SEMAFO Inc.

Tapoa Permit Group, Natougou Gold Deposit

Project No. AU4582

NI 43-101 Technical Report

March 2015

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Issued by: Perth Office
Doc ref: 150330 AU4582 Orbis_Natougou NI 43-101 Final report

Last edited: 30 March 2015

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1 Summary

This Technical Report describes the Tapoa Permit Group, which contains the Natougou gold deposit and associated Mineral Resource estimate. The Tapoa Permit Group comprises four contiguous Exploration Permits, namely Dangou, Pambourou, Boungou and Bossari, which together total 772 km^2 and are situated approximately 320 km east of Ouagadougou, the capital of Burkina Faso, West Africa. Access to the property is via sealed roads, with the last 56 km being unsealed. The climate of the region is typical of sub-Saharan Africa.

The Tapoa Permit Group is owned by Orbis Gold Limited ("Orbis"). SEMAFO Inc. ("SEMAFO") has acquired a 98% shareholding in Orbis, as of 11 March 2015, and as such Orbis' Mineral Resource estimate for the Natougou project is considered material to SEMAFO. SEMAFO initiated a compulsory acquisition of all remaining Orbis shares on 11 March 2015 and Orbis was delisted from the Australian Securities Exchange ("ASX") on 16 March 2015.

1.1 Geology and mineralisation

The Tapoa Permit Group is located within the Birimian Gold Province in West Africa. The Birimian Gold Province is a world-class gold province and hosts most of the major gold deposits in West Africa, notably in Ghana, Ivory Coast, Mali, Senegal and Burkina Faso.

Mineralisation at the Natougou deposit is hosted within a flat lying shear zone which has a subtle anticlinal geometry. The apparent axis of the anticline strikes approximately 315° and each limb dips approximately 15°.

The mineralisation is characterised by sheared amphibolite, quartz boudinage veining, biotite-plagioclase alteration and an increase in sulphide content. Sulphide assemblage comprises pyrite, pyrrhotite and minor chalcopyrite and arsenopyrite. Visible gold has been observed in core samples. The host lithology consists of mafic to intermediate volcanic/intrusive stratigraphy.

1.2 Exploration

Exploration activities on the property have been ongoing since 2010. Regional soil sampling and rock chip sampling programs were commenced by Orbis in 2010 and permit scale mapping was conducted by Orbis geologists during the course of the 2014 field season. Shallow artisanal mining activity occurs across the Tapoa Permit Group and is often used to identify targets for further exploration.

Orbis defined a large-scale high-order (+50 ppb Au) gold-in-soil anomaly in the area surrounding the Natougou discovery. The soil anomaly, defined within a 6 km by 4 km survey area, includes multiple zones of higher-order anomalism that have received minimal exploration drilling to date. The higher order soil anomalies present as priority areas for follow-up exploration.

Priority regional drill target areas which require further testing include the "Natougou Target Corridor", a 7 km long elongate northwest to southeast-trending corridor that encompasses the Natougou deposit, along with significant hard rock artisanal mining activity and widely distributed high grade surface rock chip samples collected by Orbis with assay results up to 70 g/t Au.

1.3 Drilling, sampling and assaying

A total of 714 holes have been drilled on the property as of March 2015, using reverse circulation ("RC") and diamond drilling techniques. All drillholes were drilled by Orbis between 2012 and 2014, with the bulk of the drillholes targeting the Natougou deposit. The dominant drillhole spacing at Natougou is 40 m along strike (315°) by 40 m across strike (045°). The drill spacing in the central area is up to 160 m along strike and 80 m across strike.

The global recovery for drill core and RC chips at Natougou is acceptable, with an average recovery of 98% for drill core and 76% for the RC drilling. The majority of the mineralised samples are from diamond core drilling and as such, it is Snowden's opinion that the recoveries are acceptable for representative sampling and subsequent Mineral Resource estimation.

RC cuttings are collected from the cyclone at 1 m intervals. Composite samples of 4 m are generated by riffle splitting a nominal 0.5 kg sample from each 1 m interval. Composite samples returning >0.25 g/t Au are resampled at 1 m intervals (2 kg to 3 kg riffle split from the original coarse reject), along with the immediately surrounding composite samples. Diamond core is half core sampled, with the core cut using a diamond saw. The majority of the diamond core is sampled based on the geological logging using a minimum sample length of 0.2 m and a maximum of 1.2 m.

Assaying for gold has primarily been completed at the SGS laboratory in Ouagadougou, which, based on the results of the quality control samples and multiple inspections, has achieved reasonable precision and analytical accuracy.

In the author's opinion, the drillhole data for the Natougou deposit is reasonable for use in resource estimation.

1.4 Quality assurance and quality control

Orbis implemented a quality assurance and quality control ("QAQC") protocol throughout the majority of the drilling programs at Natougou, which includes the addition of reference materials, field duplicates and blank samples to the sample batches. A sample batch typically comprises one drillhole with a blank sample inserted at the start of each batch, a field duplicate (RC field split or quarter core) inserted within the mineralised intersection along with a blank inserted after the duplicate, and a reference material sample placed at the end of the batch.

Analysis of the reference materials shows the majority of results within the accepted control limits, suggesting that reasonable analytical accuracy has been achieved. Moreover, assays of the blanks samples show no evidence of contamination during the laboratory sample preparation or assaying. For the field duplicates, overall the populations compare well, with some outliers at higher grades typical of gold deposits containing visible gold particles. Snowden considers there is no evidence to suggest that the primary sample varies significantly from the duplicate sample and that Orbis have achieved reasonable precision during the sampling and assaying process.

Snowden checked a random selection of assay certificates against the data within the database in 2013 and again in 2014. Zero discrepancies were identified from this validation. The assay certificates were sourced by Snowden directly from the SGS Ouagadougou laboratory.

1.5 Metallurgical testwork

Preliminary metallurgical testwork was completed in 2013 as part of a scoping study completed by Lycopodium Minerals Qld Pty Ltd for Orbis in 2013 (Lycopdium, 2013). Samples for the metallurgical testwork were selected only from fresh drill core, as the fresh material represents a significant majority of the mineralisation observed within the orebody.

Results of the comminution testwork highlighted that:

- The Natougou mineralisation is hard and competent and should be suitable for SAG milling. A high aspect mill was recommended due to the competent nature of the material.
- Abrasiveness is considered average and media and liner consumption rates are not expected to be excessive.
- The BWi is relatively high and grinding energy requirements are expected to be high.
- The relatively low a x b value of 27.1 suggests that the mineralisation has a high resistance to impact breakage.

Leach tests were conducted across five grind sizes, P_{80} of 106 µm, 75 µm, 53 µm, 25 µm and 10 µm. After 24 hours of leaching, gold recoveries for all samples were averaging 88% and after an additional 24 hours the gold recoveries increase to an average of 93%. The leach tests showed the following results:

- Gravity recovery of gold was determined as 25%.
- Gold recovery was high, even without a gravity circuit.
- Gold recovery increased for the finer grind sizes, suggesting that the grind size plays a more important part than cyanide concentration or gravity recovery on the overall gold recovery from the feed ore.
- Lime consumption ranged from 0.23 kg/t to 0.42 kg/t.
- Leach kinetics appeared to be faster with the inclusion of gravity recovery, suggesting that a gravity recovery circuit should be considered.
- Initial leach kinetics were slower, suggesting the presence of some coarse gold or gold locked to some extent in sulphide minerals.

Based on the early stage testwork results, Snowden considers that high recovery of gold from the Natougou mineralisation should be viable, however further work will be required to ensure ore characteristics and variability are fully understood and that selected processing options have sufficient flexibility to maintain recovery as the mineralisation varies within the orebody.

1.6 Mineral Resource estimate

Snowden Mining Industry Consultants ("Snowden") has generated a resource block model for the Natougou deposit using geological and gold mineralisation interpretations provided by Orbis.

Multiple indicator kriging ("MIK") with unfolding was used to estimate gold grades (Au) into a constrained block model reflecting the interpreted shear zone and surrounding host rocks.

Bulk density measurements were collected by Orbis from core using the Archimedes method. Whilst the samples are limited in terms of sample size (typically only 10 cm to 15 cm lengths are measured), a total of 11,073 measurements have been collected. A visual assessment of the density data shows areas of lower and higher density, with continuity between adjacent drillholes. As such, Snowden elected to estimate the bulk density using ordinary kriging (with unfolding) to ensure that the local variations in the core density measurements are reflected in the resource model.

The Natougou Mineral Resource estimate has been classified as a combination of Indicated and Inferred Resources in accordance with CIM guidelines. The resource classification was based on a review of the underlying data quality along with an assessment of the level of confidence in the understanding of both the geological and grade continuity. The Mineral Resource has been limited to within a pit shell provided by SEMAFO, based on a gold price of $1,300/oz and pit optimisation parameters described in a scoping study completed by Lycopodium Minerals Qld Pty Ltd in 2013 (Lycopdium, 2013).

The Natougou Mineral Resource comprises 5.79 million tonnes (“Mt”) at 5.87 g/t Au of Indicated Resources and 3.93 Mt at 3.49 g/t Au of Inferred Resources, reported above a 0.77 g/t Au cut-off grade. The Mineral Resource statement is detailed in Table 1.1.

Table 1.1 Natougou Mineral Resource as at March 2015, reported above a 0.77 g/t Au cut-off grade

Classification	Oxidation state	Tonnes (Mt)	Au g/t	Ounces (koz)
Indicated	Fresh	5.79	5.87	1,092
Indicated total		**5.79**	**5.87**	**1,092**
Inferred	Weakly oxidised	0.20	2.70	17
	Moderately oxidised	0.30	2.13	21
	Strongly oxidised	0.15	2.12	10
	Fresh	3.28	3.73	393
Inferred total		**3.93**	**3.49**	**442**

** Small discrepancies may occur due to rounding*

There are no Mineral Reserves on the property.

1.7 Conclusions and recommendations

The Tapoa Permit Group, including the Natougou project, is located in a well-known gold province and the property has a history of artisanal mining. Results from the exploration rock chip and soil sampling programs conducted by Orbis between 2010 and 2014 across the Tapoa Permit Group, indicate that there are multiple targets which warrant further exploration to assess the potential of additional gold mineralisation in the area.

The Natougou deposit represents a significant gold discovery in the area. The project has been drilled using diamond core and RC drilling techniques down to a nominal spacing of 40 m by 40 m in a significant portion of the deposit area. The author is satisfied that the drill sample database and geological interpretations are sufficient to enable the estimation of Mineral Resources, and sample security procedures provide confidence in the integrity of the samples and assay results. The geological interpretation carried out by Orbis has considered all material items and represents an accurate reflection of the current geological understanding.

Accepted estimation methods have been used to generate a three-dimensional ("3D") block model of gold values. In Snowden's opinion, the use of MIK estimation techniques with unfolding is appropriate for the highly skewed population distribution and folded nature of the deposit. The estimate has been classified with respect to CIM guidelines with the resources classified at an Indicated and Inferred status, according to the geological confidence and sample spacings that currently define the deposit. Snowden believes that SEMAFO should be able to increase the confidence and size of the Natougou Mineral Resource through additional drilling.

The following recommendations are made with respect to ongoing work at the Natougou gold project:

- It is recommended that larger intervals of core be used to measure the bulk density to provide a more representative measurement.
- To date, only two twin diamond holes have been drilled to validate the RC drilling results. If further RC drilling is to be completed, it is recommended that SEMAFO increase the number of twin holes so that a meaningful statistical assessment of the two drilling methods can be conducted. Twin diamond holes should be drilled as close as possible to the original RC drillhole, ideally within 3 m.
- Snowden recommends that SEMAFO generate a geological interpretation of the western hangingwall mineralisation to constrain the gold grade estimates in this area, with the ultimate aim of potentially including this material in future Mineral Resource estimates.
- A comprehensive topographic survey is recommended to ensure all mine planning and infrastructure requirements are planned for using reliable data.
- Snowden recommends that SEMAFO complete a pattern of closer spaced drilling (down to a 10 m by 10 m spacing) in a portion of the resource to better define the short range grade continuity.

2 Introduction

Snowden was engaged by SEMAFO in March 2015 to produce a NI43-101 Technical Report on the Tapoa Permit Group, which includes the Mineral Resources at the Natougou gold deposit, located approximately 320 km to the east of Ouagadougou, the capital of Burkina Faso in West Africa.

This Technical Report has been prepared by Snowden for SEMAFO, in compliance with the disclosure requirements of the Canadian National Instrument 43-101 (NI43-101) and in accordance with the requirements of Form 43-101F1. SEMAFO has acquired a 98% shareholding in Orbis, as of 11 March 2015, and as such Orbis' Mineral Resource estimate for the Natougou project is considered material to SEMAFO. SEMAFO initiated a compulsory acquisition of all remaining Orbis shares on 11 March 2015 and Orbis was delisted from the ASX on 16 March 2015. Orbis holds an Exploration Permit for the Natougou deposit and has undertaken exploration soil and chip sampling, drilling and surface mapping work on the Natougou deposit and surrounding permits since 2010.

This Technical Report has been compiled by Mr John Graindorge (Principal Consultant – Applied Geosciences) and Mr Harald Muller (Senior Principal Consultant and Divisional Manager – Metallurgy), who are full-time employees of Snowden. Both John and Harald are considered Qualified Persons ("QP") for the purposes of NI43-101. The responsibilities of each author are provided in Table 2.1.

Table 2.1 Responsibilities of each co-author

Author	Responsible for sections
John Graindorge	All sections except for Section 1.5 and Section 13
Harald Muller	Section 1.5, Section 13 and contribution to Section 18

John Graindorge visited the Natougou project site between 13 March 2015 and 17 March 2015, where he observed the general site geology from outcrop and drill core, the core storage areas and sampling equipment, along with the extents of artisanal mining activity in the area.

Unless otherwise stated, information and data contained in this report or used in its preparation have been provided by Orbis and SEMAFO.

