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**TECHNICAL REPORT**  
for  
**SABODALA GOLD PROJECT**  
**REPUBLIC OF SENEGAL, WEST AFRICA**

**PREPARED FOR**  
**TERANGA GOLD CORPORATION**

by

**AMC Mining Consultants (Canada) Ltd. in accordance with the requirements of  
National Instrument 43-101, Standards for Disclosure of Mineral Projects  
of the Canadian Securities Administrators**

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## 1 SUMMARY

### 1.1 Introduction, Location and Ownership

This Technical Report (the Report) on the Sabodala Gold Project (the Project), which includes the currently operating Sabodala Mine and Mill, and a group of nearby mining prospects in different stages of advancement, has been prepared by AMC Mining Consultants (Canada) Ltd. (AMC) of Toronto, Canada on behalf of Teranga Gold Corporation (Teranga) of Toronto, Canada.

This Report is an update of the preceding *“Technical Report Sabodala Gold Project Senegal, West Africa Prepared for Teranga Gold Corporation”*, by S G Mlot, B H van Brunt, A Riles and J C Martin, dated 7 June 2012, effective 31 December 2011 (December 2011 Technical Report). This update reflects changes in the life-of-mine plan and Mineral Reserves and Mineral Resources identified within the mining lease and the regional land package since December 2011, as disclosed by Teranga in a news release dated 19 September 2013. It has been prepared in accordance with the requirements of National Instrument 43-101 (NI 43-101), *“Standards of Disclosure for Mineral Projects”*, of the Canadian Securities Administrators (CSA) for filing on CSA’s *“System for Electronic Document Analysis and Retrieval”* (SEDAR).

Teranga is a Canadian-based gold company created to acquire the Sabodala gold mine and a large regional exploration land package, located in the Republic of Senegal (Senegal), West Africa. Teranga completed the acquisition of certain gold assets from Mineral Deposits Limited (MDL) by way of demerger in November 2010. MDL executed its Mining Convention with the Government of Senegal on 23 March 2005, and by way of a subsequent Supplementary Deed 22 January 2007, was granted a ten year (renewable) Mining concession (the Sabodala Mining Licence or ML). Teranga’s interests in Senegal are represented by two Senegalese subsidiaries, namely:

- Sabodala Gold Operations SA (SGO) 90% owned. SGO is the operator of the mine and the mill.
- Sabodala Mining Company (SMC) 100% owned. SMC is the exploration company exploring the 1,120 km<sup>2</sup> regional land package.

The Senegalese Government has a 10% free carried interest in SGO. Commencing 2 May 2007, MDL is exempt from all property, company and value added taxes for a period of eight years, expiring in May 2015.

The Project is located 650 km east of the capital Dakar within the West African Birimian geological belt in Senegal, and about 90 km from major gold mines and discoveries in Mali. The area has only recently been opened for mining and exploration and is emerging as a significant new gold district, with more than 10 Mozs of resources already reported as being discovered.

Exploration programmes are continuing with the aim of increasing resources regionally and extending plant operating life.

The Mine Licence (ML) consists of approximately 33 km<sup>2</sup> which is held by SGO on a 15 year renewable basis. Ten exploration leases held by SMC, grouped into five different project areas, surround the mine property. All permits are granted by ministerial decree and

are subject to a Mining Convention signed between SMC and the state of Senegal. The exploration permits are held in a combination of full SMC ownership and earn-in joint ventures where SMC is the funding and managing party. The current permits in which Teranga has an interest cover a total of 1,055 km<sup>2</sup>.

## 1.2 Geology and Mineralization

The property and the surrounding exploration concessions are located in the 2,213 Ma to 2,198 Ma age Kedougou-Kenieba Inlier, which lies within the Paleoproterozoic age Birimian Terrane of the West African Craton. The inlier is divided into the volcanic-dominated Mako Supergroup to the west, and the sediment-dominated Diale-Dalema Supergroup to the east. The boundary between the belts may be tectonic, with the original stratigraphic relationship not preserved and the overlying sediments appear to be overturned. The Mako and Diale-Dalema sequences are intruded by a series of variably deformed granitoid intrusions that range in age from 2,160 Ma to 2,000 Ma. Felsic and intermediate composition dykes are often spatially associated with shear zones hosting gold mineralization, and locally are host to significant gold mineralization themselves.

A north-northeast lithologic fabric is probably associated with major crustal shear zones. These include a north-northeast trending shear zone which lies east of the Sabodala property area. High strain zones and possible second and third order shear zones to the Main Transcurrent Shear Zone may control the localization of gold mineralization.

Lateritic weathering combined with duricrust formation is still active in the region. Oxidation depth in the region is highly variable, but is generally several tens of metres.

At Sabodala, mafic volcanic rocks are mainly present with a large granitic intrusion occupying the north-western portions of the property. Lithologies generally trend north-northeast to northeast with steep dips, although local variations are apparent which may be locally important trap sites for mineralization.

Principal structures on the Sabodala property form a steeply west-northwest dipping, north-northeast trending shear zone network which has previously been referred to as the “Sabodala Shear Zone”. This includes the Niakafiri, and Masato shear zones, which are high strain zones developed in altered ultramafic units. There are also shear zones that are linked to them by north to northwest trending splays. These include the “Ayoub’s Thrust”, which is focused along the ultramafic sill that lies on the west side (hanging wall) of the Sabodala deposit.

The gold deposits show many characteristics consistent with their classification as orogenic (mesothermal) gold deposits.

Several styles of mineralization are seen in the area and are described as:

- The Sabodala deposit itself which comprises a network of extension vein arrays, breccia mineralization, and a network of controlling shallow to moderate dipping shear veins which are developed adjacent to a northeast trending shear zone. The Ninienko Prospect has a similar style of gold mineralization.
- Gold mineralization within shear zones in carbonate altered ultramafic and mafic units which are associated with networks of quartz shear veins, slip surfaces, and

extension veins. This includes the Niakafiri deposit, Niakafiri West, and Dinkokhono prospects.

- Mineralization in northwest or northeast-trending, generally steeply-dipping, banded quartz veins which occur in areas of elevated strain and hosting mineralized shear zones, such as the Gora deposit and the Soreto and Soukhoto prospects.
- Quartz vein arrays developed in competent units within the sedimentary sequence of the Diale-Dalema sequence, particularly sandstone horizons and in small intrusions.

### **1.3 Status of Exploration**

SMC has been using a phased approach to the exploration of concessions and continues to screen targets in a methodical manner. Airborne geophysical targets are followed up on the ground by geological mapping where possible, as well as surface geochemistry, and termite mound sampling to delineate gold-bearing corridors and targets. Rotary air blast (RAB) drilling is employed on prospective structures where extensive transported materials render surface sampling of low effectiveness in the target generation phase. Target testing utilizes trenching in areas of shallow soil cover to map the gold bearing zones and provide a first pass evaluation of their potential. Where significant mineralization is identified this is followed by reverse circulation (RC) and diamond drilling to systematically test the defined targets.

Drillhole collars are surveyed, diamond drillholes are downhole surveyed and core is orientated so as to collect structural data. Information collected during logging includes lithology, alteration, mineralization, base of oxidation, structural geology, and geotechnical features including core recovery, rock quality designation (RQD), fracture frequency and infill, and hardness. Diamond drill core recovery averages 98% while RC recovery averages around 85%.

The SMC geological database is centralized, and has built-in validation features. A Database Manager is the custodian of the data. Sample preparation and analysis was executed at the SGS-Kayes laboratory in Kayes, Mali. Since commencing production at the Sabodala Mine, samples generated from the mill, mine and all exploration drilling are processed at the on-site laboratory operated by SGS Senegal SA (SGS). Analysis for gold is by aqua regia digestion and flame atomic absorption spectrometry (AAS) finish sometimes followed by fire assay where appropriate. ALS Chemex, South Africa has been engaged as a referee laboratory to monitor SGS assay results and XRF results from the termite mound multi-element sampling programme conducted by GESS (Geology Exploration Support Services).

### **1.4 Mineral Resource and Mineral Reserve Estimates**

Measured and Indicated Mineral Resources as of 30 June 2013 are shown in Table 1.1. Inferred Mineral Resources as of 30 June 2013 are shown in Table 1.2.



**Table 1.1 Measured and Indicated Mineral Resources as at 30 June 2013**

Deposit	Measured			Indicated			Measured and Indicated		
	Tonnes (Mt)	Grade (g/t)	Au (Moz)	Tonnes (Mt)	Grade (g/t)	Au (Moz)	Tonnes (Mt)	Grade (g/t)	Au (Moz)
Sabodala	24.36	1.36	1.06	24.90	1.33	1.06	49.26	1.34	2.12
Gora	0.30	1.74	0.02	10.50	1.10	0.37	10.70	1.12	0.39
Niakafiri	0.49	5.27	0.08	1.84	4.93	0.29	2.32	5.00	0.37
<b>Total</b>	<b>25.15</b>	<b>1.44</b>	<b>1.16</b>	<b>37.23</b>	<b>1.44</b>	<b>1.72</b>	<b>62.38</b>	<b>1.44</b>	<b>2.89</b>

**Table 1.2 Inferred Mineral Resources as at 30 June 2013**

Area	Tonnes (Mt)	Au (g/t)	Au (Moz)
Sabodala	18.05	0.95	0.55
Niakafiri	7.20	0.88	0.21
Niakafiri West	7.10	0.82	0.19
Soukhoto	0.60	1.32	0.02
Gora	0.21	3.38	0.02
Diadiako	2.90	1.27	0.12
Majiva	2.60	0.64	0.05
Masato	19.18	1.15	0.71
<b>Total</b>	<b>57.84</b>	<b>1.01</b>	<b>1.87</b>

Notes:

- CIM definitions were followed for Mineral Resources
- Mineral Resources for Sabodala include Sutuba
- Mineral Resource cut-off grades for Sabodala are 0.20 g/t Au for oxide and 0.35 g/t Au for fresh
- Mineral Resource cut-off grades for Niakafiri are 0.30 g/t Au for oxide and 0.50 g/t Au for fresh
- Mineral Resource cut-off grade for Gora is 0.50 g/t Au for oxide and fresh
- Mineral Resource cut-off grade for Niakafiri West and Soukhoto is 0.3 g/t Au for oxide and fresh
- Mineral Resource cut-off grade for Diadiako and Majiva is 0.2 g/t Au for oxide and fresh
- Mineral Resource cut-off grade for Masato is 0.35 g/t for fresh
- Measured Resources at Sabodala include stockpiles which total 7.88 Mt at 0.90 g/t Au for 0.23 Mozs
- High grade assays were capped from 10 g/t Au to 30 g/t Au at Sabodala and from 20 g/t Au to 70 g/t Au at Gora, 10 g/t Au at Soukhoto and 20 g/t Au at Masato
- The figures above are "Total" Mineral Resources and include Mineral Reserves
- Sum of individual amounts may not equal due to rounding.

The Sabodala resource model incorporates geological interpretation and drilling results to April 2013, including information and interpretation collected during mining of the Sabodala deposit. Capping levels were determined for each domain prior to compositing, and, after analysis, final capping levels were determined after taking reconciliation data into account. One metre composites were employed and the block model consisted of 5 m x 5 m x 5 m blocks. Estimation of gold grades was by ordinary kriging, with some domains utilizing the Inverse Distance Squared ( $ID^2$ ) grade estimation method.

Mineral Reserves have been estimated for the Sabodala, Niakafiri and Gora deposits which have Measured and Indicated Resources. Ore dilution for the Sabodala Mineral Reserve estimate is based on comparisons between the Mineral Resource model and actual mine operations performance over a 14 month timespan. Gora ore dilution has been estimated

based on a defined minimum mining width and through a comprehensive analysis throughout the orebody.

The total Proven and Probable Mineral Reserve estimate for the Project at 30 June 2013 is shown in Table 1.3.

**Table 1.3 Mineral Reserves as at 30 June 2013**

Deposit	Proven			Probable			Proven and Probable		
	Tonnes (Mt)	Grade (g/t)	Au (Moz)	Tonnes (Mt)	Grade (g/t)	Au (Moz)	Tonnes (Mt)	Grade (g/t)	Au (Moz)
Sabodala	4.26	1.57	0.21	7.37	1.59	0.38	11.63	1.58	0.59
Niakafiri	0.23	1.69	0.01	7.58	1.12	0.27	7.81	1.14	0.29
Gora	0.50	4.58	0.07	1.39	4.80	0.21	1.89	4.74	0.29
Stockpiles	7.88	0.9	0.23				7.88	0.90	0.23
<b>Total</b>	<b>12.87</b>	<b>1.28</b>	<b>0.53</b>	<b>16.34</b>	<b>1.64</b>	<b>0.86</b>	<b>29.21</b>	<b>1.48</b>	<b>1.40</b>

Notes:

- CIM definitions were used for Mineral Reserves.
- Mineral Reserve cut-off grades for Sabodala are 0.30 g/t Au for oxide and 0.5 g/t Au for fresh based on a \$1350/oz gold price and metallurgical recoveries between 90% and 93%.
- Mineral Reserve cut-off grades for Niakafiri are 0.35 g/t Au for oxide and 0.5 g/t Au for fresh based on a \$1350/oz gold price and metallurgical recoveries between 90% and 92%.
- Mineral Reserve cut-off grade for Gora is 0.76 g/t Au for oxide and fresh and based on a \$1200/oz gold price and metallurgical recovery of 95%.
- Sum of individual amounts may not equal due to rounding.

Geotechnical parameters for Sabodala have been provided by Xstract Mining Consultants. Geotechnical parameters for Sabodala have been applied to the Sutuba deposit, which has been incorporated into the Sabodala pit design.

Geotechnical parameters for Gora have been provided by Mining One Pty Ltd.

There is no specific geotechnical information available for Niakafiri, and the Sabodala geotechnical model was used for the Niakafiri design. The Niakafiri deposit is adjacent to the Sabodala village. There is no known community or social issue with the relocation of the village. Costs associated with this movement have been included in the Project cash flow estimates, and there is sufficient time to deal with all issues prior to the commencement of mining.

The cut-off grades employed for the pits vary according to the haul distance from the plant and the characteristics of the ore.

## **1.5 Conclusions and Recommendations**

Sabodala is an established operation which is being expanded to maximize its economic potential. There is a sound geological and exploration database on the Mining Concession and good potential for the discovery and development of additional deposits.

The geological work to date, including data collection and QA/QC processes, is of good quality and suitable for the estimation of Mineral Resources.

Unit operating costs applied in the life of mine (LOM) plan and the Mineral Reserve estimates are based on current operating costs. The projected plant production rate for the remainder of 2013 and 2014 has been demonstrated in July and August 2013. Minor improvements will be required to achieve the estimated production rates for 2015 and beyond, with demonstrable initiatives planned to be implemented.

Planning and design for the Gora pit has advanced to the point where development can commence. Permit applications have been submitted and are pending.

The Niakafiri deposit does not have geotechnical data and work should be undertaken to determine specific Niakafiri geotechnical characteristics. Ground and surface water issues should be studied appropriately, relative to any potential impact on slope design. Controlled drilling and blasting of final walls should be an area of focus in light of the significant benefits that can be obtained.

The Sabodala village must be moved prior to mining at Niakafiri. SGO has experience in such relocations, having previously moved a village for the Sabodala pit. The related cost items are included in the project cost estimates and there is time available in advance of the commencement of mining.

The Sabodala and Niakafiri ores are medium to hard but with relatively simple metallurgy allowing 90% recovery to be readily obtained. Test work has indicated that some potential exists for treating low grade oxide ores by heap leaching, although fine crushing and agglomeration is required and further optimization work is still needed.

A summary of recommendations is given below:

- Exploration should continue on the regional land package. Discovery of additional resources will provide the opportunity to extend the life of operations, and higher grades will provide flexibility in operating should the price of gold fall or costs increase.
- It is recommended that Teranga review the potential for sufficient Mineral Resources beyond the designed ultimate pit limits to permit underground mining.
- Incorporate the results of the updated stability analysis at Sabodala to improve pit economics with increased slope angles.
- Undertaking a geotechnical programme to determine specific characteristics for the pit slopes of the Niakafiri open pit.
- Complete additional drilling at Niakafiri and advance the engineering evaluation for heap leach potential.
- Commence planning and design for development of the Gora project.

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## 2 INTRODUCTION

### 2.1 General and Terms of Reference

The Sabodala Gold Project (the Project) in Senegal, West Africa, includes the operating Sabodala mine and mill, and a group of nearby mining prospects at different stages of advancement. AMC Mining Consultants (Canada) Ltd. (AMC) has prepared this updated Technical Report at the request of Teranga Gold Corporation (Teranga) of Toronto, Canada. This updated Technical Report supports information on Mineral Resources and Mineral Reserves disclosed in the press release “Revised Mine Plan Expected to Generate Significant Free Cash Flows” 19 September 2013.

This Report is an update of the preceding “*Technical Report Sabodala Gold Project Senegal, West Africa Prepared for Teranga Gold Corporation*”, by S G Mlot, B H Van Brunt, A Riles and J C Martin, dated 7 June 2012, effective 31 December 2011 (December 2011 Technical Report). This update reflects changes in the life-of-mine (LOM) plan, and Mineral Resources and Mineral Reserves identified within the mining lease and the regional land package since December 2011, as disclosed by Teranga in a news release dated 19 September 2013. It has been prepared in accordance with the requirements of National Instrument 43-101 (NI 43-101), “*Standards of Disclosure for Mineral Projects*”, of the Canadian Securities Administrators (CSA) for lodgment on CSA’s SEDAR.

### 2.2 The Issuer

Teranga is a Canadian-based gold mining company. It was created to acquire the Sabodala gold mine and a large regional exploration land package located in the Republic of Senegal (Senegal), West Africa. Teranga completed the acquisition of certain gold assets from Mineral Deposits Limited (MDL) by way of demerger in November 2010. Teranga’s interests in Senegal are represented by two Senegalese subsidiaries, namely:

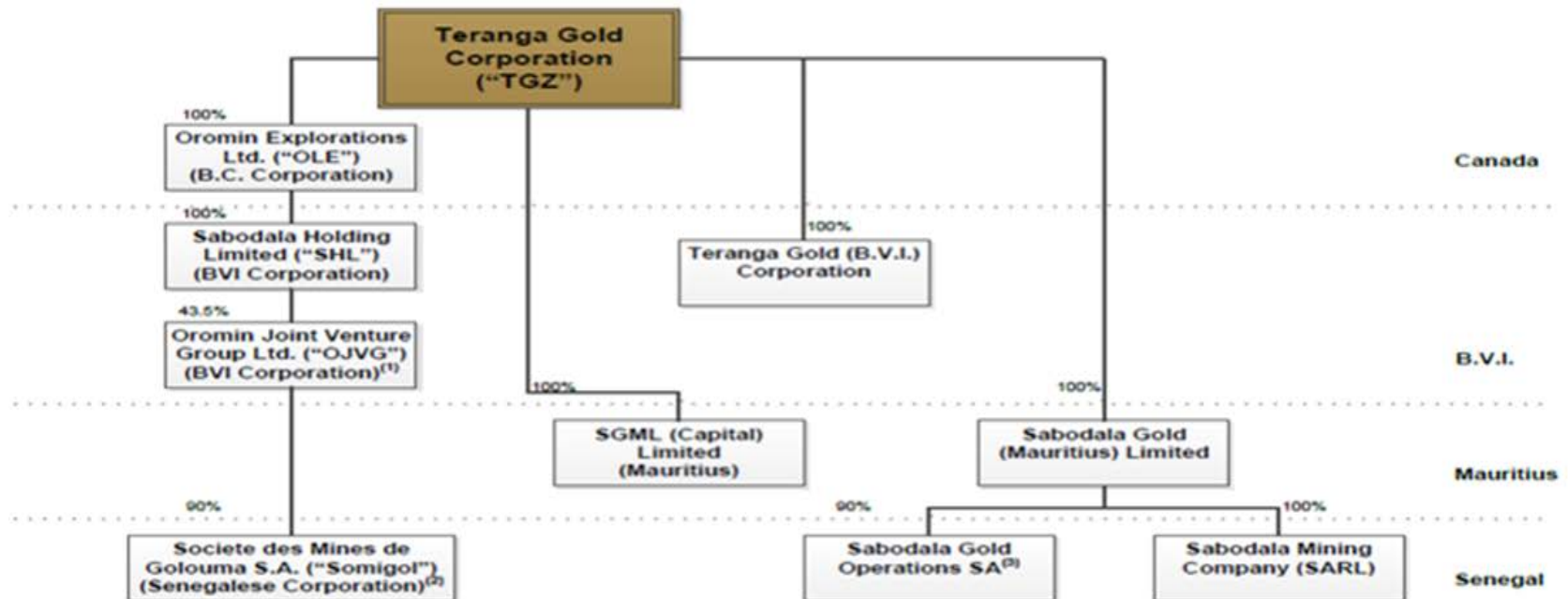
- Sabodala Gold Operations SA (SGO) 90% owned. SGO is the operator of the mine and the mill.
- Sabodala Mining Company (SMC) 100% owned. SMC is the exploration company exploring the 1,120 km<sup>2</sup> regional land package.

On 7 August 2013 Teranga announced that it had completed its take-over bid offer to acquire all of the outstanding shares of Oromin Explorations Ltd. (“Oromin”) that it did not already own. As of that date, together with the shares it already held in Oromin, Teranga owned approximately 72% of Oromin’s outstanding shares. Teranga proceeded with a plan of arrangement under the B.C. Business Corporations Act, as previously announced as part of its takeover bid, to acquire all of the remaining Oromin shares that were not deposited under its takeover bid offer. On 2 October 2013 the Oromin board of directors convened a special meeting of shareholders to consider the approval of the plan of arrangement involving Oromin and Teranga. The resolution was passed by the Oromin shareholders and on 4 October a court order was obtained also approving the plan of arrangement, effectively completing Teranga’s acquisition of all of the outstanding shares of Oromin that it did not already own.

The new Teranga organizational structure is outlined in Figure 2.1.



Figure 2.1 Teranga Organizational Structure



(1) Bendon International Ltd. also holds 43.5 % of the OJVG, with Badr Investment and Finance Company holding 13%.

(2) The Government of Senegal holds the remaining 10% of Somigol.

(3) The Government of Senegal holds the remaining 10% of Sabodala Gold Operations SA, and of the 90% held by Sabodala Gold (Mauritius) Limited, 0.5% is held by certain nominee directors thereof in accordance with the requirements of applicable Senegalese laws.

As background, Oromin holds a 43.5% interest in the Oromin Joint Venture Group Ltd. (“OJVG”) which owns a mining licence adjacent to Teranga’s operating Sabodala gold mine. Bendon International Ltd (“Bendon”) and Badr Investment & Finance Company (“Badr”) own the remaining 43.5% and 13% of the OJVG, respectively.

Oromin, through its wholly owned subsidiary Sabodala Holdings Limited, is the “Operator” of the SOMIGOL gold project pursuant to the terms of the OJVG shareholder’s agreement amongst the three OJVG partners. The OJVG property is located directly adjacent to the Sabodala mine licence and reported proven and probable reserves of 2.34 million ounces (28 MT grading 2.59 g/t Au – open pit and underground) as set out in the January 2013 Carbon-in-Leach (“CIL”) Feasibility Study (“FS”) and Mineral Reserve update for the SOMIGOL gold project, compiled by SRK Consulting (Canada) Ltd.

With a 43.5% interest in the OJVG, Teranga intends to work with Bendon and Badr to develop the OJVG deposits and process its ore through Teranga’s Sabodala mill either by agreeing to purchase their interests in the OJVG or through a toll milling arrangement on terms and conditions to be determined.

### **2.3 Report Authors**

A listing of the authors of this report, together with the sections for which they are responsible, is given in Table 2.1.

**Table 2.1 Qualified Persons Who Prepared this Technical Report**

Qualified Person	Position	Employer	Independent of Teranga?	Date of Last Site Visit	Professional Designation	Sections of Report
Ms P Nakai-Lajoie	Director, Mineral Resources	Teranga Gold Corp.	No	September 2013	P.Geo. BSc	6 - 12, 14, Part of 27
Mr P Chawrun	VP – Technical Services	Teranga Gold Corp.	No	September 2013	P.Eng., BSc (Hons) Mine Eng. B.Sc. Geol, MBA	2, 4, 5, 13, 16 - 22, 24, Part of 1, 15 and 27
Ms J C Martin	Principal Mining Engineer	AMC Mining Consultants (Canada) Ltd.	Yes, but one time employee	November 2011	P.Eng., BSc, MBA, MCIM, MAusIMM (CP)	2, 23, 27, part of 15
<b>Other Experts who have Contributed to this Technical Report</b>						
Alan Riles	Principal Metallurgical Consultant	Riles Integrated Resource Management Ltd	Yes	No Visit	B.Met (Hons), GradDip Business Management MAIG	Contributed to 13 and 17
Peter Mann	Exploration Manager	Teranga Gold Corp.	No	September 2013	MAusIMM	Contributed to 4 - 9
William Sarunic	Principal Geotechnical Engineer	Xstract Mining Consultants	Yes	June 2013	MAusIMM	Contributed to 15

Ms Martin visited the site in November 2011 and, in 2008 and 2009, was employed by SGO at the property as Chief Mine Engineer.

Ms Nakai-Lajoie visits the site regularly, and was last there in September 2013. Mr Chawrun visits the site regularly, and was last there in September 2013.

This Report is based on information provided by Teranga, a list of which is contained in Section 27 (References), on site visits undertaken by a Qualified Person, and on discussions with Teranga personnel in both Canada and Senegal.

Much of the factual text for the Technical Report was written by Teranga and provided for review by AMC. Teranga was provided with a draft of this report to review for correctness of factual content.

This report is effective 30 June 2013.

## **2.4 Units of Measure and Currency**

Throughout this report, measurements are in metric units and currency in United States dollars (US\$) unless otherwise stated. Table 2.2 includes key terms used and their abbreviations.

**Table 2.2 Units, Terms and Abbreviations**

<b>Term</b>	<b>Abbreviation</b>	<b>Term</b>	<b>Abbreviation</b>
Acidity or basicity	pH	Megawatts	MW
Billion Years	Ga	Metre(s)	m
Cubic metres	m <sup>3</sup>	Micrometer(s)	µm
Gold	Au	Millimetre(s)	mm
Grams /t	g/t	Million ounces (Troy)	Moz
Grams /t of gold	g/t Au	Million tonnes	Mt
Grams per tonne	g/t	Million Years	Ma
Kilogram(s)	kg	Parts per billion	ppb
Kilograms per cubic metre	kg/m <sup>3</sup>	Percent	%
Kilometre(s)	km	Percent weight	wt%
Kilotonne per annum	ktpa	Square kilometre(s)	km <sup>2</sup>
Kilowatt	kW	Tonne(s)	t
Kilowatt-hours per tonne	kWh/t	Tonnes per cubic metre	t/m <sup>3</sup>
Litre	L	Tonnes per day	tpd
Megatonnes	Mt	Tonnes per hour	tph
Megatonnes per annum	Mtpa	Tonnes per operating hour	tpoh
Afrigold Pty	AGP	Mining Research Company	MRC
AMC Mining Consultants (Canada) Ltd.	AMC	National Instrument 43-101	NI 43-101
AMC Mining Consultants UK Ltd	AMC UK	Nearest neighbour	NN
Anglo American Research Laboratories	AARL	Net present value	NPV
Atomic Absorption Spectrometry	AAS	New African Petroleum Company	NAFPEC
Axmin	AXM	North West Shear	NWS
Badr Investment & Finance Company	Badr	Not applicable	N/A

<b>Term</b>	<b>Abbreviation</b>	<b>Term</b>	<b>Abbreviation</b>
Ball mill work index	BWI	Ordinary kriging	OK
Bendon International Ltd	Bendon	Oromin Explorations Ltd.	Oromin
Bureau de Recherches Geologiques et Minieres	BRGM	Oromin Joint Venture Group	OJVG
Canadian Securities Administrators	CSA	Pre-feasibility study	PFS
Carbon in leach	CIL	Preliminary Economic Assessment	PEA
Certified reference material	CRM	Quality Assurance / Quality Control	QA/QC
Corporate Social Responsibility	CSR	Republic of Senegal	Senegal
Cyanide	CN	Rehabilitation and mine closure plan	RCMP
Deep flat	DF	Reverse Circulation	RC
Diamond Drill	DD	Rock Quality Designation	RQD
Diamond drilling	DD	Rod mill work index	RWI
Environmental and social impact assessment	ESIA	Rotary Air Blast (Drilling)	RAB
Environmental and social impact statement	ESIS	Run of Mine	ROM
Environmental and social management and monitoring plan	ESMMP	Sabodala Gold Operations	SGO
Feasibility Study	FS	Sabodala Gold Project	the Project
Fire Assay	FA	Sabodala Mining Company	SMC
Footwall flat zone	FW Flat	Sabodala structural corridor	SSC
General and Administration	G&A	Scott Wilson Roscoe Postle Associates	SWRPA
Geographic information system	GIS	Selective Mining Unit	SMU
Geology Exploration Support and Services	GESS	Semi-Autogenous Grinding	SAG
Global mineralization envelope	EDA	Senegal Nominees	SN
Global Positioning System	GPS	SGS Senegal GA	SGS
Heavy Fuel Oil	HFO	Standard deviation	SD
Initial public offering	IPO	Structured Query Language	SQL
Intense Cyanidation	IC	System for Electronic Document Analysis and Retrieval	SEDAR
Internal rate of return	IRR	Tailings Storage Facilities	TSF
International Finance Corporation	IFC	Teranga Gold Corporation	Teranga
International Financial Reporting Standards	IFRS	Three Dimensional	3D
Inverse Distance Squared	ID <sup>2</sup>	Tropica Environmental Consultants	Tropica
Joint Venture	JV	Ultrafine Grinding	UFG
Life of mine	LOM	Ultramafic flat zone	UM Flat
Main flat zone	MFZ	United States	US
Main Transcurrent Shear Zone	MTZ	United States Dollars	US\$
Main Transcurrent Shear Zone	MTC	Universal Transverse Mercator	UTM
Mineral Deposits Limited	MDL	Upper flat zone	UF
Mining Licence	ML	Xstract Mining Consultants	Xstract

### **3 RELIANCE ON OTHER EXPERTS**

With respect to title to the Mining Concession (Section 4 of this report), AMC has relied on Mining Agreement documents provided by Teranga that confirm the granting of the Concession and setting out the terms of seven Supplementary Deeds that amend certain provisions of the Mining Agreement.

With respect to title to exploration licences (Section 4 of this report), AMC has relied on a document provided by Teranga.

## 4 PROPERTY DESCRIPTION AND LOCATION

### 4.1 Property Location

The Project is located in southeast Senegal, approximately 650 km east-southeast of the capital city of Dakar and 96 km north of the town of Kedougou. The property location is shown in Figure 4.1.

**Figure 4.1 Location of Sabodala Property**



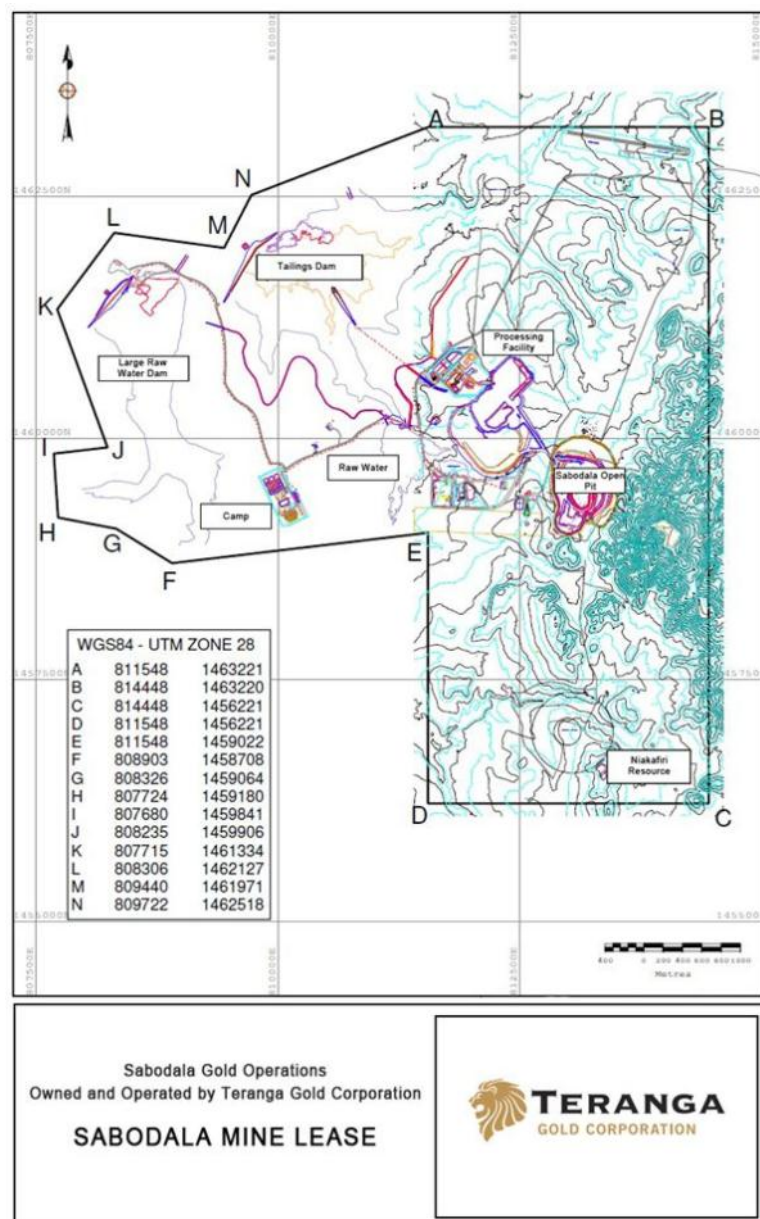


## 4.2 Land Tenure

### 4.2.1 Sabodala Mining Concession

The property is located at 13°11'5"N latitude, 12°6'45"W longitude and comprises one mining concession, granted on 2 May 2007 by Ministerial Letter No. 00197MMIE/CT BG/mad. The dimensions of the original mining concession are approximately 7 km north-south by 3 km east-west, for a total area of 20.3 km<sup>2</sup>. The current mining concession has been expanded to approximately 33 km<sup>2</sup> to accommodate the infrastructure. The outline and infrastructure as well as the UTM coordinates are shown in Figure 4.2.

**Figure 4.2 Mining Concession Limits**



In accordance with the Senegalese Mining Code, MDL, the preceding owner of the Project, executed a mining convention (or agreement) with the Government of Senegal on 23 March 2005 (the “Mining Convention”), which defined the legal, financial, fiscal, administrative and specific corporate conditions under which MDL (and now SGO, as successor) shall undertake its mining operations for gold, silver and related substances within the mining perimeter for the Sabodala gold mine.

An exploitation permit for conducting mining operations was granted to MDL under the terms of the Mining Convention on 9 June 2005. Rights conferred on the holder of an exploitation permit include, but are not limited to, the exclusive right of exploitation and free disposal of mineral substance for which the mining exploitation title has been issued within the boundaries of its perimeter and indefinitely at depth.

A subsequent Supplementary Deed to the Mining Convention signed on 22 January 2007, granted a ten year (renewable) mining concession to MDL (the “Sabodala Mining Licence” or ML), effective from the date of its formal approval by way of Presidential Decree. The Presidential Decree granting the ML was signed on 30 April 2007, and the Ministerial Notification letter, authorizing commencement of the investment and mining phases of the project, was issued on 2 May 2007. In July 2008 the Mining Convention was amended again to reflect the accession of SGO as the title holder of the ML replacing MDL.

Pursuant to the terms of a shareholders agreement establishing SGO in November 2007, the Senegalese Government retained a 10% interest in SGO, which activates after repayment of initial capital plus interest, and prior to that, it is eligible to receive dividends. Eight years after granting of the ML a tax rate of 25% is applied to mining profits in the ninth year and in each subsequent year.

On May 31, 2013, Teranga executed a series of agreements with the Senegalese Government which included amendments to the Company’s 90% held Sabodala Mining Convention, certain of its exploration permits, and also a financial settlement agreement that addressed outstanding tax assessments as well as future royalty and other payments to the Republic of Senegal. Collectively, the definitive documentation constitutes a global agreement that sets out a predictable and stable fiscal operating environment for the Company’s future investment in exploration, acquisitions and development in Senegal (the “Global Agreement”).

The Global Agreement provided, amongst other matters, the following amendments to Teranga’s SGO mineral tenure rights in Senegal:

- A price and formula to allow for the acquisition of the Republic’s additional participation option on deposits not on the Sabodala Mining Licence and to incorporate these into existing Mining Convention and fiscal regime;
- Extension of the term of the renewable Sabodala Mining Licence by five years to 2022;
- Extending five key exploration licences by a further 18 months beyond current expiry periods; and
- Increased the royalty rate from 3 to 5%, effective 1 January 2013 and prepaying US\$13.3 million in dividends that are otherwise payable under the Mining Convention, based on expected performance over the period 2013 to 2015.

- Teranga and the Government have reached a settlement of US\$3.8 million, payable in two equal installments in 2013 and 2014, to resolve approximately US\$30 million of the US\$36 million in tax assessments relating to the financial years 2007 through 2010. Approximately US\$6 million remains under negotiation and relates to the applicability of a dual tax treaty between Mauritius and Senegal on the taxability of intercompany interest payments from 2007 to 2010.

Teranga has agreed to establish a social development fund payable at mine closure. The fund is targeted at US\$15 million based on gold price performance over the next three years.

#### **4.2.2 Sabodala Regional Exploration Projects**

The regional exploration projects comprise ten granted research permits which cover a total surface area of 1,055 km<sup>2</sup>.

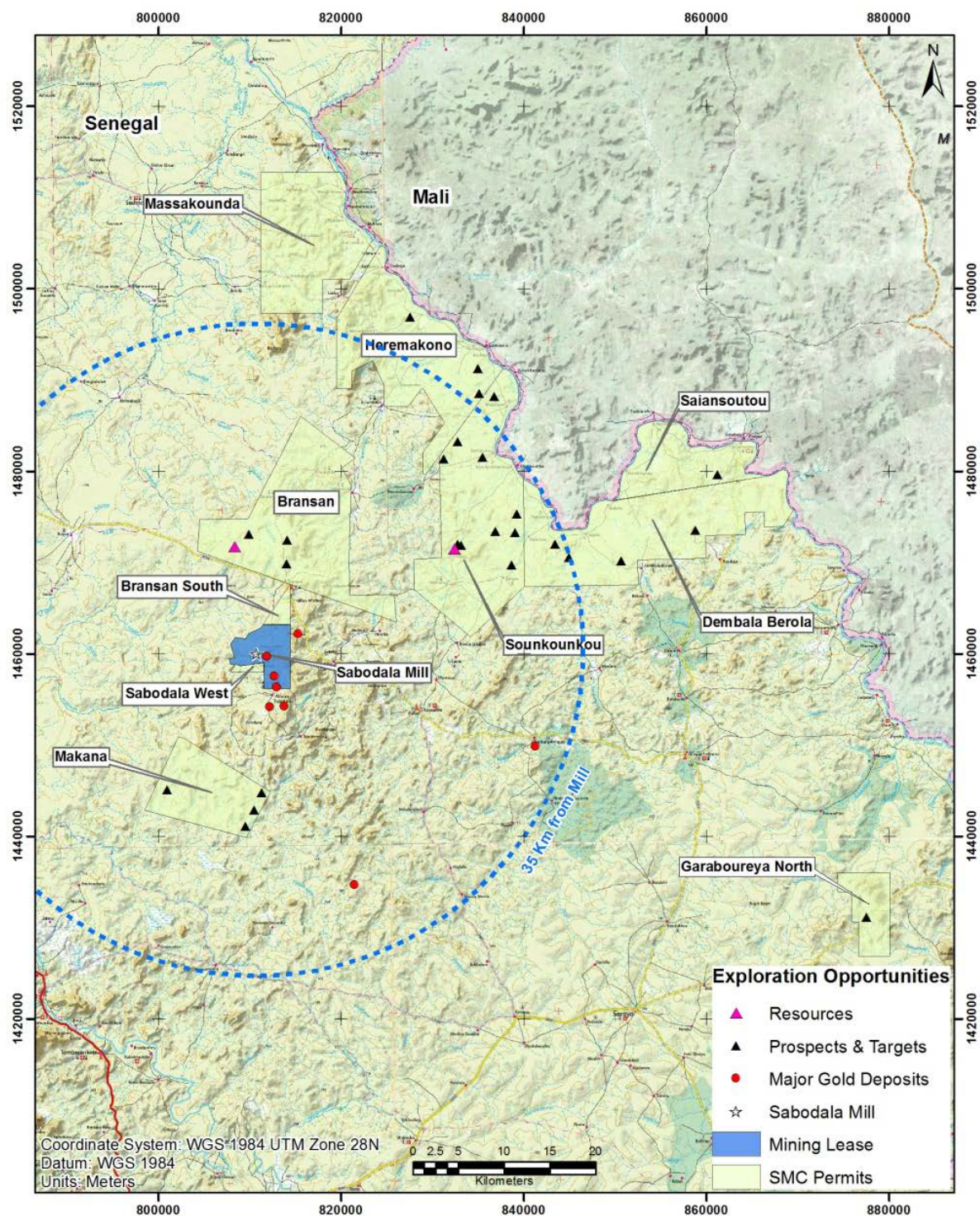
The permit locations are grouped into five different project areas:

- Near Mine Project – contains the four permits of Bransan, Makana, Bransan South and Sabodala West.
- Faleme – contains the two permits of Sounkounkou and Heremakono.
- Dembala – contains the two permits of Dembala Berola and Saiensoutou.
- Massakounda – contains the Massakounda permit.
- Garaboureyia – contains the Garaboureyia North West permit.

The permits locations are shown in Figure 4.3 and the details of the permits are tabulated in Table 4.1



**Figure 4.3 Location of Exploration Permits**



**Table 4.1 Granted Gold Exploration Permits and Applications**

Project	Permit	Original Grant Date <sup>(1)</sup>	SMC Interest	Status	Area (km <sup>2</sup> )	Next Renewal Due	Maximum Validity	Comments
Near Mine	Bransan	Dec-06	70%	2 <sup>nd</sup> Validity Period	199	N/A	Apr-17	Renewal in process <sup>(6)</sup>
	Makana	Nov-04	80%	3 <sup>rd</sup> Validity Period	84	N/A	May-15	
	Bransan Sud	Oct-10	100%	Initial Validity Permit	7	Oct-13	Oct-19	
	Sabodala Ouest	Oct-10	100%	Initial Validity Permit	3	Oct-13	Oct-19	
Faleme	Sounkounkou	Sept-06	80% <sup>(3)</sup>	3 <sup>rd</sup> Validity Period	159	N/A	Aug-16	Renewal in process <sup>(6)</sup>
	Heremakono	Oct-05	80%	2 <sup>nd</sup> Validity Period	161	N/A	Apr-16	Renewal in process <sup>(6)</sup>
Dembala	Dembala Berola	Jan-05	100% <sup>(4)</sup>	3 <sup>rd</sup> Validity Period	182	N/A	Jun-16	Renewal in process <sup>(6)</sup>
	Saiensoutou	Jan-11	100%	Initial Validity Permit	81	Nov-13	Nov-19	
Massakounda	Massakounda	Jan-05	100% <sup>(4)</sup>	3 <sup>rd</sup> Validity Period	140	N/A	Jan-15	Renewal in process <sup>(6)</sup>
Garaboureyia	Garaboureyia NW	Aug-09	75% <sup>(5)</sup>	2 <sup>nd</sup> Validity Permit	39	N/A	Aug-18	Renewal in process <sup>(6)</sup>
<b>Grand Total</b>					<b>1,055 km<sup>2</sup></b>			

(1) Refers to date of grant of Ministerial Decree awarding the exploration permit to SMC.

(2) Senegalese Mining Code provides for renewals beyond a 2<sup>nd</sup> renewal term provided the size and opportunity of the exploration works; including the proposed budget, are deemed significant enough from the State of Senegal perspective.

(3) SMC has retained a 100% interest to the Gora deposit within this exploration permit, subject to a 1.5% royalty to Axmin pursuant to Amended and Restated Joint Venture Agreement.

(4) 2% royalty is payable to Rokamko SA.

(5) SMC's joint venture partners retain a 100% interest in first 15 m of alluvial deposit subject to small scale mining permits within the perimeter of the exploration permit.

(6) Permits undergoing renewal will be reduced by 25%.

All permits are granted by ministerial decree and are subject to a mining convention signed between SMC and the state of Senegal. The gold exploration permits are held in a combination of full SMC ownership and earn-in joint ventures where SMC is the funding and managing party as outlined in Table 4.2.

**Table 4.2 Equity and Funding Arrangements for Permits**

Project	Permit	SMC Equity (%)	Holder	Comments
Near Mine	Bransan	70	SMC	Partnership with local syndicate
	Makana	80	NAFPEC	Earn in JV
	Bransan South	N/A	SMC	100% SMC
	Sabodala West	N/A	SMC	100% SMC
Faleme	Sounkounkou	80	Axmin	Earn in JV
	Heremakono	80	Axmin	Earn in JV
Dembala	Dembala Berola	100	SMC	100% SMC
	Saiensoutou	100	SMC	100% SMC
Garaboureyia	Garaboureyia NW	75	Afrigold	Earn in JV
Massakounda	Massakounda Permit	100	SMC	100% SMC

All valid permits are linked to an executed mining convention with the Government of Senegal. The conventions typically contain the following key terms:

- Exclusive right to apply for an exploitation permit provided a feasibility study is completed
- The Senegalese Government will be entitled to a 10% free carried interest in the mining operation
- 3% royalty on production
- 25% company tax with an eight year tax free period
- Senegalese import duty exemption on mining equipment, fuel, explosives, and chemicals.

Note that given the Global Agreement and its provisions extending to SMC exploration permits, it is anticipated that such permits that move into production will be merged into the SGO Mining Convention and bound by its revised fiscal terms.

#### **4.2.3 Summary of Agreements in Place over SMC's Exploration Permits**

With the transfer of the formerly Rokamco held permits of Massakounda and Dembala Berola only three agreements remain effective:

- Axmin Joint Venture – over the permits of Heremakono and Sounkounkou.
- Bransan Agreement – although this permit is fully held by SMC, there is a 30% ownership right assigned to a Senegalese company, Senegal Nominees Limited.
- NAFPEC Joint Venture – this agreement is an earn-in joint venture which covers the Makana exploration permit.

#### **4.2.4 Axmin Joint Venture**

A joint venture between Axmin (AXM) and SMC was signed on 30 September 2008 (the Axmin JV). The Axmin JV includes the following exploration permits held by Axmin: Sabodala North West, Sounkounkou and Heremakono (the Axmin Permits).



When SMC reached its 80% equity position in the joint venture, the two parties renegotiated in the last quarter of 2011, and these revised terms are in place:

- AXM elected not to participate in further development of the Gora resource. AXM retain the rights to a 1.5% net-smelter royalty from any production that may result from the resource or production from new discoveries that may arise in a defined 50 km<sup>2</sup> block around Gora.
- AXM have elected to participate on a 20% basis in the following anomalies, targets and prospects: Diabougou, KA, KB, KC, KE, KD, Diegoun North (comprising the prospects of Jam, Honey and Cinnamon), Diegoun South, Diakaling, Soreto, Soreto North, Soreto West, Heremakono Shear, Massakounda India, Central Area, South, Nienyenko, Toumboumba, Bale. New targets may be defined from regional work and added to this list as they arise.
- AXM have the right to a US\$2.5 million free-carry on work carried out by SMC over the elected targets. Cash contribution of 20% will be required by AXM once SMC exceed a combined expenditure of US\$12.5 million over these target areas.
- AXM retain a 1.5% royalty (net-smelter) on anomalies, targets and prospect on which they elect to not continue contribution.
- AXM retains the right to relinquish its 20% equity position in the AXM permits, including on a target by target basis at any time, and to dilute to 1.5% production royalty.
- As of the date hereof, the proposed perimeter for the Gora gold project (undergoing permitting to upgrade tenure rights to an exploitation licence) is the only area to date where Axmin has relinquished its 20% participation right and opted to retain only its 1.5% royalty right.
- In the case where both SMC and AXM are involved in the construction of a mine, the 10% free carried interest of the Republic of Senegal will be absorbed by both parties proportionally.
- Presently, SMC can exit the joint venture at any time with 30 days' notice.

#### **4.2.5 Bransan Agreement**

This agreement was signed on 4 July 2007 subsequent to SMC acquiring the Bransan permit in October 2006. The agreement stipulates that the initial ownerships are 70% SMC, 30% Senegal Nominees (SN). SMC will, however, be responsible for 100% funding to the exploration work and will be the manager.

Once a discovery is made and a development decision is made, SN has the right after 120 days to either:

- Convert to a contributing interest, in which case SN will have to fund its share of the development costs.
- Not to convert to a contributing interest, in which case SN will dilute to a 10% equity holding in the mine development with SMC's shareholding increasing to 90%.

SN will only be entitled to receive benefits from production after SMC has recovered all of its joint venture and development costs.



The start of the mining process will require the formation of a special purposes company, which will allow the ROS to take its 10% equity stake. The equity ratios will be diluted proportionally to accommodate the ROS equity as follows:

- In the case where SN has become a contributing party and maintained its original holding: ROS 10%, SMC 63%, SN 27%.
- In the case where SN has diluted: ROS 10%, SMC 81%, SN 9%.

#### **4.2.6 NAFPEC Joint Venture Agreement**

New African Petroleum Company SARL (NAFPEC), a Senegalese company, initially acquired the Makana exploration permit in August 2004. From September 2005 to February 2007 the permit was subject to a joint venture between NAFPEC and Randgold Resources. On 9 January 2008, SMC signed a new joint venture with NAFPEC concerning the Makana permit. The key terms are as follows:

- SMC equity from initiation is 80% and NAFPEC has a 20% equity stake in the permit.
- SMC is obliged to solely fund and manage the exploration programme.
- On grant of exploitation permit both parties are required to fund the development costs pro rata based on their equity positions.
- At the development decision, the formation of a special purposes mining company is required, and in this the ROS will have a 10% free carried interest. In terms of the original 80%/20% shareholdings this will mean the following positions:
- ROS 10%, SMC 72% and NAFPEC 18%.
- In case of dilution of either SMC or NAFPEC, the carrying of the ROS equity will be proportional between the two parties.
- In the case of default of financial contributions of development, either SMC or NAFPEC, a 1% dilution will apply for each US\$100,000 of funding shortfall, until the 10% equity position for the defaulting party is reached.
- At this 10% position the minority party has again the right to elect to contribute or dilute. In the case of default on cash call, the default triggers a sales clause where the remaining 10% can be purchased at an agreed value, or if no agreement is reached, by valuation of an independent expert.

#### **4.2.7 Garaboureira North Joint Venture Agreement**

SMC finalized a joint venture agreement over the northern portion of the Garaboureira permit during the last quarter of 2011. The agreement was with Afrigold Pty Limited (AGP) and Mining Research Company (MRC) over the northern 50 km<sup>2</sup> of the Garaboureira exploration permit. Both AGP and MRC are private companies registered in the Spanish territory of the Canary Islands. Both companies are engaged in small scale alluvial mining. The Garaboureira permit consists of a northern block covering 50 km<sup>2</sup> of prospective geology and a smaller southern, but separate portion which is not part of the joint venture. The agreement gives SMC a 75% interest in the Garaboureira (North) Permit.

AGP also holds four small scale mining permits over approximately 30% of the exploration permit, allowing it the exploitation of near surface alluvial and laterite hosted gold to a maximum depth of 15 m. SMC is entitled to 75% of all sub-surface rights outside the small scale mining blocks and 75% of the sub-15 m mining rights within the small scale mining blocks. At present there is no mining carried out by either party. SMC has a first right of refusal on any laterite gold resource within these small scale mining permits. SMC will fund exploration for primary gold resources to a feasibility study level, after which AGP will have 45 days to consider pro rata funding of a development project or to sell its interest to SMC at a price agreed to by both parties. Government participation on any mining development will be shared equally between SMC and the other joint venture partners.

### **4.3 Existing Environmental Liabilities**

There is an abandoned processing facility which operated in 1998 near the current pit. MDL reported that the historical tailings were moved to the current tailings storage facility.

There is virtually no artisanal mining on the Sabodala mining lease apart from sporadic hard rock working at Falumbo and minor alluvials at Sutuba. According to SGO, the area has not been contaminated by these workings such that it could reasonably stand out as a liability or obligation for remediation.

## **5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY**

### **5.1 Sabodala Mining Concession**

#### **5.1.1 Physiography**

Topography in the area is generally undulating with a gentle gradient to the north and west towards the major river courses in the area. The elevation varies from approximately 150 m to 350 m. In the east of the area and abutting onto the eastern side of the concession is a north-south aligned ridge rising at least 100 m above the surroundings.

Vegetation ranges from savannah to thick bushes and large trees on hillsides. Watercourses are marked by palms.

#### **5.1.2 Accessibility**

The Project is located in southeast Senegal, approximately 650 km east-southeast of the capital city of Dakar. Access to the Project from Dakar is by sealed road, Highway N1, to the regional centre of Tambacounda and then via a good all-weather sealed road, Highway N7, 230 km southeast to Kedougou, connecting with 96 km of sealed and laterite-surfaced roads which intersects the villages of Faloumbo and Sabodala. A 1,250 m sealed public airstrip, capable of handling light to medium sized aircraft, lies at the north end of the property.

There are three villages on the Sabodala Mining Concession. Sabodala village is approximately 2 km south of the Sabodala pit and is very close to the Niakafiri deposit. Faloumbo village is to the north-northeast of Sabodala pit and is close to the Faloumbo workings. The Dambankoto hamlet holds just a few families formerly from Faloumbo, and its location has been moved. Dambankoto utilizes water from a bore completed in 1982 by Bureau de Recherches Géologiques et Minières (BRGM) for hydrological test work.

#### **5.1.3 Climate**

In Kedougou the highest monthly average temperatures are between March and May (31°C to 40°C). The lowest monthly average temperatures are between December and January (17°C to 26°C). The annual Harmattan is a dry wind that blows from the north, usually from December to February, resulting in dusty and hazy skies.

There is a distinct tropical wet season from May to October, with most rain falling from storms between August and September, and a dry season from December to April. Mean annual rainfall at Sabodala is approximately 1,130 mm. It is possible to operate all year but the schedule allows for a reduced mining rate and for predominantly fresh ore to be processed in the wet season.

#### **5.1.4 Surface Rights for Mining Operations, Water, Power and Labour**

The Mining Convention, discussed in Section 4.2.1, granted all necessary surface rights to mine.

Water for Sabodala is sourced from two raw water dams and via a 42 km pipeline from the Faleme River. Power is generated on site. This is elaborated on in Section 18.

Personnel comprising the workforce are sourced from the surrounding villages, towns and the city of Dakar. Senior staff comes from various parts of the globe.

## 6 HISTORY

A soil sampling programme carried out by BRGM in 1961 resulted in the discovery of Sabodala, which had not previously been recognized by the local artisanal miners, as the gold was fine-grained.

A summary of subsequent ownership and general account of work performed is listed in Table 6.1.

**Table 6.1 Ownership Periods and Work Completed**

Year	Company	Work Done
1961	BRGM	Regional geology, soil sampling, pitting, trenching in area of artisanal mining.
1971-1973	Soviet-Senegal JV	513 m diamond drilling in 19 holes in quartz vein style mineralization.
1973-1983	BRGM	5,856 m diamond drilling in 53 holes, 263 m percussion in 30 holes.
1984-1994	Société Minière de Sabodala-Paget Mining Ltd. JV	4,705 m reverse circulation drilling in 61 holes, 192 m diamond drilling in 4 holes. Constructed airstrip and exploration camp. Resource estimate by Continental Resource Management Pty Ltd. Metallurgical studies by ALS Amtec. Rock mechanics studies by Barrett Fuller and Partners. Feasibility study by Lycopodium.
1997-1998	Eeximcor-Afrique SA	Granted exploitation permit. Constructed 200ktpa processing plant

Some outstanding findings of the work done over the subsequent tenure periods are summarized below. Despite progressively encouraging results, due to the gold price and other factors, the project did not progress to production.

- The drilling by the Soviet-Senegal JV reported intercepts of 12.2 m at 5.8 g/t Au, 69 m at 1.9 g/t Au and 25 m at 3.6 g/t Au.
- The drilling by BRGM (second tenure) reported intercepts of 8 m at 7.9 g/t Au, 35 m at 5.6 g/t Au and 18.6 m at 27.6 g/t Au, though it was not specified whether these were from percussion or from core holes.
- The drilling highlights for the next period of work by Société Minière de Sabodala-Paget Mining Ltd. JV were 28 m at 6.8 g/t Au, 13 m at 29.8 g/t Au, 18 m at 12.1 g/t Au and 25 m at 9.2 g/t Au.

The only operation at the site was by Eeximcor-Afrique SA, which mined and stockpiled 80,000 t of which 38,000 t at a grade 4.4 g/t Au were processed, producing around 4,400 oz gold.

Following Parliamentary approval of the new Senegal Mining Code on 24 November 2003, the Government of Senegal decided to accelerate development of the country's mineral resources. As part of this plan, a consortium of international companies, including MDL, were invited to tender for the exploration and exploitation of the Sabodala deposit.

MDL lodged a full complying bid for the Sabodala Gold Project on 7 June 2004, and was advised by the Government of its selection on 25 October 2004. The bid was a joint venture between SMC (70%) and private Senegalese interests (30%). Exploration drilling began in

June 2005. The company subsequently exercised its option to acquire the remaining 30% minority interest for a mixture of cash and shares.

On 2 May 2007, MDL received Mining Concession status for Sabodala by decree of the President of Senegal. The decree includes the following provisions:

- Ten year mine lease.
- Exemption from all property, company and value added taxes for a period of eight years.
- Exemption from import and export duties for a period of four years starting from date production commenced (March 2009).
- A royalty (termed a 'mining tax') equivalent to 3% of gold sales is payable to the Senegalese Government.
- The Republic of Senegal retains a 10% free carried interest after project capital is recovered with interest.

SMC has continued to explore the Project as described in Sections 9 and 10.

On 23 November 2010, Teranga completed the indirect acquisition of the Sabodala gold mine and a regional exploration package by way of a restructuring and demerger from MDL (the Demerger). As part of the Demerger, the following transactions were completed:

- The shares held in the gold-related operating and exploration companies (collectively, the 100% owned Mauritius entities, Sabodala Gold (Mauritius) Limited and SGML (Capital) Limited, as well as the Senegalese subsidiaries, namely the 90% owned Sabodala Gold Operations SA and 100% owned Sabodala Mining Company) as well as shares held in Oromin Explorations Ltd, were transferred to Teranga in consideration for the issuance of 200,000,000 common shares of Teranga to MDL and C\$50M in deferred consideration.
- On 7 December 2010 the company completed the IPO in Canada and Australia. In Canada, after exercise of the over-allotment option, a total of 36,617,900 common shares of Teranga were issued for gross proceeds of C\$109.9M. In Australia, 9,000,000 common shares of Teranga were issued for gross proceeds of A\$26.7M. Total gross proceeds of the IPO were C\$136.5M.
- A loan of C\$50M, part of the deferred consideration for the transfer of the gold assets to Teranga from MDL was repaid from the IPO proceeds.

The Mining Convention includes a commitment to invest US\$425,000 per annum in social development programs within the region, US\$200,000 per annum towards training and logistical support, as well as US\$30,000 per annum to district administration support. In addition, SGO is required to pay US\$6.50 for each additional ounce of reserves independently confirmed within the mining licence area beyond the initial amount of reserves claimed at date of grant of the mining concession; all the preceding items are included in operating costs.



## **7 GEOLOGICAL SETTING AND MINERALIZATION**

### **7.1 Regional Geology**

#### **7.1.1 Overview**

The Sabodala Mining Concession and the surrounding exploration permits are located in the 2,213 Ma to 2,198 Ma age Kedougou-Kenieba Inlier (Figure 7.1), which lies within the Paleoproterozoic age Birimian Terrane of the West African Craton. The permits straddle two major divisions of the Inlier – the volcanic-dominated Mako Supergroup to the west, and the sediment-dominated Diale-Dalema Supergroup to the east. The Sabodala deposit and western portions of the company's concessions in the Faleme and Near Mine projects are hosted in the Mako belt.

To the east, underlying the company's Dembala Berola project, the Diale-Dalema metasedimentary sequence is composed dominantly of a folded, sandy turbidite succession that is intruded by small stocks and dykes of various composition.

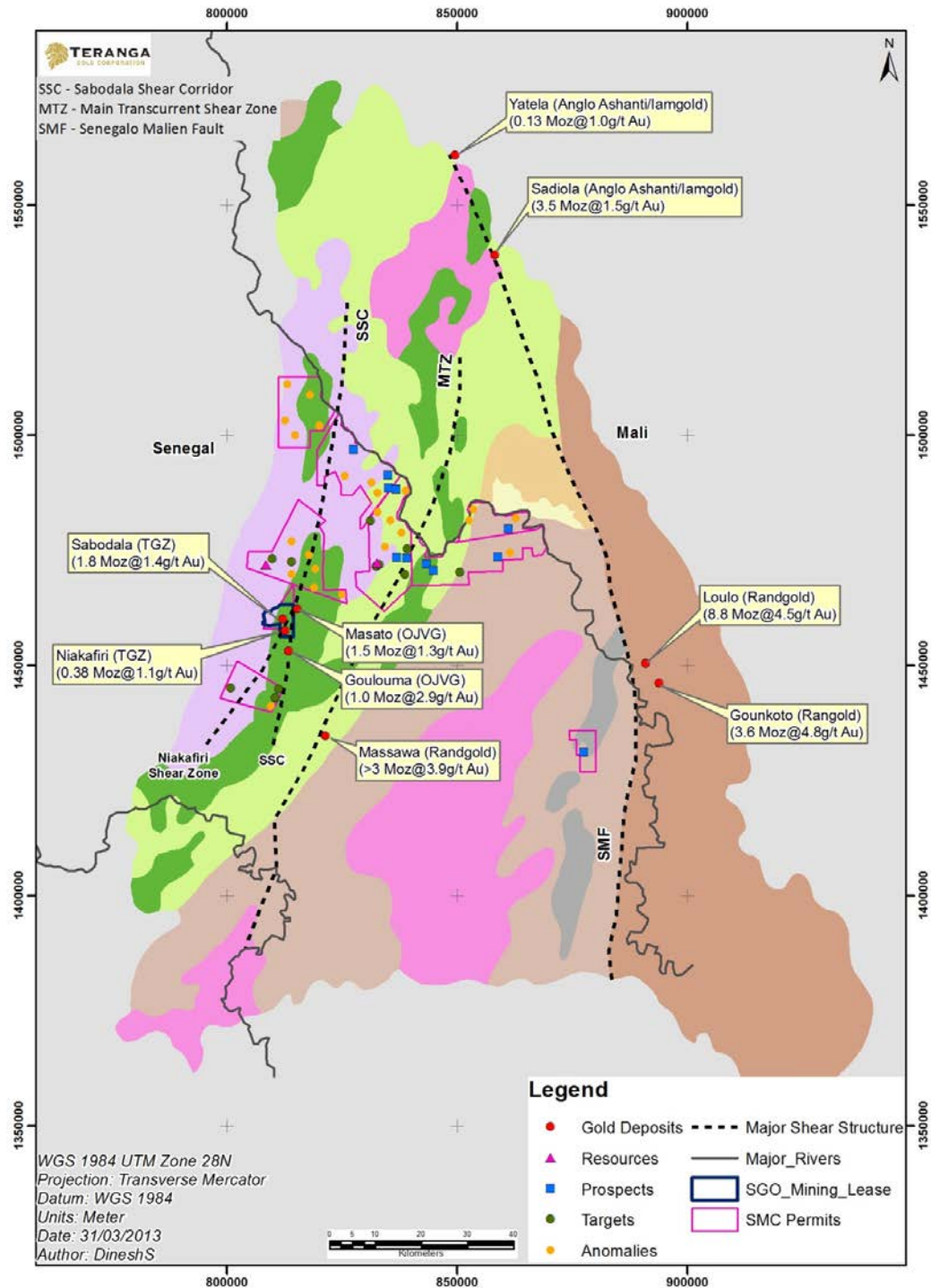
The Mako and Diale-Dalema supracrustal sequences are intruded by a series of variably deformed granitoid intrusions that range in age from 2,160 Ma to 2,000 Ma. These include the Karkadian Batholith which bounds the Mako Belt to the west, and several major large stocks in the central Mako Belt in the project areas. Lithologies in the region are affected mainly by lower greenschist grade metamorphism. Northeast trending intermediate to felsic and later, post-tectonic mafic dykes are present throughout the region, the latter forming prominent linear magnetic features. Felsic and intermediate composition dykes are often spatially associated with shear zones hosting gold mineralization, and locally are host to significant gold mineralization themselves.

#### **7.1.2 Regional Structural Setting**

Major crustal shear zones regionally bound, and influence the overall north-northeast lithologic grain in the region. These include a north-northeast trending shear zone which is interpreted to form a boundary between the Mako and Diale-Dalema groups which lies east of the Sabodala property area, and which is termed the Senegal-Tombo Shear Zone or Main Transcurrent Shear Zone (MTZ) by different authors. This structure has been previously interpreted to pass through the western portions of the Diale-Dalema sequence based on magnetic patterns, but fieldwork suggests that the linear magnetic features are instead related to sets of late mafic dykes. Zones of highly sheared rocks have been mapped in the western part of the Dembala Berola project area confirming the presence of a major shear zone.

The MTZ converges with, and may join to the north in Mali with the major northerly trending Senegal-Mali Shear Zone, which is spatially associated with several major gold deposits, including Sadiola and Loulo in Mali. Intense zones of high strain are also present in the eastern portions of the Mako Supergroup on the Sabodala project and the adjacent properties of the OJVG, confirming the presence of a major structural corridor referred to as the Sabodala Structural Corridor (SSC).

Figure 7.1 Schematic Geology and Endowment of the Kedougou-Kenieba Inlier



Note: The 'Endowment' figures are Measured and Indicated Resources and are taken from various companies' websites. The Teranga figures are to 1 October 2011, the OJVG figures to mid-2011, and the others are to the end of 2010. All figures have been back calculated to 100% of the deposit in each case, and simply give a current size for each deposit in the area.

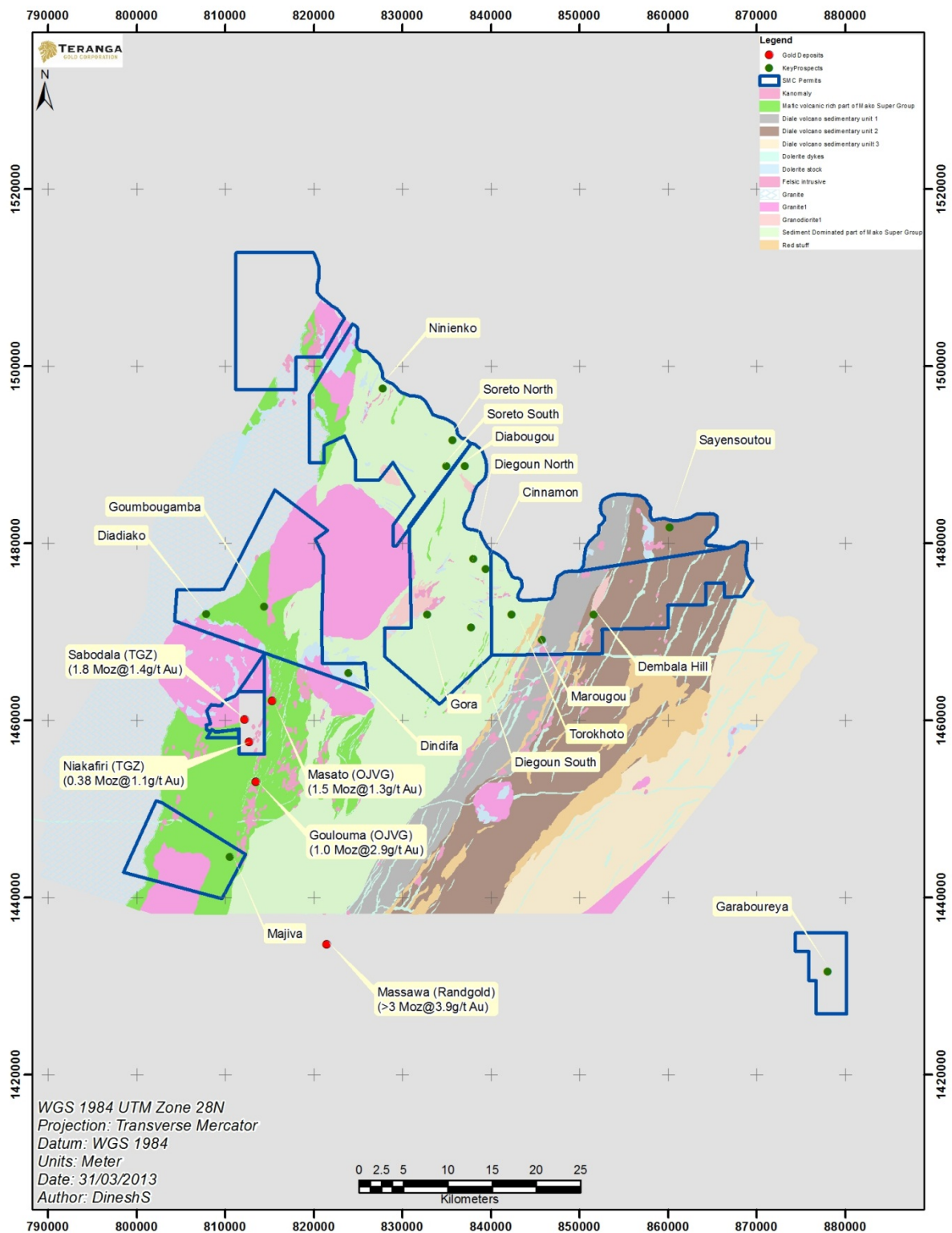
High strain zones and apparent truncations of lithologic features on the Sabodala and Sounkounkou permits suggest the presence of second and third order shear zones at the property scale, which may control the localization of gold mineralization.

The structures wrap around major intrusions, and northwest trending linking structures between major shear zones are also present, all of which form potentially prospective sites for gold deposit formation. Field relationships suggest that gold mineralization at Sabodala and other deposits in the region is probably coeval with latter stages of shear zone development.

### **7.1.3 Regional Surficial Geology**

Lateritic weathering combined with duricrust formation is still active in the region. Apart from local hills and resistant lithologies, much of the terrain is covered by laterite and ferricrete, so outcrop is sparse (Figure 7.2). Hills which occur in east and southeastern portions of the Sabodala property, around the Goumbou Gamba prospect on the central Bransan property and surrounding the Gora prospect to the east, form some of the best exposed outcrop areas on the projects. Oxidation depth in the region is highly variable, but is generally several tens of metres. Towards the northwest, thick soils and colluvial materials cover large tracts of land. Close to the Faleme River small lenses of lateritized alluvial deposits can be observed.

**Figure 7.2 Simplified Geological Map of the Sabodala Project Areas**



Note: Refer to Figure 4.3 for the individual names of the exploration permits, outlined in Figure 7.2.

## 7.2 Local Geology

The largest and best understood deposit in the company's properties is Sabodala due to its production status and size, so this deposit is described in most detail. Gold deposits on the adjacent properties of Oromin are of similar style, and include primarily shear vein systems and bulk tonnage, lower grade mineralization in carbonate altered ultramafic rocks along shear zones. Principal deposits and prospects are described below.

Teranga's properties are subdivided into four areas: the Sabodala Mine Concession and three exploration permits, referred to as the Near Mine, Dembala Berola and Faleme Projects. Each project area is composed of two to five exploration permits each containing a number of prospects as illustrated in Figure 7.2.

### 7.2.1 Sabodala Mining Lease

#### Lithology

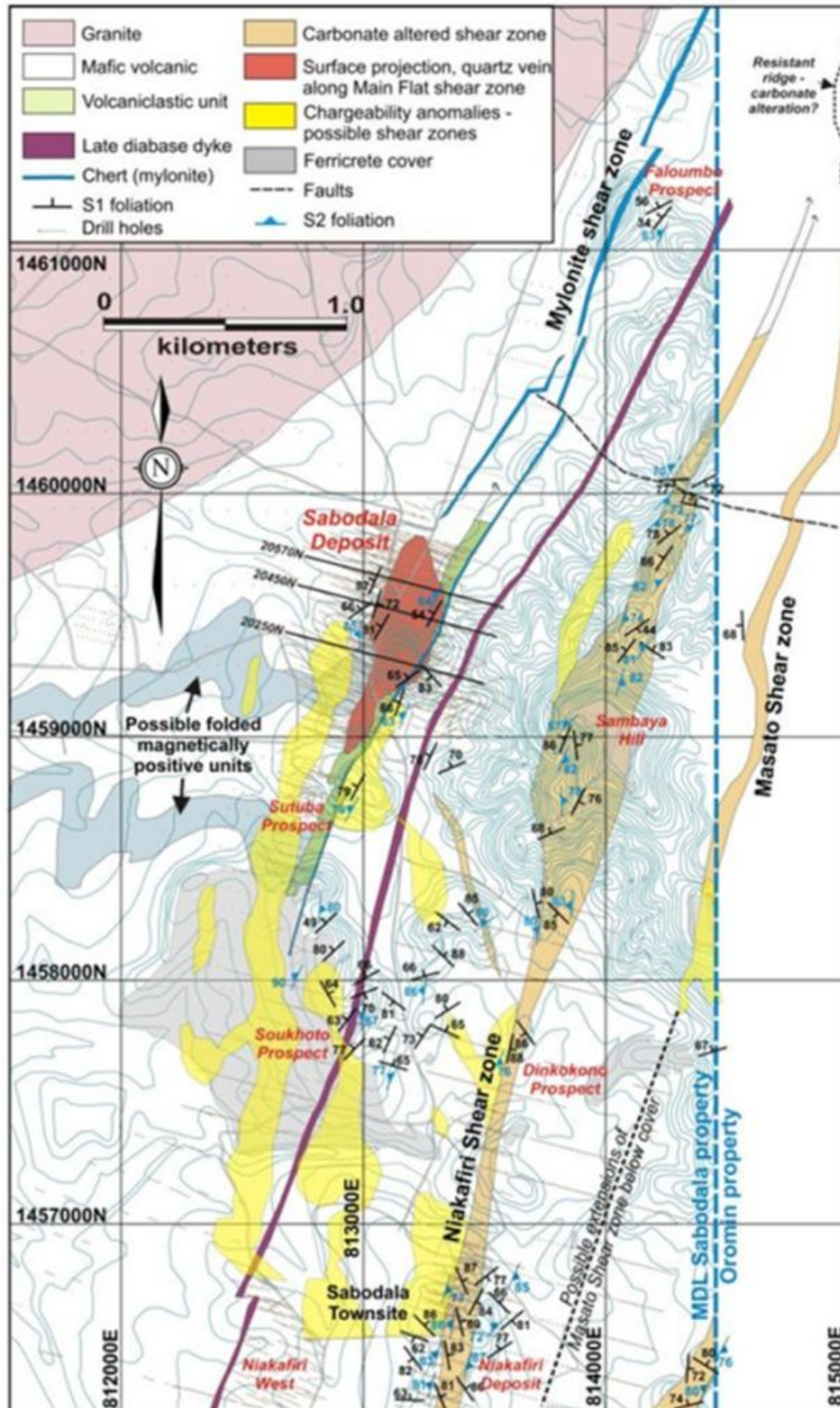
The Sabodala Mining Concession is underlain mainly by mafic volcanic rocks with associated sub-volcanic mafic intrusions of the Mako Supergroup. These are inter-layered with variably altered ultramafic units, and local sedimentary horizons. A large granitic intrusion occupies the north-western portions of the property, and several phases of mafic to felsic dykes intrude the sequence (Figure 7.2). Lithologies generally trend north-northeast to northeast with steep dips, although local variations are apparent. These variations in trend may be locally important trap sites for mineralization, especially where units are obliquely intersected, and cut by, mineralized shear zones. Lithologies are affected by lower greenschist grade metamorphic assemblages. Figure 7.2 shows the geology of the Sabodala project including the outline of the adjacent exploration permits, and Figure 7.3 shows the geology of the original mining concession.

Mafic volcanic rocks dominate in the sequence and interflow sediment horizons occur locally in the mafic volcanic sequence, with the most prominent being a cherty horizon referred to as mylonite by Painter (2005). It passes through the Sabodala deposit and is traceable from the northeast through the central portions of the Sabodala property in a series of resistant weathering outcrops. Other interflow units comprise narrow carbonaceous (graphitic) mudstone-siltstone horizons, which locally are often exploited by shear zones.

Ultramafic rocks are present throughout the stratigraphy and are variably and often intensely affected by alteration and high strain zone development. Fresher varieties which retain primary textures are mottled with relict igneous texture suggesting that they mainly comprise intrusive sills and dykes. Areas of pervasively carbonate altered ultramafic rocks occur most extensively along the Niakafiri and Masato trends/shear zones, where they are often host to gold mineralization.



Figure 7.3 Simplified Geological Map of the Sabodala Project Areas



Map after D Rhys



Dykes of several varieties intrude both the volcanic sequence and the ultramafic sills. These include at least two phases of porphyritic dykes of probable intermediate to felsic composition that preferentially intrude along shear zones in altered ultramafic units and mineralized shear zones. These are typically 1 m to 10 m thick. Later, post-mineralization, fresh mafic dykes that are up to several tens of metres in thickness trend north-northeast generally sub-parallel to the lithologic sequence. The late mafic dykes are not associated with, and cut across, mineralization and its hosting structures.

## **Structure**

The following descriptions are drawn in part on work done for Teranga by David Rhys of Panterra Geoservices, and his work has been integrated into the description from the Teranga geologists. Some drawings are from his reports, and these are noted where applicable.

Principal structures on the Sabodala property form a steeply west-northwest dipping, north-northeast trending shear zone network which has previously been referred to as the "Sabodala Shear Zone". The largest and most continuous structures within this overall corridor on the property include the north-northeast trending Niakafiri, and Masato shear zones, which are high strain zones developed in altered ultramafic units. To the west of these, several shear zones are linked to them by subsidiary north to northwest trending splays. These include the Ayoub's Thrust zone, which is focused along the ultramafic sill that lies on the west side (hanging wall) of the Sabodala deposit, shear zones which extend southward from this in the Sutuba and Soukhoto and Niakafiri West prospect areas, and the areas of high strain localized the locally termed "mylonite" unit.

The north-northeast trending shear zones on the Sabodala property likely represent first and second order structures of regional scale to first order features such as the MTZ, while the northwest trending shear zones may be third order features that accommodate strain between these higher order features. The latter locally intersect to form linking networks of locally developed shear zones that form important deposit scale controls on mineralization at other deposits in the region.

