) are found within a 5x20x40m elliptical search. Only blocks that have not been estimated by the first pass were interpolated. A minimum of 2 and a maximum number of 6 holes were used. 8 911 blocks were categorized as Indicated.

Au_MII (Au-cap):

Third pass (INF_RS): A block grade is estimated if at least 2 composites (max. 2 composites per hole) are found within a 10x30x60m elliptical search. Only blocks that have not been estimated by the two previous passes were interpolated. A minimum of 1 and a maximum number of 6 holes were used. 13 179 blocks were categorized as Inferred.

Table 6.3 presents the minimum, maximum and average grades as well as the total number of blocks interpolated within each category.

Table 6.3

Minimum, Maximum and Average grades & Total number of blocks for resource categories

	MEASURED	***MEASURED + INDICATED***	***MEASURED + INDICATED + INFERRED***
Min. grade (g Au/t)	0.049	0.028	0.001
Max. grade (g Au/t)	20.761	20.761	20.761
Average grade (g Au/t)	1.771	1.705	1.632
Number of blocks:	*11 113 blocks*	*20 024 blocks*	*33 051 blocks*

6.4 "3D" Solids and Surfaces

Solids are saved in Triangulation Workspace Azone_Solids and surfaces are saved in AZone_Surf workspace. Table 6.4 lists all 11 mineralized zones as well as the waste zone used for the resources estimation and the surfaces for updating the block model along with their level of precedence in case they overlap.

Table 6.4
List of all Mineralized zones and Surfaces at A Zone deposit

NAME	Creation Date (MM/DD/YY)	Preced.	Code	Type
AZone_ORE-1_Dec09_EvB	*12/03/09*	*5*	*100*	*Geology*
AZone_ORE-2_Dec09_EvB	*12/03/09*	*6*	*200*	*Geology*
AZone_ORE-3_Dec09_EvB	*12/03/09*	*7*	*300*	*Geology*
AZone_ORE-4_Dec09_EvB	*12/03/09*	*8*	*400*	*Geology*
AZone_ORE-5_Dec09_EvB	*12/03/09*	*11*	*500*	*Geology*
AZone_ORE-6_Dec09_EvB	*12/14/09*	*2*	*600*	*Geology*
AZone_ORE-7_Dec09_EvB	*12/02/09*	*3*	*700*	*Geology*
AZone_ORE-8_Dec09_EvB	*12/02/09*	*9*	*800*	*Geology*
AZone_ORE-9_Dec09_EvB	*12/02/09*	*10*	*900*	*Geology*
AZone_ORE-10_Dec09_EvB	*12/02/09*	*4*	*1000*	*Geology*
AZone_ORE-11_Dec09_EvB	*12/03/09*	*12*	*1100*	*Geology*
AZone_Waste-in_Dec09_EvB	*12/14/09*	*1*	*9*	*Geology*
AZone Topo	*07/28/09*	-	-	*Topography*
BottomS 675-m Dec09_EvB	*12/04/09*			*Surface*

6.5 Search Ellipses and Interpolation Profiles

All parameters used to estimate a block are presented in the following Table 6.5.

Table 6.5
Search Ellipses parameters and Interpolation Profiles – A Zone SIGNAL HILL

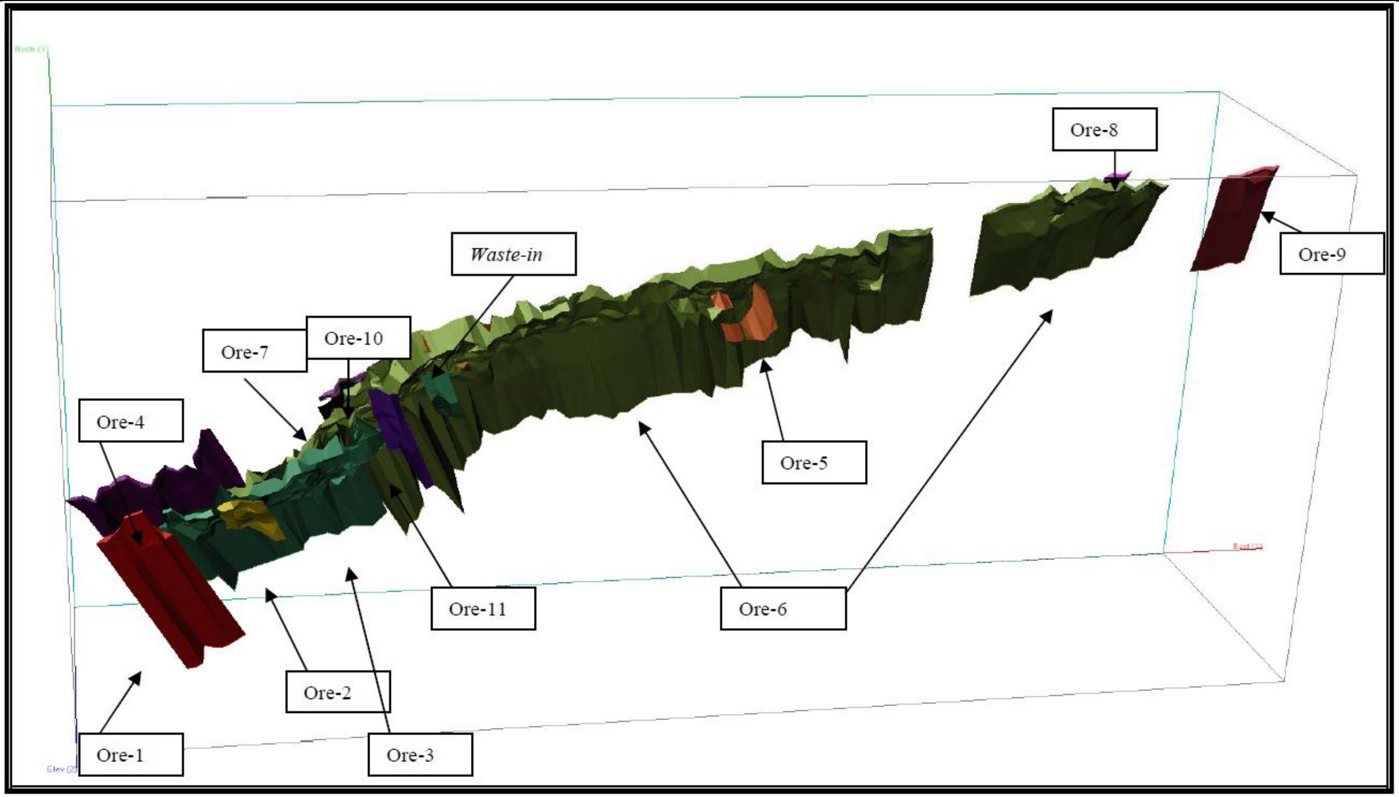
AZone Signal Hill Search Ellipses & Interpolation Profiles

Profile name & Category	Calculation Method	Blocks Update	Target Rock Codes	Search Ellipse radii	Number of composites			Orientation*		
					Min.	Max.	Max /hole	Z	Y	Z
MEA_RS MEASURED (Category 1)	ID^2 Anisotropic	Update only blocks that have the selected Rock Codes	1. (100-9100) 2. (200-9200) 3. (300-9300) 4. (400-9400) 5. (600-700-1000-9600-9700-10000) 6. (800-9800) 7. (900-9900)	*MEA_RS* X: 5m Y: 10m Z: 20m	5	12	2	115°	+45°	0°
			8. (500-9500) 9. (1100-10100)	*MEA_FLAT* X: 5m Y: 10m Z: 20m				115°	+75°	0°
IND_RS INDICATED (Category 2)	ID^2 Anisotropic	Update only blocks that have zero grades	1. (100-9100) 2. (200-9200) 3. (300-9300) 4. (400-9400) 5. (600-700-1000-9600-9700-10000) 6. (800-9800) 7. (900-9900)	*IND_RS* X: 5m Y: 20m Z: 40m	4	12	2	115°	+45°	0°
			8. (500-9500) 9. (1100-10100)	*IND_FLAT* X: 5m Y: 20m Z: 40m				115°	+75°	0°
INF_RS INFERRED (Category 3)	ID^2 Anisotropic	Update only blocks that have zero grades	1. (100-9100) 2. (200-9200) 3. (300-9300) 4. (400-9400) 5. (600-700-1000-9600-9700-10000) 6. (800-9800) 7. (900-9900)	*INF_RS* X: 10m Y: 30m Z: 60m	2	12	2	115°	+45°	0°
			8. (500-9500) 9. (1100-10100)	*INF_FLAT* X: 10m Y: 30m Z: 60m				115°	+75°	0°

6.6 Mineralized Zones

Signal Hill "A" Zone was modelled in 11 zones (Figure 6-1).