All measurement units used in this document are metric and all currencies are expressed in US dollars ("US$"), unless otherwise stated. Contained gold metal is expressed as Troy ounces ("oz"), where 1 oz = 31.1035 g.

3 Reliance on other experts

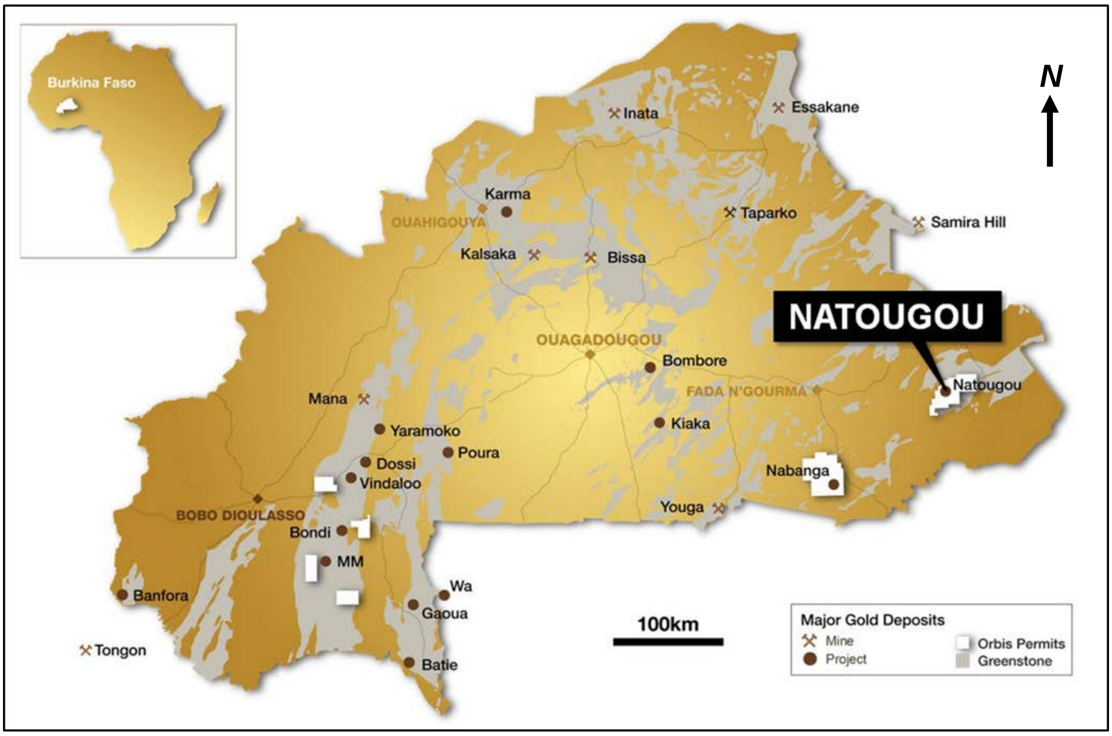
The author has not reviewed the land tenure situation and has not independently verified the legal status or ownership of the properties or any agreements that pertain to the Tapoa Permit Group. Snowden has relied on information provided by Orbis and SEMAFO relating to the legal status and ownership of the permits which comprise the Tapoa Permit Group.

Otherwise no reliance on other experts who are not QPs was made in the preparation of this report.

4 Property description and location

The Natougou gold deposit is part of the Tapoa Permit Group located in Burkina Faso, West Africa. The project lies approximately 320 km east of Ouagadougou, the capital of Burkina Faso (Figure 4.1). It is centred on UTM coordinates 326,500 mE and 1,327,500 mN (WGS84z31).

Figure 4.1 Natougou location map



Source: Orbis

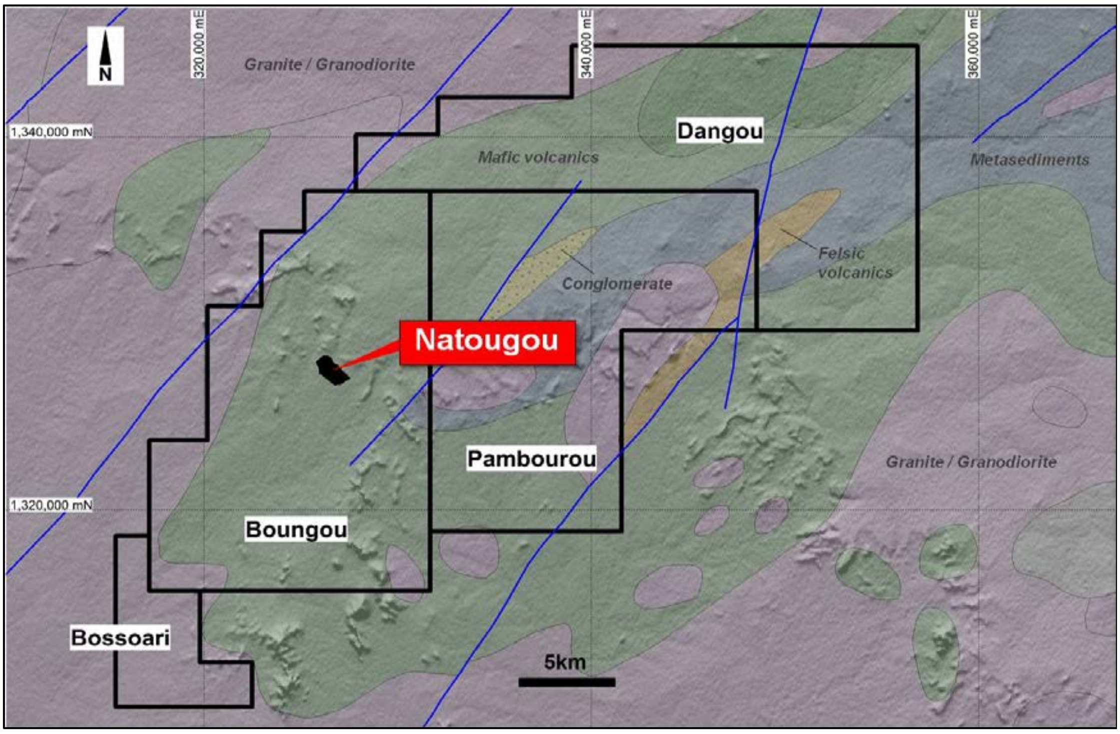
4.1 Type of mineral tenure

The Mining Act of Burkina Faso (number 031-2003/AN of 8 May 2003) provides the legal framework for exploration and mining activities within Burkina Faso. Exploration Permits up to 250 km^2 are granted for an initial period of three years, which may be renewed twice for periods of three years. At the second renewal, the permit area must be reduced by 25%, although an exemption from this requirement can be applied for at the time of the second renewal. Exploration activities are required to be reported annually to the Director General of Mines and Geology, along with the provisional program of work and budget expenses for the subsequent year.

Exploitation (Mining) Permits, which are required for mining to commence, are granted for a term of 20 years (with unlimited five-year renewals) and the government carries the right for a 10% free carried interest (via a 10% equity interest in the local holding company). The application for an Exploitation Permit requires an Environmental and Social Impact Assessment ("ESIA") and an environmental monitoring and management plan. The current Mining Act includes a sliding scale royalty to the government which is dependent on the gold price (3% to US$1,000, 4% to US$1,300 and 5% >US$1,300).

Orbis holds four contiguous Exploration Permits – Dangou, Pambourou, Boungou and Bossoari, collectively known as the Tapoa Permit Group, covering approximately 70 km in strike length along the Diapaga greenstone belt (Figure 4.2) in the southeast of Burkina Faso.

Figure 4.2 Tapoa Permit Group



Source: Orbis

Table 4.1 shows details for SEMAFO mineral tenements in Burkina Faso for the Tapoa Permit Group.

Table 4.1 Tapoa Permit Group Exploration Permits

Permit name	Grant date	First renewal date (Decree no.)	Second renewal date (Decree no.)	Final permit expiry date	Net profit royalty rate	Area (km^2)
Boungou*	05/05/2009	05/05/2012 (12-206)	05/05/2015 (submitted)	05/05/2018	1%	250
Pambourou	28/09/2011	28/09/2014 (00-081)	28/09/2017	28/09/2020	1%	234
Bossoari	21/11/2011	21/11/2014 (submitted)	21/11/2017	21/11/2020	0.5%	34
Dangou	16/12/2009	16/12/2012 (00-018)	16/12/2015	16/12/2018	1%	250

** Includes Natougou deposit*

4.1.1 Boungou Permit

The Boungou Exploration Permit, which hosts the Natougou deposit, covers an area of 250 km^2 and was originally granted on 5 May 2009 by Burkina Faso No. 2009/09 – 126/MCE/SG/DGMCC to Mr Saidou Pafadnam. In April 2010, Mr Pafadnam and MET BF Pty Ltd, a 100% subsidiary of Orbis, entered into a three-year option agreement. The original vendor of the permit (Mr Pafadnam) retains a 1% Net Profit Royalty (“NPR”), payable upon any future gold sales under the terms of the option agreement (Convention d’option pour permis de recherche Boungou) dated 21 April 2010.

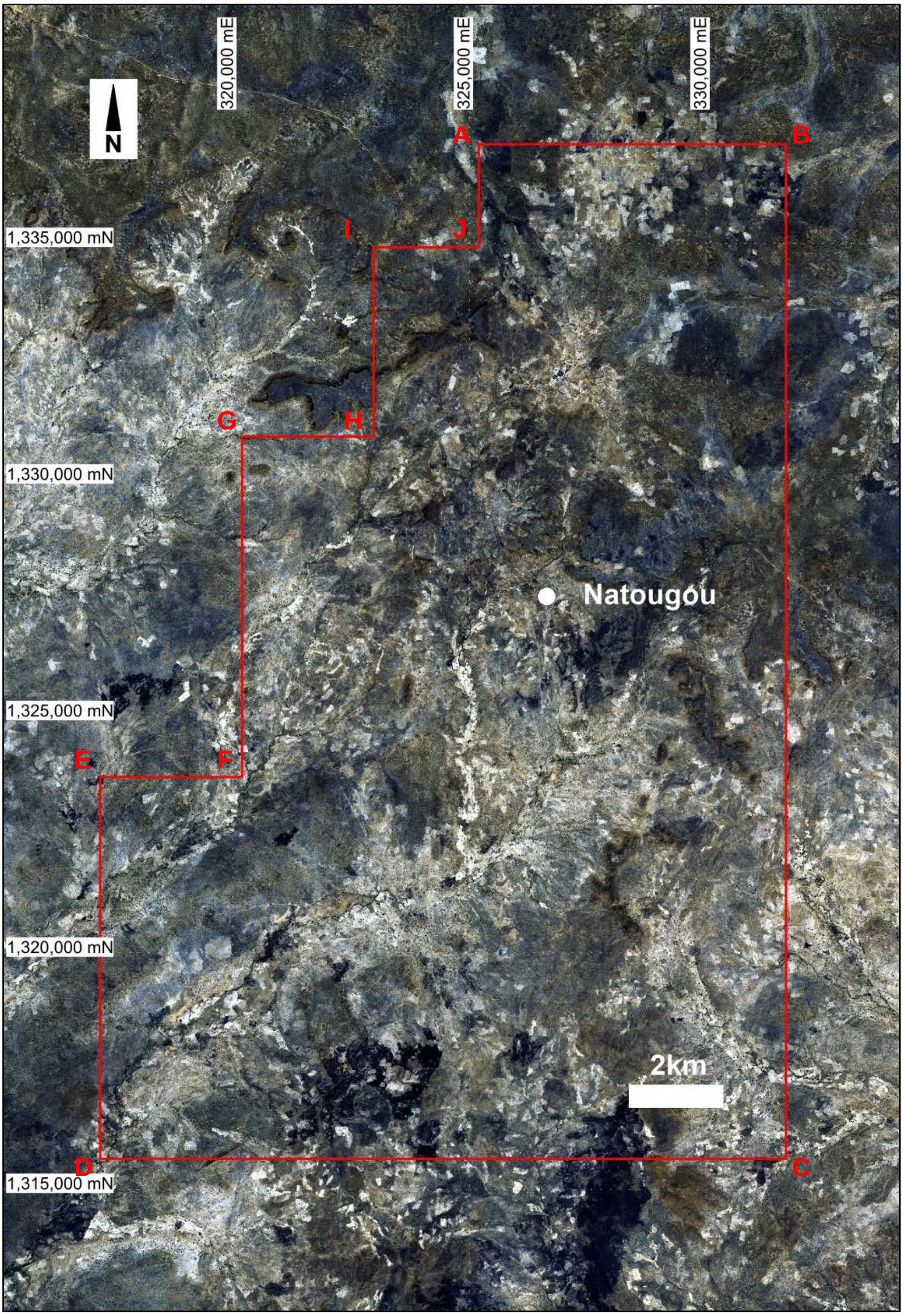
The permit was renewed for a further three years from May 2012 by Decree no. 2012/12 – 206/MCE/SG/DGMGC. On 21 January 2013, the Permit was transferred by Decree no. 2013/13 – 012/MME/SG/DGMG to Birimian Resources (100% Orbis). The permit has been granted until 5 May 2015. Orbis has applied for a renewal of the Boungou Exploration Permit for a three-year period (i.e. to 5 May 2018), along with exemption from the requirement for a 25% reduction in the permit area. Snowden understands that the renewal application was submitted to the relevant authorities in Burkina Faso on 3 February 2015, however, at the time of this report the renewal has not yet been granted.

The outline of the Boungou lease boundary is detailed in Table 4.2 and depicted in Figure 4.3.