## **Mineralization**

Gold deposits and prospects on the Sabodala Mining Concession occur in the following styles:

- The Sabodala deposit itself, which comprises a network of extension vein arrays, breccia mineralization and a network of controlling shallow to moderate dipping shear veins which are developed adjacent to a northeast trending shear zone. Ninienko has a similar style of gold mineralization.
- Gold mineralization within shear zones in carbonate altered ultramafic and mafic units that are associated with networks of quartz shear veins, slip surfaces and extension veins, which include the Niakafiri deposit, Niakafiri West and Dinkokhono prospects.
- Mineralization in northwest or northeast-trending, generally steeply-dipping banded quartz veins which occur in areas of elevated strain and hosting mineralized shear

zones such as the Gora deposit and the Toumboumba, Faloumba, Soreto and Soukhoto prospects.

- Quartz vein arrays developed in competent units within the sedimentary sequence of the Diale-Dalema sequence, particularly sandstone horizons and in small intrusions (a sedimentary hosted example is Gora).

## **7.2.2 Geology and Mineralized Areas on the Sabodala Mining Lease**

### **Sabodala**

#### **Deposit Overview**

The Sabodala deposit comprises a network of mineralized shear zones and associated surrounding sets of quartz breccia veins and vein arrays which are discordant to, and cut across the hosting volcanic stratigraphy. Mineralization is most intensely focused in and west of where the shear zone network intersects, and crosscuts the mylonitic chert unit. Best developed mineralization extends from the chert unit westward to the ultramafic-hosted Ayoub's Thrust, in the steeply west-northwest dipping host sequence comprising the volcanoclastic unit, mafic volcanic units and gabbro which lie between the chert and the shear zone. The deposit is developed over a strike length of at least 600 m from the Sutuba prospect southwest of the current open pit, northward to several hundred metres north of the open pit, where it is open at depth. Within and northward from the current open pit, the deposit plunges moderately to the north, while at the south end of the deposit the plunge is shallow to the south. The mineralization plunges vary with the orientation of, and intersections between the principal mineralized structures, which host and are surrounded, by gold mineralization.

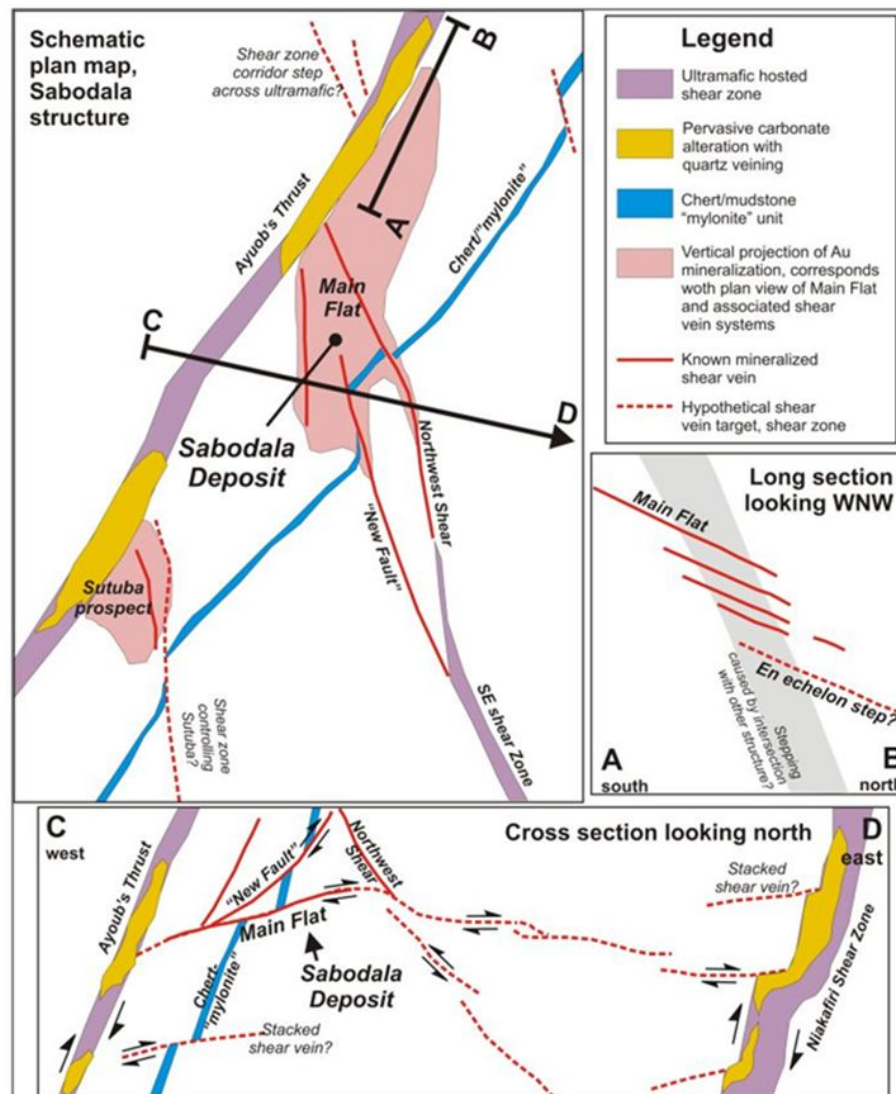
#### **Controlling Structures on a Deposit Scale**

Several shear zone orientations control the position and morphology of gold mineralization in the Sabodala deposit. The largest and most continuous is the Ayoub's Thrust, which, although containing only a small proportion of mineralization itself, likely has a major structural control on the position of adjacent mineralization and subsidiary mineralized shear zones. This structure is a 50 m to 100 m wide, largely ultramafic sill hosted, north-northeast trending and steeply dipping high strain zone which lies immediately west of the orebody, see Figure 7.4. Within it, areas of intense oxide alteration with relict fuchsite and locally abundant quartz veining define oxidized upper parts of carbonate alteration zones, which, below depths of oxidation, comprise inner dolomitic, fuchsite-bearing carbonate and outer talc-chlorite-serpentine alteration. While this alteration and veining does not usually carry gold mineralization, it defines a significant fluid channelway and controlling shear zone along the ultramafic unit adjacent to which gold mineralization is developed. A second, stratabound shear zone to the east occurs along the deformed chert-siltstone unit in eastern parts of the orebody, representing an area of high strain which has been termed the Mylonite Shear zone.

Within the Sabodala orebody, principal ore hosting and controlling structures extend between the stratabound Ayoub's Thrust, and Mylonite shear zones, forming a network of shear zones that host and are surrounded by gold mineralization, and from which subsidiary mineralized structures splay off. The most significant of these are the Main Flat

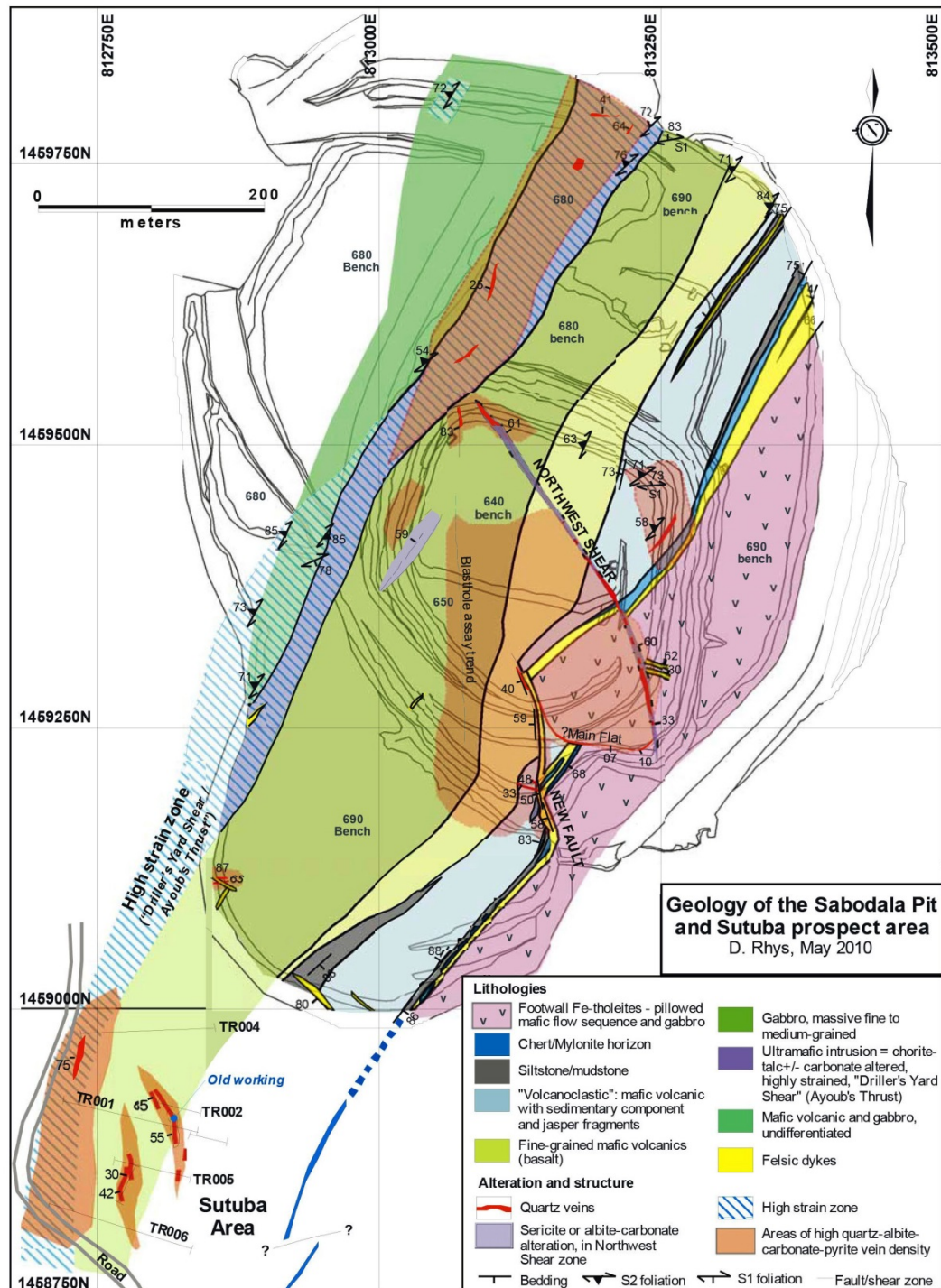
and Northwest Shear. These host and are surrounded by the most continuous and through-going areas of mineralization in the deposit along central quartz-carbonate-albite-pyrite shear vein systems developed along them, and in broad surrounding zones of alteration and veining which are best developed where the two structures intersect (Figure 7.5).

**Figure 7.4 Possible Structural Patterns and Mineralization Controls**



Note: Top left: Plan map with mineralization in the deposit coinciding with the position of the Main Flat surface projection, in shaded red, showing the interpreted structural setting and principal mineralized or controlling structures. The surface projection of the Main Flat marks the outline of the Sabodala deposit. The Main Flat is the dominant structure in a set of intersecting mineralized shear zones that include the Northwest Shear and "New Fault". These structures may emanate off a significant shear zone to the southeast ("SE shear zone") that occurs near the Dinkokhono deposit. Mineralization in the Main Flat occurs where this north-northwest trending shear zone corridor approaches and joins Ayoub's Thrust. Offsets of marker units. Note the carbonate alteration along Ayoub's Thrust where it is proximal to mineralized structures. Centre right: Hypothetical section illustrating potential downward en echelon stepping of Main Flat through area of stacked shear zones. This could occur where an oblique shear zone intersects the Main Flat. Bottom: Cross section illustrating known mineralized structures (upper left), and potential extensions and targets to the east and at depth. The Main Flat could link in en echelon steps to the Niakafiri Shear Zone. Potential for stacked shallow dipping shear zones occurs adjacent to the ultramafic-hosted shear zones to the east and west.

Figure 7.5 Geological Plan from Bench Mapping



The Main Flat is the more laterally extensive of these two principal ore hosting structures, and is traceable over a strike length of more than 600 m from north-northeast to south-southwest across the deposit. It dips shallowly to the west in southern parts of the deposit, rolling to flat and ultimately shallow to moderate north dips in northern part of the deposit,



creating an overall domal geometry. The structure accommodates more than 100 m of reverse displacement (top to the east) of marker units in southern parts of the deposit.

The displacement on the Main Flat diminishes northward as the vein/shear zone system becomes more complex, and splits into subsidiary shear vein structures at depth, some of which may define new downward en echelon steps of the shear vein system to the north that host continuing gold mineralization.

The Northwest Shear trends west-northwest and dips moderately to the northeast, running through central parts of the deposit. It is best developed immediately above the Main Flat and veining and mineralization within it thicken downward as they approach that structure. Although it is a significant and laterally traceable ore-producing structure, apparent displacement of lithologies across the Northwest Shear is only minor.

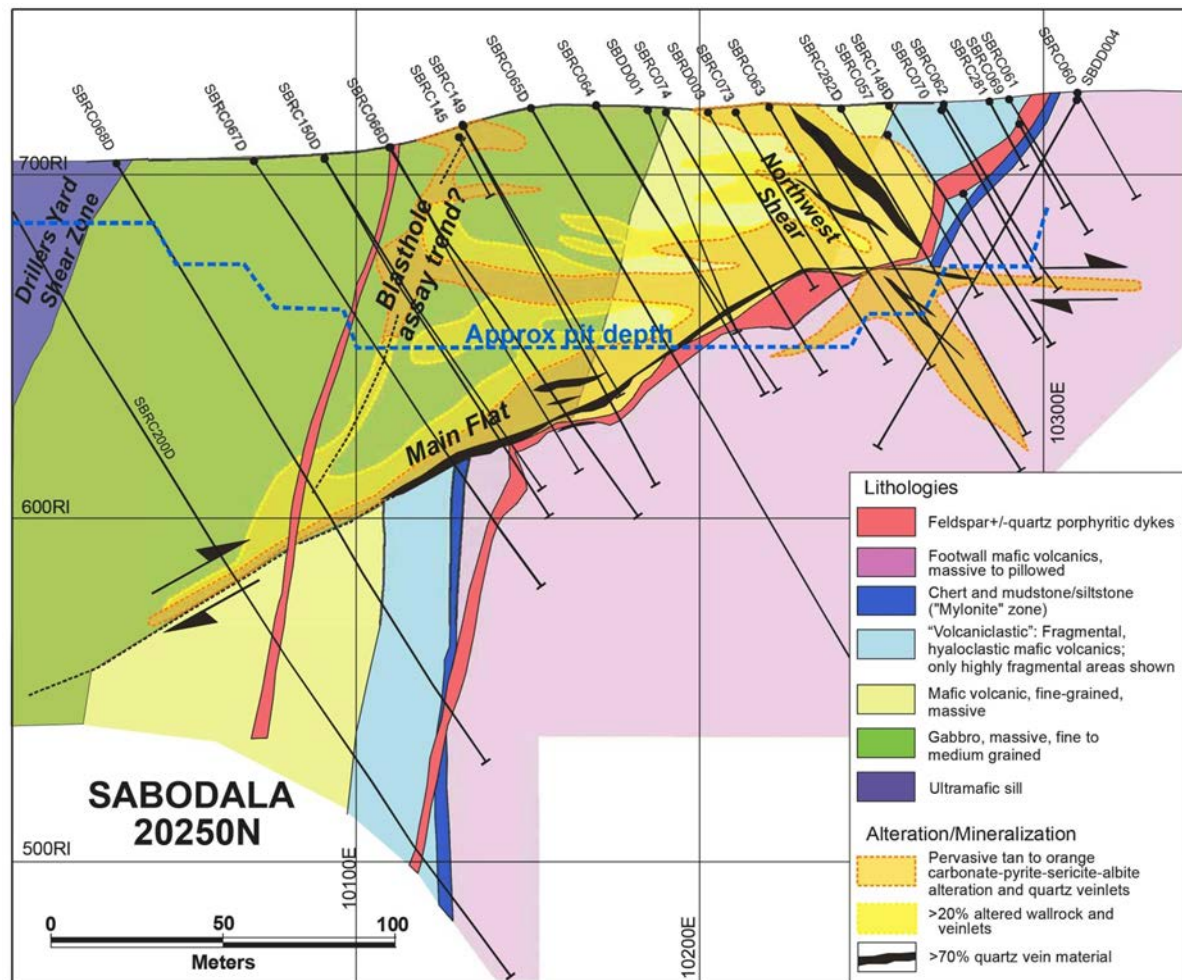
The Main Flat – Northwest Shear intersection and the abundant veining and alteration surrounding and extending between the junction of these structures together form the highest grade, north-northwest plunging core to the Sabodala orebody. The similarities in style, alteration and veining history along the Main Flat and Northwest Shear suggest that they are probably coeval and potentially conjugate shear zones.

In addition to the Main Flat and Northwest Shear, several subsidiary shear zones splay off, or link, between these mineralized structures. These locally control significant areas of gold mineralization in the deposit, and include (i) the New Fault, a potential hanging wall splay off the Main Flat which occurs in southern portions of the deposit, and (ii) a structure defined by blasthole assay patterns along the western parts of the central orebody, which is defined on its margins by a steeply dipping shear zone that is several metres wide. The New Fault accommodates significant top to the southeast displacement of lithologic units based on map patterns, and south of its junction with the Main Flat may accommodate as much as half of the displacement that is taken up on the Main Flat to the north.

Collectively, the Main Flat, Northwest Shear, New Fault, structure associated with the blast hole assay trend, and networks of dominantly shallow southerly dipping extension veins form a complex intersecting set of structures that plunges shallowly to the north-northwest.

A typical cross section showing the features is included as Figure 7.6.

**Figure 7.6 Typical Geological Cross Section**



### Veining and Alteration Associated with Mineralization

Gold mineralization at the Sabodala deposit occurs in a combination of continuous grey quartz shear veins along shear zone surfaces in the Main Flat and Northwest shear zones, in sets of quartz-carbonate-albite-pyrite extension veins, in coalescing extension and shear vein domains which form zones of quartz-carbonate matrix breccia, and in areas of pervasive tan to pink coloured carbonate-albite-sericite-pyrite alteration which surrounds and links between veins, shear zones and breccias. Multiple generations of veins are evident, but the most voluminous veining and alteration forms the youngest generations.

The most continuous mineralization occurs along and surrounding the Main Flat and Northwest Shear. In the central parts of the deposit, these two structures are cored by quartz shear vein systems comprising mottled grey, variably brecciated, and banded quartz veining which is locally host to high gold grades.

Within the Sabodala deposit, the extension veins commonly coalesce in, or join areas of vein-like or diffuse breccias, especially in or adjacent to the Northwest Shear and Main Flat where breccias can occur over intervals of several metres, and are often very high grade.



Gold mineralization of all styles is associated with pyrite in association with extension and shear veins as clots, grains and along slips surfaces within veins, as pervasively disseminated envelopes around veins, and is also disseminated in broad zones of carbonate-albite alteration surrounding shear veins. Locally pyrite forms veinlets, which both cut across, and in other areas are cut by, quartz-carbonate albite veins, suggesting multiple pyrite generations, occurring within both pyrite veinlets and quartz-carbonate veinlets. Pyrite is variable in grain size and ranges from cubic to anhedral. Pyrite of all grain sizes from mineralized zones is spatially associated with grains of native gold along crystal margins, in fractures within pyrite, or encapsulated in pyrite grains. Coarse gold is absent. (Ross and Rhys, 2009).

### **Other Prospects within the Mining Lease**

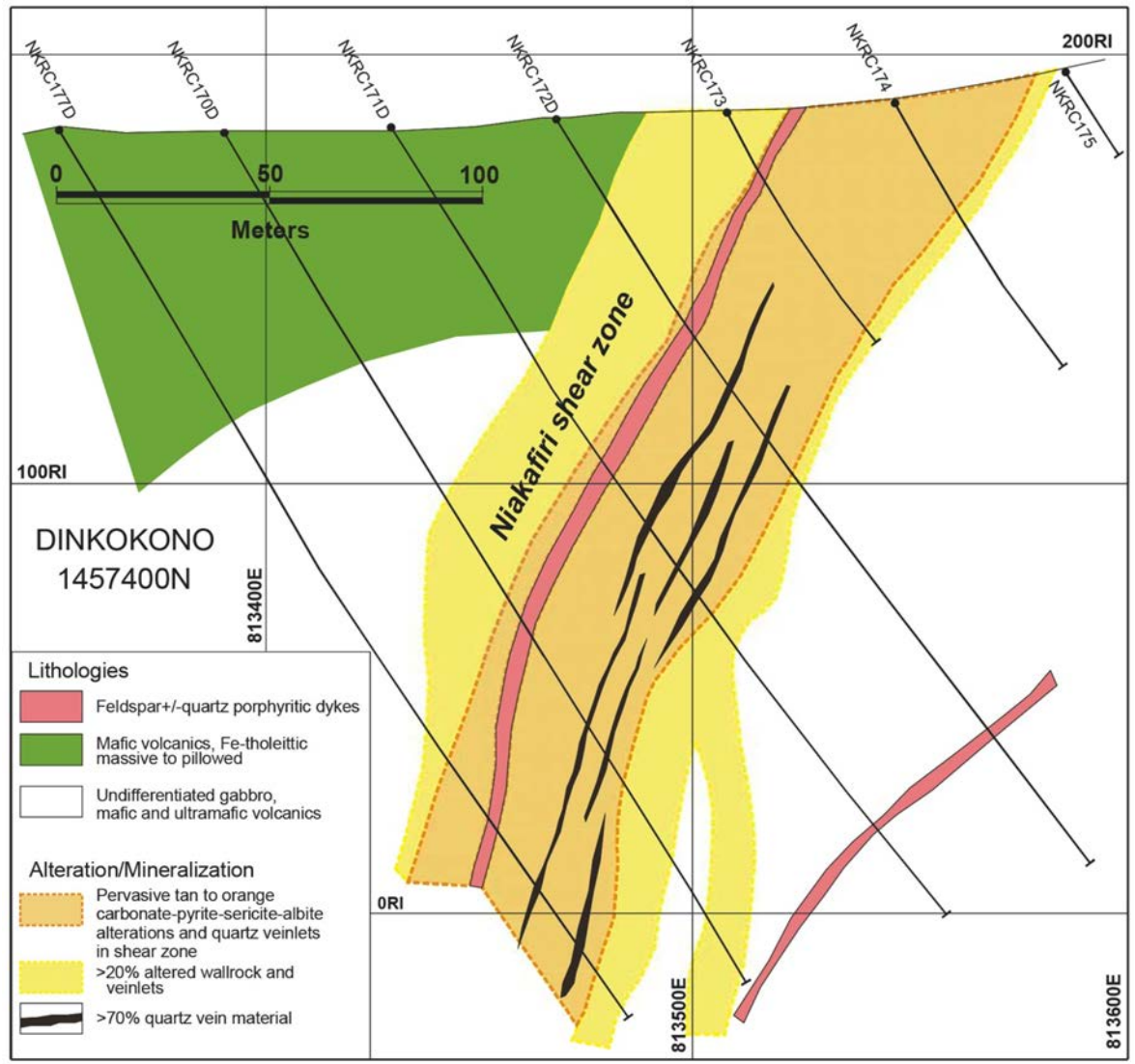
Outside of the Sabodala deposit on other parts of the Sabodala property, significant areas of mineralization are hosted by north-northeast trending, steep west-northwest dipping carbonate altered shear zones along the Niakafiri Shear Zone, shear zones which splay off this structure to the west, and along the Masato shear zone which lies 400 to 500 m east of and parallel to the Niakafiri Shear zone. Similar styles of mineralization are also present on continuations of these shear zones on the adjacent Oromin properties, including the Masato deposit, which lies along the Masato Shear Zone to the northeast of the Sabodala property, and in the Maki Medina deposit, which forms an additional zone of mineralization along the Niakafiri Shear Zone to the south.

On the Sabodala property, the Niakafiri Shear Zone is traceable from the Niakafiri deposit northward through the Dinkokhono, Sambaya and Masato prospects before passing out of the property to the northeast. Alteration associated with mineralization in the Niakafiri, Masato and other shear zones on the Sabodala property is associated with coincident positive IP resistivity and chargeability responses with form outlines of known areas of carbonate-muscovite-pyrite alteration that are developed along them.

### **Niakafiri Deposit**

The most extensive areas of mineralization along carbonate altered shear zones occurs at the Niakafiri deposit in southern parts of the Sabodala property, extending from the southern parts of the property boundary to the Dinkokhono prospect. Here, the Niakafiri deposit occurs along an approximately 750 m strike length of the Niakafiri shear zone. The deposit has been drilled to a depth of 150 m and parts are still open. The mineralization style in the Niakafiri deposit, and spatially associated shear zones developed in the Niakafiri West area, comprises sets of quartz veins, shear veins and disseminated pyrite developed in the ultramafic-hosted carbonate altered shear zones along, and splaying off the main Niakafiri Shear Zone (Figure 7.7).

**Figure 7.7 Cross Section Through the Niakafiri Shear Zone Looking North**



The cross section illustrated in Figure 7.7 is located at the north end of the Niakafiri deposit, just south of the Dinkokhono prospect. The shear zone corresponds with the area of altered rocks, and is most intense in areas of pervasive carbonate-dominant alteration. Highest gold grades correspond with areas of most intense veining, especially along shear veins shown in black.

Drilling suggests that the shear zones and their hosting ultramafic units dip steeply to the west and may be locally discordant to the volcanic stratigraphy. The dominant alteration mineral in the Niakafiri Shear Zone in the deposit area is dolomite with variable muscovite (sericite) content, and quartz, albite and pyrite as other common alteration minerals.

Pink felsic dykes of various ages occur along the Niakafiri shear zone in the Niakafiri deposit within areas of carbonate alteration and gold mineralization, as they do at the Sabodala deposit.

Gold mineralization in the Niakafiri deposit is generally concentrated in areas of both most intense strain, and most pervasive dolomite-sericite alteration within the Niakafiri Shear zone where networks of quartz extension and shear veins are developed, often spatially associated with felsic dykes. The intersection of north-northeast and north-northwest trending shear vein sets and associated fringing sets of steeply dipping, east-west trending extension veins around them defines steep northerly plunging shoots.

The sequence of veining from oldest most deformed to least deformed, young extension veins suggests that veining associated with gold mineralization in the shear zone was coeval with deformation.

The mainly steeply dipping extension and shear veins at Niakafiri that are associated with areas of gold mineralization are generally more highly strained than those at the Sabodala deposit, and may form an older set of veins than the main stage shallow dipping Sabodala vein arrays. Like the older, steeply dipping veins in the Sabodala deposit, late shallow dipping extension veins that may be coeval with main stage veining at the Sabodala deposit cut the Niakafiri vein systems, suggesting the Niakafiri mineralization may have been mainly coeval with early phases of mineralization there.

### **Niakafiri West Deposit**

Diamond drilling and IP patterns west of the Niakafiri deposit indicate that a network of carbonate altered shear zones extends west and northwest from the Niakafiri deposit beneath and west of the Sabodala town site. These shear zones extend north-northeast beneath overburden and ferricrete through the western Sutuba and Soukhoto areas and may link up with the Ayoub's Thrust at the Sabodala deposit. Drilling and geophysical patterns suggest that these structures include north-northwest trending shear zone strands which link northwest in the area of the Niakafiri West deposit into a north-northeast trending shear zone corridor. In drill core, the style of mineralization at Niakafiri West is closely comparable to the Niakafiri deposit, comprising sets of variably deformed quartz extension veins and quartz-carbonate-sericite-tourmaline-pyrite shear veins developed in tan to pale green carbonate alteration in areas of high strain.

### **Soukhoto and Faloumbo Areas**

The Soukhoto and Faloumbo areas contain widely spaced east-northeast trending and steeply dipping quartz veins which vary from 5 cm to 50 cm thick, and which have strike lengths of at least several tens of metres. The veins comprise white quartz with local prismatic fill, and have thin foliated envelopes suggesting that they are developed in minor shear zones. They are hosted in foliated mafic volcanic rocks. These veins occur in areas of high strain between the more intense shear zones such as the nearby Niakafiri shear zone and associated subsidiary structures, potentially linking between the larger shear zones or occurring in areas of strain accommodation at bends and terminations of individual shear zone strands. Potential occurs in these areas for defining individual higher grade shear veins, or for areas of lower grade, bulk tonnage mineralization where the shear veins are closely spaced or are associated with sets of quartz extension veins.

## **7.3 Geology of the Exploration Project Areas**

### **7.3.1 Near Mine Project**

The project composed of the Makana, Bransan, Bransan South and Sabodala West permits lie within the Mako Supergroup, the same general geology as is host to the Sabodala property. Mafic volcanic rocks predominate at both properties, and host bands of ultramafic rocks which are locally highly strained and carbonate altered, such as in eastern portions of the Makana property, which hosts the southern continuation of the Niakafiri Shear zone. Felsic volcanic rocks also occur in the west-central portions of the Makana permit west of the southern continuations of the Sabodala mine stratigraphy, where they are spatially associated with quartz-feldspar porphyritic intrusions, defining a bimodal component to the volcanic sequence.

On the Bransan permit, one of the best exposed prospects is Goumbou Gamba, which is hosted by a north trending granitic sill that is localized in alternating mafic volcanic rocks and highly strained talc-chlorite altered ultramafic rocks. Here areas of high strain locally wrap around granite intrusions to the east, forming bends and steps, and locally penetrating into and offsetting margins of these intrusions, (See section 10.6 for details). Continuations of potentially the same chert-mudstone horizon that is present in the Sabodala pit are present on the Bransan permit, west of the Goumbou Gamba prospect, and in eastern parts of the Makana permit.

Three large granitoid intrusions have been mapped on Makana, Bransan, Bransan South and Sabodala North West. Outcrops of these granites are relatively small in extent with most of the intrusions covered by laterite, however the high resolution aeromagnetics clearly define their boundaries. Significant gold mineralization is present in the central granitoid, named Faloumbo granite.

The western portion of the project area is underlain by the Kakadian batholith, which is poorly mapped complex of gneissic material, largely covered by laterite plateaus. The SSC can be traced from the western portions of the Makana permit, through the Oromin JV permit and Sabodala to Bransan in the north. At Bransan the interpretation of the aeromagnetics is that the structure cuts through and breaks up the Dialakotoba granitoid.

### **Diadiako Prospect**

Diadiako Prospect is located on a major regional scale geologic contact between basement Kakadian granite-gneiss and Mako Supergroup basalts and meta-volcanics (Figure 7.2). The highly competent Kakadian basement rocks have acted like a rigid block, against which the Mako host sequence has been sheared and deformed. This geologic contact has produced a crustal scale shear system that contains many individual shear zones, some of which are mineralized with gold (such as the Diadiako target). In the vicinity of Diadiako, the crustal scale shear system has a surface trace that is approximately 1.5 km wide (hanging Wall to footwall) which trends parallel to the Kakadian / Mako geologic contact. This wide system is the overall enveloping structure to several elongate northwest trending surface geochemical anomalies which represent individual shear zones that are mineralized. The Diadiako target is one of these individual shear zones.

Host rocks to mineralization at Diadiako are well foliated mafic volcanics and basalts. Mineralization occurs as auriferous pyrite occurring in quartz veins and breccia systems hosted within hydrothermally altered country rock. Alteration is a characteristic upper greenschist facies mineral assemblage containing carbonate, silica, albite, hematite, muscovite, and chlorite. Alteration can be patchy to pervasively developed and range in colour between brown, orange, and green dependent on the relative proportion of constituent minerals. Mineralization is most commonly associated with quartz veining and breccias developed in orange/pink albite-hematite altered metavolcanics.

Mineralized quartz veins commonly contain laminated and brecciated internal textures, and are generally mottled grey in colour. Vein margins commonly host displacement surfaces that are lineated and mantled with dark grey to black cataclasite composed of finely comminuted vein, wallrock and sulphide (pyrite). Vein quartz is characteristically opaque, suggesting that recrystallization is pervasive and caused by ongoing deformation of the vein breccia system or by an overprinting metamorphic event.

### **Makana Permit**

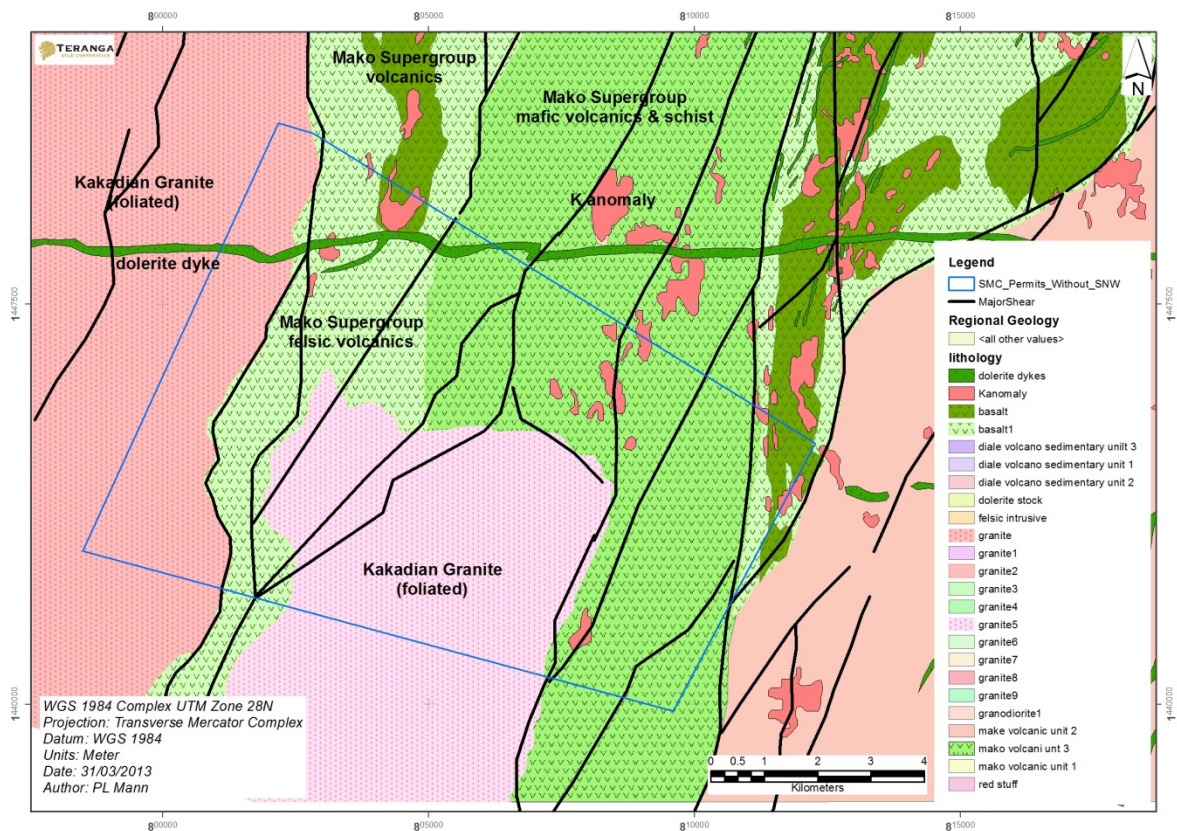
At the permit scale, Makana straddles the contact between the Kakadian Granite (to the west), and felsic volcanics, basalts, ultramafics, and subordinate greenstone metasediments of the Mako Supergroup (to the east). These rocks contain ductile shear zones and brittle cross-faults at various orientations, which record a complex and protracted deformation history that culminates in the intrusion of post-tectonic dolerite dykes (Figure 7.8).

The Makana Permit contains several target prospects that include Majiva North, Majiva Central, Majiva South, and Sanou-Samou. It is the southernmost permit within the Near Mine Project area. Geologically Makana is situated on the southern strike extension of the SSC, a major crustal scale high-strain zone of primary importance for regional gold mineralization. The eastern portion of the Makana Permit is interpreted to contain the southern strike continuation of the Niakafiri Shear Zone, a primary structure related to the SSC, which transects Majiva North, Majiva Central, and Majiva South, Prospects. The central portion of the permit contains numerous granite intrusive bodies that intrude country rock volcanics, basalts, and greenstones of the Mako Supergroup. These intrusive bodies provide analogues for Sabodala Style mineralization settings, which are situated proximal to the margin of the auriferous Falombou Granite intrusive body. Mapping and preliminary drilling have identified large scale quartz-carbonate altered shear zones that contain both disseminated and vein hosted gold mineralization. Laterite cover on the prospect is extensive and variable in thickness, covering up to 75% of the Makana Permit's surface area.

Figure 7.8 illustrates the Makana permit regional geology as interpreted from airborne geophysics and mapping.



**Figure 7.8 Makana Permit Regional Geology**



Surface mapping and drilling to date have confirmed that the local stratigraphy on the eastern side of the Makana permit is similar to the host sequence exposed within the Sabodala Open Cut and nearby outcrop. Key elements of the Sabodala mine stratigraphy are a metachert unit that forms an effective marker unit, and is flanked to the west by adjacent mafic volcanics and gabbros. At Makana, a north trending chert marker unit composed of fine grained quartz and cryptocrystalline chalcedony is situated adjacent to a volcanoclastic sequence. This local stratigraphy is similar in spatial arrangement, composition and appearance to the chert/mylonite zone and undifferentiated mafic volcanics and gabbros that define the hanging wall at Sabodala Pit.

Mapping has located several north-northeast trending high strain zones in outcrop that are defined by the development of intense, penetrative foliation in Mako Supergroup country rocks. These structures are interpreted as primary first order shears that may host vein mineralization, or control the development of mineralized veins in the lower strain domains located between these structures.

The Makana extension veins are similar in geometry, internal texture, mineralogy and orientation to variably mineralized early vein sets at Sabodala Pit (Teranga) and the Golouma Group (Oromin).



### 7.3.2 Dembala Berola Project

The Dembala Berola project, comprising the Dembala Berola and Saiensoutou Permits, are underlain mainly by the turbiditic sedimentary rocks of the Diale-Dalema Supergroup. Principal lithologies in this area comprise a thick sequence of bedded turbiditic sandstone, siltstone, and mudstone. Bedding in most areas dips west-northwest moderately to steeply, although variations to shallow and moderate east-southeast dips occur locally. Bedding in trenches within prospects and isolated outcrop exposures observed throughout the area is generally upright and faces west toward the Mako belt, based on facing indicators such as common graded bedding and local load casts and scours.

The Diale-Dalema sequence is intruded by several phases of intrusions having differing ages and a range of compositions. Most are small stocks and dykes, the former which generally are less than 2 km in length and a few hundred metres wide. There are often preferential hosts to gold-bearing quartz veins, generally as sets of extension veins and associated with minor shear zones which cross them. Common varieties include gabbro, quartz-feldspar porphyritic felsic intrusions, and medium to fine-grained probable granodiorite. Thermal aureoles around some form hornfels zones, or are spatially associated with areas of higher, upper greenschist, metamorphic grade. The intrusions become more abundant westward toward the transition to the Mako Supergroup where some tectonic interleaving of the intrusions and sediments may occur, and in the transition area larger granitoids intrusions are also present. Dykes of the different intrusive types typically trend northeast shallowly oblique to the strike of bedding, with steep dips.

#### Tourokhoto

This is a bulk tonnage target with potential for additional shear zone hosted mineralization with peripheral extension veining in the adjacent units. The evidence of syntectonic veining and the presence of tourmaline suggest the style of shear zone veining and make this target highly prospective.

The Tourokhoto Prospect is located over the MTZ. Geology is marked by the transition from the more volcanic Mako Group in the west to the more sediment dominated series of the Diale-Dalema Group to the east, (Figure 7.2).

At this prospect the Mako volcanic group is represented by sedimentary formations with major fine pelitic sediments locally with some basaltic lava flows. The centre of the prospect contains a large sheared gabbro/gabbro-diorite, surrounded by a black shale series intercalated with basaltic pillow lava units which can up to several tens of metres in width.

The Mako sediment cannot visually be differentiated from the Diale sediments: it is very fine and completely deformed. At surface, fine saprolitic particles covers the soil mixed with erosional products of the once covering lateritic plateaus. Shales are visible within the cutting rivers beds and only some late doleritic dykes are showing some variation in this very continuous area.

The centre of the Tourokhoto prospect is characterized by a large gabbro-gabbrodiorite body possibly intercalated with some black shales and orientated NNE paralleling the MTZ trend. The gabbro is sub vertical and sheared and locally mineralized. Some dykes of a porphyroblastic dolerite with larger feldspar crystals also intrude the sequence.

To the east of the gabbro, hematitic black shales are encountered, these are completely sheared and locally strongly mylonitized and trend N25-35°E. The many sub-parallel shear zones have a very high hematite content that weathers to a highly ferruginous fine grained unit which in places appears gossanous. A medium size iron-rich hill, partially oxidized into a gossan, crops out in the north of the prospect.

This mylonitic zone and sheared corridor are a product of the intense deformation that occurred along the MTZ. These ferruginous sheared sediments can be traced over strike lengths of several kilometres from north to south. The main area of deformation is represented by the black shales in between the gabbro body and the pillow lava basalts.

Basaltic pillow lava flows are intercalated with the black shales. Generally modest in size, a few metres to ten metres wide, they show very well defined pillow structures. Some gold mineralization is known to occur along these more brittle units.

Eastward, past this intense zone of alteration lie the sediments of the Diale Group. The Diale Group is characterized by medium to fine-grained sediments, varying from pelites and shales to greywacke and sandstones. Minor basalt units are present. The first Diale unit encountered is a very fine pelitic unit also called Dembala Berola Pelites. This unit forms large planes of clayey, white-grey soils that turn to bull dust on the bush tracks during the dry season and extensive mud planes in the wet season.

From the aeromagnetic images the MTZ can be interpreted as a major N35°E trending shear which is clearly crosscut by major N70°E fault structures. It appears that the MTZ is compartmentalized into several fault-bounded blocks by these later N70°E faults/shears. These later faults/shears are not visible in the field in the Tourokhoto Prospect but may contribute as significant structures for mineralization. Late classic N135°E brittle faults are crosscutting the formations. They are fairly visible in the field, cutting through the dolerite dykes and pillow lava flow units. The local drainage pattern is influenced by this trend.

### **Tourokhoto-Marougou Prospect**

The Tourokhoto Marougou prospect is located 3 km southwest of the Tourokhoto prospect. It is underlain mainly by the turbiditic sedimentary rocks of the Diale-Dalema Supergroup described above. These strata include greywacke, siltstone, shale units intruded by felsic porphyry. Bedding appears to dip moderately to steeply west-northwest. Argillic alteration is pervasive throughout the sequences in the area. The Tourokhoto Marougou prospect surface gold anomaly was originally defined by termite mound soil geochemistry. The anomaly was further defined by subsequent RAB drilling. RC drilling programmes identified a series of north-northeast trending northwest dipping (25-45°) auriferous quartz vein lenses with disseminated pyrite developed over a 1,200 m strike length down to depths of 170 m below surface.

### **Goundamekho Prospect**

The Goundamekho prospect is underlain by the turbiditic sedimentary rocks of the Diale-Dalema Supergroup described above. It is located on major 070° trending structures but some local north-northeast trending structural elements are also visible. The main surface gold anomaly consists of three sub-parallel north-northeast trending anomalies about 2.5 km long along strike and approximately 2 km in width. Trenching revealed quartz-

sulphide stock-works in greywacke, 1 m to 2 m thick, short strike length quartz veins and stringer zones of quartz over widths of 2 m to 3 m. RC drilling indicates that felsic intrusive units may be present at depth.

### **Dembala Hill Prospect**

The Dembala Hill prospect contains gold mineralization associated with a gabbro-diorite intrusion occurring within turbiditic sedimentary rocks of the Diale-Dalema Supergroup described above. The prospect has been extended to include a 4,000 m long buried intrusive body interpreted from the aeromagnetic data set. The intrusion sits along a gold bearing structure which parallels the Main Transcurrent Shear Zone (MTZ).

### **Saiensoutou Permit**

The prospect is located on the permit of the same name and is defined by a 2.8 km long north-south trending surface gold anomaly defined from analysis of termite mound samples. The anomaly is associated with a strong arsenic response and a buried intrusive is indicated by an aeromagnetic response. The prospect is underlain by the turbiditic sedimentary rocks of the Diale-Dalema Supergroup described above.

### **7.3.3 Faleme Project**

The Faleme Project consists of three adjacent exploration permits: Sounkounkou, Heremakono and Massakounda. The permits follow the Senegal-Mali Border to the north and span the entire Mako Group of mafics and sediments with the Kakadian Batholith bounding this unit in the west at Massakounda and the MTZ bounding it in the east.

The Sounkounkou and Heremakono permits are dominated by fine grained sediments assigned to the Mako Group. As with the Mako Supergroup, the turbidite sequences in the Diale-Dalema Supergroup are intruded by late, fresh mafic dykes that form prominent aeromagnetic lineaments.

Narrow north to northeast trending shear zones associated with intense development of the dominant foliation occur locally in the Diale-Dalema sequence where they vary from bedding concordant to discordant. Several shears are localized along felsic dykes some associated with gold mineralization. The Massawa deposit, operated by Randgold Resources, lies approximately 10 km east of the Makana concession in the Diale-Dalema sequence adjacent to a north-northeast trending shear zone and associated dykes; if of sufficient size and extent, this structure or associated shear zones could project into the Sounkounkou permit.

### **Gora Deposit**

The Gora Deposit lies approximately 22 km northeast of the Sabodala processing plant, along the transition between the Mako and Diale-Dalema belts. Gora occurs within the Sounkounkou exploration permit held by Axmin in which SMC has an 80% interest in an earn-in joint venture. The area is accessed via an all-weather laterite road to Sounkounkou and then a bush track which has been upgraded with stretches of laterite, culverts and concrete bridges.

Gora is hosted by a moderate to steep southeast dipping, northeast trending sequence of turbiditic sandstone, siltstone and mudstone which is at least locally overturned by tight to isoclinal folding which are consistently down facing towards the west. The sedimentary package hosting the veins is of undetermined thickness, but from limited outcrops and IP data is estimated to be in the order of 500 m to 600 m thick in the Gora area. At Gora the sedimentary package is intruded and probably bounded by various sill-like intrusions to the east and west, including gabbro, felsic porphyries, minor granitic dykes and large amounts of quartz-monodiorite pugs and dykes. The hosting sediments have been affected by upper greenschist grade metamorphic conditions, defined by aluminosilicate porphyroblasts and biotite, probably in the thermal aureole of the surrounding intrusions. Hosting lithologies contain a slaty foliation which strikes parallel but which dips variably with respect to bedding.

The Gora prospect is defined by a series of northeast trending, 45° to 55° southeast dipping quartz veins see the section and plan in Figure 7.9 and Figure 7.10. Two types of quartz are present, a white, unmineralized variety and a smoky, auriferous variety. The smoky quartz contains remnants of muscovite  $\pm$  K-spar and altered carbonaceous wall rock. Pyrite and trace amounts of chalcopyrite are present in both mineralized and unmineralized samples. Pyrrhotite is present in mineralized samples intergrown in some cases with chalcopyrite. Veining extends for at least 700 m along strike, where outcropping veins form ridges resistant to weathering as shown in Figure 7.11, photo A.

The gold occurs as fine grained, but visible gold has been observed in core from about 6 holes to date, with the largest measuring up to 120 microns. Gold occurs as free grains on the boundaries of quartz crystals with a very small proportion of gold encapsulated or attached to pyrite. The abundance of visible gold in polished sections did not correlate well with gold grade in the assay intervals. Where abundant gold was observed, the flakes occurred in discrete clusters.

Figure 7.9 Cross Section A-A Through the Gora Prospect

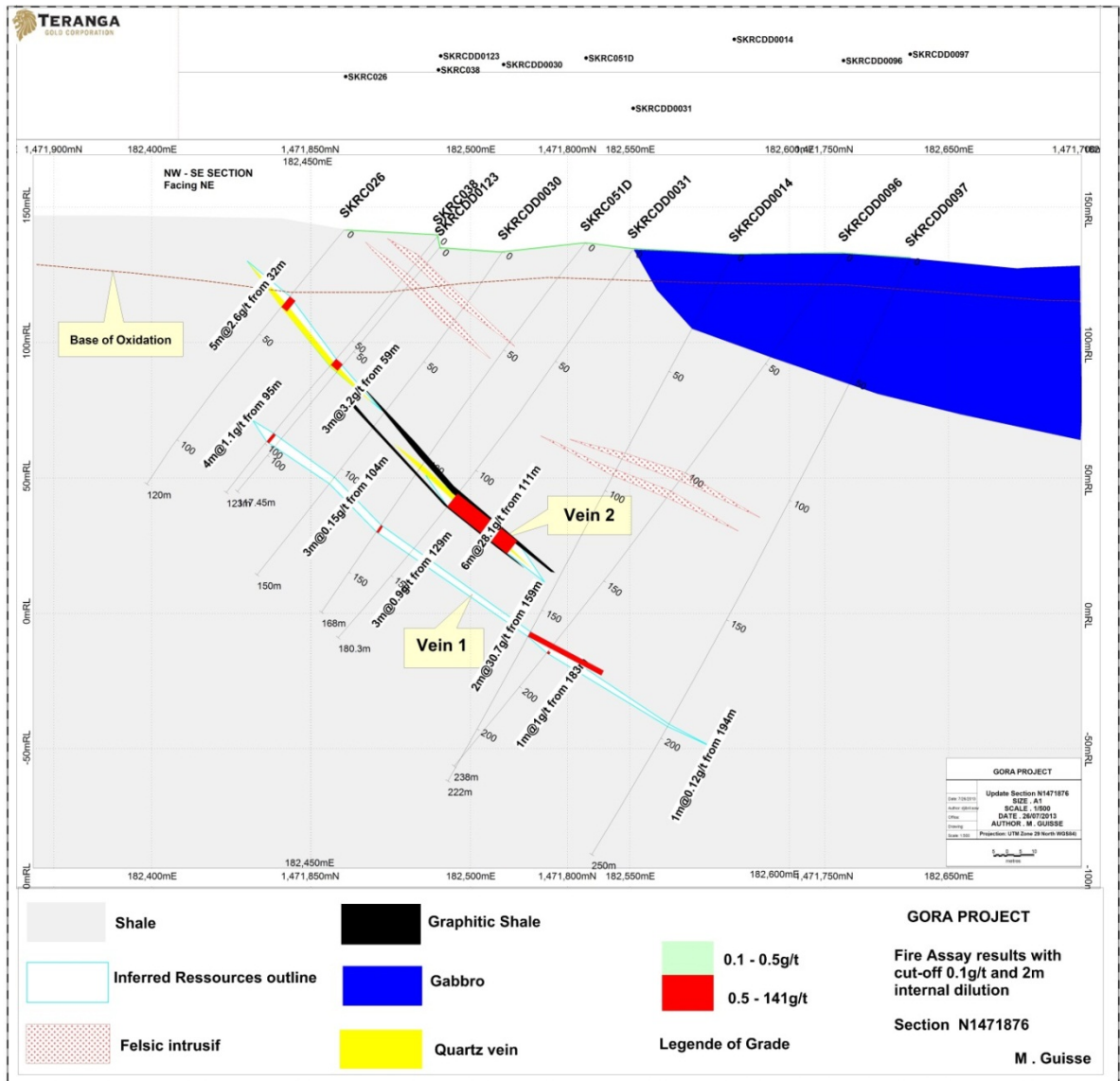
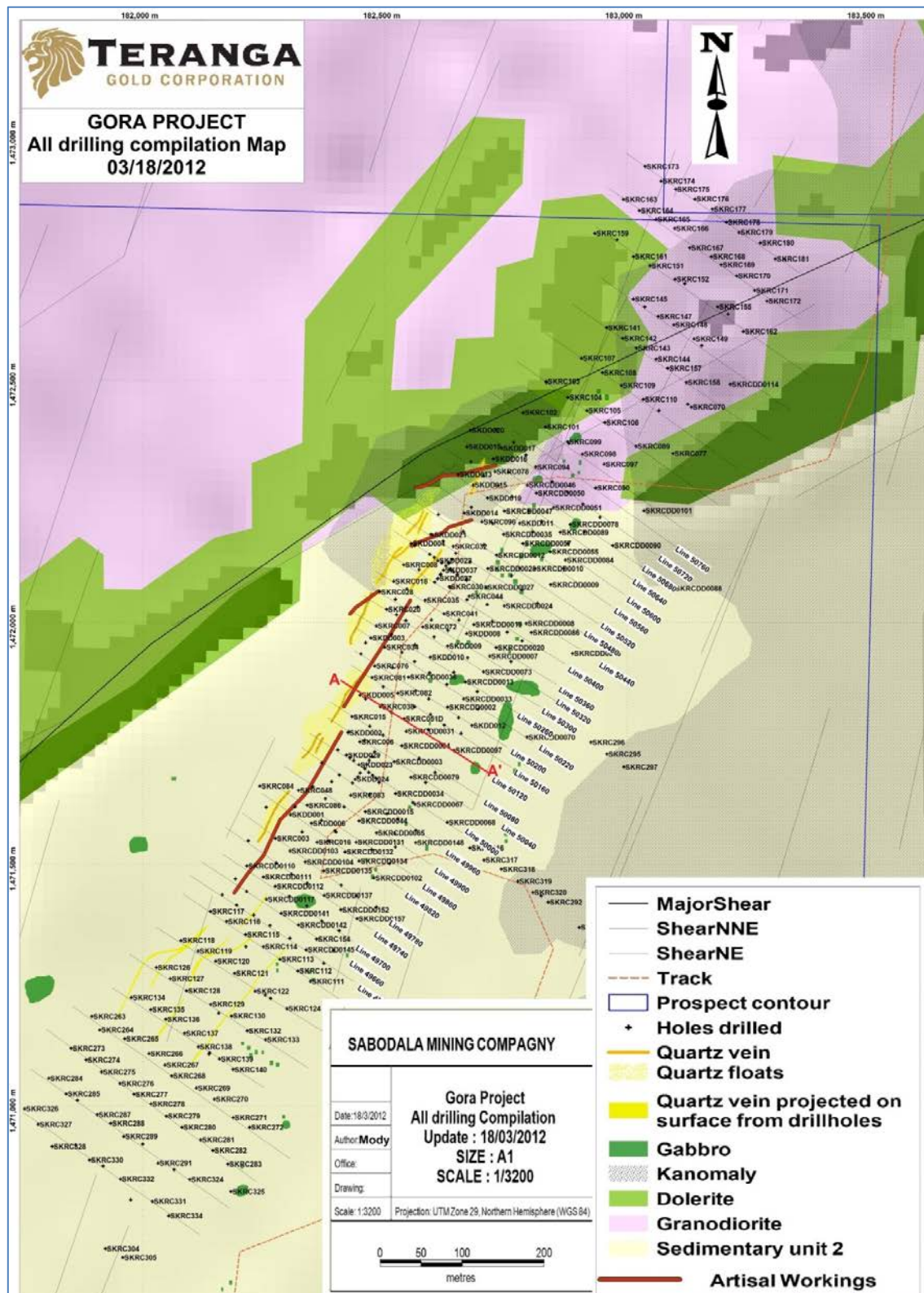




Figure 7.10 Surface Geology of the Gora Quartz Vein Prospect





A resistive ridge of quartz veining is shown in Figure 7.11. Veins dip between 45° and 55° to the southeast and have been observed in some trenches to steepen to 50° to 75°. Veins locally vary to several metres thick and are typically banded with grey and white quartz as shown in Figure 7.12. Dark gray bands and stylolites in the veins may contain carbonaceous material, possibly tourmaline, and reddish Fe-oxides probably after pyrite. The veins occur in narrow shear zones, which are locally manifested as narrow zones of more intense foliation on vein margins. In many locations these selvages are very carbonaceous and up to 0.5 m thick. Left steps in the outcrops of veins in plan may suggest either en echelon stepping of the veins and/or left lateral offsets on late sinistral faults known to be developed regionally.

**Figure 7.11 Resistive Ridge of Quartz Veining**



**Figure 7.12 Detail of Vein Mineralization**



Longitudinal sections of grade times thickness plots of the principal veins at Gora display a steep north plunging ore shoot control. The veins are banded shear veins with a strike length of the vein system of at least 700 m.

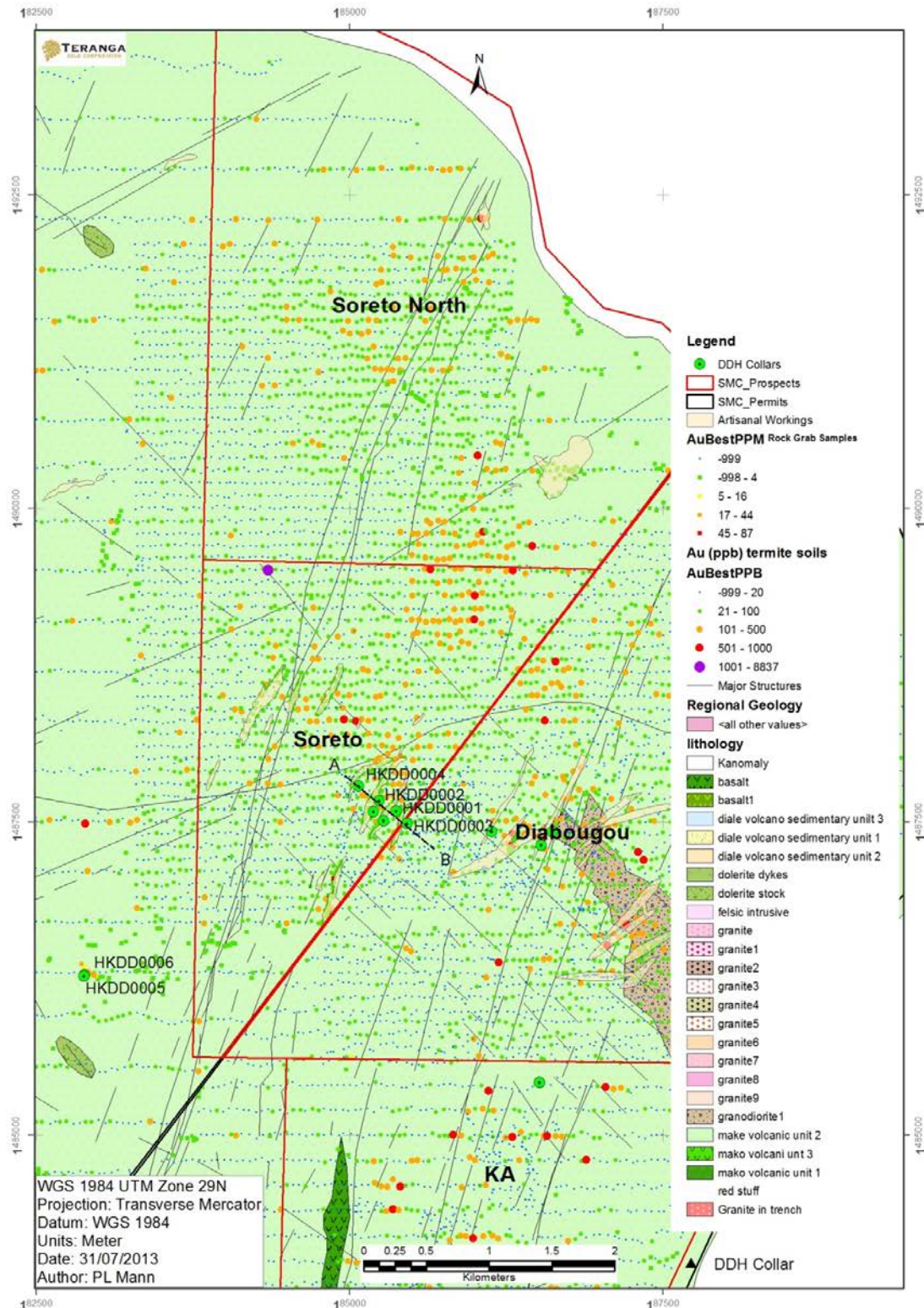
### **Soreto and Diabougou Prospects**

The Soreto and Diabougou prospects are hosted by folded northeast and east-northeast trending sequences of Mako volcano-sedimentary schistose turbiditic sandstone, siltstone,

greywacke and mudstone, which appear from the airborne magnetic data to be isoclinally folded. The sedimentary package is intruded by gabbro, granodiorite, felsic porphyries, minor granitic dykes and large amounts of quartz-monzodiorite plugs and dykes. The hosting sediments have also been affected by upper greenschist grade metamorphic conditions.

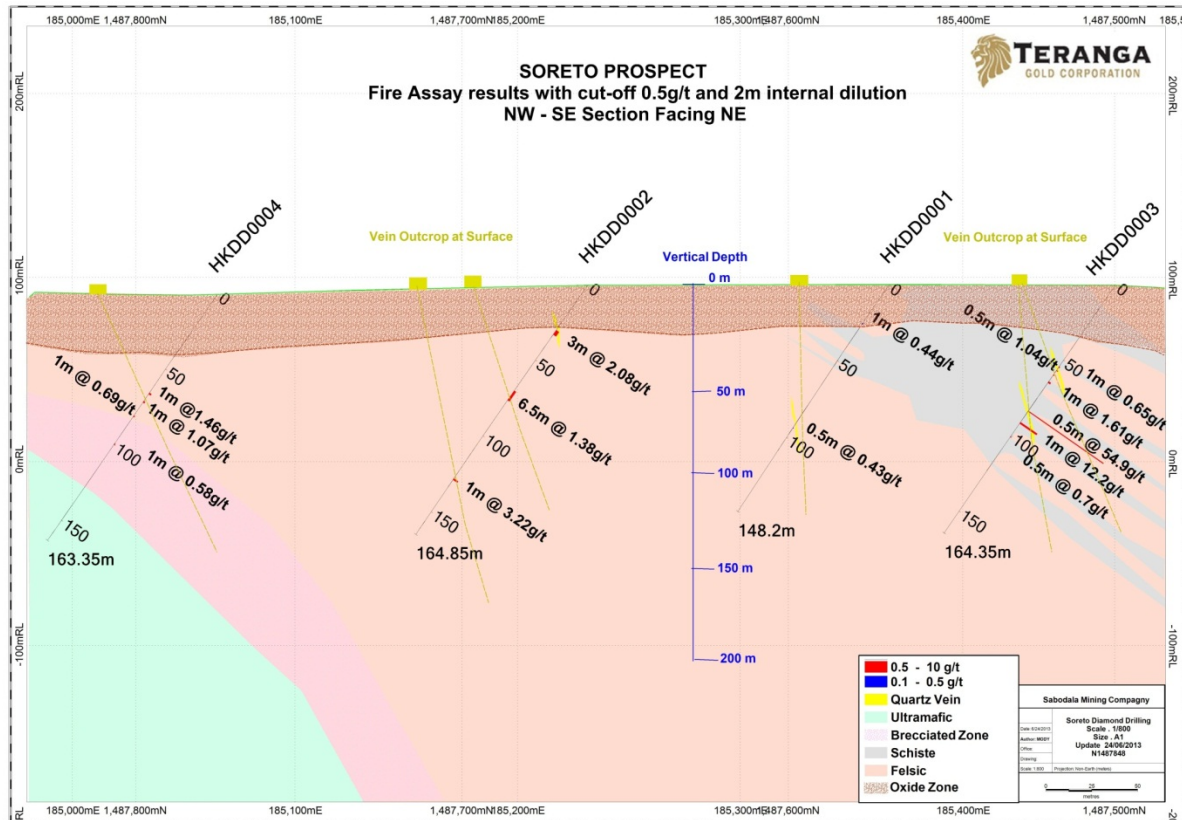
The gold mineralization which is often visible occurs in smoky and white quartz veins developed in sheared and brecciated intrusives and sediments. The quartz veins and gold mineralization appears to be controlled by north and north-northeast trending structures, dipping steeply to the southeast. These structures are related to regional shear and thrust zones. Northwest southeast trending structures were also observed. Pyrite and trace amounts of chalcopyrite are present in both mineralized and unmineralized samples. Surface exposures of the quartz veining and coincident surface geochemical anomalies extend in excess of 2000 m along strike, Figure 7.13, Figure 7.14.

Figure 7.13 Soreto-Diabougou geology and soil geochemistry





**Figure 7.14 Cross section A-B through the Soreto prospect**



### Ninienko Prospect

The Ninienko prospect is underlain mainly by andesitic lavas with associated sub-volcanic mafic intrusions, inter-layered with variably altered sedimentary horizons of the Mako volcano-sedimentary supergroup. A large granitic intrusion occupies the north-western portions of the property, with several gabbroic and doleritic to felsic dykes intruding the sequence (Figure 7.15). Lithologies generally trend north-northeast to northeast with steep dips, although local variations are apparent.

Gold mineralization is mainly associated with flat lying white and smoky quartz veins (Figure 7.16) developed within granodiorite, granite and andesitic units which are brecciated in places. The gold mineralization has been traced in trenches excavated over a distance of 1,200 m and coincides with a termite geochemical soil anomaly extending over a 2,500 m strike length. The mineralization appears to be controlled by regional scale north-northeast trending decollement and imbricate thrust systems.

Figure 7.15 Ninienko geology and soil geochemistry

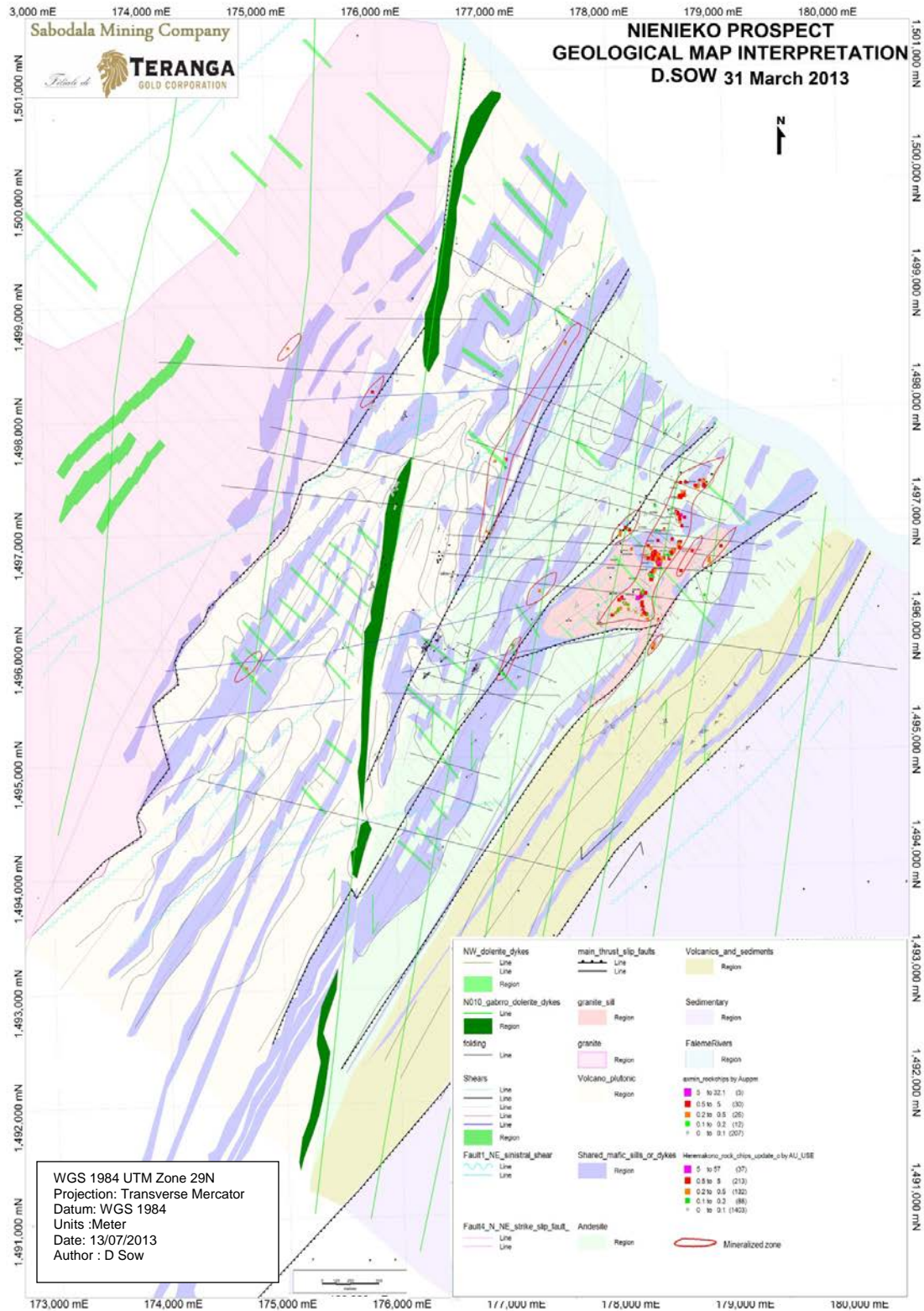




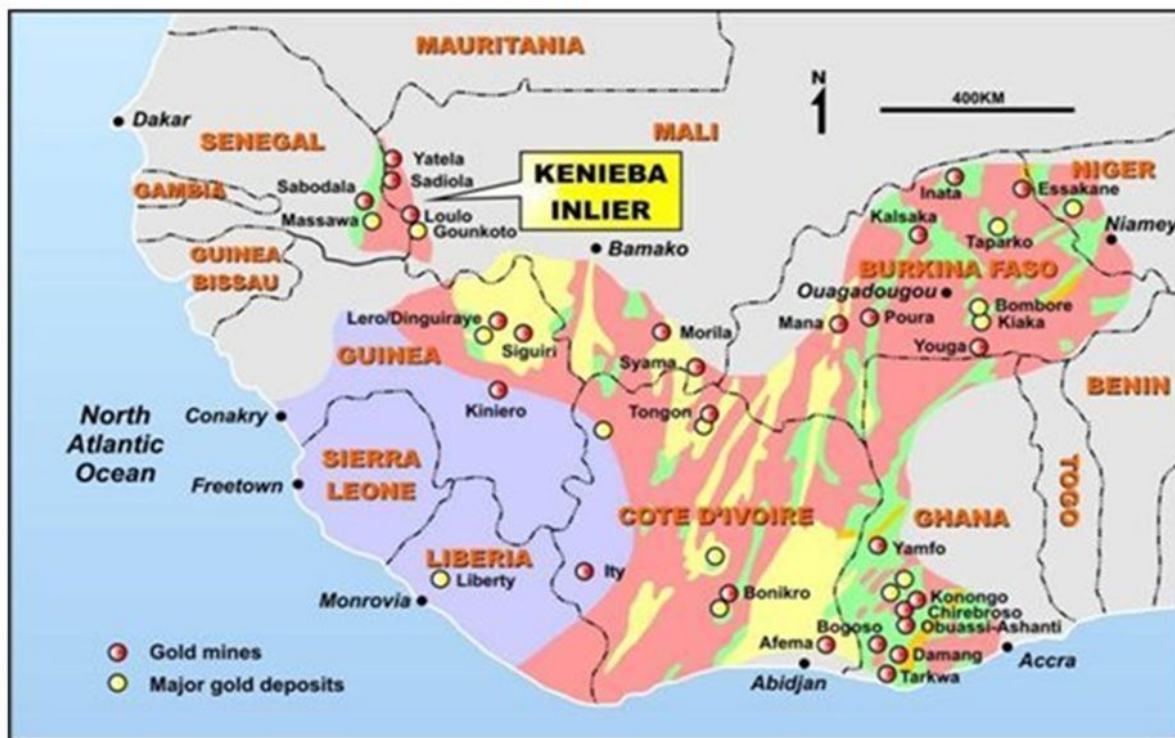
Figure 7.16 Ninienko trench sections



## 8 DEPOSIT TYPES

Sabodala occurs in the West African (Birimian) paleoproterozoic metallogenic province which extends from Senegal and Mali through northeastern Guinea, Ivory Coast, Ghana and Burkina Faso and as far as Niger (Figure 8.1).

**Figure 8.1 Regional Geology West Africa**



The region includes several world class gold deposits such as Loulo and Sadiola in Mali, and Ashanti (Obuassi) in Ghana. The metallogenic district is associated with paleoproterozoic aged epigenetic gold deposits which occur in 2.25 Ga to 1.90 Ga granite-greenstone belts of the Birimian and Tarkwaian cycles, which were deformed and metamorphosed during the paleoproterozoic Eburnean orogeny adjacent to the Archean Sao Luis Craton in Guinea, Sierra Leone, and Liberia. Despite the abundance of known deposits, much of the region is lightly explored.

Gold deposits in the West African metallogenic district, including those on the Sabodala project and the company's adjacent exploration concessions, show many characteristics consistent with their classification as orogenic (mesothermal) gold deposits and prospects. In addition to the deposits in western Africa, these include some of the largest gold deposits globally of variable age, such as the Archean aged Hollinger and Red Lake deposits in Canada and Kalgoorlie in Australia. Orogenic gold systems are structurally controlled deposits formed during regional deformation (orogenic) events. The term orogenic refers to deposits sharing common origin in metamorphic belts which have undergone regional compressional to transpressional deformation (orogenesis), often in response to terrane accretion or continent-continent collisional events.

Orogenic gold deposits exhibit a range of styles dependent on metamorphic grade, setting, fluid type and fluid/confining pressure. They include often spatially associated quartz shear veins, extension vein arrays, shear zone and disseminated sulphide styles. At greenschist grade, vein dominated styles such as those developed in the Sabodala district contain quartz-carbonate  $\pm$ albite  $\pm$ K-feldspar veins with up to 10% (pyrite  $\pm$ arsenopyrite  $\pm$ base metals) sulphides and associated Fe-carbonate albite, chlorite, scheelite, fuchsite and tourmaline as associated vein and hydrothermal alteration assemblages. Vein systems and shear zones are often semi-brittle in style, including both brittle veining styles (extension veins and fault hosted brecciated shear veins) which alternate with periods of ductile deformation, producing sequences of early folded and younger less strained vein systems during latter periods of regional deformation at peak to immediate post-peak metamorphic timing. Sigmoidal extension vein arrays are often present and are typical of the deposit style. This deposit type often also has great vertical extent providing potential for discovery of significant down dip and down plunge continuations of mineralized zones.

Like the Sabodala district, orogenic deposits are typically localized adjacent to major faults (shear zones) in second and third order shear zones within volcano-sedimentary (greenstone and sedimentary) belts between granitic domains (commonly for Precambrian deposits such as the west African Birimian, Abitibi Greenstone Belt of Canada and Yilgarn region of Western Australia) or in slate belt turbidite sequences (many Phanerozoic age deposits). Fluid source for these systems is controversial: they generally involve a dominant metamorphic fluid component, consistent with their setting and relative timing, but in many districts there is also evidence for a contributing magmatic fluid inducing early oxide-rich alteration assemblages, as is seen at Sabodala.

## **9 EXPLORATION**

### **9.1 Exploration Approach**

Exploration results from previous operators are presented in this section. Unless otherwise stated exploration work completed prior to December 2010 would be from the previous operator MDL, work after that time would be by Teranga. There is a phased approach used to explore the exploration permits.

#### **Phase 1: Target Generation**

The following data types are collected and compiled.

- Airborne geophysics are interpreted and integrated with field geology (regolith and outcrop mapping) to identify major prospective structures, lithologies and alteration zones and provide a project scale regolith framework in which the context of any surface geochemistry can be evaluated.
- Surface geochemistry to delineate gold-bearing corridors and targets.
- RAB drilling and trenching of prospective structures where extensive transported materials render surface sampling of low effectiveness.

This work also includes geological mapping which is discussed below.

#### **Phase 2: Prioritization and Ranking**

Based on the compiled data from Phase 1 and the knowledge base of the SMC exploration team, targets are ordered by best chance of hosting economic mineralization.

#### **Phase 3: Target Testing**

- Trenching is carried out in areas of shallow soil cover to map the gold bearing zones and provide a first pass evaluation of their potential.
- RC and diamond drilling are used to systematically test the defined targets.

Where significant mineralization has been identified, systematic RC and diamond drilling is employed to ascertain dimension and quality of the target area.

### **9.2 Geophysical Surveys and Investigations**

Various sets of Landsat, Aster and Quickbird images are available for most of the permit areas. These have been used in remote sensing interpretations by J Kaisin of GESS (Geology Exploration Support Services) to produce project wide, consistent regolith maps.

In October 2005, Worley Parsons GPX conducted an airborne survey on 100 m line spacing, acquiring magnetic, radiometric and digital terrain data. This survey covered 100% of the Near Mine, Faleme Projects and 60% of the Dembala Berola Project.

From May to November 2007 Fugro Airborne Surveys (Pty) Limited flew a 133,817 line km aeromagnetic and radiometric survey over eastern Senegal on behalf of the Ministry of

Finance and Economy. The survey was flown on 250 m spaced lines on a 135 azimuth, at a survey height of 80 m. This survey provided coverage over the remaining parts of the exploration permits and allowed SMC to improve its understanding of the regional structures and geology.

A digital terrain model is available from the 2005 airborne geophysical datasets. In addition to that there are 1:200,000 scale government topographic maps available. For some areas 100,000 and 50,000 scale maps are available.

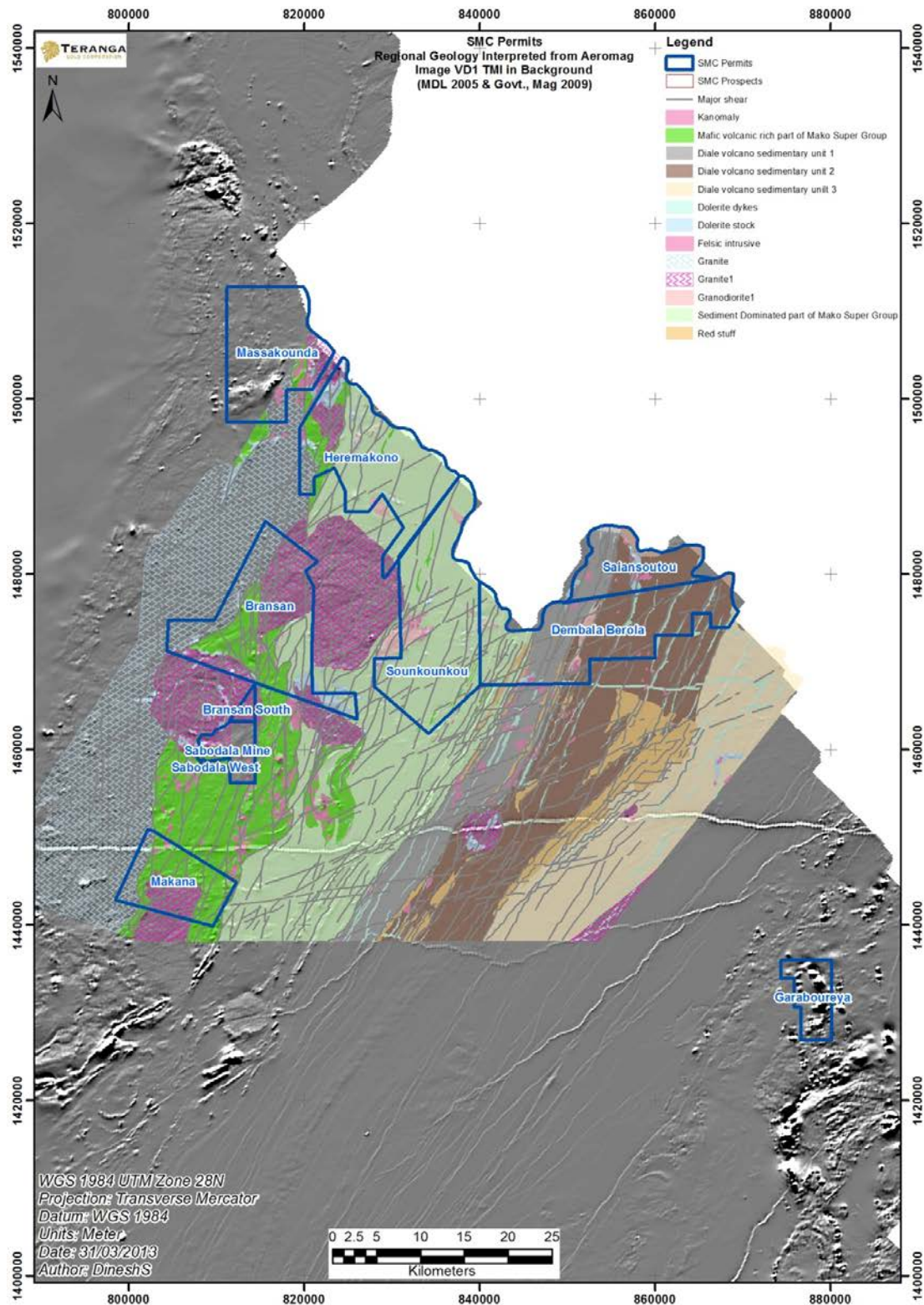
A dipole-dipole IP survey was completed over the mine lease during 2008.