Figure 6-1
Identification of all Mineralized zones of the A Zone deposit



7 SIGNAL HILL - "B" ZONE BLOCK MODEL

7.1 SIGNAL HILL "B" Zone Block Model parameters

The block model is a standard type (rock code assignment using a volume threshold of 50%) with dimensions shown in Table 7.1. The B Zone block model is oriented North-South/East- West and the mineralisation solids are mainly oriented ~64° South-West/North-East.

Table 7.1
Block model dimensions – B Zone SIGNAL HILL (UTM35S and AMSL)

	Number of blocks	*Size of Blocks (m)*	*Min. Coordinates*	*Max. Coordinates*
Columns	103	4	586 800	587 212
Rows	75	4	7 631 500	7 631 800
Levels	47	2.5	872.5	990
Origin	*Elevation:* 990m		*Easting:* 586 800	*Northing:* 7 631 500
Rotation	0°			

7.2 Grade Capping

Grade capping analysis was performed on sample assays grouped by rock codes. Decile analysis showed capped values ranging between 10 g Au/t (zone 300) and 15 g Au/t (zones 100 and 400). The percentage of metal lost after capping, ranges between 1.84% (zone 100) and 15.06% (zone 300). No capping was necessary for zones 200, 500, 600 and 700. All information per zone is shown on Table 7.2.

Table 7.2
Capping grade by zones – B Zone SIGNAL HILL

Zone's Name	*Rock Code*	*Average grade*	*Au grade capping*	*% of Metal removed*	*Assays capped/ Total assays*
BZone_ORE-1_Oct09_EvB	100	1.50 g/t	15 g/t	1.84	2 / 406
BZone_ORE-2_Oct09_EvB	200	1.36 g/t	-	-	0 / 35
BZone_ORE-3_Oct09_EvB	300	1.19 g/t	10 g/t	15.06	2 / 72
BZone_ORE-4_Oct09_EvB	400	1.60 g/t	15 g/t	5.02	1 / 127
BZone_ORE-5_Oct09_EvB	500	0.72 g/t	-	-	0 / 13
BZone_ORE-6_Oct09_EvB	600	0.56 g/t	-	-	0 / 3
BZone_ORE-7_Oct09_EvB	700	3.31 g/t	-	-	0 / 28

(Au-cap):

First pass (MEA_RS): A block grade is estimated if at least 5 composites from three different diamond drill holes (max. 2 composites per hole) are found within a 10x20x5m elliptical search. A minimum of 3 and a maximum number of 6 holes were used. Only blocks with the selected rock codes were interpolated. 821 blocks (M only) were interpolated within this category and categorized as Measured.

Au_MI (Au-cap):

Second pass (IND_RS): A block grade is estimated if at least 3 composites from two different diamond drill holes (max. 2 composites per hole) are found within a 20x40x5m elliptical search. Only blocks that have not been estimated by the first pass were interpolated. A minimum of 2 and a maximum number of 6 holes were used. 1 042 blocks (Ind. only) were interpolated within this category.

Au_MII (Au-cap):

Third pass (INF_RS): A block grade is estimated if at least 2 composites (max. 2 composites per hole) are found within a 30x60x10m elliptical search. Only blocks that have not been estimated by the two previous passes were interpolated. A minimum of 1 and a maximum number of 6 holes were used. 704 blocks (Inf. only) were interpolated within this category.

Table 7.3 presents the minimum, maximum and average grades as well as the total number of blocks interpolated within each category.

Table 7.3
Minimum, Maximum and Average grades & Total number of blocks for resource categories

	MEASURED	MEASURED + INDICATED	MEASURED + INDICATED + INFERRED
Min. grade (g Au/t)	0.114	0.031	0.013
Max. grade (g Au/t)	8.137	8.137	8.529
Average grade (g Au/t)	1.732	1.537	1.5632
Number of blocks:	821 blocks (M)	1 863 blocks (MI)	2 567 blocks (MII)

7.3 "3D" Solids and Surfaces

Solids are saved in Triangulation Workspace Bzone_Solids and surfaces are saved in BZone_Surf workspace. Table 7.4 lists the surfaces and solids used for updating the block model along with their level of precedence in case they overlap.

Table 7.4
List of all Mineralized Zones and Surfaces at B Zone deposit

NAME	Creation Date (MM/DD/YY)	Preced.	Code	Type
BZone_ORE-1_Oct09_EvB	10/11/09	1	100	Geology
BZone_ORE-2_Oct09_EvB	10/11/09	2	200	Geology
BZone_ORE-3_Oct09_EvB	10/11/09	3	300	Geology
BZone_ORE-4_Oct09_EvB	10/11/09	4	400	Geology
BZone_ORE-5_Oct09_EvB	10/11/09	5	500	Geology
BZone_ORE-6_Oct09_EvB	10/11/09	6	600	Geology
BZone_ORE-7_Oct09_EvB	10/11/09	7	700	Geology
BZone_Topo	09/09/09	-	-	Topography
Oxide_Billy	12/17/09	-	-	Surface
SurfaceB_BottomS_11Nov09EvB	11/11/09	-	-	Surface

7.4 Search Ellipses & Interpolation Profiles

All parameters used to estimate a block are presented in Table 7.5.

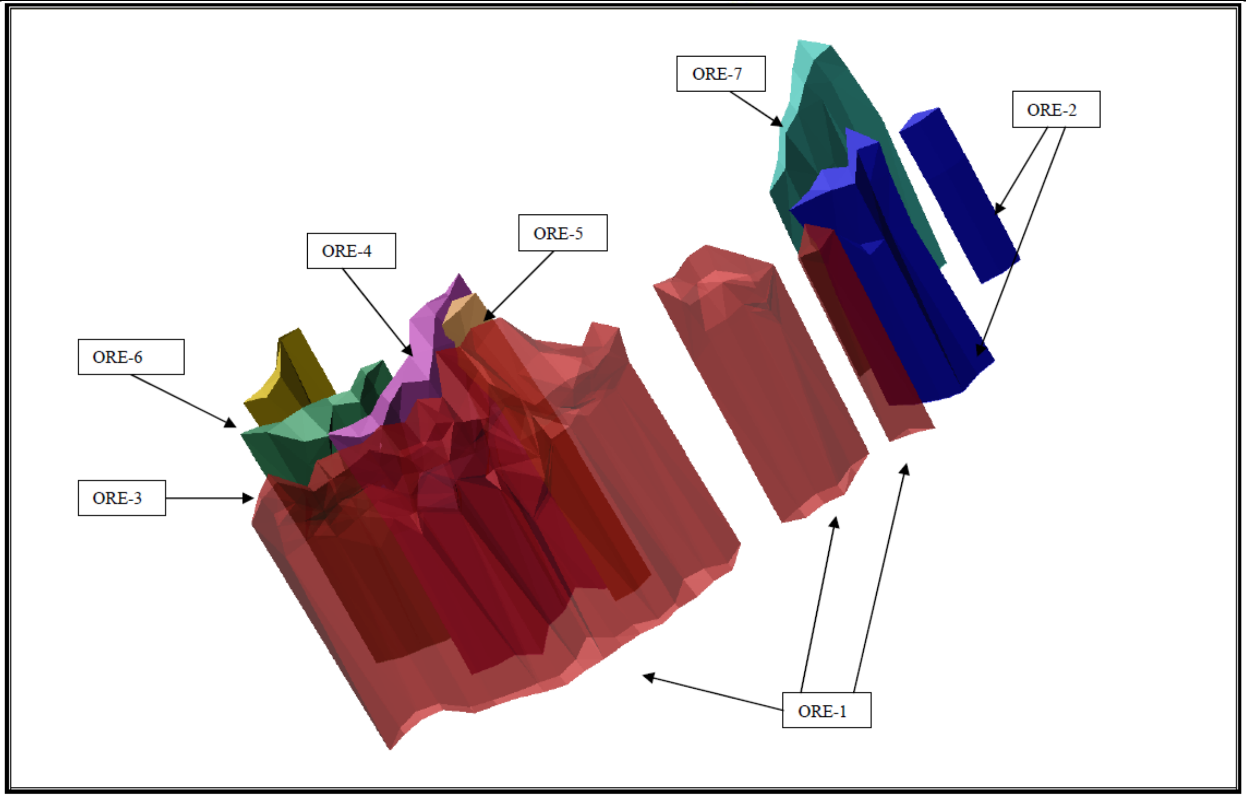
Table 7.5
Search Ellipses parameters and Interpolation Profiles – B Zone SIGNAL HILL

BZone Signal Hill Search Ellipses & Interpolation Profiles	Profile name & Category	Calculation Method	Blocks Update	Target Rock Codes	Search Ellipse radii	Number of composites			Orientation*		
						Min.	Max.	Max /hole	Z	Y	Z
	MEA_RS MEASURED (Category 1)	ID² Anisotropic	Update blocks that have the selected Rock Codes	100 200 300 400 500 600 700	***MEA_RS*** X: 10m Y: 20m Z: 5m	5	12	2	-65°	+45°	0°
	IND_RS INDICATED (Category 2)	ID² Anisotropic	Update only blocks that have zero grades	100 200 300 400 500 600 700	***IND_RS*** X: 20m Y: 40m Z: 5m	3	12	2	-65°	+45°	0°
	INF_RS INFERRED (Category 3)	ID² Anisotropic	Update only blocks that have zero grades	100 200 300 400 500 600 700	***INF_RS*** X: 30m Y: 60m Z: 10m	2	12	2	-65°	+45°	0°

7.5 Mineralized Zones

Signal Hill "B" Zone was modelled into 7 zones (Figure 7-1).