Table 4.2 Boungou permit boundary (UTM – Clarke 1880 Datum: Adindan, Zone 31 North)

Point (see Figure 4.3)	Easting (mE)	Northing (mN)
A	325,199	1,336,880
B	331,699	1,336,880
C	331,699	1,315,430
D	317,199	1,315,430
E	317,199	1,323,500
F	320,199	1,323,500
G	320,199	1,330,700
H	322,979	1,330,700
I	322,979	1,334,700
J	325,199	1,334,700

Figure 4.3 Boungou permit boundary



Source: Orbis (UTM - Clarke 1880 Datum: Adindan, Zone 31 North)

5 Accessibility, climate, local resources, infrastructure and physiography

5.1 Access and physiography

Access to Natougou is by means of Route Nationale RN04, an all-weather bitumen road from Ouagadougou, the capital of Burkina Faso, through Fada n'Gourma to the Ougarou junction. From there, travel is via a laterite road to the property 60 km to the southeast.

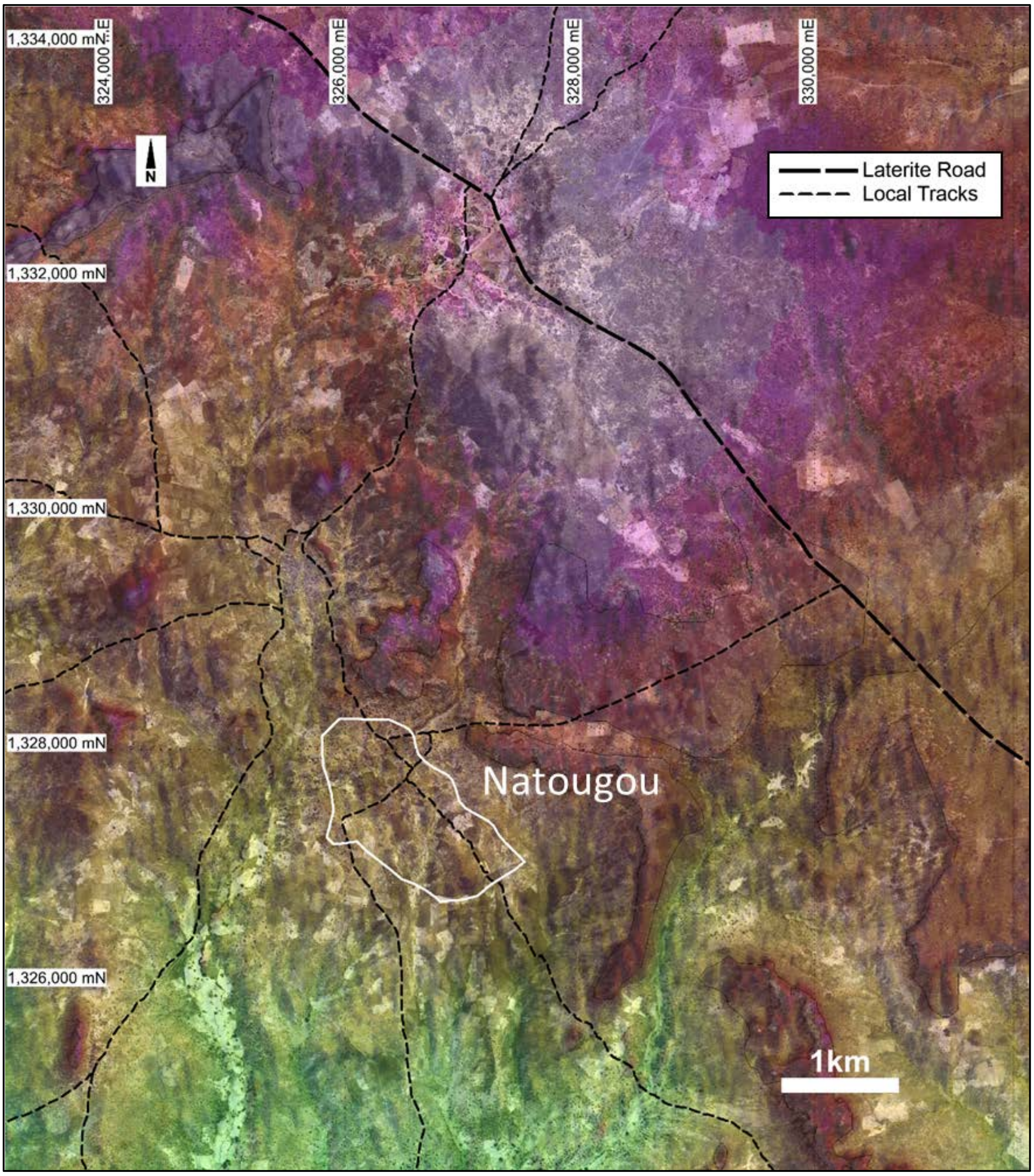
Fada n'Gourma is the nearest town with basic hospital, hotel and limited resupply facilities. Any significant supplies must be sourced from Ouagadougou.

The Natougou area is relatively flat and sits at an elevation of approximately 260 m above sea level. To the east and north of Natougou are mesas which rise approximately 10 m above the surrounding topography. A small hill is located in the very southern corner of the deposit.

The land rises gently to the north, culminating in the height of land separating two watersheds. The main laterite access road into site is located along this ridge top. The road is reasonably well-drained and is accessible year-round to four-wheel drive vehicles.

Numerous tracks allow for access to most places throughout the Natougou area. During the wet season (August to October), heavy rains may temporarily restrict vehicle movement in the immediate area of the deposit.

Figure 5.1 Natougou access routes

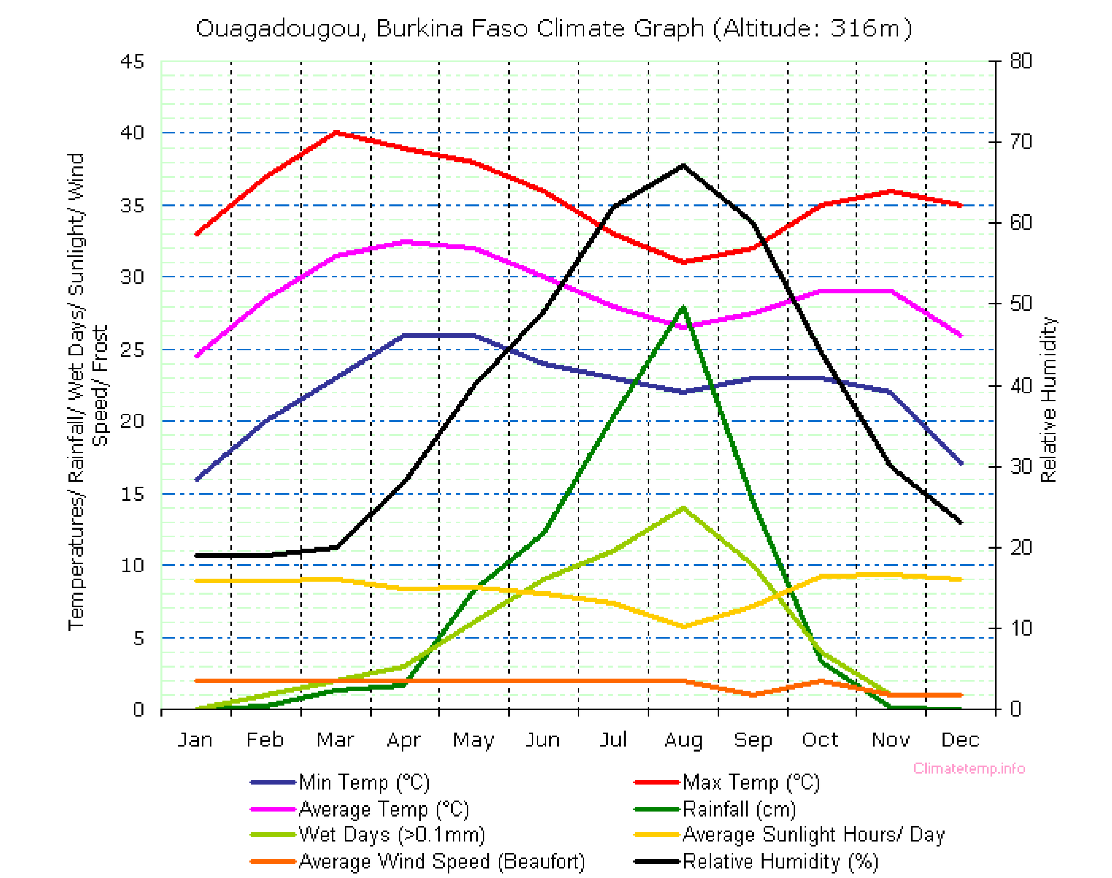


Source: Orbis

5.2 Climate

The climate of Burkina Faso is semi-arid, with a rainy season from May to September, and a hot dry season from February to April. Average temperatures range between 16°Centigrade ("C") overnight in the cool season to over 40°C during the day in the hot season. Average annual rainfall is approximately 900 mm, although large inter-year variability is common (Figure 5.2). During October to April, the climate is heavily influenced by the dry, dust-laden northwest trade wind known as Harmattan, which blows down from the Sahara Desert.

Figure 5.2 Climate information for Ouagadougou



Source: www.climatemps.com

Monthly rainfall historic data has been obtained from the National Climatic Data Centre website for the Fada n'Gourma weather station located approximately 100 km west from Natougou. Data covers the years 1920 to 2010. The average monthly rainfall data from this station is given in Table 5.1. August is on average the wettest month of the year with an average rainfall of 244.6 mm, while December, January and February are the driest months with average rainfall close to 0 mm.

Table 5.1 Average monthly rainfall for Fada n'Gourma

Month	Average monthly rainfall (mm)
January	0.1
February	0.5
March	6.7
April	26.0
May	75.3
June	121.4
July	182.0
August	244.6
September	154.9
October	29.8
November	1.6
December	0.9
Annual total	**843.8**

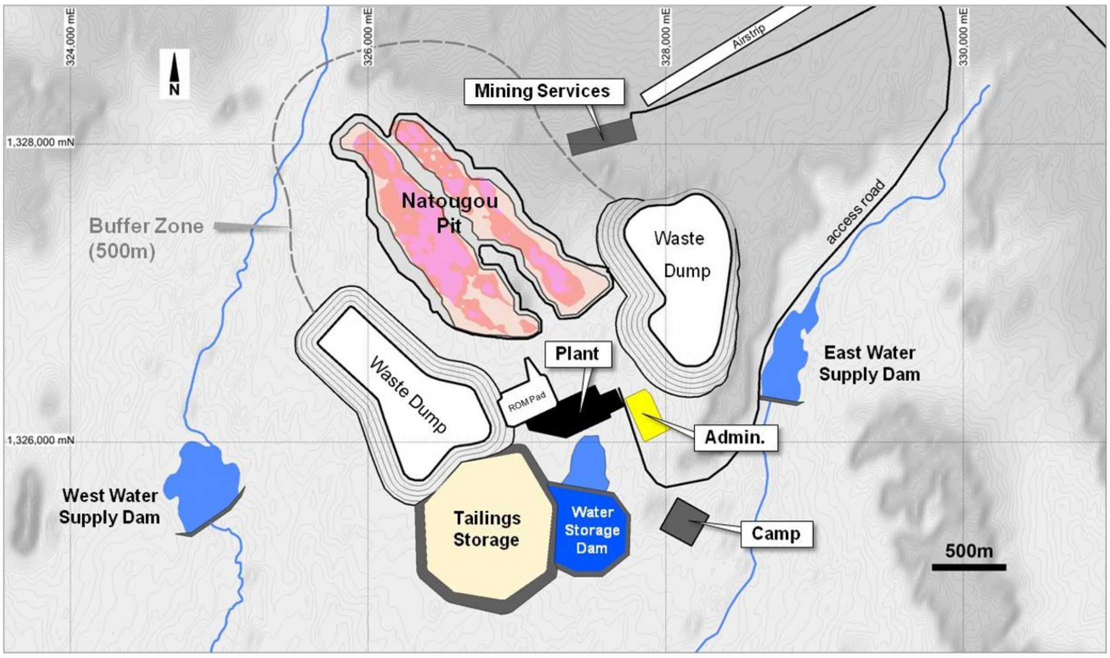
Vegetation in the region is a mosaic of cultivated land and tropical acacia savannah.

5.3 Infrastructure

Development of the Natougou project will require investment in a range of infrastructure items including upgrades to road access, installation of water supply and storage facilities, tailings storage facilities, power generation facilities and camp/accommodation facilities. The following sections are based on a scoping study on the Natougou project, completed by Lycopodium Minerals Qld Pty Ltd for Orbis in 2013 (Lycopodium, 2013).

A provisional site layout plan is shown in Figure 5.3 below, however Snowden understands that further site optimisation will be undertaken as part of an ongoing Feasibility Study.

Figure 5.3 Provisional site layout



Source: Orbis

5.3.1 Water supply

Water for the project is likely to be sourced from two water catchment dams to be established over seasonal watercourses adjacent to the processing plant site. Water from the dams will be transferred to a water storage pond at the processing plant to minimise water losses from evaporation and seepage. This water supply is to be supplemented (during dry conditions) by a borefield to be developed adjacent to the project area.

5.3.2 Tailings storage facility

Tailings from the process plant are to be deposited in a sub-aerial tailings storage facility ("TSF") which is provisionally located approximately 1 km southwest of the proposed plant site. The TSF will be constructed with confining embankments in an octagonal arrangement adjacent to the proposed waste rock facility. The tailings dam walls will be raised by upstream lifts over the life of the project.

5.3.3 Power supply

Orbis indicated that power will likely be generated via on-site heavy fuel oil ("HFO") generators. However, further studies to be conducted as part of the Feasibility Study, will assess a range of power supply options including the use of HFO and/or diesel-fired generators, as well as options to source power from regional electricity grids.

5.3.4 Mining personnel

Mining personnel will likely be sourced from a combination of local personnel along with expatriate personnel.