Several phases of interpretation of the above geophysical data set have been completed:

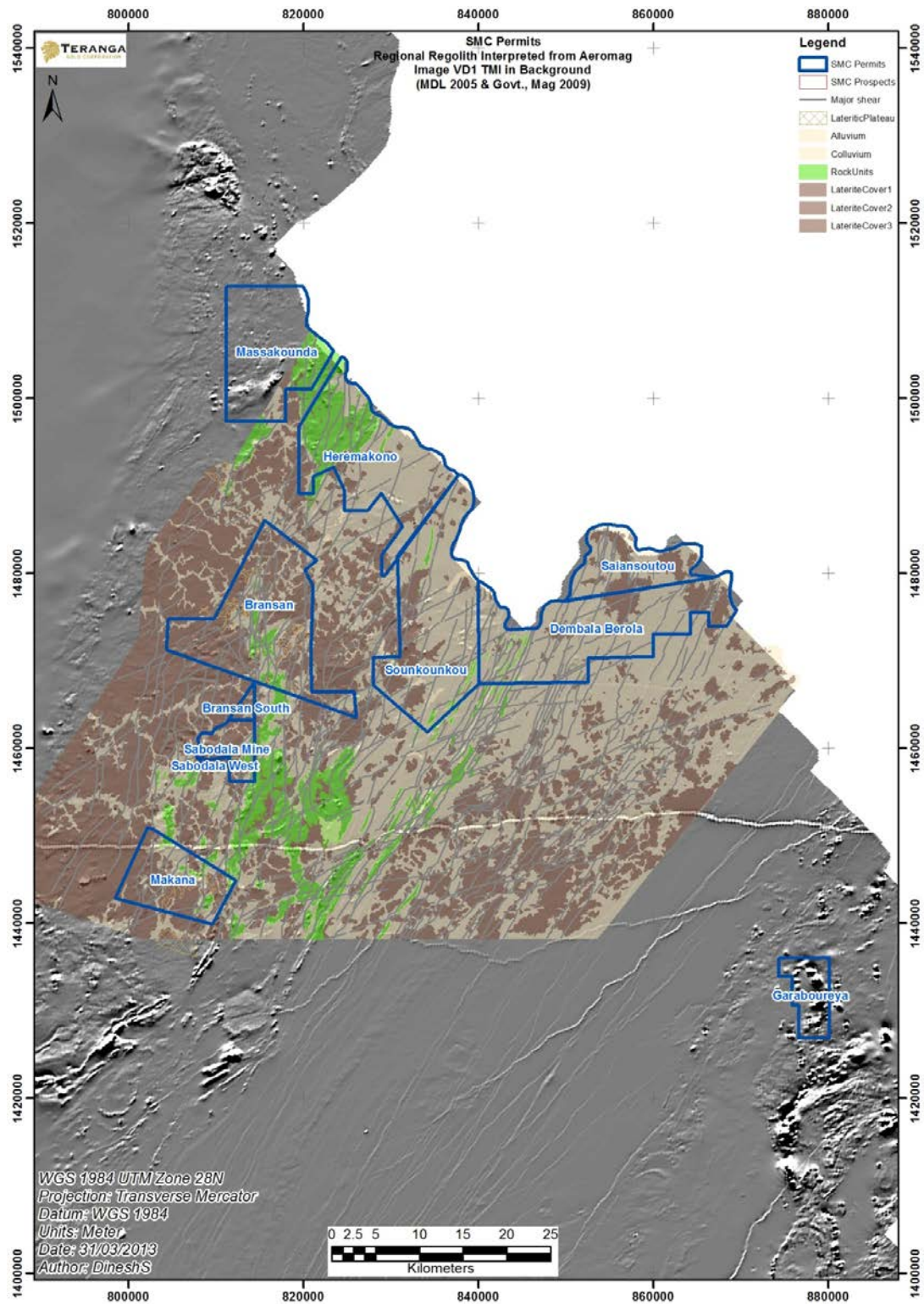
- In 2006 a regional interpretation of the Mako Belt by Dave Isles, at 100,000 scale.
- In 2007 a regional interpretation of the 2005 SMC survey by Rankin at 100,000 scale.
- In 2007 Nick Lockett and Associates completed a Quickbird, remote sensing interpretation of outcrop and regolith geology of the Dembala Berola Berola Project the interpretation was integrated with the available aeromagnetics. This is shown in Figure 9.1.
- In 2009 and 2010 consultant Jean Kaisin was engaged for several project scale interpretations of SMC and government flown geophysical datasets. The interpretation was produced at 1:25000 scale. The interpretation integrated the aeromagnetics, existing geological knowledge, DTM, radiometric and satellite imagery. The resultant fully attributed GIS map contains interpreted basement geology, regolith and structure. The exception is the Massakounda permit, which remains to be integrated into this map. This is shown in Figure 9.2.
- During 2011 IP surveys were completed over the Majiva prospect at Makana (Near Mine Project), KC, Jam and Gora (Faleme Project). The surveys were completed by crews of SAGAX Africa Limited, based in Ouagadougou, Burkina Faso.



**Figure 9.1 Generalized Geology of Kedougou-Kenieba Inlier and SMC/SGO Leases**



**Figure 9.2** Regolith Map from Radiometrics, DTM and Satellite Imagery



### 9.3 Soil, Termite Mound and Rock Chip Geochemistry

Surface geochemical sampling is an integral part of SMC's early exploration strategy. Prior to 2008, the general approach was to obtain a first pass coverage of 400 m x 100 m spaced soil samples for gold analysis. In areas of positive responses infill sampling to 200 m x 50 m may be carried out. Large surveys have been completed on virtually all projects, Table 9.1.

Since 2008 SMC has adopted cathedral termite mound sampling as the preferred regional geochemical sampling medium. These termites are known to bring material to surface from as deep as the water table potentially exposing buried mineralization in areas of shallow surface cover. There is also a great advantage in terms of the speed that the surveys can be completed.

Large termite mound surveys have been completed on the Faleme, Near Mine and Dembala Berola Projects. Regional termite mound sampling campaigns have been conducted on a nominal 200 m x 50 m spacing.

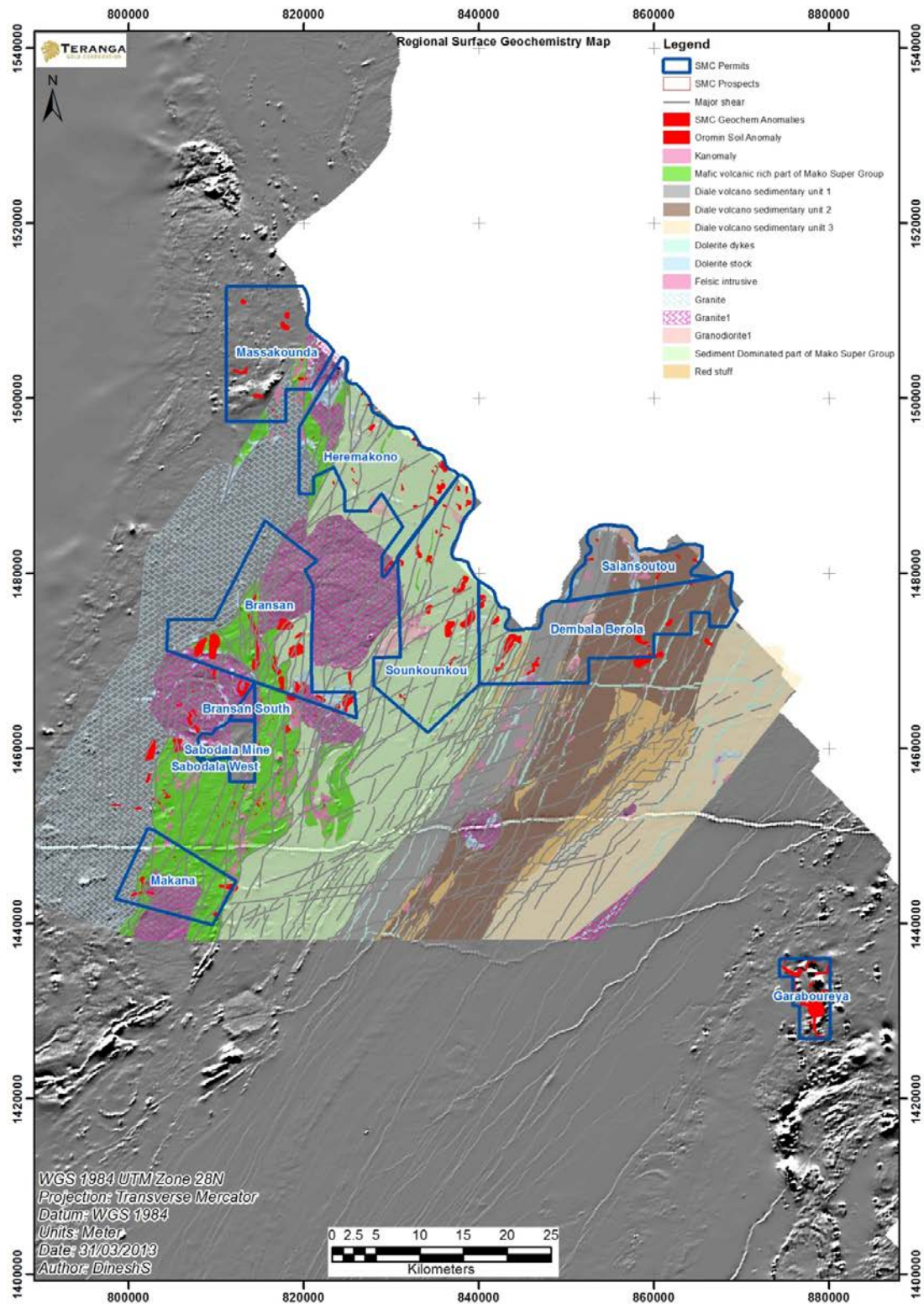
SMC's geochemical data base contains gold analysis from over 42,000 soil samples, 113,000 termite samples and over 11,000 rock chip samples from the exploration programs. Large surface geochemical datasets have also been received from Axmin for the joint venture permits of Sounkounkou, Heremakono and Sabodala NW. Geochemical anomalies are illustrated in Figure 9.3.

**Table 9.1 SMC Sample Summary**

Permit	Soil Samples	Termite Soil Samples	Rock Chip Samples
Bransan	8,662	16,512	2,567
Makana	4,180	4,259	801
Dembala Berola	9,981	16,538	3,290
Garaboureya	-	5,101	82
Haremakono	5,930	24,456	2,226
Sabodala West	73	1,201	-
Bransan South	422	383	-
Massakounda	3,952	7,815	48
Sayensoutou	-	13,746	-
Sounkounkou	9,433	23,699	2,673
<b>Total</b>	<b>42,633</b>	<b>113,710</b>	<b>11,687</b>



**Figure 9.3 Surface Geochemical Anomalies and Prospects Identified to Date**



## 9.4 Geological Mapping

Geological mapping has been conducted largely by SMC staff geologists on selected prospects in all project areas.

Extensive and detailed mapping has been completed over the Eastern and Central Parts of Makana Permit; the prospects of Goumbou Gamba, Goumbou Gamba South and North, Diadiako, the SSC and Dindifa prospect areas at Bransan. Surface mapping has also been conducted over the Niakafiri prospects on the Mining Lease.

On the Faleme Project prospect scale geological mapping has been completed on the Gora, all the Diegoun prospects, KA, KB, KC, KD, KE, Soreto, Soreto North, Soreto Corridor and Diabougou prospects. The Diakhalien and Dantoumangoto prospects were also mapped, (Figure 9.4).

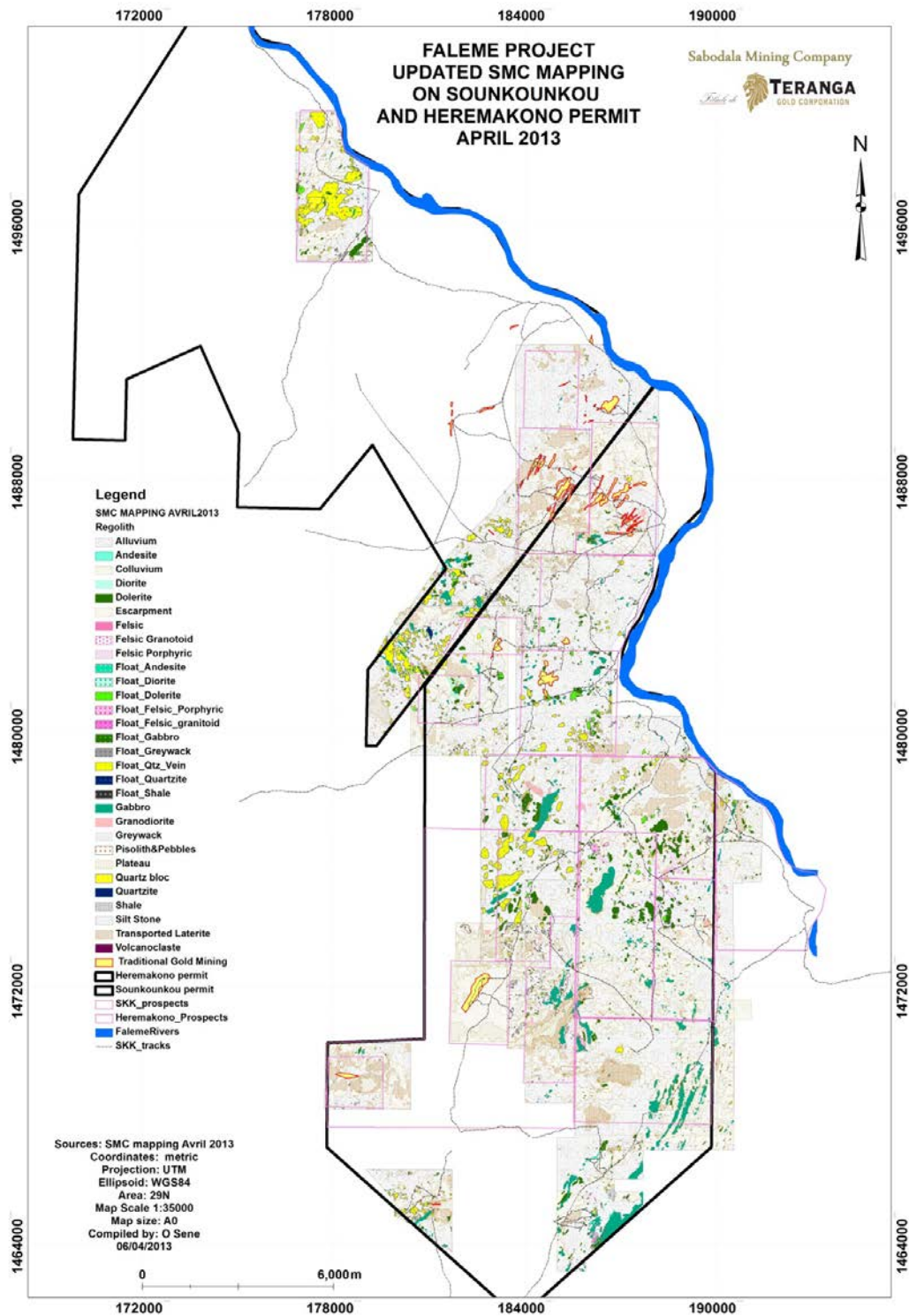
On the Dembala Berola Project, prospect scale mapping has been completed on Gounamehko and its north extension, Dembala Hill, Seven Hills, Saiensoutou, Saiensoutou Extension, Berola Hill, Some, Bondala and Gora by SMC geologists. The Tourokphoto and Tourokphoto Marougou prospect mapping was conducted by J Kaisin (GESS).

Regional scale mapping over the Massakounda permit was completed by Geoter, as part of 400 m x 100 m soil geochemical grid covering 90% of the property.

Based on the above, SMC currently has over 28 targets to consider for follow-up work, The key targets that were followed up with additional drilling since the October 2010 Technical Report are; Gora Tourokphoto, Dembala Hill, Goundamekho, Diegoun North, Diegoun South, Diadiako, Toumoumba, Majiva, Soreto, Ninienko, and Tourokphoto Marugou.



Figure 9.4 Faleme Project Area Geological Mapping programmes



## **9.5 Makana and Bransan Permits**

Exploration work carried out by Teranga includes: aeromagnetic and radiometric survey, remote sensing data acquisition, surface mapping, soil sample collection, termitaria geochemical sample collection as well as rock chip sample collection. At Majiva North prospect, a gradient array IP survey was contracted to Sagax Afrique SA (based in Burkina Faso) and completed in April 2011. Sagax is an independent contractor that carried out in-field data acquisition, post processing, image generation and preliminary interpretation.

Comparison of anomalous regional soil/termitaria geochemistry (>30 ppb Au) with structural interpretation of aeromagnetics and regional geology has yielded several additional targets for follow-up exploration. RAB, RC and DD drilling programmes formed part of this follow-up programme. Several of the targets are related to the contact zones of Kakadian Granite with Mako Supergroup rocks, as well as in areas of shear deformation and cross faulting.

## **9.6 Dembala Berola Permit**

Exploration work on this permit was conducted by the previous operator MDL who investigated anomalies with RAB, RC and DD drill programmes. At Tourokhoto and Cinnamon West MDL identified an extensive zone of surface gold anomaly coincident with the Main Trans-current shear zone, a major structure marking the boundary of the more mafic Mako Group to the west and the sediment dominated Diale-Dalema Group to the east.

Teranga explored the Tourokhoto, Cinnamon West, Dembala Hill, Seven Hills, Goundamekho and Tourokhoto Marougou Prospects and completed additional RC drilling programmes on the Tourokhoto, Cinnamon West, Dembala Hill and Tourokhoto Marougou Prospects, 2012 and 2013.

At Goundamekho trenching revealed quartz-sulphide stock works in greywacke (1 m to 2 m thick), short strike length quartz veins, and stringer zones of quartz over widths of 2 m to 3 m.

## **9.7 Sounkounkou Permit**

Exploration work focused on the Gora, the Diegoun prospects, KA, KB, KC, KD, KE, and Diabougou prospects. Gold anomalies identified by the regional geochemical sampling and rock chip sampling programmes as well as by earlier RAB and RC drilling programmes were investigated with further detailed mapping and drilling programmes. Details of the follow-up drilling are provided in Section 10 of this report.

## **9.8 Heremakono Permit**

Exploration carried out by Teranga on the Heremakono Permit included additional surface mapping, further termite geochemical soil sampling programmes, trenching and rock chip sampling. Anomalous gold bearing zones were evaluated by means of trenching and drill programmes. The Soreto, Soreto North, Soreto Corridor Ninienko Prospects were the main area of focus in 2012-2013, with a limited diamond drill core programme being conducted at Soreto. Further details are provided in Section 10.

### **9.9 Massakounda Permit**

Exploration on the Massakounda Permit entailed limited reconnaissance mapping, termite and soil geochemical sampling programmes as well as rock chip sampling on a limited scale. Gold anomalies identified are shown in Figure 9.3.

### **9.10 Garaboureyia Permit**

Teranga has undertaken limited exploration programmes entailing termite mound sampling and mapping. Details of this and historical exploration work undertaken on the permit are discussed in Section 10 of this report.

## 10 DRILLING

### 10.1 Overview

Teranga and its predecessors drilled approximately 2,066 drillholes, (395,954 m) of diamond, RC and combined diamond/RC holes on the ML property from 2005 to April 2013, as detailed in Table 10.1.

On the regional land package Teranga, its predecessors and joint venture partners have drilled a total of 135,199 m of RC and diamond core from 2005 to 2011. This includes 68,013 m on the Gora project. From October 2010 to December 2011, Teranga drilled a total of 115,919 m of RC and diamond core, including 61,722 m drilled on the Gora project. Between January 2012 and March 2013 42,389 m of RC and 2,431 m of diamond core drilling were completed by Teranga on the regional exploration package.

The regional exploration database also contains 321,505 m of RAB drilling, of which 150,884 m was completed by Teranga from October 2010 to December 2011 and 61,577 m completed by Teranga from January 2012 to March 2013.

Total regional exploration drilling is listed by drilling type and summarized in Table 10.2, Table 10.2 and Table 10.3.

**Table 10.1 Mining Lease Total Drilling 2005 to Apr-13**

Teranga Total Drilling 2005 to 2012					
Deposit/Prospect	Year	No. of Holes	RC (m)	DD (m)	Total (m)
Sabodala	2005	165	11,760	5,725	17,485
	2006	228	20,251	20,567	40,818
	2007	289	24,457	29,601	54,058
	2008	82	6,258	8,562	14,820
	2011	26	4,300	1,108	5,408
	2012	163	22,695	30,028	52,723
	<b>2013</b>	<b>68</b>	<b>3,261</b>	<b>900</b>	<b>4,161</b>
Flat Extension (Sabodala)	2010	13	2,542	4,039	6,581
	2011	50	8,817	13,157	21,974
Base of Sambaya Hill	2012	32	2,162	2,423	4,585
	<b>2013</b>	<b>21</b>	<b>1,904</b>	<b>1,319</b>	<b>3,223</b>
Niakafiri	2005	45	3,646	1,149	4,795
	2006	69	6,268	3,912	10,180
	2007	46	3,420	2,786	6,206
	2012	-	-	-	-
Niakafiri West	2007	22	1,385	-	1,385
	2008	40	5,380	740	6,120
	2012	-	-	-	-
Dinkhokono	2007	43	3,540	-	3,540
	2008	26	2,847	2,142	4,989

Teranga Total Drilling 2005 to 2012					
Deposit/Prospect	Year	No. of Holes	RC (m)	DD (m)	Total (m)
	2012	15	492	2,841	3,333
	<b>2013</b>	<b>5</b>	<b>-</b>	<b>616</b>	<b>616</b>
Masato	2007	5	495	711	1,206
	2009	2	-	363	363
	2010	1	-	188	188
	2011	87	15,731	19,768	35,499
	2012	24	5,932	7,096	13,028
Masato North	<b>2013</b>	<b>6</b>	<b>-</b>	<b>870</b>	<b>870</b>
Mamasato	2012	13	-	1,673	1,673
Sutuba	2006	39	2,959	1,013	3,972
	2007	33	2,580	18	2,598
	2008	50	3,976	1,101	5,077
	2009	1	-	100	100
	2010	48	3,001	392	3,393
	2012	21	3,099	768	3,867
	<b>2013</b>	<b>20</b>	<b>-</b>	<b>2,425</b>	<b>2,425</b>
Falombou	2009	4	638	-	638
	2012	1	-	277	277
Dambakhoto Sterilization	2009	2	270	-	270
	2010	2	300	-	300
	2011	1	300	-	300
Soukhoto	2007	32	2,859	327	3,186
	2010	8	-	951	951
	2012	6	694	356	1,050
Ayoub's Extension	2010	11	1,098	-	1,098
	2011	92	10,453	5,543	15,996
	2012	56	7,149	14,542	21,691
Sambaya Hill	2007	42	5,885	-	5,885
	2010	1	399	-	399
	2011	2	-	1,200	1,200
	<b>2013</b>	<b>8</b>	<b>798</b>	<b>656</b>	<b>1,454</b>
<b>Total</b>		<b>2,066</b>	<b>204,001</b>	<b>191,953</b>	<b>395,954</b>



**Table 10.2 Teranga Regional Exploration Drilling Oct-10 – Dec-11**

Teranga Drilling October 2012 to 31 December 2011										
PERMIT	PROSPECT	RAB		RC		RC_DDH			DDH	
		Holes (No)	Meters (m)	Holes (No)	Meters (m)	Holes (No)	RC (m)	DDH (m)	Holes (No)	Meters (m)
BRANSAN	Bransan	-	-	-	-	-	-	-	-	-
	Diadiako	-	-	28	4473	5	222	1,343	-	-
	Diadiako East	1,115	30,959	-	-	-	-	-	-	-
	Dindifa	-	-	-	-	-	-	-	-	-
	Goumbou Gamba	-	-	-	-	-	-	-	1	250
	Goumbou Gamba South	-	-	3	642	-	-	-	-	-
	Sougoutoukourou	-	-	-	-	-	-	-	-	-
	SSC	43	1,225	-	-	-	-	-	-	-
BRANSAN SOUTH	Bransan South	35	1,721	-	-	-	-	-	-	-
DEMBALA BEROLA	Cinnamon West	-	-	-	-	-	-	-	-	-
	Dembala Hill	113	4,463	24	2,769	-	-	-	3	1,057
	Goundameko	-	-	36	4,087	-	-	-	-	-
	Saiensoutou	3	306	-	-	-	-	-	-	-
	Khossaguiri	130	2,855	-	-	-	-	-	-	-
	Seven Hills	-	-	-	-	-	-	-	-	-
	Tourokoto	999	23,266	25	4,557	-	-	-	5	1,691
GARABOUREYA	Garaboureyia	-	-	-	-	-	-	-	-	-
HEREMAKONO	Nynienko	-	-	-	-	-	-	-	-	-
	Soreto	-	-	-	-	-	-	-	-	-
MAKANA	Majiva Central	-	-	6	1,246	-	-	-	-	-
	Majiva North	-	-	38	7,813	4	249	1,074	-	-
	Majiva South	-	-	3	582	-	-	-	-	-
	Sanu Samou	-	-	-	-	-	-	-	-	-
	Wourouss	-	-	-	-	-	-	-	-	-
	Wourouss North	-	-	-	-	-	-	-	-	-
SABODALA NW	Bale	-	-	-	-	-	-	-	-	-
	Toumboumba	1,150	49,097	49	8,748	4	300	1,067	-	-
SAIENSOUTOU	Saiensoutou	114	4,576	-	-	-	-	-	-	-
SOUNKOUNKOU	Cinnamon	708	10,363	-	-	-	-	-	-	-
	Dantoumangoto	-	-	-	-	-	-	-	-	-
	Diabougou	118	2,443	-	-	-	-	-	-	-
	Diakhaling	-	-	-	-	-	-	-	-	-
	Diegoun South	502	5,490	11	1,763	-	-	-	3	657
	Diegoun West	-	-	-	-	-	-	-	-	-
	Gora	-	-	170	25,672	163	14,537	17,105	39	4,408
	Honey	-	-	21	3,523	-	-	-	-	-
	Jam	129	1,702	31	5,116	-	-	-	1	248
	JC Corridor	249	1,964	-	-	-	-	-	-	-
	KA	27	361	-	-	-	-	-	-	-
	KB	298	2,603	-	-	-	-	-	3	720
	KC	617	7,450	-	-	-	-	-	-	-
	KD	-	-	-	-	-	-	-	-	-
	KE	-	-	-	-	-	-	-	-	-
	Zone ABC	-	-	-	-	-	-	-	-	-
TOTAL		6,350	150,844	445	70,991	176	15,308	20,589	55	9,031

**Table 10.3 Teranga Regional Exploration Drilling Jan-12 – Mar-13**

Permit	Prospect	RAB		RC		DDH	
		Holes (No)	Meters (m)	Holes (No)	Meters (m)	Holes (No)	Meters (m)
Bransan	Bransan	-	-	-	-	-	-
	Diadiako	-	-	-	-	-	-
	Diadiako East	-	-	15	2,774	-	-
	Dindifa	256	2,635	-	-	-	-
	Goumbou Gamba	-	-	8	1626	-	-
	Goumbou Gamba South	-	-	-	-	-	-
	Sougoutoukourou	119	2,298	-	-	-	-
	SSC	57	1,994	-	-	-	-
Bransan South	Bransan South	49	879	-	-	-	-
Dembala Berola	Cinnamon West	-	-	8	1,460	-	-
	Dembala Hill	-	-	7	1,400	-	-
	Seven Hills	-	-	-	-	-	-
	Tourokhotou Marougou	-	-	86	17,105	-	-
Garaboureyia	Garaboureyia	-	-	-	-	-	-
Heremakono	Ninienko	-	-	-	-	-	-
	Soreto	-	-	-	-	6	826
Makana	Majiva North	-	-	4	615	-	-
	Majiva South	-	-	-	-	-	-
	Sanu Samou	-	-	-	-	-	-
	Wourouss	766	15,142	6	971	-	-
	Wourouss North	222	3,491	-	-	-	-
Saiensoutou	Saiensoutou	153	5,698	14	2,800	-	-
Sounkounkou	Cinnamon	-	-	6	1,100	-	-
	Dantoumangoto	183	863	-	-	-	-
	Diabougou	-	-	-	-	-	-
	Diakhaling	207	2,376	-	-	-	-
	Diegoun South	-	-	-	-	1	300
	Diegoun West	193	2,678	-	-	-	-
	Gora	67	1,356	14	2,314	-	-
	Honey	-	-	-	-	-	-
	Jam	355	3,425	15	2,923	9	2,131
	JC Corridor	1,171	10,276	-	-	-	-
	KA	333	3,287	-	-	-	-
	KB	-	-	8	1,196	-	-
	KD	-	-	-	-	-	-
	KE	-	-	-	-	-	-
	Zone ABC	228	2,729	-	-	-	-
<b>Total</b>		<b>4,568</b>	<b>61,577</b>	<b>291</b>	<b>42,389</b>	<b>10</b>	<b>2,431</b>

Drilling completed by the previous operator MDL, from January 2005 to September 2010, is summarized in Table 10.4.

**Table 10.4 Regional Exploration Drilling Jan-05 – Sep-10**

MDL Drilling January 2005 to September 2010										
PERMIT	PROSPECT	RAB		RC		RC_DDH			DDH	
		Holes (No)	Meters (m)	Holes (No)	Meters (m)	Holes (No)	RC (m)	DDH (m)	Holes (No)	Meters (m)
BRANSAN	Bransan	22	868	-	-	-	-	-	-	-
	Diadiako	411	13,190	12	1,249				9	1,973
	Diadiako East									
	Dindifa									
	Goumbou Gamba	248	10,551	20	2,885				2	243
	Goumbou Gamba South	359	6,569							
	Sougoutoukourou	151	5,967						1	194
	SSC	630	16,073							
BRANSAN SOUTH	Bransan South									
DEMBALA BEROLA	Cinnamon West									
	Demba Hill									
	Goundameko	59	2,438	20	1,950					
	Saiensoutou									
	Khossaguri									
	Seven Hills									
	Tourokoto	1	11							
GARABOUREYA	Garaboureyia									
HEREMAKONO	Nynienko								4	326
	Soreto								2	155
MAKANA	Majiva Central	775	21,942						2	455
	Majiva North									
	Majiva South	347	6,451							
	Sanu Samou	214	4,300							
	Wourouss									
	Wourouss North									
SABODALA NW	Bale									
	Toumboumba									
SAIENSOUTOU	Saiensoutou									
SOUNKOUNKOU	Sterilisation	10	420						15	338
	Cinnamon	1	2							
	Dantoumangoto	22	557							
	Diabougou	109	2,252	17	1,775				3	323
	Diakhaling	15	426							
	Diegoun South	38	471						7	724
	Diegoun West									
	Gora	208	4,420	50	6,123	1	123	45		
	Honey	352	3,125							
	Jam	301	2,978							
	JC Corridor									
	KA	131	2,135						2	270
	KB	91	1,316							
	KC	8	215						2	129
	KD	4	123							
	KE									
	Zone ABC	289	2,284							
TOTAL		4,796	109,084	119	13,982	1	123	45	49	5,130

Management of the drilling programs, including logging, sampling, and data verification, was contracted to RSG Global through to 2007. Since 2008, drilling supervision has been undertaken by SGO on the ML and SMC on the regional land package. Teranga has established and followed standard operating procedures for RAB, RC and core drilling.

RC and diamond drillhole collars are surveyed using either a Total Station or Differential GPS, both of which are capable of providing three-dimensional collar co-ordinates to sub-meter accuracy. Downhole surveys were undertaken using a multishot-type instrument. A gyroscope was used for additional accuracy when holes were drilled in magnetic rocks.

Teranga follows a similar sampling method and approach for the Sabodala project as was previously provided in the November 2007 NI 43-101 Report by Scott Wilson Roscoe Postle Associates Inc. (SWRPA, 2007). For completeness of the current report, the sample method and approach has been excerpted, edited and expanded from the November 2007 report and applies to the Sabodala project and the exploration leases. Reconnaissance sampling of soil, outcrop and termite mounds is discussed in the Exploration Section.

## **10.2 Reverse Circulation Drilling**

Reverse circulation (RC) drilling is used for shallow exploration drillholes (<250 m) and pre-collars of deeper diamond tailed drillholes. RC cuttings are collected through a cyclone into a collector bag. The cuttings are sampled on 1 m intervals for each meter drilled. The 1 m interval cuttings are passed through a three-tier, one-eighth splitter resulting in an approximately 2.0 kg to 2.5 kg subsample.

All RC drill contractors have been requested to allow for sufficient air and appropriate technique to ensure dry samples are delivered >95% of the time. In the instances where some water ingress is unavoidable, damp or wet samples are dried prior to being split; clods are not force-fed through the riffles. Plastic sample bags and calico collection bags are labeled with a permanent ink marker. As a general policy bulk RC bags are to be emptied and removed only on receipt of the assay results. For resource drilling, mineralized intervals and 3 m to 5 m immediately adjacent on both sides, are retained either as laboratory rejects or by resampling the original bulk RC bags.

The cyclone is cleaned regularly. The drill log and sample book are regularly checked against the hole depth as drilling proceeds to ensure compatibility. The drill log has a column for sample return quality which is noted as either “good” or “poor”.

A sample of the chips for the interval is stored in a plastic chip tray and received by the logging geologist. Sections are manually drawn in the field as the drilling progresses.

On resource drill programs a reflex single shot camera is used for downhole surveys with the initial reading taken downhole and subsequent readings taken every 30 m thereafter as the hole progresses. Some contractors use a gyroscope for the down-hole surveys. The driller reads the instrument and records the data. A geologist or geological technician is at the rig at all times it is in operation. A 7° west correction is added to the reading to correct for the local declination. Due to the cost involved, shallow early stage exploration RC holes are generally not surveyed down the hole.

## **10.3 Diamond Drilling**

All diamond drillholes are collared and finalized using HQ or NQ sized equipment. When larger diameter holes were required for geotechnical studies, PQ sized holes were drilled. Drillholes are typically drilled approximately perpendicular to the target mineralization from the hanging wall to or into the footwall. A geologist is at attendance at the rig when it is in operation during day shift. The driller will take the downhole survey as the hole advances at regular 30 m intervals.

Core measurement blocks are inserted by the driller into the core boxes and the block position marked in the box in case of core movement during transport to the core logging

facility. Core orientation marks are rotated to the bottom of the core. The core pieces are then aligned in the core trays and the orientation line propagated along the length of the core. The core is marked for sampling by a geologist respecting lithological and mineralization contacts. Sampling is mostly done in 1 m intervals, except on rare occasions where geological variations are examined in more detail.

The core is halved lengthwise with a diamond saw, then sampled, bagged and tagged.

On resource drilling programs, bulk density determinations are carried out for both mineralized and barren host rocks, as well as on samples of the various weathering profiles. A 20 cm to 30 cm sample is taken from each 5 m interval of the split core. Bulk density determinations are measured in-house using the immersion in water method. Porous oxide samples were sealed with paraffin wax prior to taking measurements.

For metallurgical studies, the remaining half core is split, with the quarter core samples sent for analysis.

#### **10.4 Rotary Air Blast Drilling**

The rotary air blast (RAB) drill is used for reconnaissance exploration drilling. RAB holes are typically drilled to blade refusal, which in most cases coincides with the top of the unoxidized bedrock. The maximum, practical drill depth for most rigs is around 60 m to 80 m where the oxidation and overburden profile is very well developed. Holes are angled 60° to 70° degrees to surface. Collar surveys are picked up using hand held GPS units. No downhole surveys are performed.

Cuttings are recovered via a cyclone which is attached by a drill pipe to the top of the sealed whole collar. Unlike RC cuttings, the cuttings from a RAB hole are exposed to the wall rock as they ascend to the collar of the hole for collection.

Samples submitted for analysis are a composite of two individual one metre samples. The 1 m sample is taken via a pipe inserted into the cuttings pile in two passes; forming a cross pattern. The composite weighs approximately 2.5 kg. The RAB cuttings are left in 1 m piles on the ground near the hole collar. The subsample composite is collected in a clear plastic bag, the top folded twice and stapled over the fold with a paper sample number tag inserted in the fold.

#### **10.5 Regional Exploration Data Management**

The SMC drilling and surface geochemical geological database is centralized, and held in an SQL database which resides on the Sabodala server. The SGO mining operation implemented a site-wide Centric™ platform in 2009 to manage its various drilling, mining and production dataflow. Following this roll out the exploration team transferred its MS Access database onto the same platform. This product is managed by NCS technologies of Canada. The exploration component is a customized module based on the borehole manager in use for the grade control drilling.

User interface is via the web based Centric platform format and monitored by a dedicated Data Manager. The database has built in validation features. The geologist completes hand written entries either at the rig or in the core yard on a standard drill core logging form. Data



entry personnel then enter the field logs into the data base. Field data from some large outsourced campaigns are received in MS Excel format that can be directly imported into the database. The database and data entry are supervised by a dedicated Database and GIS manager.

Assays from all laboratories are received in digital format via e-mail and are automatically loaded into the database upon simple QA/QC data plotting and checking. The hand written logs, down hole surveys, driller sheets and safety forms are in an organized fashion within the same data room. Electronic files are kept under the control of the Data Manager.

## **10.6 Mine Lease Drilling**

RC holes were drilled to a maximum depth of approximately 100 m. Below this depth, water inflow makes RC inefficient and diamond drilling is used. Diamond drilling incorporates both NQ (47.6 mm diameter) and HQ (63.5 mm diameter) core.

Drillhole collars are surveyed using a theodolite or Topcon differential GPS based on survey points triangulated from established monuments. All holes are downhole surveyed using a Reflex Easy-Shot single shot tool. Frequency of measurement is dictated by the target of the hole. Holes drilled on a predetermined grid are surveyed at 30 m intervals after the hole is completed. Holes targeted specifically at a certain geologic feature are downhole surveyed as the hole progresses. Ezy-Mark or ACE Tool TM is used for oriented core. To provide adequate coverage, orientation marks are inserted every 3 m down the hole.

The geologist logs wet diamond drill core and RC chips consistent coding system for lithology, alteration, mineralization and base of oxidation. Core logging also includes structural geology, geotechnical features including core recovery, rock quality designation (RQD), fracture frequency and infill, and hardness. Diamond drill core recovery averages 95% for fresh rock and approximately 80% to 90% for oxide. RC recovery averages approximately 85%.

The logging data is recorded by a geologist on handwritten logging forms, entered into Excel spreadsheets and then stored in a SQL MS Access database. MS Access to the database is restricted as much as possible to maintain accuracy. MapInfo or Vulcan is available and used for on-site data validation by the responsible geologist and geological for geological interpretation.

All drill core is photographed before it is sampled or disturbed during logging. For geotechnical purposes, core photographs are taken dry, as soon as possible after recovery to minimize the effects of breakage during handling or decomposition from exposure to air and water. The core is re-photographed wet for easier recognition of colours, geological features and textures. Each core tray is photographed with a name board listing project location, drillhole number, tray number, start and end depths of tray, date and colour bar.

## **Mine Lease Drilling 2012 to 2013**

Total drilling on the ML from January 2012 to April 2013 is summarized in Table 10.1. Drillhole collar locations are illustrated in Figure 10.1. Drilling focused on the Sabodala and Sutuba deposits to upgrade and increase Mineral Resources and Mineral Reserves, with a few sterilization and geotechnical holes drilled adjacent to the existing open pit. Drilling at

Sabodala also focused on the potential down dip extension of the Ayoub's zone and mylonite (Falombou) to the north of the open pit. Additional drilling was completed on prospects considered to have high potential for significant mineralization, to test new zones along identified structural trends and to delineate sterilized areas for future mining infrastructure.

Waste dump condemnation drilling southeast of the Sabodala open pit encountered a mineralized zone within the general trend of the NW Shear projected to the southeast near the base of Sambaya Hill. The "Base of Sambaya Hill" drilling programme intersected narrow mineralization in a number of holes.

Widely spaced drillholes at Sambaya and Dinkhokono North targeted an IP anomaly located within the Niakafiri Shear Zone north of Dinkhokono.

At Masato North, a preliminary drill programme consisting of six holes was completed to test the northern extent of a possible splay off the Sabodala Shear Zone adjacent to the ML boundary. Narrow low grade intervals were intersected.

Drilling continued at Masato to follow up on mineralization intersected in previous drilling and delineate the shear zone located adjacent to the east boundary of the ML.

Drilling in 2012 established the continuation of the Mamasato prospect located adjacent to the ML boundary, south of Masato. Gold mineralization is located in quartz veins with variable strike orientations.

Drillholes were oriented at various trends and it was not always possible to drill perpendicular to the specific targets, therefore sample lengths may not be representative of the true thicknesses of the target mineralization. This was accommodated for in the resource modeling. Significant results from the 2012 and 2013 ML drill programs are listed in Table 10.5.

Figure 10.1 ML Exploration Drilling Programs – 2012 to 2013

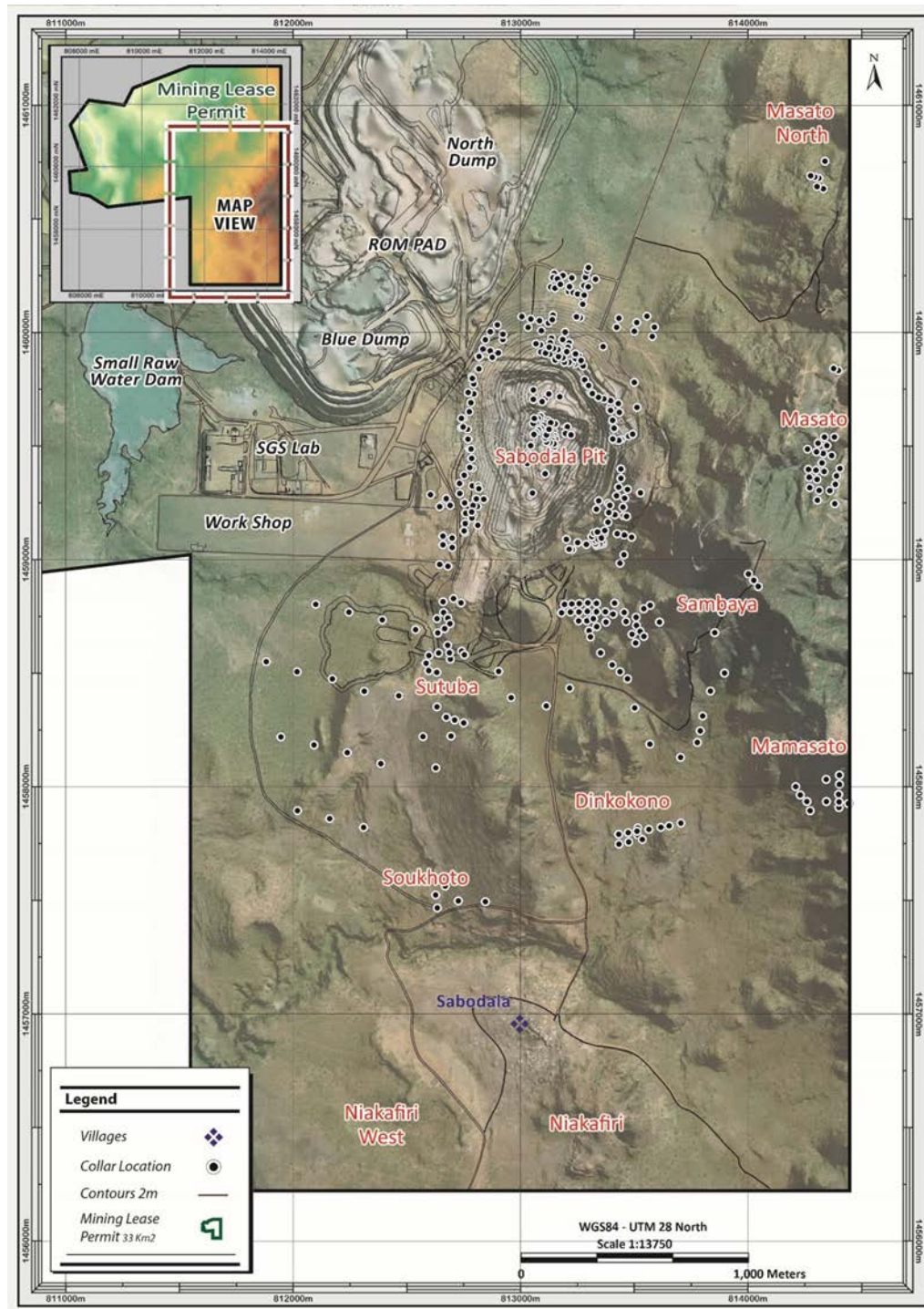
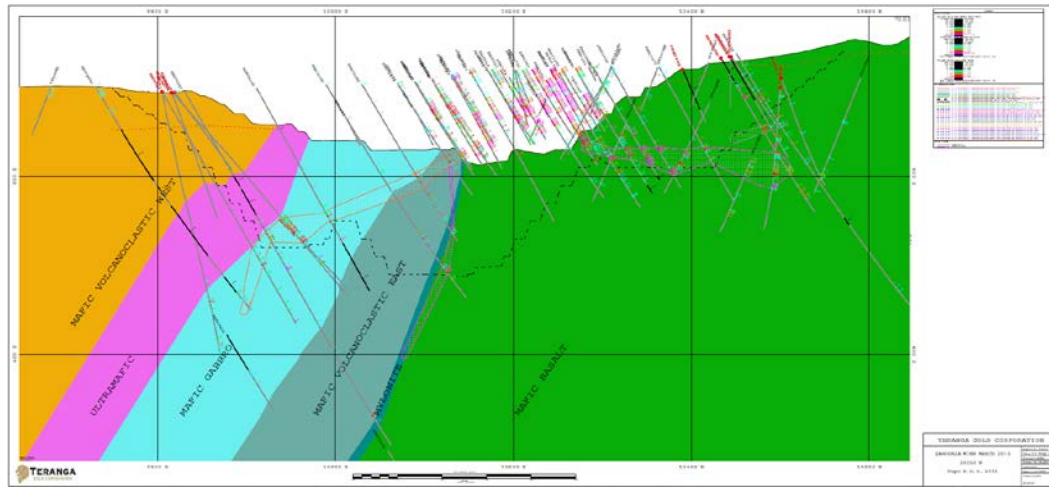


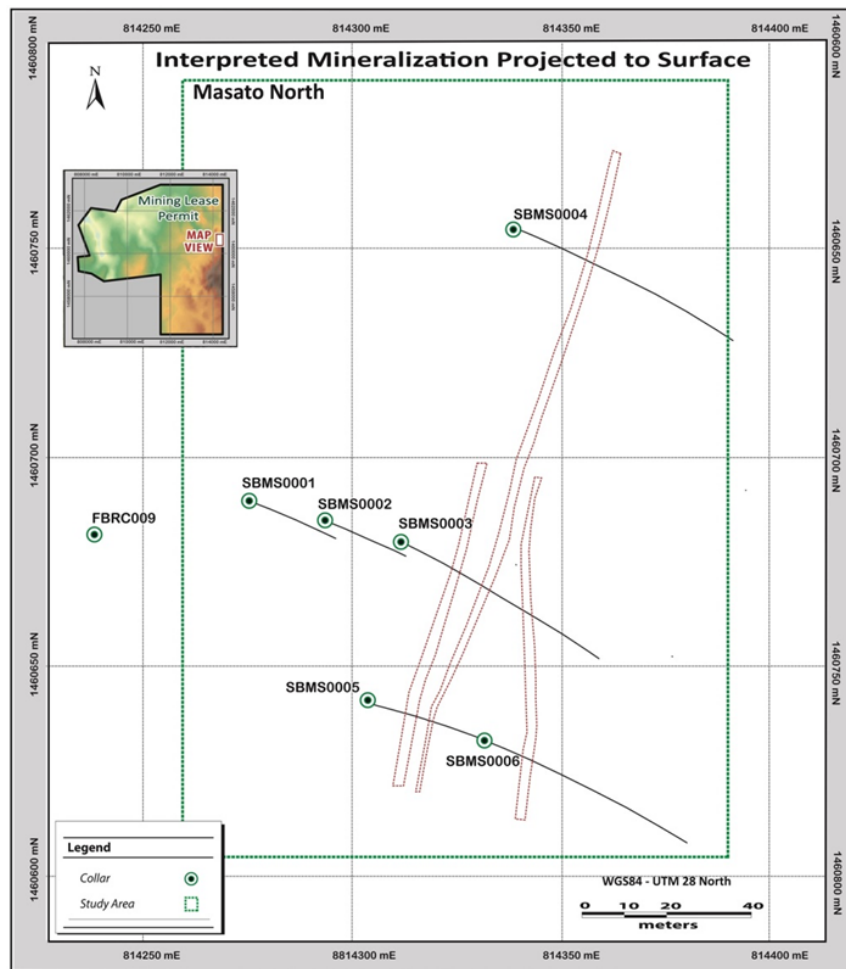
Figure 10.2 illustrates the location of recent drilling at Sabodala to upgrade and increase Mineral Resources. Drillholes targeted the east and west extents of the final pit shell.

**Figure 10.2 Sabodala Vertical Cross Section 20250N (looking north)**



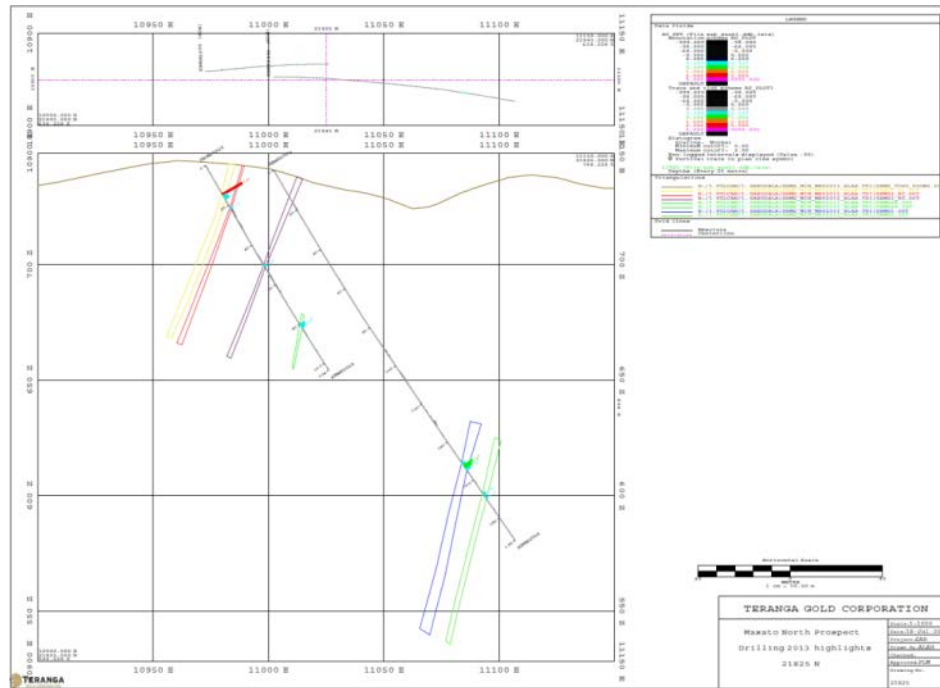
The location of the Masato North drillholes is shown in Figure 10.1 and Figure 10.3. Typical sections through the mineralization are depicted in Figure 10.4 and Figure 10.5.

**Figure 10.3 Masato North Drilling Programme**



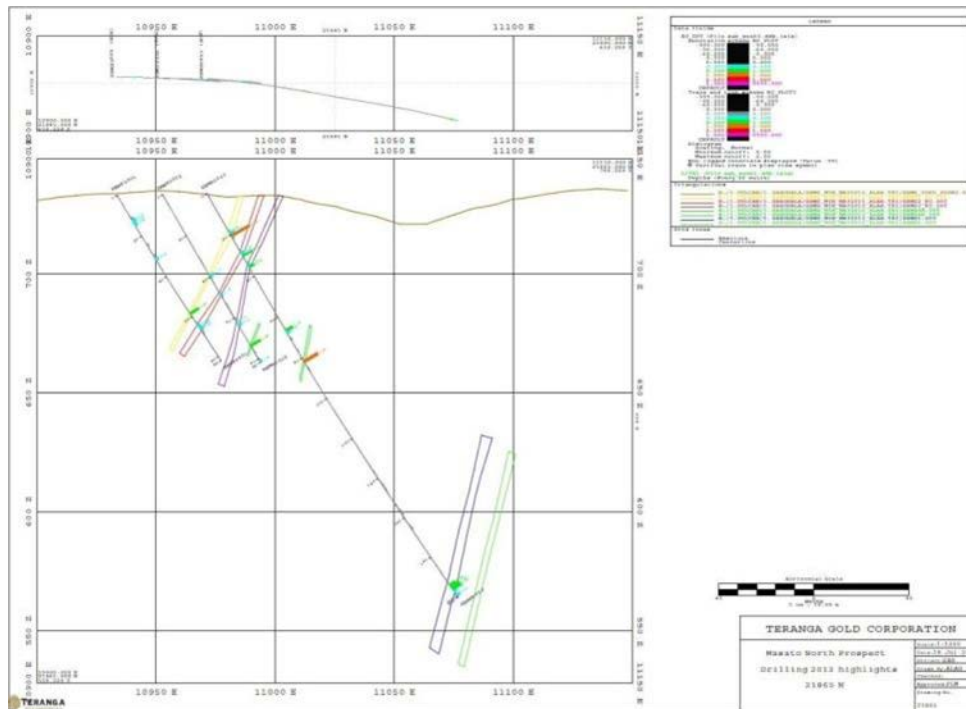


**Figure 10.4 Masato North Vertical Cross Section - DDH SBMS0001- SBMS0003**



Note: Looking NE @ 21° azimuth

**Figure 10.5 Masato North Vertical Cross Section - DDH SBMS0005- SBMS0004**



Note: Looking NE @ 21° azimuth



**Table 10.5 ML Drill Results 2012 to 2013**

Dinkokono							
RC Intersections, >0.5g/t Au with max 2m internal dilution							
Hole ID	LOCALx	LOCALy	LOCALAzi	Dip	Downhole Depth (meters)	Intercept value (downhole width @ g/t Au)	
DKDD073	10917.52	18884.85	65.00	-65.00	11.00	11 m @ 1.10 g/t	
DKDD075	10854.82	18809.98	65.00	-65.00	231.00	2 m @ 1.56 g/t	
DKDD077	10842.84	18851.77	65.00	-65.00	276.00	9 m @ 1.19 g/t	
DKDD078	10893.91	18829.87	55.80	-64.70	61.00	5 m @ 1.33 g/t	
					69.00	6 m @ 1.53 g/t	
DKDD081	10916.83	18899.77	65.00	-65.00	14.00	14 m @ 1.04 g/t	
SBDK0001	11021.34	19247.18	249.00	-70.00	11.00	3 m @ 1.07 g/t	
					82.00	5 m @ 1.51 g/t	
SBDK0003	11075.73	19381.89	299.00	-50.00	96.00	2 m @ 1.60 g/t	

Mamasato							
RC Intersections, >0.5g/t Au with max 2m internal dilution							
Hole ID	LOCALx	LOCALy	LOCALAzi	Dip	Downhole Depth (meters)	Intercept value (downhole width @ g/t Au)	
SMDD175	11664.96	19313.77	129.00	-60.00	31.00	6 m @ 1.03 g/t	

Masato						
RC intersections, >0.5g/t Au with max 2m internal dilution						
Hole ID	LOCALx	LOCALy	LOCALAz	Dip	Downhole Depth (meters)	Intercept value (downhole width @ g/t Au)
SMRC140D	11243.56	21072.09	90.00	-90.00	457.00	4 m @ 3.21 g/t
					470.00	9 m @ 1.20 g/t
					497.00	7 m @ 1.16 g/t
					512.00	19 m @ 1.26 g/t
					604.00	4 m @ 1.54 g/t
					637.00	11 m @ 1.44 g/t
					671.00	3 m @ 1.01 g/t
SMRC141D	11266.32	21068.95	90.00	-90.00	422.00	4 m @ 1.22 g/t
					429.00	2 m @ 1.12 g/t
					456.00	15 m @ 4.08 g/t
					474.00	17 m @ 2.53 g/t
					494.00	3 m @ 1.03 g/t
					499.00	2 m @ 1.05 g/t
					509.00	11 m @ 1.07 g/t
					570.00	2 m @ 1.74 g/t
					590.00	21 m @ 2.03 g/t
					622.00	6 m @ 1.38 g/t
					631.00	5 m @ 1.07 g/t
					641.00	2 m @ 1.01 g/t
SMRC142D	11322.82	20780.94	90.00	-90.00	651.00	2 m @ 1.10 g/t
					441.00	14 m @ 8.46 g/t
					472.00	2 m @ 1.21 g/t
					501.00	4 m @ 1.79 g/t
					562.00	16 m @ 1.80 g/t
SMRC143D	11280.35	20769.85	90.00	-90.00	584.00	4 m @ 1.11 g/t
					484.00	8 m @ 2.81 g/t
					497.00	8 m @ 1.17 g/t
					509.00	5 m @ 1.81 g/t
SMRC144D	11221.53	20699.84	90.00	-90.00	543.00	8 m @ 1.04 g/t
					604.00	2 m @ 2.06 g/t
					611.00	6 m @ 1.01 g/t
					624.00	4 m @ 1.44 g/t
					634.00	7 m @ 2.13 g/t
					645.00	25 m @ 1.51 g/t
					691.00	2 m @ 1.10 g/t
SMRC145D	11259.80	20736.71	90.00	-90.00	724.00	8 m @ 1.44 g/t
					735.00	2 m @ 1.06 g/t
					575.00	3 m @ 1.03 g/t
					584.00	2 m @ 1.33 g/t
					677.00	2 m @ 1.62 g/t
					695.00	6 m @ 1.24 g/t
					704.00	11 m @ 1.69 g/t
SMRC146D	11299.95	20736.41	90.00	-90.00	734.00	12 m @ 1.97 g/t
					784.00	19 m @ 1.77 g/t
					316.00	3 m @ 1.40 g/t
					500.00	9 m @ 3.69 g/t
					512.00	6 m @ 1.15 g/t
					537.00	2 m @ 4.28 g/t
SMRC147D	11280.68	20619.54	90.00	-90.00	542.00	2 m @ 1.30 g/t
					564.35	7.65 m @ 1.29 g/t
					551.00	7 m @ 3.21 g/t
					592.00	3 m @ 1.10 g/t
SMRC148D	11298.33	20656.97	90.00	-90.00	655.00	4 m @ 3.51 g/t
					716.00	3 m @ 1.56 g/t
					558.00	5 m @ 2.92 g/t
					566.00	8 m @ 1.72 g/t
					599.00	4 m @ 1.02 g/t
					626.00	5 m @ 1.28 g/t
					644.00	8 m @ 2.54 g/t
SMRC149D	11262.82	20697.97	90.00	-90.00	669.00	8 m @ 1.01 g/t
					731.00	3 m @ 1.21 g/t
					545.00	5 m @ 1.29 g/t

Base of Sambaya Hill						
RC intersections, >0.5g/t Au with max 2m internal dilution						
Hole ID	LOCALx	LOCALy	LOCALAz	Dip	Downhole Depth (meters)	Intercept value (downhole width @ g/t Au)
SBDH235	10704.05	19684.94	129.00	-59.37	153.00	3 m @ 1.50 g/t
					160.00	9 m @ 1.16 g/t
SBDH236	10732.11	19722.24	129.00	-59.37	93.00	2 m @ 1.12 g/t
SBDH237	10730.26	19719.69	104.00	-60.00	79.00	4 m @ 1.01 g/t
SBDH401DD	10679.05	19718.20	79.00	-60.00	1.00	3 m @ 1.23 g/t
SBDH403DD	10687.02	19759.72	339.00	-90.00	14.28	2.72 m @ 1.23 g/t
SBDH404DD	10686.06	19757.96	229.00	-60.00	59.00	6.8 m @ 1.59 g/t
SBDH405DD	10639.62	19765.93	219.00	-60.00	85.83	6.87 m @ 1.10 g/t
SBDH408DD	10492.65	19685.77	299.00	-50.00	73.00	2 m @ 1.43 g/t
SBDH412DD	10552.41	19742.00	9.00	-50.00	77.00	3 m @ 1.31 g/t
					82.00	3.1 m @ 1.07 g/t
SBDH415DD	10520.67	19712.01	339.00	-60.00	88.00	14 m @ 1.22 g/t
					108.80	17.2 m @ 1.47 g/t
					130.00	6 m @ 1.27 g/t
					138.50	11.5 m @ 2.18 g/t
					164.00	7 m @ 1.30 g/t
SBDH418DD	10497.25	19741.86	339.00	-90.00	0.00	14 m @ 1.07 g/t
SBDH430DD	10456.39	19803.46	179.00	-50.00	127.46	6.32 m @ 1.74 g/t
SBDH438DD	10503.23	19775.20	179.00	-50.00	29.00	7.45 m @ 1.69 g/t
SBDH439DD	10570.63	19831.77	179.00	-50.00	50.00	6.83 m @ 1.71 g/t
SBDH443DD	10677.51	19795.34	129.00	-60.00	40.00	3 m @ 1.16 g/t
					58.00	3 m @ 1.77 g/t
SBDH444DD	10389.16	19780.98	179.00	-50.00	84.00	7 m @ 1.54 g/t
SBDH447DD	10355.40	19731.99	179.00	-50.00	58.00	6 m @ 1.03 g/t
SBDH448DD	10358.71	19771.04	179.00	-50.00	173.00	3 m @ 1.27 g/t
SBDH455DD	10494.33	19813.36	159.00	-83.00	140.70	11.3 m @ 1.25 g/t
SBDH458D	10503.99	19776.26	151.80	-82.30	79.00	12 m @ 1.68 g/t
SBDH459	10551.28	19743.86	325.50	-61.50	83.00	22 m @ 1.43 g/t
					117.00	9 m @ 1.22 g/t
SBDH463	10541.24	19783.48	355.30	-90.00	61.00	11 m @ 1.07 g/t
					113.00	2 m @ 1.46 g/t
					159.00	13 m @ 1.40 g/t
					179.00	3 m @ 1.44 g/t
SBSE0001	10542.57	19780.10	159.00	-75.00	16.00	4 m @ 1.08 g/t
SBSE0002	10550.87	19743.16	319.00	-75.00	113.00	2 m @ 1.82 g/t
SBSE0003	10549.78	19744.57	319.00	-50.00	46.00	9 m @ 1.08 g/t
SBSE0004	10472.11	19725.66	339.00	-90.00	41.00	11 m @ 1.01 g/t
SBSE0006	10436.97	19715.94	339.00	-90.00	153.00	14 m @ 1.01 g/t
					171.00	2 m @ 2.26 g/t
SBSE0007	10576.50	19783.02	145.20	-69.80	36.00	5 m @ 1.00 g/t
					44.00	4 m @ 1.01 g/t

Sambaya						
RC intersections, >0.5g/t Au with max 2m internal dilution						
Hole ID	LOCALx	LOCALy	LOCALAz	Dip	Downhole Depth (meters)	Intercept value (downhole width @ g/t Au)
SBSB0006	11107.72	20103.08	299.00	-50.00	34.00	2 m @ 1.97 g/t
					46.00	4 m @ 1.15 g/t

Soukhoto						
RC intersections, >0.5g/t Au with max 2m internal dilution						
Hole ID	LOCALx	LOCALy	LOCALAz	Dip	Downhole Depth (meters)	Intercept value (downhole width @ g/t Au)
SKDD008	10152.18	18338.23	275.50	-86.90	173.00	3 m @ 1.22 g/t

## 10.7 Regional Exploration Drilling

Trenching and RAB drilling are primarily used to evaluate surface geochemical anomalies and more accurately locate the bedrock gold bearing structures that give rise to the surface

gold anomalies in an area. Both are quick and cost effective methods. Trenching is largely deployed in areas where the surface cover is generally <2 m thick. It has the added advantage of exposing great widths of bedrock geology that is generally only available in rare and scattered outcrops. For safety reasons, trenches are restricted to a maximum depth of 2.5 m.

RAB drilling is conducted where the surface cover exceeds 2 m of overburden. RAB holes are drilled to blade refusal with the aim of sampling the top of the un-oxidized bedrock as well as the profile of saprolite. The use of trenches has diminished since 2010 for safety and environmental reasons and because of the greater availability of RAB rigs in Senegal over the last two to three years.

RC and diamond drilling are used to test and evaluate areas with well-defined gold-bearing structures defined in outcrop, trenches or RAB holes. In many cases RC pre-collars are used to evaluate or drill the top 100 m to 150 m of a hole and a diamond tail is used to capture geological information from greater depths.

Drillholes were oriented at various trends and were not always drilled perpendicular to the specific targets, therefore sample lengths may not be representative of the true thicknesses of the target mineralization.

#### **10.7.1 Near Mine Project**

Teranga has completed exploration RAB, RC and DD drilling on the Makana and Bransan Permits. Details of the drilling are summarized in Table 10.1 through Table 10.4. The drilling results for several “Advanced Target Drilling Programmes” are summarized below.

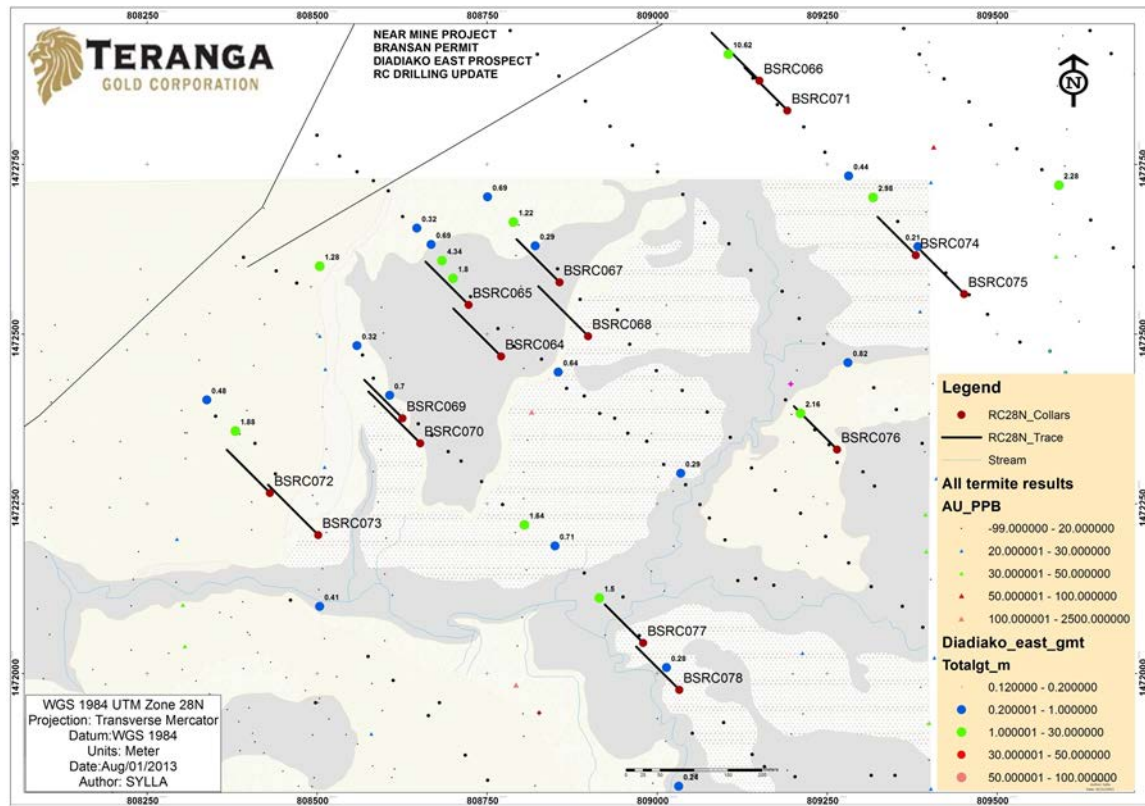
##### **Diadiako Projects**

Previous RC and diamond core drilling (2008 to 2010) was focused on a continuous and robust northeast-trending multi-point RAB and termite surface geochemical anomaly, with a strike length of 1,200 m and variable width of 50 m to 150 m. Drill fences were generally oriented northwest and spaced at regular 100 m intervals. Previous work at Diadiako included field mapping, soil and termite surface geochemical sampling.

Previous drilling tested mineralization to limited vertical depths which range between 50 m and 160 m, with most fences having a maximum vertical depth of 110 m to 130 m.

The drillhole locations are shown in Figure 10.6.

**Figure 10.6 Diadiako Prospect Drillholes – Plan View**



## Bransan Permit

### Goumbou Gamba and Goumbou Gamba South Prospects

Drilling undertaken on the Goumbou Gamba and Goumbou Gamba South Prospects include 607 RAB holes totaling 17,120 m, 31 RC holes totaling 5,153 m and 3 DD holes totaling 493 m, Figure 10.7. A typical section through the mineralized zone is shown in Figure 10.8. Notable intercepts are listed in Table 10.6.



Figure 10.7 Goumbou Gamba Prospects Geology and Drillhole Locations

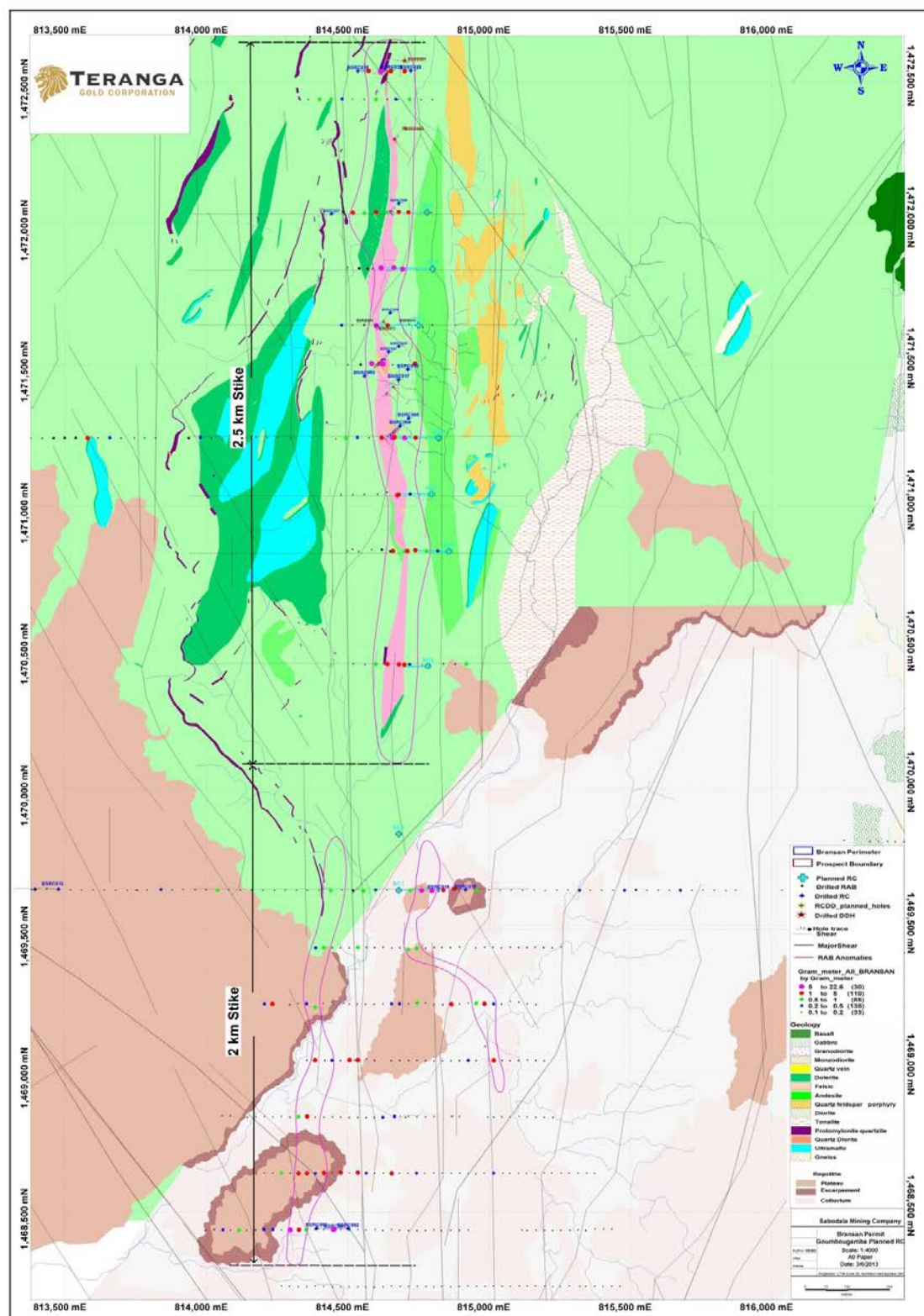
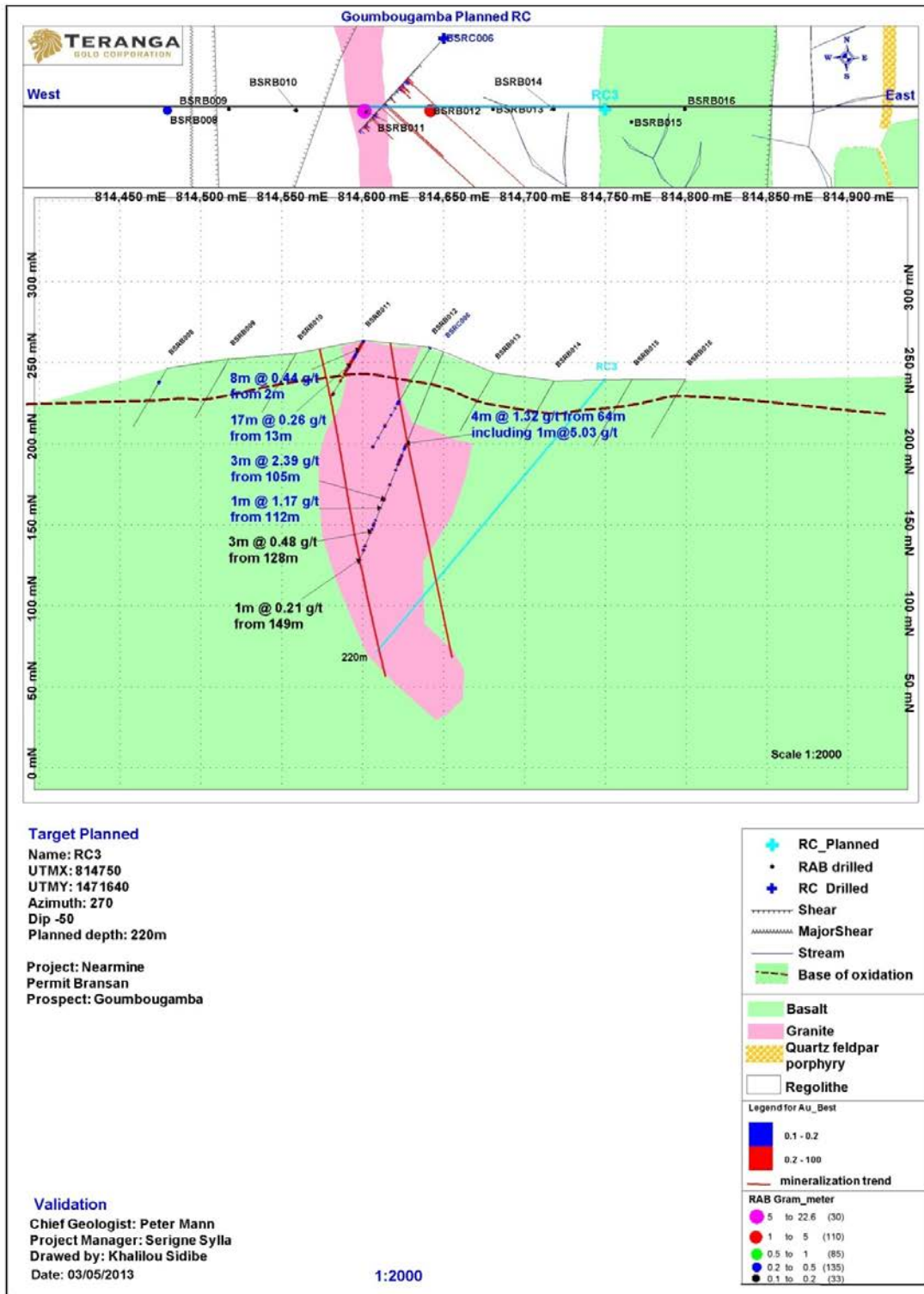


Figure 10.8 Goumbou Gamba Prospect Vertical Cross Section Looking North



**Table 10.6 Goumbou Gamba RC Drill Results (intersections >1g/t Au)**

Goumbou Gamba: RC Drilling						
RC intersections, > 1.0 g/t Au with max 2m internal dilution						
Hole ID	UTM(28)X	UTM(28)Y	Azi	Dip	From (depth in meters)	Intercept width with Au Grade (g/t)
BSRC004	814685.90	1471284.00	231.60	-60.10	145.00	1m @ 1.41 g/t
BSRC006	814650.00	1471684.00	222.40	-59.10	66.00	1m @ 4.64 g/t
					105.00	3m @ 2.39 g/t
					112.00	1m @ 1.17 g/t
					130.00	1m @ 1.07 g/t
BSRC014	814821.30	1469640.00	282.50	-61.50	33.00	1m @ 1.38 g/t
BSRC017	814680.30	1471447.00	224.10	-60.80	126.00	1m @ 1.07 g/t

### Makana Permit

### Majiva and Wourouss Prospects

The Majiva and Wourouss Prospects are one of several gold anomalies within the Makana Permit which overlies one of the main Sabodala structures. This structure is interpreted as being the same structure controlling the Masato Au mineralization. Drilling to date has included 2,324 RAB holes totaling 51,326 m, 77 RC holes totaling 14,761 m and 2 DD holes totaling 455 m.

Figure 10.9 shows the Majiva Prospect gold targets and advanced targets with drillhole locations areas. Figure 10.10 is an East-West Cross section looking North through the Advanced Target 1 on the Majiva Central Prospect.