Figure 7-1
Identification of all mineralized zones for B Zone deposit



8 SIGNAL HILL - "F" ZONE BLOCK MODEL

8.1 SIGNAL HILL "F" Zone Block Model parameters

The block model is a standard type (rock code assignment using a volume threshold of 50%) with dimensions shown in Table 8.1. The model is oriented North-South /East - West and the mineralisation solids are oriented 80° towards the east.

Table 8.1
Block model dimensions – F Zone SIGNAL HILL (UTM35S and AMSL)

	Number of blocks	*Size of Blocks (m)*	*Min. Coordinates*	*Max. Coordinates*
Columns	75	4	587 200	587 500
Rows	44	4	7 632 000	7 632 176
Levels	44	2.5	890	1000
Origin	*Elevation: 1000m*		*Easting:* 587 200	*Northing:* 7 632 000
Rotation	0°			

8.2 Grade Capping

A capped value of 30 g Au/t (zone 99) was chosen. All information per zone is shown on Table 8.2. Soft boundaries are used between alteration levels.

Table 8.2

Capping grades by zones – F Zone

Zone's Name	*Rock Code*	*Au grade capping*
FZ Update July2009	99	30 g Au/t

8.3 Resource Estimation

2.5 meters, equal-length composites (with capped gold grades) were used for grade interpolation using the inverse distance squared (ID2) weighting scheme in two passes. 880 composites of 2.5meters of length were included inside the zone and only composites of 1.25m minimum and 2.50m maximum were saved in the point area. Therefore, 725 points were saved in “2_5MRS” file and used to interpolate all blocks included in zone 99.

The database includes 313 holes and totalizes 9 038 assays. From this, 1 857 assays were intersected by the zone and used to calculate the present resources calculation.

Au_MI (Au-cap):

First pass (FZ_IND): A block grade is estimated if at least 3 composites from two different holes (no max. /hole) are found within a 5x16x12m elliptical search. All blocks with the selected rock codes were interpolated. A minimum of 2 and a maximum number of 6 holes were used. 2,397 blocks were categorized as indicated.

Au_MII (Au-cap):

Second pass (FZ_INF): A block grade is estimated if at least 2 composites (no max. /hole) are found within a 5x25x12m elliptical search. Only blocks that have not been estimated by the previous pass were interpolated. A minimum of 1 and a maximum number of 6 holes were used. 1 206 blocks were categorized as inferred.

Table 8.3 presents the minimum, maximum and average grades as well as the total number of blocks interpolated within each category.

Table 8.3
Minimum, Maximum and Average grades and total number of blocks for resource categories

	INDICATED	*INDICATED + INFERRED*
Min. grade (g Au/t)	0.015	0.015
Max. grade (g Au/t)	20.232	20.232
Average grade (g Au/t)	2.697	2.661
Number of blocks:	*2 397 blocks*	*3,603 blocks*

8.4 “3D” Solids and Surfaces

Solid and Surface are saved in Triangulation Workspace FZ_Solids. Table 8.4 lists the surfaces and solid used for updating the block model along with their level of precedence.

Table 8.4
List of all Mineralized zones and Surfaces at F Zone deposit

NAME	Creation Date (MM/DD/YY)	Preced.	Code	Type
FZ Update July2009	*07/02/09*	*1*	*99*	*Geology*
Fzone Topo	*07/11/09*	*-*	*-*	*Topography*
Oxide_Billy	*12/17/09*	*-*	*-*	*Surface*

8.5 Search Ellipses and Interpolation Profiles

All parameters used to estimate a block are presented in Table 8.5.

Table 8.5
Search Ellipses parameters and Interpolation Profiles – F Zone SIGNAL HILL

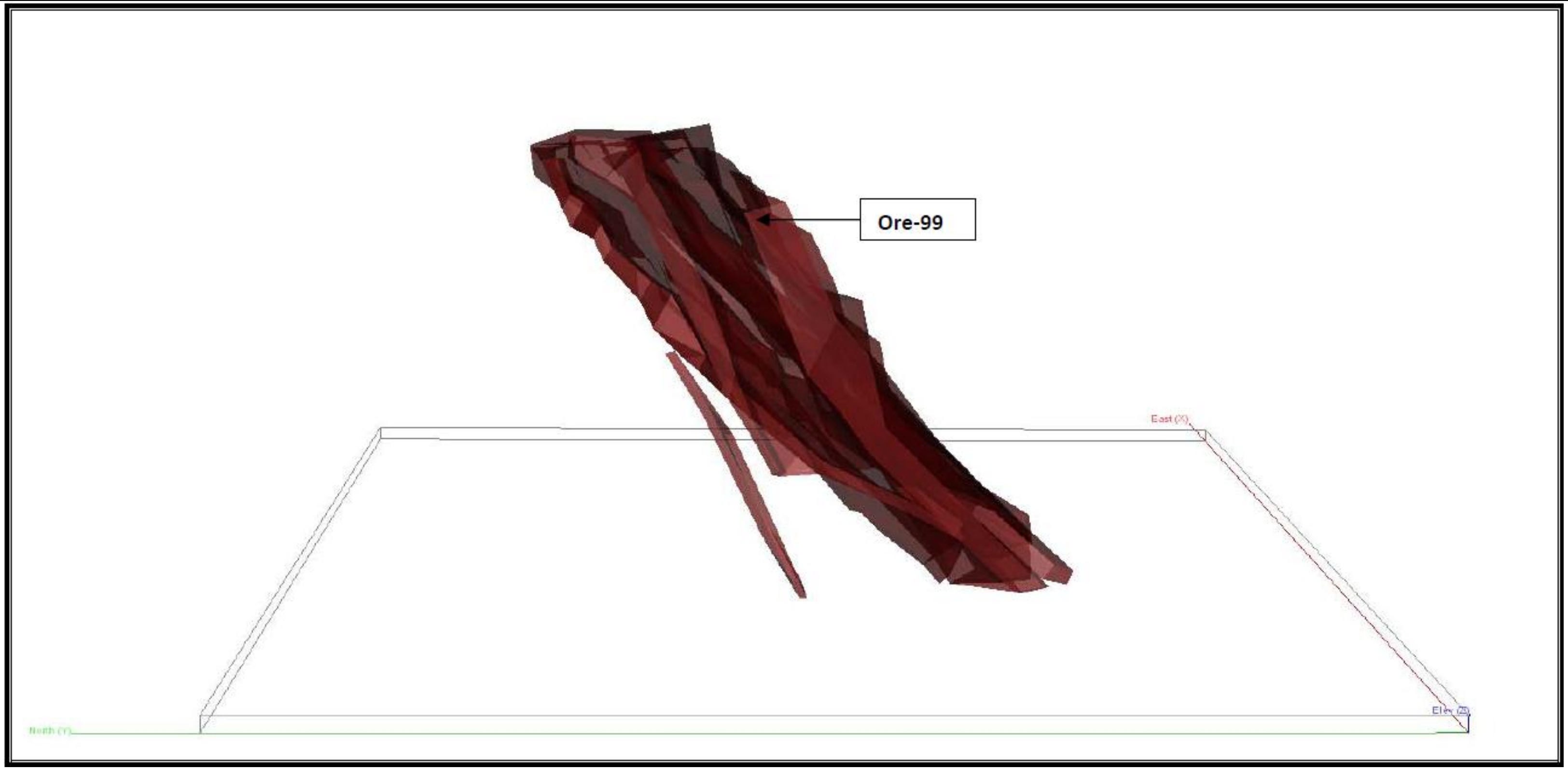
	Profile name & Category	Calculation Method	Blocks Update	Target Rock Codes	Search Ellipse		Number of composites			Orientation*		
					Grade range Under 10g/t	HG Range >10g/t	Min.	Max.	Max/hole	Z	Y	Z
F Zone SIGNAL HILL - Search Ellipse & Interpolation Profiles	FZ_IND INDICATED (Category 2)	ID^2 Anisotropic	Update blocks that have the selected rock codes	99	X: 5m Y: 16m Z: 12m	X: 2.5m Y: 8m Z: 6m	3	12	No restriction	80°	+45°	0°
	FZ_INF INFERRED (Category 3)	ID^2 Anisotropic	Update only blocks that have zero grades	99	X: 10m Y: 50m Z: 25m	X: 5m Y: 25m Z: 12.5m	2	12	No restriction	80°	+45°	0°

* Rotation around each axis (+is counter-clockwise)

8.6 Mineralized Zones

Signal Hill "F" Zone was modelled into only 1 zone (Figure 8-1).