6 History

No exploration is known to have occurred on the Tapoa permits prior to 2010 when Orbis commenced soil and rock chip sampling. The soil and rock chip sampling was followed up in 2012 with a regional RC drilling program which resulted in the discovery of the Natougou gold deposit. Resource drilling commenced at Natougou in 2012 and culminated with an initial Mineral Resource estimate being completed by Snowden in August 2013 (Snowden, 2013), which was classified and reported in accordance with the 2004 edition of the Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves (the “JORC Code”). Orbis completed further infill drilling at Natougou in 2014 and the Mineral Resource estimate was updated by Snowden in August 2014 and was classified and reported in accordance with the 2012 edition of the JORC Code.

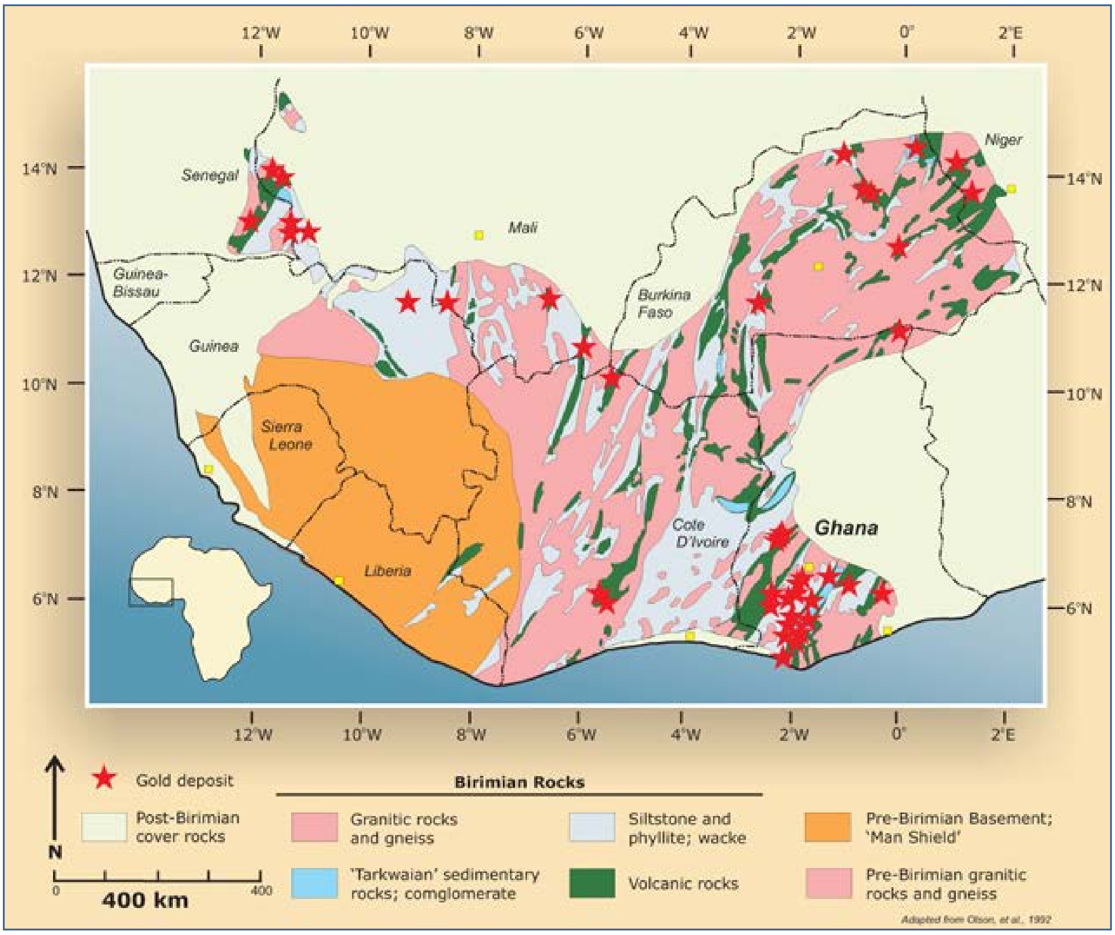
No modern production of gold has occurred within the Tapoa Permit Group. The central part of the Boungou permit has artisanal activity along the north to south trending drainage system. Extraction of gold by the local community from artisanal workings has occurred for an unknown period of time, with free gold recovered by gravity methods in gold pans or through simple sluicing methods. The vertical extent of the workings is unknown, however they are thought to reach a maximum depth of approximately 20 m to 40 m, although the vast majority of the workings are less than 5 m deep. Snowden notes that the deeper workings are extremely localised and limited in extent. The total tonnage and grade of material extracted from artisanal workings at the Natougou deposit is unknown, however it is not considered to be material to the current Mineral Resource estimate.

7 Geological setting and mineralisation

7.1 Regional geology

The Tapoa Permit Group is located within the Birimian Gold Province in West Africa (Figure 7.1). The Birimian Gold Province is a world class gold province and hosts most of the major gold deposits in West Africa, notably in Ghana, Ivory Coast, Mali, Senegal and Burkina Faso.

Figure 7.1 Overview of regional geology of Birimian Province



Source: Orbis

The Birimian is a Paleoproterozoic granite-greenstone province that developed during the Eburnean Orogeny (2195 Ma to 2067 million years ago (Ma); Pohl, 1988).

The rocks of the Birimian are distinguished into two main groups (Lower Series and Upper Series), which despite the nomenclature, are regarded as being time equivalents (Appiah *et al.,* 1991).

The Lower Series consists of predominantly sediments, comprising black and grey phyllites, schists and meta-greywackes with subordinate volcanics, all of which have been metamorphosed to greenschist facies (Appiah *et al.,* 1991; Dzigbodi-Adjimah, 1993). Phyllites and argillites are the most widespread lithology.

The Upper Series consist of predominantly volcanic rocks, including andesitic tuffs and tholeiitic basaltic volcanics, with associated basic intrusives, and interbedded graphitic phyllites containing 1% to 2% pyrite. These volcanic dominated belts are generally parallel to the Natougou deposit and trend in a northeasterly direction. Individual belts are 15 km to 40 km in width and are spaced approximately 90 km apart.

7.1.1 Eburnian metamorphics and intrusives

These rocks comprise much of the Lower to Middle Proterozoic of the Man Shield which is composed of granitoid rocks and high grade metamorphic equivalents (gneisses). These rocks yield Eburnian age datings between 2081±25 Ma and 1968±49 Ma, within a thermal event that started at 2127±65 Ma. The granitoids include quartz-diorite, tonalite, trondhjemite, adamellite, granodiorite and granite. The quartz-diorites are largely found cutting the greenstone accumulations, while the granites are developed within the sedimentary basins. The granitoids are divided into two types, namely, synorogenic foliated batholiths within the basin centres, and late orogenic, unfoliated intrusions within the Upper Series volcanic belts (Leube *et al.,* 1990).

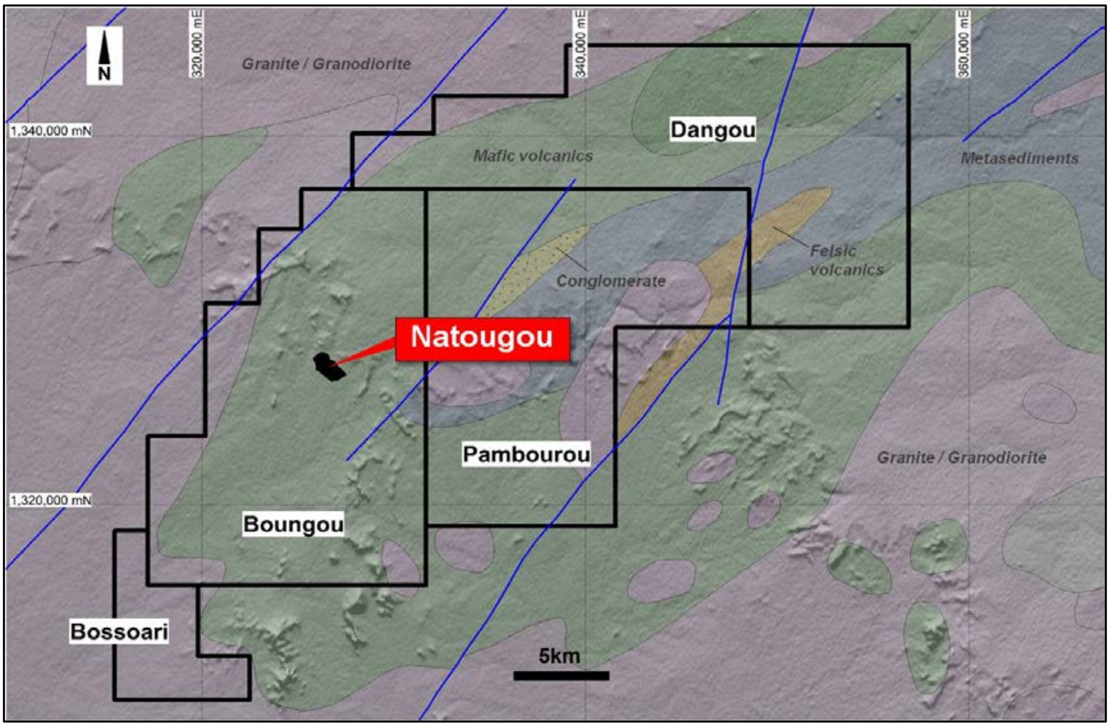
7.1.2 Tarkwaian sequence

The Tarkwaian sequence is up to 2,600 m thick in the Tarkwa district. These sediments are present in all of the volcanic belts, being developed in the centres of each, with the exception of the Sefwi Belt where they occur on its eastern margin. No Tarkwaian rocks have been found within the main Birimian basins of the Lower Series. The Tarkwaian sediments overlie and truncate granitoids dated at 1890 Ma to 2061 Ma which cut the Birimian (Leube *et al.,* 1990), but are older than a series of 1650 Ma mafic intrusives (Leube *et al.,* 1990). The main Tarkwaian development over the Ashanti Belt is some 250 km long and averages about 16 km in width (Leube *et al.,* 1990).

7.2 Property geology

The Boungou permit, which contains the Natougou deposit, lies within the Diapaga greenstone belt, a northeast-southwest orientated belt that extends over 250 km in length and over 50 km in width (Figure 7.2). Orbis holds four contiguous permits, collectively known as the Tapoa Permit Group, covering 70 km in strike length along the Diapaga belt.

Figure 7.2 Orbis permits within Diapaga belt



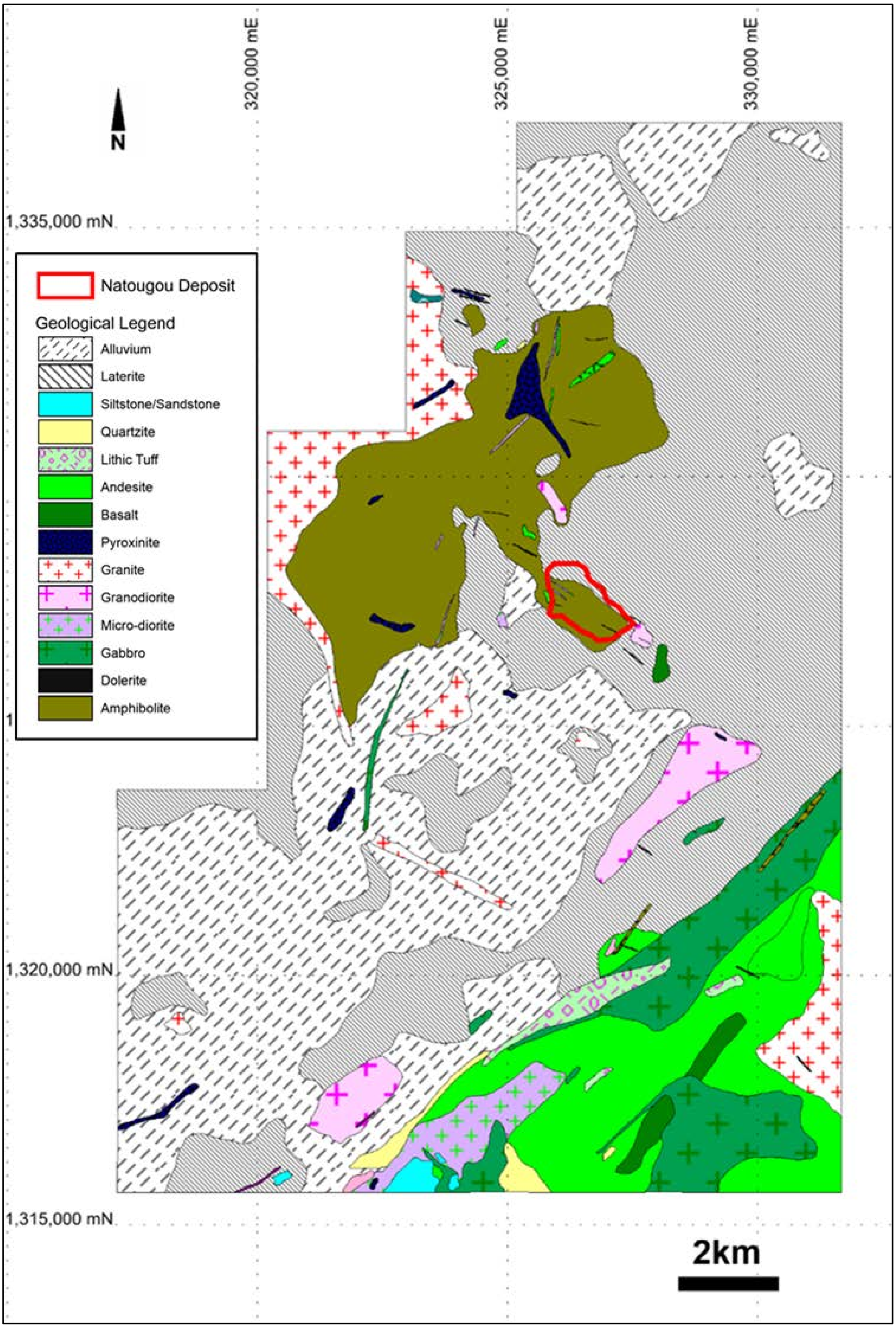
Source: Orbis

Permit scale mapping was conducted by Orbis geologists during the course of the 2014 field season (Figure 7.3). Laterite and alluvium cover extensive (lateral) portions of the permit, however both are generally less than 10 m in thickness. Laterites cover the northern areas where mesas are more prevalent. Alluvium is more extensively developed in the southern half of the permit associated with the larger drainages.