Figure 10.9 Majiva Prospect Gold Targets and Advanced Gold Targets

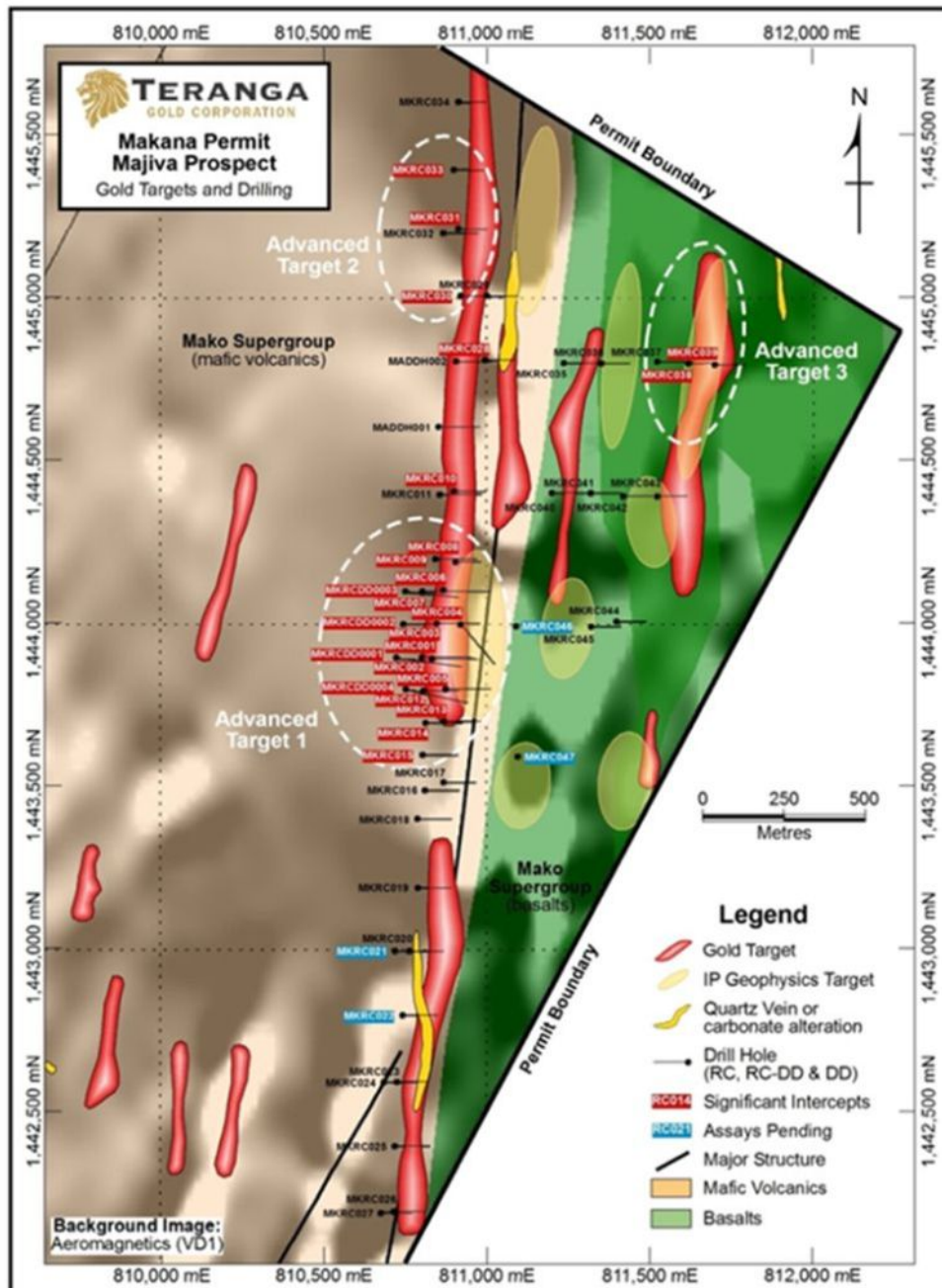
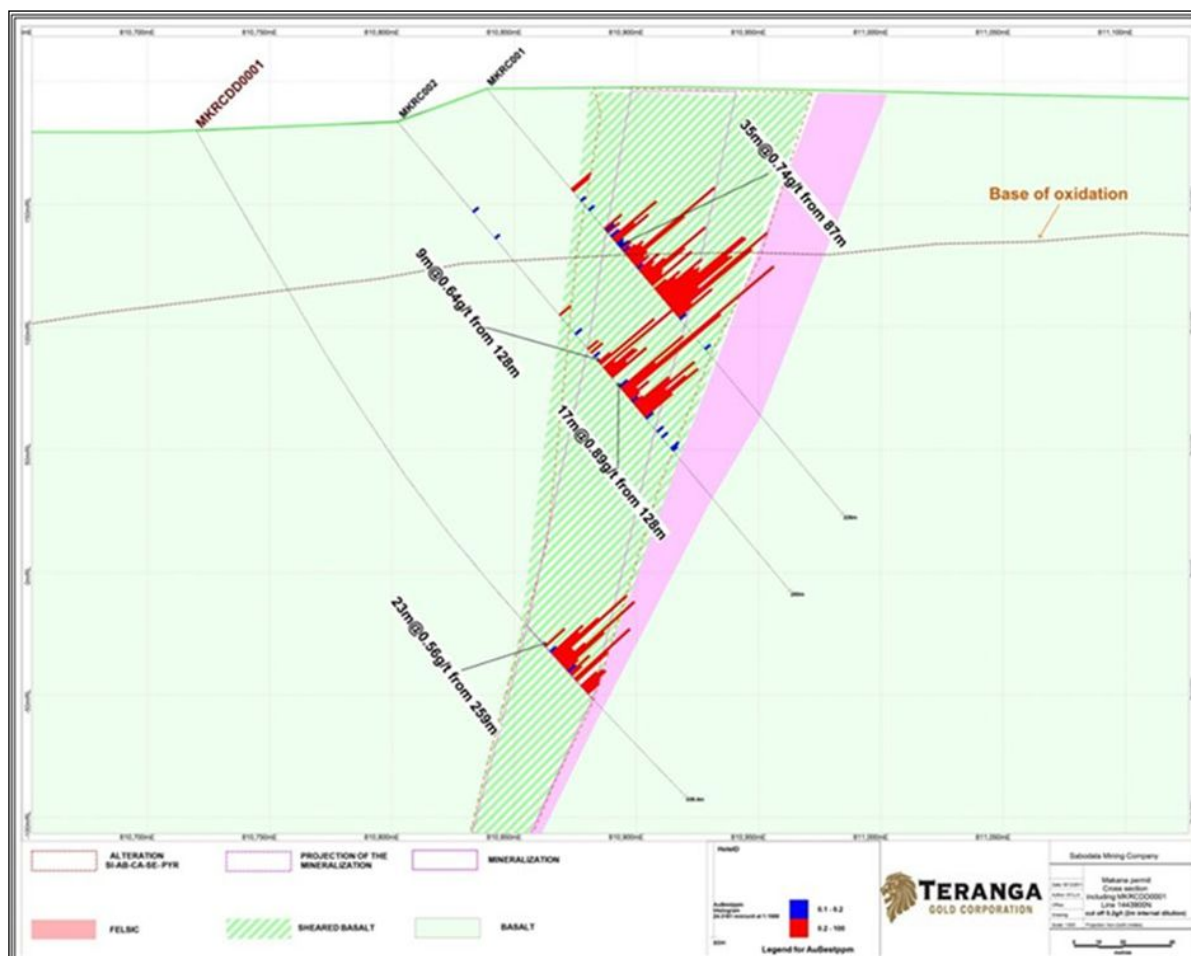




Figure 10.10 Majiva Central Prospect Advanced Target 1 - Looking North



Note: Section 1,443,900N



### **10.7.2 Dembala Berola Project**

#### **Dembala Berola Permit**

##### **Tourokhoto Prospect**

MDL had completed its target generation strategy as described in the Exploration section of this report and identified an extensive zone of surface gold anomaly coincident with the Main Trans-current shear zone, a major structure marking the boundary of the more mafic Mako Supergroup to the west and the sediment dominated Diale-Dalema Supergroup to the east. Teranga commenced a RAB and diamond drill campaign in December 2010 and completed a total of 23,400 m of RAB, 4,557 m RC and an early scout diamond drilling programme consisting of five holes for 1,691 m.

The RAB programme delineated several, large, zones of bedrock gold anomaly associated with the MTZ, but also in areas to the east of the main MTZ structural belt, underneath relatively low level surface gold anomalies.

##### **Results of RAB Drilling**

Zones of gold mineralization are shown in Figure 10.11.

Zone 1 in Figure 10.11 is located in between the northern lateritic plateaus, on the western flank of the elongate gabbro body. The surface geochemical anomaly surpasses most anomalies of the area in size (about 5 km to 7 km long), in width (up to 2 km) and in intensity.

Zone 2 is located eastward, in the pelitic sequence of the Diale area, and possibly related to some basaltic lava flows.

Zone 3 is located just west of the Diale River and is also a NNE elongated anomaly of a lesser intensity but located just on the eastern flank of a basaltic lava flow. A fourth very elongated but thin and weak anomaly also is located in the middle of the MTZ.

To compare RAB results to the geochemistry anomalies, a score index was calculated:

- Grades are multiplied by width and summarized. If multiple intersections are present in a hole they are summed.
- The scores are then plotted at the collar of each RAB hole.

Figure 10.11 illustrates the results from the calculation of the index. The relationship between the sample length and the true thickness of the mineralization is not known. Intersections of mineralization ranged in length from 1 m to 12 m.

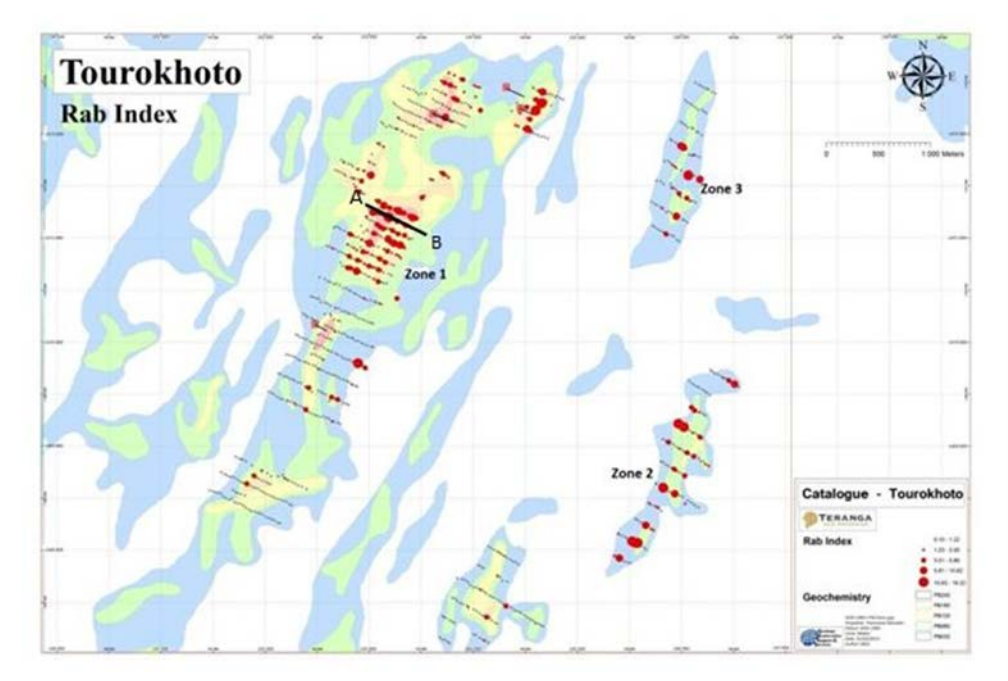
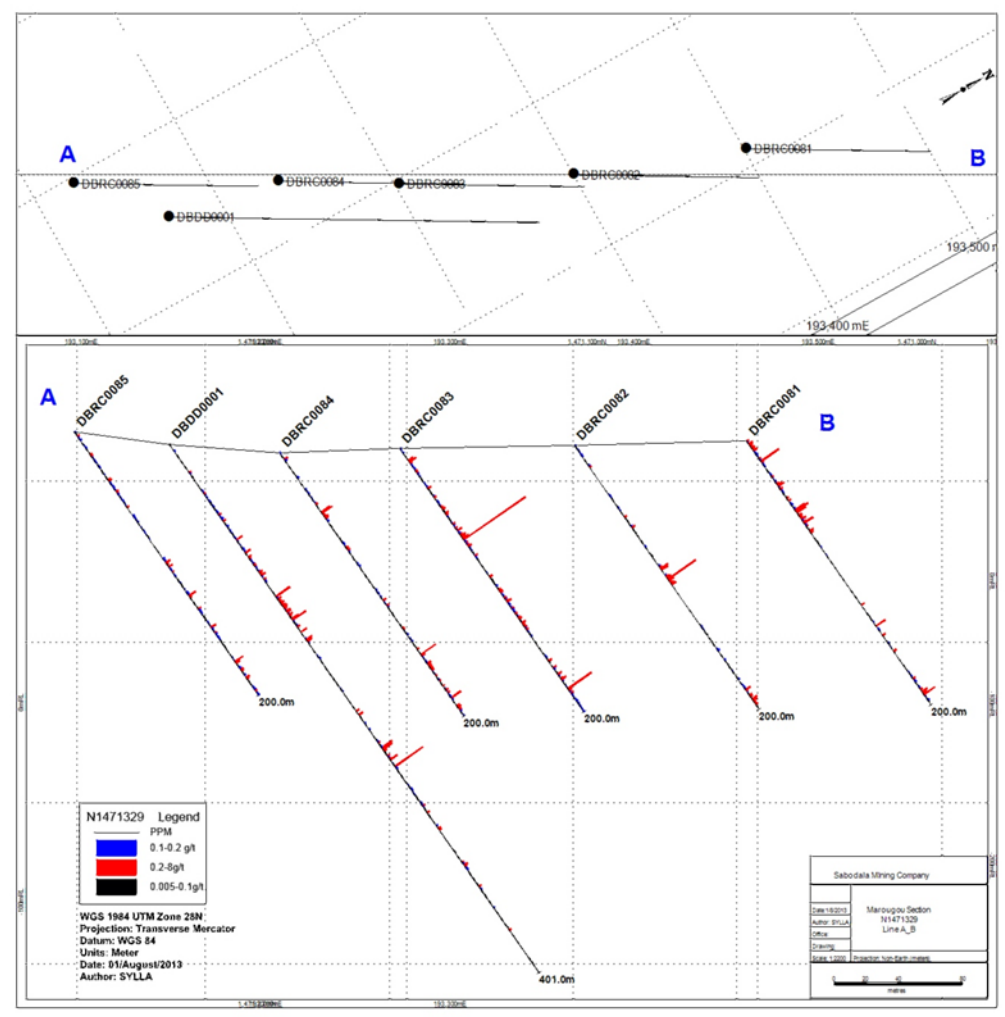


Figure 10.12 Tourokhoto Vertical Cross Section over Main Target area



**Table 10.7 Tourokhoto RC Drill Results (intersections >1g/t Au)**

Tourokoto: RC Drilling						
RC intersections, >1.0 g/t Au with max 2m internal dilution						
Hole ID	UTM(29)X	UTM(29)Y	Azi	Dip	Downhole Depth (meters)	Intercept Value (downhole width @ g/t Au)
DBRC0081	193401.60	1471111.00	120.00	-55.00	15.00	1m @ 1.93 g/t
					52.00	3m @ 1.14 g/t
DBRC0082	193300.30	1471149.00	120.00	-55.00	101.00	2m @ 1.66 g/t
DBRC0083	193202.70	1471197.00	120.00	-55.00	68.00	2m @ 3.75 g/t
					182.00	1m @ 2.44 g/t
DBRC0084	193138.10	1471235.00	120.00	-55.00	45.00	2m @ 1.04 g/t
DBRC0089	193043.40	1471045.00	120.00	-55.00	43.00	2m @ 1.34 g/t
DBRC0093	193148.00	1470786.00	120.00	-55.00	39.00	5m @ 1.13 g/t
DBRC0094	193054.50	1470828.00	120.00	-55.00	168.00	2m @ 3.88 g/t
					133.00	3m @ 1.77 g/t
DBRC0102	193079.80	1471369.00	120.00	-55.00	139.00	1m @ 1.64 g/t
					158.00	2m @ 1.23 g/t
DBRC0108	193921.90	1472526.00	120.00	-55.00	61.00	1m @ 1.92 g/t
DBRC0110	193737.90	1472602.00	120.00	-55.00	70.00	2m @ 4.46 g/t
DBRC0113	194542.60	1472460.00	120.00	-55.00	8.00	1m @ 2.47 g/t
DBRC0114	194653.00	1472195.00	120.00	-55.00	47.00	2m @ 1.57 g/t
DBRC0115	194556.90	1472252.00	120.00	-55.00	110.00	1m @ 2.04 g/t
DBRC0116	194470.10	1472273.00	120.00	-55.00	89.00	3m @ 15.27 g/t
DBRC0130	192698.80	1470771.00	120.00	-55.00	72.00	2m @ 1.07 g/t
DBRC0135	192461.90	1469988.00	120.00	-55.00	9.00	1m @ 1.50 g/t
DBRC0137	193184.80	1471296.00	120.00	-55.00	90.00	1m @ 2.04 g/t

### Tourokhoto Marougou Prospect

The 2010 RAB and DD drilling programme at Tourokhoto delineated several large zones of bedrock gold anomaly associated with the MTZ as well as areas to the east of the main MTZ structural belt which were called Zone 2 and 3, (Figure 10.11). Zone 2 was named the Tourokhoto Marougou Prospect and further investigated by a 17,000 m RC drill programme undertaken in late December 2012 and early February 2013, (Figure 10.13 and Figure 10.14). The drilling programme defined a number of discrete gold mineralized zones within the Diale sediments which lacked strike and down-dip continuity, (Figures 10.15, 10.16, 10.17). Notable values intersected in the RC holes are listed in Table 10.8 below.

Figure 10.13 Dembala Berola 2012-2013 RC Drill Programmes

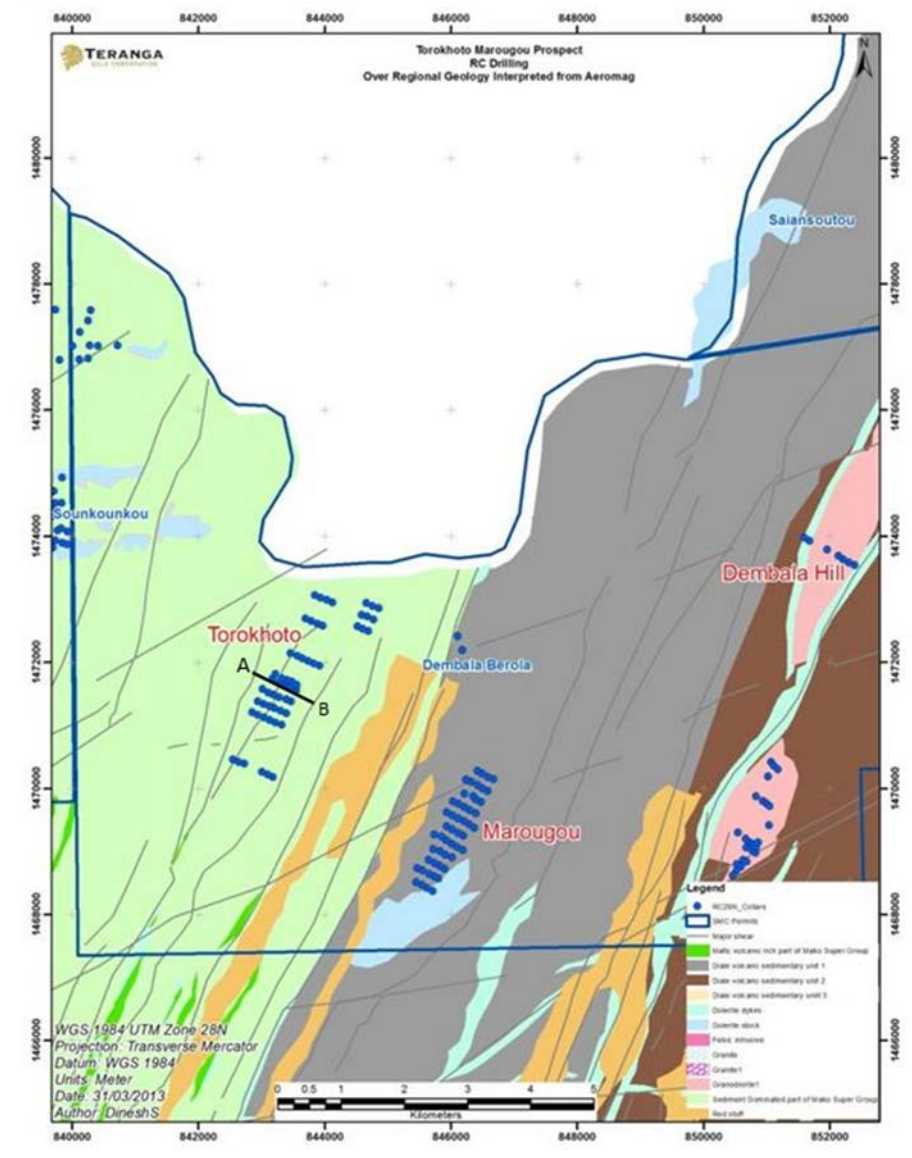




Figure 10.14 Tourokhoto Marougou RC Drilling Programme

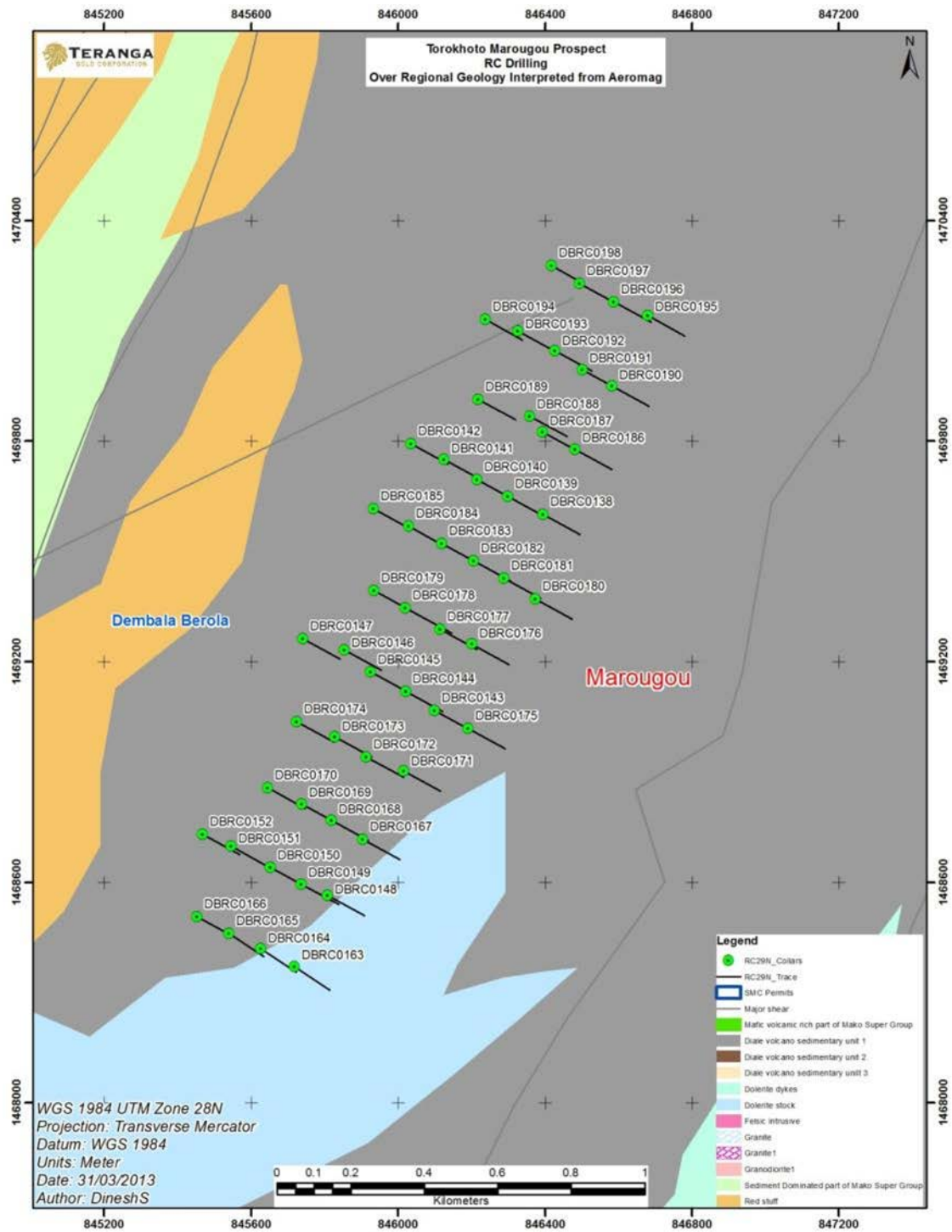
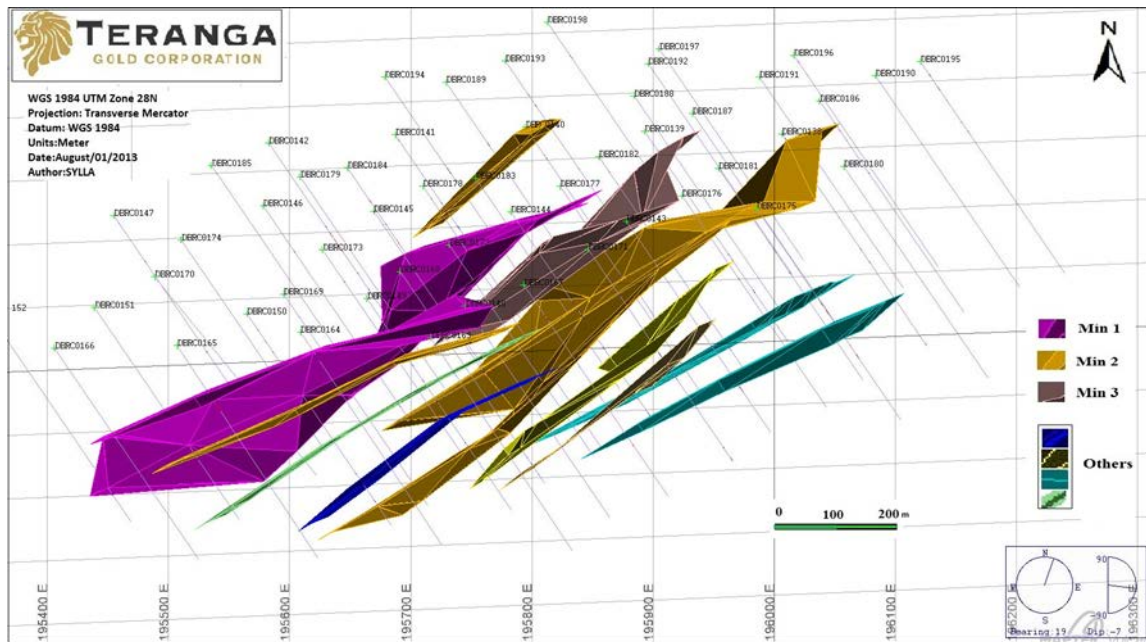
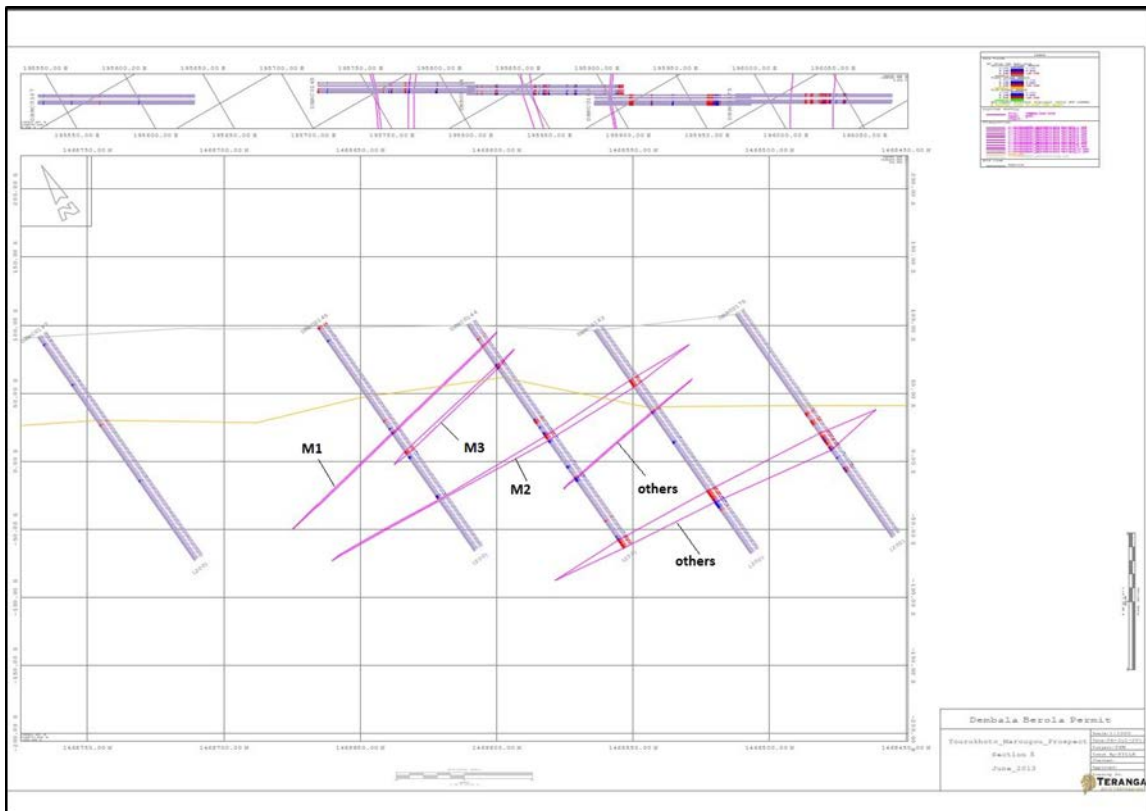


Figure 10.15 Tourokhoto Marougou Inclined View



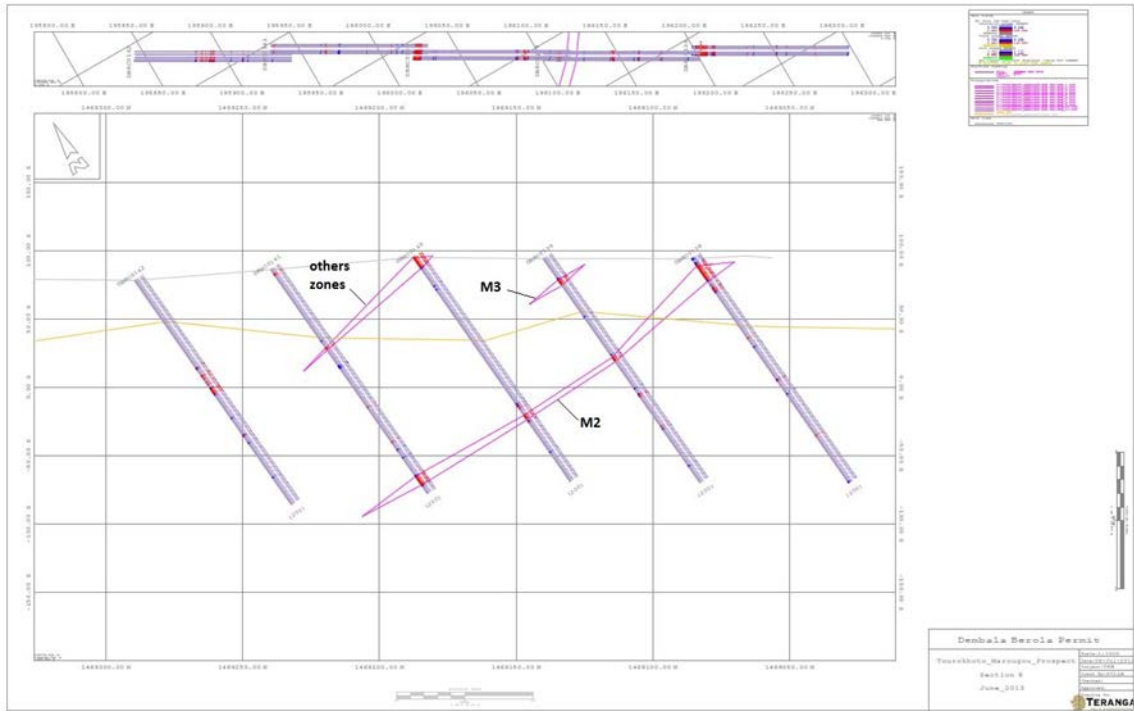
Note: Looking along 19° azimuth

Figure 10.16 Tourokhoto Marougou Vertical Cross Section through RC 147-175



Note: Facing 30° azimuth

Figure 10.17 Tourokhoto Marougou NW-SE Plan and Section through RC 142-138



Note: Facing NE

**Table 10.8 Tourokhoto Marougou RC Drill Results (intersections >1g/t Au)**

Marougou: RC Drilling						
RC intersections, >1.0 g/t Au with max 2m internal dilution						
Hole ID	UTM(29)X	UTM(29)Y	Azi	Dip	Downhole Depth (meters)	Intercept value (downhole width @ g/t Au)
DBRC0138	196196.00	1469088.00	120.00	-55.00	6.00	12m @ 13.18 g/t
DBRC0139	196100.00	1469139.00	120.00	-55.00	88.00	4m @ 1.94 g/t
					123.00	1m @ 1.46 g/t
DBRC0140	196018.00	1469187.00	120.00	-55.00	0.00	10m @ 1.18 g/t
					132.00	1m @ 1.06 g/t
					143.00	1m @ 2.30 g/t
					5.00	1m @ 1.15 g/t
DBRC0141	195930.00	1469243.00	120.00	-55.00	123.00	1m @ 1.09 g/t
					185.00	7m @ 1.33 g/t
DBRC0142	195841.00	1469288.00	120.00	-55.00	97.00	4m @ 1.21 g/t
DBRC0143	195887.00	1468562.00	120.00	-55.00	45.00	5m @ 1.16 g/t
					144.00	8m @ 3.59 g/t
DBRC0144	195810.00	1468615.00	120.00	-55.00	194.00	6m @ 2.03 g/t
DBRC0145	195716.00	1468671.00	120.00	-55.00	153.00	1m @ 1.00 g/t
DBRC0148	195584.00	1468066.00	120.00	-55.00	3.00	3m @ 1.16 g/t
					16.00	4m @ 1.01 g/t
DBRC0149	195514.00	1468099.00	120.00	-55.00	31.00	14m @ 3.25 g/t
DBRC0151	195326.00	1468206.00	120.00	-55.00	123.00	1m @ 1.86 g/t
					137.00	2m @ 1.10 g/t
DBRC0155	195964.80	1471440.00	120.00	-55.00	56.00	1m @ 1.13 g/t
DBRC0164	195400.00	1467926.00	125.00	-55.00	25.00	2m @ 1.30 g/t
					33.00	1m @ 1.52 g/t
DBRC0165	195313.00	1467970.00	125.00	-55.00	47.00	4m @ 1.21 g/t
					55.00	6m @ 2.32 g/t
DBRC0167	195684.00	1468217.00	120.00	-55.00	72.00	1m @ 2.25 g/t
					39.00	8m @ 1.69 g/t
DBRC0168	195600.00	1468270.00	120.00	-55.00	152.00	1m @ 4.96 g/t
					192.00	1m @ 2.56 g/t
DBRC0171	195800.00	1468400.00	120.00	-55.00	89.00	5m @ 1.81 g/t
					198.00	2m @ 2.34 g/t
DBRC0173	195614.00	1468497.00	120.00	-55.00	102.00	4m @ 2.26 g/t
DBRC0175	195977.00	1468511.00	120.00	-55.00	109.00	3m @ 2.95 g/t
DBRC0177	195908.00	1468783.00	120.00	-55.00	16.00	2m @ 1.35 g/t
DBRC0178	195815.00	1468842.00	120.00	-55.00	121.00	4m @ 1.55 g/t
DBRC0179	195731.00	1468892.00	120.00	-55.00	127.00	1m @ 1.12 g/t
DBRC0182	196003.00	1468966.00	120.00	-55.00	70.00	1m @ 1.19 g/t
					75.00	3m @ 3.47 g/t
DBRC0183	195918.00	1469015.00	120.00	-55.00	45.00	3m @ 2.35 g/t
					95.00	1m @ 1.33 g/t
					105.00	1m @ 1.06 g/t
					138.00	2m @ 1.11 g/t
DBRC0194	196051.00	1469621.00	120.00	-55.00	186.00	1m @ 1.25 g/t

### Dembala Hill

The Dembala Hill target was extended to include a 4,000 m long buried intrusive body interpreted from the aeromagnetic data set, (Figure 10.13). The intrusion sits along a significant gold-bearing structure which parallels the MTZ. The same structure is host to the original Dembala Hill prospect and further south, outside the Teranga permit, the same structure hosts the Makabingui deposit partially hosted within a small granite and gabbro body that intruded this structure.

At Dembala Hill diamond drilling in early 2011 produced intersections from the southern part of the prospect that ranged from 1 m to 19 m and Au grades ranging between 0.54 g/t and 2.15 g/t. Mineralization at Dembala Hill is hosted on the south eastern flange of a granodiorite plug, and is related to minor carbonate-chlorite-pyrite alteration. The mineralization is well developed and can be traced across most sections, but is mostly in the sub 1 g/t Au range.

A small programme of RAB lines were drilled over the roof zone of the interpreted buried intrusive with the aim of testing for associated gold anomalies and also to confirm the presence of the postulated intrusion. A total of 113 holes for 4,463 m were drilled over four lines with an average depth of 39 m per hole (holes were angled at 60°). The buried intrusive was not intersected in this programme, which is likely to be deeper down than the relatively shallow RAB drilling completed. During the first Quarter, 2011 a programme of seven-hole RC was completed for 1,400 m located to intersect the intrusive and check for signs of mineralization within it. Apart from one minor felsic dyke only sediments were intersected. This indicates that the intrusive is either too deeply buried or the magnetic signature is caused by some other lithology, possibly thin magnetic dykes or basalts that may be folded adjacent to the shear structure. Notable RC Au intercepts are listed in Table 10.9 below.

**Table 10.9 Dembala Hill RC Drill Results (intersections >0.5 g/t Au)**

Dembala Hill: RC Drilling						
RC intersections, >0.5g/t Au with max 2m internal dilution						
Hole ID	UTM(29)X	UTM(29)Y	Azi	Dip	Downhole Depth (meters)	Intercept Value (downhole width @ g/t Au)
DBRC0057	200309.00	1468180.00	130.00	-50.00	67.00	4m @ 1.05 g/t
					107.00	1m @ 1.11 g/t
DBRC0058	200370.00	1468139.00	130.00	-50.00	5.00	1m @ 1.03 g/t
					28.00	19m @ 0.99 g/t
DBRC0062	200462.00	1468217.00	130.00	-50.00	20.00	1m @ 1.49 g/t
DBRC0063	200459.00	1468444.00	130.00	-50.00	32.00	1m @ 1.12 g/t
					56.00	1m @ 3.81 g/t
DBRC0070	200616.00	1468446.00	130.00	-50.00	0.00	2m @ 1.00 g/t
					7.00	2m @ 1.08 g/t
					57.00	2m @ 1.02 g/t
DBRC0072	200829.00	1468785.00	130.00	-50.00	33.00	1m @ 1.30 g/t
DBRC0076	200850.00	1469091.00	130.00	-50.00	16.00	2m @ 1.13 g/t
					86.00	3m @ 1.56 g/t
					92.00	3m @ 1.21 g/t
DBRC0078	200885.00	1469790.00	130.00	-50.00	60.00	1m @ 1.14 g/t

### Goundamekho Prospect

The prospect was subject to minor RAB and RC drilling by the previous operator MDL. A total of 20 holes for 1,950 m were completed by MDL. The programme targeted two main zones of mineralization highlighted in historic drilling by SAMAX and trenching by MDL. No drilling has been conducted since 2010.

### Cinnamon West Prospect

Eight RC holes were drilled on the Cinnamon West Prospect, with significant intersections presented in Table 10.10.



**Table 10.10 Cinnamon West RC Drill Results (intersections >1g/t Au)**

Cinnamon West: RC Drilling						
RC intersections, >1.0 g/t Au with max 2m internal dilution						
Hole ID	UTM(29)X	UTM(29)Y	Azi	Dip	Downhole Depth (meters)	Intercept value (downhole width @ g/t Au)
DBRC0221	190251.00	1477046.00	120.00	-50.00	0.00	6m @ 2.80 g/t
DBRC0224	190397.00	1476641.00	120.00	-50.00	42.00	2m @ 1.55 g/t
DBRC0225	190236.00	1476448.00	120.00	-50.00	113.00	1m @ 3.02 g/t
DBRC0227	190706.00	1476638.00	120.00	-50.00	82.00	1m @ 4.80 g/t
					90.00	1m @ 1.30 g/t
					96.00	1m @ 1.43 g/t
					115.00	2m @ 7.05 g/t
					130.00	1m @ 1.79 g/t

### Saiensoutou Permit

### Saiensoutou Prospect

The main prospect on this permit consists of a surface gold anomaly defined by termite mound sampling that extends for over 2 km in a north-south orientation. This trend is interpreted to be an extensional set of structures related to movement along the 70° north trending structures visible on the regional aeromagnetic trends in the areas. The surface gold anomaly has partially coincident arsenic anomalies which could be associated with the mineralization or alternatively indicate the presence of mafic rocks not visible in the aeromagnetics. The presence of mafic rocks within this sediment dominated area can provide favorable competency contrasts which would create permeable fractured zones during deformation and mineralizing events. To the immediate SW of the gold trend, anomalous values of rubidium, strontium and molybdenum indicate the presence of alkali intrusions not yet discovered in outcrop.

Follow-up work included a programme of RAB drilling, with 153 holes totaling 5,698 m completed from 2012 to 2013. Auriferous RAB trends were intersected and followed up with a small programme of RC drill testing, with 14 holes totaling 2,800 m completed.

Notable intercepts from the RC drill programme are listed in Table 10.11 below.

**Table 10.11 Saiensoutou Prospect RC Drill Results (intersections >0.5 g/t Au)**

Saiensoutou: RC Drilling						
RC intersections, >0.5g/t Au with max 2m internal dilution						
Hole ID	UTM(29)X	UTM(29)Y	Azi	Dip	Downhole Depth (meters)	Intercept Value (downhole width @ g/t Au)
SARC0005	210326.00	1478427.00	90.00	-50.00	45.00	1m @ 0.99 g/t
SARC0006	210229.00	1478411.00	90.00	-50.00	49.00	9m @ 1.45 g/t
SARC0008	210330.00	1478804.00	90.00	-50.00	43.00	1m @ 1.04 g/t
					89.00	1m @ 1.64 g/t
SARC0011	210539.00	1477856.00	90.00	-50.00	43.00	6m @ 0.77 g/t

### **10.7.3 Faleme Project**

#### **Soukounkou Permit**

##### **Gora Deposit**

Initial work at Gora was recorded by Axmin, who referred to this prospect as Zone D. The Axmin drill collars and trench locations were still visible in the field in 2010. A total of seven, shallow diamond holes and five trenches were completed by Axmin in 2007.

The 2010 RC drilling at Gora prospect was conducted by Minerex drilling contractors for SMC. A total of 6,246 m in 51 holes were completed in the first phase. Drilling was planned on a 40 m x 40 m grid. All drill collars were surveyed by experienced mine surveyors, using a differential GPS (LEICAGPS 2010). All coordinates were surveyed in UTM Zone 29N coordinates. A Reflex single shot camera was used for down-hole surveys at 30 m intervals.

Teranga began follow-up drilling at Gora in January 2011. Drilling was planned on a 40 m x 40 m grid across the extent of the identified mineralization, down to a maximum vertical depth of 130 m. By the end of December 2011 a total of 386 RC and DD holes totaling 61,468 m of drilling was completed and included:

- Ten holes for 4,665 m of step-out exploration drilling to test for key structural intersections at depth.
- 24 closely spaced geostatistical holes for 2,800 m in two separate areas of the deposit. Holes were drilled along perpendicular lines forming two crosses, designed at 10 m spacing parallel to and perpendicular to strike, between existing 40 m x 40 m spaced holes.
- Approximately 20,000 m of exploration drilling along strike to test a number of parallel IP targets in the vicinity of the Gora deposit.

The 2011 drilling intersected a third vein which was modeled and referred to as Vein 3. Vein 4 initially intersected in the 2010 drilling was again intersected in the 2011 drilling.

In 2012, 67 RAB holes were drilled to the northwest of the main mineralization to follow-up grab sample results which yielded elevated Au values below 0.5 g/t. No significant Au values were returned. Fourteen RC drillholes were drilled to test an IP anomaly to the southeast of the main mineralization, with no significant gold mineralization intersected.

##### **Diegoun South Prospect**

The prospect was tested by 11 RC holes for a total of 1,763 m. Four diamond holes have been drilled (SKDD103 to SKDD105 and 107) for a total of 957 m.

Mineralization is confined to a granodiorite body where it is associated with minor quartz stringers and minor zones of alteration. The target consists of a well-defined gold anomaly from 200 m x 50 m spaced termite mound sampling, extending approximately 2,200 m in a NE direction, paralleling one of the 070 NE structures interpreted from the aeromagnetic data. Previous trenching and RAB drilling defined zones of bedrock gold mineralization (Figure 10.18) related to a NE trending granite body (approximately 100 m wide), containing

quartz stock-work and albite-pyrite alteration. Hole SKDD103 and SKDD104 targeted a zone of higher grade gold results from the termite sampling (>180 ppb Au). Wide zones of anomalous gold from RC drilling were identified along strike in both directions (Figure 10.19).

Hole SKDD105 was drilled in 2011 and targeted the down dip extension of the mineralization encountered in SKRC254 and SKRC253. Mineralization is related to quartz veining in a felsic intrusive. The drilling identified only weak alteration in the diamond holes, consisting of traces of pyrite, minor hematite and carbonate alteration.

**Figure 10.18 Geology and Drillhole Locations at Diegoun South Prospect**

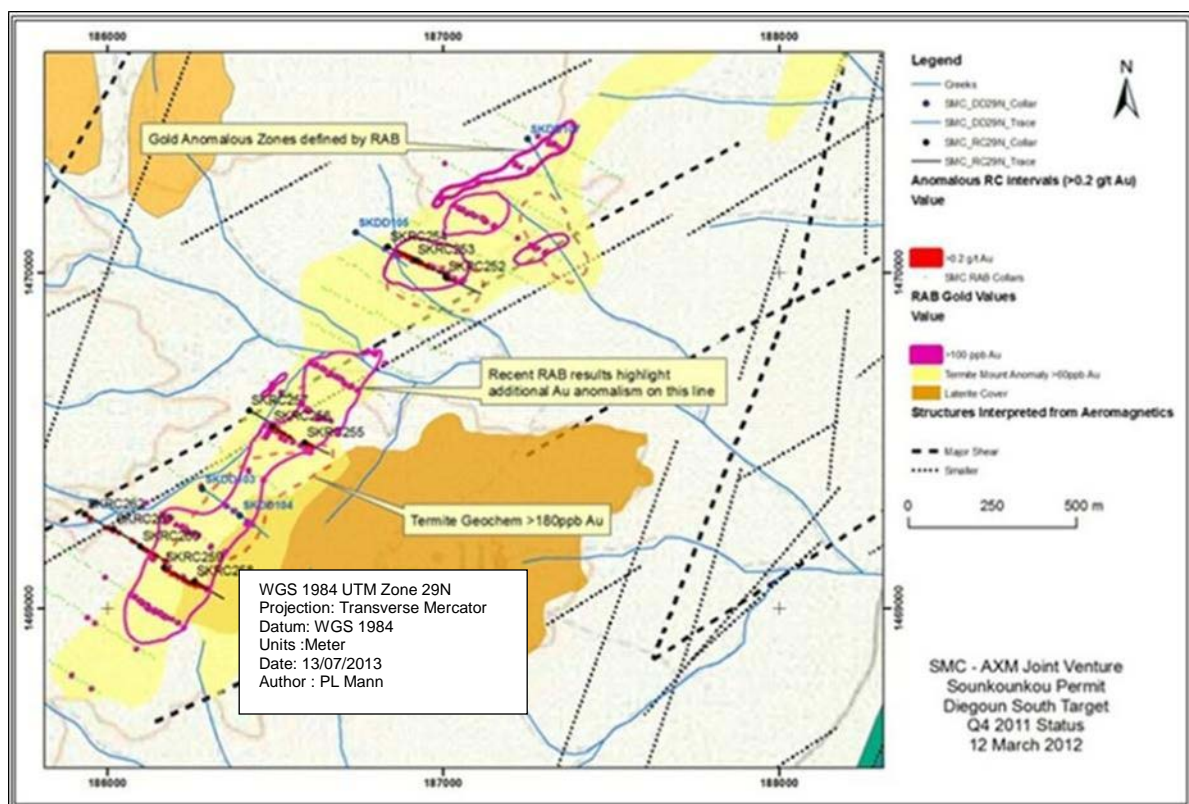
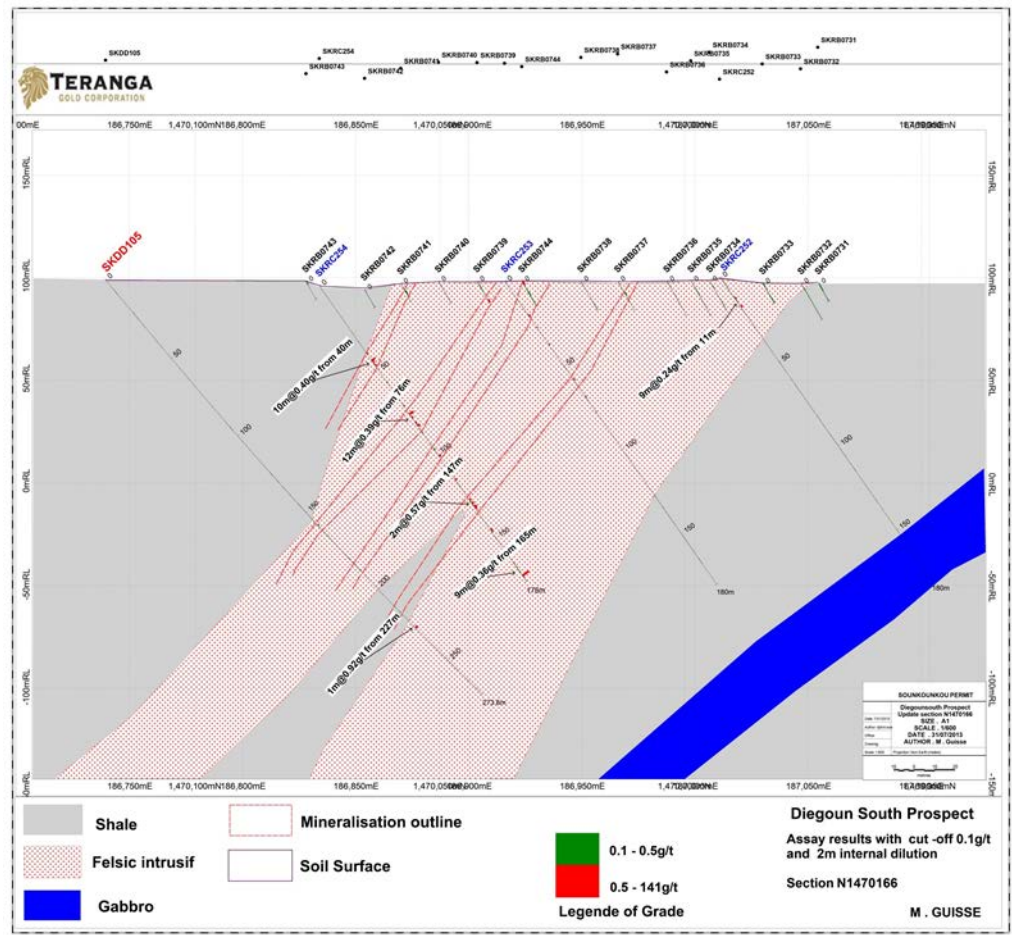


Figure 10.19 Diegoun South Vertical Cross Section through SKDD105



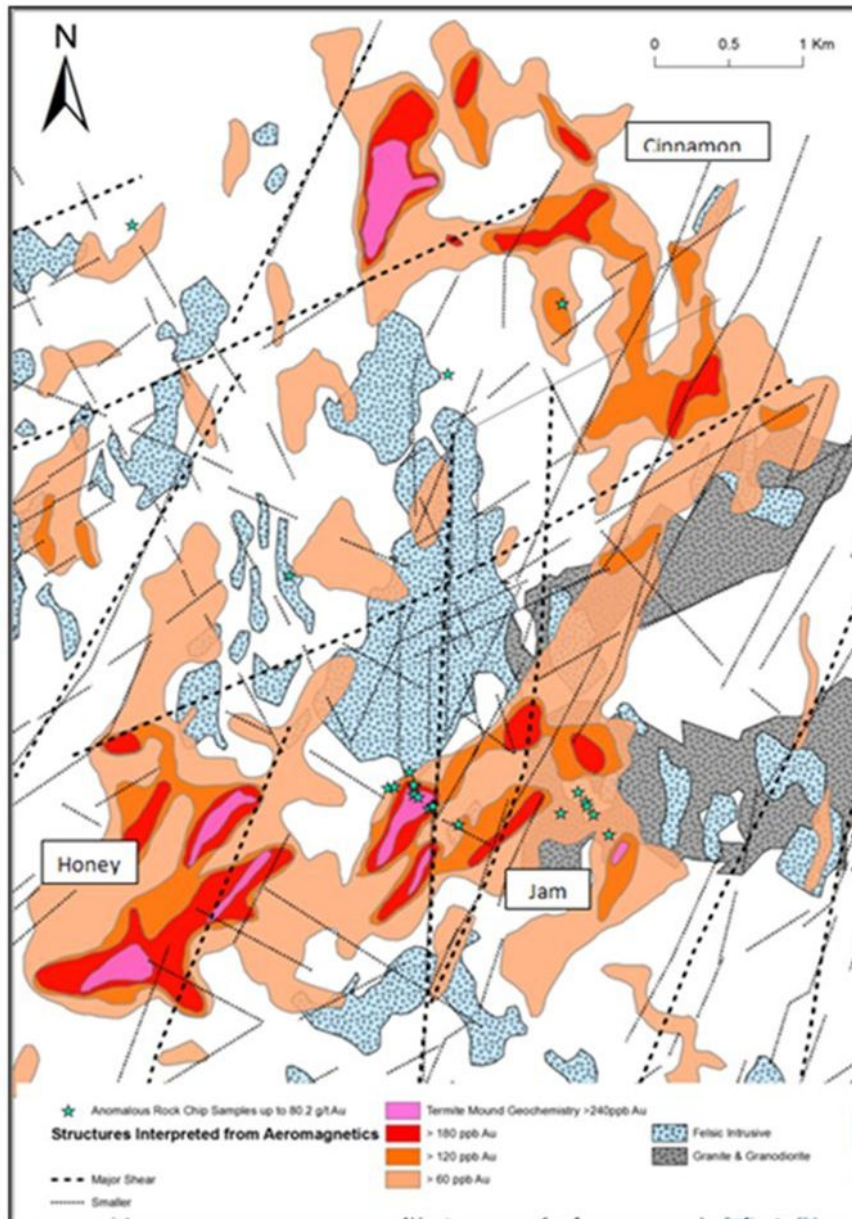
Note: Facing 30° azimuth

## Diegoun Prospects

This is a large complex of extensive surface gold anomalism identified by termite mound sampling carried out by GESS. The prospect is referred to as The Donut due to its ring-like shape around a central intrusive. The geochemical surface expression covers an area of approximately 20 km<sup>2</sup> with the anomalies apparently peripheral to a central complex of felsic intrusive consisting of quartz-feldspar porphyries, gabbro and granodiorite. Country rocks to the intrusive are largely sediments of the Mako group with minor basalts. This large complex has been subdivided into three areas: Honey in the southwest, Jam to the southeast and Cinnamon to the north (Figure 10.20).



**Figure 10.20 Diegoun Prospects**



### Cinnamon

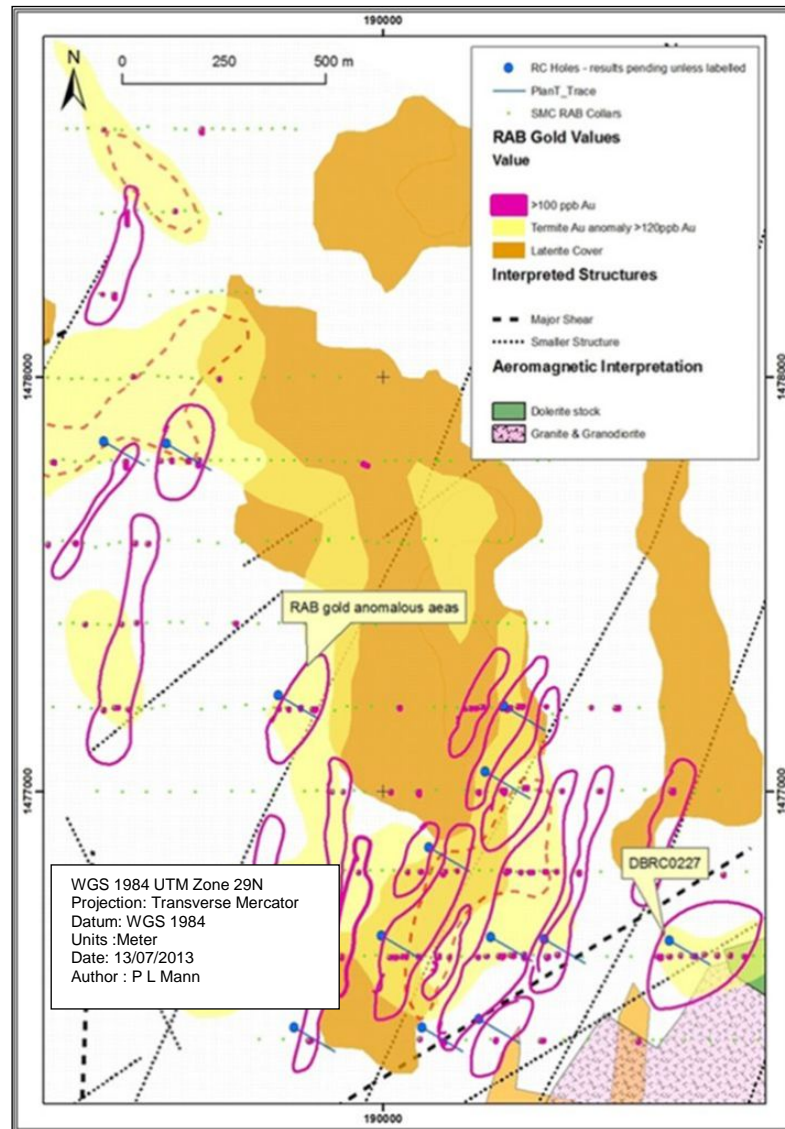
A 709 hole RAB drill programme, of 10,365 m, was completed on the northern portion of the Diegoun target area (approximately 28 km from the Sabodala mill). This includes 249 holes for 1,984 m, which forms part of a larger programme commenced late 2011 to complete a first pass RAB coverage on 200 m spaced lines over the structural corridor between Cinnamon and Jam. Results of interest are listed in Table 10.12.

The RAB results from the earlier programme define a series of north-northeast-trending bedrock gold anomalies with a strike length of up to 600 m – RC drill testing of these anomalies was undertaken in the first Quarter of 2012.



Figure 10.21 is a simplified plan of the geology, RAB anomalies and recent RC drilling.

**Figure 10.21 Simplified Geology, RAB Anomalies and Recent RC Drilling, Cinnamon Prospect**



**Table 10.12 Cinnamon Prospect RC Drill Results (intersections >1g/t Au)**

Cinnamon: RC Drilling						
RC intersections, >1.0 g/t Au with max 2m internal dilution						
Hole ID	UTM(29)X	UTM(29)Y	Azi	Dip	Downhole Depth (meters)	Intercept Values (downhole width @ g/t Au)
SKRC340	189587.00	1476633.00	120.00	-50.00	131.00	1m @ 1.21 g/t
SKRC341	189741.00	1477231.00	120.00	-50.00	103.00	1m @ 1.45 g/t
SKRC344	189996.00	1476650.00	120.00	-50.00	104.00	1m @ 2.10 g/t

## **Jam and Honey**

During 2011, the bedrock auriferous trends at Honey and Jam were then followed up with a programme of 52 RC holes for 8,639 m completed (31 holes at Jam for 5,116 m and 21 holes at Honey for 3,523 m). The RC holes targeted most of these trends on a southeast azimuth and on a 200 m to 600 m spacing. The mineralization at Honey is mostly related to narrow zones of quartz veining in metasediments.

The objectives of this drilling were to:

- Follow-up on selected mineralized zones identified from previous RC drilling. The first RC programme was oriented to test the dominant northeast structural grain.
- Test two zones which are associated with northwest trends.
- Drill at a high angle to the previous RC drilling to help establish the main orientation of the mineralized zones.

Additional RAB drilling on NE trending lines was also carried out to ensure NW trending features, evident in quartz vein and IP trends, are adequately covered. Previous RAB lines were extended to the south and to the west to ensure adequate coverage. A 248 m DD hole was also drilled on Jam.

In 2012 a follow-up programme was initiated at Jam where 355 RAB holes totaling 3,425 m, 15 RC holes totaling 2,923 m and 9 DD holes totaling 2,131 m were drilled. Results of interest are listed below in Tables 10.18, 10.19 and 10.20.

## **Diabougou Prospect**

At Diabougou MDL conducted a 109 hole, 2,252 m RAB drilling programme followed by a 17 hole, 1,775 m RC drilling programme and a 3 hole 323 DD drill programme to follow-up termite soil Au anomalies. No drilling has been conducted on this prospect since 2011.

## **KA, KB, KC, KD, KE JC Corridor and Zone ABC Prospects**

Drilling on the KA, KB, KC, KD, KE, JC Corridor and Zone ABC prospects included 3,446 RAB holes totalling 34,743 m, 8 RC holes totalling 1,196 m and 7 DD holes totalling 1,119 m.

The borehole locations and geology of the area is shown in Figure 10.22. A zone of Au mineralization in KB was identified. Results of interest are listed in Table 10.16.

**Table 10.13 Jam Prospect RC Drill Results (intersections >1g/t Au)**

Jam: RC Drilling						
RC intersections, >1.0 g/t Au with max 2m internal dilution						
Hole ID	UTM(29)X	UTM(29)Y	Azi	Dip	Downhole Depth (meters)	Intercept value (downhole width @ g/t Au)
SKRC183	188652.00	1473150.00	305.00	-55.00	18.00	1m @ 2.59 g/t
SKRC189	189302.00	1474249.00	60.00	-55.00	172.00	1m @ 1.42 g/t
SKRC190	188953.00	1473879.00	60.00	-55.00	118.00	1m @ 1.22 g/t
SKRC191	189364.00	1474055.00	60.00	-55.00	92.00	2m @ 1.05 g/t
SKRC192	189397.00	1473994.00	60.00	-55.00	49.00	2m @ 1.34 g/t
SKRC193	189475.00	1473853.00	95.00	-55.00	3.00	1m @ 3.99 g/t
SKRC194	189514.00	1473789.00	60.00	-55.00	60.00	1m @ 1.41 g/t
SKRC200	188657.00	1473164.00	115.00	-50.00	116.00	2m @ 1.17 g/t
					176.00	3m @ 1.70 g/t
SKRC203	188765.00	1473502.00	115.00	-50.00	136.00	2m @ 1.05 g/t
					142.00	3m @ 1.20 g/t
SKRC204	188880.00	1473470.00	115.00	-50.00	26.00	2m @ 18.89 g/t
SKRC206	189753.00	1473534.00	115.00	-50.00	166.00	2m @ 1.25 g/t
SKRC207	189834.00	1473507.00	115.00	-50.00	2.00	13m @ 1.65 g/t
SKRC208	189521.00	1473761.00	115.00	-50.00	56.00	1m @ 1.18 g/t
SKRC209	189742.00	1473761.00	115.00	-50.00	124.00	1m @ 1.09 g/t
SKRC212	189323.00	1473946.00	115.00	-50.00	147.00	4m @ 1.56 g/t
SKRC215	188440.00	1473930.00	115.00	-50.00	13.00	2m @ 1.15 g/t
					71.00	1m @ 4.41 g/t
SKRC216	188354.00	1473971.00	115.00	-50.00	13.00	4m @ 1.74 g/t
SKRC219	189290.00	1474346.00	115.00	-50.00	118.00	1m @ 1.62 g/t
SKRC220	189394.00	1474315.00	115.00	-50.00	113.00	1m @ 1.26 g/t
					121.00	1m @ 3.81 g/t
SKRC243	187155.00	1474001.00	115.00	-50.00	71.00	3m @ 1.10 g/t
SKRC245	189340.00	1474556.00	115.00	-50.00	122.00	3m @ 1.01 g/t
SKRC246	189059.00	1474561.00	115.00	-50.00	28.00	3m @ 1.44 g/t
SKRC251	188818.00	1474155.00	115.00	-50.00	113.00	1m @ 1.11 g/t
SKRC345	188649.00	1473571.00	60.00	-70.00	132.00	1m @ 1.00 g/t
SKRC346	188800.00	1473421.00	60.00	-70.00	150.00	2m @ 1.78 g/t

**Table 10.14 Jam Prospect DD Drill Results (intersections ≥1g/t Au)**

Jam: DDH Drilling						
DDH intersections, ≥1.0 g/t Au with max 2m internal dilution						
Hole ID	UTM(29)X	UTM(29)Y	Azi	Dip	Downhole Depth (meters)	Intersept Value (downhole width @ g/t Au)
SKDD109	188702.00	1473498.00	60.00	-70.00	123.00	4m @ 2.39 g/t
					156.00	1m @ 1.00 g/t
					296.00	2m @ 2.46 g/t
SKDD114	189316.00	1474047.00	60.00	-55.00	10.00	1m @ 1.36 g/t
SKDD115	189490.00	1473753.00	60.00	-55.00	86.00	2m @ 1.96 g/t

**Table 10.15 Honey Prospect RC Drill Results (intersections >1g/t Au)**

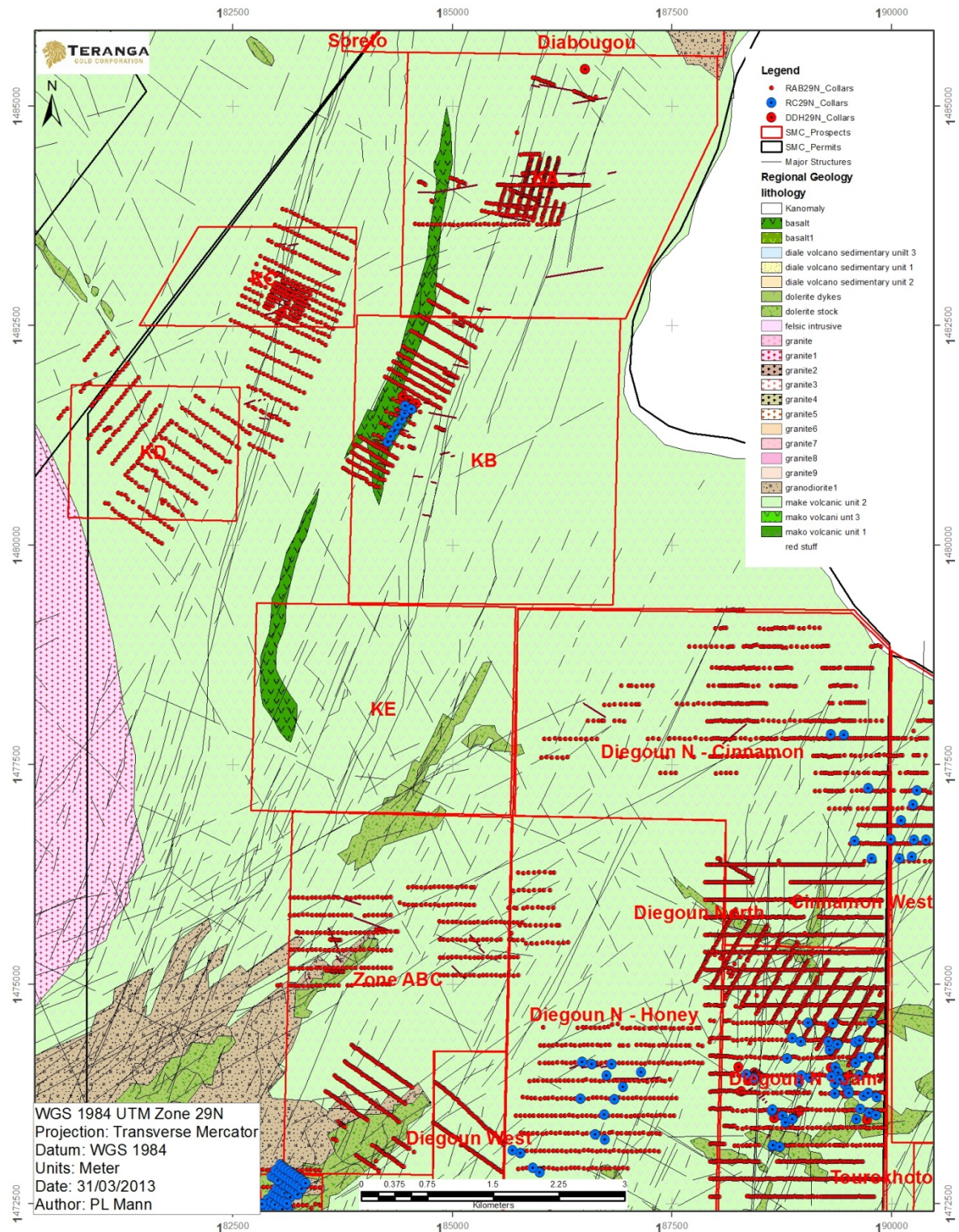
Honey: RC Drilling						
RC intersections, >1.0 g/t Au with max 2m internal dilution						
Hole ID	UTM(29)X	UTM(29)Y	Azi	Dip	Downhole Depth (meters)	Intercept value (downhole width @ g/t Au)
SKRC222	186593.00	1474089.00	115.00	-50.00	69.00	1m @ 1.04 g/t
SKRC226	186948.00	1473829.00	115.00	-50.00	182.00	1m @ 9.64 g/t
SKRC227	186734.00	1473512.00	115.00	-50.00	23.00	2m @ 1.01 g/t
					32.00	1m @ 2.67 g/t
					70.00	5m @ 2.23 g/t
SKRC228	186631.00	1473291.00	115.00	-50.00	54.00	1m @ 1.41 g/t
					111.00	1m @ 1.12 g/t
SKRC232	185998.00	1472853.00	115.00	-50.00	4.00	1m @ 3.72 g/t
SKRC234	186124.00	1472642.00	115.00	-50.00	4.00	4m @ 2.40 g/t
					23.00	1m @ 1.19 g/t
SKRC235	186033.00	1472668.00	115.00	-50.00	81.00	1m @ 2.26 g/t
SKRC240	186849.00	1473689.00	115.00	-50.00	46.00	1m @ 1.34 g/t
SKRC241	186465.00	1473694.00	115.00	-50.00	35.00	2m @ 2.08 g/t

**Table 10.16 KB Prospect RC Drill Results (intersections >1g/t Au)**

KB: RC DRILLING						
RC intersections, >1.0 g/t Au with max 2m internal dilution						
Hole ID	UTM(29)X	UTM(29)Y	Azi	Dip	Downhole Depth (meters)	Intercept value (downhole width @ g/t Au)
SKRC195	184268.00	1481177.00	300.00	-55.00	16.00	1m @ 2.01 g/t
SKRC336	184460.00	1481504.00	300.00	-55.00	3.00	1m @ 1.76 g/t
					122.00	1m @ 1.02 g/t
SKRC337	184471.00	1481588.00	300.00	-55.00	8.00	1m @ 1.56 g/t



**Figure 10.22 KA, KB, KC, KD, KE JC Corridor and Zone ABC Prospect Geology and Borehole Locations**





## Heremakono Permit

### Soreto Prospect

Drilling on the Soreto Prospect initially entailed a limited DD drilling programme conducted by Axmin, consisting of two holes totaling 155 m. In 2013 SMC undertook a reconnaissance DD drilling programme of 6 DD holes totaling 826 m over the termite geochemical soil gold anomaly shown in Figure 10.23 and Figure 10.24. Notable Au intercept values are listed in Table 10.17 below.

**Figure 10.23 Soreto and Diabougou Geology and Termite Soil Au Anomalies**

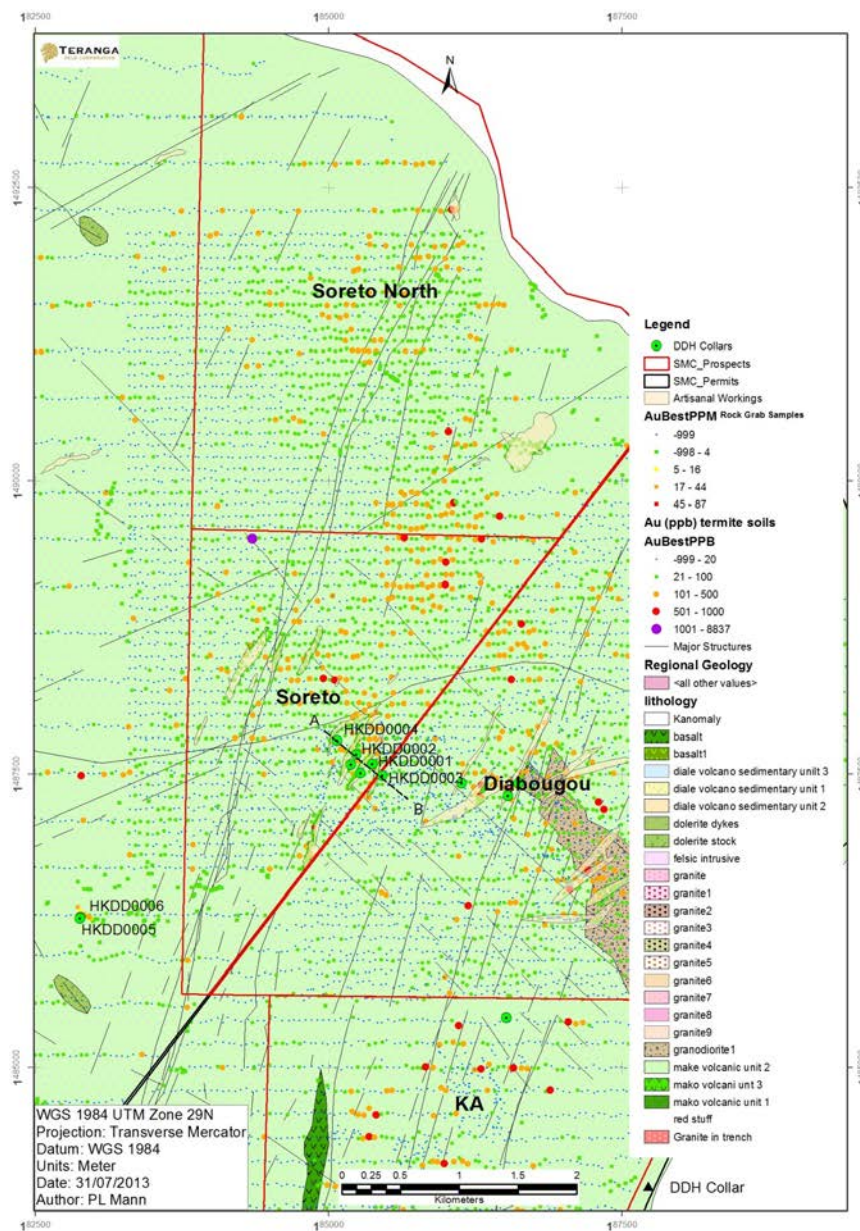


Figure 10.24 Soreto NW-SE Section (A-B) through DD Boreholes HKDD0001- 4

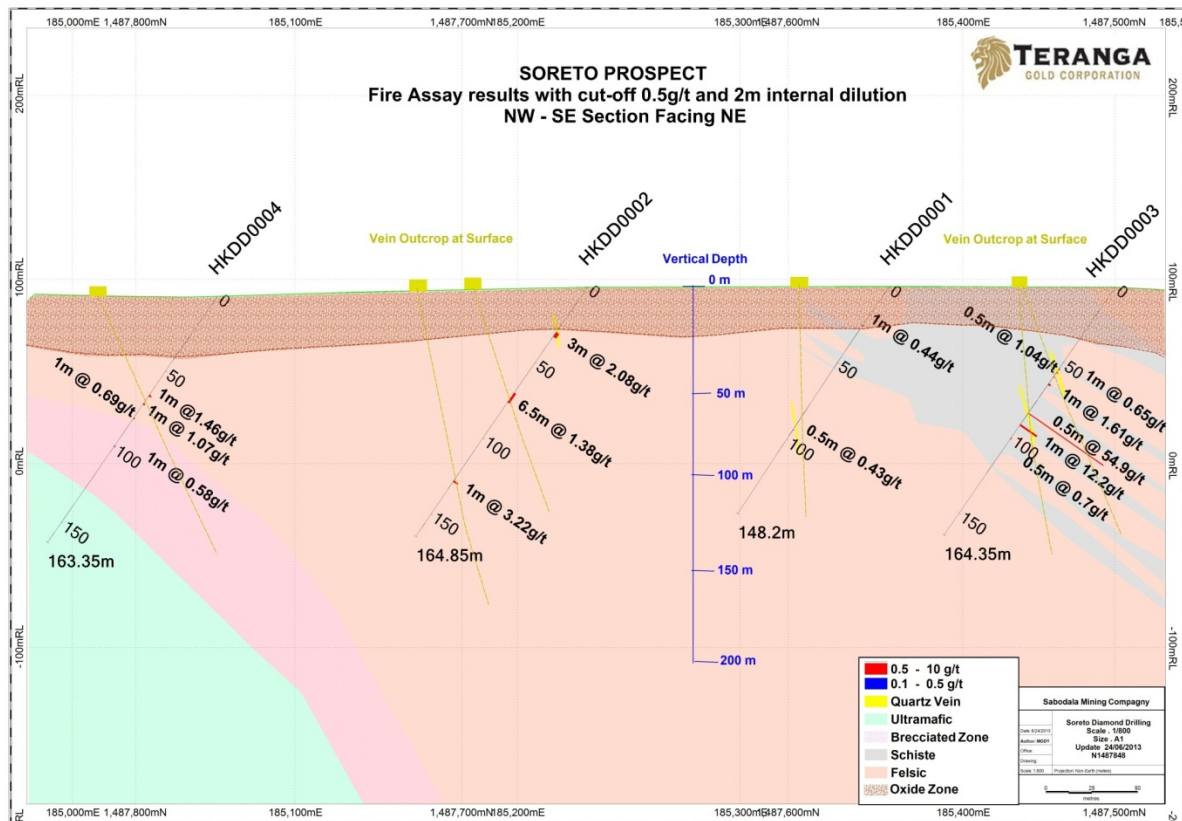


Table 10.17 Soreto Prospect DD Drill Results (intersections  $\geq 1$ g/t Au)

Soreto: DDH Drilling						
DDH intersections, $\geq 1.0$ g/t Au with max 2m internal dilution						
Hole ID	UTM(29)X	UTM(29)Y	Azi	Dip	Downhole Depth (meters)	Intercept Values (downhole depth @ g/t Au)
HKDD0001	185373.00	1487583.00	-55.00	305.00	93.00	1m @ 1.00 g/t
					30.00	3m @ 2.01 g/t
HKDD0002	185233.60	1487666.00	-55.00	305.00	70.00	6.5m @ 1.38 g/t
					128.00	1m @ 3.20 g/t
HKDD0003	185459.40	1487487.00	-55.00	305.00	1.00	1m @ 1.77 g/t
					56.50	0.5m @ 1.04 g/t
					64.00	1m @ 1.61 g/t
					83.50	0.5m @ 21.20 g/t
HKDD0004	185073.90	1487786.00	-55.00	305.00	91.00	1m @ 10g/t
					65.50	1m @ 1.46 g/t
					71.00	1m @ 1.07 g/t

## **11 SAMPLE PREPARATION ANALYSES AND SECURITY**

Sections 11.1 through 11.3 are summaries of the sample preparation methodology and analyses followed from 2005 to 2011, as described in detail in the October 2010 NI 43-101 Technical Report. These sections are largely taken from the December 2011 Technical Report.