Figure 8-1
View showing the ore zone at F Zone deposit



9 SIGNAL HILL - “WEST” ZONE BLOCK MODEL

9.1 SIGNAL HILL “West” Zone Block Model parameters

The West Zone block model is a standard type (rock code assignment using a volume threshold of 50%) with dimensions shown in Table 9.1. The West Zone block model is oriented ~57° towards the East and the mineralisation solids are oriented North- South/East-West.

Table 9.1
Block model dimensions – West Zone SIGNAL HILL (UTM35S and AMSL)

	Number of blocks	*Size of Blocks (m)*	*Min. Coordinates*	*Max. Coordinates*
Columns	50	4	585 180	585 380
Rows	50	4	7 631 320	7 631 520
Levels	44	2.5	880	990
Origin	*Elevation: 990m*		*Easting:* 585 180	*Northing:* 7 631 320
Rotation	0°			

9.2 Grade Capping

A capped value of 15 g Au/t (zone 99) was chosen. All information per zone is shown on Table 9.2. Soft boundaries are used between alteration levels.

Table 9.2
Capping grade – West Zone

Zone's Name	*Rock Code*	*Au grade capping*
WZ_ORE	99	15 g Au/t

9.3 Resource Estimation

2.5 meters, equal-length composites (with capped gold grades) were used for grade interpolation using the inverse distance squared (ID2) weighting scheme in two passes. 378 composites of 2.5 meters length are found inside the zone and only the composites of 1.25m minimum to 2.50m maximum were saved in the point area. In total, 341 points were saved in “CMPS2_5RS” file and used to interpolate all blocks included in zone 99.

The database includes 83 holes and totalizes 3 698 assays. From this, 877 (1-meter) assays were intersected by the zone and used to calculate the present resources calculation.

Au_MI (Au-cap):

First pass (WZ_RSIND): A block grade is estimated if at least 3 composites from two different diamond drill holes (no max. /hole) are found within a 15x20x5m elliptical search. All blocks with the selected rock codes were interpolated. A minimum of 2 and a maximum number of 6 holes were used. 2,621 blocks were interpolated within this category and categorized as Indicated.

Au_MII (Au-cap):

Second pass (WZ_RSINF): A block grade is estimated if at least 2 composites (no max. /hole) are found within a 20x25x7.5m elliptical search. Only blocks that have not been estimated by the previous pass were interpolated. A minimum of 1 and a maximum number of 6 holes were used. 909 blocks were categorized as Inferred.

Table 9.3 presents the minimum, maximum and average grades as well as the total number of blocks interpolated within each category

Table 9.3
Minimum, Maximum and Average grades & Total number of blocks for resource categories

	INDICATED	*INDICATED + INFERRED*
Min. grade (g Au/t)	0.038	0.038
Max. grade (g Au/t)	8.303	8.303
Average grade (g Au/t)	1.399	1.305
Number of blocks:	*2 621 blocks*	4 530 blocks

9.4 "3D" Solids and Surfaces

Solid and Surfaces are saved in Triangulation Workspace WZ_Solids. Table 9.4 lists the surfaces and solid used for updating the block model along with their level of precedence.

Table 9.4
List of all Mineralized zones and Surfaces at West Zone deposit

NAME	Creation Date (MM/DD/YY)	Preced.	Code	Type
WZ_ORE	*06/15/09*	*1*	*99*	*Geology*
WZ Topo	*07/13/09*	-	-	*Topography*
Oxide_Billy	*12/16/09*	-	-	*Surface*

9.5 Search Ellipses and Interpolation Profiles

All parameters used to estimate a block are presented in Table 9.5.

Table 9.5 Search Ellipses parameters and Interpolation Profiles

West Zone SIGNAL HILL

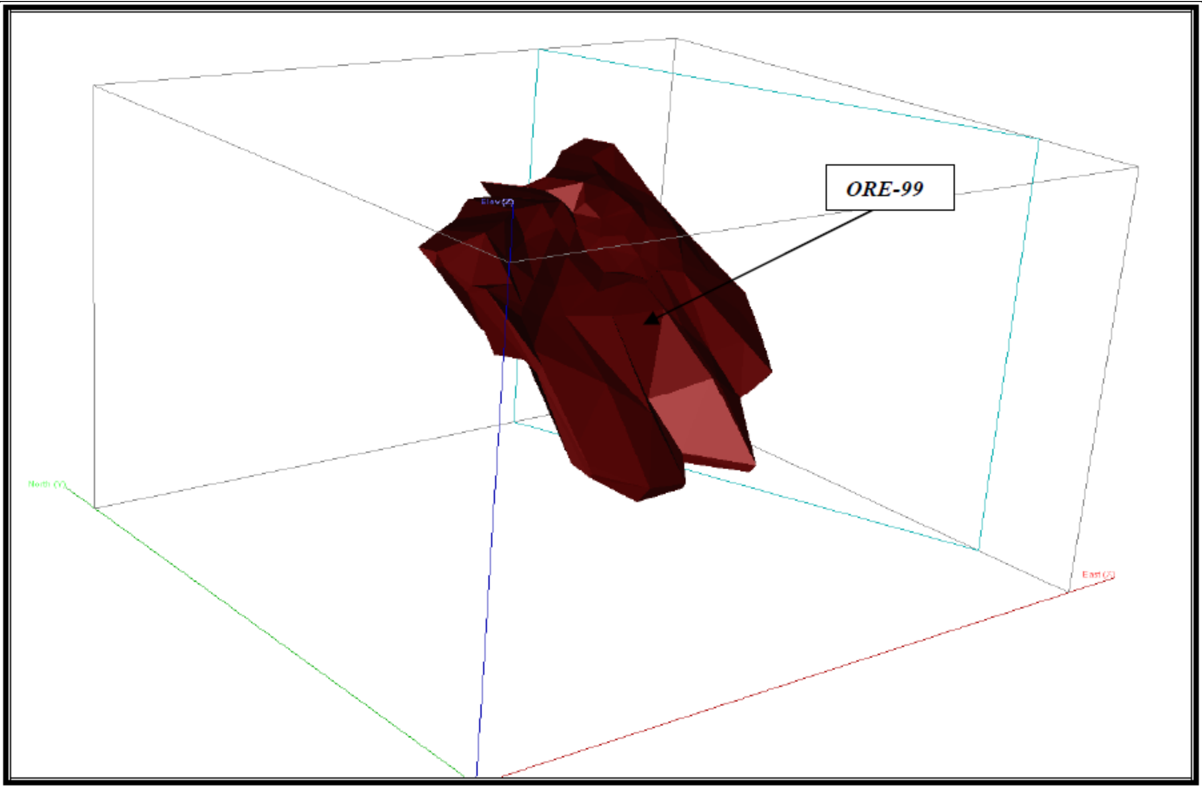
West ZONE - Search Ellipse & Interpolation Profiles	Profile name & Category	Calculation Method	Blocks Update	Target Rock Codes	Search Ellipse		Number of composites			Orientation*		
					NG Range 10g/t <	HG Range >10g/t	Min.	Max.	Max/hole	Z	Y	Z
	WZ_RSIND INDICATED (Category 2)	ID^2 Anisotropic	Update blocks that have the selected rock codes	99	X: 15m Y: 20m Z: 5m	X: 7.5m Y: 10m Z: 2.5m	3	12	2	-80°	+45°	0°
	WZ_RSINF INFERRED (Category 3)	ID^2 Anisotropic	Update only blocks that have zero grades	99	X: 20m Y: 25m Z: 7.5m	X: 10m Y: 12.5m Z: 3.75m	2	12	2	-80°	+45°	0°

* Rotation around each axis (+is counter-clockwise)

9.6 Mineralized Zones

Signal Hill "West" Zone was modelled into only 1 zone (Figure 9-1).

Figure 9-1 View showing the ore zone at West Zone deposit



10 MOLOMOLO BLOCK MODEL

10.1 MOLOMOLO Block Model parameters

The block model is a standard type (rock code assignment using a volume threshold of 50%) with dimensions shown in Table 10.1. The model is oriented North-South/East-West and the mineralisation solids are mainly oriented West-East and dipping between 24° and 33°.