The most significant rock type on the permit is a large mafic unit consisting predominantly of amphibolite with minor associated diorite and gabbro plutons, which occupies the central portion of the Boungou permit. The amphibolite hosts the mineralised shear at Natougou; the unit outcrops as small hills but can also be seen in valleys where small streams have cut through the cover sediments and exposed the bedrock.

Along the western edge of the permit is a large granitoid batholith (tonalite, granodiorite and quartz-diorite). Lithic tuff, andesite and gabbro outcrop in the southeast corner of the permit along with minor meta-sediments (meta-sandstone and quartzite). Small intermediate to felsic intrusions (granodiorite, biotite-granite) occur in the southeastern part of the permit. Northwest-southeast oriented steeply dipping dolerite dykes intrude all the above lithologies at Natougou. The dolerites are fine to medium-grained with abundant plagioclase and sparse hornblende and pyroxene phenocrysts.

Figure 7.3 Property geological map – Boungou permit



Source: Orbis

7.3 Natougou geology

A standardised set of logging codes developed during initial resource drilling allowed for more consistency in the data collected. It was recognised by Orbis that the geological logging could be simplified into seven different lithological units and two main alteration types. However, logging codes that pre-date the standardised legend are still retained in the database. The main characteristics logged are presented below.

7.3.1 Oxidation

Four degrees of oxidation were identified at Natougou (Figure 7.4). These ranged from strongly oxidised through to fresh bedrock:

- Strongly oxidised material (SOX) has no remnant textures.
- Moderately oxidised material (MOX) has observable textures and/or pieces of rock.
- Weakly oxidised rock (WOX) is relatively unaltered bedrock with oxidation only observed along fracture planes.
- Fresh bedrock (FRS) has no observed oxidation on fractures.

Figure 7.4 Oxidation types

CODE	OXIDATION
SOX	strongly oxidised
MOX	moderately oxidised
WOX	weakly oxidised
FRS	fresh bedrock

Source: Orbis

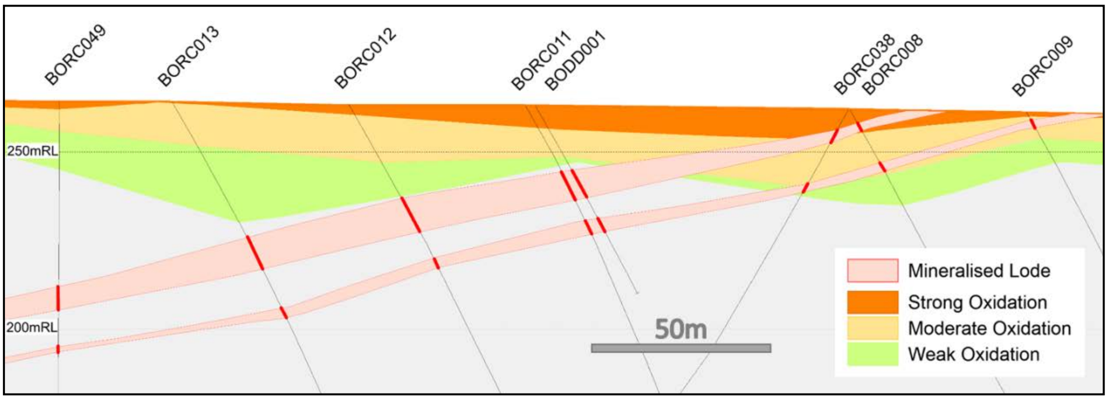
The base of complete oxidation is shallow at Natougou (Figure 7.5). Fresh rock is encountered on average less than 10 m below surface.

Figure 7.5 Photo of typical oxidation profile in core from Natougou

Source: Orbis

Only a very small portion of the mineralised shear is interpreted to be within the oxidised zones (Figure 7.6). This occurs along the very southeast edge of the deposit where the mineralised zone outcrops.

Figure 7.6 Long section (looking northeast) showing oxidation impact on mineralisation



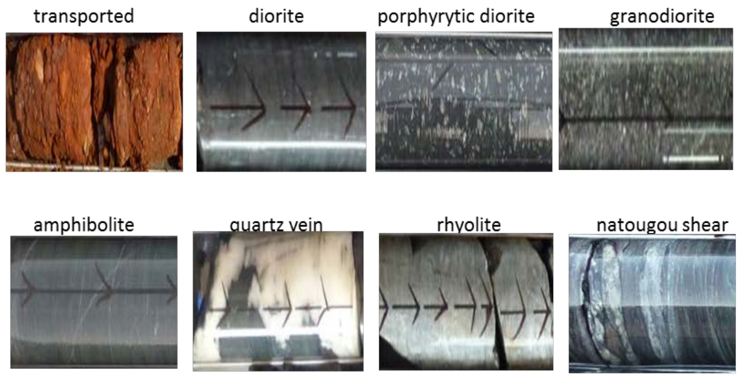
Source: Orbis

7.3.2 Lithology

All of the rock types intercepted in the drillholes are the same as those observed in surface mapping, with the exception of the granite situated in the west of the permit (Figure 7.7).

Figure 7.7 Lithology types

CODE	LITHOLOGY
ROB	transported
GDI	diorite/porphyritic diorite
GGD	granodiorite
MAM	amphibolite
VQZ	quartz vein (>50% vn qtz)
VRH	rhyolite
NSZ	natougou shear zone
OID	no sample



Source: Orbis

The logging code ROB encompasses any material with characteristics of transported material (soil, alluvium, laterites, etc.). Transported material at Natougou is generally about 2 m and rarely exceeds 5 m in thickness.

The amphibolite unit (MAM) is by far the most abundant rock type encountered in the drillholes at Natougou which is consistent with the surface mapping. The amphibolite has been mapped and logged as one unit, however it was recognised during the 2014 infill drilling program that it can be differentiated in drill core, as well as locally in some outcrops, into two distinct units. The lower unit is fine-grained to aphanitic in texture, whilst the upper unit is medium- to coarse-grained in texture. The coarse-grained amphibolite has elongate amphibole minerals and often exhibits a banding with alternating light bands comprising plagioclase and dark bands consisting of Fe-Mg minerals such as amphibolite and minor biotite. Minor carbonate stringers have been observed cross-cutting the amphibolites.

The focus of the logging was a visual identification of what Orbis geologists refer to as the Boungou Shear Zone ("BSZ"). It is characterised by the combination of pink-brown biotite alteration and strong shearing. The BSZ can be distinguished from the surrounding host rocks and therefore has been logged as a separate lithological unit.

The diorite and porphyritic diorite (GDI) are green in colour and exhibit a medium-grained texture to porphyritic texture (due to the presence of mm scale plagioclase and amphibole phenocrysts). The granodiorite (GGD) is a medium- to coarse-grained leucocratic rock. Major minerals are plagioclase and quartz, often with minor biotite and epidote. Both the diorite (GDI) and granodiorite (GGD) can exhibit foliation. They are both observed in numerous (and often consecutive) drillholes. A non-foliated diorite has been logged in drill core but using the same lithological code (GDI) as the foliated diorite.

The diorite and granodiorite dykes, observed across multiple consecutive holes, are interpreted as sills. In many drillholes the mineralised lode appears spatially associated with these sub-parallel felsic (granodiorite and rhyolite) and/or mafic (diorite) sills. The sills appear to post-date mineralisation although it is highly probable that some of the sills were emplaced following a similar plane of weakness as the mineralising fluids and the events may be related.

The non-foliated diorite is believed to equate to the dolerite dykes mapped on surface that post-date all other rocks in the area.

Rhyolite (VRH) is encountered as thin lenses (1 m to 2 m wide) of fine-grained to aphanitic felsic rocks with few or no phenocrysts and no mafic minerals. They are easily recognisable by their light grey to almost white colour and their uniformly fine texture.

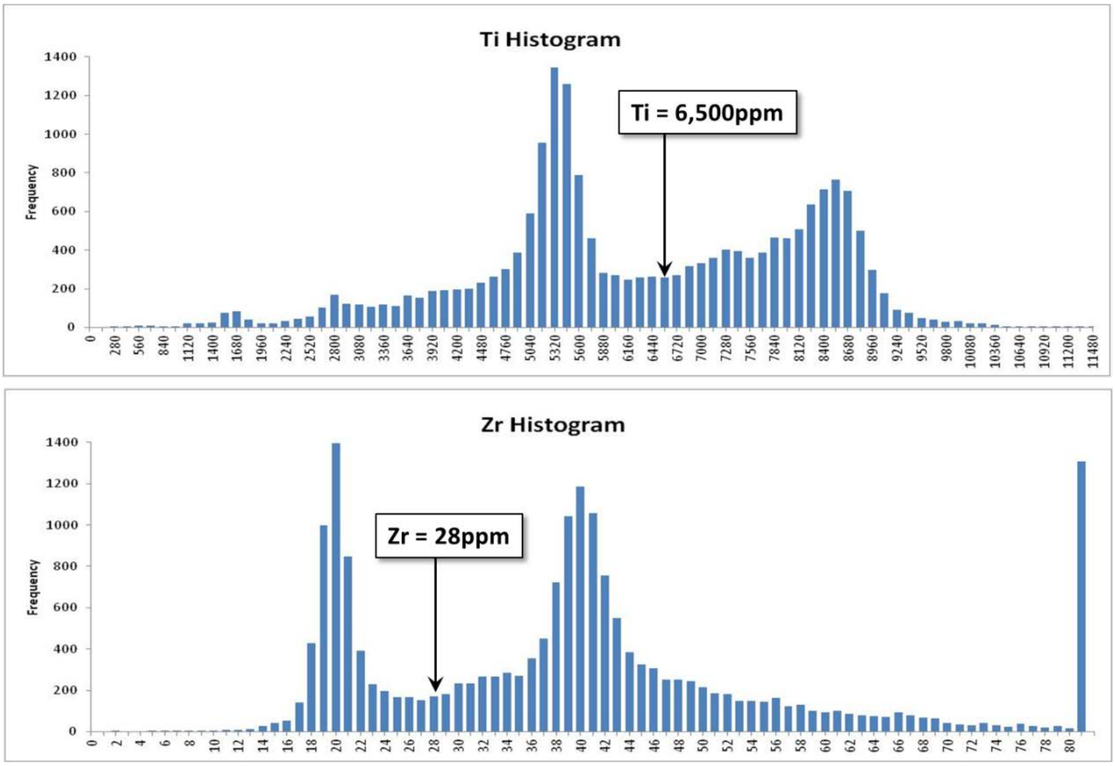
Discrete veins of quartz are rare. They are logged in core and in RC chips if the quartz fragments are more than 50% of the interval.

The main mineralised lode is spatially related to the contact between two mafic volcanic units (locally termed upper and lower mafic units). It is believed that this contact provided a plane of weakness between two competent units along which gold bearing fluids were focused resulting in banding. The two volcanic units, although visually very similar, can often be differentiated based on the presence or absence of this banding. The footwall contact between the BSZ and the lower mafic unit tends to be a sharper contact than that of the hangingwall contact.

Chemically the upper mafic unit and the lower mafic unit are quite distinct. The following histograms, based on handheld x-ray fluorescence (XRF) analysis, show that there are two distinct populations of Ti and Zr observed in the mafic volcanic units (Figure 7.8). The upper mafic has Ti and Zr values approximately double those of the lower unit.

The drop in both Ti and Zr to values below 6,500 parts per million ("ppm") and 28 ppm respectively were used to define a boundary between the two mafic units (Figure 7.9).

Figure 7.8 Titanium and zirconium total population histograms



Source: Orbis

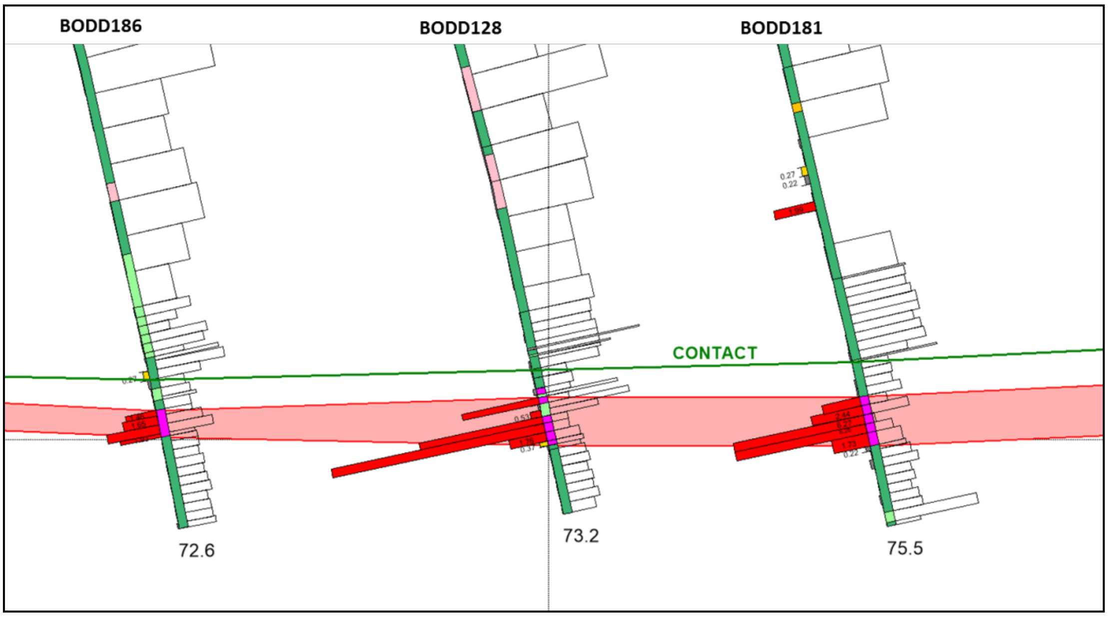
Figure 7.9 Example of Ti-Zr boundary in XRF – BODD276

Hole_ID	From_m	To-m	Interval	Lithology	Au_ppm	Ti	Zr	
BODD276	82	83	1	MAM	0.07	7351	35	
BODD276	83	83.91	0.91	MAM	0.04	7000	46	
BODD276	83.91	85	1.09	MAM	0.02	8615	39	
BODD276	85	85.43	0.43	MAM	0.12	8994	42	
BODD276	85.43	86	0.57	BSZ	1.53	5793	22	Contact
BODD276	86	87	1	BSZ	2.17	5325	22	
BODD276	87	88	1	BSZ	1.41	5197	29	
BODD276	88	89	1	BSZ	4.03	5174	19	
BODD276	89	90	1	BSZ	0.91	4757	14	
BODD276	90	90.96	0.96	BSZ	0.15	5617	18	
BODD276	90.96	92	1.04	MAM	0.005	5390	20	
BODD276	92	93	1	MAM	0.005	5351	20	
BODD276	93	94	1	MAM	0.07	5016	21	
BODD276	94	95	1	MAM	0.02	5217	20	
BODD276	95	96	1	MAM	0.06	5592	20	
BODD276	96	96.6	0.6	MAM	0.08	5560	19	

Source: Orbis

The mineralised lode shows a strong geological affinity to the titanium-zirconium boundary. The mineralised lode can be developed in the upper mafic above the contact, in the lower mafic below the contact or right at the contact. Whilst the position of the lode relative to the contact can vary, there is local consistency across multiple drillholes (Figure 7.10).