No part of sample preparation other than bagging of samples for delivery to the sample preparation laboratory was conducted by an employee, officer, director or associate of the issuer.

### **11.1 2005 to 2008**

Samples were analyzed at the SGS laboratory in Kayes, Mali. The Kayes laboratory is not certified to the ISO/IEC 17025 standard however, the internal laboratory QA/QC and data quality systems are identical to those followed by SGS ISO/IEC accredited laboratories in Toronto, Johannesburg, and Perth, as stated by SGS (Toronto).

All Mine Lease core, RC and RAB samples were dried and crushed to minus 2 mm. The jaw crusher was cleaned using an air gun and visually inspected. Barren quartz was crushed between samples for additional cleaning as required. Crushed samples were split using a Jones riffle to 200 g. The 200 g sample was pulverized with a ring and puck pulverizer to 85% minus 75 µm (200 mesh).

Sample pulps were analyzed for gold by fire assay with an atomic absorption finish using 50 g samples (SGS Package FAA515). The detection limit for this package is 0.005 g/t Au (5 ppb).

### **11.2 2009 to 2011**

Since commencing production at the Sabodala Mine in 2009, samples generated from the mill, mine and exploration drilling (mine lease and regional) were processed at the on-site laboratory operated by SGS. The mine site SGS laboratory is not certified to standard ISO/IEC accreditation.

Samples received by the lab were transferred into stainless steel trays, and coded with sample system identification numbers. Samples were dried at 105 °C for 8 hours.

Dried samples were crushed in the jaw crusher to minus 2 mm. Compressed air was used to clean the crusher and splitter between samples, with crushing of barren quartz for additional cleaning as required. Crushed samples were pulverized to 95% minus 75 µm.

Sample pulps were analyzed for gold using an aqua regia digestion followed by AAS (SGS package ARE155). Samples returning results higher than 0.2 g/t Au were sent for fire assay analysis at SGS Kayes, Mali.

### **11.3 Quality Assurance/Quality Control Program**

In addition to the standard SGS internal quality control measures employed, a blind QA/QC programme was established, consisting of geological standards, blanks and duplicate

samples inserted into the sample stream at regular intervals. Details of the Gora QA/QC programme from April 2010 to September 2011 are documented in an internal Teranga report, dated September 2011.

#### **11.3.1 Blanks**

The regular submission of blank material is used to assess potential contamination during sample preparation and to identify sample numbering errors. The QA/QC protocol called for blanks to be inserted in the sample stream at a rate of approximately 1 in 20 samples. Blanks were originally prepared by RSG Global until 2008, and then prepared by SMC/SGO until 2011. SMC/SGO used barren granite as blank material collected from surface outcrops near Saraya. Granite material was originally assayed for gold at different labs by atomic absorption and fire assay, to ensure that the samples were barren of gold prior to use. All test results returned gold values below the detection limit.

A total of 9,169 blank samples were submitted. The pass/fail limit was based on  $\pm 0.015$  g/t Au (3 times the detection limit of 0.005 g/t Au). Results returned 97.3% of the blanks within the maximum acceptance level and 2.7% of the blanks outside the failure limit.

#### **11.3.2 Duplicates**

Duplicate reject samples were submitted at a rate of one duplicate per batch of 20 samples throughout the project. Most drillholes are a combination of RC drilling and diamond drilling. SMC treats the duplicate result data for RC and diamond drilling collectively.

RC duplicate samples were generated by taking a second split, approximately 2 kg to 3 kg of the bulk reject (20 kg to 30 kg) through the three-tier riffle splitter in the field. Drill core duplicate reject samples were generated by riffle splitting the minus 6 mm crushed sample at the assay laboratory.

#### **11.3.3 Certified Reference Material (Standards)**

A total of 35 certified reference material samples (CRMs) supplied by Geostats Pty. Ltd and Rocklabs Ltd. were utilized. The more recent protocols are limited to 15 standards sourced from Geostats Pty Ltd. The QA/QC protocol called for blanks to be inserted in the sample stream at a rate of approximately 1 in 40 samples.

Specific pass/fail criteria were determined from the standard deviation provided for the CRMs. The conventional approach to setting acceptance limits is to use the mean assay  $\pm 2$  standard deviations as a warning limit and  $\pm 3$  standard deviations as a failure limit.

As noted in previous reports, results of the standard reference sample programme indicated a slight problem with the standard sample insertion procedure and monitoring protocols. The insertion of standards has since been centralized to one facility where tighter monitoring and controls have eliminated this problem. Although a portion of the results that exceed expected values could be caused by mislabelling of the standards, a portion cannot be explained on that basis. Failed batches from the Gora drilling have been re-analyzed at OMAC Laboratories in Ireland.



## **11.4 January 2012 to April 2013**

Teranga has established standard operating procedures for sample preparation, analysis and security of RAB, RC and diamond drill core samples. The following are summaries of Teranga's documented procedures.

### **11.4.1 Sample Preparation**

The Project or Exploration Geologist is responsible for all sampling activities including sampling, sample bagging, numbering and tagging, sorting, transportation, security, completion of the analytical submission sheets and QA/QC programme.

The core storage compound at the Sabodala Mine and the exploration camps are protected by high level security fences and are under 24 hour surveillance by security personnel.

One sample is taken for each one metre interval drilled by RC or for each two metre interval drilled by RAB. Jones riffle splitters are used at the drill site to obtain a representative sub-sample. Drill core sampling intervals are defined then cut in half with a diamond saw along the core length. Half core is sampled over approximate one metre lengths or based on lithology intervals. Preparation duplicate samples (rejects) were submitted for additional check assaying as required.

### **11.4.2 Analytical Procedures**

All samples were processed initially at the on-site SGS laboratory for gold analysis following similar analytical procedures (SGS package ARE155) listed in Section 11.2. Samples returning results higher than 0.2 g/t Au were sent for additional fire assay analysis at SGS Kayes, Mali (SGS Package FAA515).

### **11.4.3 Quality Assurance/Quality Control Program**

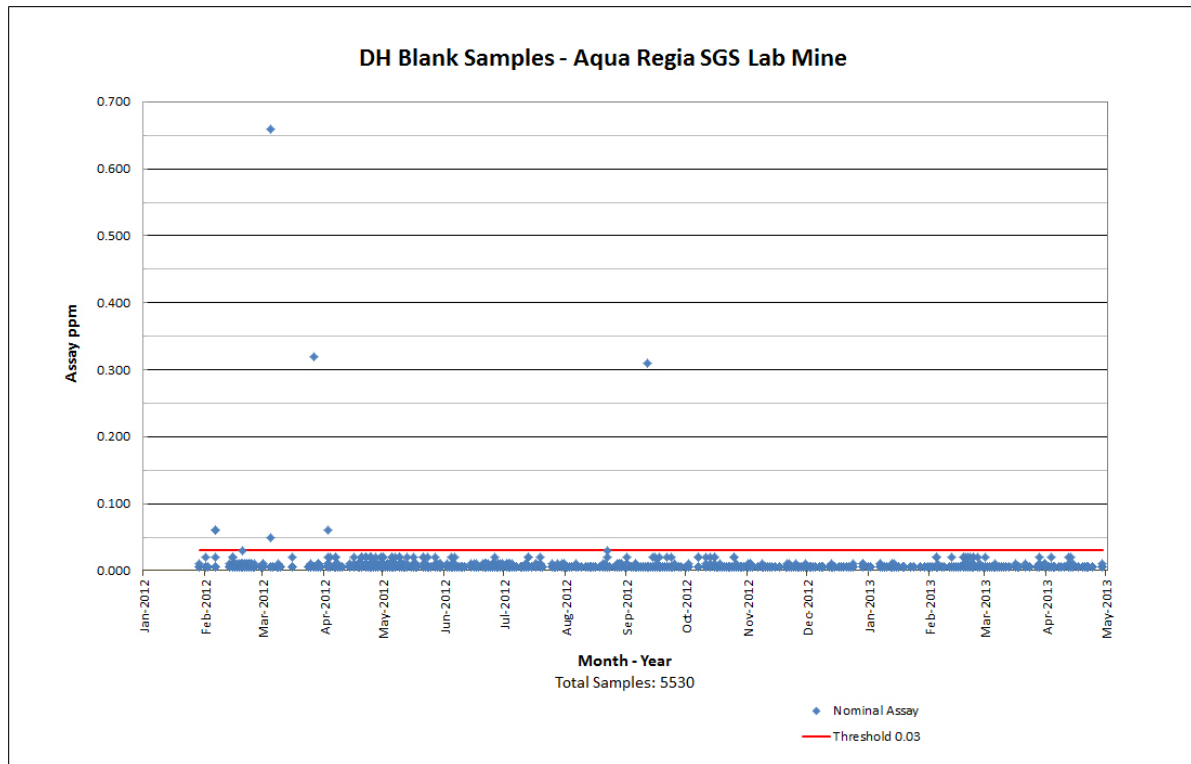
Teranga's QA/QC programme conducted for the Mine Lease exploration drilling programme from January 2012 to April 2013 is summarized in the following sections. Results from the QA/QC samples submitted to the SGS mine site lab (atomic absorption method) are discussed.

#### **Blanks**

An assay result was considered a failure if it returned a value greater than five times the detection limit of the assay method. Blanks were inserted into the sample stream at a rate of approximately 1 in 20 samples. Teranga submitted a total of 5,530 blank samples of which 7 were failures (<0.2%). Results indicate minimal evidence of contamination, drift or tampering. The results of the geological blanks are illustrated in Figure 11.1.



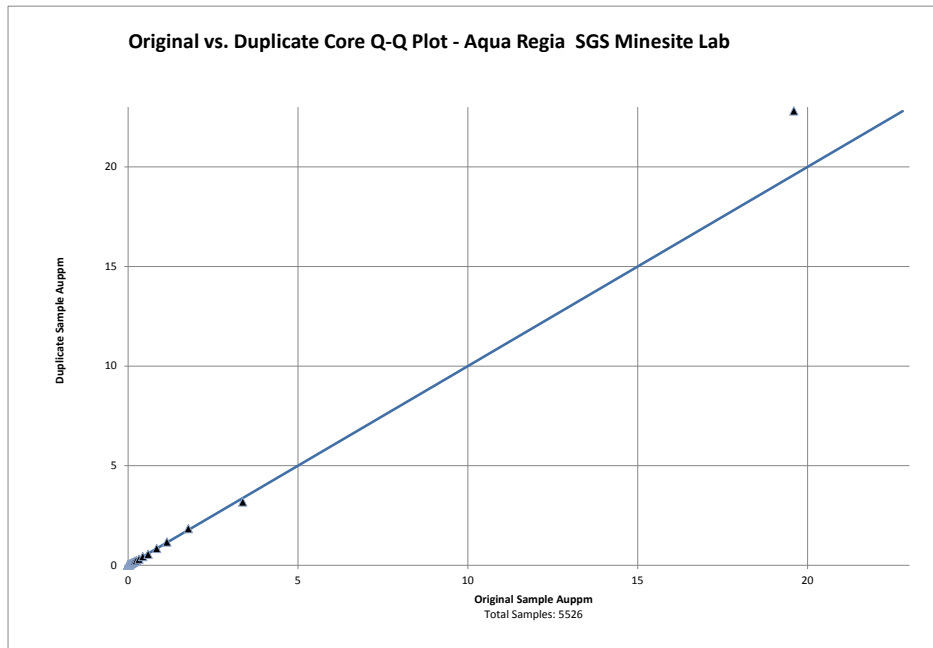
**Figure 11.1 Geological Blank Assays**



### Duplicates

Preparation duplicates were generated from the remaining crushed reject sample and submitted for comparison against the original assay result. Teranga submitted 5,526 preparation duplicates for analysis. Results show good correlation between the original and duplicate core gold assays. Results are presented in Figure 11.2.

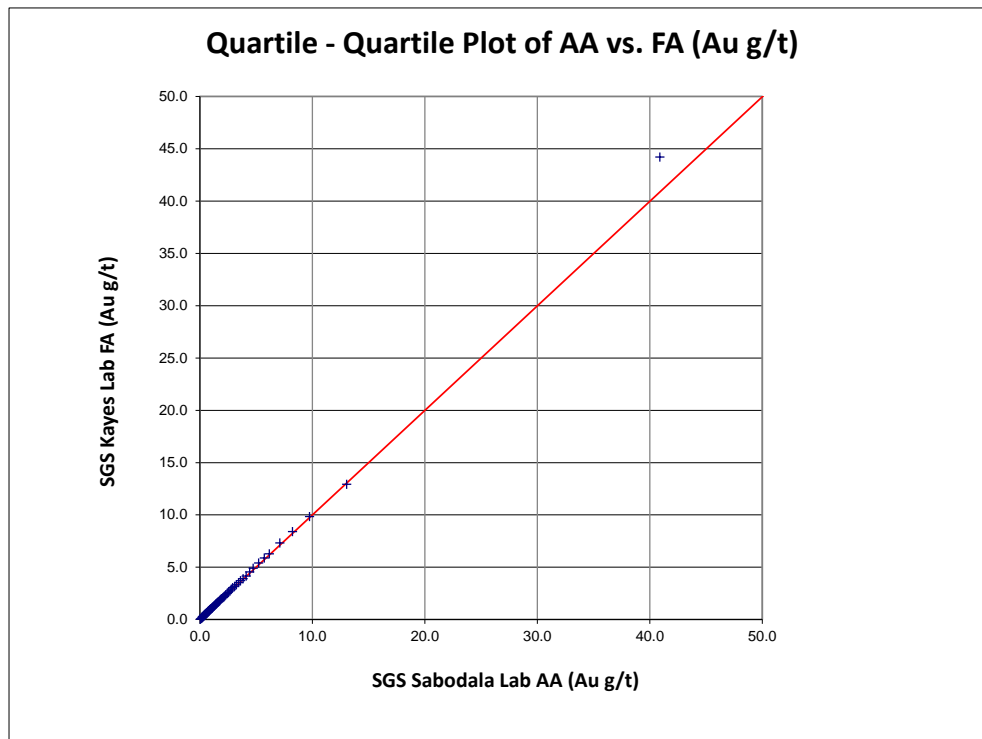
**Figure 11.2 Core Reassay – Original vs. Duplicate**



### Check Assay Programme

Teranga sent 3,578 pulp samples originally assayed by AA at the SGS mine site lab to SGS Kayes for additional fire assaying. Samples returning greater than 0.2 g/t Au by AA were sent for FA. Original AA results were replaced with FA results in the final database. Comparative results show adequate correlation and are presented in Figure 11.3.

**Figure 11.3 AA vs. FA Quartile-Quartile Plot**



#### **Certified Reference Material (Standards)**

Teranga acquired thirteen CRMs from Geostats Pty. Ltd. and three CRMs from ORE Research & Exploration Pty. Ltd., which were inserted into the sample stream at a rate of 1 in 20 samples. The expected values and standard deviations (SD) for the various CRMs are listed in Table 11.1. The two failures can be attributed to the insertion of a different standard. Results for the other fourteen standards are within acceptable limits. The certified reference sample grades cover the range of expected drilling results and are considered appropriate for use in Teranga's QA/QC programme.

**Table 11.1 Expected Values and Ranges of CRMs**

Source	Standard	Au g/t	S. D.	Number of assays	Number of failures	% Failures	Lab
Geostats	G302-10	0.160	0.030	478	0	0.0	SGS Mine Laboratory
ORE	Oreas 501	0.192	0.016	1237	1	0.1	SGS Mine Laboratory
Geostats	G305-2	0.300	0.050	14	0	0.0	SGS Mine Laboratory
Geostats	G909-10	0.530	0.070	46	0	0.0	SGS Mine Laboratory
ORE	Oreas503	0.658	0.046	1285	0	0.0	SGS Mine Laboratory
Geostats	G901-9	0.660	0.100	5	0	0.0	SGS Mine Laboratory
Geostats	G908-4	0.930	0.060	456	1	0.2	SGS Mine Laboratory
Geostats	910-10	0.950	0.060	43	0	0.0	SGS Mine Laboratory
ORE	Oreas504	1.470	0.070	1327	0	0.0	SGS Mine Laboratory
Geostats	G901-7	1.530	0.110	3	0	0.0	SGS Mine Laboratory
Geostats	G311-8	1.540	0.130	470	0	0.0	SGS Mine Laboratory
Geostats	G308-8	2.410	0.130	25	0	0.0	SGS Mine Laboratory
Geostats	G307-5	4.840	0.250	50	0	0.0	SGS Mine Laboratory
Geostats	G397-2	4.330	0.270	27	0	0.0	SGS Mine Laboratory
Geostats	G905-10	6.690	0.250	19	0	0.0	SGS Mine Laboratory
Geostats	G908-8	9.410	0.450	24	0	0.0	SGS Mine Laboratory

The following graphs in Figure 11.4 through Figure 11.19 illustrate the gold assay results for the CRMs.

**Figure 11.4 Standard G302-10**

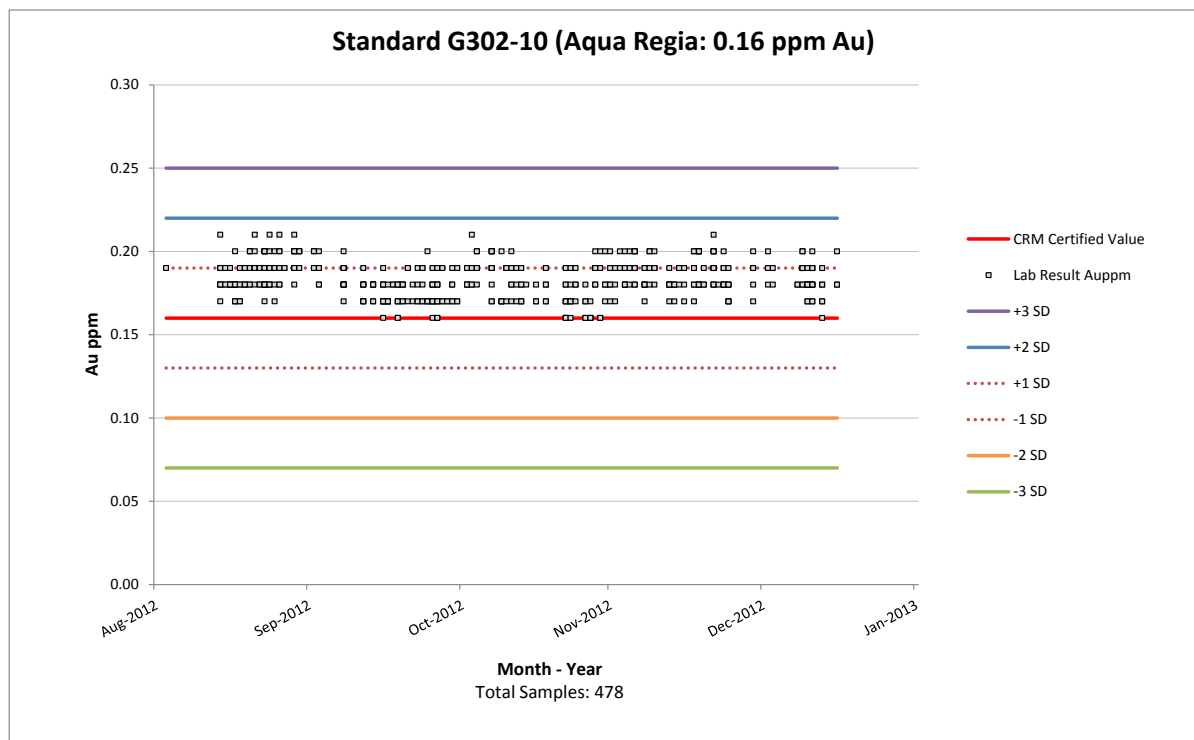


Figure 11.5 Standard OREAS 501

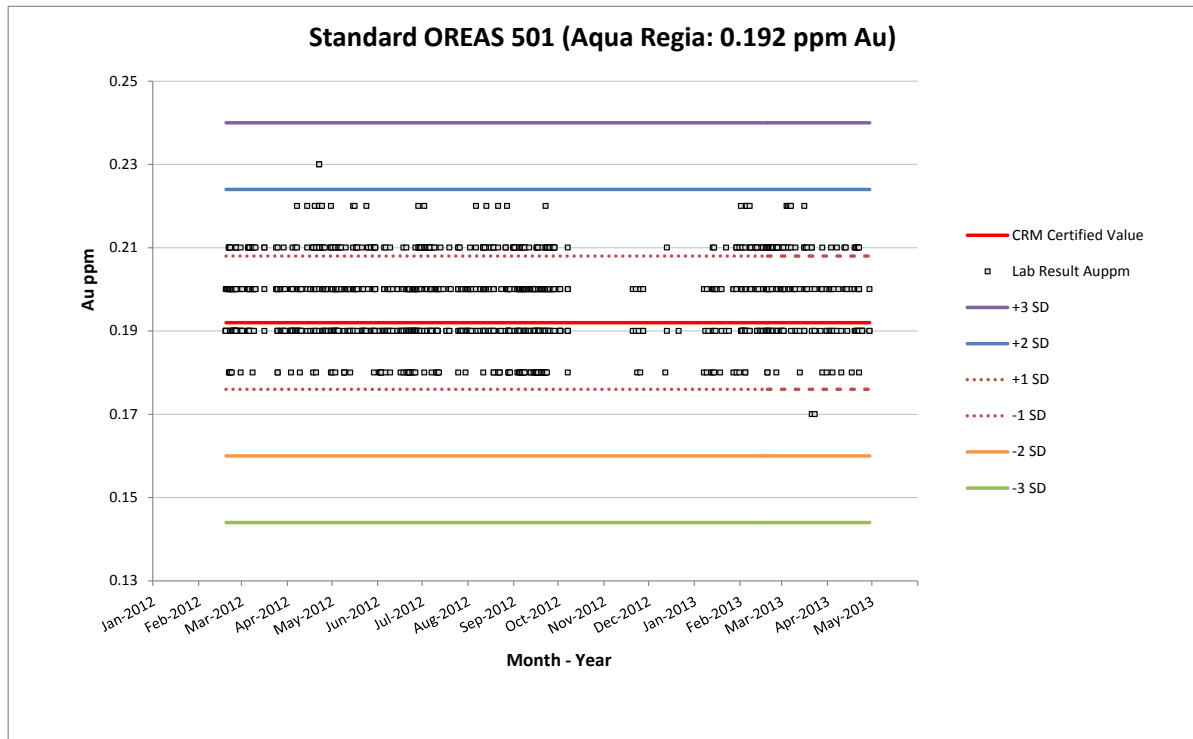


Figure 11.6 Standard G305-2

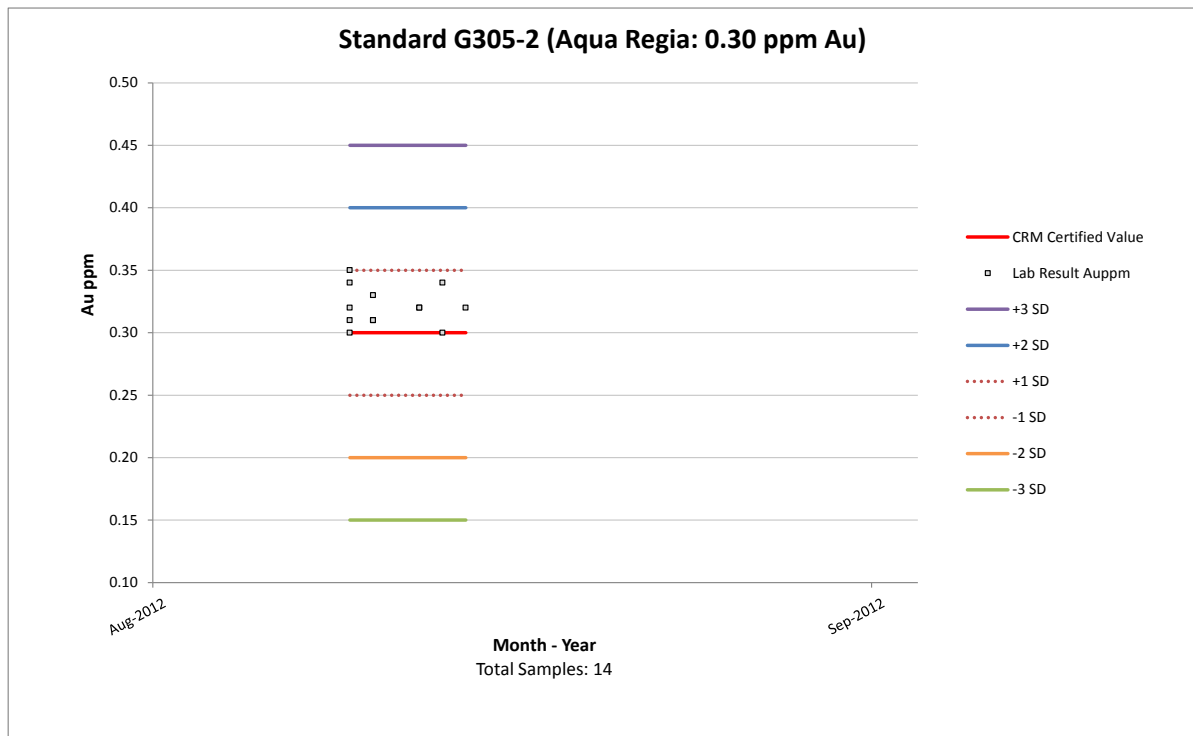




Figure 11.7 Standard G909-10

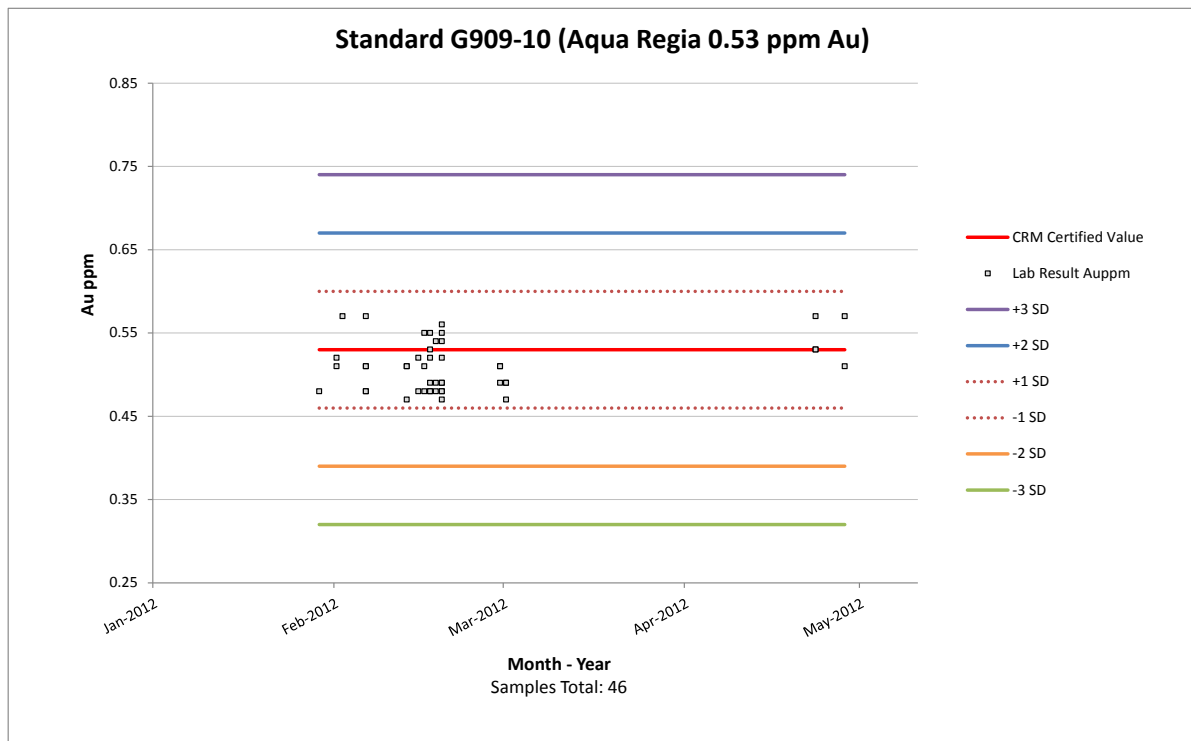
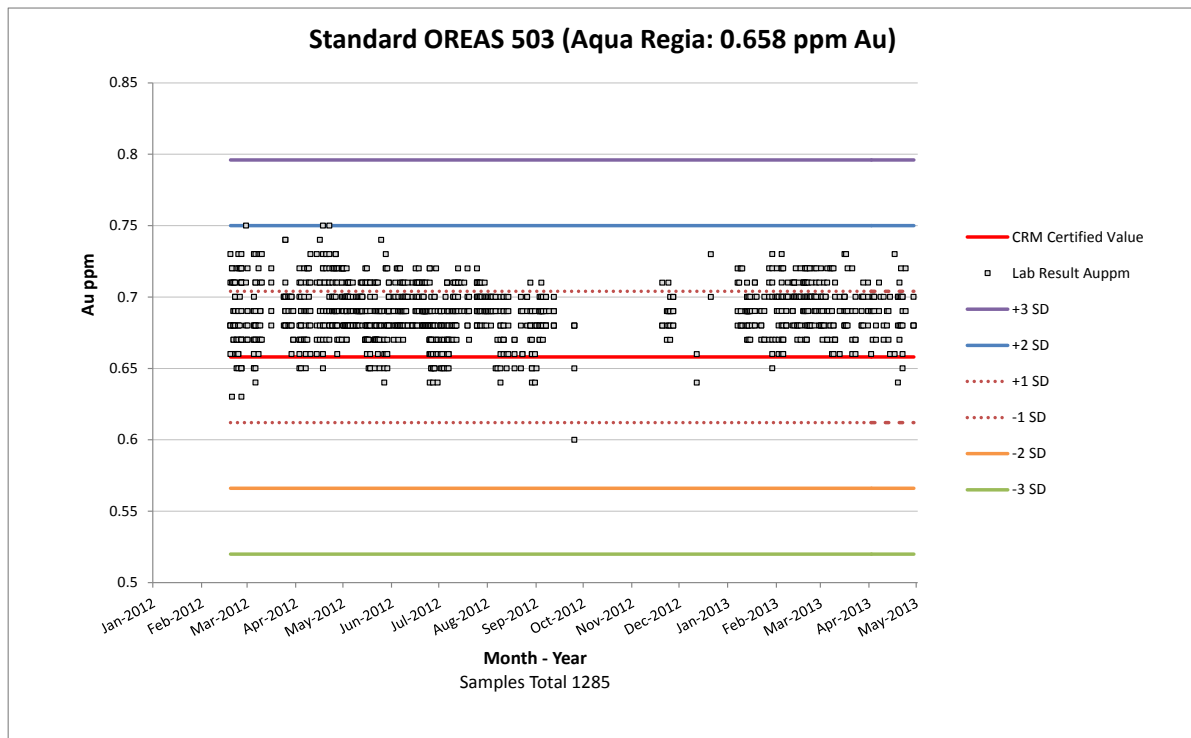
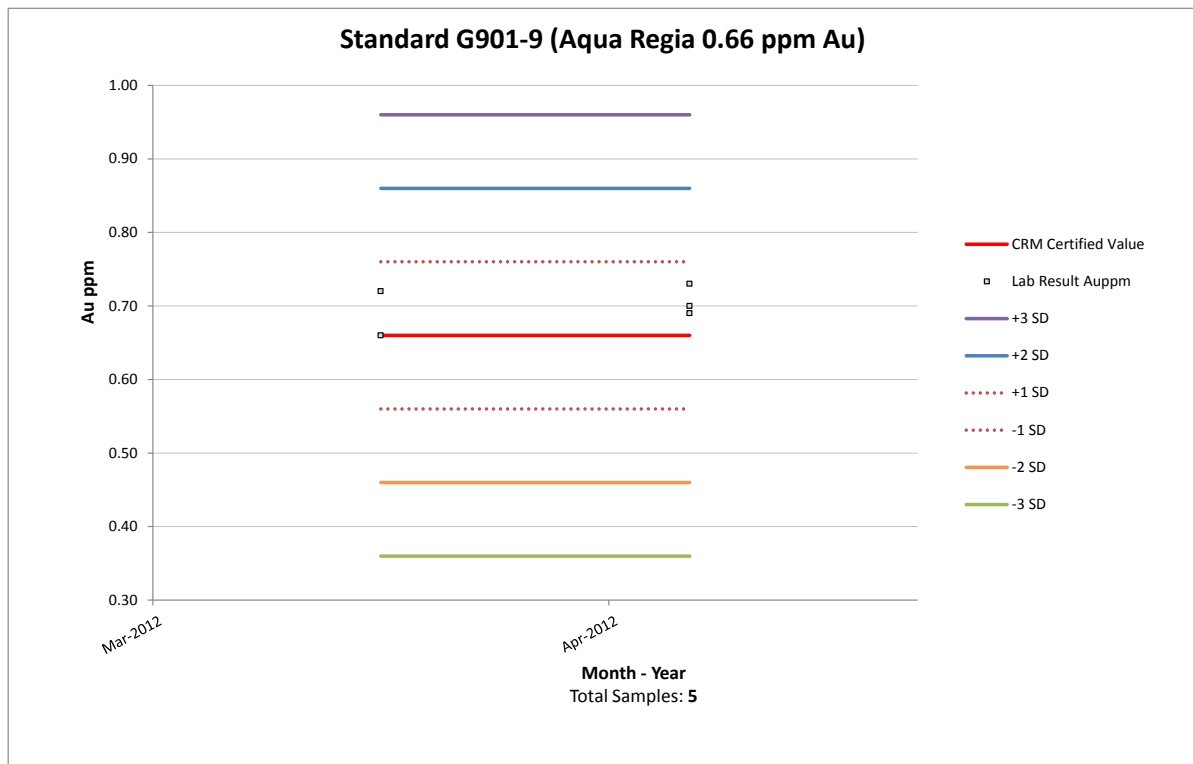


Figure 11.8 Standard OREAS 503



**Figure 11.9 Standard G901-9**



**Figure 11.10 Standard G908-4**

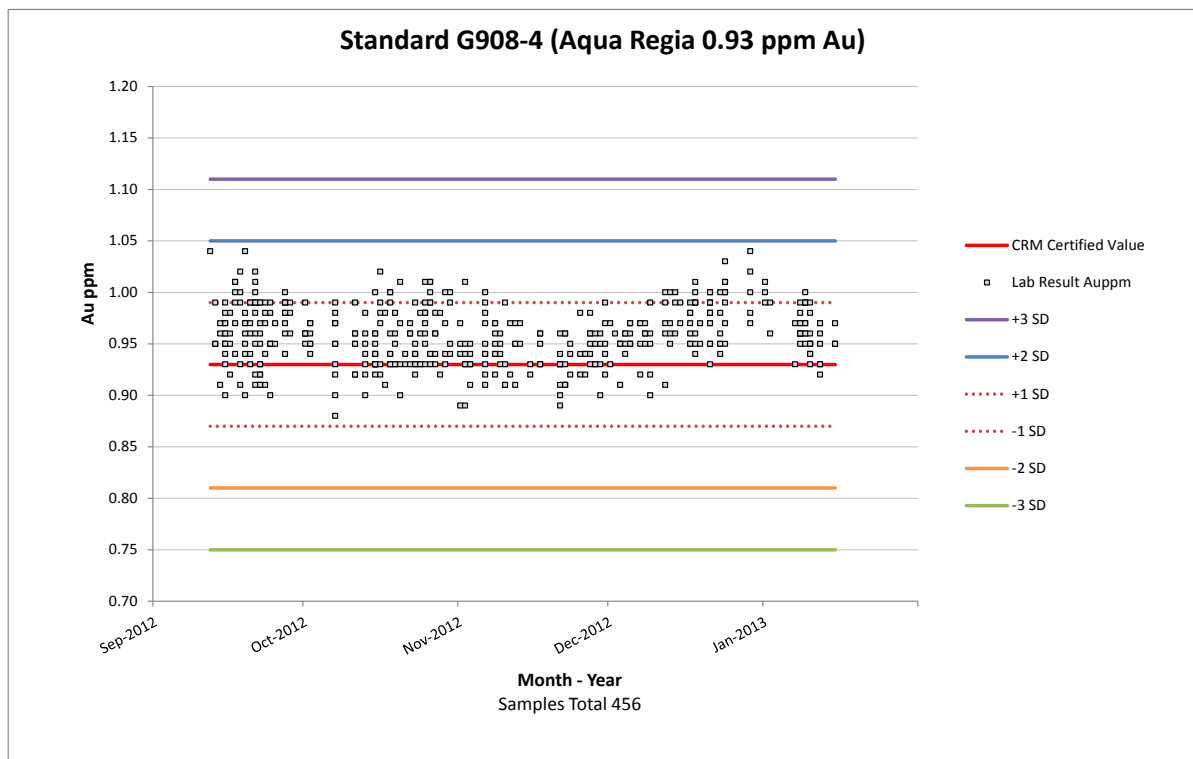


Figure 11.11 Standard G910-10

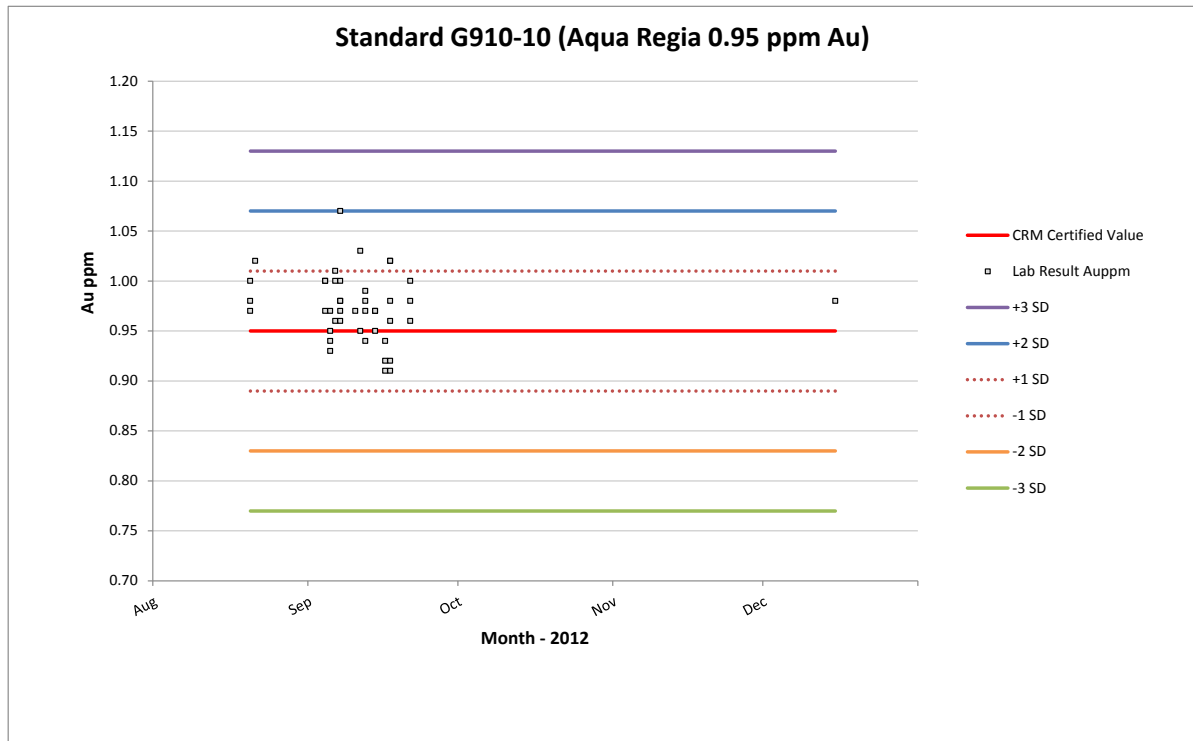


Figure 11.12 Standard OREAS 504

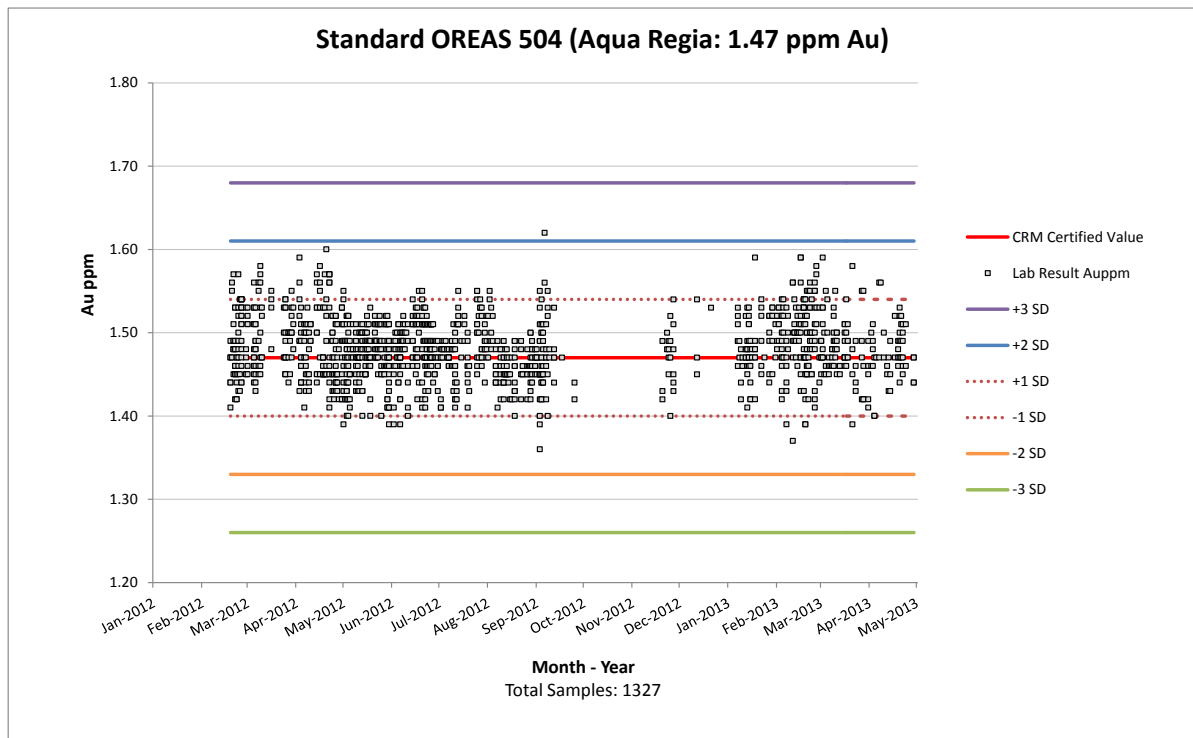


Figure 11.13 Standard G901-7

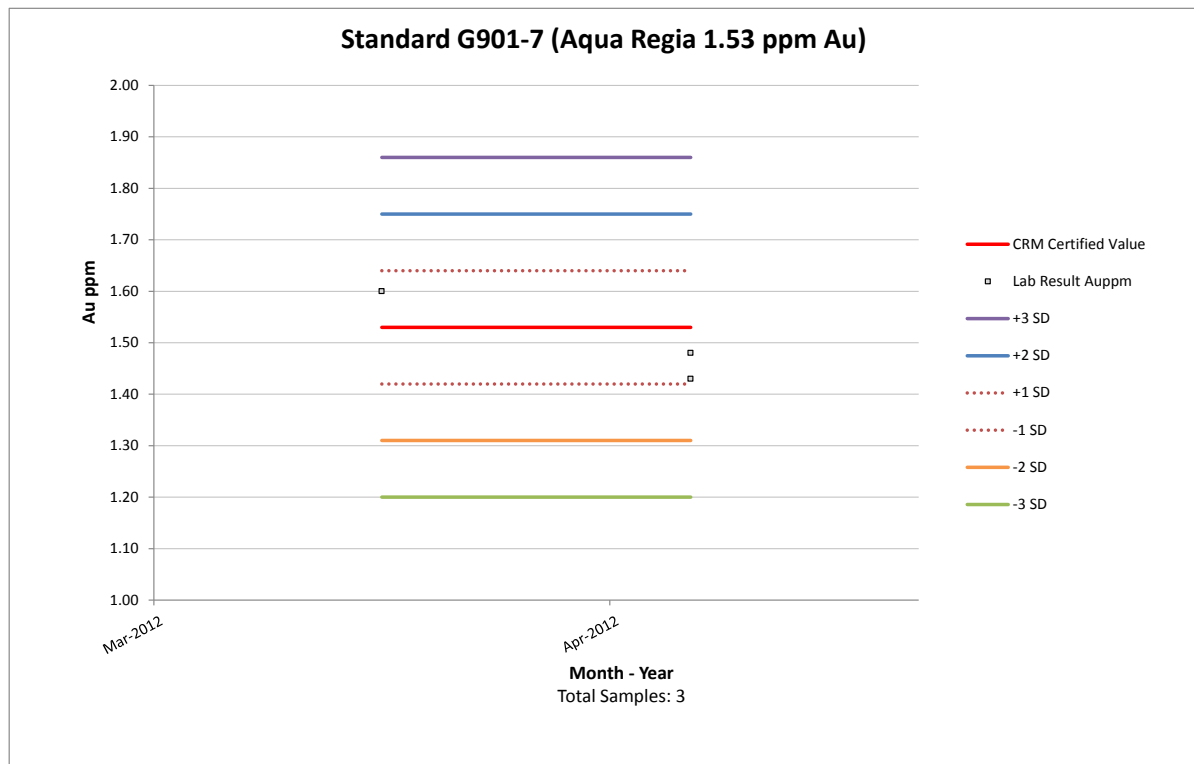


Figure 11.14 Standard G311-8

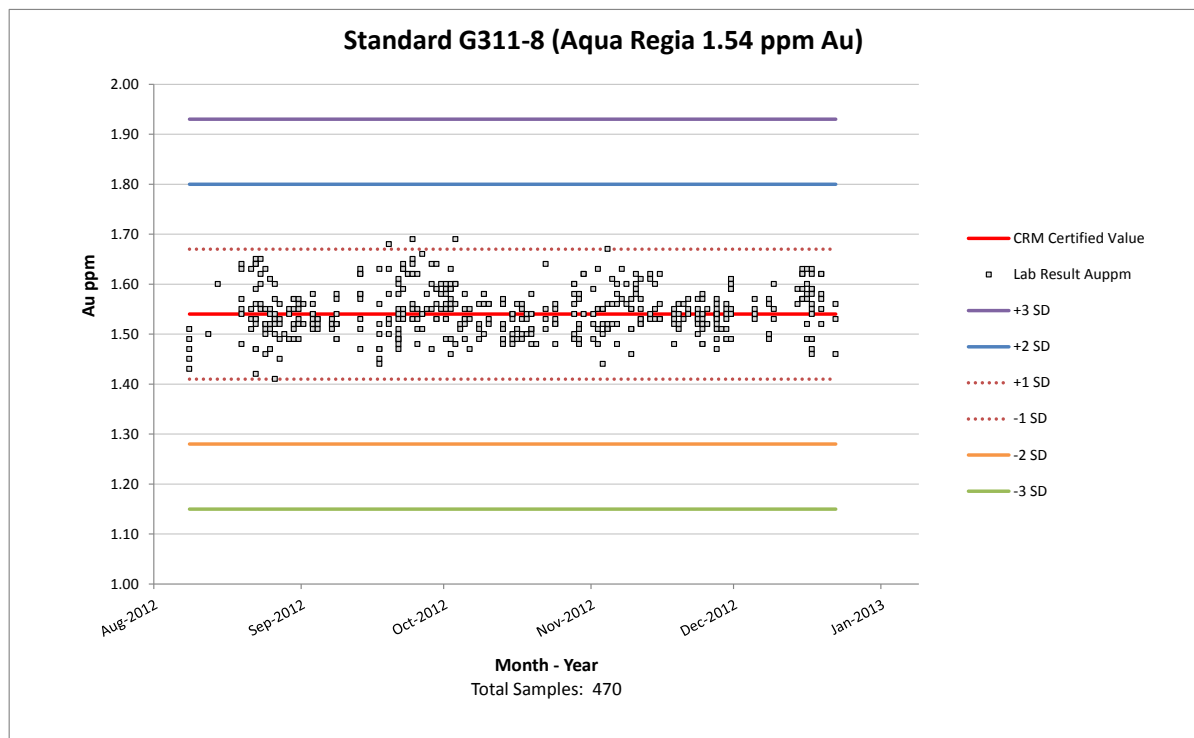


Figure 11.15 Standard G308-8

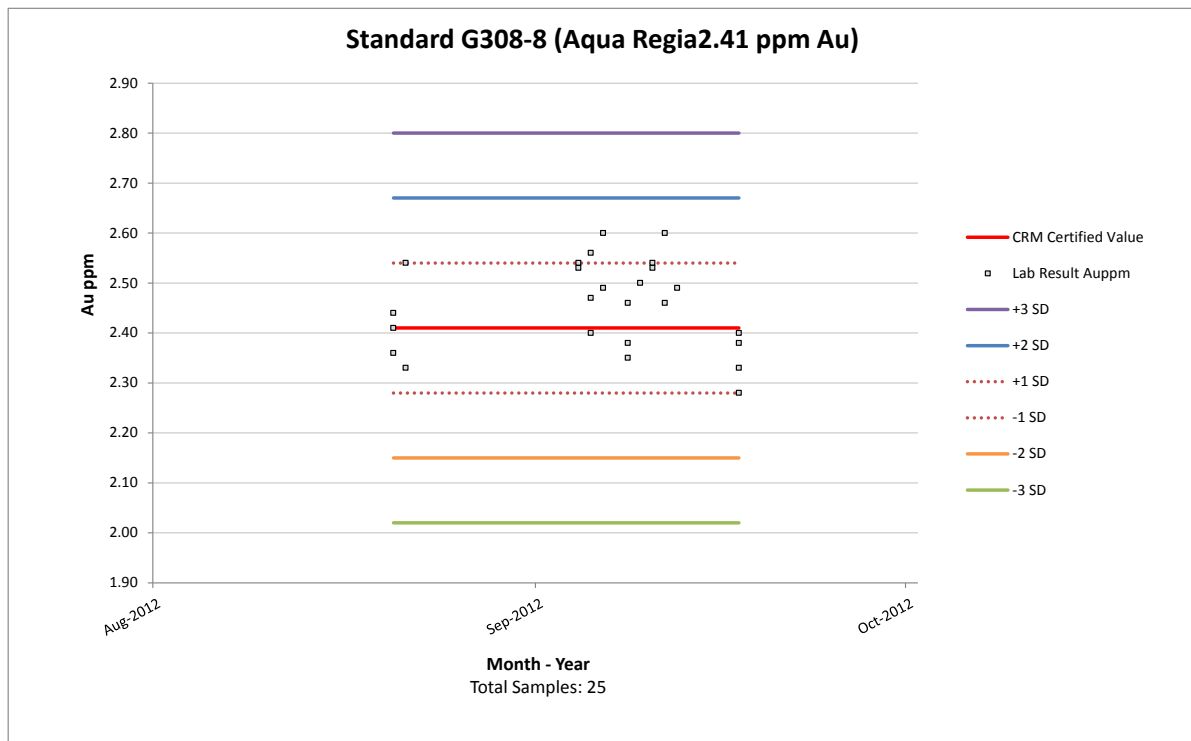


Figure 11.16 Standard G307-5

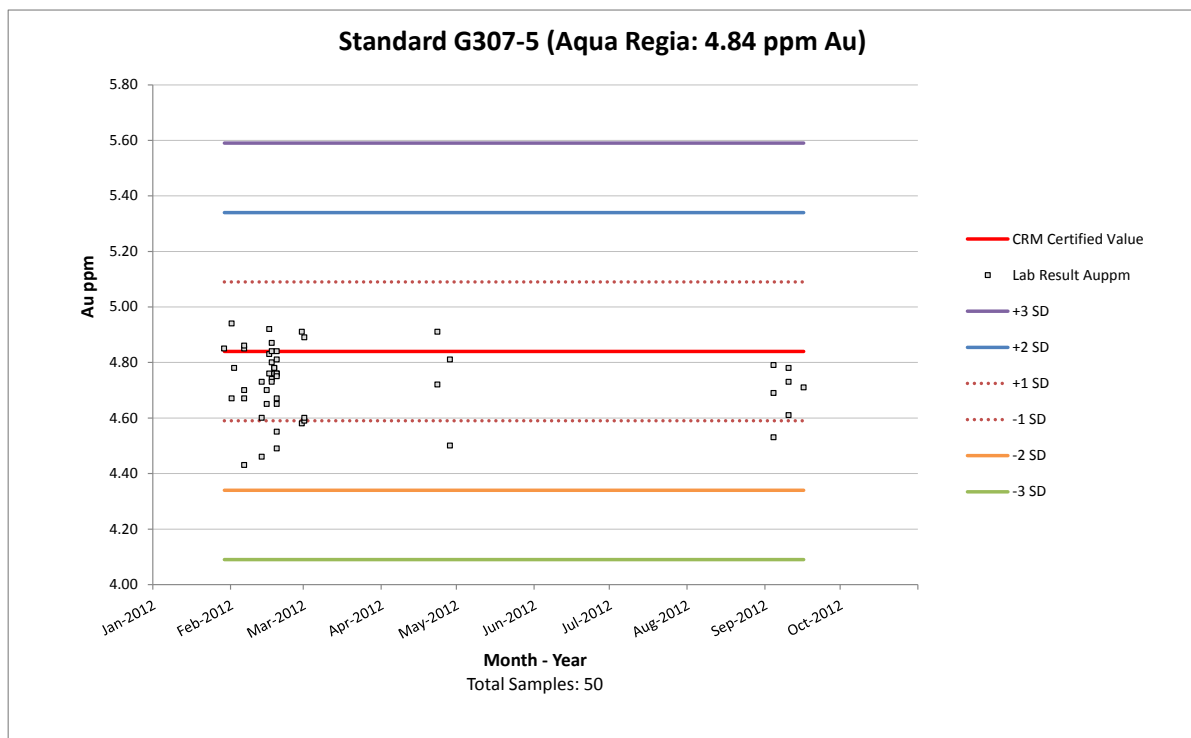




Figure 11.17 Standard G397-2

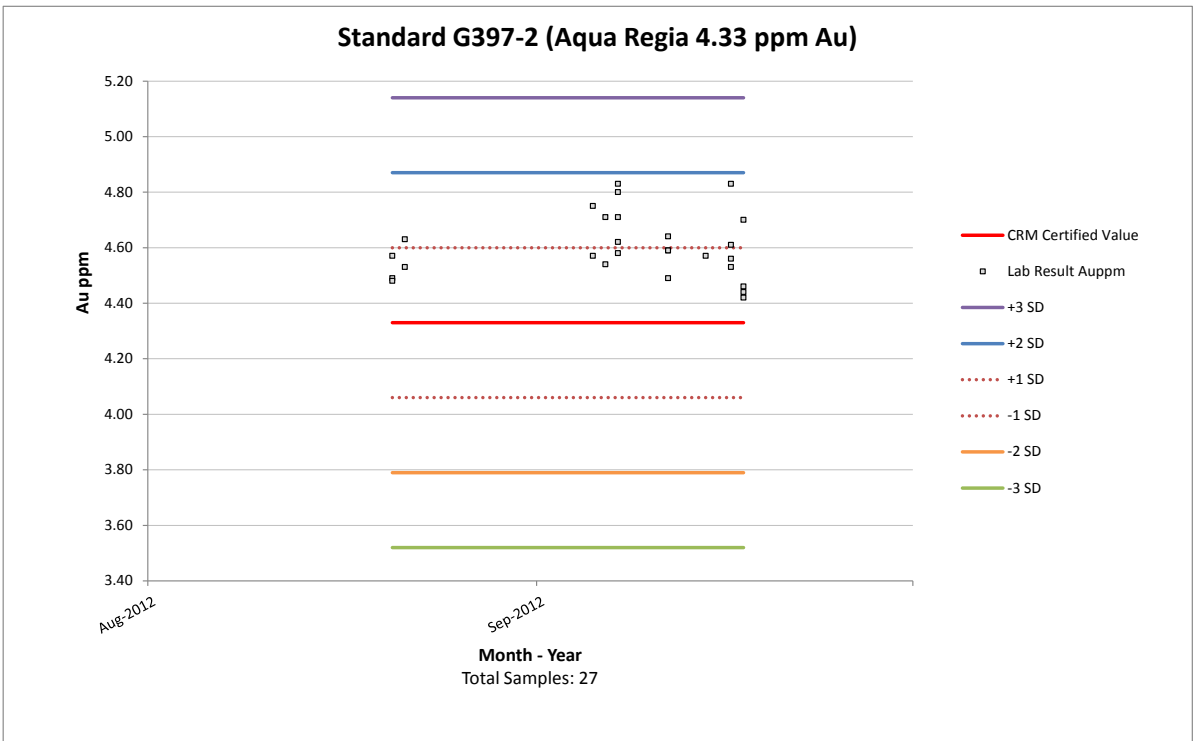
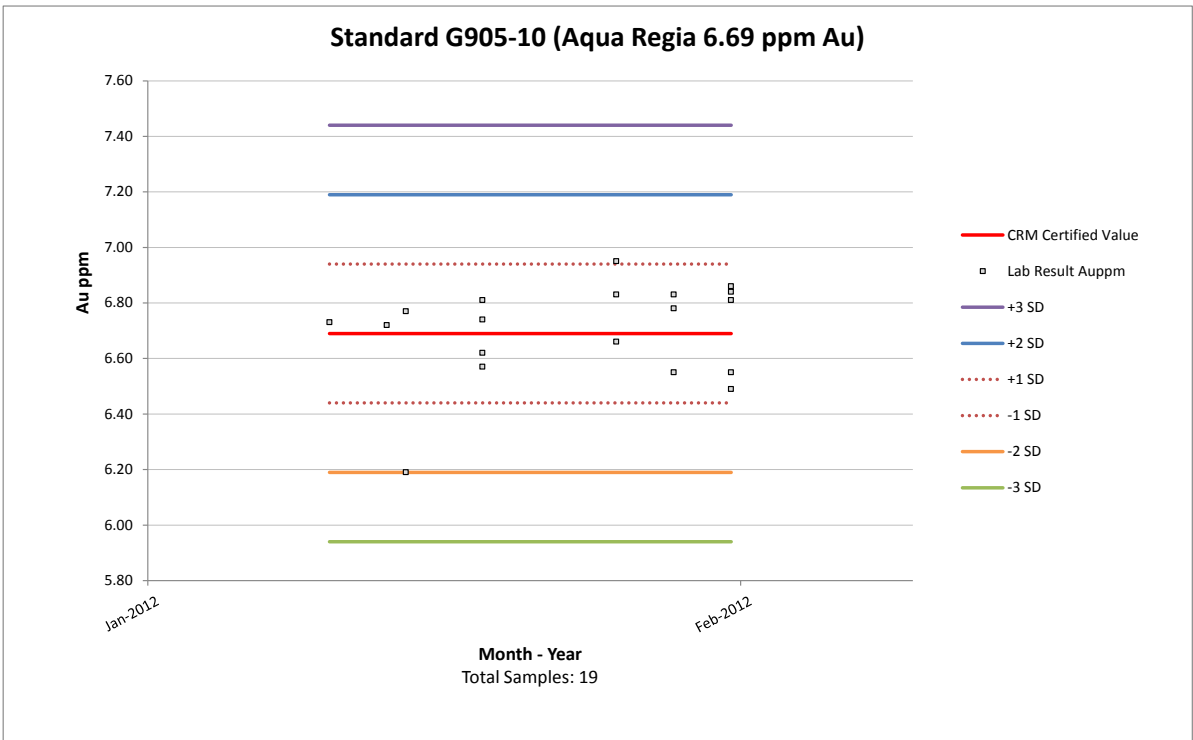
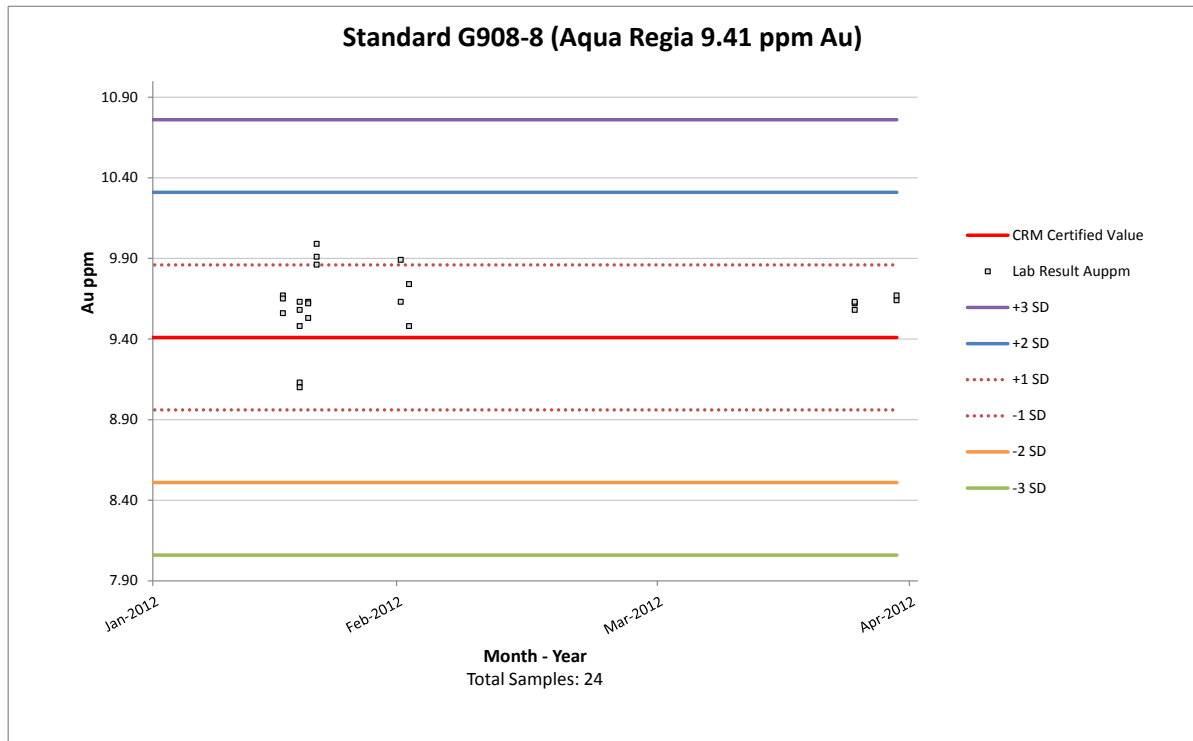


Figure 11.18 Standard G905-10



**Figure 11.19 Standard G908-8**



In addition, sixty CRM samples taken from G302-10, G908-4 and G311-8 were inserted into the sample stream for fire assay at the SGS Kayes laboratory. All samples returned results within acceptable limits, with no failures.

## **12 DATA VERIFICATION**

### **12.1 Previous Work**

Independent reviewers SWRPA (2007) and AMC (2010 and 2012) completed extensive reviews of data collected from 2005 to 2011, as part of their verification of data, and documented in detail in previous NI 43-101 technical reports.

RSG Global managed drilling programs until 2007, including logging, sampling, data verification, and QA/QC. SWRPA reviewed the procedures followed by RSG Global and did not identify any significant discrepancies.

AMC reviewed geological knowledge and practices on the mining lease and regional exploration properties, the on-site laboratory facility, sample analysis, security and QA/QC procedures. Standard industry practices were followed for drilling and QA/QC with no significant discrepancies identified.

### **12.2 Teranga Data Verification**

The Teranga exploration teams follow standard industry practice protocols for drilling. Teranga has established standard operating procedures for diamond drilling (DD), RAB, and RC programs, core logging and sampling and QA/QC, which were followed for the 2012 and 2013 regional exploration and ML drilling programs.

Drillhole (DD, RC, and RAB) collars are surveyed for collar coordinates and elevation. Reflex<sup>®</sup> instruments are used to record the downhole surveys to determine inclination and azimuth. All surveys are checked for accurate transfer into the digital database.

Data entry of the all drillhole data is completed manually. Verification of the regional exploration data in the Centric database and the ML data in the Access database includes checks on duplicate “from” and “to” entries, duplicate sample numbers, sample intervals beyond the end of the hole and collar coordinates. Additional checks are conducted against assay certificates with periodic field survey checks of collar locations. Data verification is completed as each hole is entered and finalized. Access to drillhole databases is limited for security, and is managed by the designated Database Managers.

Discrepancy issues were previously identified in the ML database, therefore additional verification was completed on the entire ML database in May 2013. The quality of the ML database is considered to be acceptable for use in Mineral Resource estimates.

Teranga followed industry standard procedures for the regional and ML exploration QA/QC programs. Results documented in Section 11 indicate no significant discrepancies.

## **13 MINERAL PROCESSING AND METALLURGICAL TESTING**

### **13.1 Overview**

Metallurgical testing for the Sabodala project has spanned several years. Due to its relative importance, more detailed metallurgical research has been concentrated on the ore from the Sabodala deposit. Most of the testing and the most significant results are those conducted by MDL as these became the base for the current mill design. Subsequent testing has been conducted on the Sabodala orebody as the deposit has continued to be mined at depth.

Under MDL ownership Ausenco managed the feasibility study test programme undertaken by ALS Amtec (of Perth, Australia). The test work was performed during late 2005 and 2006, and it was the base for defining the process design criteria for the Sabodala processing plant. The test work programme included mineralogy, grinding, leach extraction, rheology, gravity separation, flotation, and cyanide detoxification.

The test work was completed in several phases and included programs to investigate different flow sheet treatment options, including whole ore cyanidation and gravity recoverable gold with intensive cyanidation of the gravity concentrate and cyanidation of the gravity tailings (options ultimately discarded).

AMC considers that the metallurgical test work results do not indicate the presence of deleterious elements (e.g. copper and other cyanide consumers) or other factors that could impact on economic extraction.

#### **13.1.1 Previous Test Work**

In 1988 a joint venture between BRGM and a Russian partner investigated whole ore cyanidation and reportedly achieved a gold recovery of 90%. In 1993, a prefeasibility study was undertaken by Lycopodium, Australia, based on test work completed by Metcon, Australia. The test work indicated a recovery of 87.5% at a grind  $P_{80}$  of 66  $\mu\text{m}$  was achievable with whole ore cyanidation. An alternative flow sheet with flotation, concentrate regrinding, and leaching was also investigated and achieved similar overall recoveries.

Lycopodium completed a feasibility study in 1994 with a predicted gold recovery of 91.2% including a gravity circuit and direct cyanidation. The gravity circuit was found to be most effective with the hard ore type. The Bond rod mill work index (RWI) and ball mill work index (BWI) of 26.1 kWh/t and 17.6 kWh/t respectively were found for this ore type.

### **13.2 Testing of Ore from the Sabodala Deposit**

#### **13.2.1 Ore Samples**

MDL and RSG Global (Australia) identified two main ore types for the Sabodala deposit:

- Brecciated – complex mineralized breccia characterized by quartz matrix infill with albite, sericite, disseminated pyrite and occasional red brown hematite. This ore type represents 75% of the ore at Sabodala.

- Siliceous – A siliceous breccia distinguished by intense silicification and a high silica matrix. This ore type represents some 25% of the ore at Sabodala.

However observations after the first year of operation have indicated that perhaps the distinction between these two ore types are not as significant as originally thought from drill core alone.

A total of 65 kg of quarter core samples from the Sabodala 2005 drilling programme were selected by MDL and sent to Ammtec (now ALS Ammtec). The samples were combined into a single composite. This composite sample was used for comminution, grind optimization and preg-robbing tests (Ammtec, 2007).

Ausenco requested additional metallurgical testing samples. These included:

- One main comminution sample (170 kg), taken near the centre of the Main Zone and intended to represent fresh, competent Sabodala material.
- Six comminution variability samples (40 kg each) taken from the brecciated, siliceous and oxide zones.
- One main extraction composite sample (120 kg) per main ore type.
- Twenty-seven (27) extraction variability samples (7 kg each) representing the expected variation in gold grade.

The average grade of the main extraction sample, Composite Sample No.1, was 5.69 g/t Au. This was higher than the expected mine mean grade of 3.40 g/t Au. Therefore 75 kg of the sample was diluted with low grade material to make Composite Sample No.2, grading 3.35 g/t Au.

### **13.2.2 Mineralogy**

A 1 kg sample from the Composite Sample No.2 (see above) was examined by Roger Townsend and Associates Ltd. The main findings were:

- Presence of hematite and pyrite as the major opaque mineral constituents
- Gold occurred typically as fine grains, largely associated as inclusions in pyrite
- Several examples of fine liberated gold were observed
- Other oxide and sulphide minerals were noted as accessory and trace occurrences.

### **13.2.3 Comminution Test Work**

Tests were carried out on the main comminution composite sample and six variability samples, including:

- JK Drop Weight Tests
- SAG Mill Comminution Determinations
- Bond Index Determinations (Abrasion, Rod Mill, Ball Mill)



The Bond work index determinations for fresh ore indicated a RWI range of 18.3 kWh/t to 22.8 kWh/t, and a BWI range of 15.0 kWh/t to 18.9 kWh/t. This indicates a medium to hard ore.

The Bond work index determinations for the Oxide ore indicated an average RWI and BWI of 10.2 kWh/t and 9.3 kWh/t respectively, indicating a soft ore.

The abrasion index values for the fresh ore range from 0.223 to 0.524 and are considered moderately abrasive.

In summary, the results indicated that the Sabodala Fresh ore was a reasonably hard and competent ore and that the Oxide material, which constitutes a small portion of the pit, was considerably softer and less competent. These results are in line with values reported for historical test work.

### **Recent Test work**

During February 2013, three separate composite samples were prepared to represent the areas to be mined in the Sabodala pit for the remainder of its mine life at the expected head grade. These were named FW, MFZ corresponding to footwall and main fault zone respectively and EDA, corresponding to the mineralized envelope outside of the main zones.

The FW and MFZ lithologies contained significant brecciated material whereas the EDA sample was mainly basalt.

These samples were subject to SMC comminution tests at JKTech Pty Ltd, in Brisbane Australia.

The FW and MFZ samples returned results within the same range as those in the original comminution test work described above. However the EDA sample was found to be very hard, in the hardest 5% of the JK global database, presumably due to the predominantly basaltic lithology. (JK Tech, 2013)

The EDA sample represents the small mineralized areas within the matrix of the orebody that were not modeled as a part of the main ore zones. This represents a small component of the overall mineralization within the Sabodala orebody, and since the occurrence is sporadic, will be fed as a blend with the other ore zones.

### **13.2.4 Extraction Test Work**

Preliminary tests for the feasibility study focused on direct leaching of the whole ore at a 75 µm grind size. Initial tests on Composite Sample No.2 yielded a gold leach extraction of 84%. Subsequent leaching tests extraction was in the range of 84% to 88%. Diagnostic investigation of the residues indicated that losses were primarily due to fine gold associated with sulphide minerals.

Test work indicated that there appeared to be no preg-robbing tendencies with the Sabodala ore.

### **Determination of Optimum Grind**

Leach tests at 53 µm, 75 µm, 90 µm, and 106 µm were carried out on composite samples. Gold and silver extraction rates increased with fineness of grind. The optimal grind was determined to be 75 µm and all further tests were conducted at a  $P_{80} = 75 \mu\text{m}$ .

### **Size by Size Diagnostic Gold Analysis**

A composite sample was ground at  $P_{80} = 75 \mu\text{m}$  and screened at 150 µm, 106 µm, 75 µm, and 38 µm. The majority of the Au (87%) and Ag (91%) were found in the -75 µm fractions. These results were in agreement with the observations in the cyanidation leach tests which indicated an absence of coarser gold, and were in line with the mineralogical observations described in Section 13.2.2. The deportment of gold in various minerals was determined by a series of selective leaches. The results indicated that free and cyanide leachable gold content increased with fineness of grind.

The unrecovered gold was associated with pyrite, the proportion increasing with coarseness of grind.

### **Gravity Separation Test Work**

Composite Sample No.2 was ground to 350 µm and tested in a 3" laboratory Knelson Concentrator. A total of 22.9% of the gold reported to the gravity concentrate. It was considered likely that the gold present was fine grained and hence not liberated at 350 microns.

The Knelson gravity concentrate was subjected to intense cyanidation (IC) leach using 30 kg/t cyanide. The Knelson gravity tailings were ground to a  $P_{80}$  of 75 µm and were subjected to standard cyanidation under several sets of conditions. The results indicated that leach extraction was independent of different agitation modes. The gold extraction was 84%; no improvement over direct whole ore leaching. Diagnostic tests of the tailings indicated that the unrecovered gold occurred almost entirely as sulphide occluded fine grained gold.

After reviewing the results it was decided to evaluate ultrafine grinding (UFG) and subsequent IC of a high mass-pull gravity concentrate. The high gravity mass-pull increased the gravity gold recovery to 53.8%. The gravity concentrates were ground to  $P_{80}$ 's of 10 µm, 20 µm, and 30 µm. Subsequent IC leach of the gravity concentrate resulted in leach extractions in excess of 95%. The gravity tailings were treated by direct cyanidation and reported extractions of approximately 85%. This resulted in an increase in overall gold extraction to levels of 89% to 91%.

Subsequently a comprehensive set of tests for each of the 27 variability samples was performed, applying the conditions established for the Composite Sample No.2. The conditions included a primary grind of 350 µm, gravity concentration, UFG of the concentrate to 20 µm followed by IC, and secondary grind of the tails to 75 µm followed by CIL leaching. The average leach extraction of the gravity concentrate was 97.5%, with overall leach extractions (combined concentrate and tails leaching) ranging from 85.2% to 96.8%. The average variability test gold extraction was 91.4%.

### **Pre-Leach Conditioning Tests**

Two samples were used to test the effects of pre-conditioning on gold extraction. One sample was leached with hydrogen peroxide, and the second sample leached with lead nitrate. The pre-conditioning of the slurry resulted in increased leaching kinetics; however overall gold extraction levels were unchanged. These results kept the belief that the unrecovered gold was occluded within sulphides, and hence leach accelerants such as hydrogen peroxide or lead nitrate were ineffective to improve extraction rates.

### **Oxygen Uptake Tests**

A 2 kg sub-sample of Composite Sample No.2 was ground to a  $P_{80} = 75 \mu\text{m}$  and subsequently used to determine the oxygen uptake characteristics of the ore. The ore showed low oxygen demand having negligible amounts of oxygen consuming minerals such as pyrrhotite. The outcomes of the oxygen uptake tests were in accord with the mineralogical assessment presented in Section 13.2.2.

#### **13.2.5 Gold Recovery Models**

The feasibility study test work, based on 27 variability samples, had indicated some dependence of recovery on head grade for fresh ore but not for oxide and transition ore

On commissioning of the plant and reaching steady state, this dependence was further investigated from actual plant data.

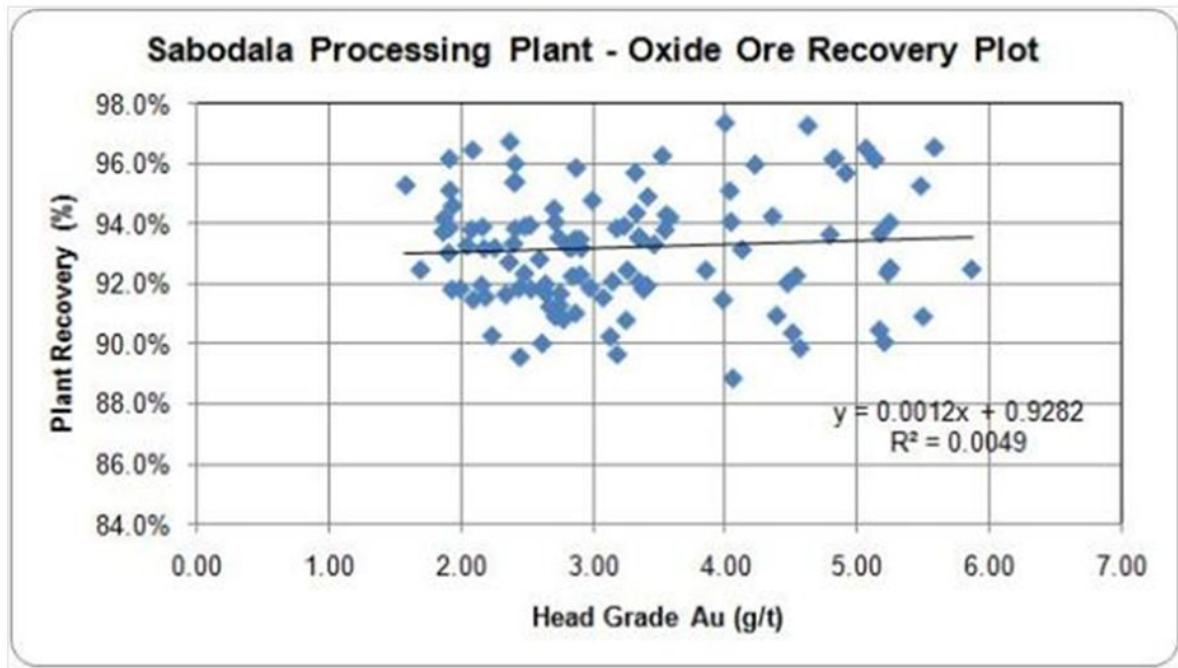
Accordingly, new recovery models were developed based on the performance of the Sabodala processing plant while treating either oxide ore or fresh ore. The data utilized for the recovery models:

- Represents the actual gold recovery performance of the Sabodala processing plant
- Is determined from daily results
- Excludes process interruptions
- Has been reviewed for data consistency and data integrity

In the four month period from March 2009 to July 2009 (inclusive) the feed material to the processing plant was predominantly oxide and transitional ore, and the ore was sourced from different areas of the Sabodala open cut mine, both in terms of horizontal location and depth.