Table 10.1
Block model dimensions - Molomolo (UTM35S and AMSL)

	Number of blocks	*Size of Blocks (m)*	*Min. Coordinates*	*Max. Coordinates*
Columns	145	4	584 260	584 840
Rows	140	4	7 627 780	7 628 340
Levels	75	2.5	762.5	950
Origin	*Elevation:* 1030m		*Easting:* 584 260	*Northing:* 7 628 340
Rotation	0°			

10.2 GRADE CAPPING

Grade capping analysis was performed on sample assays grouped by rock codes. Only decile analysis was performed on assays and results show capped values of 5 g Au/t for zone 300 and 10 g Au/t for zone 200. The percentage of metal lost after capping, is of 3.8% (zone 200) and 5.28% (zone 300). No capping value was necessary for zones 100, 400, 500, 600, 700, 800, 900, 1000 and 1100. All information per zone is shown on Table 10.2.

Table 10.2
Capping grades by zones – Molomolo

Zone's Name	Rock Code	Average grade	Au grade capping	% of Metal removed	Assays capped/ Total assays
ORE-1_MoloMinS_Nov09	100	2.39 g/t	-	-	0 / 272
ORE-2_ MoloMinS_Nov09	200	1.53 g/t	10 g/t	3.8%	3 / 180
ORE-3_ MoloMinS_Nov09	300	0.58 g/t	5 g/t	5.28%	1 / 75
ORE-4_MoloMinS_Nov09	400	1.20 g/t	-	-	0 / 68
ORE-5_ MoloMinS_Nov09	500	0.91 g/t	-	-	0 / 35
ORE-6_ MoloMinS_Nov09	600	0.71 g/t	-	-	0 / 31
ORE-7_ MoloMinS_Nov09	700	1.87 g/t	-	-	0 / 4
ORE-8_ MoloMinS_Nov09	800	1.05 g/t	-	-	0 / 33
ORE-9_ MoloMinS_Nov09	900	0.98 g/t	-	-	0 / 11
ORE-10_ MoloMinS_Nov09	1000	1.04 g/t	-	-	0 / 27
ORE-11_ MoloMinS_Nov09	1100	1.38 g/t	-	-	0 / 63

10.3 RESOURCE ESTIMATION

2.5 meter, equal-length composites (with capped gold grades) were used for grade interpolation using the inverse distance squared (ID2) weighting scheme in three passes. The 2.5m composites table includes 394 composites. From this, 285 point areas of 2.50m maximum length and 1.25m minimum length were saved in the Point Area Workspace under "PA_Molo_AU-cap_25Nov". This file was used to interpolate all blocks inside each zone.

The database includes 175 holes from which 806 assays were used for the current resource estimation.

Au_M (Au-cap):

First pass (MEA_RS): A block grade is estimated if at least 5 composites from three different diamond drill holes (max. 2 composites per hole) are found within a 5x10x20m elliptical search. A minimum of 3 and a maximum number of 5 holes were used. 303 blocks were interpolated within this category and categorized as Measured.

Au_MI (Au-cap):

Second pass (IND_RS): A block grade is estimated if at least 3 composites from two different diamond drill holes (max. 2 composites per hole) are found within a 5x20x40m elliptical search. Only blocks that have not been estimated by the first pass were interpolated. A minimum of 2 and a maximum number of 5 holes were used. 3,032 blocks were interpolated within this category and categorized as Indicated.

Au_MII (Au-cap):

Third pass (INF_RS): A block grade is estimated if at least 2 composites (max. 2 composites per hole) are found within a 10x30x60m elliptical search. Only blocks that have not been estimated by the two previous passes were interpolated. A minimum of 1 and a maximum number of 4 holes were used. 1,255 blocks were interpolated within this category and categorized as Inferred.

Hard boundaries were used between the rock codes and soft boundaries were used between the alteration levels. Table 10.3 presents the minimum, maximum and average grades as well as the total number of blocks interpolated within each category.

Table 10.3
Minimum, Maximum and Average grades & Total number of blocks for resource categories

	MEASURED	*MEASURED + INDICATED*	*MEASURED + INDICATED + INFERRED*
Min. grade (g Au/t)	*0.028*	*0.028*	*0.028*
Max. grade (g Au/t)	*7.288*	*8.689*	*8.689*
Average grade (g Au/t)	*2.531*	*1.574*	*1.505*
Number of blocks:	*303 blocks (M)*	*1 863 blocks (MI)*	*2 567 blocks (MII)*

10.4 "3D" Solids and Surfaces

Solids and Surfaces are saved in Triangulation Workspace WZ_Solids. Table 10.4 lists the surfaces and solid used for updating the block model along with their level of precedence in case they overlapped.

Table 10.4
Lists of all mineralized zones and Surfaces at Molomolo deposit

Zone's Name	Precedence	Code	Type
ORE-1_MoloMinS_Nov09_EvB	*1*	*100*	*Geology*
ORE-2_MoloMinS_Nov09_EvB	*2*	*200*	*Geology*
ORE-3_MoloMinS_Nov09_EvB	*3*	*300*	*Geology*
ORE-4_MoloMinS_Nov09_EvB	*4*	*400*	*Geology*
ORE-5_MoloMinS_Nov09_EvB	*5*	*500*	*Geology*
ORE-6_MoloMinS_Nov09_EvB	*6*	*600*	*Geology*
ORE-7_MoloMinS_Nov09_EvB	*7*	*700*	*Geology*
ORE-8_MoloMinS_Nov09_EvB	*8*	*800*	*Geology*
ORE-9_MoloMinS_Nov09_EvB	*9*	*900*	*Geology*
ORE-10_MoloMinS_Nov09_EvB	*10*	*1000*	*Geology*
ORE-11_MoloMinS_Nov09_EvB	*11*	*1100*	*Geology*
TOPO_ Molomolo_Old_Vers	-	-	*Topography*
Oxide__Dec09		-	*Surface*
Sulphide_Dec09		-	*Surface*
Btm_Surf_765_m_Nov09_EvB	-	-	*Surface*

10.5 Search Ellipses and Interpolation Profiles

All parameters used to estimate a block are presented in Table 10.5.

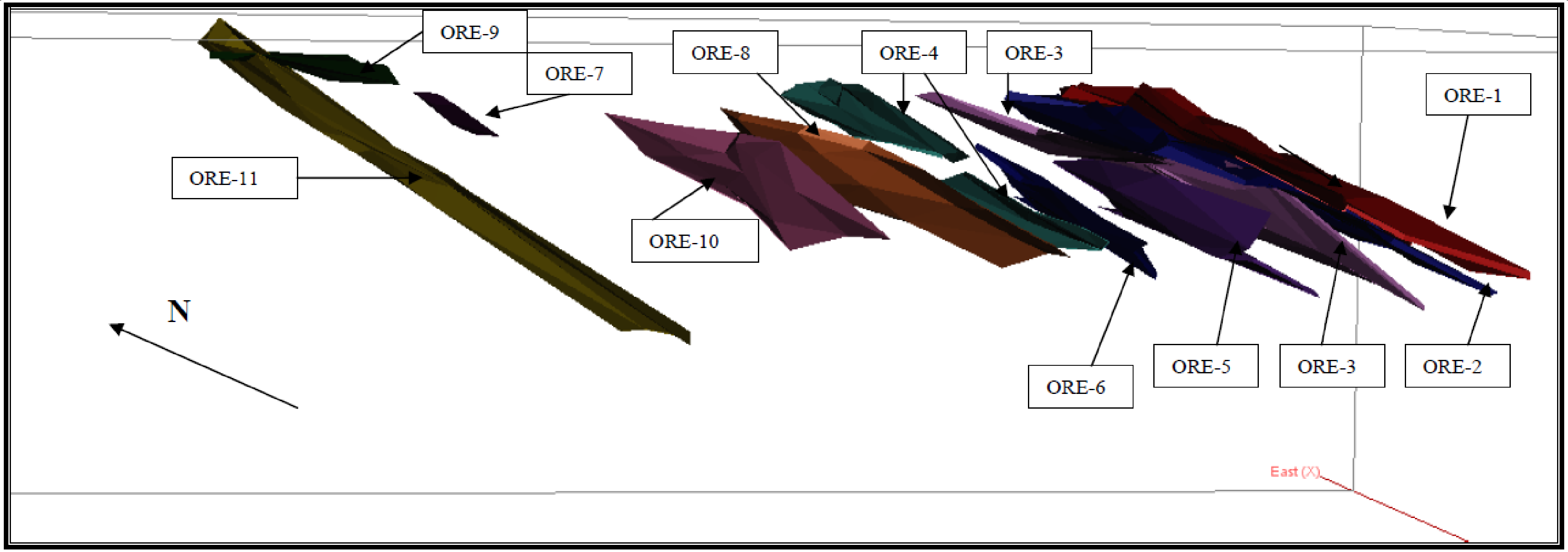
Table 10.5
Search Ellipses parameters and Interpolation profiles for MOLOMOLO deposit

MOLOMOLO Search Ellipse & Interpolation Profiles	Profile name & Category	Calculation Method	Blocks Update	Target Rock Codes		Search Ellipse radii	Number of composites			Orientation*		
							Min.	Max.	Max/hole	Z	Y	Z
	MEA_RS MEASURED (Category 1)	ID^2 Anisotropic	All blocks	100 200 300 400 500 600	700 800 900 1000 1100	X: 5m Y: 10m Z: 20m	5	10	2	90°	+64°	-3°
	IND_RS INDICATED (Category 2)	ID^2 Anisotropic	Only zero grade blocks	100 200 300 400 500 600	700 800 900 1000 1100	X: 5m Y: 20m Z: 40m	3	10	2	90°	+64°	-3°
	INF_RS INFERRED (Category 3)	ID^2 Anisotropic	Only zero grade blocks	100 200 300 400 500 600	700 800 900 1000 1100	X: 10m Y: 30m Z: 60m	2	8	2	90°	+64°	-3°

10.6 Mineralized Zones

The Molomolo deposit was modelled into 11 zones (Figure 10-1).