Figure 7.10 Cross-section example of Ti-Zi boundary in relation to lode



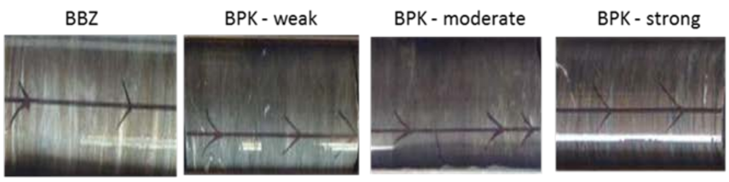
Source: Orbis

7.3.3 Alteration

Two types of alteration are significant with respect to the mineralised shear at Natougou. The two alteration types are locally termed the Boungou pink (BPK) and the Boungou bleached zone (BBZ), as shown in Figure 7.11 and Figure 7.12.

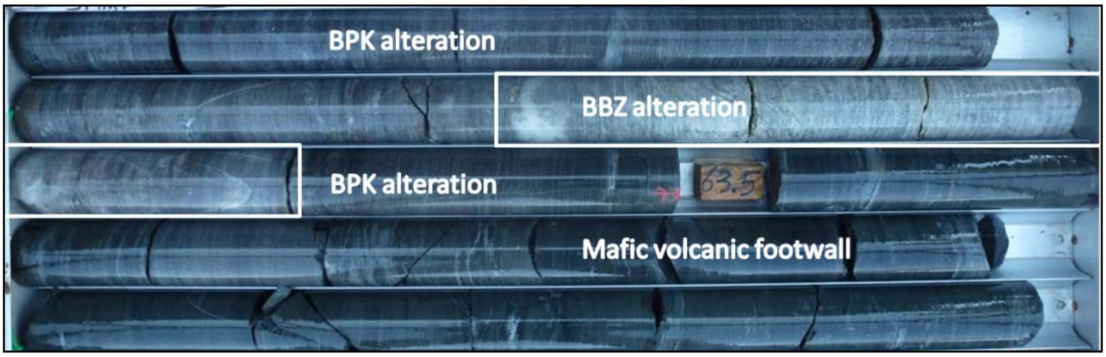
Figure 7.11 Alteration types

CODE	ALTERATION
NP	not present
BPK	Boungou pink alteration
BBZ	Boungou bleached zone



Source: Orbis

Figure 7.12 Core showing BPK and BBZ alteration



Source: Orbis

The BPK type is a pink-brown alteration consisting of fine-grained biotite-plagioclase. It is generally present over the entire width of the mineralised shear zone. It is the schistosity developed by the alignment of the biotite that gives the mineralised zone the sheared texture.

The BBZ type is a silica-sericite alteration generally developed as a discrete zone over widths of about 1 m within the BPK alteration. Variable amounts of quartz veining, often highly deformed (boudinaged or folded) can be observed within some of the BBZ. Small bands of silica-sericite are also interspersed within the wider zones of BPK alteration.

Potassium and rubidium values were found to be in the order of 10 times higher in the alteration zones than in host rocks. Coincident elevated values of these alteration pathfinder elements (K >15,000 ppm and Rb >45 ppm) highlight the BPK alteration and provide further evidence to support the interpretation of the mineralised lode (Figure 7.13).

The BBZ, although often present within the mineralised lode, does not have a known chemical signature but is easily identified visually in core.

The dykes and sills present at Natougou can also exhibit relatively high potassium values in XRF data. They can be readily distinguished from the alteration/lode due to high Zr with low Ti (typical of the diorites) and high Zr with no Ti (typical of the granodiorites) and are characterised by low to absent arsenic and sulphur values. The dykes are also identified visually in the lithological logging.

Figure 7.13 XRF geochemistry of mineralised intercept (BODD192)

XRF "lode" geochemistry:
As >500ppm
S >5,000ppm
K >15,000ppm
Rb >45ppm

Hole_ID	From	To	Interval	Au_ppm	Lithology	As	S	K	Rb	Ti	Zr
BODD192	52.00	53.00	1.00	0.08	MAM			2782	12	8401	37
BODD192	53.00	54.00	1.00	0.05	MAM		1634	3794	18	8743	42
BODD192	54.00	55.00	1.00	0.01	MAM			5016	19	8057	39
BODD192	55.00	56.00	1.00	0.03	MAM		1690	3900	18	8332	39
BODD192	56.00	57.00	1.00	0.02	MAM		2086	4407	18	8231	44
BODD192	57.00	58.20	1.20	0.21	MAM			3733	18	8395	41
BODD192	58.20	59.00	0.80	0.60	BSZ	530	5459	16997	54	4914	18
BODD192	59.00	60.00	1.00	2.99	BSZ	1437	7656	26261	77	4849	24
BODD192	60.00	60.80	0.80	0.88	BSZ	991	5608	21496	62	5133	18
BODD192	60.80	62.00	1.20	0.06	MAM	55		3259	15	5265	24
BODD192	62.00	62.95	0.95	0.04	MAM	278		7665	26	5406	22
BODD192	62.95	63.27	0.32	0.01	GDI/MAM	47		19511	58	3942	43
BODD192	63.27	64.00	0.73	0.09	MAM	45		8797	28	5335	22
BODD192	64.00	65.00	1.00	0.03	MAM	13	1458	7035	22	5075	23
BODD192	65.00	66.23	1.23	0.09	MAM	13	1208	6976	29	5609	20
BODD192	66.23	67.39	1.16	0.01	MAM/GDI			7375	23	3823	47
BODD192	67.39	68.00	0.61	0.01	MAM			4376	21	5340	19
BODD192	68.00	69.00	1.00	0.01	MAM			2370	13	5450	19
BODD192	69.00	70.00	1.00	0.28	MAM	43	1640	4345	22	5364	18
BODD192	70.00	71.00	1.00	0.01	MAM			3556	19	5333	22
BODD192	71.00	71.70	0.70	0.02	MAM		1376	3591	15	5266	21

Logging of "BSZ"

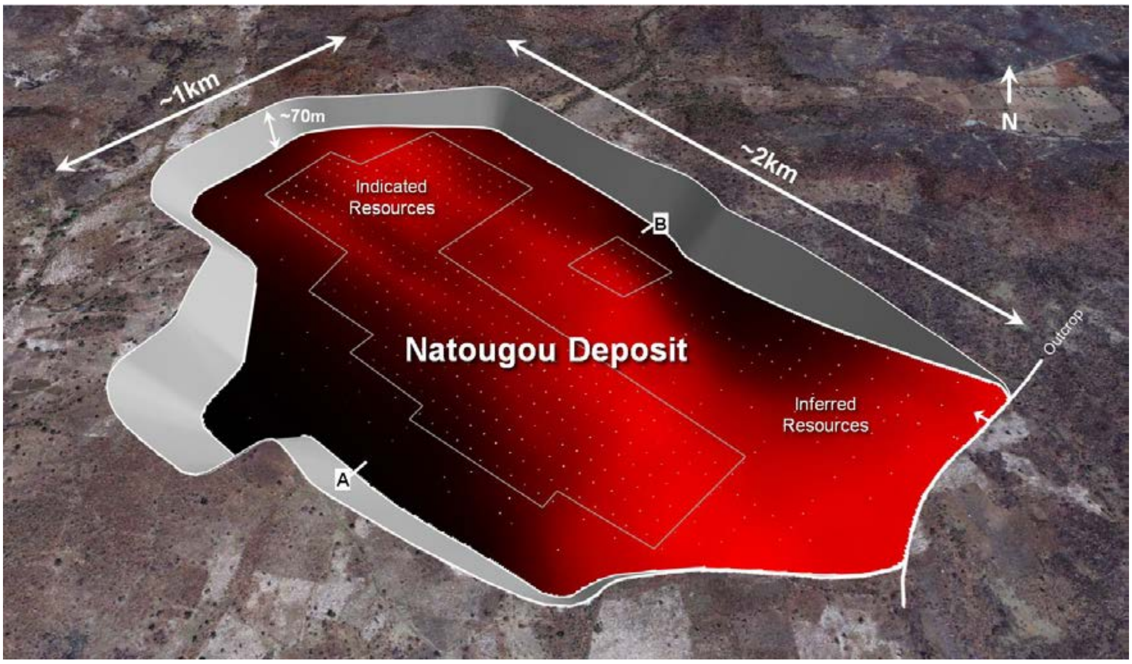
False K / Zr Signals in GDI
where K >14,000 and Ti/Zr Ratio <50 or high Cr

Source: Orbis

7.3.4 Mineralisation

The main mineralised lode is interpreted as a flat-lying anticlinal shear that outcrops in the southeast and plunges gently to the northwest (Figure 7.14).

Figure 7.14 Natougou deposit global geometry

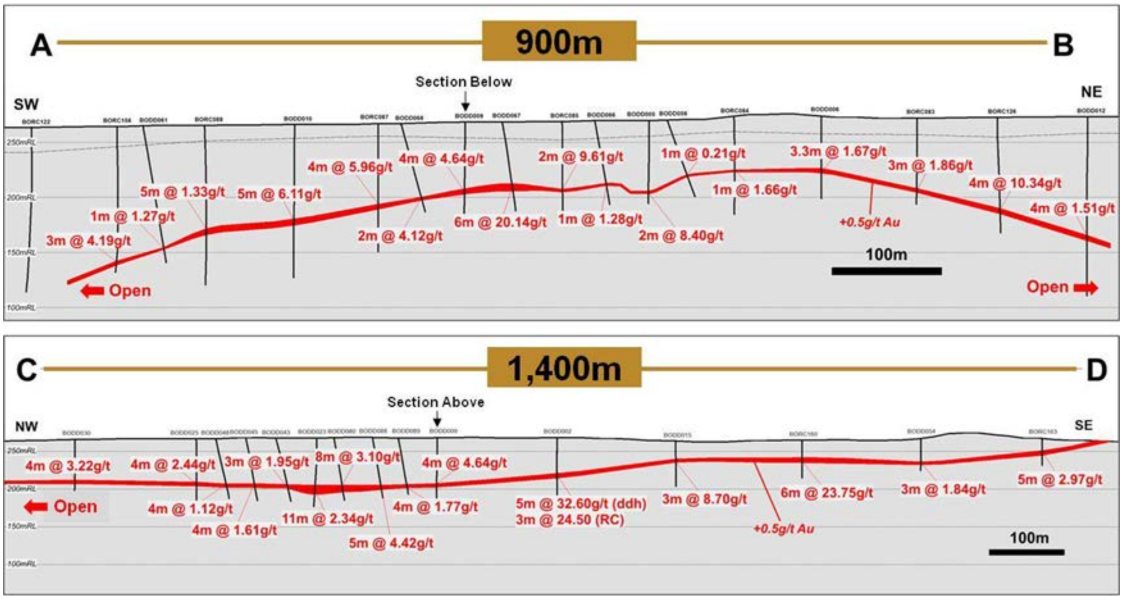


Source: Orbis

The mineralisation has a strike length of approximately 1,900 m, striking towards a bearing of 315° and an across-strike length of approximately 1,000 m (towards 045°). The mineralisation is gently folded with the fold axis oriented along strike and the limbs dipping gently at approximately 15° (Figure 7.15).

Mineralisation is open across strike (towards 045° and 225°) as well as towards 315°. The average true thickness of the mineralisation is approximately 3.9 m.

Figure 7.15 Cross-section (A-B; top) and long section (C-D; bottom) through Natougou deposit



Source: Orbis

Various data sources were used to delineate the gold mineralisation at Natougou, including geological logging, gold grade, analysis of trace elements from handheld XRF data, along with review and examination of core photographs.