The plot of head grade against plant recovery for the oxide blends for the time period March to July 2009 is presented in Figure 13.1.

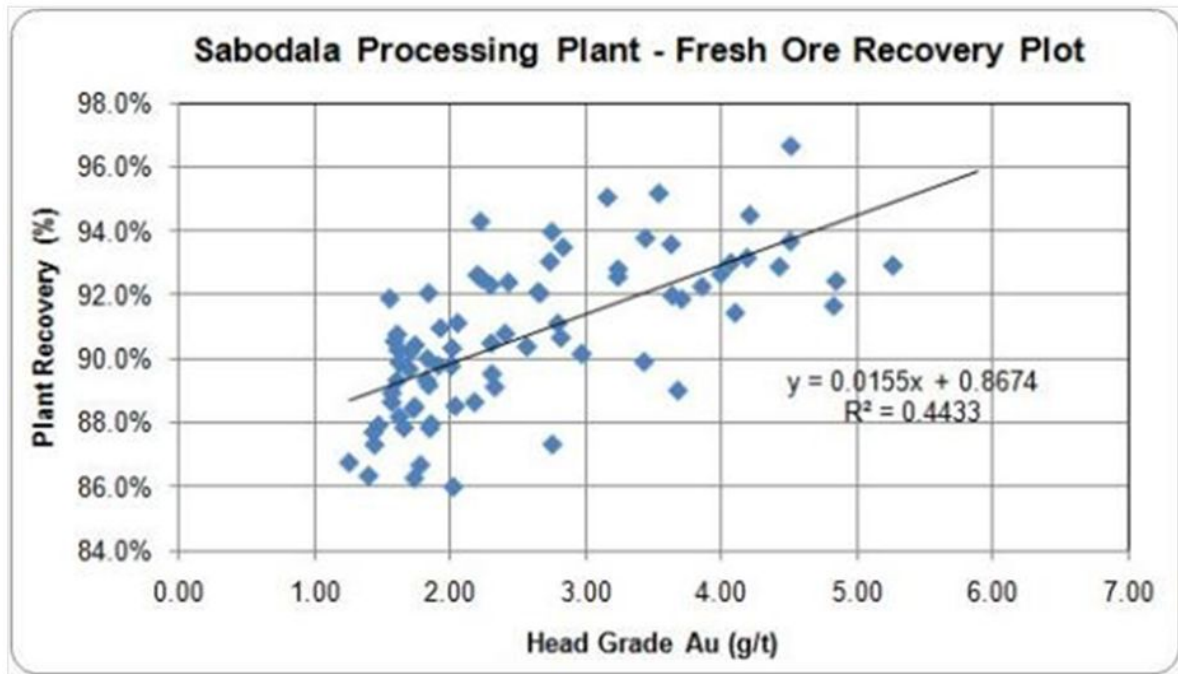
**Figure 13.1 Plant Recovery as a Function of Head Grade (Oxide Ore)**



The plot shown in Figure 13.1 demonstrates virtually no trend between head grade and recovery for the oxide ore, for data collected during the period March 2009 to July 2009. The plot covers a head grade range of 1.5 g/t to 5.9 g/t, and shows recovery values ranging from 88% to 97.5%. Accordingly, a single figure of 92.8% has been adopted for the recovery of Sabodala oxide ore sources. This is believed to represent a fair, realistic recovery value which may be applied to oxide ore sourced from the Sabodala open cut mine.

One year later, in the three-month period April 2010 to July 2010 (inclusive) the Sabodala processing plant treated in excess of 90% fresh ore. This has provided the opportunity to assess the recovery of the fresh ore as a function of head grade. The recovery plot for the fresh ore is presented in Figure 13.2.

**Figure 13.2 Plant Recovery as a Function of Head Grade (Fresh Ore)**



The plot demonstrates a noticeable positive correlation between head grade and recovery for the Sabodala open cut mine Fresh ore processed during the period April 2010 to July 2010. The trend line  $R^2$  value of 0.44 is considered fair in light of the use of actual plant data. The maximum variation is approximately  $\pm 4$  recovery units from the trend line to the observed results.

Accordingly, a recovery model has been adopted to calculate the expected recovery of the Sabodala fresh ore based on the expected head grade. The recovery algorithm adopted is:

$$\text{Gold Recovery \%} = 86.74 + (1.55 \times \text{Head Grade})$$

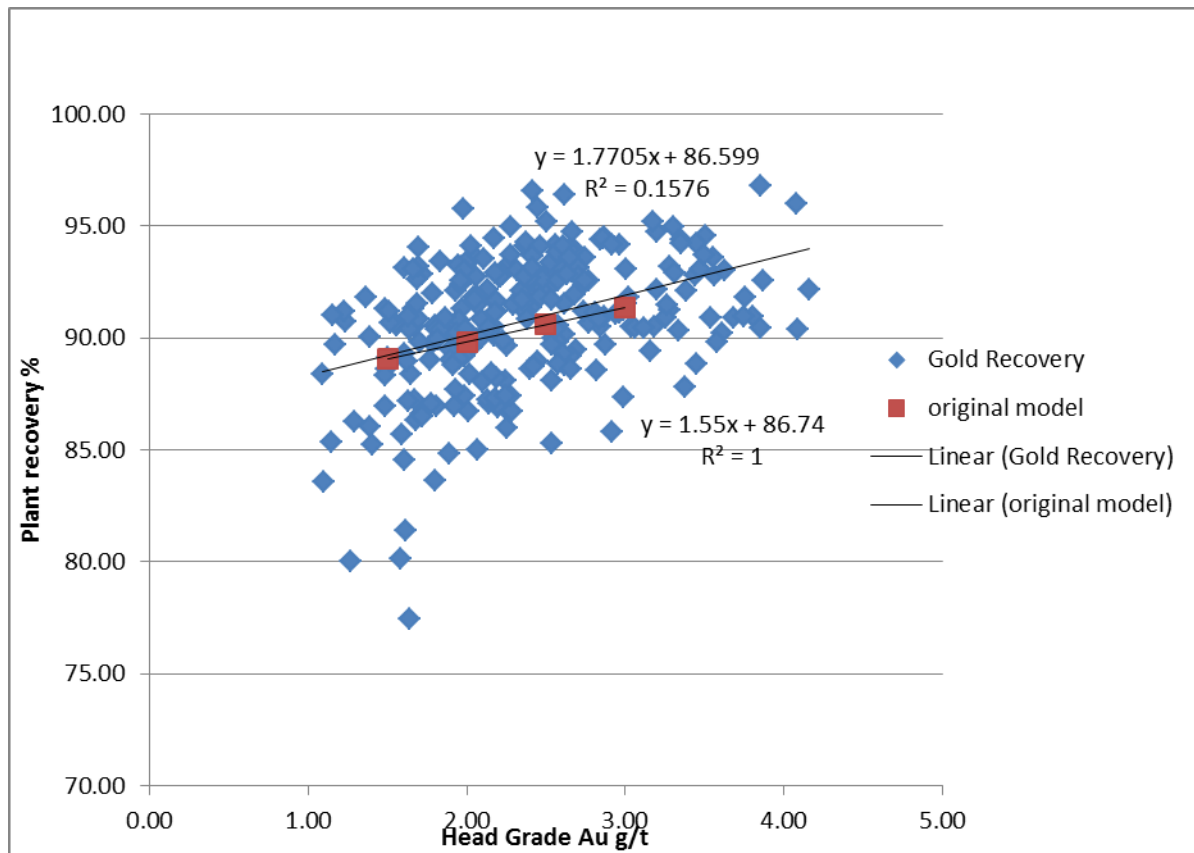
The maximum recovery value has been capped at 94.5%, in line with the modelled recovery for a 5 g/t feed grade. This seeks to avoid an overestimation of recovery from high grade ore sources, an inherent problem with a linear recovery algorithm. This recovery algorithm and maximum recovery cap has been utilized for financial modelling purposes.

This model has been tested against more recent mill operating data, from the period September 2012 to June 2013 on predominantly fresh ore.

Although there is considerably more scatter in the data and also the plant underperformed relative to the model for the 2012 data by around 1% recovery, the first half of 2013 was closely in accord with the recovery algorithm cited above. This relationship is shown in Figure 13.3.



**Figure 13.3 Plant Recovery as a Function of Head Grade (Fresh ore H1 2013)**



This provides general support for continuing to use the recovery algorithm. If a more definitive recovery algorithm is required, a more controlled and specific exercise will be carried out under steady state conditions with a parcel of demonstrably of fresh ore.

### 13.2.6 Other Test Work

#### Viscosity Test Work

The Sabodala ore was found to exhibit relatively low viscosity. This indicates that there would be no slurry handling problems encountered in the milling, leaching or thickening circuits.

#### Flash Flotation Test Work

A single flash flotation test on Composite Sample #2 showed that 82.6% of the gold could be recovered into 2.4% of the feed mass using a flash flotation cell on the cyclone underflow. The recovery of sulphur to the concentrate was practically equivalent to the recovery of gold, believed to confirm the reported mineralogy of gold predominantly associated with pyrite.

This test was considered to be non-representative of the orebody as a whole and the flotation concentrate was not subjected to leach extraction tests.

## Key Reagents

The main reagents used in the plant are grinding media, cyanide (in the form of NaCN) and lime (in the form of quicklime, CaO).

The design consumption of grinding media was 1.68 kg/t. The cyanide consumption rate was 1.23 kg/t, however this figure incorporates the intensive cyanidation of a gravity concentrate. The design lime consumption rate was 0.90 kg/t.

### 13.3 Testing of Ore from the Niakafiri Deposit

In 2007 Ammtec (now ALS Ammtec) performed test work on four samples of ore from the Niakafiri deposit. The test work included grinding, followed by either whole ore leaching or gravity concentration, IC of the gravity concentrate and CIL leaching of gravity tailings. This test work was completed at a scoping level in comparison to the detailed test work previously undertaken on the Sabodala ore.

The samples were taken from two drillholes identified as NKDD001 and NKDD002. Specific intercepts from each drillhole were used and two samples from each hole were generated. Two of the samples were used for grinding test work and two for leach extraction test work. The main sample used for extraction testing (Sample #2 from NKDD002) had a grade of 1.51 g/t Au. This sample was not intended to be, and cannot be considered representative of the entire deposit.

The grinding test work was performed on the two samples from drillhole NKDD001 and indicated that the main ore (fresh ore, Sample #3) has a RWI of 21.8 kWh/t and a BWI of 15.8 kWh/t. These results are within the range of results obtained for the Sabodala ore. It is expected the grinding energy requirements for Niakafiri ore will be similar to the Sabodala ore.

Sample #4 representing the oxide component of the ore body reported low work index results. The RWI was 6.7 kWh/t and the BWI of 2.1 kWh/t.

The results of extraction test work performed on the Niakafiri ore indicated that gravity concentration followed by regrinding and IC is a superior process route to whole ore cyanidation. The overall gold extraction ranged from 89.7% to 93.7%, with varying grinds from a  $P_{80}$  of 150  $\mu\text{m}$  to 75  $\mu\text{m}$ .

The test work results for the Niakafiri ore are preliminary. They indicate that the Niakafiri ore will likely behave in a similar fashion to the Sabodala ore. MDL utilized recovery figures of 90% and 92% for Niakafiri fresh ore and oxide ore respectively in the feasibility study financial model.

### 13.4 Metallurgical Testing for Gora

The Gora orebody represents approximately 500 kt annually (2.1 Mt total) compared to the planned 4 Mtpa Sabodala plant design capacity and therefore has small materiality on throughput tonnage alone. However, its comparatively high grade means that its gold content is near 300 koz and as a result is material. Moreover, the structure is complex with several thin veins and initial examination shows that it contains carbonaceous shales with

active carbon in proximate waste zones likely to be partially included in the plant feed, therefore there is potential for preg-robbing. Apart from its impact on the Gora gold recovery itself, the preg-robbing potential in a blend with Sabodala ore could also reduce the overall plant recovery.

The total weight of metallurgical samples available for the primary ore (none available for oxide) was 100 kg so a carefully-focused programme was developed to test five composites representing significant mineable tonnage and based on the main veins; the north, south and central parts of the orebody; and depth. These composites were coded as south, central, north; main vein present; and depth:

- S2 south vein 2
- C1 central vein 1
- N1 north vein 1
- C1D central vein 1 at depth
- N5D north vein 5 at depth

The test work programme was a standard gold programme but with an initial evaluation of the preg-robbing potential and a review pause-point to assess its potential impact and its variability across the composites.

Two grind test composites were made up, (S2+C1+N1) and (C1D+N5D) for the SMC test and a BWI test (on SMC test products).

Initial results, (ALS Ammtec, 2012) follow:

- Both grind composites gave very similar results. The SMC estimate of the JK A\*b parameter was 35 (similar to Sabodala) whereas the SMC Mia of 22 kWh/t and BWI of 23 kWh/t were about 20% harder than Sabodala. The conclusion is that the ore would behave similarly in the SAG mill but may appear harder in the ball mill.
- Pre-robbing was found to be low to moderate and in a well-run CIL circuit would not be expected to cause recovery losses. However, there was some variability across the composites and the preg-robbing potential did not correlate with organic carbon content, so it was decided to continue with gravity-leach tests on all five composites.

These leach test are summarized in Table 13.1.

**Table 13.1 Direct and CIL Leach Recoveries on Gora Composites**

Composite	Total Recovery Gravity + Direct Leach		Total Recovery Gravity + CIL		Calc Head (Au g/t)	Assay Head (Au g/t)
	2 hrs	24 hrs	2 hrs	24 hrs		
S2	95.4	97.6	95.7	98.3	12.3	15.8
C1	94.3	96.6	92.8	97.7	6.4	10.0
N1	97.1	99.0	96.3	98.0	13.3	21.3
C1D	94.1	97.0	93.9	96.2	7.5	7.1
N5D	95.2	97.8	95.1	97.0	8.3	10.2

Extremely fast kinetics and high ultimate recoveries were observed for all composites. Also, the discrepancies between calculated and assay heads were indicative of coarse gold, as evidenced by high gravity recoveries. Mineralogical examination by QEMSCAN confirmed the presence of free gold with similar liberation characteristics for all composites. There was only one potential concern revealed; the presence of sylvanite (a gold/silver telluride) and Ag-Te-Bi alloys in both north composites (N1 and N5D).

Accordingly, the final stage of the programme involved two composites (N1+N5D) and (S2+C1+C1D) and CIL leaching, with and without gravity, to ensure that potential impact of tellurides in the north part of the orebody was tested.

Results are summarized in Table 13.2.

**Table 13.2 Final Gora Recoveries**

Composite	Total Recovery			CN Consumption (kg/t)	Process
	2 hrs	24 hrs	48 hrs		
(S2+C1+C1D)	95.2	97.3	98.2	0.88	Grav+CIL
(N1+N5D)	85.5	91.3	98.6	0.86	Grav+CIL
(S2+C1+C1D)	91.6	97.1	98.0	0.79	CIL
(N1+N5D)	96.8	97.2	98.4	0.79	CIL
<b>Average</b>	<b>92.3</b>	<b>95.8</b>	<b>98.3</b>	<b>0.83</b>	

These tests confirmed very fast kinetics and high ultimate recoveries of the earlier work and showed that, even without a gravity circuit removing coarse and potentially slow-leaching gold, leach kinetics and recoveries are maintained. No further leach optimization was carried out.

Overall conclusions from the Gora test work are:

- Preg-robbing is not an issue.
- The Gora ore will behave in a similar fashion to Sabodala ore in the SAG mill but may require additional grinding in the ball mill.
- A gravity circuit does not appear essential to achieve high ultimate recoveries.
- A very high gold recovery of 95% was demonstrated in the test work. While very high when benchmarked across other gold recovery models, evidence supports using this value for future planning and modeling.
- Cyanide consumption, although not optimized in this series of tests, is expected to be similar to that of Sabodala.

AMC considers that blending Gora ore with Sabodala ore in the main Sabodala mill is feasible; ball mill throughput may be lower and therefore unit costs approximately 0.5 to 1.0 US\$/t higher, but gold recovery will exceed that of the Sabodala ore.

## 14 MINERAL RESOURCE ESTIMATES

### 14.1 Project Mineral Resources

Mineral Resources were estimated for the project covering three deposits and three exploration permit areas and are summarized in Table 14.1 and Table 14.2. Mineral Resources for Sabodala include Sutuba. Mineral Resources are reported inclusive of Mineral Reserves and are reported as at 30 June 2013.

**Table 14.1 Measured and Indicated Mineral Resources as at 30 June 2013**

Area	Measured			Indicated			Measured and Indicated		
	Tonnes (Mt)	Au (g/t)	Au oz (Moz)	Tonnes (Mt)	Au (g/t)	Au oz (Moz)	Tonnes (Mt)	Au (g/t)	Au oz (Moz)
Sabodala	24.36	1.36	1.06	24.90	1.33	1.06	49.26	1.34	2.12
Niakafiri	0.30	1.74	0.02	10.50	1.10	0.37	10.70	1.12	0.39
Gora	0.49	5.27	0.08	1.84	4.93	0.29	2.32	5.00	0.37
<b>Total</b>	<b>25.15</b>	<b>1.44</b>	<b>1.16</b>	<b>37.23</b>	<b>1.44</b>	<b>1.72</b>	<b>62.38</b>	<b>1.44</b>	<b>2.89</b>

Notes:

- 1) CIM definitions were followed for Mineral Resources
- 2) Mineral Resources are estimated at cut-off grades listed in Table 14.3
- 3) Measured Resources at Sabodala include stockpiles which total 7.88 Mt at 0.90 g/t Au for 0.23 Mozs
- 4) High grade assays were capped from 10 g/t Au to 30 g/t Au at Sabodala and from 20 g/t Au to 70 g/t Au at Gora
- 5) The figures above are "Total" Mineral Resources and include Mineral Reserves
- 6) Sum of individual amounts may not equal due to rounding.

**Table 14.2 Inferred Mineral Resources as at 30 June 2013**

Area	Inferred Resources		
	Tonnes (Mt)	Au (g/t)	Au oz (Moz)
Sabodala	18.05	0.95	0.55
Niakafiri	7.20	0.88	0.21
Niakafiri West	7.10	0.82	0.19
Soukhoto	0.60	1.32	0.02
Gora	0.21	3.38	0.02
Diadiako	2.90	1.27	0.12
Majiva	2.60	0.64	0.05
Masato	19.18	1.15	0.71
<b>Total</b>	<b>57.84</b>	<b>1.01</b>	<b>1.87</b>

Notes:

- 1) CIM definitions were followed for Mineral Resources.
- 2) Mineral Resources are estimated at cut-off grades listed in Table 14.3
- 3) High grade assays were capped from 10 g/t Au at Soukhoto and 20 g/t Au at Masato
- 4) Sum of individual amounts may not equal due to rounding.

Reasonable prospects for economic extraction, as per CIM guidelines (CIM, 2010), have been determined by way of cut-off grades that are in-line with current Sabodala practice as listed in Table 14.3.



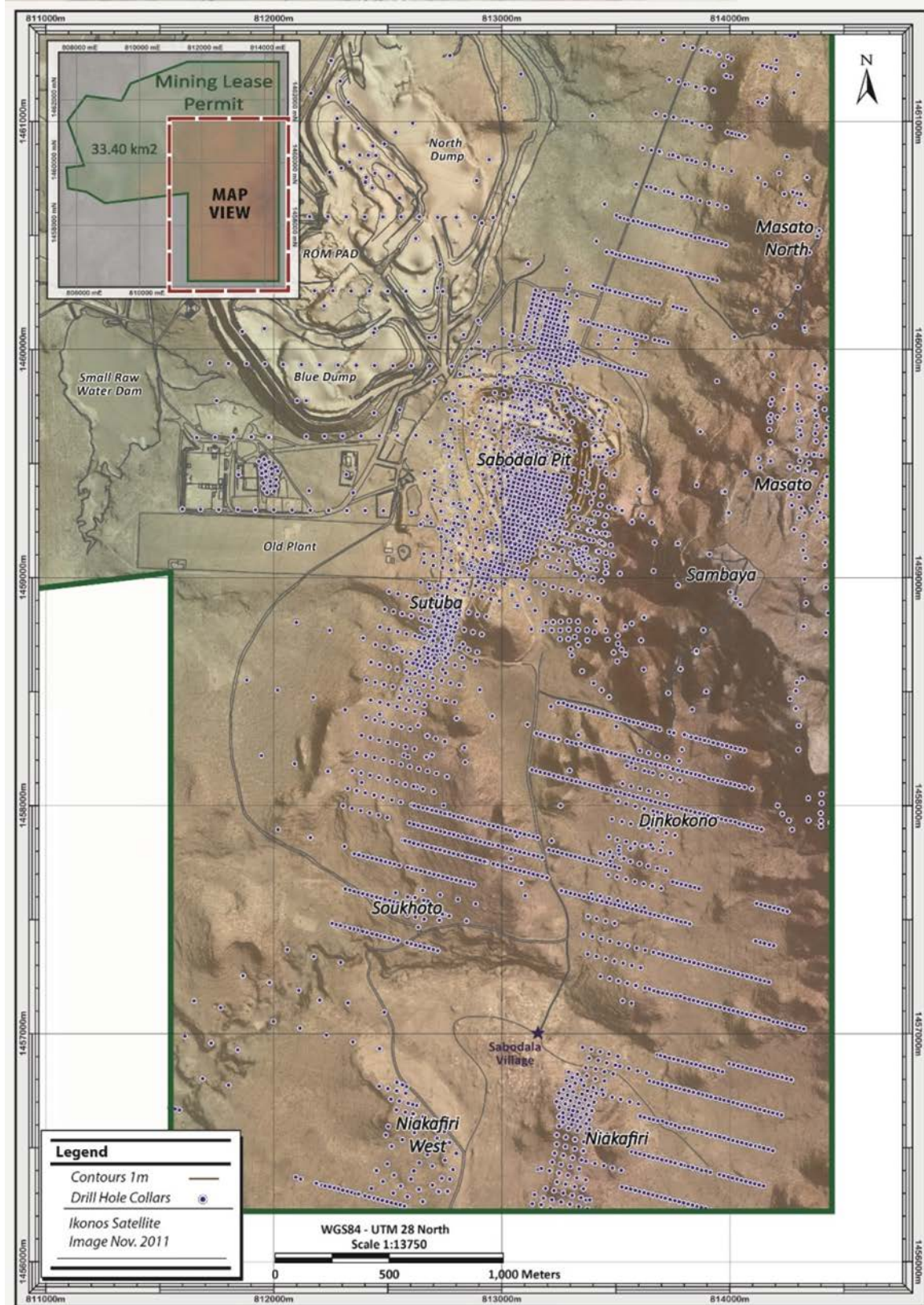
**Table 14.3 Mineral Resource Gold Cut-off Grades**

Area	Oxide (g/t Au)	Fresh (g/t Au)	All (g/t Au)
Sabodala	0.2	0.35	-
Niakafiri	0.3	0.5	-
Niakafiri West & Soukhoto	-	-	0.3
Gora	-	-	0.5
Diadiako	-	-	0.2
Majiva	-	-	0.2
Masato	-	0.35	-

Ms. Patti Nakai-Lajoie, P. Geo. is a full-time employee of Teranga and not independent, and is a Qualified Person in accordance with NI 43-101. She has reviewed and accepts responsibility for the Mineral Resource estimates. Ms. Nakai-Lajoie is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing or political issues that would materially affect the Mineral Resource estimates.

Figure 14.1 shows the mining concession boundary, the location of the main deposits and the plant site.

Figure 14.1 Location of Deposits and Prospects on the Mining Concession



## 14.2 Sabodala Mineral Resource Estimate

Teranga estimated the updated Mineral Resources for Sabodala, which includes the Sutuba deposit. The effective date of the estimate is May 17, 2013.

### 14.2.1 Database

#### Drillhole Database

The Sabodala drillhole database is stored in a MS Access and Vulcan Isis format, and comprises drillhole collar coordinate data, collar azimuth and dip data, lithology, alteration, structure and vein data, and sample interval and assay data.

The 2013 Mineral Resource database contains a total of 1,428 drillholes. This includes holes drilled after 31 August 2011, which is the previous resource database cut-off date. Additional assays received after this date from previously drilled holes are also included in the updated database. The effective date of the Sabodala database is 30 April 2013.

#### Bulk Density

There were a total of 38,761 bulk density determinations in the Sabodala database as of 1 September 2008. The immersion in water method was conducted by in-house Sabodala personnel to determine the bulk density values in core samples. Samples were approximately 10 cm long and correspond to most of the rock types in the Sabodala deposit although some barren or areas with very low mineralization were not sampled.

Bulk density determinations were flagged with lithology and oxide models then averaged by lithology type. Although local variances are not preserved, calculated averages are within reasonable limits for each lithology type and were used in the final block model.

There were no bulk density determinations located in the oxide portion of the porphyry and therefore the average bulk density was determined from the original lithology flagging of a previous oxide model. Adjusted bulk densities were calculated to account for partial rock blocks adjacent to the topographic surface.

Table 14.4 lists the average bulk densities assigned to the block model.

**Table 14.4 Sabodala Bulk Density by Lithology**

Lithology	Fresh		Oxide	
	Samples (No.)	Average (t/m <sup>3</sup> )	Samples (No.)	Average (t/m <sup>3</sup> )
Volcaniclastics West	1,626	2.84	17	2.76
Ultramafics	2,166	2.85	40	2.52
Gabbro	7,878	2.85	90	2.17
Volcaniclastics East	9,960	2.82	261	2.34
Mylonite	1,884	2.73	7	2.14
Basalt	12,976	2.87	82	2.38
Felsic Porphyry	459	2.75	assigned	2.68

### **14.2.2 Wireframe Models**

#### **Lithologic Models**

The surface outcrop lithology maps and interpretations from Painter (Painter, 2005) and Rhys (Rhys, 2010) were imported and registered in Vulcan local mine grid coordinates to aid in wireframe modelling. The Sabodala production geology group provided recent pit mapping from March 2013, which was also incorporated into the models.

Existing lithology models were revised in 2013 based on additional drill data. A total of 6 lithology models were generated for the mafic basalt, mylonite, east mafic volcanoclastic, gabbro, ultramafic and west mafic volcanoclastic units. The existing topographic surface was used to generate an "air" model. The block model boundary was used to limit the extents of the lithology models.

An oxidation surface was constructed by modelling individual points representing the base of the weathered rock profile in each drillhole. Oxide and "fresh" (unoxidized) rock solids were generated.

#### **Mineralization Models**

Existing mineralization zones were reviewed and remodelled in 2013 based on lithological, alteration and structural trends using additional drillhole data and the most recent structural interpretation. A total of 24 mineralization models were generated and are presented in Figure 14.2.

The structural study undertaken by Rhys (Rhys, 2009) indicates that the Main Flat Zone (MFZ) is the dominant mineralization-controlling structure based on field and core observations and is associated with quartz veining, intense brecciation, shearing and carbonate-albite-pyrite-sericite alteration.

Upper Flat Zones (UF) splay off steeper trending structures (NWS and the original East Thrust zone) with variable widths and primarily located above the MFZ in the hangingwall volcanoclastics and footwall mafic basalts where mineralization is not as continuous from hole to hole as in the MFZ. These exhibit a general shallow trend similar to the MFZ and are associated with variable carbonate-albite-siliceous alteration.

The Ultramafic Flat Zone (UM Flat) is located above the MFZ primarily in the ultramafic unit, trends parallel to the MFZ and UF Zones, and is associated with quartz veining and variable carbonate-albite alteration.

The Footwall Flat Zone (FW Flat) was originally a part of the MFZ but has been modelled as a splay off the eastern footwall of the MFZ. This zone has similar alteration and structural characteristics to the MFZ but follows a southeast-northwest trend with a shallow dip to the northeast.

Two steep zones have been modelled and generally follow the trends of the previously modelled steep zones. The Steep FG Zone corresponds to the steep-dipping portion of the mylonite at depth and includes high grades associated with variable shearing at the

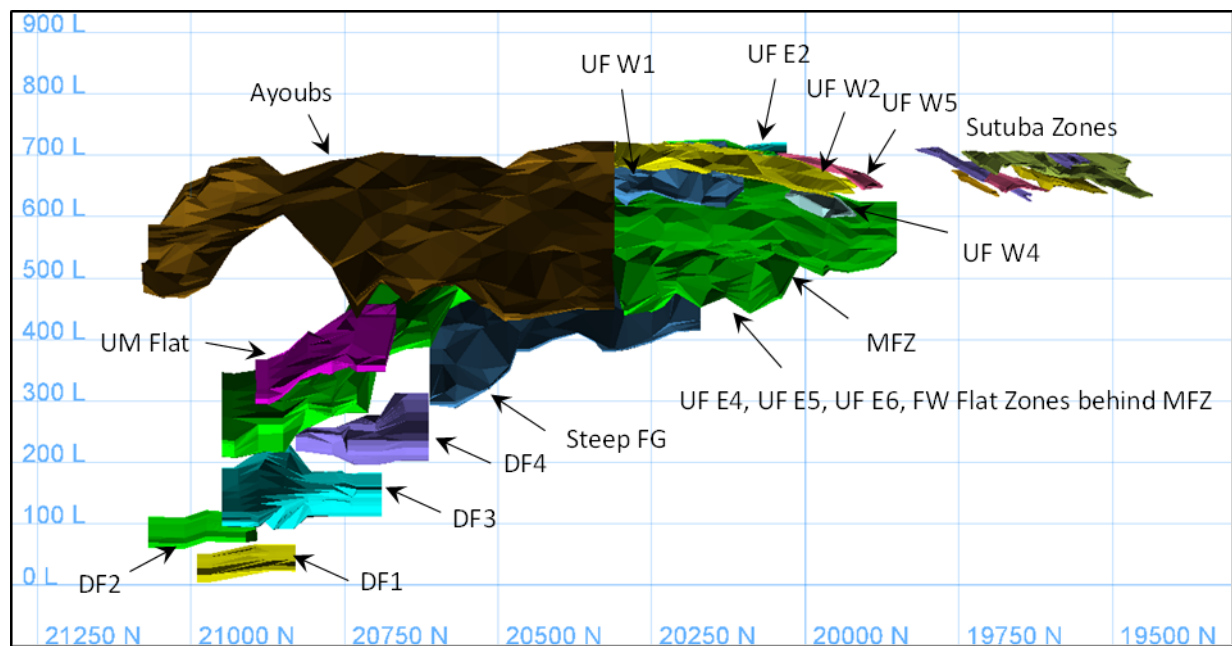
contacts. The steep Ayoub Thrust Zone generally aligns parallel to the gabbro/mafic volcanic contact and includes quartz veining with weak carbonate-albite alteration.

Four Deep Flat Zones (DF) were modelled at depth. These are associated with generally flat trending breccia zones with associated albite and silicious alteration, and narrow felsic intrusions.

Six Sutuba zones were modelled as northwest trending shallow southwest dipping narrow structures, as interpreted from drillhole logs and field observation. These follow similar trends as the Upper Flat zones, but are located further south and away from other identified steep structures.

A global mineralization envelope (EDA) was generated that includes all mineralization domains as well as mineralization located in closely-spaced and widely-spaced holes that have not been domained. Mineralization inside the EDA but located outside of other modelled domains has been treated as a separate domain with a unique composite and domain flag.

**Figure 14.2 Sabodala Mineralization Solids - Long Section Looking East**



### 14.2.3 Statistics and Compositing

#### Statistics

A static Vulcan Isis database was created from the MS Access drillhole database containing the drillholes. A total of 1,428 drillholes are included in the Vulcan database containing collar, downhole survey, lithological, alteration, structure, mineralization and analytical data.



The classical statistics for the raw gold assays in the Sabodala drillholes are presented in Table 14.5.

**Table 14.5 Sabodala Assay Statistics**

Parameter	MFZ	Ayoub	Steep FG	FW Flat	UM Flat	DF Zones	UF Zones	Sutuba Zones	EDA
Minimum g/t Au	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
25th percentile	0.05	0.02	0.05	0.08	0.02	0.01	0.08	0.15	0.01
Median g/t Au	0.42	0.13	0.51	0.67	0.24	0.03	0.51	0.45	0.01
75th percentile	1.95	0.54	1.99	2.55	0.96	0.48	1.89	1.42	0.02
Maximum g/t Au	117.0	37.0	184.0	56.50	119.0	123.4	85.4	90.4	152.0
Mean g/t Au	2.01	0.57	3.46	2.04	1.21	0.88	1.76	1.36	0.13
SD g/t Au	4.86	1.49	12.73	3.68	7.21	3.48	3.70	3.57	0.93
Coefficient of Var'n	2.42	2.62	3.68	1.80	5.94	3.95	2.11	2.62	7.05
No of samples	15,441	3,853	576	2,812	530	4,185	5,604	949	148,323

### Capping Levels

Capping levels were determined by raw assays for mineralization domains prior to compositing to limit the influence of high grade outliers. All assays located inside mineralization wireframes were combined to determine an appropriate capping level for each mineralized zone or zone group. Capping levels were established using a combination of histograms, probability plots, decile plots and cutting curves. Capping levels are listed in Table 14.6.

**Table 14.6 Capping Levels**

Domain	Total Assays	Capping Level (g/t Au)	Number of Capped Assays	Number of Uncapped Assays
MFZ	15,441	30	73	15,368
Ayoub	3,853	15	6	3,847
Steep FG	576	20	21	555
FW Flat	2,812	20	13	2,799
UM Flat	530	10	3	527
DF Zones	4,185	20	10	4,175
UF Zones	5,604	20	31	5,573
Sutuba Zones	949	20	1	948
EDA	148,323	10	186	148,137

### Composites

Run-length composites were generated at one metre lengths inside the domain wireframes and inside the larger mineralized envelope (EDA), flagged by mineralization domain. Non-logged and unsampled intervals were replaced with a grade of 0.0 g/t Au prior to compositing. Composites less than 0.5 m in length were removed from the final database. This accounted for a small percentage of data (1%) with no demonstrated grade bias.

The classical statistics for the final one metre composites are presented in Table 14.7.

**Table 14.7 Sabodala Composite Statistics**

Parameter	MFZ	Ayoub	Steep FG	FW Flat	UM Flat	DF Zones	UF Zones	Sutuba Zones	EDA
Minimum g/t Au	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25th percentile	0.04	0.02	0.05	0.11	0.01	0.01	0.1	0.16	0.005
Median g/t Au	0.43	0.13	0.55	0.75	0.19	0.03	0.55	0.47	0.01
75th percentile	1.94	0.54	2.23	2.53	0.82	0.49	1.89	1.44	0.02
Maximum g/t Au	30.00	15.00	20.00	20.00	10.00	20.00	20.00	19.0	10.00
Mean g/t Au	1.84	0.54	2.27	1.94	0.71	0.80	1.68	1.28	0.08
SD g/t Au	3.66	1.21	4.16	2.96	1.31	2.15	2.92	2.09	0.45
Coefficient of Var'n	1.99	2.24	1.84	1.52	1.84	2.69	1.74	1.64	5.57
No of samples	15,597	3,884	553	2,703	590	4,303	5,577	952	172,544

#### 14.2.4 Block Model

##### Block Model Parameters

The block model was constructed along an east-west orientation with 10 m x 10 m x 10 m parent block sizes and 1.25 m x 1.25 m x 1.25 m sub-blocks along mineralization domain boundaries extending from 9500E to 10800E, 19300N to 21300N and 20 m elevation to 800 m elevation. The maximum block size inside mineralization domains and EDA is 2.5 m x 2.5 m x 2.5 m.

##### Variography and Grade Estimation

Domain models were used as hard boundaries to limit the extent of influence of composite grades within the domains.

Block gold grades were estimated using the Ordinary Kriging method (OK) for the MFZ, Ayoub, Steep FG, FW Flat, UF Zones and the EDA. Downhole and directional correlograms were constructed for mineralization domains containing sufficient number of composites to generate suitable variograms. The variogram model parameters used in the previous 2011 estimate were reviewed using the additional data from 2012 and 2013. Revisions to the variogram parameters were not warranted and remain the same.

The first estimation pass uses small limited searches to estimate blocks located close to composites. The second estimation pass uses larger search radii based on the 2nd variogram structure with composites from a minimum of two drillholes that connect the majority of the blocks estimated during the first pass. The third estimation pass uses 1.5 times the second variogram structure with no minimum drillhole restriction. The minor search range for the second and third estimation passes for the EDA was determined visually and were more restrictive, in order to prevent extrapolation of grades beyond reasonable limits in the absence of a hard boundary.

The Inverse Distance Squared method ( $ID^2$ ) was used to estimate block gold grades for the UM Flat, Deep Flat Zones and Sutuba Zones, due to the small number of contained sample

composites or the presence of multiple trends. Search directions were determined visually for each domain. Isotropic search ranges were applied for grade estimation. Three estimation runs were applied, each with increasing search distances. Grade estimation parameters are listed in Table 14.8.

**Table 14.8 Vulcan Grade Estimation Parameters**

		MFZ	Ayoub	Steep FG	FW Flat	UM Flat	DF Zones	UF Zones	Sutuba Zones	EDA
Estimation Method		OK	OK	OK	OK	ID <sup>2</sup>	ID <sup>2</sup>	OK	ID <sup>2</sup>	OK
Search Ellipse Orientation	Bearing (z)	340	353	353	327	-	-	338	-	335
	Plunge (y)	-9	-26	-26	-11	-	-	-10	-	-11
	Dip (x)	23.4	56.2	56.2	-19.2	-	-	23.0	-	22.6
Min. No. Samp.	Pass 1 / 2 / 3	3,6,2	3,6,2	3,6,2	3,6,2	3,6,2	3,6,2	3,6,2	3,6,2	3,6,2
Max. No. Samp.	Pass 1 / 2 / 3	12	12	12	12	12	12	12	12	12
Ranges Pass 1	Major Axis	10	10	10	10	10	10	10	10	10
	Semi-major Axis	10	10	10	10	10	10	10	10	10
	Minor Axis	3	3	3	3	3	3	3	3	5
Pass 2	Major Axis	65	80	40	40	50	50	75	50	60
	Semi-major Axis	40	40	40	30	50	50	50	50	40
	Minor Axis	35	20	30	25	50	50	35	50	10
Pass 3	Major Axis	98	120	60	60	75	75	112	75	90
	Semi-major Axis	60	60	60	45	75	75	75	75	60
	Minor Axis	53	30	45	38	75	75	53	75	60
Variography	C <sub>0</sub>	0.1	0.2	0.2	0.13	-	-	0.27	-	0.4
	C <sub>1</sub>	0.6	0.622	0.622	0.709	-	-	0.584	-	0.3
	Major Axis	40	40	10	15	-	-	20	-	30
	Semi-major Axis	20	20	10	15	-	-	20	-	20
	Minor Axis	10	10	10	8	-	-	7	-	20
	C <sub>2</sub>	0.3	0.178	0.178	0.161	-	-	0.146	-	0.3
	Major Axis	65	80	40	40	-	-	75	-	60
	Semi-major Axis	40	40	40	30	-	-	50	-	40
	Minor Axis	35	20	30	25	-	-	35	-	40

## Resource Classification

The Mineral Resource classification complies with the CIM Definition Standards (CIM, 2010).

Resource classification is primarily based on drillhole spacing and continuity of grade, and is manually completed. Manual adjustments were made to eliminate the unusual artifacts generated from the estimation passes.

Additional estimation runs were completed for classification of Measured Resources. Blocks estimated by OK, using search ranges corresponding to the 1st variogram structures with a

minimum of two drillholes, and well established geological and grade continuity were classified as Measured Resources. Blocks estimated by ID<sup>2</sup>, using a 20 m by 20 m by 20 m search range with a minimum of two drillholes, were classified as Measured Resources.

Blocks estimated during the second estimation run with a minimum of two holes were classified as Indicated Resources, where geological and grade continuity has been sufficiently established.

Inferred Resources have been defined with the third estimation run based on the wide spacing of drillholes and resultant uncertainty in geological and grade continuity.

### **Block Grade Validation**

Visual validation comparing assay and composite grades to block grade estimates showed reasonable correlation with no significant overestimation or overextended influence of high grades.

Final block grades were compared to the average grades of composites for each mineralization zone, with no significant differences identified.

### **Mineral Resource Estimate**

Mineral Resources for the Sabodala deposit are reported below the March 2013 month end pit surface, at cut-off grades of 0.20 g/t Au for oxide and 0.35 g/t Au for fresh rock, and are presented in Table 14.9 and Table 14.10. The effective date of the Mineral Resource estimate is 17 May 2013.

**Table 14.9 Sabodala Measured and Indicated Resources**

<b>Material</b>	<b>Measured</b>			<b>Indicated</b>			<b>Measured and Indicated</b>		
	<b>Tonnes (Mt)</b>	<b>Grade (g/t Au)</b>	<b>Au (Moz)</b>	<b>Tonnes (Mt)</b>	<b>Grade (g/t Au)</b>	<b>Au (Moz)</b>	<b>Tonnes (Mt)</b>	<b>Grade (g/t Au)</b>	<b>Au (Moz)</b>
Oxide	0.12	0.73	0.003	0.55	0.89	0.02	0.67	0.86	0.02
Fresh	16.36	1.58	0.83	24.34	1.34	1.05	40.71	1.44	1.88
Stockpile	7.88	0.90	0.23				7.88	0.90	0.23
<b>Total</b>	<b>24.36</b>	<b>1.36</b>	<b>1.06</b>	<b>24.90</b>	<b>1.33</b>	<b>1.06</b>	<b>49.26</b>	<b>1.34</b>	<b>2.12</b>

Notes:

- 1) CIM definitions were followed for Mineral Resources.
- 2) Mineral Resources for Sabodala include Sutuba.
- 3) Mineral Resources are reported at cut-off grades of 0.20 g/t Au for oxide and 0.35 g/t Au for fresh rock.
- 4) High grade assays were capped at grades ranging from 10 g/t to 30 g/t Au.
- 5) Measured Resources include stockpiles which total 7.88 Mt at 0.90 g/t Au, for 0.23 Mozs.
- 6) Mineral Resources are reported inclusive of Mineral Reserves.
- 7) Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
- 8) Numbers may not add due to rounding.

**Table 14.10 Sabodala Inferred Mineral Resources**

Material	Inferred		
	Tonnes (Mt)	Au (g/t)	Au (Moz)
Oxide	0.22	0.55	0.004
Fresh	17.84	0.96	0.55
<b>Total</b>	18.05	0.95	0.55

Notes:

- 1) CIM definitions were followed for Mineral Resources.
- 2) Mineral Resources are reported at cut-off grades of 0.20 g/t Au for oxide and 0.35 g/t Au for fresh rock.
- 3) High grade assays were capped at grades ranging from 10 g/t to 30 g/t Au.
- 4) Numbers may not add due to rounding.

### 14.3 Niakafiri Mineral Resource Estimate

The estimate for the Niakafiri deposit was generated in June 2007. The following is a brief description of the estimation procedures.

#### 14.3.1 Database

##### Drillhole Database

The Niakafiri drillhole data is maintained in a MS Access database. Stored data include gold assays, lithology, alteration, structural information, collar coordinates, downhole surveys, and bulk density data. The drillhole spacing is approximately one third of the deposit is 20 m by 20 m, while the remainder is 40 m x 20 m.

The Niakafiri Access database contains a total of 24,389 m of RC and diamond drilling in 203 surface drillholes.

##### Bulk Density

Bulk density determinations were conducted on Niakafiri core samples by in-house personnel, similar to the procedure followed for determining Sabodala bulk densities. A total of 6,000 measurements were taken on Niakafiri core. The average bulk density applied to fresh rock was 2.80 t/m<sup>3</sup> and 2.00 t/m<sup>3</sup> was applied to oxide, using bulk density determinations for mafic volcanics.

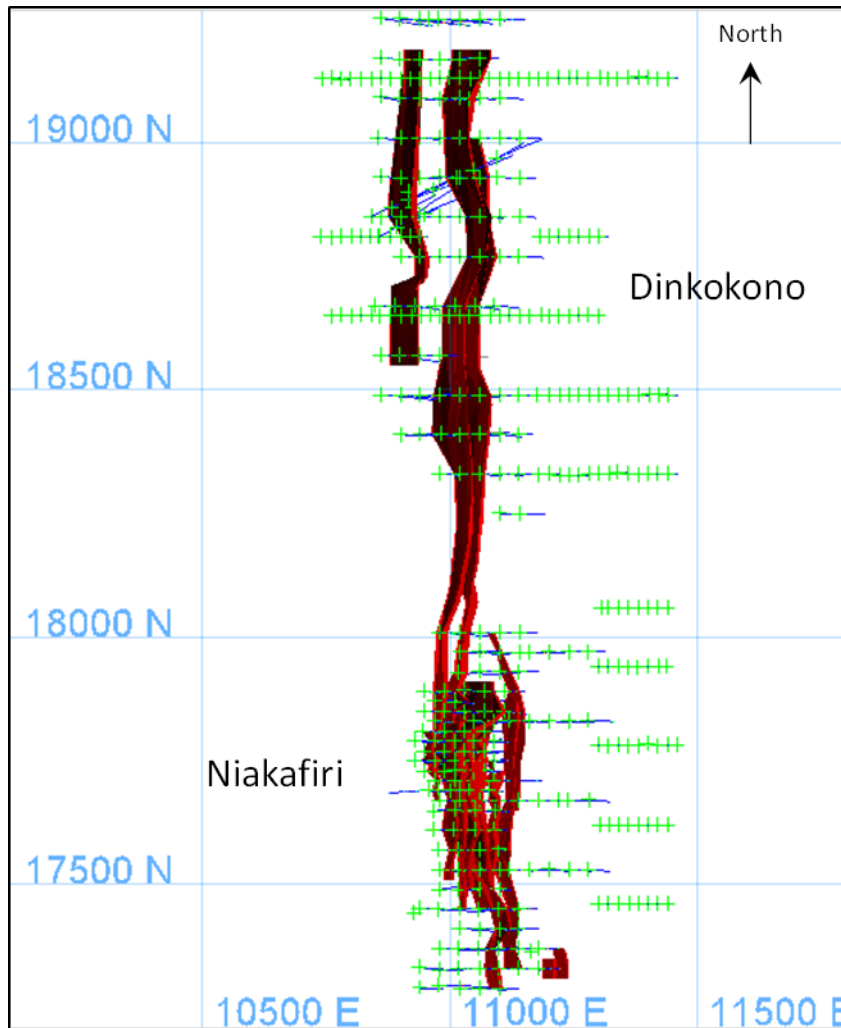
#### 14.3.2 Wireframe Models

##### Mineralization Models

Correlation of mineralized domains is based on a 0.5 g/t Au cut-off grade supported by geological interpretation, including the north-trending shears. The 0.5 g/t Au cut-off grade is not a hard boundary as approximately 25% of the assays included in the mineralized domains are less than 0.5 g/t Au. Niakafiri and Dinkokhono mineralization models are presented in Figure 14.3.



**Figure 14.3 Niakafiri and Dinkokhono Mineralization Models**



### 14.3.3 Statistics and Compositing

#### Statistics

The statistics of raw assays within the mineralized domains in the Niakafiri deposit are summarized in Table 14.11.

**Table 14.11 Statistics of Raw Assay Data**

Parameter	Mineralized Domain
Minimum g/t Au	0.00
25 <sup>th</sup> percentile	0.45
Median g/t Au	0.97
75 <sup>th</sup> percentile	1.94
Maximum g/t Au	18.90
Mean g/t Au	1.52
SD g/t Au	1.78
Coefficient of Var'n	1.17
No of samples	3,636

### Grade Capping

Based on the low coefficient of variation, management of high grade assays was not considered necessary.

### Composites

Drillhole grades were composited into nominal 2.5 m bench composites prior to estimating the variograms and interpolating gold grades.

#### 14.3.4 Block Model

##### Block Model Parameters

The block model is a variable block size model with parent blocks at 5 m x 5 m x 5 m and sub blocks of 2.5 m x 2.5 m x 1 m blocks.

##### Grade Estimation

Pairwise relative variograms were calculated using 2.5 m composited gold values separately for data inside and outside the mineralized domain. The variogram for inside the mineralized domain has the greatest continuity of 47 m, oriented towards 351° azimuth, plunging -20°. Secondary directions were modelled with very short ranges.

Grade interpolation was carried using Ordinary Kriging based on the parameters summarized in Table 14.12.

**Table 14.12 Niakafiri Ordinary Kriging Estimation Parameters**

Parameters	Primary Pass Inside Mineralized Domain	Secondary Pass Inside Mineralized Domain (Inferred)	Primary Pass Outside Mineralized Domain
Discrete Approximate Matrix	3 m x 3 m x 1 m	3 m x 3 m x 1 m	3 m x 3 m x 1 m
Nominal Composite	2.5 m bench	2.5 m bench	2.5 m bench
Search Rotation (X, Y, Z)	351 -19.7, 79	351 - 19.7, 79	330,0,80
Search Ellipsoid Distance (X m, Y m, Z m)	50, 50, 10	100,100, 20	50, 54, 20
Minimum Samples	1	1	1
Maximum Samples	10	10	10
Maximum Samples/Drillhole	2	2	2

A reduced search limit of 10 m by 10 m by 5 m was applied to composites greater than 1.8 g/t outside of the domain boundaries, to reduce the influence of the high grades in the block estimates.

### Resource Classification

Classification of Mineral Resources was based on the following:

- Number of drillholes in the grade estimate (1=Inferred; 2=Indicated; 3=Measured)
- Ratio of the average distance to the composites/principal variogram range for the domain ( $\leq 50\%$ =Measured;  $50\%-100\%$ =Indicated;  $>100\%$ = Inferred)

### Mineral Resource Estimate

Mineral Resources for the Niakafiri deposit are presented in Table 14.13 and Table 14.14. The effective date of the Mineral Resource estimate is 30 May 2010.

**Table 14.13 Niakafiri Measured and Indicated Mineral Resources**

Material	Measured			Indicated			Measured and Indicated		
	Tonnes (Mt)	Grade (g/t Au)	Au (Moz)	Tonnes (Mt)	Grade (g/t Au)	Au (Moz)	Tonnes (Mt)	Grade (g/t Au)	Au (Moz)
Oxide	0.12	1.84	0.01	5.37	0.93	0.16	5.49	0.95	0.17
Fresh	0.16	1.67	0.01	5.09	1.28	0.21	5.25	1.29	0.22
<b>Total</b>	<b>0.30</b>	<b>1.74</b>	<b>0.02</b>	<b>10.50</b>	<b>1.10</b>	<b>0.37</b>	<b>10.70</b>	<b>1.12</b>	<b>0.39</b>

Notes:

- 1) CIM definitions were followed for Mineral Resources
- 2) Mineral Resources are reported at cut-off grades of 0.30 g/t Au for oxide and 0.50 g/t for Au for fresh rock.
- 3) Mineral Resources are reported inclusive of Mineral Reserves.
- 4) Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
- 4) Sum of individual amounts may not equal due to rounding.

**Table 14.14 Niakafiri Inferred Mineral Resources**

Material	Inferred		
	Tonnes (Mt)	Grade (g/t Au)	Au (Moz)
Oxide	2.78	0.75	0.07
Fresh	4.47	0.96	0.14
<b>Total</b>	<b>7.20</b>	<b>0.88</b>	<b>0.21</b>

Notes:

- 1) CIM definitions were followed for Mineral Resources
- 2) Mineral Resources are reported at cut-off grades of 0.30 g/t Au for oxide and 0.50 g/t for Au for fresh rock.
- 3) Sum of individual amounts may not equal due to rounding.

#### 14.4 Niakafiri West and Soukhoto Mineral Resource Estimates

Mineral Resource estimates were generated for the Niakafiri West prospect and the Soukhoto prospect in June 2010.

##### 14.4.1 Overview

Mineralization wireframes were constructed for Niakafiri West and Soukhoto constraining assays at a 0.3 g/t Au cut-off grade (D1). Due to varying mineralization trends, mineralization was not exclusively constrained within the wireframes. Additional mineralization located outside of modelled mineralized domains has been treated as a separate domain (D9) for each prospect, with a unique composite and domain flag for resource estimation. This domain is not wireframed but is constrained by the resource block model extents. The D1 mineralization domains at Niakafiri West were grouped into four sub-domains based on mineralization trends.

As the majority of drilling at Niakafiri West and Soukhoto was RC, sufficient representative core was not available for bulk density determinations. Average bulk densities were determined from existing data in similar lithologies. Bulk densities of 2.75 t/m<sup>3</sup> for fresh rock and 2.20 t/m<sup>3</sup> for oxide were applied to both Niakafiri West and Soukhoto.

Raw assays were flagged by domain to determine capping levels. A capping level of 10 g/t Au was applied to Soukhoto assays inside the mineralization domain prior to compositing. Capping levels were not applied to Niakafiri West assays.

Run-length composites were generated at two metre lengths both inside and outside of mineralization wireframes.

The Niakafiri West and Soukhoto block models were constructed along an east-west orientation with a 5 m by 5 m by 2.5 m block size. The Niakafiri West block model extends from 10100E to 10700E, 17120N to 17720N and 500 m elevation to 740 m elevation. The Soukhoto block model extends from 10000E to 10350E, 18360N to 18480N and 540 m elevation to 740 m elevation.

Mineralization wireframes for D1 were used as hard boundaries to limit the extent of influence of composite grades within the domains.

Block gold grades were estimated using the Inverse Distance Squared method (ID<sup>2</sup>) for the mineralized domains (D1) and the Nearest Neighbour (NN) estimation method for the larger unconstrained domains (D9). Search directions were determined visually for each domain. One estimation run was applied for each domain. Grade estimation parameters are listed in Table 14.15.

Niakafiri West and Soukhoto Mineral Resources have been classified as Inferred Resources due to the wide spacing of drillholes and resultant uncertainty in geological and grade continuity.

**Table 14.15 Grade Estimation Parameters**

Prospect	Niakafiri West					Soukhoto	
Domain	D1				D9	D1	D9
Sub domain	d1	d2	d3	d4			
Bearing	90	90	270	270	90	90	90
Plunge	40	70	5	25	40	35	35
Dip	0	0	0	0	0	0	0
Major	60	60	60	60	60	60	60
Semi Major	30	30	30	30	40	30	40
Minor	10	10	10	10	20	10	20
Min data	1	1	1	1	1	1	1
Max data	4	4	4	4	1	4	1

#### 14.4.2 Mineral Resource Estimate

Mineral Resources for Niakafiri West and Soukhoto are reported at a cut-off grade of 0.30 g/t Au and are presented in Table 14.16. The effective date of the Mineral Resource estimates is June 2010.

**Table 14.16 Niakafiri West and Soukhoto Inferred Mineral Resources**

Cut-Off Grade (g/t Au)	Niakafiri West			Soukhoto		
	Tonnes (Mt)	Grade (g/t Au)	Au (Moz)	Tonnes (Mt)	Grade (g/t Au)	Au (Moz)
0.30	7.10	0.82	0.19	0.60	1.32	0.02

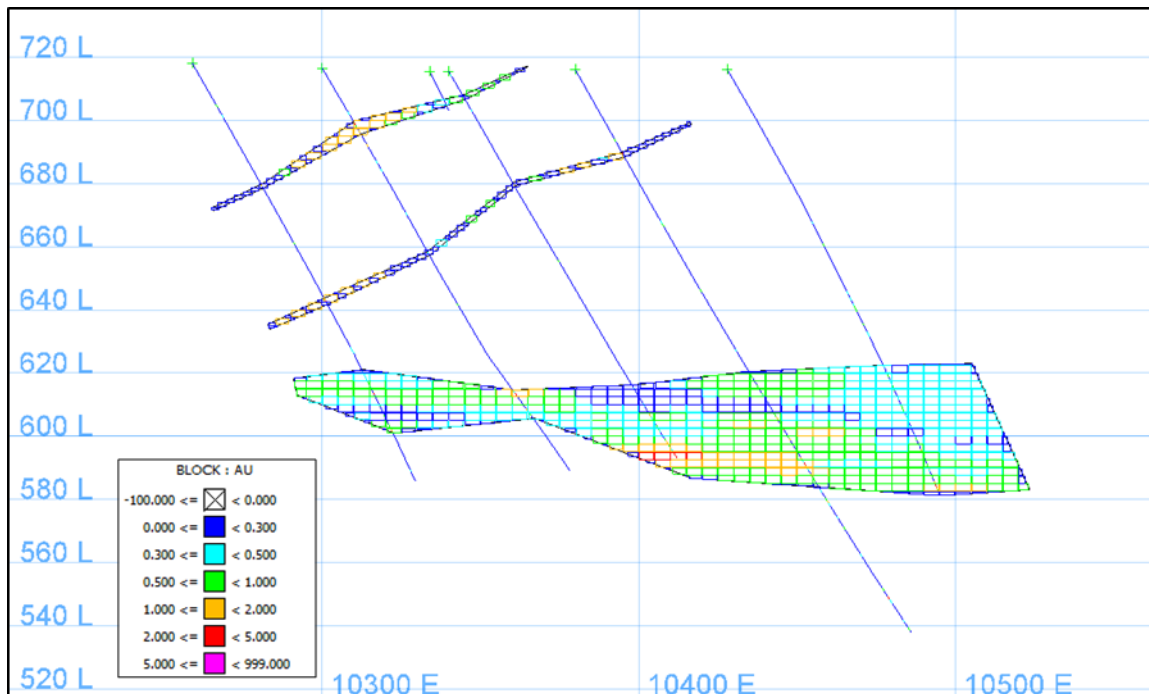
Notes:

- 1) CIM definitions were followed for Mineral Resources.
- 2) Mineral Resources are reported at a 0.30 g/t Au cut-off grade for oxide and fresh rock.
- 3) High grade assays at Soukhoto in D1 were capped at 10 g/t Au.

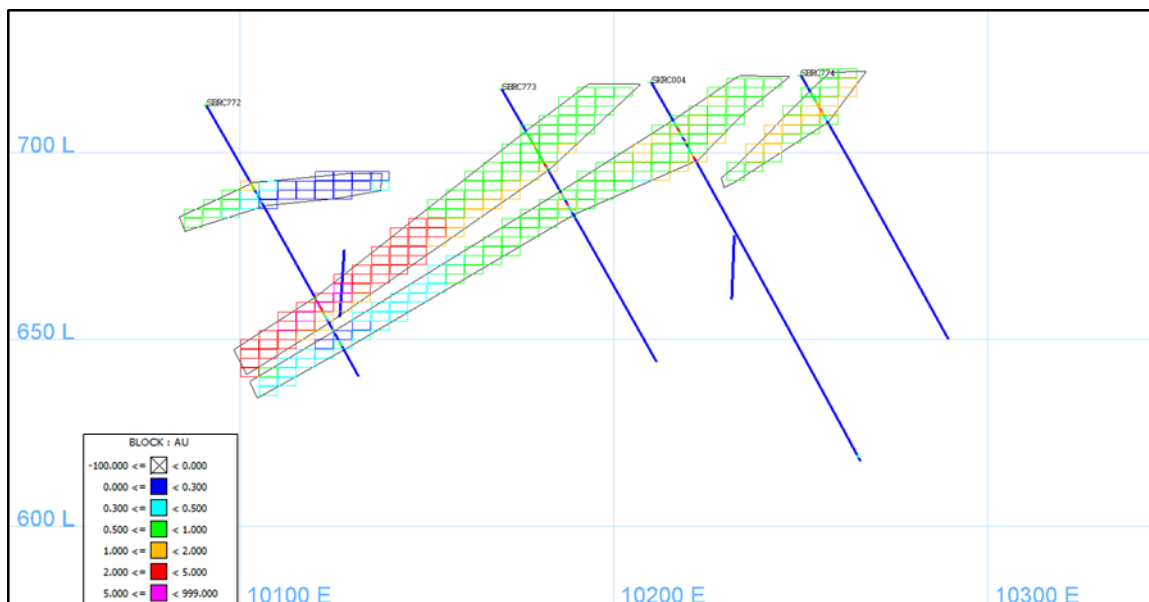
Representative cross-sections showing estimated block grades for D1 for Niakafiri West and Soukhoto are presented in Figure 14.4 and Figure 14.5 respectively.



**Figure 14.4 Niakafiri West Cross Section 17540N (looking North)**



**Figure 14.5 Soukhoto Cross Section 18420N (looking North)**



## 14.5 Gora Resource Estimate

A total of 70,787 m have been drilled on the Gora property by Axmin in 2007, SMC in 2010 and Teranga in 2011. The Gora Mineral Resource estimate was updated in October 2012 and includes additional assays received after completion of the February 2012 resource model.

### 14.5.1 Database

#### Drillhole Database

The Gora drillhole database is maintained in a Centric data management system and a Vulcan® Isis database. The Vulcan® database includes a total of 259 surface holes with tables for collar, survey, lithology, and assay data. Not all of the holes were used for resource estimation as some holes are located outside of the mineralized zones. Table 14.17 lists the Gora drillholes, summarized by hole type.

**Table 14.17 Gora Resource Database**

Drillhole Type	Number of Drillholes	Number of Assays
DDH	35	3,663
RCDD	148	27,474
RC	76	9,011
Total	259	40,148

#### Bulk Density

There are a total of 1,469 bulk density determinations taken from 52 drillholes. The immersion in water method was conducted by in-house Teranga personnel to determine the bulk density values in core samples. Teranga personnel followed in-house operating procedures for collecting bulk density determinations.

Samples were taken from veins, mafic volcanics, felsic volcanics and sediments. There were no bulk density determinations for the oxide portion, therefore the bulk density estimated for the previous block model was used for the oxide. The vein samples taken were a combination of vein and wallrock sediments, with the majority of the sample consisting of sediments, therefore the average bulk density of the veins and sediments was applied to the veins. The mafic and felsic volcanic units are discontinuous, irregular, intercalated within the more extensive sedimentary unit and not separately modelled. The average bulk density of the sediments was applied to all fresh rock. Final bulk densities are listed in Table 14.18.

**Table 14.18 Gora Bulk Densities**

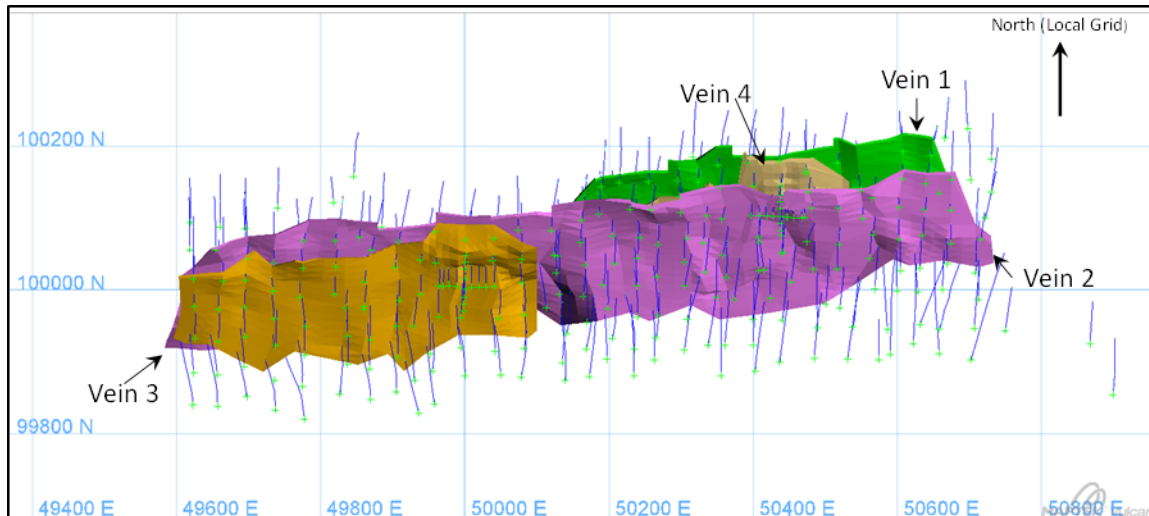
Lithology	Average Bulk Density
Oxide	2.53
Veins	2.72
Fresh Rock (mafic/felsic volcanics, sediments)	2.77

### 14.5.2 Wireframe Models

Teranga generated all surface and solid wireframes using Maptek's Vulcan® version 8.1.4. A topographic surface was generated from surveyed drillhole collars and artisanal mined workings. An oxide surface was modelled based on logged lithological data. Four vein mineralization wireframes were generated based on local lithological, alteration and

structural trends from drillholes and surface mapping, a minimum 2 m width and a 0.1 g/t Au cut-off grade. Vein mineralization solids are illustrated in Figure 14.6.

**Figure 14.6 Gora Mineralization Solids**



### 14.5.3 Statistics and Compositing

#### Assay Statistics

The vein mineralization solids for the four domains contain a total of 1,342 assay intervals from 225 drillholes. Sample statistics of the assayed information are shown in Table 14.23.

**Table 14.19 Gora Assay Statistics**

Parameter	Vein 1	Vein 2	Vein 3	Vein 4
Minimum Grade (g/t Au)	0.003	0.003	0.003	0.003
25 <sup>th</sup> percentile (g/t Au)	0.12	0.06	0.051	0.08
Median Grade (g/t Au)	0.62	0.16	0.14	0.23
75 <sup>th</sup> percentile (g/t Au)	6.02	0.89	0.42	1.79
Maximum Grade (g/t Au)	159.0	55.30	138.0	58.2
Mean Grade (g/t Au)	7.40	2.68	1.60	4.09
Standard Deviation	16.65	7.9	9.92	10.04
Coefficient of Variation	2.25	2.95	6.19	2.45
Number of Samples	391	566	205	180

#### Grade Capping

Capping levels were determined by raw assays for each mineralization domain prior to compositing, to limit the influence of high grade outliers. All assays located inside each mineralization wireframe were combined to determine an appropriate capping level for each mineralized zone. Capping levels were established using a combination of histogram, probability, percentile and cutting curve plots. Final capping levels are listed in Table 14.20.

**Table 14.20 Capping Levels**

Vein Domain	Capping Level (g/t Au)	Total Number of Assays	Number of Capped Assays	%Capped Assays
Vein 1	70	391	3	0.8
Vein 2	45	566	6	1.1
Vein 3	20	205	1	0.5
Vein 4	45	180	2	1.1

### Composites

Run-length composites were generated at two metre lengths from capped assays. Composites were flagged by mineralization domain. Non-logged and unsampled intervals were replaced with a grade of 0.0 g/t Au. Composites less than 0.5 m in length were removed from the final composite database. This accounted for a small percentage of data with no demonstrated grade bias. Table 14.21 lists the composite statistics.

**Table 14.21 Gora Composite Statistics**

Parameter	Vein 1	Vein 2	Vein 3	Vein 4
Minimum Grade (g/t Au)	0.003	0.00	0.003	0.003
25th percentile (g/t Au)	0.16	0.10	0.08	0.12
Median Grade (g/t Au)	1.10	0.27	0.18	0.42
75th percentile (g/t Au)	8.33	1.44	0.58	1.87
Maximum Grade (g/t Au)	67.1	44.54	10.42	33.89
Mean Grade (g/t Au)	6.51	2.43	0.96	3.69
Standard Deviation	11.14	5.88	2.02	7.34
Coefficient of Variation	1.71	2.42	2.10	1.99
Number of Samples	215	313	110	99

### 14.5.4 Block Model

#### Block Model Parameters

The Gora block model was generated in Vulcan<sup>TM</sup> and constructed in local grid coordinates along an east-west orientation, with a 5 m by 5 m by 5 m parent block size and 0.5 m by 0.5 m by 0.5 m sub-blocks along mineralization domain boundaries. The block model extends from 49,300E to 51,200E, 99,700N to 100,400N and 300 m elevation to 750 m elevation. The maximum block size inside mineralization domains is 2.5 m by 2.5 m by 2.5 m.

The transformation from Gora local grid coordinates to UTM Zone 29 is based on the common points in Table 14.22. This transformation results in a translation and clockwise rotation of approximately 55°.

**Table 14.22 Gora Grid Coordinate Transformation**

	Gora Local Grid			UTM Zone 29		
	Easting	Northing	Elevation	Easting	Northing	Elevation
Point 1	50,000	100,000	661.367	182,458.07	1,471,697.61	139.367
Point 2	50,500.647	100,000	659.191	182,745.408	1,472,107.971	137.191

The transformation is calculated using the following functions. The factors used for the transformation are listed in Table 14.23.

$$\text{UTM\_East} = \text{PRXA} + P * (\text{GoraLocal\_Easting} - \text{SUBXA}) + Q * (\text{GoraLocal\_Northing} - \text{SUBYA})$$

$$\text{UTM\_North} = \text{PRYA} + P * (\text{GoraLocal\_Northing} - \text{SUBYA}) + Q * (\text{GoraLocal\_Easting} - \text{SUBXA})$$

**Table 14.23 Gora Grid Coordinate Transformation Factors**

Factor	Value
SUBXA	50,000.000
SUBYA	100,000.000
SUBXB	50,500.647
SUBYB	100,000.000
PRXA	182,458.070
PRYA	1,471,697.610
PRXB	182,745.408
PRYB	1,472,107.971
P	0.57393333
Q	-0.81966136

## Grade Estimation

Block grades were estimated using the Inverse Distance Cubed (ID<sup>3</sup>) method. Domain models were used as hard boundaries to limit the extent of influence of composite grades within the domains.

Suitable variograms could not be generated for individual or combined domain models due to the small number of contained sample composites. Search ranges were determined visually based on continuity of mineralization and drillhole spacing.

Search directions were determined visually for each domain. Isotropic search ranges in the major and semi-major directions following the trend of individual domain models were applied. Minor search ranges were also determined visually and were shorter. Search directions and trends are listed in Table 14.24.



**Table 14.24 Vulcan Search Parameters**

Domain Model	General Trend		Vulcan Rotation		
	Strike (°)	Dip (°)	Z Rotation	Y Rotation	X Rotation
Vein 1	85	-42S	85	0	-42
Vein 2	86	-45S	86	0	-45
Vein 3	85	-40S	85	0	-40
Vein 4	90	-40S	90	0	-40

Three grade estimation passes were run with increasing major, semi-major, and minor search ranges for each successive estimation run. Estimation flags were stored for each estimation run based on increasing search distances. The number of samples and holes were stored in separate block variables for use in determining resource classification. Grade estimation parameters are listed in Table 14.25.

**Table 14.25 Grade Estimation Parameters**

Vein	Estimation Run	Search Ranges			Number of Samples Per Estimate		
		Major Axis	Semi-Major Axis	Minor Axis	Minimum Samples/Estimate	Maximum Samples/Estimate	Maximum Samples/DH
All Veins	1	5	5	5	3	12	3
	2	40	40	20	3	12	3
	3	60	60	30	2	12	-

### Resource Classification

Gora resource classification within gold mineralization domains is primarily based on drillhole spacing and continuity of grade, and was manually completed. Blocks estimated by drillholes with a maximum spacing of approximately 20 ft, and well established geological and grade continuity, were classified as Measured Resources. Blocks estimated by a minimum of two drillholes with a maximum spacing of approximately 40 ft, and sufficient geological and grade continuity were classified as Indicated Resources. Manual adjustments were made to eliminate the unusual artifacts generated from the estimation passes.

Inferred Resources have been defined by the wide spacing of drillholes and resultant uncertainty in geological and grade continuity.

### Block Grade Validation

Block grade validation consisted of a visual validation, as well as a comparison of the average block grade to the average composite grade by domain. Visual validation comparing mineralization intercepts and composite grades to block grade estimates showed reasonable correlation with no significant overestimation or overextended influence of high grades. The average block grades for Veins 1 and 2 were higher than the average composite grades due to widely spaced high grade composites influencing a larger number of blocks. No significant discrepancies were identified with the block grade validation.

## Mineral Resource Estimate

Measured and Indicated Mineral Resource estimates are summarized in Table 14.26 and Inferred Mineral Resource estimates are summarized in Table 14.27. A cut-off grade of 0.5 g/t Au has been applied to both oxide and fresh material. The effective date of the Gora Mineral Resource is 22 October 2012.

**Table 14.26 Gora Measured and Indicated Mineral Resources**

Measured			Indicated			Measured and Indicated		
Tonnes (Mt)	Grade (g/t Au)	Au (Moz)	Tonnes (Mt)	Grade (g/t Au)	Au (Moz)	Tonnes (Mt)	Grade (g/t Au)	Au (Moz)
0.49	5.27	0.08	1.84	4.93	0.29	2.32	5.00	0.37

Notes:

- 1) CIM definitions were followed for Mineral Resources.
- 2) Mineral Resources are reported at a 0.50 g/t Au cut-off grade for oxide and fresh rock.
- 3) High grade assays were capped at 70 g/t Au for Vein 1, 45 g/t Au for Vein 2, 20 g/t Au for Vein 3 and 45 g/t Au for Vein 4.
- 4) Mineral Resources are reported inclusive of Mineral Reserves.
- 5) Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
- 5) Sum of individual amounts may not equal due to rounding.

**Table 14.27 Gora Inferred Mineral Resources**

Tonnes (Mt)	Grade (g/t Au)	Au (Moz)
0.21	3.38	0.02

Notes:

1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources are reported at a 0.50 g/t Au cut-off grade for oxide and fresh rock.
3. High grade assays were capped at 70 g/t Au for Vein 1, 45 g/t Au for Vein 2, 20 g/t Au for Vein 3 and 45 g/t Au for Vein 4.

## 14.6 Diadiako Mineral Resource Estimate

A preliminary Mineral Resource estimate for Diadiako was generated in December 2011.

### 14.6.1 Overview

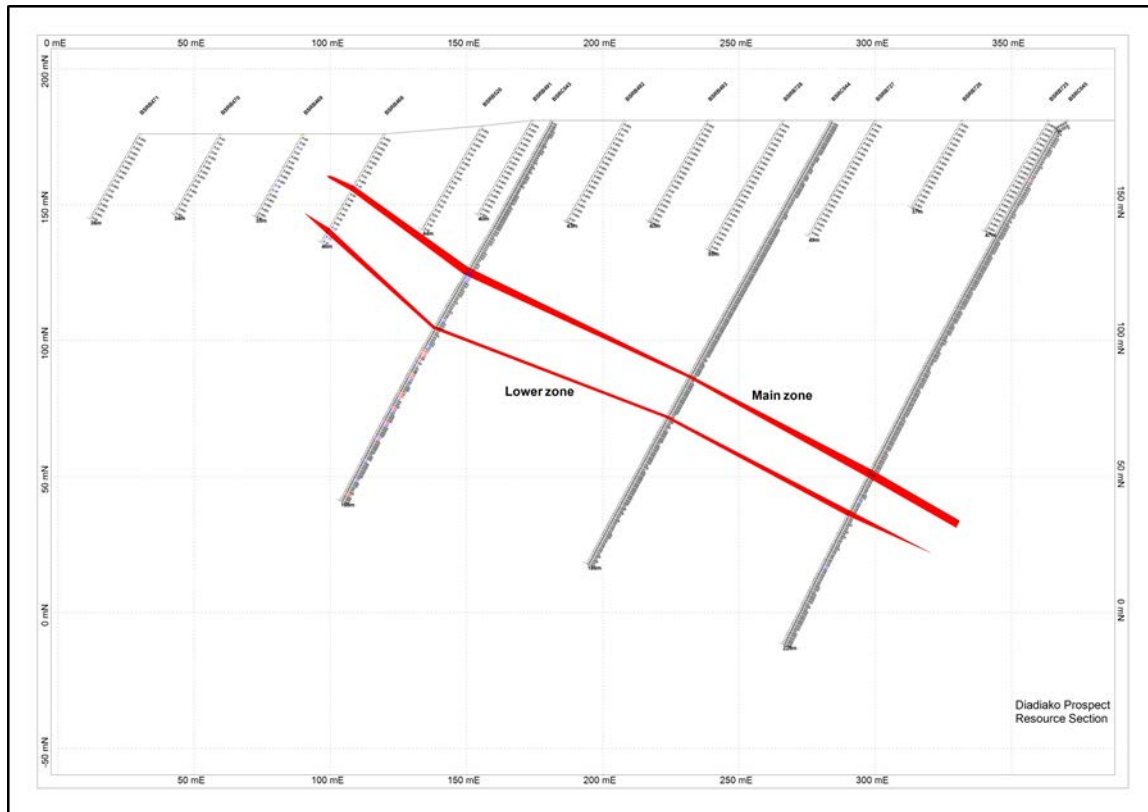
Mineralization was modelled on nine vertical cross-sections oriented along 135° azimuth and spaced 100 metres apart. Drillholes are collared approximately 50 m to 100 m apart on sections. Two sub-parallel zones (Main Zone and Lower Zone) were modelled using a 0.2 g/t Au cut-off grade. The Main Zone extends 900 metres along strike and the Lower Zone extends 400 metres along strike, both trending at 45° azimuth, dipping 30° southeast, with a 2.8 metre average width. Mineralization was modelled 25 metres down dip beyond the deepest mineralized drillhole intersection, extending approximately 150 m vertically below surface. Mineralized zones are illustrated in Figure 14.7.

Mineralization polygons were generated based on mineralized drillhole intercepts on each section, then digitized using MapInfo Target® 3D software, which calculated the area of each polygon. An average interval width on section and a 100 metre width across each section (50 metre projection on both sides) were applied to calculate volumes, and a 2.70 t/m<sup>3</sup> bulk density was applied to generate tonnages.

Average gold grades were calculated across each drillhole intercept inside mineralization polygons, and applied to each corresponding sectional volume. Capping levels were not applied to Diadiako assays.

Diadiako Mineral Resources have been classified as Inferred Resources due to the wide spacing of drillholes and resultant uncertainty in geological and grade continuity.

**Figure 14.7 Diadiako Cross Section 1,471,700N Looking North**



#### 14.6.2 Mineral Resource Estimate

Mineral Resources for Diadiako are reported at a cut-off grade of 0.35 g/t Au and are presented in Table 14.28. The effective date of the Mineral Resource estimate is December 2011.

**Table 14.28 Diadiako Inferred Mineral Resources**

Zone	Tonnes (kt)	Au (g/t)	Average Thickness (m)	Contained Au (koz)	Total Gold (%)
Main Zone	2.52	1.31	4.6	106	89
Lower Zone	0.40	1.00	1.5	13	11
<b>Total</b>	<b>2.90</b>	<b>1.27</b>	<b>4.1</b>	<b>119</b>	<b>100</b>

Notes:

- 1) CIM definitions were followed for Mineral Resources.
- 2) Mineral Resources are reported at a 0.20 g/t Au cut-off grade for oxide and fresh rock.
- 3) Capping levels were not applied to assays.
- 4) Sum of individual amounts may not add due to rounding.

## **14.7 Majiva Mineral Resource Estimate**

A preliminary Mineral Resource estimate for Majiva was generated in December 2011.