Figure 10-1
Identification VIEW of all mineralized zones for Molomolo deposit



APPENDIX 2: Rock Density Measurements

Table 10-6
Table of rock density measurements

Rock Type	Dry Weight (g)	Wet Weight (g)	Difference (g)	Specific Gravity Dry weight/ Difference	Comments
Quartz vein from the Kwena open pit	436.9	272.1	164.8	2.651092233	
	491.6	305.8	185.8	2.645855759	Minor Kaolin
	593.3	369.6	223.7	2.652212785	
	590.2	367.1	223.1	2.645450471	Some feldspars
	473.1	294.5	178.6	2.64893617	Some oxides
Average	517.02	321.82	195.20	**2.65**	
Waste rock. Quartz-sericite schist from the Kwena open pit	494.8	310.3	184.5	2.681842818	
	564.5	352	212.5	2.656470588	
	467.8	297.3	170.5	2.743695015	
	547	354.5	192.5	2.841558442	Sheared, with amphiboles
	584.8	355.1	229.7	2.545929473	
	450.5	284.8	165.7	2.718768859	Amphibole
	482.2	313.5	168.7	2.858328394	Amphibole
	525.7	329.7	196	2.682142857	Some fine sericite
	424.2	266	158.2	2.681415929	Some fine sericite
Average	504.61	318.13	186.48	**2.71**	
Carbonatised grey Quartzite from the Kwena open pit	559.9	350	209.9	2.667460696	
	434.9	268.3	166.6	2.610444178	
	489.9	315.4	174.5	2.807449857	
	582.3	365.8	216.5	2.68960739	
	484.6	304.2	180.4	2.686252772	
	356.2	223.2	133	2.678195489	
	302.7	202.3	100.4	3.014940239	
	528.5	328	200.5	2.635910224	
	532.2	336.1	196.1	2.713921469	
	310.6	198.9	111.7	2.780662489	

Rock Type	Dry Weight (g)	Wet Weight (g)	Difference (g)	Specific Gravity Dry weight/ Difference	Comments
	271.5	176.5	95	2.857894737	Fine grained Mn
	241	144.9	96.1	2.50780437	Much carbonate
Average	424.53	267.80	156.73	**2.72**	
Green Chloritic clay-rich zone from the Kwena open pit	447.5	248	199.5	2.243107769	
	523.8	340	183.8	2.849836779	
	498.5	287	211.5	2.356973995	Water absorption
	456.1	283	173.1	2.634893125	
	556.7	327.8	228.9	2.432066405	
	470.9	269.2	201.7	2.334655429	Fine serucite chlorite schist
	520.2	289.9	230.3	2.258792879	Sericite chlorite schist (fine)
	448.3	260	188.3	2.380775358	
	405.7	226.7	179	2.266480447	
Average	480.86	281.29	199.57	**2.42**	
Oxidised Banded Iron Formation ore from the Kwena open pit	341.3	220.8	120.5	2.832365145	Oxidised & siliceous
	570.7	365.3	205.4	2.778481013	
	521.2	296	225.2	2.314387211	Continually absorbing water - nontronitic
	381.5	235.5	146	2.613013699	Quartz-rich with little "BIF"
	423.4	266.9	156.5	2.70543131	Strongly banded
	429.8	265.8	164	2.620731707	Banded, some sulphide staining
	323.5	201.5	122	2.651639344	Very oxidised, minor nontronite
	308.7	194.5	114.2	2.703152364	Oxidised, with yellow green S staining
	397.4	258.5	138.9	2.861051116	
	505.5	342	163.5	3.091743119	Much S staining, and possibly manganese
Average	420.30	264.68	155.62	**2.72**	

Rock Type	Dry Weight (g)	Wet Weight (g)	Difference (g)	Specific Gravity Dry weight/ Difference	Comments
Ferruginous BIF Ore zone from the Kwena open pit	511	311.8	199.2	2.565261044	Silicified, sheared, weathered
	409	258.5	150.5	2.717607973	Similar to above butwith MnO staining
	546.4	337.8	208.6	2.61936721	Weathered sheared, with open spaces
	552.3	303.6	248.7	2.220747889	BIF with carbonate veins
	491.3	318.6	172.7	2.844817603	
	577	363.3	213.7	2.700046795	
	566.9	371.2	195.7	2.896780787	
	490	322.8	167.2	2.93062201	
Average	517.99	323.45	194.54	**2.69**	
Feldspathic ore from the Signal Hill deposit	406.3	251.7	154.6	2.628072445	
	421.6	259.7	161.9	2.60407659	
	345.5	213.2	132.3	2.61148904	
	400.3	246.2	154.1	2.597663855	
	434.4	269	165.4	2.626360339	
	473.9	292	181.9	2.605277625	
	353.2	217.2	136	2.597058824	
	356.4	211	145.4	2.451169188	
	337.6	205.6	132	2.557575758	
	327.2	202.5	124.7	2.623897354	
Average	385.64	236.81	148.83	**2.59**	