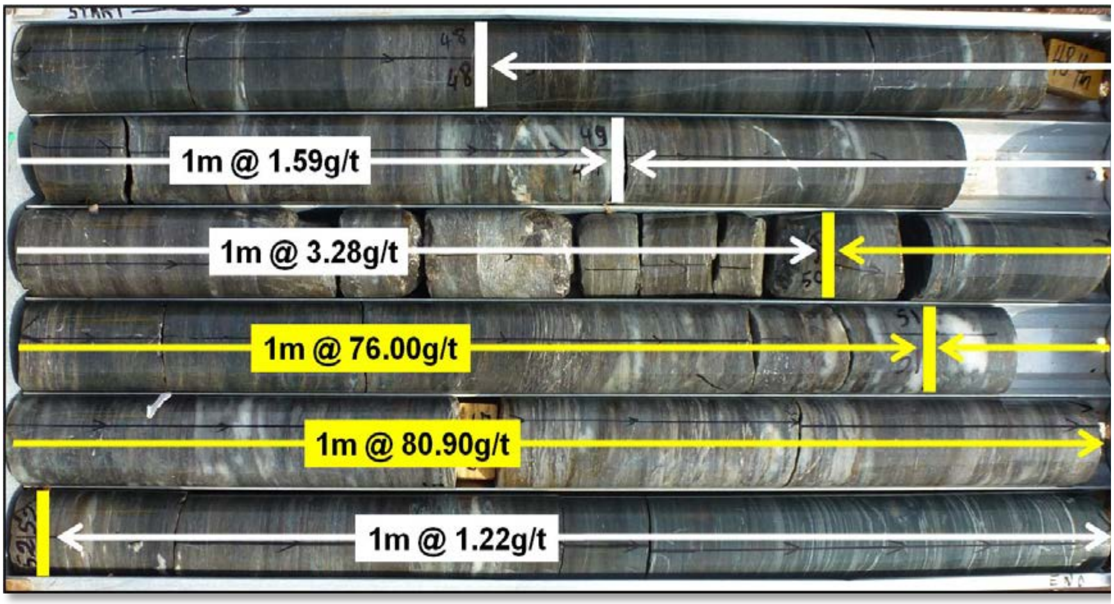
The main host to the mineralisation at Natougou is the Boungou Shear Zone ("BSZ"). Geological logging of the BSZ was carried out on site prior to sampling of the core and RC chips. Gold assays therefore were not a factor in logging of the BSZ.

The BSZ was logged in the core based on the combination of pink-brown biotite alteration (BPK), presence of silica-sericite alteration (BBZ) and the development of a shear fabric. Whilst the BSZ does vary in intensity across the deposit, the tenor of the gold mineralisation shows a strong correlation to the degree of shearing and alteration. There is consistency within zones of higher grade, which exhibit strong shearing and BPK alteration, and within zones of lower grade, which tend to exhibit weak to moderate shearing and BPK alteration.

Arsenopyrite is almost invariably associated with the presence of gold in assayed samples. The percent arsenopyrite logged can be used as an initial identification of the mineralised lode. The trace element data from the handheld XRF in the form of elevated arsenic and sulphur values (As >500 ppm and S >5,000 ppm) corroborated the interpretation of the lode.

It was noted during the inspection of core on site and during the review of photographs that the highest grade zones can often be correlated with an abundance of quartz veining observed within the shear (Figure 7.16). The quartz veining is boudinaged and folded and clearly pre-dates the development of the shear. Visible gold was observed in many of the quartz-rich zones.

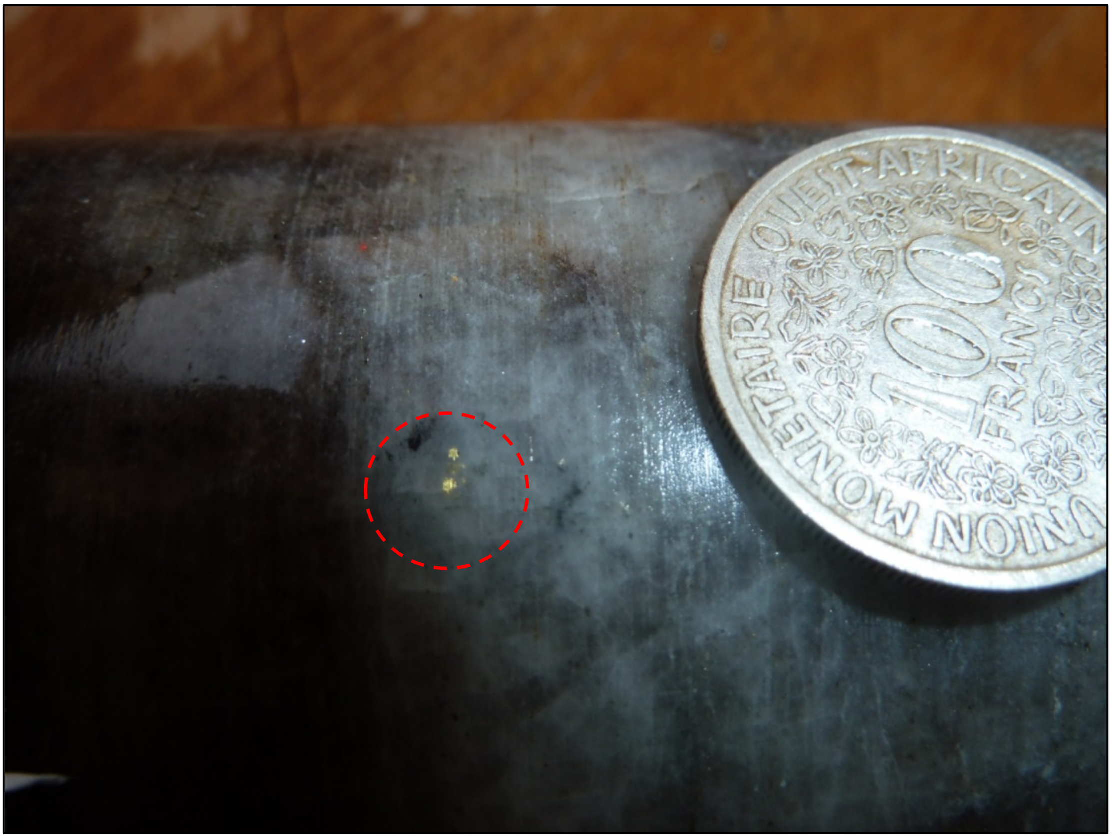
Figure 7.16 Quartz-rich zones exhibiting higher grade Au in BODD002



Source: Orbis

Although not common, visible gold has been observed in core in some drillholes (Figure 7.17).

Figure 7.17 Photo of visible gold in core from Natougou



Two zones of mineralisation have been interpreted by Orbis – the main mineralised lode and a minor mineralised lode, which occurs below the main lode in the southeastern portion of the deposit and is referred to as the minor footwall mineralisation.

Gold mineralisation also occurs above the main mineralised lode in the northwestern portion of the deposit and is referred to as the western hangingwall mineralised zone. This zone appears to be somewhat discontinuous and is currently poorly understood in terms of the nature and controls of this mineralisation. The western hangingwall zone is included in the waste domain for the purposes of grade estimation and does not form part of the reported Mineral Resource.

8 Deposit type

The Natougou deposit can be described as a West African shear zone hosted greenstone gold deposit. Gold mineralisation is associated with biotite and silica-sericite alteration, along with disseminated sulphides and occasional free gold. The mineralisation is structurally controlled and is hosted primarily within a large shear zone and its associated alteration.

9 Exploration

Regional soil sampling and rock chip sampling programs were commenced by Orbis in 2010. Permit scale mapping was conducted by Orbis geologists during the course of the 2014 field season. Results of the mapping are detailed in Section 7.2.

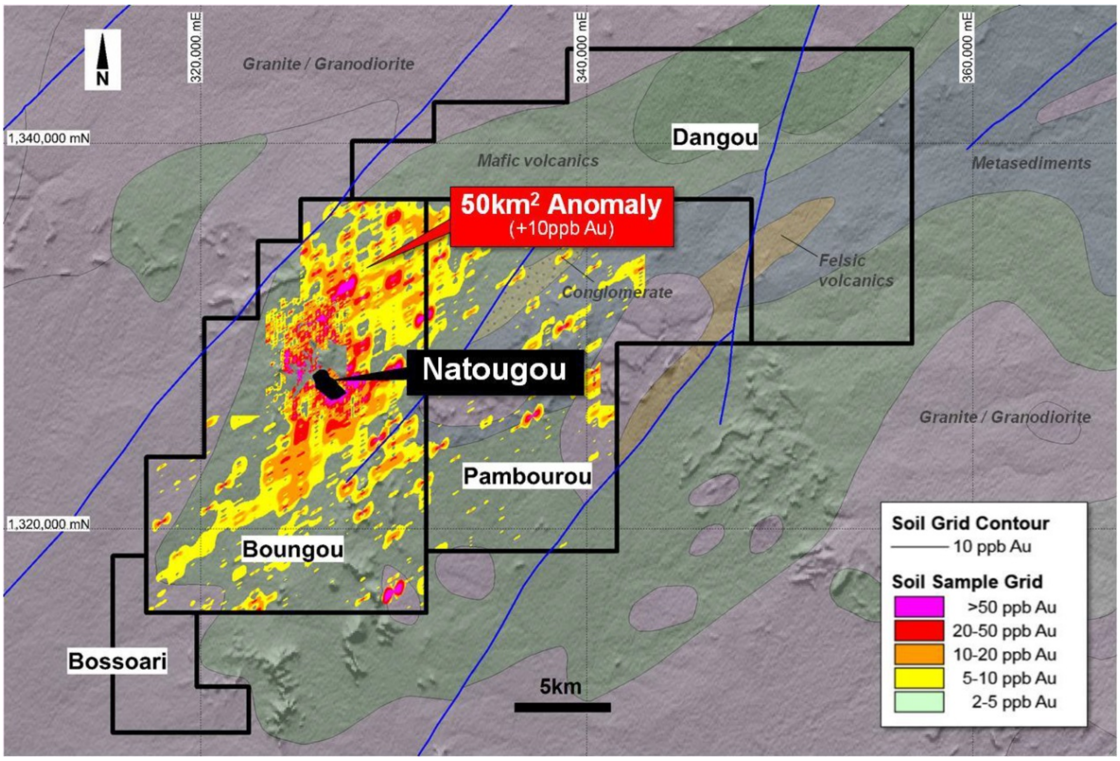
Orbis has defined a large-scale high order (+50 ppb Au) gold-in-soil anomaly in the area surrounding the Natougou discovery. The soil anomaly, defined within a 6 km by 4 km survey area, includes multiple zones of higher-order anomalism that have received minimal exploration drilling to date. The higher order soil anomalies present as priority areas for follow-up exploration.

Figure 9.1 is a map showing the results of soil sampling indicating significant anomalies surrounding the Natougou deposit, probably in part related to drainage features. The results of rock chip samples (>0.1 g/t Au) across the Tapoa Permit Group are presented in Figure 9.2. The group of anomalous rock chip samples immediately to the north of the Natougou deposit coincide with the +50 ppb Au soil anomaly and are associated with extensive artisanal workings in the area.

Additionally, Orbis completed 13 trenches between November 2014 and January 2015, with an average length of approximately 38 m. All of the trenches were within the Boungou permit. The trenches were hand dug to an approximate depth of 1.5 m and chip samples collected at 1 m intervals from the side wall close to the base of the trench. Nine of the trenches showed no significant intersections. The best results were obtained from trench BOTR006, which returned an intersection of 9 m at 9.43 g/t Au (horizontal width; not true width) based on a lower cut-off of 1 g/t Au (or 12 m at 7.15 g/t Au if a lower cut-off of 0.2 g/t Au is used). BOTR006 is interpreted to have intersected the along strike surface expression of the Natougou mineralisation (Figure 9.3).

Priority regional drill target areas which require further testing include the “Natougou Target Corridor”, a 7 km long elongate northwest to southeast-trending corridor that encompasses the Natougou deposit, significant hard rock artisanal mining activity and widely distributed high grade surface rock chip samples collected by Orbis with assay results up to 70 g/t Au (Figure 9.4).