### **14.7.1 Overview**

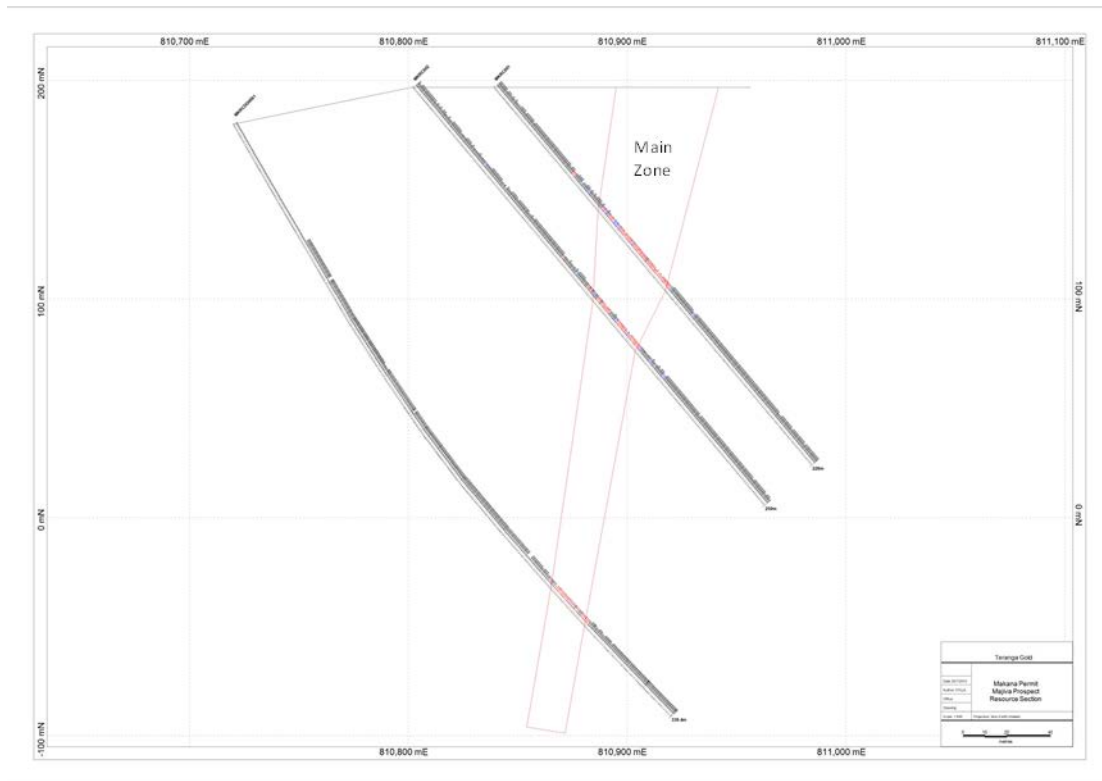
Mineralization was modelled on five vertical cross-sections oriented along 90° azimuth and spaced 100 metres apart. Drillholes are collared approximately 50 m to 100 m apart on sections. Two sub-parallel zones (Main Zone and Target 2) were modelled using a 0.2 g/t Au cut-off grade. The Main Zone extends 500 metres along strike and the Target 2 Zone extends 800 metres along strike, both trending north-south, dipping 70° to 80° west. Mineralization was modelled 25 metres down dip beyond the deepest mineralized drillhole intersection. The Main Zone is illustrated in Figure 14.8.

Mineralization polygons were generated based on mineralized drillhole intercepts on each section, then digitized using MapInfo Target® 3D software, which calculated the area of each polygon. An average interval width on section and a 100 metre width across each section (50 metre projection on both sides) were applied to calculate volumes, and a 2.70 t/m<sup>3</sup> bulk density was applied to generate tonnages.

Average gold grades were calculated across each drillhole intercept inside mineralization polygons, and applied to each corresponding sectional volume. Capping levels were not applied to Majiva assays.

The Majiva Mineral Resource has been classified as an Inferred Resource due to the wide spacing of drillholes and resultant uncertainty in geological and grade continuity.

**Figure 14.8 Majiva Cross Section 1,443,900N Looking North**



#### 14.7.2 Mineral Resource Estimate

The Mineral Resource for Majiva is reported at a cut-off grade of 0.2 g/t Au and is presented in Table 14.x. The effective date of the Mineral Resource estimate is December 2011.

**Table 14.29 Majiva Inferred Mineral Resource**

Zone	Tonnes (Mt)	Grade (Au g/t)	Au (koz)
Main Zone	2.6	0.64	50

Notes:

- 1) CIM definitions were followed for Mineral Resources.
- 2) Mineral Resources are reported at a 0.20 g/t Au cut-off grade for oxide and fresh rock.
- 3) Capping levels were not applied to assays.
- 4) Sum of individual amounts may not add due to rounding.

#### 14.8 Masato Resource Estimate

In 2011, mineralization was identified at Masato with a total of 87 drillholes completed. The objectives in 2012 included definition drilling by in-filling and extending the mineralized zones. An additional twenty-four holes were drilled in 2012.



### 14.8.1 Database

#### Drillhole Database

The Masato drillhole database is maintained in an Access database and a Vulcan® Isis database. The Vulcan® database includes a total of 106 surface holes with tables for collar, survey, lithology, and assay data. Not all of the holes were used for resource estimation as some holes are located outside of the mineralized zones. Table lists the drillholes summarized by hole type. The effective date of the Masato database is 30 October 2012.

**Table 14.30 Masato Resource Database**

Drillhole Type	Number of Drillholes	Number of Assays
DDH	28	6,102
RCDD	40	17,469
RC	38	9,421
Total	106	32,992

#### Bulk Density

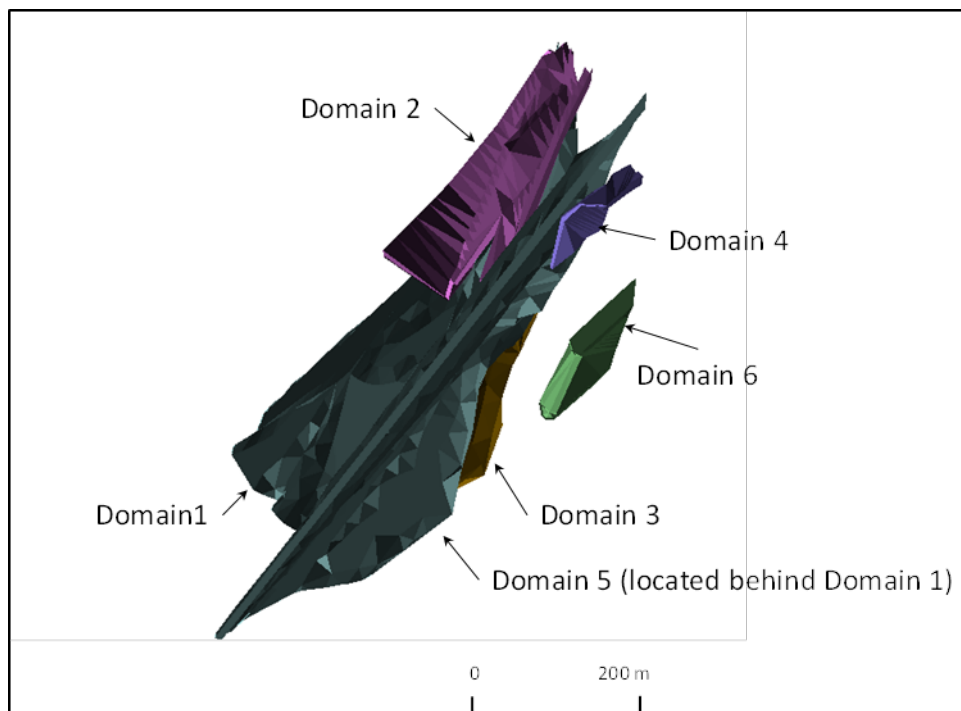
There were no bulk density determinations taken on the Masato drill core. Average bulk densities calculated for basalt, gabbro and ultramafic lithologies located at Sabodala were applied to Masato lithologies. An average bulk density of 2.38 was applied to oxide rock and an average bulk density of 2.85 was applied to fresh rock at Masato.

### 14.8.2 Wireframe Models

The existing topographic surface covering the Mine Lease property was used to generate an “air” model. An oxidation surface was modelled based on logged lithological data representing the base of the weathered rock profile.

Six mineralization wireframes were generated based on local lithological, alteration and structural trends from drillholes, a minimum 2 m width and a 0.2 g/t Au cut-off grade. The mineralization solids are shown in Figure 14.9

**Figure 14.9 Masato Mineralization Solids (3D View looking along 008/-15)**



### 14.8.3 Statistics and Compositing

#### Assay Statistics

Resource wireframes for the 6 mineralization domains contain a total of 3,664 assay intervals from 63 drillholes. Assay statistics are listed in Table 14.31.

**Table 14.31 Masato Assay Statistics**

Parameter	Domain 1	Domain 2	Domain 3	Domain 4	Domain 5	Domain 6
Minimum Grade (g/t Au)	0.005	0.005	0.005	0.01	0.005	0.01
25 <sup>th</sup> percentile (g/t Au)	0.19	0.11	0.01	0.27	0.32	0.31
Median Grade (g/t Au)	0.54	0.32	0.12	0.45	0.68	0.77
75 <sup>th</sup> percentile (g/t Au)	1.44	0.84	0.4	1.08	1.56	1.87
Maximum Grade (g/t Au)	66.4	6.57	18.7	2.75	7.44	10.5
Mean Grade (g/t Au)	1.33	0.68	0.45	0.70	1.20	1.55
Standard Deviation	2.73	0.93	1.09	0.61	1.34	2.03
Coefficient of Variation	2.06	1.36	2.44	0.87	1.12	1.31
Number of Samples	1,889	305	1,246	60	88	76

#### Grade Capping

Capping levels of raw assays were determined prior to compositing, to limit the influence of high grade outliers. All assays located inside the mineralization wireframes were combined to determine an appropriate capping level for all mineralized zones. One capping level was

established for Masato mineralization domains using a combination of histogram, probability, percentile and cutting curve plots. A capping level of 20 g/t Au was determined to be appropriate and applied to the Domain 1 assays prior to compositing. This resulted in the capping of 5 assays (0.3%). Capping levels were not applied to the other domains.

## Composites

Run-length composites were generated at two metre lengths from capped assays. Composites were flagged by mineralization domain. Non-logged and unsampled intervals were replaced with a grade of 0.0 g/t Au. Composites less than 0.5 m in length were removed from the final composite database. This accounted for a small percentage of data with no demonstrated grade bias. Composite statistics are presented in Table 14.32.

**Table 14.32 Masato Composite Statistics**

Parameter	Domain 1	Domain 2	Domain 3	Domain 4	Domain 5	Domain 6
Minimum Grade (g/t Au)	0.0	0.0	0.005	0.11	0.03	0.02
25 <sup>th</sup> percentile (g/t Au)	0.27	0.10	0.02	0.30	0.41	0.56
Median Grade (g/t Au)	0.64	0.36	0.16	0.62	0.88	0.91
75 <sup>th</sup> percentile (g/t Au)	1.48	0.88	0.47	1.09	1.67	2.23
Maximum Grade (g/t Au)	20.0	6.57	13.13	1.75	5.02	5.62
Mean Grade (g/t Au)	1.26	0.63	0.44	0.71	1.20	1.54
Standard Deviation	1.82	0.80	0.93	0.47	1.08	1.54
Coefficient of Variation	1.44	1.26	2.08	0.67	0.91	1.00
Number of Samples	962	173	628	31	44	39

## 14.8.4 Block Model

### Block Model Parameters

The Masato block model was generated in Vulcan<sup>®</sup> and constructed in UTM Zone 28N coordinates along an east-west orientation, with a 10 m by 10 m by 10 m parent block size and 2.5 m by 2.5 m by 2.5 m sub-blocks along mineralization domain boundaries. The block model extends from 813,308E to 814,448E, 1,458,480N to 1,461,100N and -575 m elevation to 365 m elevation. The maximum block size inside mineralization domains is 2.5 m by 2.5 m by 2.5 m.

### Grade Estimation

Block grades were estimated using the ID<sup>2</sup> method. Domain models were used as hard boundaries to limit the extent of influence of composite grades within the domains.

Suitable variograms could not be generated for individual or combined domain models due to the small number of contained sample composites or the presence of multiple trends. Search ranges were determined visually based on continuity of mineralization and drillhole spacing. Isotropic search ranges in the major, semi-major and minor directions were applied. Search directions and trends are listed in Table 14.33.

**Table 14.33 Vulcan Search Parameters**

Domain Model	General Trend		Vulcan Rotation		
	Strike (°)	Dip (°)	Z Rotation	Y Rotation	X Rotation
Domain 1	005	-65W	5	0	65
Domain 2	000	-75W	0	0	75
Domain 3	160	-70W	160	0	-70
Domain 4	005	-45W	5	0	45
Domain 5	000	-50W	0	0	50
Domain 6	038	-52W	38	0	52

Three grade estimation passes were run with increasing major, semi-major and minor search ranges for successive estimation runs. Estimation flags were stored for each estimation run based on increasing search distances. The number of samples and holes were stored in separate block variables for use in determining resource classification. Grade estimation parameters are listed in Table 14.34.

**Table 14.34 Grade Estimation Parameters**

Vein	Estimation Run	Search Ranges			Number of Samples Per Estimate		
		Major Axis	Semi-Major Axis	Minor Axis	Minimum Samples/Estimate	Maximum Samples/Estimate	Maximum Samples/DH
All Veins	1	5	5	5	3	12	3
	2	40	40	40	6	12	3
	3	60	60	60	3	12	-

### Resource Classification

Masato resource classification within gold mineralization domains is primarily based on drillhole spacing and continuity of grade. Due to the irregular and local wide spacing of drillholes, and resultant uncertainty in geological and grade continuity, Masato Mineral Resources have been classified as Inferred Resources.

### Block Grade Validation

Block grade validation consisted of a visual validation, as well as a comparison of the average block grade to the average composite grade by domain. Visual validation comparing mineralization intercepts and composite grades to block grade estimates showed reasonable correlation with no significant overestimation or overextended influence of high grades. The average block grades for Domains 3 and 5 were higher than the average composite grades due to widely spaced high grade composites influencing a larger number of blocks. No significant discrepancies were identified with the block grade validation.

## Mineral Resource Estimate

The Masato Inferred Mineral Resource estimate is summarized in Table 14.35. A cut-off grade of 0.35 g/t Au has been applied to fresh material. The effective date of the Masato Mineral Resource is 5 November 2012.

**Table 14.35 Masato Inferred Mineral Resources**

<b>Tonnes (Mt)</b>	<b>Grade (g/t Au)</b>	<b>Au (Moz)</b>
19.18	1.15	0.71

Notes:

1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources are reported at a 0.35 g/t Au cut-off grade for fresh rock.
3. High assays were capped at 20 g/t Au for Domain 1. Capping levels were not applied to Domain 2, 3 and 4.

## 14.9 Reconciliation

Reconciliation of Sabodala block model estimates, open pit production and mill feed is conducted monthly, quarterly and annually. Monthly reconciliation procedures have been established in-house and are recorded in an internal company document. Mineral Reserve and mill feed cut-off grades as well as stockpile practices at Sabodala have changed over time since commencement of production; however, during the period from January 2012 to March 2013 inclusive, a consistent cut-off grade of 1.0 g/t Au has been applied to mill feed. Daily mill feed tonnes and grades are generated by the Teranga process engineering team.

For the purposes of reconciliation, the actual mined material is defined as the tonnage which is reported on a shift-by-shift basis combined with the grades estimated within the grade control model.

Monthly reconciliation, recorded by bench, is undertaken by two separate comparisons. The first is a comparison of the grade control model (including actual mined and stockpile movements) against mill feed, and the second is a comparison of the Mineral Reserve to actual mined. Note, fresh ore in the grade range 0.5 g/t to 1.0 g/t is placed into a low grade stockpile to be processed at the end of the mine life.

Significant discrepancies identified in the monthly reconciliation are immediately investigated, to identify the source of the discrepancies and determine remediation procedures as quickly as possible.

The mined portion of the grade control model used in the reconciliation includes all blocks above a cut-off grade (including Measured, Indicated and Inferred Resources).

A comparison of the grade control model (including the actual mined and stockpiles) to mill feed from January 1, 2012 to March 31, 2013 inclusive, is presented by month in Table 14.36. Results indicate that above a 1.0 g/t Au cut-off, the tonnes, grade and ounces in the grade control model are within 4% of the milled tonnes, grade and ounces.

**Table 14.36 Grade Control to Mill Feed (1.0 g/t cut-off)**

1 g/t Au cut-off	Grade Control Model (Actual Mined and Stockpiles)			Mill Feed			Variance		
Month	Tonnes (kt)	Grade (Au g/t)	Au (koz)	Tonnes (kt)	Grade (Au g/t)	Au (koz)	Tonnes (%)	Grade (%)	Ounces (%)
Jan/12	219.3	2.30	16.2	220.1	2.55	18.0	-0.4	-9.8	-10.1
Feb/12	177.5	2.28	13.0	181.7	2.04	11.9	-2.3	11.8	9.2
Mar/12	197.1	2.60	16.5	170.9	3.01	16.5	15.3	-13.6	-0.4
Apr/12	137.3	2.48	10.9	105.6	2.17	7.4	30.0	14.3	48.6
May/12	227.5	3.51	25.7	206.7	3.08	20.5	10.1	14.0	25.5
Jun/12	170.6	3.82	20.9	178.1	4.01	23.0	-4.2	-4.7	-8.8
Jul/12	238.6	3.67	28.1	210.7	2.79	18.9	13.2	31.5	49.0
Aug/12	219.9	3.57	25.2	224.8	3.25	23.5	-2.2	9.8	7.5
Sept/12	224.1	2.98	21.5	214.6	3.30	22.8	4.4	-9.7	-5.7
Oct/12	257.0	2.80	23.1	255.2	3.04	24.9	0.7	-7.9	-7.3
Nov/12	221.6	3.50	24.9	236.0	3.39	25.7	-6.1	3.2	-3.0
Dec/12	255.7	3.58	29.4	234.1	3.79	28.5	9.2	-5.5	3.2
Jan/13	196.2	3.89	24.5	215.5	4.25	29.4	-9.0	-8.5	-16.7
Feb/13	225.4	3.34	24.2	225.6	3.38	24.5	-0.1	-1.2	-1.3
Mar/13	262.1	2.68	22.6	256.1	2.47	20.3	2.3	8.5	11.0
<b>Total</b>	<b>3,229.7</b>	<b>3.15</b>	<b>326.9</b>	<b>3,135.5</b>	<b>3.13</b>	<b>315.9</b>	<b>3.0</b>	<b>0.5</b>	<b>3.5</b>

A comparison of the Measured and Indicated Resources in the May 2013 block model to actual mined from January 1, 2012 to March 31, 2013 inclusive is presented by bench at a cut-off grade of 0.5 g/t Au in Table 14.37. Although the actual mined tonnages are not classified by resource category and include Inferred Resources, the Inferred Resources only account for 0.6% of the total actual mined tonnes.

Results indicate that above the reported Mineral Resource cut-off grade for fresh rock at 0.5 g/t Au, the actual mined portion of the grade control model reports 1% fewer tonnes, 6% higher grade and 5% higher ounces. This indicates a close correlation between the actual mined and a diluted Mineral Reserve model reblocked to 5 m x 5 m x 10 m.



**Table 14.37 Mineral Resources to Actual Mined (0.5 g/t cut-off)**

0.5 g/t Au cut-off	Measured + Indicated Resources			Actual Mined			Variance		
Bench	Tonnes (kt)	Grade (Au g/t)	Au (koz)	Tonnes (kt)	Grade (Au g/t)	Au (koz)	Tonnes (%)	Grade (%)	Ounces (%)
710	50.5	1.05	1.7	54.9	1.19	2.1	9	14	24
700	103.6	1.53	5.1	94.5	1.23	3.7	-9	-20	-27
690	104.9	1.47	5.0	133.1	1.52	6.5	27	3	31
680	9.8	0.98	0.3	20.0	0.95	0.6	105	-3	99
660	3.2	1.43	0.1	0	0	0	-100	-100	-100
650	0.4	0.55	0.01	0	0	0	-100	-100	-100
640	28.6	1.05	1.0	14.3	1.21	0.6	-50	16	-42
630	220.5	1.07	7.6	120.5	0.89	3.4	-45	-17	-54
620	226.2	0.99	7.2	204.1	0.90	5.9	-10	-9	-18
610	170.9	0.95	5.2	140.1	0.99	4.4	-18	4	-15
600	121.7	1.13	4.4	171.3	1.06	5.8	41	-6	32
590	654.6	1.51	31.7	816.3	1.59	41.8	-25	6	32
580	1,081.2	1.85	64.4	1,027.9	2.20	72.7	-5	19	13
570	1,022.9	1.98	65.2	961.2	2.31	71.5	-6	17	10
560	886.8	2.18	62.0	885.6	1.84	52.4	0	-15	-16
550	725.8	2.10	48.9	738.3	2.28	54.0	2	9	10
540	642.9	2.09	43.2	621.1	2.40	48.0	-3	15	11
530	494.7	2.17	34.6	523.0	2.29	38.5	-6	5	11
520	416.8	2.02	27.0	382.5	2.00	24.6	-8	-1	-9
510	274.7	1.88	16.6	287.9	1.97	18.2	5	5	10
<b>Total</b>	<b>7,240.3</b>	<b>1.85</b>	<b>431.2</b>	<b>7,196.7</b>	<b>1.97</b>	<b>454.8</b>	<b>-1</b>	<b>6</b>	<b>5</b>

A comparison of the Measured and Indicated Resources in the May 2013 block model to actual mined from January 1, 2012 to March 31, 2013 inclusive is presented by bench at the mill feed cut-off grade of 1.0 g/t Au in Table 14.38. The actual mined tonnages include Inferred Resources, which only account for 0.2% of the total actual mined tonnes.

Results indicate that above the current mill feed cut-off grade, the actual mined portion of the grade control model reports 9% fewer tonnes, 11% higher grade and 1% higher ounces. This can be attributed to selective mining of the Mineral Reserve model using closer spaced grade control data.

**Table 14.38 Mineral Resources to Actual Mined (1.9 g/t cut-off)**

1.0 g/t Au cut-off	Measured + Indicated Resources			Actual Mined			Variance		
Bench	Tonnes (kt)	Grade (Au g/t)	Au (koz)	Tonnes (kt)	Grade (Au g/t)	Au (koz)	Tonnes (%)	Grade (%)	Ounces (%)
710	21.2	1.55	1.1	21.6	2.01	1.4	2	30	33
700	53.1	2.30	3.9	37.3	2.01	2.4	-30	-12	-39
690	61.3	2.01	4.0	69.7	2.21	5.0	14	10	25
680	3.8	1.33	0.2	9.2	1.24	0.4	142	-7	126
660	1.8	1.87	0.1	0	0	0	-100	-100	-100
640	14.9	1.29	0.6	14.0	1.23	0.6	-6	-5	-11
630	96.7	1.49	4.6	20.5	1.56	1.0	-79	5	-78
620	86.8	1.42	4.0	43.8	1.40	2.0	-50	-1	-50
610	63.7	1.38	2.8	41.6	1.47	2.0	-35	6	-31
600	54.6	1.65	2.9	50.1	1.81	2.9	-8	10	1
590	367.0	2.12	25.1	464.5	2.19	32.7	27	3	30
580	780.0	2.29	57.4	722.0	2.75	63.8	-7	20	11
570	789.7	2.35	59.7	671.0	2.93	63.2	-15	25	6
560	621.4	2.80	55.9	559.5	2.43	43.7	-10	-13	-22
550	493.1	2.74	43.5	444.5	3.22	46.0	-10	17	6
540	481.4	2.55	39.5	422.4	3.11	42.2	-12	22	7
530	346.7	2.80	31.2	353.0	2.96	33.6	2	6	8
520	283.6	2.63	23.9	254.3	2.60	21.3	-10	-1	-11
510	191.8	2.39	14.7	179.6	2.67	15.4	-6	12	5
<b>Total</b>	<b>4,812.4</b>	<b>2.42</b>	<b>374.9</b>	<b>4,378.6</b>	<b>2.70</b>	<b>379.5</b>	<b>-9</b>	<b>11</b>	<b>1</b>

## 15 MINERAL RESERVE ESTIMATES

### 15.1 Summary of Mineral Reserves

Mineral Reserve estimates have been prepared for the Sabodala, Niakafiri and Gora deposits.

The Sabodala deposit is currently being mined by conventional open pit methods with the Sutuba deposit mined as an extension of that open pit. The Niakafiri deposit is located approximately 5 km from the Sabodala pit and the Gora deposit is located 22 km northeast of the Sabodala processing plant.

The Mineral Reserve estimates are based on resource block models prepared by Teranga, as discussed in Section 14:

- Sabodala, including Sutuba, - resource block model dated May 2013
- Niakafiri - resource block model dated June 2007
- Gora – resource block model dated October 2012

The Proven and Probable Mineral Reserves for all deposits are based on only that part of the Measured and Indicated Resources that fall within the designed final pit limits.

Mineral Reserve cut-off grades are based on current operating practice and 2013 budget costs. Due to differences in timing for the pit optimization and design work, the following gold prices were applied:

- Sabodala, including Sutuba, - US\$1350
- Niakafiri – US\$1350
- Gora – US\$1200

No change has been made to the Niakafiri Mineral Reserve estimate from the December 2011 Technical Report.

Material from the Sabodala pit can either be sent directly to the processing facility or to a stockpile. Teranga estimates that the stockpile, at 30 June 2013, contains 7.88 Mt of ore at a grade of 0.90 g/t Au representing 230 kozs. Stockpile material is included in the Proven Mineral Reserve category.

The estimate of Mineral Reserves effective 30 June 2013 is presented in Table 15.1.

**Table 15.1 Mineral Reserves as at 30 June 2013**

Deposit	Proven			Probable			Proven and Probable		
	Tonnes (Mt)	Grade (g/t)	Au (Moz)	Tonnes (Mt)	Grade (g/t)	Au (Moz)	Tonnes (Mt)	Grade (g/t)	Au (Moz)
Sabodala	4.26	1.57	0.21	7.37	1.59	0.38	11.63	1.58	0.59
Niakafiri	0.23	1.69	0.01	7.58	1.12	0.27	7.81	1.14	0.29
Gora	0.50	4.58	0.07	1.39	4.80	0.21	1.89	4.74	0.29
Stockpiles	7.88	0.90	0.23				7.88	0.90	0.23
<b>Total</b>	<b>12.87</b>	<b>1.28</b>	<b>0.53</b>	<b>16.34</b>	<b>1.64</b>	<b>0.86</b>	<b>29.21</b>	<b>1.48</b>	<b>1.40</b>

Notes:

- CIM definitions were used for Mineral Reserves.
- Mineral Reserve cut-off grades for Sabodala are 0.30 g/t Au for oxide and 0.5 g/t Au for fresh based on a US\$1350/oz gold price and metallurgical recoveries between 90% and 93%.
- Mineral Reserve cut-off grades for Niakafiri are 0.35 g/t Au for oxide and 0.5 g/t Au for fresh based on a US\$1350/oz gold price and metallurgical recoveries between 90% and 92%.
- Mineral Reserve cut-off grade for Gora is 0.76 g/t Au for oxide and fresh and based on a US\$1200/oz gold price and metallurgical recovery of 95%.
- Sum of individual amounts may not equal due to rounding.

Information in the above table relating to Mineral Reserve estimates associated with the Sabodala deposit and stockpiles is based on information compiled by Mr. Paul Chawrun, P.Eng., who is a Licenced Professional Engineer in Ontario which is currently included as a “Recognized Overseas Professional Organization” in a list promulgated by the ASX from time to time.

Mr. Chawrun is a full-time employee of Teranga and is not “independent” within the meaning of NI 43-101. Mr. Chawrun has sufficient experience which is relevant to the style of mineralization and type of deposit under consideration and to the activity which he is undertaking to qualify as a “Qualified Person” under NI 43-101. He has reviewed and accepts responsibility for the Mineral Reserve estimates. He is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing or political issues that would materially affect the Mineral Reserve estimate.

Information in the above table relating to Mineral Reserve estimates associated with the Niakafiri and Gora deposits is based on information compiled by Ms. Julia Martin, P.Eng., MAusIMM (CP). Ms Martin is a full-time employee of AMC Mining Consultants (Canada) Ltd. and independent of Teranga. Ms. Martin has sufficient experience which is relevant to the style of mineralization and type of deposit under consideration and to the activity which he is undertaking to qualify as a “Qualified Person” under NI 43-101. She has reviewed and accepts responsibility for the Mineral Reserve estimates. AMC is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing or political issues that would materially affect the Mineral Reserve estimate.

Inferred Mineral Resources contained within the proposed pits do not contribute to the Mineral Reserve estimate, but offer an option to be evaluated with additional drilling. They are shown in Table 15.2.

**Table 15.2 Contained Inferred Mineral Resources**

Deposit	Tonnes (kt)	Grade (Au g/t)	Au (koz)
Sabodala	521	1.42	23.8
Niakafiri	16	0.70	0.4
Gora	83	2.80	7.4
<b>Total</b>	<b>692</b>	<b>1.49</b>	<b>33.2</b>

## 15.2 Open Pit Definition

The open pit optimization and design work for the Sabodala and Niakafiri deposits was undertaken by Teranga personnel. The optimization and design work for the Gora deposit was undertaken by AMC Mining Consultants UK Ltd. (AMC UK).

### 15.2.1 Dilution and Recovery

Dilution and ore loss parameters were applied to each of the resource block models before undertaking open pit optimization work using Gemcom Whittle™ software.

In the case of the Sabodala and Niakafiri deposits, the resource block models were reblocked to account for dilution and ore loss. The reblocking parameters were derived by reviewing reconciliation data for Sabodala which compares the contents of the sub-celled resource block model to the actual mined material.

In essence, the reblocked model represents the selective mining unit (SMU) that can be physically extracted during operations. It is both noted and recommended that the reconciliation figures be continuously reviewed to ensure that the reblocked model continues to predict actual mined grades going forward.

Reblocking parameters for Sabodala are 5 m x 5 m x 10 m (X,Y,Z). A comparison of the insitu and diluted Mineral Resource is provided in Table 15.3.

**Table 15.3 Sabodala Resource Insitu and Diluted Comparison**

Cut-off value 0.5 g/t	Insitu Resource			Diluted Resource		
Resource Category	Tonnes (Mt)	g/t (au)	Au (koz)	Tonnes (Mt)	g/t (au)	Au (koz)
Measured	8.9	1.90	543	10.6	1.48	507
Indicated	11.7	1.79	672	13.3	1.45	618
Total	20.6	1.84	1,215	23.9	1.46	1,125
Proportion of Resource				116%		93%

Reblocking parameters for Niakafiri are 5 m x 5 m x 5 m (X,Y,Z). A comparison of the insitu and diluted Mineral Resource is provided in Table 15.4.

**Table 15.4 Niakafiri Resource Insitu and Diluted Comparison**

Cut-off value 0.5 g/t	Insitu Resource			Diluted Resource		
Resource Category	Tonnes (Mt)	g/t (au)	Au (koz)	Tonnes (Mt)	g/t (au)	Au (koz)
Measured	0.3	1.77	15	0.3	1.68	15
Indicated	7.9	1.33	340	9.0	1.19	342
Total	8.2	1.34	355	9.2	1.20	357
Proportion of Resource				112%		101%

In the case of the Gora deposit, a different technique was applied for estimating dilution and ore loss to account for the narrow-vein style of the orebody. The Gora resource block model was developed with ore blocks sub-celled to 0.5 m x 0.5 m x 0.5 m providing detailed resolution on the dipping veins.

To generate a diluted Mineral Resource for mining studies, AMC UK utilized a proprietary macro within CAE Datamine<sup>TM</sup> software. A bench height of 2.5 m, a minimum mining width of 4 m, and a dilution skin of 0.5 m were selected to account for practicalities of mining to an ore boundary.

A minimum mining width of 4 m was also applied where veins were close together such that the minimum waste pillar between veins was required to be 4 m, otherwise the veins were taken together and the waste between them considered internal dilution.

Following the application of the dilution macro, the resultant material was described as per the following:

- Always ore – resource model blocks that were above the cut-off grade before and after the application of the macro
- Dilution – resource model blocks that were below the cut-off grade, but included with the ore to meet the minimum mining width requirement
- Ore loss – resource blocks that were above the cut-of grade, but could not be combined with adjacent blocks of sufficiently high grade material to meet the minimum mining width requirement

The impact of the application of the dilution macro is illustrated in Figure 15.1 and Figure 15.2.



Figure 15.1 Gora Pit - Plan View (621.25 m)

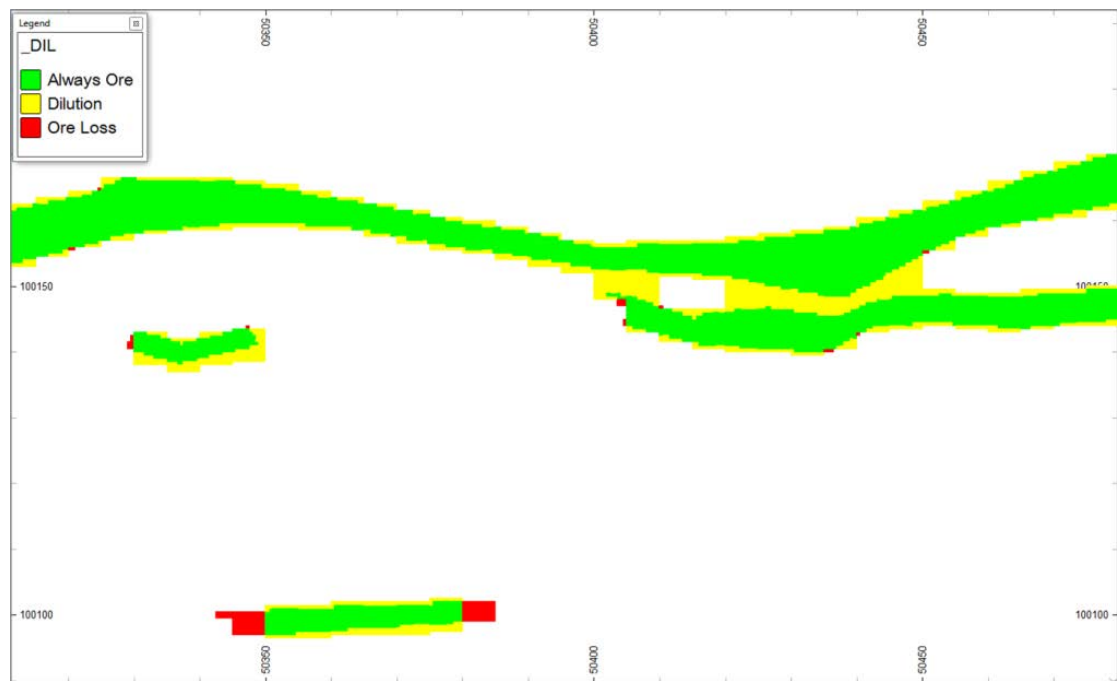


Figure 15.2 Gora Pit - Plan View (621.25 m)

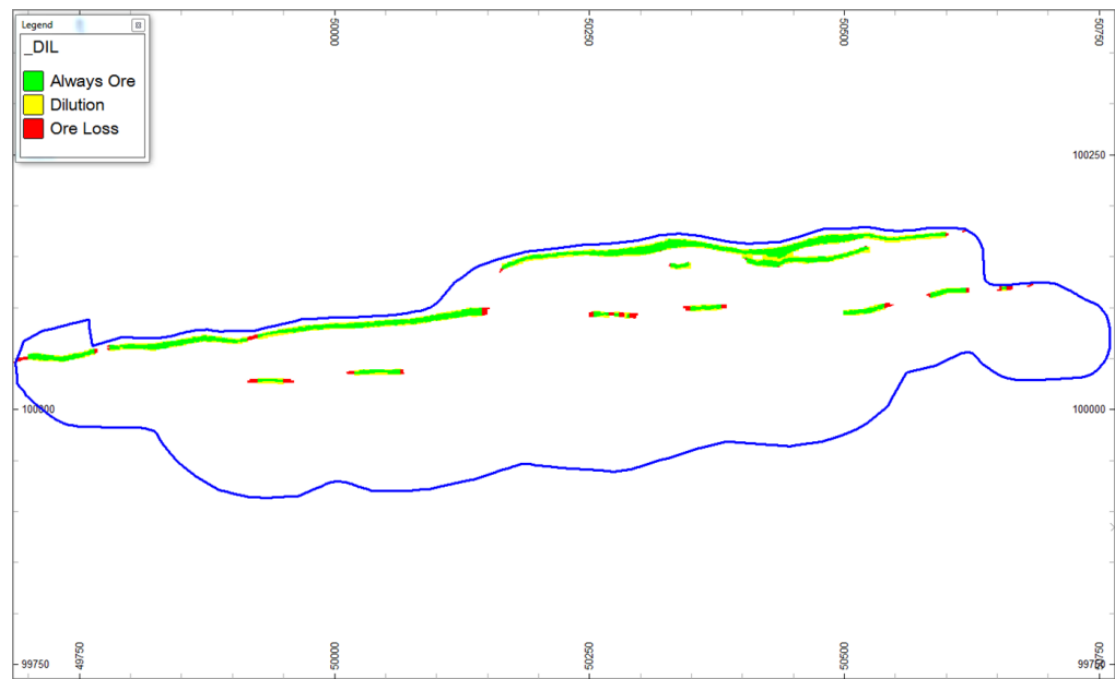


Table 15.5 is a comparison between the Gora in situ and diluted Mineral Resource.

**Table 15.5 Gora Resource Insitu and Diluted Comparison**

Cut-off value 0.76 g/t	Insitu Resource			Diluted Resource		
Resource Category	Tonnes (kt)	Au (g/t)	Au (koz)	Tonnes (kt)	Au (g/t)	Au (koz)
Measured	449	5.66	82	540	4.38	76
Indicated	1,659	5.39	288	2,033	4.08	267
Total	2,108	5.46	370	2,573	4.15	343
Proportion of Resource				122%		93%

Note - not all areas of the Mineral Resource were recoverable using the mining recovery parameters described above. As a result, the net dilution in the Mineral Reserve estimate exceeds the amount shown in Table 15.5.

### 15.2.2 Pit Optimization Parameters

The pit optimization parameters and cut-off grade calculations for Sabodala are outlined in Table 15.6 and Table 15.7 respectively.

**Table 15.6 Sabodala Processing Throughput, G&A and Refining Parameters**

Item	Unit	Fixed	Oxide	Fresh
G&A	USD / annum	\$14,000,000		
Mill throughput rate	tonnes ore / annum		4,500,000	3,800,000
G&A	USD / tonne ore		3.11	3.68
Transport and refining	USD / ounce Au	4.20		
Silver Byproduct Credit	USD / ounce Au	(1.88)		
Royalty	%	5.0		
Additional Gora Royalty (Axmin)	%	1.5		
Metal payable at refinery	%	99.92		

**Table 15.7 Sabodala Cut-off Grade**

Item	Unit	Fixed	Oxide	Fresh
Mining	US\$ / tonne rock		2.25	2.50
<b>COG</b>				
Ore transport	US\$ / tonne ore	-		
Processing	US\$ / tonne ore		13.00	17.50
Processing recovery	%		93.0	90.0
Total site cost	US\$ / tonne ore		16.11	21.18
Gold price	US\$/ ounce	\$1,350		
Cut-off	g / tonne Au		0.42	0.57
Incremental cut-off	g / tonne Au		0.30	0.50

The results of the Niakafiri pit definition presented in the current report are unchanged from those presented in the December 2011 Technical Report. No changes to the Mineral Resource estimate or final pit design have been made since that time. The LG optimization work for Niakafiri was originally undertaken at a US\$900/oz Au price and 2010 operating costs. The resultant cut-off grade is equivalent to a US\$1350/oz Au price with 2013 operating costs.

The August 2007 model for Niakafiri was used, referencing only blocks classified as Measured and Indicated Resources. The pit definition comprised a first stage pit optimization shell and a second stage final pit design. Pit optimization runs were completed using a program based on the LG algorithm for pit optimization.

Pit optimization parameters for Niakafiri were identical to those for Sabodala with the following two exceptions:

- An additional 0.25 US\$/t added to the mining cost to allow for the longer haulage distance (5 km) to the Sabodala plant
- Slightly lower metallurgical recovery for oxide, 92% compared to 93% for Sabodala.

The resultant cut-off grade for Niakafiri is therefore also very similar to Sabodala, with an incremental cut-off grade of 0.35 for oxide and 0.50 for fresh.

For both Sabodala and Niakafiri, the higher cut-off grade for fresh ore reflects the higher cost of treatment and recovery of non-oxidized ore.

An incremental haulage cost of US\$0.02/t was applied on a bench basis to account for additional haulage costs as the pits deepen. The bench height at both Sabodala and Niakafiri is 10 m.

For Gora, the pit optimization parameters and cut-off grade for Gora are outlined in Table 15.8 and Table 15.9.

Note that both selective and non-selective mining is planned for this deposit. The ore, as well as the immediately adjacent waste, will be mined selectively on 5 m benches while the bulk waste will be mined on 10 m benches. An incremental haulage cost of US\$0.035/t was applied on a bench basis to account for additional haulage costs as the pit deepens. This is reflected in the costs applied to each of the blocks during the optimization work.

**Table 15.8 Gora Processing Throughput, G&A and Refining Parameters**

Item	Unit	Fixed	Oxide	Fresh
G&A	USD / annum	\$14,000,000		
Mill throughput rate	tonnes ore / annum		4,500,000	3,800,000
G&A	USD / tonne ore		3.11	3.68
Transport and refining	USD / ounce Au	4.20		
Silver Byproduct Credit	USD / ounce Au	(1.88)		
Royalty	%	6.5		
Additional Gora Royalty (Axmin)	%	1.5		
Metal payable at refinery	%	99.92		

**Table 15.9 Gora Cut-off Grade**

Item	Unit	Fixed	Bulk	Selective
Mining	US\$ / tonne rock		2.40	2.90
<b>COG</b>				
Ore transport	US\$ / tonne	3.30		
Processing	US\$ / tonne ore			18.33
Processing recovery	%			95.0
Total site cost	US\$ / tonne			25.31
Gold price	US\$/ ounce	\$1,200		
Cut-off	g / tonne Au			0.76

Note: All material is considered to be fresh

### 15.2.3 Geotechnical Considerations

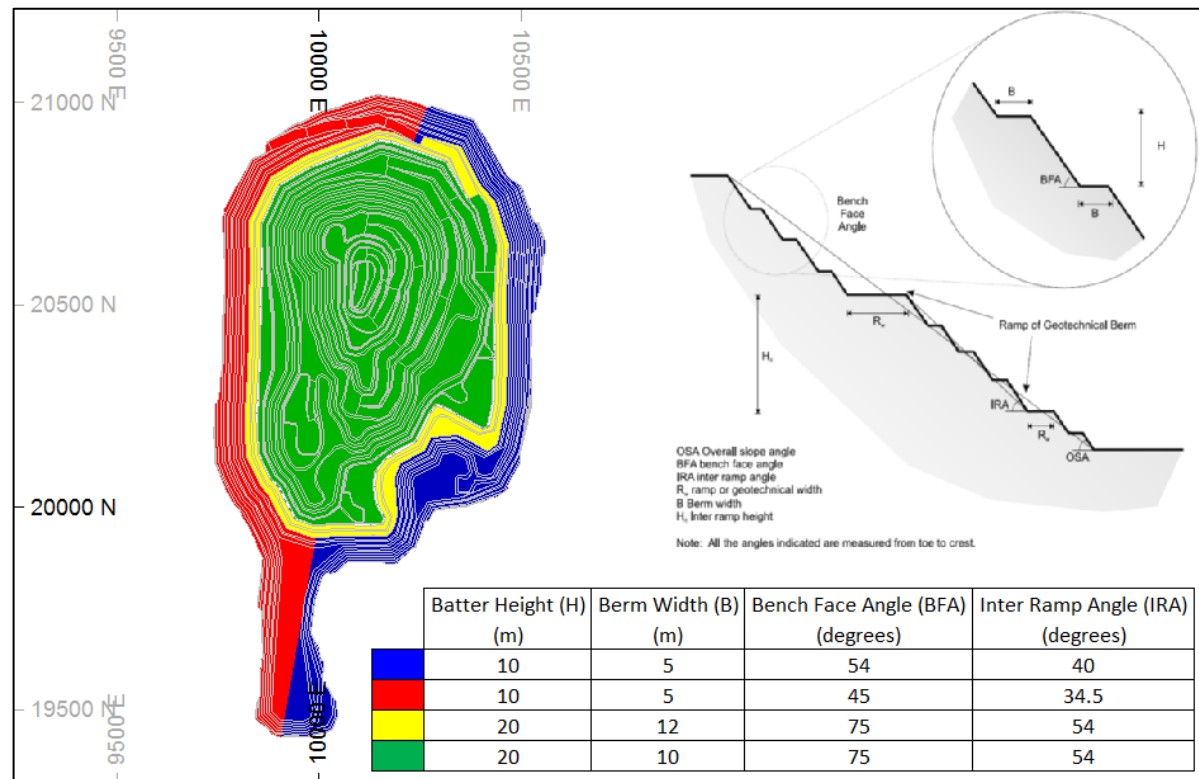
Continuity in personnel providing geotechnical advice for the Sabodala operation has been maintained since 2006, including the completion of a feasibility-level geotechnical assessment for Sabodala in July 2007. Geotechnical advice is currently provided by Xstract Mining Consultants (Xstract) out of Australia.

#### Sabodala

The Sabodala pit has been actively mined for several years and to a depth of greater than 100 m, forming slopes in both the phase 1 and phase 2 pits intersecting all of the rock types in both the weathered and fresh state. Significant useful slope experience, including batter failures and steeper than designed batters, has been gained since the commencement of mining.

Geotechnical site visits were undertaken in December 2012 and most recently in June 2013 to review the Sabodala pit and compile data to evaluate slope optimization opportunities. Slope parameters in the current pit design remain unchanged, but the site visit provided confirmation of the operating techniques and rock mass performance. Pit slopes used for the Sabodala optimization and design work were confirmed by Xstract and are shown in Figure 15.3

**Figure 15.3 Sabodala Geotechnical Slope Parameters**



These recommendations assume the use of modified trim production blasting along with the use of an excavator onsite to rake and scale the debris from the batter slopes once blasted and excavated.

At the time of writing this Technical Report, a detailed review and analysis of the Sabodala slope stability performance data combined with geotechnical logging data from selected boreholes is ongoing.

This study will develop a geotechnical defect pattern model, a revised rockmass model and perform slope stability analyses by adjusting key input variables. Using the rockmass model, the slope stability analysis will be determined at various batter scales to assess for probability of undercutting stability and overtopping berm capacity at inter-ramp and overall slope scales assessing major structure interactions.

The objective of this study is to evaluate the potential for alternative slope designs for the remainder of the Sabodala pit to optimize waste volume and stripping schedules balanced with maximum ore recovery from the current parameters. Both the ongoing and previous analysis have determined the current slope design parameters to be well within a tolerable safety factor with the mine operating procedures used in the Sabodala mine.

### Niakafiri

Pit walls through oxide rock at Niakafiri have been designed at an average slope angle of 35 degrees. Pit slopes in the underlying fresh basalt are as shown in Table 15.10.

**Table 15.10 Niakafiri Geotechnical Slope Parameters**

Lithology	Bearing	Slope
Basalt	35	35.8
	80	42.2
	133	56.0
	175	63.3
	300	55.0
	340	47.9
Oxide	0	35

## Gora

Geotechnical parameters for the Gora deposit are taken from a December 2011 Mining One Pty Ltd report (Mining One, 2011). The parameters are shown in Table 15.11.

**Table 15.11 Gora Geotechnical Slope Parameters**

Domain	Weathered	Fresh Mafic	Fresh Felsic	Fresh Granodiorite	Fresh Shale
Depth Range	0-20 m	>20 m	>20 m	>20 m	>20 m
Batter Height	10 m	20 m	20 m	20 m	20 m
Batter angle					
1 <sup>st</sup> Batter	All 40°	50°	50°	50°	50°
<sup>1</sup> Subsequent Batters		65° (60°)	70° (60°)	70° (60°)	60° (50°)
Berm Width	7 m	7 m	7 m	7 m	7 m
<sup>2</sup> Overall Slope Angle	N/A	46.4° (44.0°)	48.8° (44°)	48.8° (44.0°)	44.0° (39°)
<sup>1</sup> Batter angle presented for subsequent batters assume presplit blasting and those in ( ) are for <b>no</b> pre-splitting					
<sup>2</sup> Overall slope angle is calculated crest to toe for 160 m high slope including weathered and transitional batter slopes.					

## 15.2.4 Sensitivity

Sensitivity testing was undertaken on all three deposits to demonstrate the robust nature of the Mineral Reserve ounces over a range of gold prices. The sensitivities are shown for Sabodala and Gora in Figure 15.4 and Figure 15.5.



Figure 15.4 Sabodala Gold Price Sensitivity Chart

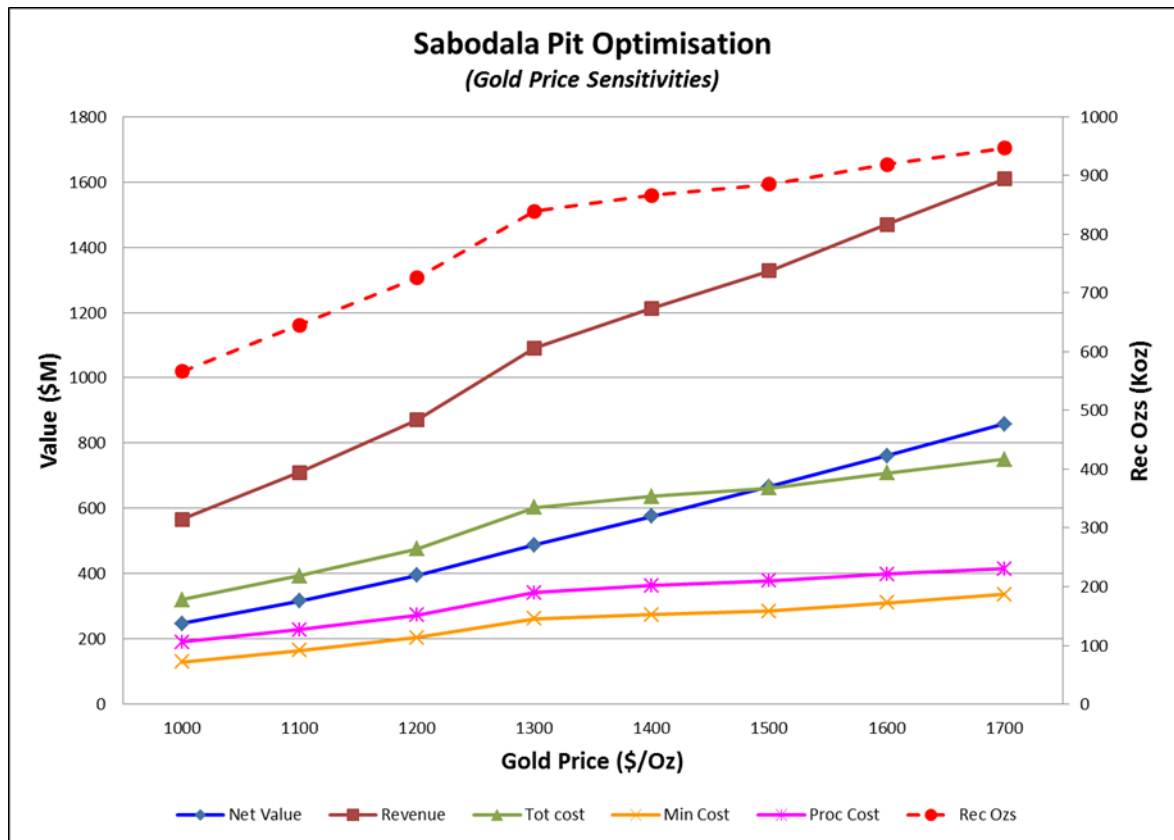
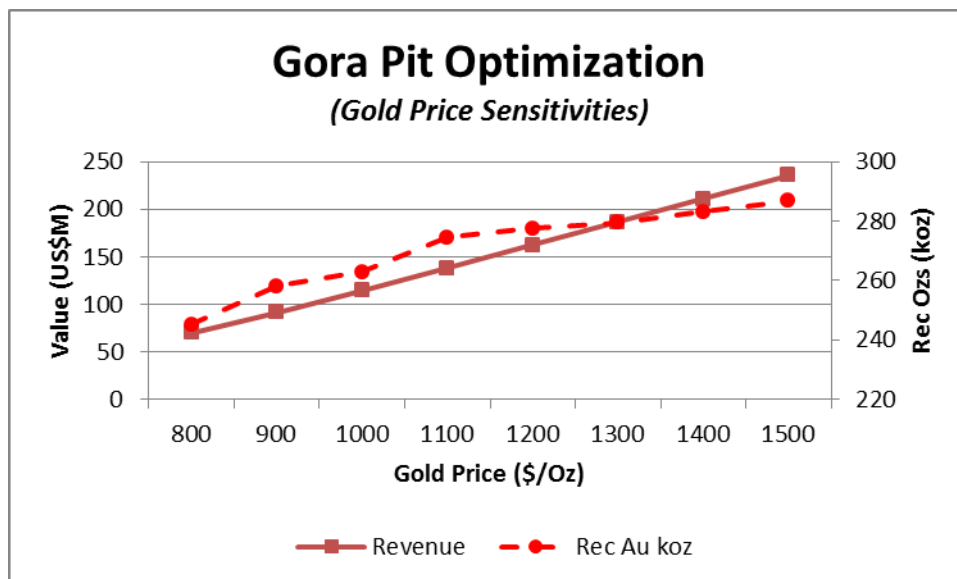


Figure 15.5 Gora Gold Price Sensitivity Chart



Work on the Niakafiri deposit is on-going and sensitivity testing will be undertaken as part of the current work programme.

### **15.2.5 Pit Design Considerations**

All haulage roads are designed to accommodate two-way traffic of the HD785-7 haul trucks, and a safety berm of at least half the height of a haul truck tire. The roads are 26 m wide and have a maximum 10% overall gradient.

### **15.2.6 Sabodala Pit Design**

Once completed, the Sabodala open pit will have been developed through four separate mining phases, of which Phase 3 and Phase 4 remain.

The Sabodala pit was optimized through a series of design phases that balanced the strip ratio with an even distribution of gold production for the remaining years of mine life. The pit was designed using a base US\$1000 Au price LG pitshell and then adjusted to optimize Phase 3 access for 2013/14 and the final wall location for Phase 4 to optimize strip ratio and ore production for the remainder of the Sabodala pit life.

Mine operations are currently progressing through the third phase and expect to begin the final Phase 4 towards the year end 2013. The Sabodala pit will continue mining Phases 3 and Phase 4 through 2014, with Phase 4 continuing through 2015 to scheduled depletion 2016.

The ultimate pit as of 30 June 2013 contains 70.5 Mt of rock including 60.0 Mt of waste and 11.6 Mt of ore at 1.58 g/t Au of Proven and Probable Mineral Reserves resulting in an average strip ratio of 5.07:1. The design was developed using a cut-off grade of 0.5 g/t Au for fresh rock and 0.30 g/t Au for oxide.

Sufficient waste dump area is available north and south of the Sabodala pit to accommodate the waste rock mined.

The ultimate pit design for Sabodala is shown in Figure 15.6 through Figure 15.10.

Figure 15.6 Sabodala Ultimate Pit – Plan View

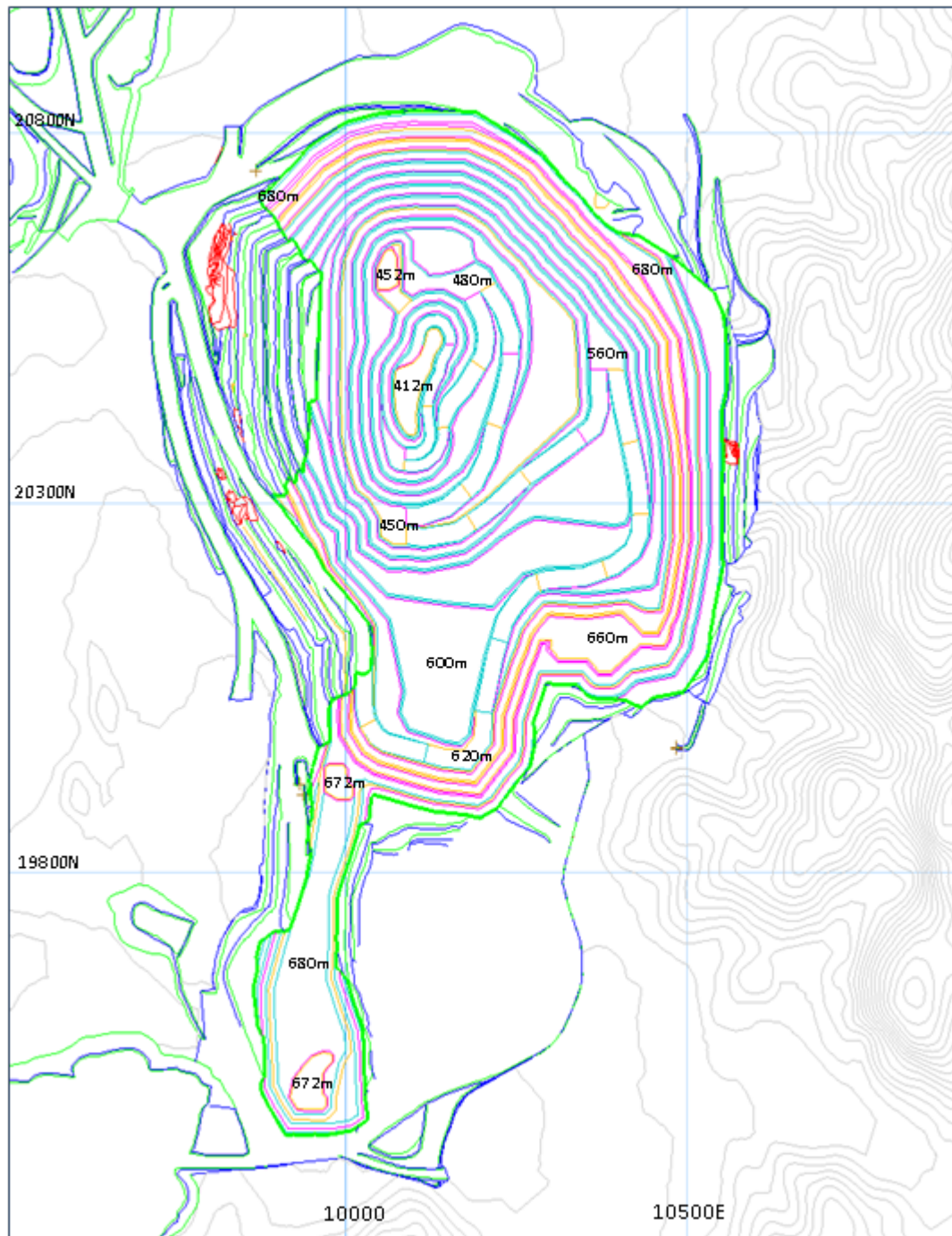


Figure 15.7 Sabodala Ultimate Pit - Looking North (20500 N)

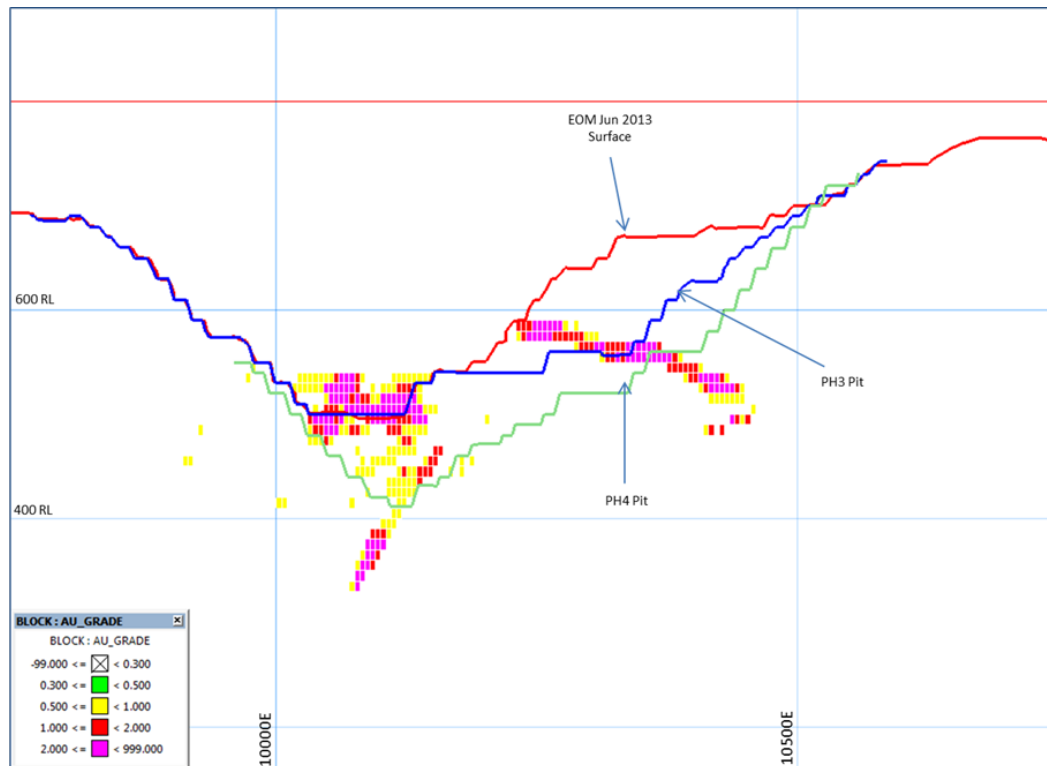


Figure 15.8 Sabodala Ultimate Pit - Looking North (20400 N)

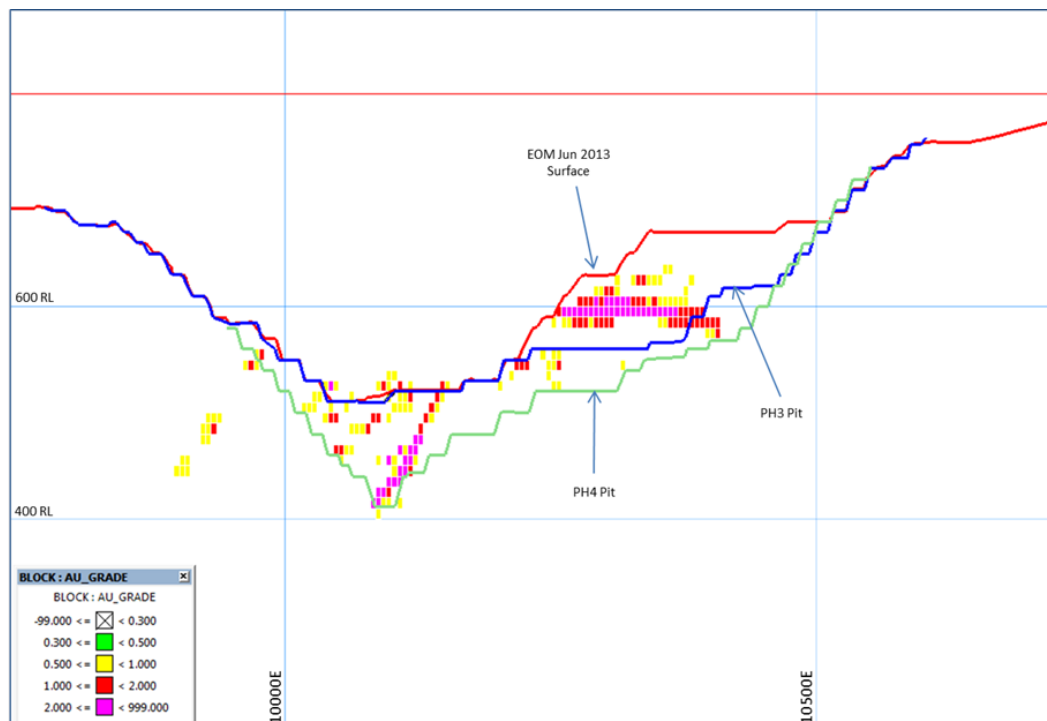


Figure 15.9 Sabodala Ultimate Pit - Looking East (10070 E)

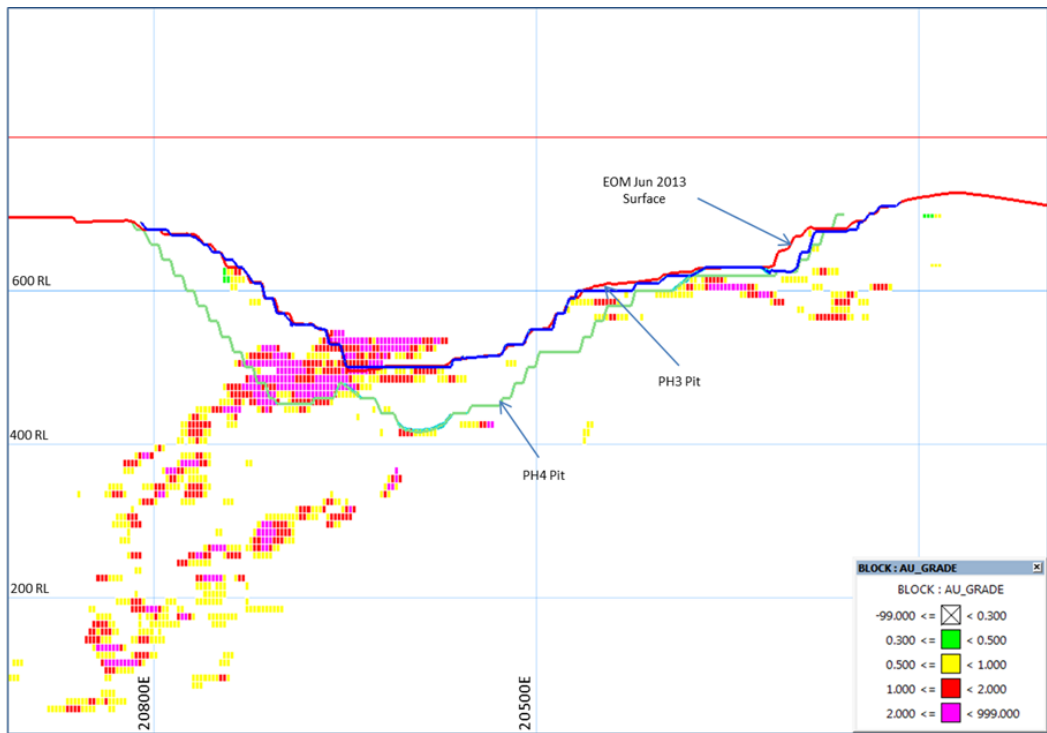
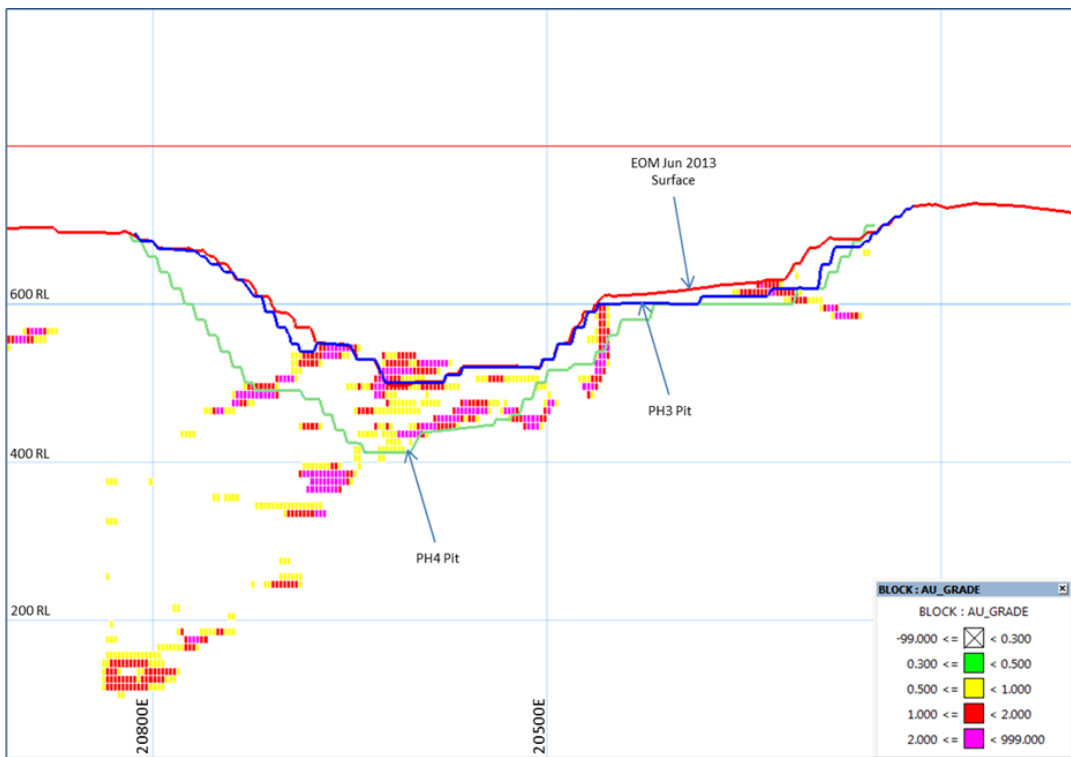


Figure 15.10 Sabodala Ultimate Pit – Looking East (10070 E)



### 15.2.7 Niakafiri Pit Design

The Niakafiri deposit is approximately 5 km from the Sabodala pit and adjacent to the Sabodala village. The Sabodala village will be relocated prior to commencement of mining at Niakafiri. There are no known community and social issues associated with the relocation of the village and relevant costs for the movement have been included in the reserve estimation process.

The results of the Niakafiri pit definition presented in the current report are unchanged from those presented in the December 2011 Technical report. No changes to the Mineral Resource estimate and the final pit design have been made since that time.

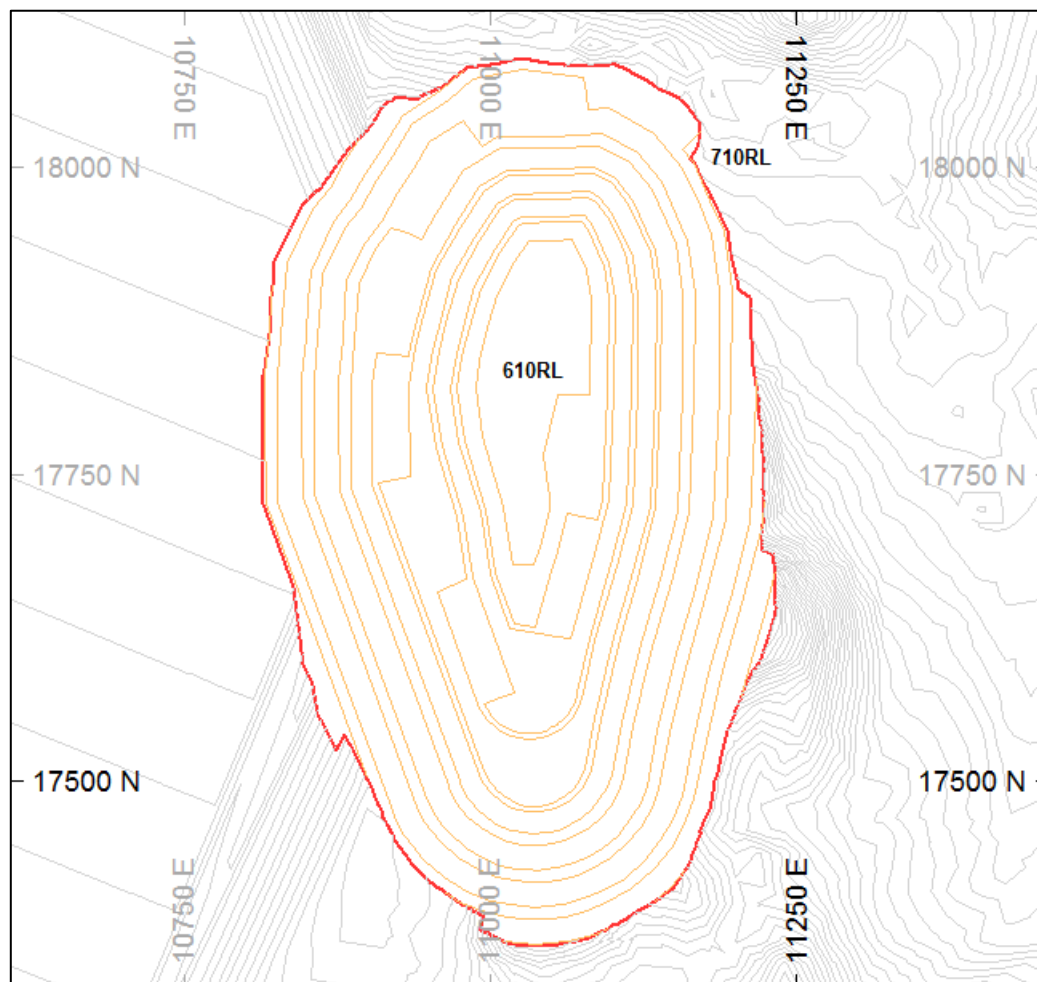
The Niakafiri final pit is 720 m long (N-S) and 400 m wide. The highest walls in this pit (140 m) are located the in south-east and south-west walls. The Niakafiri final pit design includes smaller haulage roads, approximately 25 m in width and overall 10 percent gradient.

The Niakafiri pit will be mined in a single phase. The ultimate pit contains 30.4 Mt of rock including 22.6 Mt of waste and 7.8 Mt at 1.14 g/t Au of Proven and Probable Mineral Reserves resulting in an average 2.9:1 waste to ore strip ratio.

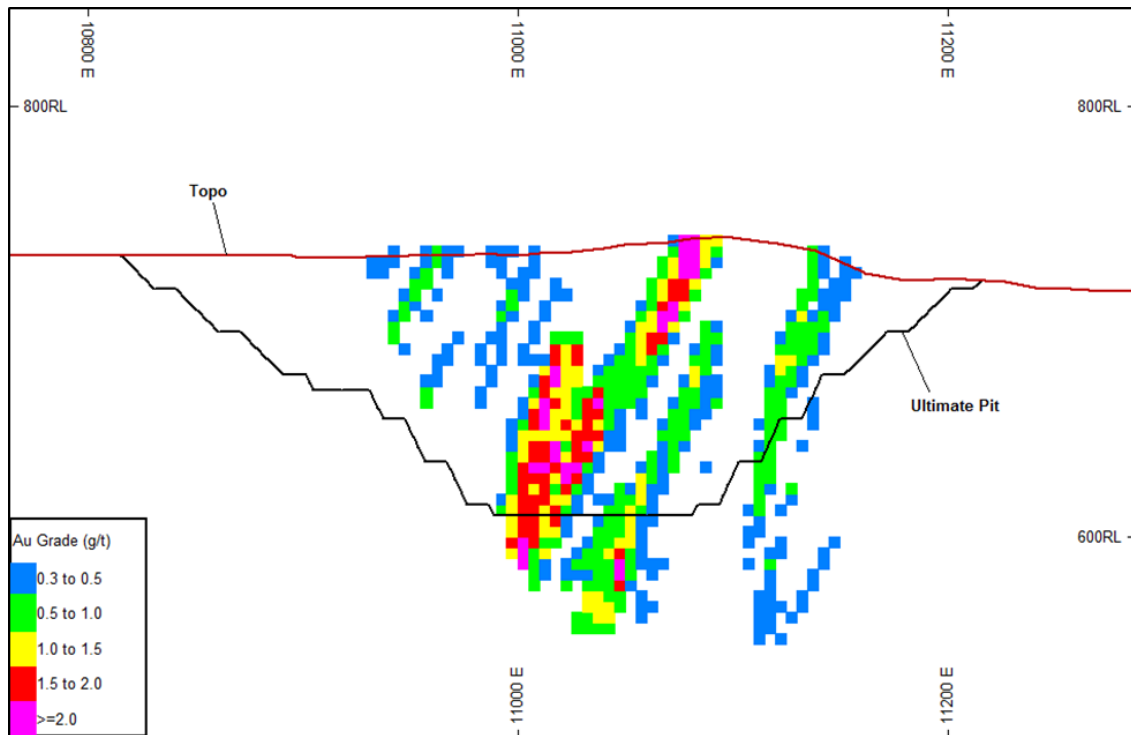
The pit design for Niakafiri is shown in Figure 15.11 through Figure 15.13.



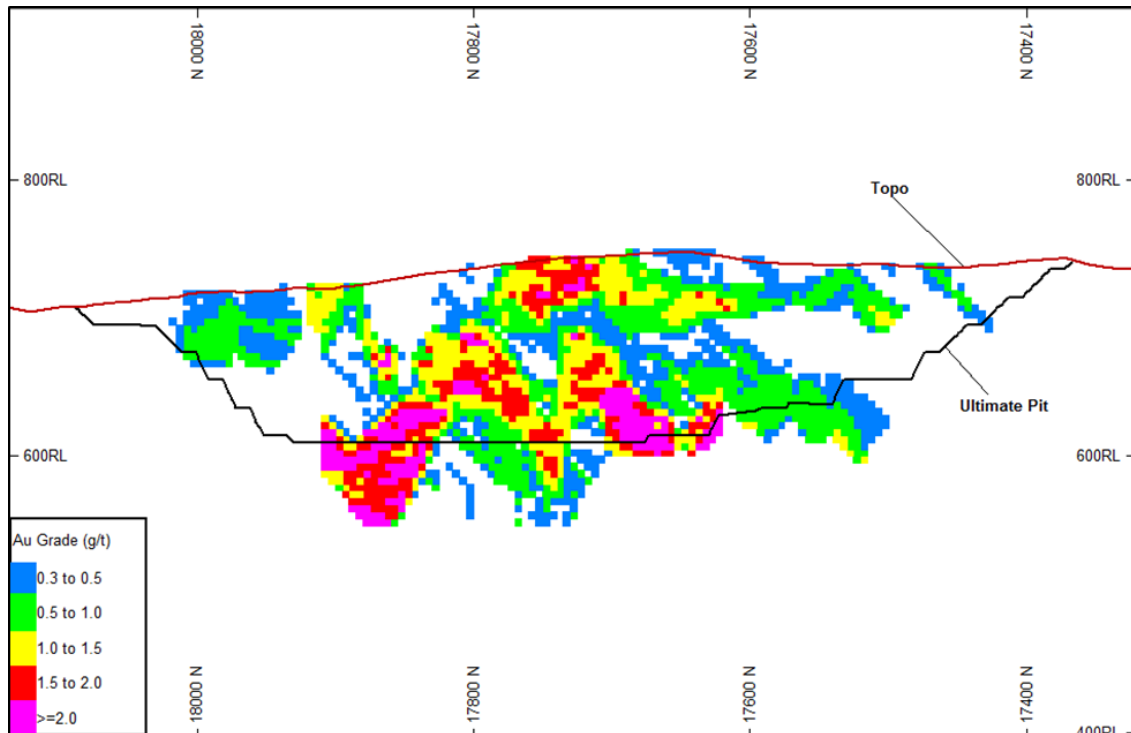
**Figure 15.11 Niakafiri Ultimate Pit – Plan View**



**Figure 15.12 Niakafiri Ultimate Pit – Looking North (17830 N)**



**Figure 15.13 Niakafiri Ultimate Pit – Looking East (11025 E)**



### 15.3 Gora Pit Design

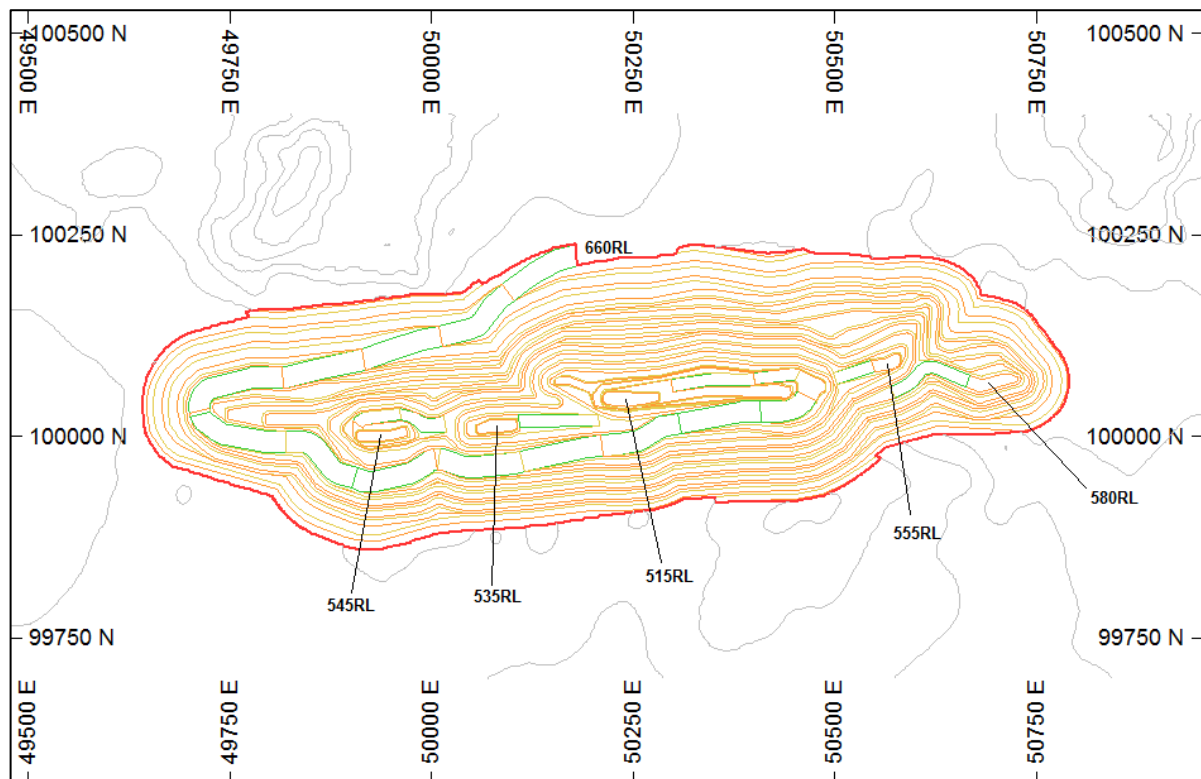
#### 15.3.1 Dilution and Recovery – Selective Bench Design

Gora is a vein deposit dipping 45 to 55 degrees south east. To improve the mining selectivity a bench height of 5 m was selected for mining in ore. A 10 m bench was selected for mining in waste. The 5 m benches will be mined in two 2.5 m flitches with a PC1250 excavator. The 10 m benches will be mined with a PC2000 excavator similar to currently utilized at Sabodala. This equipment is compatible with the trucks currently utilized at Sabodala.