APPENDIX 3: Mining Schedule and Cash Flow Model

MINING			Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11
GOLD PRODUCTION											
MINED		TOTALS									
Waste	tonnes	8 207 682	698 018	763 302	776 857	731 265	774 512	727 332	719 884	718 172	543 503
Ore	tonnes	1 844 462	121 260	141 215	91 939	119 465	76 566	123 785	131 383	132 275	164 451
Grams	g	3 207 904	216 448	241 773	158 062	208 757	127 916	215 211	231 037	233 237	294 716
Grade	g/t	1.74	1.78	1.71	1.72	1.75	1.67	1.74	1.76	1.76	1.79
Total Mined - ozs	ozs	103 136	6 959	7 773	5 082	6 712	4 113	6 919	7 428	7 499	9 475
STOCKPILE MOVEMENT											
Ore	tonnes		31 260	51 215	1 939	29 465	-13 434	33 785	41 383	42 275	74 451
Grams	(g)		55 799	87 685	3 334	51 488	-24 992	58 738	72 772	74 542	133 425
Grade	(g/t)		1.78	1.71	1.72	1.75	1.86	1.74	1.76	1.76	1.79
STOCKPILE BALANCE											
Ore	tonnes		227 989	279 204	281 144	310 608	297 174	330 960	372 343	414 617	489 068
Grams	(g)	196 729	435 324	523 008	526 343	577 831	552 839	611 577	684 349	758 892	892 317
Grade	(g/t)		1.91	1.87	1.87	1.86	1.86	1.85	1.84	1.83	1.82
LOW GRADE ROM STOCKPILE											
Ore	tonnes	784 812	-	-	-	-	-	-	-	-	-
Grams	(g)	894 686	-	-	-	-	-	-	-	-	-
Grade	(g/t)		-	-	-	-	-	-	-	-	-
TREATED		TOTALS									
Ore	tonnes	2 826 004	90 000	90 000	90 000	90 000	90 000	90 000	90 000	90 000	90 000
Grams	g	4 482 115	160 649	154 089	154 728	157 269	152 907	156 472	158 265	158 695	161 291
Grade	g/t	1.59	1.78	1.71	1.72	1.75	1.70	1.74	1.76	1.76	1.79
Recovery	%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%
Produced - Au	ozs	125 370	4 494	4 310	4 328	4 399	4 277	4 377	4 427	4 439	4 511
Produced - Au	kgs	3 899	140	134	135	137	133	136	138	138	140
REVENUE			Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11
Gold Price (Nominal)	US$/oz		1 400	1 400	1 400	1 400	1 400	1 400	1 400	1 400	1 400
Gold Revenue	US$'000s	152 931					5 988	6 127	6 198	6 214	6 316
Total Revenue	US$'000s	**152 931**	**-**	**-**	**-**	**-**	**5 988**	**6 127**	**6 198**	**6 214**	**6 316**
OPERATING COSTS			Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11
OPERATING COSTS - REAL											
Mining Costs	US$ '000s	16 654					2 145	2 145	2 145	2 143	1 784
Processing	US$ '000s	45 128					1 647	1 647	1 647	1 647	1 647
G&A	US$ '000s	11 590					423	423	423	423	423
Rehabilitation Costs	US$ '000s	1 070					70	70	70	70	70
TOTAL OPERATING COSTS	US$ '000s	74 442	-	-	-	-	4 285	4 285	4 285	4 283	3 924
US$/oz (real)		**594**									
TOTAL OPERATING COSTS (NOMINAL)											
TOTAL OPERATING COSTS (NOMINAL)	US$ '000s	75 314	-	-	-	-	4 285	4 285	4 285	4 283	3 924
CAPEX (Real)			Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11
SUSTAINING CAPITAL	US$ '000s	2 500					125	125	125	125	125
Other	US$ '000s	-									
Other	US$ '000s	-									
RESTORATION AND CLOSURE COSTS	US$ '000s	6 348									
Totals	US$ '000s	8 848	-	-	-	-	125	125	125	125	125
CAPEX (Nominal)			Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11
SUSTAINING CAPITAL	US$ '000s	2 520	-	-	-	-	125	125	125	125	125
Other	US$ '000s	-									
Other	US$ '000s	-									
RESTORATION AND CLOSURE COSTS	US$ '000s	6 773									
Total	US$ '000s	9 294	-	-	-	-	125	125	125	125	125
INCOME STATEMENT			Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11
Total Revenue	US$ '000s	152 931					5 988	6 127	6 198	6 214	6 316
Realisation Costs:	US$ '000s	270					11	11	11	11	11
Transport, Insurance, Security	US$ '000s	190					7	8	8	8	8
Refining Charges	US$ '000s	80					3	3	3	3	3
Net Sales Revenue	US$ '000s	152 661					5 977	6 117	6 187	6 203	6 305
Botswana Govt Royalty	US$ '000s	7 647					299	306	310	311	316
Total Operating Cost	US$ '000s	75 314					4 285	4 285	4 285	4 283	3 924
Operating Profit	US$ '000s	69 700					1 393	1 525	1 592	1 610	2 065
Taxation	US$ '000s	2 285					-	-	-	-	-
Income After Tax	US$ '000s	67 416					1 393	1 525	1 592	1 610	2 065
Capex	US$ '000s	9 294					125	125	125	125	125
Cash Flow	US$ '000s	58 122					1 268	1 400	1 467	1 485	1 940
Cash Flow (real)	US$ '000s	56 646	-	-	-	-	1 268	1 400	1 467	1 485	1 940
Cumulative Cash Flow (real)			-	-	-	-	1 268	2 669	4 135	5 620	7 560

Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12
535 060	417 514	303 929	248 273	158 852	70 992	20 216	-	-	-	-	-	-	-	-
147 770	151 046	144 046	86 992	64 798	74 780	45 433	27 259	-	-	-	-	-		
267 678	263 014	247 606	148 486	109 114	124 618	74 746	45 485	-	-	-	-	-		
1.81	1.74	1.72	1.71	1.68	1.67	1.65	1.67	-	-	-	-	-		
8 606	8 456	7 961	4 774	3 508	4 007	2 403	1 462	-	-	-	-	-		
57 770	61 046	54 046	-3 008	-25 202	-15 220	-44 567	-62 741	-90 000	-90 000	-90 000	-90 000	-90 000	-61 192	-
104 648	106 299	92 902	-5 436	-45 543	-27 505	-80 537	-113 378	-162 638	-162 638	-162 638	-162 638	-162 638	-110 579	-
1.81	1.74	1.72	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	-
546 838	607 884	661 930	658 922	633 720	618 499	573 932	511 192	421 192	331 192	241 192	151 192	61 192	-0	-
996 964	1 103 263	1 196 164	1 190 728	1 145 186	1 117 681	1 037 144	923 767	761 129	598 491	435 854	273 216	110 578	-1	-
1.82	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	-
-	-	-	-	-	-	-	-	-	-	-	-	-	28 808	90 000
-	-	-	-	-	-	-	-	-	-	-	-	-	32 841	102 600
-	-	-	-	-	-	-	-	-	-	-	-	-	1.14	1.14
90 000	90 000	90 000	90 000	90 000	90 000	90 000	90 000	90 000	90 000	90 000	90 000	90 000	90 000	90 000
163 031	156 716	154 705	153 922	154 657	152 122	155 282	158 862	162 638	162 638	162 638	162 638	162 638	143 420	102 600
1.81	1.74	1.72	1.71	1.72	1.69	1.73	1.77	1.81	1.81	1.81	1.81	1.81	1.59	1.14
87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%
4 560	4 384	4 327	4 305	4 326	4 255	4 343	4 444	4 549	4 549	4 549	4 549	4 549	4 012	2 870
142	136	135	134	135	132	135	138	141	141	141	141	141	125	89
Oct-11	**Nov-11**	**Dec-11**	**Jan-12**	**Feb-12**	**Mar-12**	**Apr-12**	**May-12**	**Jun-12**	**Jul-12**	**Aug-12**	**Sep-12**	**Oct-12**	**Nov-12**	**Dec-12**
1 400	1 400	1 400	1 403	1 406	1 409	1 412	1 414	1 417	1 420	1 423	1 426	1 429	1 432	1 435
6 384	6 137	6 058	6 040	6 081	5 994	6 131	6 285	6 448	6 461	6 475	6 488	6 501	5 745	4 118
6 384	**6 137**	**6 058**	**6 040**	**6 081**	**5 994**	**6 131**	**6 285**	**6 448**	**6 461**	**6 475**	**6 488**	**6 501**	**5 745**	**4 118**
Oct-11	**Nov-11**	**Dec-11**	**Jan-12**	**Feb-12**	**Mar-12**	**Apr-12**	**May-12**	**Jun-12**	**Jul-12**	**Aug-12**	**Sep-12**	**Oct-12**	**Nov-12**	**Dec-12**
1 721	1 433	1 129	845	564	367	165	69	-	-	-	-	-	-	-
1 647	1 647	1 647	1 647	1 647	1 647	1 647	1 647	1 647	1 647	1 647	1 647	1 647	1 647	1 647
423	423	423	423	423	423	423	423	423	423	423	423	423	423	423
70	70	70	37	37	37	37	37	37	37	37	37	37	37	37
3 861	3 573	3 269	2 952	2 670	2 474	2 272	2 175	2 107	2 107	2 107	2 107	2 107	2 107	2 107
3 861	3 573	3 269	2 958	2 681	2 489	2 291	2 198	2 133	2 137	2 142	2 146	2 150	2 155	2 159
Oct-11	**Nov-11**	**Dec-11**	**Jan-12**	**Feb-12**	**Mar-12**	**Apr-12**	**May-12**	**Jun-12**	**Jul-12**	**Aug-12**	**Sep-12**	**Oct-12**	**Nov-12**	**Dec-12**
125	125	125	125	125	125	125	125	125	125	125	125	125	125	125
											529	529	529	529
125	125	125	125	125	125	125	125	125	125	125	654	654	654	654
Oct-11	**Nov-11**	**Dec-11**	**Jan-12**	**Feb-12**	**Mar-12**	**Apr-12**	**May-12**	**Jun-12**	**Jul-12**	**Aug-12**	**Sep-12**	**Oct-12**	**Nov-12**	**Dec-12**
125	125	125	125	126	126	126	126	127	127	127	127	128	128	128
											551	553	556	558
125	125	125	125	126	126	126	126	127	127	127	678	681	683	686
Oct-11	**Nov-11**	**Dec-11**	**Jan-12**	**Feb-12**	**Mar-12**	**Apr-12**	**May-12**	**Jun-12**	**Jul-12**	**Aug-12**	**Sep-12**	**Oct-12**	**Nov-12**	**Dec-12**
6 384	6 137	6 058	6 040	6 081	5 994	6 131	6 285	6 448	6 461	6 475	6 488	6 501	5 745	4 118
11	11	11	11	11	11	11	11	11	11	11	11	11	10	7
8	8	8	8	8	7	8	8	8	8	8	8	8	7	5
3	3	3	3	3	3	3	3	3	3	3	3	3	3	2
6 373	6 126	6 047	6 029	6 071	5 983	6 120	6 274	6 437	6 450	6 463	6 476	6 490	5 735	4 111
319	307	303	302	304	300	307	314	322	323	324	324	325	287	206
3 861	3 573	3 269	2 958	2 681	2 489	2 291	2 198	2 133	2 137	2 142	2 146	2 150	2 155	2 159
2 193	2 246	2 476	2 770	3 085	3 194	3 523	3 762	3 981	3 990	3 998	4 006	4 014	3 293	1 746
-	-	-	-	-	-	-	-	-	-	-	-	-	-	114
2 193	2 246	2 476	2 770	3 085	3 194	3 523	3 762	3 981	3 990	3 998	4 006	4 014	3 293	1 632
125	125	125	125	126	126	126	126	127	127	127	678	681	683	686
2 068	2 121	2 351	2 644	2 960	3 069	3 397	3 636	3 855	3 863	3 871	3 328	3 333	2 609	946
2 068	2 121	2 351	2 633	2 933	3 028	3 337	3 556	3 753	3 744	3 735	3 197	3 188	2 484	896
9 628	11 749	14 100	16 733	19 666	22 694	26 030	29 586	33 339	37 083	40 818	44 015	47 203	49 687	50 583

Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	2011	2012	2013
-	-	-	-	-	-	-	-	-	-	-	-	7 709 348	498 334	-
								-	-	-	-	1 545 201	299 261	-
								-	-	-	-	2 705 456	502 447	-
								-	-	-	-	1.75	1.68	#DIV/0!
								-	-	-	-	86 982	16 154	-
-	-	-	-	-	-	-	-	-	-	-	-			
-	-	-	-	-	-	-	-	-	-	-	-			
-	-	-	-	-	-	-	-	-	-	-	-			
-	-	-	-	-	-	-	-	-	-	-	-			
-	-	-	-	-	-	-	-	-	-	-	-			
-	-	-	-	-	-	-	-	-	-	-	-			
90 000	90 000	90 000	90 000	90 000	90 000	90 000	36 004	-	-	-	-	-	118 808	666 004
102 600	102 600	102 600	102 600	102 600	102 600	102 600	41 045	-	-	-	-	-	135 441	759 245
1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	-	-	-	-			
90 000	90 000	90 000	90 000	90 000	90 000	90 000	36 004	-	-	-	-	1 080 000	1 080 000	666 004
102 600	102 600	102 600	102 600	102 600	102 600	102 600	41 045	-	-	-	-	1 888 817	1 834 054	759 245
1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	-	-	-	-	1.75	1.70	1.14
87%	87%	87%	87%	87%	87%	87%	87%	0%	0%	0%	0%			
2 870	2 870	2 870	2 870	2 870	2 870	2 870	1 148	-	-	-	-	52 832	51 301	21 237
89	89	89	89	89	89	89	36	-	-	-	-	1 643	1 596	661
Jan-13	**Feb-13**	**Mar-13**	**Apr-13**	**May-13**	**Jun-13**	**Jul-13**	**Aug-13**	**Sep-13**	**Oct-13**	**Nov-13**	**Dec-13**	**2011**	**2012**	**2013**
1 438	1 441	1 444	1 447	1 450	1 453	1 456	1 459	1 462	1 465	1 468	1 471	329 256	342 803	357 596
4 127	4 135	4 144	4 152	4 161	4 169	4 178	1 675	-	-	-	-	49 423	72 767	30 741
4 127	**4 135**	**4 144**	**4 152**	**4 161**	**4 169**	**4 178**	**1 675**	**-**	**-**	**-**	**-**	**49 423**	**72 767**	**30 741**
Jan-13	**Feb-13**	**Mar-13**	**Apr-13**	**May-13**	**Jun-13**	**Jul-13**	**Aug-13**	**Sep-13**	**Oct-13**	**Nov-13**	**Dec-13**	**2011**	**2012**	**2013**
-	-	-	-	-	-	-	-	-	-	-	-	14 644	2 010	-
1 647	1 647	1 647	1 647	1 647	1 647	1 647	659	-	-	-	-	13 176	19 764	12 188
423	423	423	423	423	423	423	169	-	-	-	-	3 384	5 076	3 130
9	9	9	9	9	9	9	9					560	440	70
2 079	2 079	2 079	2 079	2 079	2 079	2 079	837	-	-	-	-	31 764	27 290	15 388
2 135	2 140	2 144	2 148	2 153	2 157	2 162	872	-	-	-	-	31 764	27 639	15 910
Jan-13	**Feb-13**	**Mar-13**	**Apr-13**	**May-13**	**Jun-13**	**Jul-13**	**Aug-13**	**Sep-13**	**Oct-13**	**Nov-13**	**Dec-13**	**2011**	**2012**	**2013**
												1 000	1 500	-
												-	-	-
												-	-	-
529	529	529	529	529	529	529	529					-	2 116	4 232
529	529	529	529	529	529	529	529	-	-	-	-	1 000	3 616	4 232
Jan-13	**Feb-13**	**Mar-13**	**Apr-13**	**May-13**	**Jun-13**	**Jul-13**	**Aug-13**	**Sep-13**	**Oct-13**	**Nov-13**	**Dec-13**	**2011**	**2012**	**2013**
-	-	-	-	-	-	-	-	-	-	-	-	1 000	1 520	-
												-	-	-
												-	-	-
561	563	566	568	571	573	576	578	-	-	-	-	-	2 218	4 556
561	563	566	568	571	573	576	578	-	-	-	-	1 000	3 738	4 556
Jan-13	**Feb-13**	**Mar-13**	**Apr-13**	**May-13**	**Jun-13**	**Jul-13**	**Aug-13**	**Sep-13**	**Oct-13**	**Nov-13**	**Dec-13**	**2011**	**2012**	**2013**
4 127	4 135	4 144	4 152	4 161	4 169	4 178	1 675	-	-	-	-	49 423	72 767	30 741
7	7	7	7	7	7	7	3	-	-	-	-	87	128	54
5	5	5	5	5	5	5	2	-	-	-	-	61	90	38
2	2	2	2	2	2	2	1	-	-	-	-	26	38	16
4 119	4 128	4 136	4 145	4 153	4 162	4 171	1 672	-	-	-	-	49 335	72 639	30 687
206	207	207	208	208	208	209	84	-	-	-	-	2 471	3 638	1 537
2 135	2 140	2 144	2 148	2 153	2 157	2 162	872	-	-	-	-	31 764	27 639	15 910
1 778	1 782	1 785	1 789	1 793	1 796	1 800	716	-	-	-	-	15 100	41 361	13 239
304	305	305	305	305	306	306	34	-	-	-	-	-	114	2 171
1 474	1 477	1 480	1 484	1 487	1 491	1 494	682	-	-	-	-	15 100	41 247	11 068
561	563	566	568	571	573	576	578	-	-	-	-	1 000	3 738	4 556
913	914	915	916	916	917	918	103	-	-	-	-	14 100	37 510	6 513
862	859	856	853	850	847	844	94	-	-	-	-	14 100	36 483	6 062
51 445	52 303	53 159	54 012	54 861	55 708	56 551	56 646	56 646	56 646	56 646	56 646			

APPENDIX 4

Monthly production reports: May 2010 to March 2011

(Source: Mine monthly reports)

	Production (Ktpm)				Plant Availability		Comments
	Ore Mined		Ore Processed				
Month	Actual	Plan	Actual	Plan	Actual	Plan	
May-10	109	99	100	91	92.6	92	The mill electrical diagrams is a major concern and causes ongoing down time.
Jun-10	98	99	89	106	82.4	98	Electrical work at the mill still needs attention along with aggressive preventative maintenance.
Jul-10	No Report						
Aug-10	72	91	101	106	93.5	98	Electrical work at the mill still needs attention along with aggressive preventative maintenance.
Sep-10	90	74	132	106	94.8	98	Electrical work at the mill still needs attention along with aggressive preventative maintenance.
							Vibration on the SAG Mill motor needs immediate attention.
Oct-10	84	74	91	106	84.9	98	Electrical work at the mill still needs attention along with aggressive preventative maintenance.
							Water Shortage towards month end
							The pinion gear of the SAG Mill drive train was replaced
Nov-10	74	74	75	106	69.4	98	Water Shortage were again an issue during the month and throughput was capped.
							The jaw crusher swing stock main bearing failed
							MT 400 truck fleet experiencing transmission problems due to long hall
Dec-10	90	74	113	106	100	98	MT 400 truck fleet experiencing transmission problems due to long hall
Jan-11	67	121	73	78	67.6	72.2	MT 400 truck fleet experiencing transmission problems due to long hall
Feb-11	101	121	102	98	94.4	90.7	Availability of sufficient water to sustain plant feed stays a concern
Mar-11	68	92	81	88	75	90.7	Availability of sufficient water to sustain plant feed stays a concern
							Plant throughput was reduced due a higher percentage of hard rock and restricted SAG mill power draw.