Optimizations on the Gora deposit were carried out utilizing a lower revenue factor to identify interim pit phases. Two interim phase optimization shells were identified for scheduling purposes, so the overall Gora schedule will be undertaken in three phases.

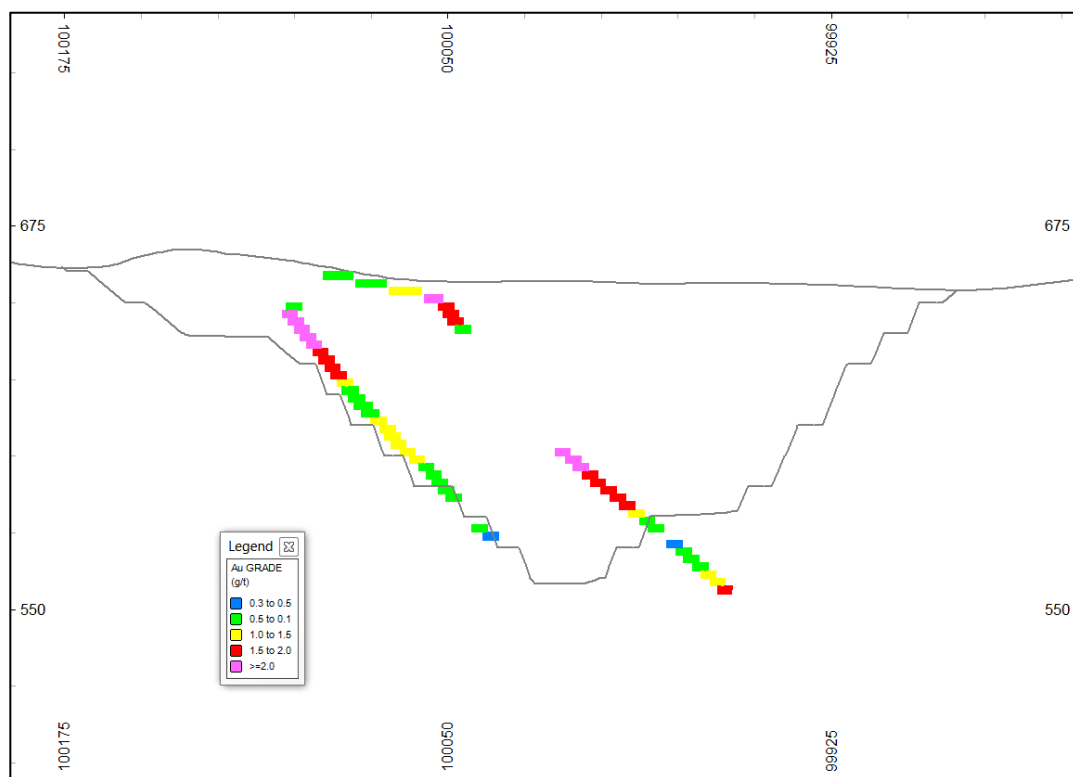
The pit design for Gora is shown in Figure 15.14 through Figure 15.17, with the scheduling phases also shown in Figure 15.18.

**Figure 15.14 Gora Ultimate Pit - Plan View**

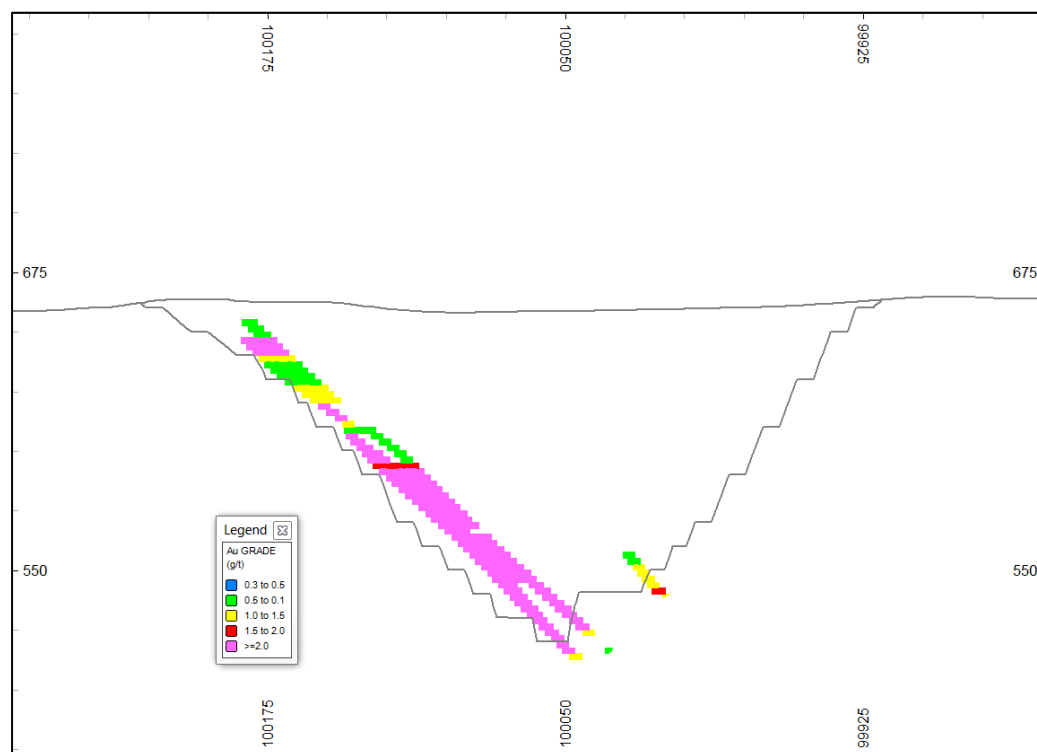


Note: The Sabodala mine grid is utilized for Gora. True north is approximately 55° from vertical striking NNE.

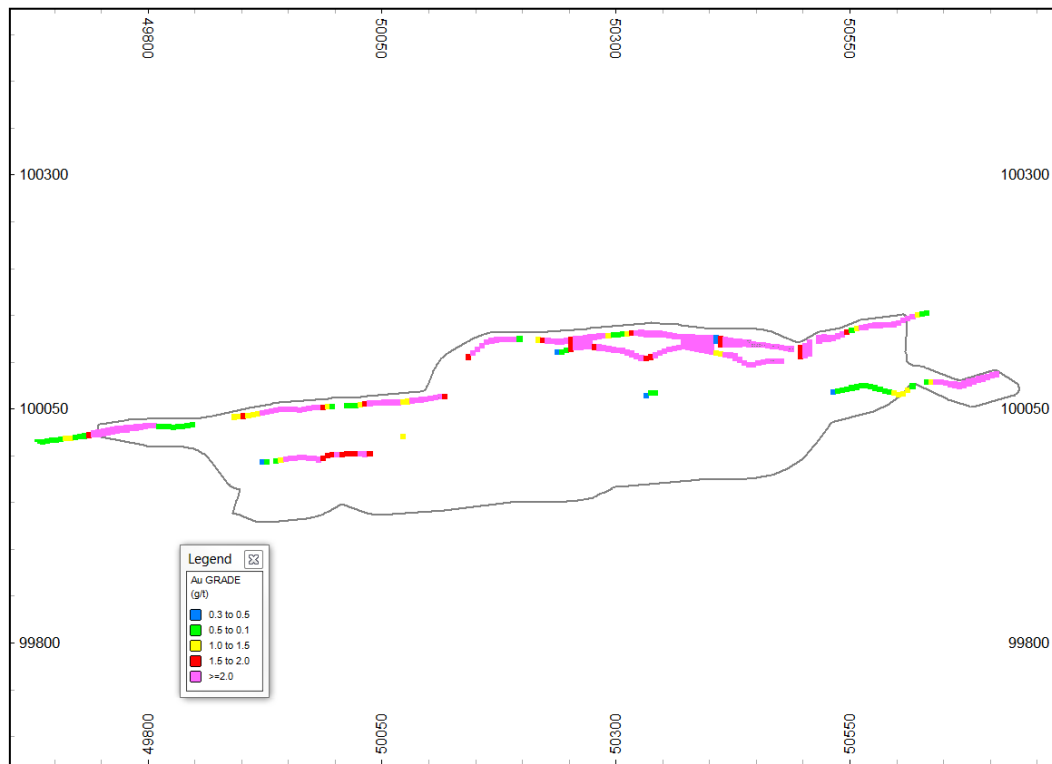
**Figure 15.15 Gora Ultimate Pit – Looking Northeast (50000 E on Mine Grid)**



**Figure 15.16 Gora Ultimate Pit - Looking Northeast (50400 E on Mine Grid)**

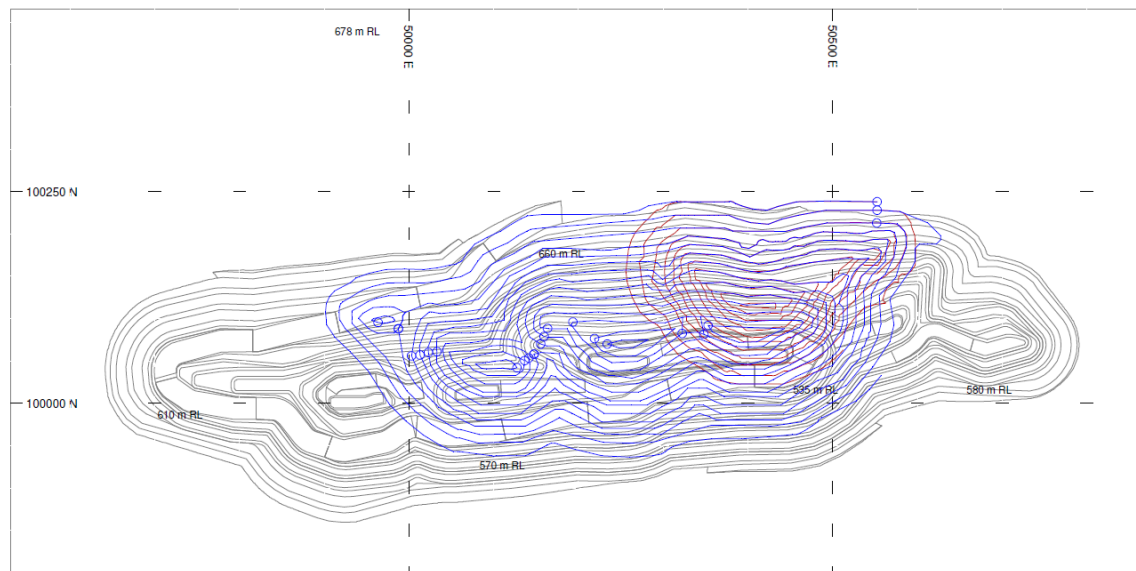


**Figure 15.17 Gora Ultimate Pit - Plan View (590 mRL)**



Note: The Sabodala mine grid is utilized for Gora. True north is approximately 55° from vertical striking NNE.

**Figure 15.18 Gora Pit Phases**



Note: The Sabodala mine grid is utilized for Gora. True north is approximately 55° from vertical striking NNE.

## 15.4 Stockpiles

The selective mining practice at Sabodala since start-up, has released ore at a faster rate than milling, resulting in the build-up of several lower grade stockpiles. These stockpiles range in grade from marginally economic (0.5 g/t Au) to low grade (1.5 g/t Au). Stockpiled ore constitutes Mineral Reserves and is reported as a Proven Mineral Resource.

The total inventory as of 30 June 2013 is shown in Table 15.12.

**Table 15.12 Stockpiles Inventory as at 30 June 2013**

Proven			Probable			Proven and Probable		
Tonnes (kt)	Au (g/t)	Au (koz)	Tonnes (kt)	Au (g/t)	Au (koz)	Tonnes (kt)	Au (g/t)	Au (koz)
7.88	0.90	0.23	-	-	-	7.88	0.90	0.23

## 15.5 Review

The pit designs and the procedures used for their generation have been reviewed for the Sabodala, Niakafiri, Gora deposits and the following comments are provided:

- The mine planning process for the Sabodala project production units, including specifically that for final pit design, is in line with standard mining engineering procedure.
- The parameters used for the pit optimization process appear reasonable as they are based on actual performance at the Sabodala project, both in terms of economic factors and in geotechnical behaviour of pit slopes.
- The cut-off grade calculations discussed in Section 15.2.2 and presented in Table 15.6 through Table 15.9 have been reviewed. They are supported by current operating practice and are considered an appropriate basis for definition of Mineral Reserves.
- AMC is not aware of any permitting issues which could materially affect the Mineral Reserves estimates.
- Xstract is recommending several cross-structural directional drill holes along strike of the orebody prior to commencement of mining at Gora to confirm the unlikely potential for existence of structural features normal to the mineralization planes.

The Mineral Reserve estimate for Niakafiri is based on work that was originally reported in the October 2010 Technical Report (AMC 2010). This work is based on a resource model completed in 2007. Given the time that has elapsed since this work was done and the changes in mining costs and gold price, it is recommended updated pit optimization and design work be undertaken for Niakafiri. Niakafiri is scheduled to commence mining in 2016. This is timely for a feasibility study to be completed in early 2015, prior to budgeting for 2016.



## **16 MINING**

### **16.1 Project Summary**

Pre-production stripping and mining in the Sabodala open pit commenced in January 2008.

The site has since operated continuously since then and has expanded in scope to four projects, including Sabodala. These projects are described as follows:

#### **Sabodala Open Pit Operation**

The open pit is operational, and in phase three of the four phase mine plan. Phase three commenced in Q3 2012 initially with waste stripping and then moved into ore in mid-2013. Finally Phase four is scheduled to commence in Q4 2013 carrying the open pit into the final phase. The Sabodala open pit is scheduled to be depleted by 2016.

#### **Gora Open Pit Project**

Gora is located 22 km from the Sabodala plant and will be mined as a satellite pit. Development of the Gora project is imminent and production is scheduled from early 2015 through 2018.

#### **Niakafiri Open Pit Project**

Niakafiri is located 5 km from the Sabodala plant and will be mined as a satellite pit. It has been scheduled to commence in 2016 and to be depleted in 2019. There are no material changes to the estimated quantities of Mineral Reserves and Mineral Resources since the October 2010 report.

### **16.2 Material Movement**

The Sabodala open pit is in phase three of a four phase mine plan. The selective mining practice at Sabodala since start-up has released ore at a faster rate than milling capacity. This has resulted in a large build-up of stockpiled ore.

Figure 16.1 is a view of Sabodala open pit looking westward. The ROM pad and waste rock dump are in the foreground, and tailings pond in the far background.

**Figure 16.1 General View of the Sabodala Pit**



The mining method utilized is conventional truck and shovel open pit mining. The mining operation is effective at selectively separating ore from waste, and in separating the four ore categories that are stockpiled if not immediately milled. These are namely; high grade, medium grade, low grade and marginal as defined in Table 16.1.

**Table 16.1 Grade Classes for Ore Movement**

Code	Category	Grade Interval
A	High Grade	> 2.0 g/t Au
B	Medium grade	1.5 – 2.0 g/t Au
C	Low Grade	1.0 – 1.5 g/t Au
D	Marginal	0.5 – 1.0 g/t Au

### 16.3 Personnel and Equipment

Open pit mining operations at Sabodala are carried out by the owner. The Gora, Niakafiri, and Sutuba projects will use skilled personnel from the Sabodala operation to train and expand the operational capacity and meet expansion targets.

The staffing level required onsite for the Sabodala mining operation is about 200 employees. This includes an allowance for additional personnel to cover holidays and other absenteeism. Three crews are assumed, with one person per machine.

**Table 16.2 Mining Fleet and Personnel Required**

Mining Fleet	Operators
24 x Haul Trucks	72
4 x Face Shovels (Back up loader operated by shovel operators when down)	12
2 x Loaders (ROM Pad)	6
3 x Water Trucks	9
3 x Graders	9
7 x Dozers	21
2 x Wheeled Dozers	6
1 x Rock Breaker	3
2 x Excavator	6
9 x Drills	27
Additional Operators	
2 x Leading Hands	6
1 x Translator	3
2 x Flagmen	6
<b>Sub Total</b>	<b>186</b>

The current fleet of on-site equipment includes three PC3000 shovels, one PC2000 shovel and two WA900 wheel loaders. The PC3000's are fitted with 15 m<sup>3</sup> buckets. The PC2000 shovel is fitted with a 10 m<sup>3</sup> bucket and the WA900's with a 10.5 m<sup>3</sup> bucket. These shovels load a fleet of twenty-four 91 t Komatsu HD785-7 haul trucks (Figure 16.2).

**Figure 16.2 Loading in the Sabodala Pit**



Six Sandvik Pantera DP1500s and three Bucyrus/Cat Reedrill SKF-12s (Figure 16.3) are used to drill blast patterns onsite.

**Figure 16.3 Drilling Blastholes in the Sabodala Pit**



Use of the current equipment models from Sabodala for the Niakafiri and Sutuba projects will prove to be an operational advantage for Niakafiri and Sutuba expansion projects as maintenance parts located on site fit all the equipment and the on-site mechanics are experienced from working at Sabodala. The equipment for the Gora project will be similar, although an excavator will be used in place of a shovel in order to mine more selectively.

#### **16.4 Mining Schedule**

The mining schedule is driven by maximizing the use of mining equipment and stockpiling ore beyond the milling capacity. The maximum mine capacity for Sabodala, Sutuba and Niakafiri with the current equipment fleet is up to 40 Mtpa ore and waste under favourable haul conditions. However, to optimize the cash flow and to account for congested digging conditions in the final stages of the Sabodala pit, the maximum total material moved in the current plan is approximately 36 Mtpa. Surplus equipment from Sabodala will be utilized in Gora and Niakafiri. As well, as the fleet ages the highest cost mine equipment will be lowest priority for utilization.

Mine planning has been carried out using the MineSched™ software package in monthly periods for the remainder of 2013 and for 2014, then in annual increments thereafter to the end of the project life, estimated to be in 2021 when including stockpile depletion. The production rate for the Gora open pit is planned at a rate of approximately 10 Mtpa.

Key milestones:

- 2013 continue Phase 3 of Sabodala

- Late 2014 development of Gora, commencement in Q1 2015
- 2016 commencement of Niakafiri
- 2016 depletion of Sabodala
- 2018 depletion of Gora
- 2018 depletion of Niakafiri
- 2021 depletion of low grade stockpiles

The general mine planning targets are to minimize the operating areas in the oxide zones during the wet season from approximately mid-May to mid-October. The currently deployed operating fleet has excess loading capacity and excess hauling capacity. The mine plan benefits from the use of the excess capacity in the following areas:

- Oxide materials during the dry season to further reduce or minimize oxide mining during the wet season.
- Increasing operations at the pit bottom during the dry season to permit allow scaling back at times during the wet season.
- Prioritization of use for newer equipment

The mine production schedule is shown in Table 16.3.

Table 16.3     Production Schedule

		Unit	2013 Q3-Q4	2014	2015	2016	2017	2018	2019	2020	2021	Total
Sabodala Phase 3	Mined Rock	kt	17,258	14,367	-	-	-	-	-	-	-	31,625
	Mined Waste	kt	14,692	10,577	-	-	-	-	-	-	-	25,269
	Mined Ore	kt	2,566	3,790	-	-	-	-	-	-	-	6,355
	Ore Grade	g/t	1.39	1.8	-	-	-	-	-	-	-	1.63
	Strip Ratio	w:o	5.7	2.8	-	-	-	-	-	-	-	4.0
	Mined Ounces	koz	115	219	-	-	-	-	-	-	-	334
	Sabodala Phase 4	Mined Rock	kt	921	17,378	17,833	2,923	-	-	-	-	-
Mined Waste		kt	795	16,545	14,573	1,848	-	-	-	-	-	33,760
Mined Ore		kt	127	833	3,261	1,075	-	-	-	-	-	5,295
Ore Grade		g/t	0.89	1.08	1.61	1.67	-	-	-	-	-	1.52
Strip Ratio		w:o	6.3	19.9	4.5	1.7	-	-	-	-	-	6.38
Mined Ounces		koz	4	29	169	58	-	-	-	-	-	259
Sabodala Total		Mined Rock	kt	18,179	31,744	17,833	2,923	-	-	-	-	-
	Mined Waste	kt	15,487	27,122	14,573	1,848	-	-	-	-	-	59,029
	Mined Ore	kt	2,692	4,623	3,261	1,075	-	-	-	-	-	11,651
	Ore Grade	g/t	1.36	1.67	1.61	1.67	-	-	-	-	-	1.58
	Strip Ratio	w:o	5.8	5.9	4.5	1.7	-	-	-	-	-	5.07
	Mined Ounces	koz	118	248	169	58	-	-	-	-	-	593
	Gora	Mined Rock	kt	-	-	10,617	11,475	11,443	6,454	-	-	-
Mined Waste		kt	-	-	10,082	10,781	11,184	6,022	-	-	-	38,069
Mined Ore		kt	-	-	535	665	259	432	-	-	-	1,891
Ore Grade		g/t	-	-	4.7	4.9	2.9	5.6	-	-	-	4.74
Strip Ratio		w:o	-	-	18.9	16.2	43.2	13.9	-	-	-	20.13
Mined Ounces		koz	-	-	81	105	24	78	-	-	-	288
Niakafiri		Mined Rock	kt	-	-	-	11,500	11,500	7,378	-	-	-
	Mined Waste	kt	-	-	-	8,625	8,625	5,322	-	-	-	22,572
	Mined Ore	kt	-	-	-	2,875	2,875	2,055	-	-	-	7,805
	Ore Grade	g/t	-	-	-	1.1	1.1	1.2	-	-	-	1.14
	Strip Ratio	w:o	-	-	-	3.0	3.0	2.6	-	-	-	2.89
	Mined Ounces	koz	-	-	-	105	105	76	-	-	-	287
	Total Mining	Mined Rock	kt	18,179	31,744	28,450	25,897	22,943	13,832	-	-	-
Mined Waste		kt	15,487	27,122	24,654	21,254	19,809	11,344	-	-	-	119,670
Mined Ore (>0.5 g/ t )		kt	2,692	4,623	3,795	4,615	3,134	2,488	-	-	-	21,347
Ore Grade		g/t	1.36	1.67	2.04	1.81	1.29	1.93	-	-	-	1.7
Strip Ratio		w:o	5.8	5.9	6.5	4.6	6.3	4.6	-	-	-	5.61
Mined Ounces		koz	118	248	249	268	130	154	-	-	-	1,168
Stockpile – Ending Balance*		High Grade(>0.5 g/t)	kt	87	-	-	-	-	-	-	-	-
	Low Grade (0.5>1.5 g/ t )	kt	8,729	9,938	9,925	10,534	9,667	8,355	4,555	755	-	-
	Total SP	kt	8,816	9,938	9,925	10,534	9,667	8,355	4,555	755	-	-
Processing	Ore Milled	kt	1,748	3,500	3,800	4,000	4,000	3,800	3,800	3,800	773	29,222
	Grade	g/t	1.96	2.10	2.09	2.06	1.23	1.57	0.73	0.62	0.62	1.49
	Contained Gold	koz	110	236	255	265	158	191	89	76	15	1,397
	Oxide	%	1.4	1.1	6.4	20.2	17.9	1.1	2.7	10.0	10.0	8.31
	Recovery	%	90.7	91.1	89.9	90.6	90.6	89.8	89.2	89.9	88.8	90.3
	Gold Production	koz	100	215	229	240	143	172	80	68	14	1,261

\*The metal contained in the stockpile as of 30 June 2013 is 228,000 ozs.



During the course of the mine life, the ROM ore will exceed the milling capacity. Ore that is in excess of process plant capacity will be selectively stockpiled and processed on a prioritized basis throughout the life of the operation to optimize the head grade on a daily basis.

The stockpiling practice used at the Sabodala complex supports a secure mill feed grade, on average, above the ROM ore grade for the same period.

## **16.5 Review**

The project mining schedule and the procedures to develop it have been reviewed for the Sabodala pit and the following comments are provided:

- Overall, the mine planning process applied by Teranga for the Sabodala project production units follow standard mining engineering procedures.
- Total quantities of waste, ore and contained gold in the mine design closely match those indicated as Mineral Reserves in Section 15.
- Major mining equipment has the capacity to maintain levels of availability, utilization and productivity that support the total mine capacity used to model the LOM schedule.
- Mining unit cost estimates for budgeting and LOM planning are in line with recent actual mining costs at Sabodala.

## 17 RECOVERY METHODS

The original Sabodala processing plant was nominally designed to process 2.0 Mtpa, or approximately 6,000 tpd of ore. The expansion to a nameplate design of 3.6 Mtpa (fresh ore) was completed in late 2012, and comprised essentially of the introduction of partial secondary crushing, installation of a second ball mill of identical capacity, and addition of three new leach tanks to the CIL circuit.

The plant has been in an extended commissioning process since this time and since June 2013 has been operating near this capacity on a sustained long term basis. A sustained rate at or near the nameplate design capacity is expected for the remainder of 2013 and beyond.

### 17.1 Ore Sources

To date, the ore treated by the Sabodala processing plant has been sourced exclusively from the Sabodala open pit (including Sutuba) which has been designed in phases. As of September 2013 ore from Phases 1, 2, and 3 has been successfully treated. This has resulted in the processing plant treating ore from a vertical cross section of the open cut mine plan, including oxide and transitional ore blends through to competent fresh material.

### 17.2 Overview of Current Processing Plant

The plant comprises facilities for crushing, grinding, CIL cyanidation and tailings disposal. Gold recovery facilities include acid washing, carbon stripping and electro winning, followed by bullion smelting and carbon regeneration. The major equipment of the plant includes:

- Primary crusher: Nordberg C140S single toggle jaw crusher
- Secondary crusher: Sandvik CH660 cone crusher
- SAG Mill: Outotec 7.3 m x 4.3 m EGL, 4000 kW
- Ball Mills (x2): Outotec 5.5 m x 7.85 m EGL 4000 kW
- Recycle (Pebble) crusher: Metso HP200SX Cone crusher
- CIL circuit: 3 x 2600 m<sup>3</sup> leach tanks and 9 x 1240 m<sup>3</sup> adsorption tanks with compressed air injection
- Elution circuit: 5t batch capacity, split AARL elution
- Tailings Thickener (x2): Outotec 23 m high rate thickener

Figure 17.1 shows the location of the Sabodala mill and power plant.

**Figure 17.1 Sabodala Mill and Power Station**



### **17.2.1 Crushing, Stockpiling and Reclaim**

Run-of-mine ore is delivered to the primary crushing facility by rear-dump haul trucks and front-end loaders. Ore delivery from the mine is on a 24 hour per day schedule. The primary crusher incorporates a jaw crusher, followed by a secondary crushing system that produces the required feed for the semi autogenous grind (SAG) mill.

Belt conveying systems deliver crushed ore to the primary and secondary crushed ore stockpiles. The reclaim system includes a single apron feeder and two vibrating feeders, located under the stockpile and a triple deck screen for sizing between the primary and secondary crushers.

### **17.2.2 Grinding and classification**

Ore is ground in two stages to produce a product suitable for cyanide leaching. The first stage includes a SAG mill driven by a 4 MW variable speed motor. Oversize pebbles extracted from the SAG mill are removed by a screen, crushed by the 132 kW pebble crusher and returned to the SAG Mill feed. Undersize from the SAG mill discharge screen gravitates to the cyclone feed hopper, where it is combined with the ball mill discharge and process water.

The second grinding stage consists of two ball mills driven by 4 MW fixed speed motor. The ball mills operate in closed circuit with a cyclone cluster consisting of sixteen (16) 250 mm diameter cyclones (12 operating, 4 standby). The cyclone cluster is fed a combination of the SAG mill discharge, the ball mill discharge and process water. The cyclone underflow reports back to the ball mill for further grinding, while the cyclone overflow, at 48 - 50 wt% solids and a  $P_{80} = 75 \mu\text{m}$  gravitates to the CIL feed pumps.

### **17.2.3 Leaching and Adsorption Circuit**

The leach circuit consists of three leach tanks and nine leach-adsorption stages. The circuit residence time varies from approximately 24 hours to 30 hours, dependent on the ore blend.

Lime is added to the grinding circuit to increase the slurry pH to 10, which is the alkalinity required for subsequent cyanidation. Sodium cyanide is added to the first leach tank to

effect gold leaching. All tanks are sparged with low pressure air to ensure sufficient oxygen is available for the gold dissolution reaction.

Granular 6 x 12 mesh activated carbon is present in the slurry to absorb the gold-cyanide complex ion, and is maintained at a concentration of 10 to 15 kg/m<sup>3</sup> per tank.

Each stage of the adsorption circuit consists of a mechanically agitated tank equipped with a mechanically swept vertical carbon retaining screen. Slurry flows from tank to tank, and carbon is advanced counter current by pumping slurry from tank to tank up stream.

#### **17.2.4 Carbon Recovery and Acid Wash**

The metals-loaded carbon is recovered from the adsorption circuit using the loaded carbon transfer pump. The carbon is screened and washed with process water on the loaded carbon screen and reports to the acid wash column.

A set volume of concentrated hydrochloric acid is added to a controlled flow of raw water feeding the acid wash column, to achieve a concentration of 3% HCl (w/v). The carbon is allowed to soak, with acid-soluble metals being dissolved from the loaded carbon.

After soaking, the carbon is rinsed with 4 bed volumes (bv) of raw water. The acid wash column discharge reports to the carbon safety screen. The rinsed carbon is transferred to the elution column using raw water.

#### **17.3 Carbon Elution and Electrowinning**

The Sabodala elution circuit utilizes a split Anglo American Research Laboratories (AARL) design to treat carbon in five tonne batches.

To recover gold from the carbon, batches of carbon are subject to a high pressure and temperature process termed elution. A hot cyanide-caustic solution is used to remove the gold from the carbon and into solution. Then, gold is recovered from this pregnant solution by electrowinning onto stainless steel wire wool cathodes in a single electro-winning cell.

The loaded cathodes are removed and pressure washed, with the gold in the form of sludge being recovered and dried. The dried gold sludge is mixed with fluxing chemicals and smelted on site to produce bullion bars of 88% Au purity, with silver forming the balance. After gold recovery the "barren" carbon is thermally re-activated and returned to the circuit.

The gold bullion is shipped under secured conditions to the contracted refinery for further processing and subsequent sale.

##### **17.3.1 Tailings Thickening**

The CIL circuit tailings are thickened prior to final storage in the tailings storage facilities (TSF). Two tailings thickeners are used to recover process water (containing valuable reagents) and reduce the overall tailings storage requirements. The achieved thickened underflow density range is 60 - 65 wt% solids.

The thickener underflow is pumped via a two-stage pumping arrangement to the TSF.

### 17.3.2 Tailings Storage

The TSF was designed by Coffey Geosciences, Australia. The TSF site is located approximately 500 m north-west of the processing plant. The TSF utilizes a natural valley storage design, with three separate embankments required to contain the tailings over time. Construction was completed on an additional lift for the tailings storage facility in Q3 2013, with a new deposition area and containment structure (TSF#2) planned for use later in the LOM.

The TSF is serviced by two tailings discharge lines and water is reclaimed from a centrally located decant ring and pumping arrangement. Tailings are deposited along the beaches around the perimeter of the containment structure and are gradually filling the natural valley. The decant ring is centrally located within the tailings pond and the reclaimed water is filtered naturally for reuse in the Sabodala processing plant. Several potential design optimizations are currently being evaluated for an additional lift to TSF#1 and the timing for TSF#2.

The design criteria for TSF #1 to the current elevation of 149RL are as follows:

- Total storage volume: 27 Mm<sup>3</sup>
- Annual production of 4 Mt.
- Tailings beach slope of approximately 1%.
- Consolidated in-situ dry tailings density of 1.35 t/m<sup>3</sup>.
- Tailings are generally non-acid-forming, and should pose limited geochemical concern as indicated by geological test work.

### 17.3.3 Plant Performance

The performance metrics for the Sabodala processing plant are presented in Table 17.1 through Table 17.3.

Note is made of the following:

- Crushed tonnes are reported as wet tonnes
- Milled tonnes are reported as dry tonnes
- All costs are reported in US\$, and relate to the metallurgical processing facility only
- Power consumed includes the entire Sabodala mine site

**Table 17.1 Primary Crushing Circuit Performance**

Primary Crushing Circuit	Q4 2012	Q1 2013	Q2 2013	July and August 2013
Net Production Rate (tph)	503	500	503	<b>592</b>
Availability (%)	84.6%	80.4%	80.7%	89.9%
Utilization (%)	78.0%	78.6%	83.3%	79.8%
Operating Time (%)	66.0%	63.2%	67.2%	71.7%
<b>Crushed Tonnes (t)</b>	<b>732,340</b>	<b>682,963</b>	<b>738,445</b>	<b>631,950</b>
<b>Annualized Capability</b>	<b>2,905,479</b>	<b>2,769,794</b>	<b>2,961,895</b>	<b>3,720,351</b>

**Table 17.2 Milling Circuit Performance**

Milling Circuit	Q4 2012	Q1 2013	Q2 2013	July and August 2013
Net Production Rate (tph)	367	354	360	<b>415</b>
Availability (%)	96.1%	92.7%	91.4%	96.8%
Utilization (%)	94.6%	99.5%	99.6%	99.5%
Operating Time (%)	91.0%	92.2%	91.0%	96.4%
<b>Milled Tonnes</b>	<b>736,602</b>	<b>704,018</b>	<b>716,144</b>	<b>595,106</b>
<b>Annualised Capability</b>	<b>2,922,388</b>	<b>2,855,184</b>	<b>2,872,446</b>	<b>3,503,447</b>

**Table 17.3 Projected Plant Production**

	2014	2015	2016	2017	2018	2019	2020	2021
<b>Mill Operating Time (%)</b>	97%	97%	97%	97%	97%	97%	97%	97%
<b>Mill Throughput (Mtpa)</b>	3.5	3.8	4.0	4.0	3.8	3.8	3.8	0.8
<b>Mill TPOH (tpoh)</b>	412	447	471	471	447	447	447	91
<b>Oxide Feed (%)</b>	1%	6%	20%	18%	1%	3%	10%	10%

The Primary Crushing circuit is comprised of a fixed grizzly over the ROM bin. An apron feeder delivers ore to a vibrating grizzly, from which the oversize is fed to a Jaw crusher.

In estimating future crushing and milling capacity, post-expansion historical performance was considered along with the upgrades and design changes to the crushing circuit carried out in Q1 and Q2 2013, as well as extended maintenance shutdowns in January and May that focused on reducing frequency and duration of future planned maintenance.

Specific improvements to operating performance were:

- Jaw liner life extended from 7 to 10 days.
- Re-engineering and changing the wear plates in the majority of chutes.
- A rotatable fixed grizzly to reduce repair and replacement time.

These changes reduce planned maintenance and breakdown events, enabling a move from several to a single five-day shut per year for major maintenance and remedial work.

### **Apron Feeder Gearbox Upgrade**

In July 2013, an upgraded gearbox was installed on the apron feeder which takes feed from the ROM bin and delivers it to the vibrating grizzly screen. The ratio change for the new gearbox is 24.7%, which elevated the capacity of the apron feeder from 520 tpoh to 650 tpoh.

### **Vibrating Grizzly**

In June 2013, the vibrating grizzly screen design was altered by removing a finger from each deck of the grizzly screen, and all remaining fingers were replaced with smooth fingers to increase surface area. This reduced the blinding issues that increased percentage material beyond the designed 57.7%, at times reaching 100% (complete



blinded). This significantly reduced overall crushing circuit throughput and resulted in significant operational delays to clean the grizzly screen.

The combination of these upgrades to the primary crushing circuit has resulted in a significant increase in primary crusher throughput which has allowed the build-up of significant inventory (35 kt) between the primary crushing circuit and the mill circuit.

### **Mill Throughput**

Due to the improvements in the primary crushing circuit, the key elements for plant throughput are the SAG and Ball mills operating time and throughput rate. The rates required for the mine plan throughput of 3.5 Mtpa in 2014 have been achieved since the completion of the primary crusher upgrades.

The increase from 3.5 Mtpa to 3.8 Mtpa planned for the subsequent years will be a result of the following:

- Implementation of an automated cascade control system to continually manage mill feed from the primary and secondary crushed stockpiles. A 2-3% improvement in throughput is expected after this implementation.
- Optimization of the SAG mill discharge size to increase throughput without adversely affecting recovery rates. This optimization work is now possible as the crushed stockpiles decouple the crusher and mill production rates. This is expected to produce approximately 20-25 tpoh.

In addition to these gains in milling capacity, the impact of significant amounts of oxide feed from Niakafiri in 2017 and 2018 will enable the annual mill throughput to reach 4.0 Mtpa. This is a result of reduced grinding required for oxide ore, which has been observed since initial operations.

## **18 PROJECT INFRASTRUCTURE**

### **18.1 Water Storage**

Primary water supply to service the processing plant and mine is comprised of three surface water storage dams from local catchment areas. These dams are designed to store adequate water from seasonal rainfall events to provide for mine production needs on a year-round basis.

SGO has also constructed a water pipeline to the Faleme River 42 km away, for supplemental water if necessary. To date it has not been necessary to operate of this pipeline as sufficient surface water has been obtained from local catchment areas.

### **18.2 Camp and Plant Site**

The main camp is located approximately 3 km from the mine and 2 km from the mill. Kwickspace was contracted by MDL and is the supplier of the pre-fabricated camp buildings. The camp was originally designed to house up to 600 employees. It was expanded to a capacity of 960 persons to accommodate the increased workforce for the expanded mining and milling operations.

A separate camp has been constructed at Bransan for exploration personnel and is designed to accommodate 50 persons.

Figure 18.1 shows the "Quads" in the foreground with the recreational areas in the middle of the photograph and the rest of the camp in the background. The exploration camp is shown in Figure 18.2.

Figure 18.1 View of Camp Site



Figure 18.2 Exploration Camp Site



The truck shop and fuel farm were constructed in 2008. Sufficient capacity exists in the fuel farm to accommodate the expanded mining fleet.

The Administration complex is made up pre-fabricated buildings which were supplied by Kwickspace.

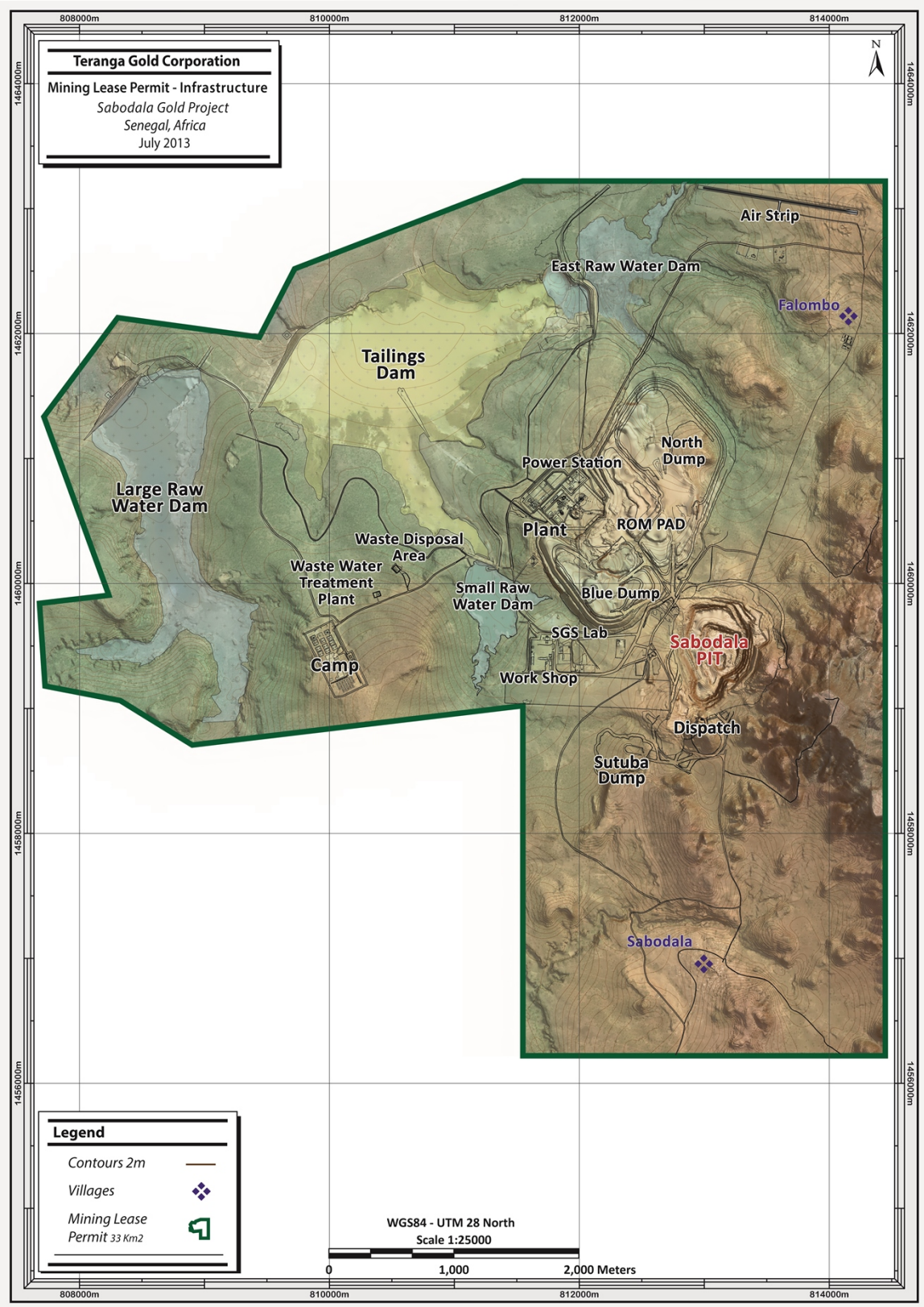
### **18.3 Power Supply**

All power required for the operation (mine, mill and camp and offices), is generated in house. A 30 MW, 5+1-engine Wärtsilä heavy fuel oil (HFO) power plant was constructed at a cost of US\$30 million. The power station was commissioned in November of 2008.

The Sabodala power station was expanded to 36 MW capacity with the addition of one new 6 MW unit in 2012.

Overall site infrastructure is shown in Figure 18.3.

Figure 18.3 Site Infrastructure



#### **18.4 Dakar Facilities**

Existing port facilities at Dakar are utilized for unloading of all project construction freight and for long term operational freight. No new infrastructure is required for the port to accommodate the Project.

Teranga has set up its own corporate offices in Dakar in which logistics, government liaison, personnel transport and other management functions for SGO and SMC are based.

#### **18.5 Communications**

The site has the following communication and radio facilities:

- Satellite internet
- VOIP satellite phone
- Cell phone coverage
- Vehicle and hand-held radios



## **19 MARKET STUDIES AND CONTRACTS**

### **19.1 Markets**

The principal commodity of SGO is gold. Gold is widely and freely traded on the international market, with known and instantly accessible pricing information.

### **19.2 Contracts**

Gold produced at the mine site is shipped, under secure conditions, to a refiner. Pursuant to existing contracts, the refiner delivers the gold directly to an account held with Macquarie Environmental Studies, Permitting and Social or Community Impact.

## **20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT**

### **20.1 Environmental Licences and Permits**

An Environmental and Social Impact Statement (ESIS) for the Project was completed in July 2006 by Tropica Environmental Consultants ("Tropica"), and an Environmental and Social Management and Monitoring Plan (ESMMP) was developed by Earth Systems in September 2007. Environmental Compliance Certification was granted by the Ministère de l'Environnement et de la Protection de la Nature on 22 January 2008.

### **20.2 Rehabilitation and Mine Closure**

The ESMMP committed SGO to prepare a stand-alone Rehabilitation and Mine Closure Plan (RMCP) in the first year of operation. The RMCP provides a comprehensive discussion of the implementation, management and monitoring of rehabilitation activities that are to be undertaken during both the operational and closure phases of the Project. The RMCP also provides SGO with a clear indication of anticipated rehabilitation and closure costs throughout the life of the Project. This plan satisfies the requirements of the Government of Senegal as well as relevant international standards (specifically Australian, Canadian and those of the International Finance Corporation (IFC)).

In 2012, the SGO Environment Department was reinforced with the appointment of a new environment manager, a project environmental and quality assurance officer, a biodiversity officer, a GIS (geographic information system) Officer and an environmental technician.

As part of the progressive rehabilitation plan, local seed collection was organized, involving communities and local forestry agents. A nursery will be constructed and will produce local species to be used for reclaimed areas.

As of the date of this report, no bonds, guarantees or other financial sureties for future reclamation and rehabilitation obligations had been posted.

In mid-2008, estimated closure costs for the Project were US\$18.08 million. Teranga has internally estimated and escalated the closure costs to US\$25 million as included in capital expenditure table (Table 21.1) in Section 21.

### **20.3 New Tailings Storage Facility Environmental Assessment**

The permitting process for the expanded tailings storage commenced in Q3 2011 and the Environmental and Social Impact Assessment (ESIA) for TSF2 was completed in 2012. Construction commenced for an extended lift on TSF#1 in Q2 2013. An engineering analysis is ongoing to determine additional storage options in TSF#1 and required timing for TSF#2.

### **20.4 Gora Project**

The Gora deposit lies approximately 22 km northeast of the Sabodala processing plant and is located within the Sounkounkou exploration permit for which SMC holds a majority interest. In 2012, SGO's Environment Department, with the assistance of locally accredited

and international consultancies, submitted the terms of reference for the ESIA for the Gora Project. Development for mining at Gora is scheduled to commence by late 2014 with preliminary early work in late 2013.

The permitting process for the Gora Project is expected to comprise two principal steps:

1. An area of SMC's existing exploration permit encompassing the Gora Project will be converted into a mine lease. This application has been filed.
2. A new road easement for the haulage of ore from the Gora Project to the Sabodala Mine.

## **20.5 Niakafiri Project**

The Niakafiri Project will necessitate the physical displacement of Sabodala village, a population of approximately 3000 persons.

In late 2008, SGO commissioned Earth Systems to prepare a draft Resettlement and Compensation Framework for the Niakafiri Project.

In September 2011, SGO engaged with the Government of Senegal in a strategic planning process to strengthen the administrative and institutional frameworks needed to support the management of impacts arising from the mining sector, including the resettlement of Sabodala village. This planning process has continued through 2013.

Permitting work is underway and a detailed ESIA is expected in 2014. Production from Niakafiri is scheduled for 2016, giving time to deal with any issues arising before mining commences.

## **20.6 Corporate Social Responsibility**

SGO is a member of the West African task force for Corporate Social Responsibility (CSR). In 2012 SGO made US\$805,000 in direct CSR contributions of which US\$471,000 was contributed to the Social Fund exceeding what is outlined in the Sabodala Mining Agreement.

SGO's social fund focusses on six areas of development: education, water & sanitation, health, revenue generation, governance & planning, and sport and culture. Significant achievements in 2012 include:

- Support to the upgrade and extend the potable water supply in the villages around the mine site. In 2012 14 water and sanitation projects were funded by Teranga including four new water wells and the rehabilitation and extension of the Sabodala village water network. The rehabilitation and upgrade increased water storage capacity by 50% and provided seven public fountains and 60 household connections.
- In partnership with the regional health services, an anti-malaria indoor-spray programme takes place every year covering 14 villages that house well over 12,00 households.
- To increase food security in the area, Teranga has supported the implementation of poultry farming activities and has extended the 2011 granary programme to another

four villages in 2013. As part of its impact mitigation measures for TSF#2, Teranga underwent extensive consultation with the impacted communities and as such established the concept of market gardens. The first market garden project was a huge success, since this initiative provided income through the selling of produce and provided food security when this was not available to this community in the past.

- Supported 19 programs in the education sector including: providing bursaries for 15 students from Senegal to study at universities abroad, funding the rent for 114 local Kedougou students studying in Dakar, building eight classrooms for the Sabodala Secondary School, and initiating a book giving programme.
- Partnership programs with regional and local planning councils to support them with the preparation of their respective development frameworks included financing the local development plan for the Kedougou region and providing office equipment for the rural and regional councils of Sabodala and Kedougou respectively.
- Hosted a series of community meetings in support of a new Regional Development Plan and created a multi-stakeholder roundtable with the help of rePlan and international specialized consultancy firm.
- Teranga is currently working to establish an office in the regional centre of Kedougou.

## 21 CAPITAL AND OPERATING COSTS

### 21.1 Capital Costs

The projected capital expenditure profile is shown below in Table 21.1. The largest item for 2013 is the Gora development.

**Table 21.1 Capital Expenditure**

Sustaining Capex	LOM (US\$ '000)	2013 Q3-Q4 (US\$ '000)	2014 (US\$ '000)	2015 (US\$ '000)	2016 (US\$ '000)	2017 Forward (US\$ '000)
Mining	13.55	0.95	3.50	3.00	3.00	3.10
Processing	18.33	0.33	2.00	2.50	2.50	11.00
Admin & Other Sustaining	5.44	0.19	1.00	1.00	1.00	2.25
Community Relations	25.74	0.74	-	20.00	5.00	-
Environment - Closure	25.00	-	-	2.00	2.00	21.00
<b>Total Sustaining Capex</b>	<b>88.06</b>	<b>2.21</b>	<b>6.50</b>	<b>28.50</b>	<b>13.50</b>	<b>37.35</b>
<b>Capital Projects &amp; Development</b>						
Gora Development	24.48	-	20.03	4.45	-	-
Other Projects & Development	8.44	2.34	4.00	2.10	-	-
<b>Total Projects and Development</b>	<b>32.92</b>	<b>2.34</b>	<b>24.03</b>	<b>6.55</b>	<b>-</b>	<b>-</b>
<b>Combined Total (US\$ '000)</b>	<b>120.98</b>	<b>4.55</b>	<b>30.53</b>	<b>35.05</b>	<b>13.50</b>	<b>37.35</b>

Included in the projected expenditures shown in the table above are allowances for additional replacement blasthole drills, the raising of the tailings impoundment, community relations, the relocation of the Sabodala village and other sustaining capital.

### 21.2 Operating Cost Estimates

The estimated unit and total operating costs over the project life are shown in Table 21.2.

**Table 21.2 Operating Cost**

Activity	Unit	LOM	2013 Q3-Q4	2014	2015	2016	2017 Forward
Mining	US\$/t mined	2.63	2.55	2.59	2.66	2.60	2.69
Processing	US\$/t milled	17.53	19.12	18.00	18.00	15.68	17.6
General & Admin.	US\$ '000	97	9	17	16	15	40
Mining	US\$ '000	371	47	82	76	67	99
Processing	US\$ '000	512	33	63	68	63	285
General & Admin	US\$ '000	97	9	17	16	15	40
Refining & Freight	US\$ '000	7	1	1	1	1	3
Byproduct Credits	US\$ '000	(2)	(0.2)	(0.4)	(0.4)	(0.5)	(0.9)
<b>Total Operating Costs</b>	<b>US\$ '000</b>	<b>985</b>	<b>90</b>	<b>163</b>	<b>161</b>	<b>146</b>	<b>426</b>
Deferred Stripping Adjustment	US\$ '000	(81)	(12)	(37)	(11)	(10)	(11)
Inventory Adjustment	US\$ '000	47	(21)	-	(6)	5	69
Royalty	US\$ '000	86	7	14	16	16	33
<b>Total Cash Costs<sup>(1)</sup></b>	<b>US\$ '000</b>	<b>1,037</b>	<b>64</b>	<b>140</b>	<b>160</b>	<b>157</b>	<b>517</b>
<b>Total Cash Costs<sup>(1)</sup></b>	<b>US\$/oz</b>	<b>813</b>	<b>641</b>	<b>657</b>	<b>694</b>	<b>650</b>	<b>1,052</b>
Capex <sup>(2)</sup>	US\$ '000	97	5	31	33	12	16
Capitalized Deferred Stripping	US\$ '000	81	12	37	11	10	11
Capitalized Reserve Development	US\$ '000	7	1	6	0	0	0
Corporate Admin	US\$ '000	83	7	13	13	13	37
<b>All-In Sustaining Cash Costs<sup>(1)</sup></b>	<b>US\$ '000</b>	<b>1,305</b>	<b>89</b>	<b>227</b>	<b>217</b>	<b>192</b>	<b>581</b>
<b>All-In Sustaining Cash Costs<sup>(1)</sup></b>	<b>US\$/oz</b>	<b>1,022</b>	<b>886</b>	<b>1,060</b>	<b>939</b>	<b>792</b>	<b>1,184</b>

Notes:

(1) Total cash costs, total cash costs per ounce, all-in sustaining costs (AISC) and all-in sustaining costs per ounce are non-IFRS financial performance measures with no standard definition under IFRS. AISC, as defined by the World Gold council, is an extension of existing "cash costs" and incorporate costs related to sustaining production. As per the World Gold council definitions, the cost per ounce metrics are based on ounces sold.

(2) Capex excludes Environment – Closure expenditures

Fuel is one of the largest components of the operating cost. The unit price has been assumed at US\$1.10/L.

Table 21.3 is a breakdown of total waste used in the calculation of capitalized deferred stripping under IFRS standards.



**Table 21.3 Waste Stripping Schedule**

<b>Waste Stripping</b>	<b>Unit</b>	<b>LOM</b>	<b>2013 Q3-Q4</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017 Forward</b>
Operating	Mt	94.51	14.85	14.55	20.62	17.57	26.92
Deferred	Mt	25.17	0.64	12.57	4.04	3.69	4.23
<b>Total Waste</b>	<b>Mt</b>	<b>119.68</b>	<b>15.49</b>	<b>27.12</b>	<b>24.66</b>	<b>21.26</b>	<b>31.15</b>

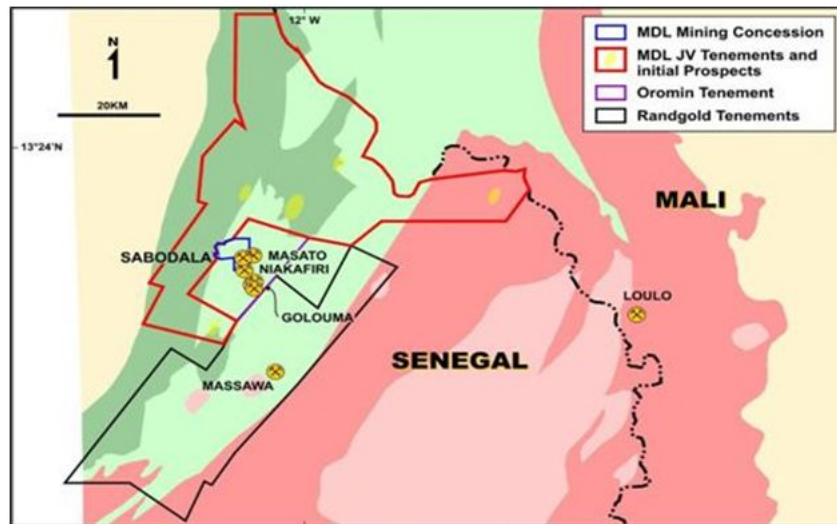
## **22 ECONOMIC ANALYSIS**

As Sabodala is considered to be a producing issuer, information required under Item 22 is excluded from this report as there is no material expansion of current production that has not been previously disclosed in a Technical Report.

## 23 ADJACENT PROPERTIES

Two significant properties are adjacent to the Project; Oromin Exploration Ltd.'s Golouma project (in which Teranga has participation), and Randgold Resources' Massawa project. The locations of the two projects with respect to Sabodala are shown in Figure 23.1.

**Figure 23.1 Adjacent Properties Locations**



### 23.1 Oromin Joint Venture

Note that details relating to the August 2013 Oromin transaction may be found in Section 24.1.

The Oromin Joint Venture Group ("OJVG") is exploring a concession adjacent to the Project. Pursuant to the demerger with MDL, Teranga acquired approximately 13.8% of the issued and outstanding shares of Oromin, thus giving it an interest in the adjoining ground.

Oromin Exploration Ltd. (Oromin) owns 43.5% of OJVG, and operates the OJVG Gold Project in Senegal (OJVG Project). The balance of the OJVG is held by private companies Bendon International (43.5%) and Badr Investment and Finance (13%). Somigol, a recently formed Senegalese operating company, holds 100% of the OJVG Project, subject to the 10% carried interest of the Government of Senegal. Oromin is the operator.

The following information has been taken from the Oromin website and is presented here for informational purposes only. AMC has not independently confirmed its accuracy and the information given is not necessarily indicative of mineralization on the Project.

#### 23.1.1 Opportunity

The advanced OJVG Project is a proposed, construction-ready open-pit and underground gold carbon-in-leach (CIL) mining operation with potential for incremental heap-leach production in its early years.

Both a CIL Feasibility Study and a Heap Leach PEA Study were completed in 2013.

The Mineral Resource estimate for the OJVG Project is laid out in Table 23.1.

**Table 23.1 OJVG Mineral Resource Summary Table – September 2012**

Mineral Resource Table -- September 2012				
Deposit Type	Category	Tonnes (000's)	Gold Grade (g/t)	Contained Gold (oz)
Golouma Deposits	Indicated	13,685	3.18	1,400,000
	Inferred	5,455	3.43	601,000
Masato Deposit	Indicated	44,970	1.34	1,933,000
	Inferred	3,527	1.13	128,000
Sub-Total	Indicated	58,655	1.77	3,333,000
	Inferred	8,982	2.52	728,000
Heap Leach Deposits	Indicated	16,551	0.84	445,000
	Inferred	8,346	0.87	234,000
Total	Indicated	75,206	1.56	3,778,000
	Inferred	17,329	1.73	963,000

The Mineral Reserve estimate for the OJVG Project is laid out in Table 23.2.

**Table 23.2 OJVG Mineral Reserve Table – January 2013**

Mineral Reserve Table -- January 2013				
Deposit Type	Category	Tonnes (000's)	Gold Grade (g/t)	Contained Gold (oz)
Golouma Deposits	Probable OP	2,902	2.38	222,000
	Probable UG	<u>6,122</u>	<u>4.52</u>	<u>890,000</u>
	Probable Sub-Total	9,024	3.83	1,112,000
Masato Deposit	Probable OP	18,987	2	1,223,000
Total Probable		28,011	2.59	2,335,000

## 23.2 RandGold Massawa Project

The information in the text that follows has not been independently verified by AMC and the information is not necessarily indicative of mineralization on the Project.

The Massawa project is located approximately 700 kilometers south east of the capital city of Dakar and some 90 kilometers due west of Randgold's Loulo mine in Mali. Randgold owns 83.25% in partnership with a local company who owns 6.75%, after providing for the State of Senegal's right to a non-contributory 10% share. The Massawa gold deposit is located approximately 30 km south of the Sabodala plant.

The text that follows is taken verbatim from the Randgold Resources Annual Report 2012 (Randgold, 2012).

*“The most advanced of our prospects is the Massawa project in Senegal, just across the border from Loulo. This is a large but metallurgically complex deposit which has been returned to the exploration division for further work, and in particular to test the potential for additional, non-refractory resources. Metallurgical testwork on the sulphides is underway. As the process is likely to involve pressure oxidisation, it will therefore be power intensive and access to low cost power is essential to the project’s viability and this is currently being investigated.” (pg 8)*

*“The initial prefeasibility study was completed on the open pit Mineral Reserves in 2010. In 2011, it was decided to delay the feasibility study and focus instead on understanding the geological and metallurgical controls as well as growing the resource base of the project.” (pg 50)*

*“The current feasibility plan is to progress the study through 2013 and 2014. Metallurgical sampling is currently underway to support pilot pressure oxidation testwork planned to be completed by Hazen in Denver during 2013. This is critical to confirm recoveries, reagent consumptions and processing operating costs of the pressure oxidation (PoX) and CIL circuits.” (pg 51)*

The Mineral Resource and Mineral Reserve estimates for Massawa are laid out in Table 23.3.

**Table 23.3 Massawa Mineral Resource and Mineral Reserve Table – 31 Dec-12**

	Category	Tonnes (Mt)	Grade (g/t)	Gold (Moz)	Attributable Gold*** 83.25% (Moz)
<b>Mineral Resources*</b>					
Open Pits	Indicated	37.33	2.65	3.18	2.65
	Inferred	1.19	3.31	0.13	0.11
	Inferred	2.18	4.24	0.30	0.25
Total Mineral Resources	Indicated	37.33	2.65	3.18	2.65
	Inferred	3.36	3.92	0.42	0.35
<b>Mineral Reserves**</b>					
Open Pits		20.73	3.07	2.05	1.70
Total Mineral Reserves	Proven and Probable	20.73	3.07	2.05	1.70

\* Open pit mineral resources are the insitu mineral resources falling within the US\$1 500/oz pit shell reported at a 0.5g/t cut-off. Underground mineral resources are those insitu mineral resources below the US\$1 500/oz pit shell of the North 2 deposit reported at a 2.0g/t cut-off. Mineral resources were generated by Mr Babacar Diouf, an officer of the company and competent person.

\*\* Open pit mineral reserves are reported at a gold price of US\$1 000/oz and a 1.1g/t cut-off and include dilution and ore loss factors. Open pit mineral reserves were calculated by Mr Onno ten Brinke, in his capacity as an independent consultant, and reviewed and verified by Mr Rodney Quick, an officer of the company and competent person.

\*\*\* Attributable gold (Moz) refers to the quantity attributable to Randgold based on Randgold’s 83.25% interest in the Massawa gold project.

## **24 OTHER RELEVANT DATA AND INFORMATION**

### **24.1 Oromin Transaction**

On 7 August 2013 Teranga announced that it had completed its take-over bid offer to acquire all of the outstanding shares of Oromin that it did not already own. As of that date, together with the shares it already held in Oromin, Teranga owned approximately 72% of Oromin's outstanding shares. Teranga proceeded with a plan of arrangement under the B.C. Business Corporations Act, as previously announced as part of its takeover bid, to acquire all of the remaining Oromin shares that were not deposited under its takeover bid offer. On 2 October 2013 the Oromin board of directors convened a special meeting of shareholders to consider the approval of the plan of arrangement involving Oromin and Teranga. The resolution was passed by the Oromin shareholders and on 4 October a court order was obtained also approving the plan of arrangement, effectively completing Teranga's acquisition of all of the outstanding shares of Oromin that it did not already own.

Teranga has engaged the other partners of the OJVG and intends to come to an agreement for either potential purchase or toll milling arrangement using the Sabodala processing plant facilities.

As a result of this transaction and future potential agreements, Teranga intends to incorporate the Mineral Resources and Mineral Reserves from the Oromin joint venture into an integrated life of mine plan.

### **24.2 Sabodala Underground Potential**

In August 2011, AMC completed a desktop study to identify mineralization outside of the Sabodala ultimate pit that could potentially be mined by underground methods. The study included selection of appropriate mining methods, estimation of mining operating costs and an estimation of a mineable underground inventory. The Study was based on the 2009 resource model and considered mineralization outside of the 2010 ultimate pit design.

The results of the study were positive and indicated that approximately 2.2 Mt of the current Inferred Resources at a mean grade of 3 g/t Au might be economically extractable.

Since the completion of the study to the date of the present report a new block model and a new ultimate pit design has been produced. Much of the Mineral Resource that was considered for underground mining is now within the ultimate pit outline. However, recent diamond drilling has identified resources beyond the ultimate depth of the pit and these may be mined by underground methods from the pit bottom. A PFS of underground mining could be undertaken based on the newest block model, and Mineral Resources outside of the ultimate pit shell.

### **24.3 Heap Leach Test Programme**

#### **24.3.1 Introduction**

In view of the greater oxide component at Niakafiri and other orebodies in the district, heap leach potential was considered to merit some initial investigation. Accordingly in January 2010 two bulk crushed ore samples were submitted to SGS Laboratories (South Africa) for



heap leach amenability test work. An overview of the sample nature and head grades is presented in Table 24.1.

**Table 24.1 Overview of Heap Leach Samples**

Sample	Composition	Grade (g/t)
1	100% Oxide ore	1.29
2	67% Oxide ore 33% Fresh ore	1.32

The specific origin of the ore is uncertain given the nature of ROM pad stockpiling and blending. The samples were intended to provide a scoping level overview of heap leach amenability of the Sabodala oxide ore, and the potential application to alternative ore sources.

### 24.3.2 Test Work Programme

The test work programme commenced in April 2010 and included:

- Determination of optimal crush size (in the range of 6 mm to 12 mm) by crushing and subsequent intensive bottle roll leaching.
- Testing of material permeability at optimal crush size (to determine need for agglomerate).
- Agglomeration (with cement) of the samples at the optimal crush size.
- Column heap leach tests at the selected crush size, for a duration of 60 to 90 days.

### 24.3.3 Results

The optimal crush size was determined to be 8 mm, common to both samples. A summary of the initial extraction results are presented in Table 24.2.

**Table 24.2 Summary of Initial Leaching Test Results.**

Sample (No.)	Crush Size (mm)	Au Extraction (%)	Sample (No.)	Crush Size (mm)	Au Extraction (%)
1	6	93.1	2	6	58.7
1	8	89.8	2	8	73.4
1	10	78.5	2	10	58.4
1	12	80.1	2	12	61.7

The samples were leached via bottle rolls for a period of 7 days with excess cyanide. Sample 1 did not appear to be fully leached, with extraction increasing up to day 7. Sample 2 appeared to be fully leached by day 5, with no additional extraction noted.

The oxide sample (Sample #1) delivered high gold extraction values, ranging from 78.5% at the 10 mm crush size, to 93.1% at a crush size of 6 mm. In turn, the mixed oxide – fresh ore sample returned gold extraction values of 58.4% up to 73.4%.

The permeability tests indicated that agglomeration of the samples would be required, due to the high percentage of fine material. Agglomeration was undertaken with a cement addition rate of 1 kg/t.

The agglomerated samples were stacked into 150 mm diameter, 2 m high test columns, and leaching commenced in mid June 2010. The leaching tests were stopped after 50 days. The extraction results for Sample 1 and Sample 2 at day 30 are presented in Table 24.3.

**Table 24.3 Summary of 30 Day Results**

Sample	Au Extraction (%)	Cyanide Consumption (kg/t)	Lime Consumption (kg/t)
1	90.8	4.53	3.75
2	60.2	4.39	3.72

The leach columns are arranged as an open system, with a constant supply of fresh leach solution. The gold extraction and cyanide consumption are calculated by daily analysis of the discharge leach solution. This arrangement provides an accurate measurement of achievable gold extractions, but probably overestimates both leach kinetics and reagent consumption.

Although these tests were of a preliminary nature only, they showed clearly that the oxide material is potentially amenable to heap leaching. Additional test work is required in order to develop design criteria and cost parameters.

## 25 INTERPRETATION AND CONCLUSIONS

In addition to an operation which is being expanded there is a good geological database from the maturing exploration work on the ML, as well as potential for further deposits in the immediate vicinity. The level of exploration in the area, as proposed, will need a rigorous focus in order to maintain quality in all the work being done.

The geological work to date including data collection is of good quality and suitable for the estimation of Mineral Resource. Drilling must be carried out to sufficient density. There is a succession of targets / deposits in the "pipeline" and it will be important to continually rank and upgrade these. There is significant potential to add to the Mineral Resource total via the current exploration programme.

The Proven and Probable Mineral Reserves as of 30 June 2013 are 29.21 Mt grading 1.48 g/t Au for 1.40 Moz.

The review indicates that the Sabodala, Gora and Niakafiri deposits, combined with the stockpiled material, have the capacity to produce sufficient ore on an ongoing basis for the current mill capacity.

There have now been five full years of mining operations at Sabodala and the operation has reached its short term targets. It can be anticipated that operational processes will continue to improve as the operation matures and that these will have a positive impact on costs and equipment efficiency.

The Niakafiri deposit does not yet have geotechnical data. While AMC has assumed that the geotechnical conditions are similar to Sabodala, assessment work should be undertaken to determine specific Niakafiri geotechnical characteristics.

The Sabodala village must be moved prior to mining at Niakafiri. As village relocation has been undertaken previously for the Sabodala pit, Teranga believes that it has a very clear path to do so again for Niakafiri and the process to do this is underway. The related cost items are included in the project cost estimates and there is time to deal with all issues prior to the commencement of mining.

Mining operations in the Sabodala pit have shown that the rock mass is relatively dry with some exceptions. The ground water is related to some structural conduits. It has been observed that the pit makes approximately 6,000 m<sup>3</sup> of water per month, which is roughly equivalent to one day's pumping with one pump. There are sufficient measures in the mine to control the water and keep it out of the pit.

The Sabodala and Niakafiri ores are medium to hard but with relatively simple metallurgy allowing 90% recovery to be readily obtained. Test work has indicated that some potential exists for treating low grade oxide ores by heap leaching although fine crushing and agglomeration is required and further optimization work is still needed.

## **26 RECOMMENDATIONS**

### **Exploration**

Exploration should continue on the regional land package. Discovery of additional resources will provide the opportunity to extend the life of operations, and higher grades will provide flexibility in operating should the price of gold fall or costs increase.

### **Sabodala Geotechnical**

A detailed stability analysis to update the rock mass classification and slope stability parameters for the Sabodala pit has been ongoing at the time of writing this report. Incorporation of these parameters to further optimize the pit economics is recommended.

### **Sabodala Underground Prefeasibility Study**

Potentially viable underground mining at Sabodala outside of the ultimate pit design is seen as possible. The current ultimate pit design does not reach all the known Mineral Resources and an area below the pit may provide the possibility of underground mining. A pre-feasibility study to better define the potential operations is recommended. Estimated cost US\$300 thousand.

### **Niakafiri Resource Definition**

Analysis of the existing database and surface work has indicated that additional drilling may be warranted to the north of the currently defined Mineral Resource and Mineral Reserve.

### **Niakafiri Heap Leach Investigation**

A significant amount of the Mineral Resource and Mineral Reserve at Niakafiri is oxidized. Further testing and engineering scoping studies are recommended to determine the feasibility of a heap leach pad for the oxidized Niakafiri ore.

### **Gora Development**

Planning and design for the Gora development has reached a stage where the project should commence. Applications for permits have been filed and are pending.

### **Niakafiri Geotechnical Study**

A geotechnical programme to determine specific characteristics for the pit slopes of the Niakafiri open pit should be undertaken. Estimated cost US\$0.5 million.

### **Gora Geotechnical Study**

The geotechnical evaluation for the Gora pit used drill core that is orientated approximately normal to the mineralization planes so that they would determine their true width. An additional geotechnical programme is recommended to place several holes oriented down dip of mineralization to confirm the absence of major structural features in the opposite direction. Estimated cost US\$0.2 million.

## 27 REFERENCES

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## **QUALIFIED PERSONS' CERTIFICATES**

**W P Chawrun, P.Eng.**

Teranga Gold Corporation

[pchawrun@terangagold.com](mailto:pchawrun@terangagold.com)

I, William Paul Chawrun, P.Eng. B.Sc. (Hons) Mine Engineering, B.Sc Geology, MBA, do hereby certify that:

I am the Vice President, Technical Services for Teranga Gold Corporation, Suite 2600, 121 King Street West, Toronto, Ontario M5H 3T9.

1. This certificate applies to the technical report titled "Technical Report for Sabodala Gold Project, Republic of Senegal, West Africa prepared for Teranga Gold Corporation" with the effective date 30 June 2013 (the Technical Report).
2. I am a graduate of Queen's University, Canada (B.Sc Hons, 1993); McMaster University, Canada (B.Sc. 1988), Athabasca University, Canada, (MBA, 2006).
3. I am a registered member of the Association of Professional Engineers of Ontario.
4. I have worked as a mining engineer for over 20 years since graduation from an engineering program at university. My relevant experience for the purpose of the Technical Report includes:
  - Site based engineering and multi-disciplined technical management at surface mine operations
  - Cost modeling, Mineral Reserve estimation, Mine Planning
  - Mine project technical development – surface and underground
5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
6. I am responsible for the preparation of Sections 2, 4, 5, 13, 16 - 22, 24 and part of Sections 1, 15 and 27 of the Technical Report. I visit the Sabodala regularly, most recently in September 2013.
7. I have not had prior involvement with the property that is the subject of the Technical Report previous to my starting employment at Teranga Gold Corporation in October, 2012.
8. As of the effective date of the Technical Report, to the best of my knowledge, information and belief Sections 2, 4, 5, 13, 16 - 22, 24 and part of Sections 1, 15 and 27 contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
9. I am an employee of Teranga Gold and therefore not independent of the issuer.
10. I have read National Instrument 43-101 and Form 43-101F1, and Sections 2, 4, 5, 13, 16 - 22, 24 and part of Sections 1, 15 and 27 of the Technical Report have been prepared in compliance with that instrument and form.
11. 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 10 October 2013

*Original Signed and Sealed*

W. Paul Chawrun, P. Eng.

**P Nakai-Lajoie, P. Geo.**  
Teranga Gold Corporation  
[pnlajoie@terangagold.com](mailto:pnlajoie@terangagold.com)

I, Patti Nakai-Lajoie, P. Geo., BSc, do hereby certify that:

I am the Director, Mineral Resources for Teranga Gold Corporation, Suite 2600, 121 King Street West, Toronto, Ontario M5H 3T9.

1. This certificate applies to the technical report titled "Technical Report for Sabodala Gold Project, Republic of Senegal, West Africa prepared for Teranga Gold Corporation" with the effective date 30 June 2013 (the Technical Report).
2. I am a graduate of University of Toronto, Toronto, Ontario, Canada, in 1980 with a Bachelor of Science degree in Geology.
3. I am a registered member of the Association of Professional Geoscientists of Ontario (Reg. # 0290).
4. I have worked as a geologist for a total of 31 years since my graduation from university. My relevant experience for the purpose of the Technical Report is:
  - Supervision of underground and surface exploration programs
  - Mineral Resource estimation and block modeling
  - Senior positions with major Canadian mining companies, with responsibilities in managing all resource related functions
5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
6. I am responsible for the preparation of Sections 6-12, 14 and part of Section 27 of the Technical Report. I visited the Sabodala Project in September 2013.
7. I have had prior involvement with the property that is the subject of the Technical Report. I was periodically employed as a Consulting Geologist from February 2009 until October 2011.
8. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, Sections 6-12, 14 and part of Section 27 of the Technical Report contain all scientific and technical information that is required to make the Report not misleading.
9. I am an employee of Teranga Gold and therefore not independent of the issuer.
10. I have read National Instrument 43-101 and Form 43-101F1, and Sections 6-12, 14 and part of Section 27 of the Technical Report have been prepared in compliance with that instrument and form.
11. 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 10 October 2013

*Original Signed and Sealed*

Patti Nakai-Lajoie, P. Geo.

**J C Martin, P.Eng.**

AMC Mining Consultants (Canada) Ltd.

[jmartin@amcconsultants.com](mailto:jmartin@amcconsultants.com)

I, Julia Martin, P.Eng., BSc, MBA, MAusIMM(CP), do hereby certify that:

I am a Principal Mining Engineer of AMC Mining Consultants (Canada) Ltd., Suite 300, 90 Adelaide Street West, Toronto, Ontario M5H 3V9.

1. This certificate applies to the technical report titled "Technical Report for Sabodala Gold Project, Republic of Senegal, West Africa prepared for Teranga Gold Corporation" with the effective date 30 June 2013 (the Technical Report).
2. I am a graduate of Queen's University, Canada (BSc, 1994); Curtin University, Australia (MBA, 2008).
3. I am a registered member of the Association of Professional Engineers of Ontario and a Chartered Professional Member of The Australasian Institute of Mining and Metallurgy.
4. I have worked as a mining engineer for a total of 19 years since my graduation from university. My relevant experience for the purpose of the Technical Report includes:
  - Site based mine engineering at surface and underground operations
  - Cost modeling and Mineral Reserve estimation
5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
6. I am responsible for the preparation of Sections 3, 23, 25, 26 and part of Sections 1, 15 of the Technical Report. I visited the Sabodala property in November 2011.
7. I have had prior involvement with the property that is the subject of the Technical Report. I was employed as the Chief Mining Engineer on that property from October 2008 until October 2009.
8. As of the effective date of the Technical Report, to the best of my knowledge, information and belief Sections 3, 23, 25, 26 and part of Sections 1, 15 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 applying all of the tests in section 1.5 of National Instrument 43-101.
10. I have read National Instrument 43-101 and Form 43-101F1, and Sections 3, 23, 25, 26 and part of Sections 1, 15 of the Technical Report have been prepared in compliance with that instrument and form.
11. 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 10 October 2013

*Original Signed and Sealed*

Julia Martin, PEng.