Figure 9.1 Tapoa Permit Group exploration soil anomaly



Source: Orbis

Figure 9.2 Tapoa Permit Group exploration rock chip samples >0.1 g/t Au

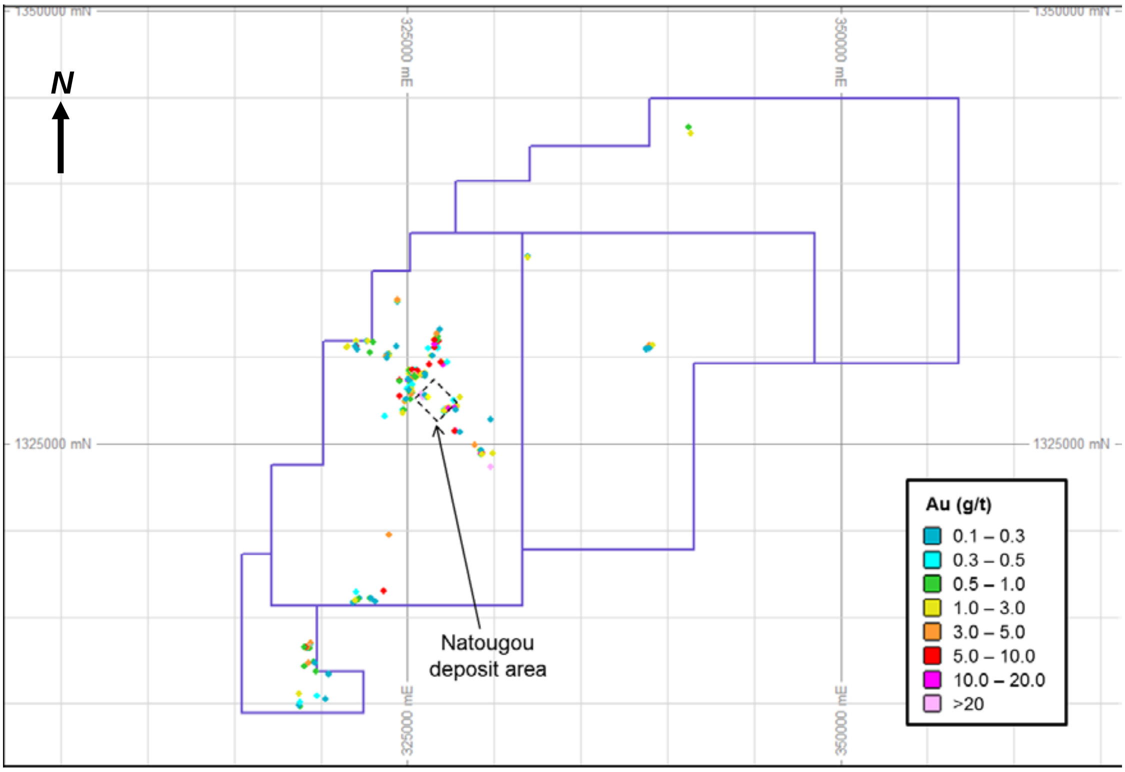
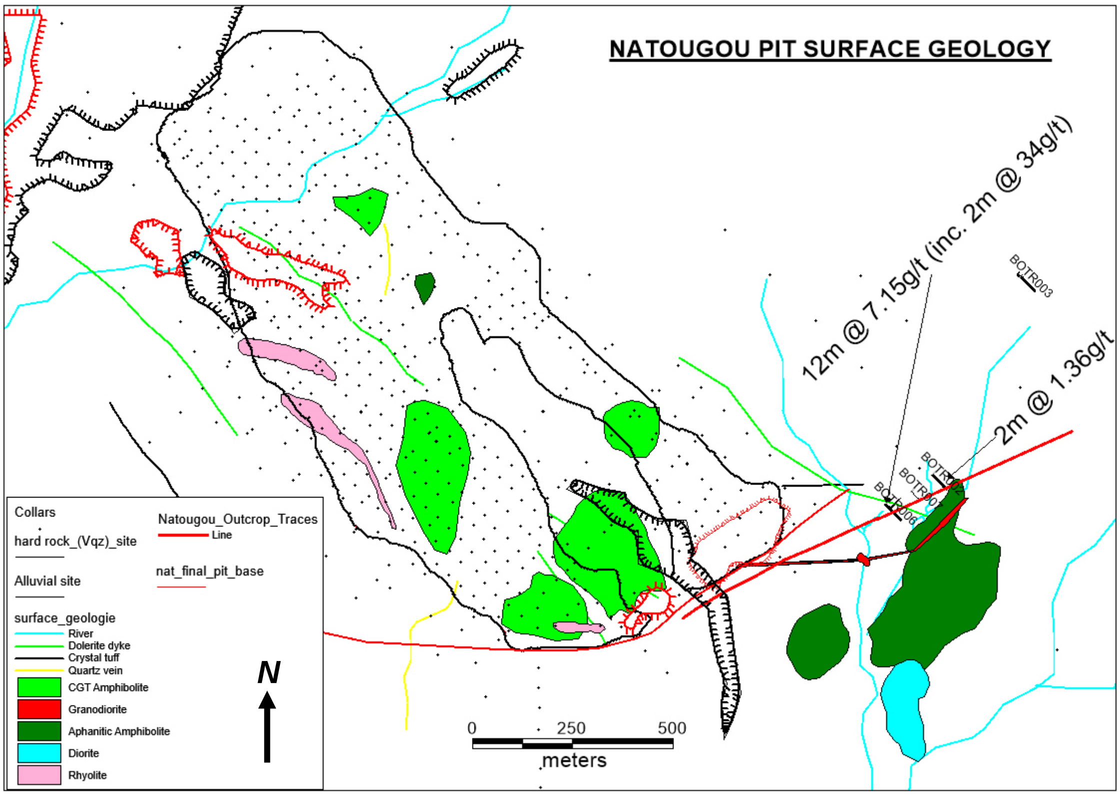
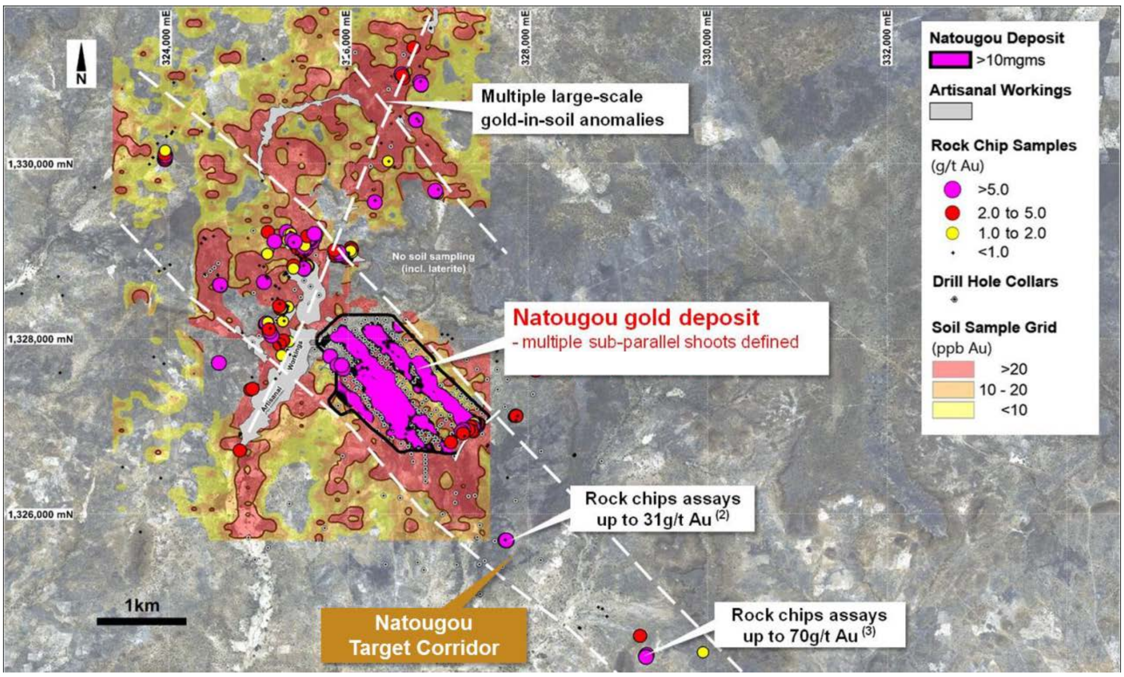


Figure 9.3 Natougou trench results



Source: Orbis

Figure 9.4 Targets within the Natougou Corridor and the broader gold-in-soil anomaly



Source: Orbis

10 Drilling

Drilling at Natougou was performed by a combination of RC and diamond drilling. The diamond drillholes were pre-collared using RC drilling down to approximately 10 m above the interpreted top of mineralisation. Diamond tails (HQ diameter) were used to complete the holes. A limited number of diamond holes were cored from the surface.

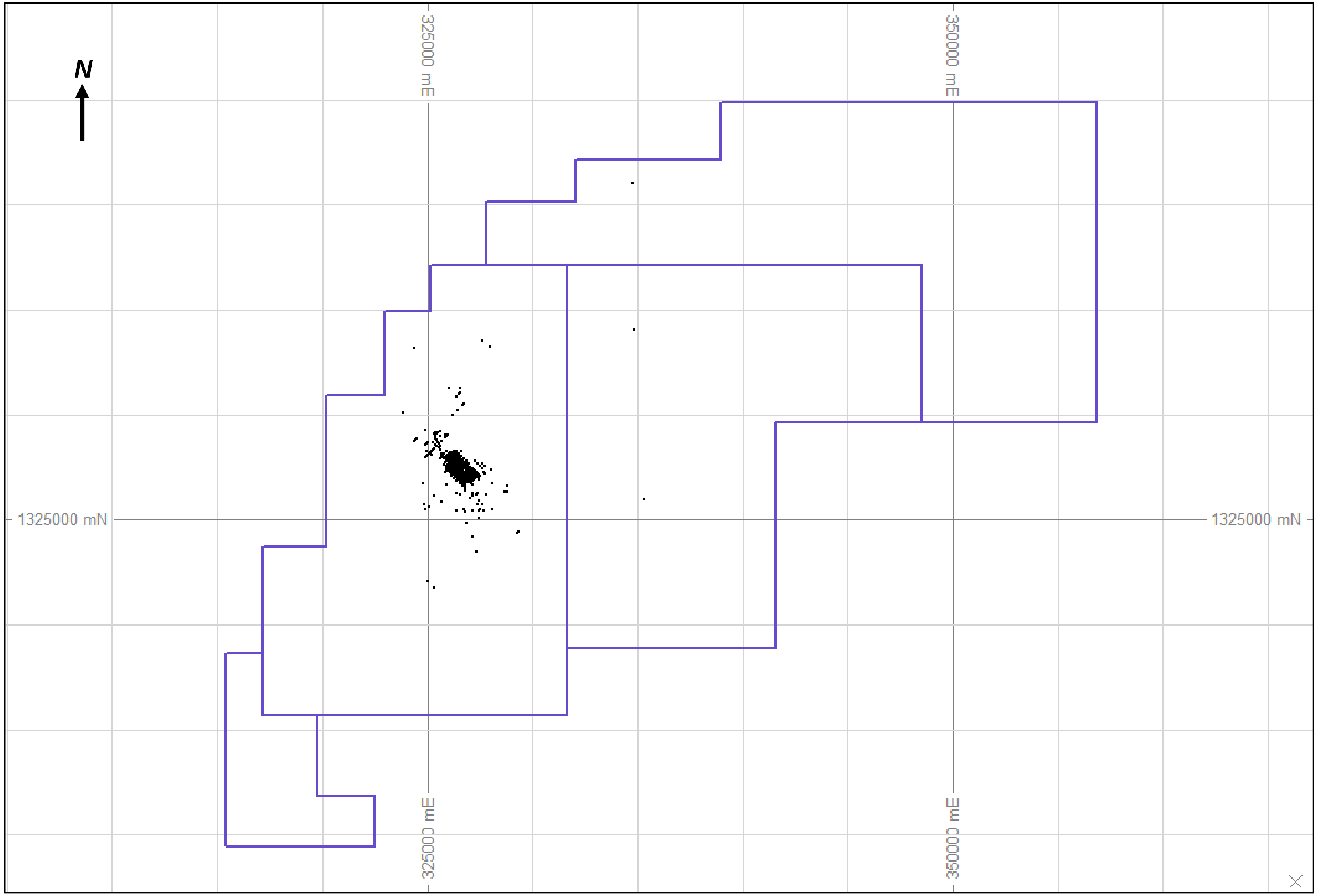
The dataset contains 714 drillholes, of which, 588 were used for the Resource estimate. Table 10.1 summarises the drillhole details. All drillholes were drilled by Orbis between 2012 and 2014.

Table 10.1 Tapoa Permit Group drillhole details

Drill type	Number of holes	Pre-collar total length (m)	Average total depth (m)	Total length (m)
Diamond	483	21,460	75	36,048
RC	231	-	98	22,776
Total	**714**	**21,460**	**82**	**58,824**

An example southwest-northeast cross section and northwest-southeast long section is provided in Figure 7.15. A collar location plan is presented in Figure 10.1. The vast majority of the drilling is focused on the Natougou deposit.

Figure 10.1 Drillhole collar location plan for Tapoa Permit Group



10.1 Sampling techniques

10.1.1 RC sampling

Material from the RC drilling is collected (every 1 m) into a poly bag (plastic bag) directly from the cyclone on the drill rig. The bags are pre-labelled with the hole ID, “metre from” and “metre to”. The sample is then weighed to estimate recovery. The magnetic susceptibility is also measured using a KT-10 magnetic susceptibility metre. Three readings are recorded in the field logging template and the average of the three is used. A small sample of chips from each 1 m drilling run is removed with a sieve, washed and placed in appropriately labelled chip trays for future reference.

All 1 m RC samples are composited to 4 m samples. A riffle splitter is used to split the 1 m samples to an approximate weight of 500 g resulting in an approximate 2 kg sample representing a 4 m interval of drilling. Sample tickets are placed into a poly bag and the hole ID and sample depth recorded on the remaining ticket stub. The riffle splitter is cleaned after each sample with a brush. Quality control samples were also submitted with these samples.

The split 2 kg samples were placed in a poly bag and transported to camp to await shipment to the SGS laboratory in Ouagadougou. The original 1 m drill bags from each hole are transported directly after splitting and arranged in order by depth drilled at the bag farm. With the exception of initial RC drillholes, Orbis routinely collect a 2 kg to 3 kg split of the 1 m samples for storage in an enclosed shed on site.

The assay results from the 4 m composites are used to select 1 m intervals for resampling. A grade of 0.25 g/t Au is used to flag 4 m composite samples for the second phase of assaying. The 4 m composite samples either side of the identified mineralised section are also split to bracket potential mineralisation. A riffle splitter is used to split the 1 m sample to an approximate 2 kg to 3 kg sample. This is placed in a pre-labelled polythene bag. A corresponding sample ticket is placed in each bag and the hole ID and depth recorded on the stub remaining in the ticket book. The riffle splitter is cleaned after each sample. Quality control samples are submitted with these samples and details of this process are explained further in Section 11.2.

Records of sampling show that RC samples were collected dry 99% of the time.

10.1.2 Diamond drillhole sampling

Diamond core samples were collected on 1 m intervals up to and including hole BODD089, thereafter all diamond sampling was either sampled on a maximum of 1.2 m intervals or to the lithological/alteration/mineralisation boundaries, with a minimum sample length of 0.2 m. The core is cut in half lengthwise using a diamond saw and the sampled half core is placed in a plastic bag and labelled with the hole ID and depth. A sample ticket labelled with the hole ID and depth is also placed in the bag. Quality control samples were also submitted with these samples and details of this process are explained further in Section 11.2.

10.2 Drill sample recovery

The drilling recoveries for both diamond core and RC drilling are reviewed to ensure appropriate material weight or core length has been recovered. The global recovery for drill core and RC chips is acceptable, with an average recovery of 98% for drill core (Figure 10.2) and 76% for the RC drilling (Figure 10.3). The majority of the mineralised samples are from diamond core drilling and as such, it is Snowden’s opinion that the recoveries are acceptable for representative sampling and subsequent Mineral Resource estimation.

Figure 10.2 Histogram of core recoveries

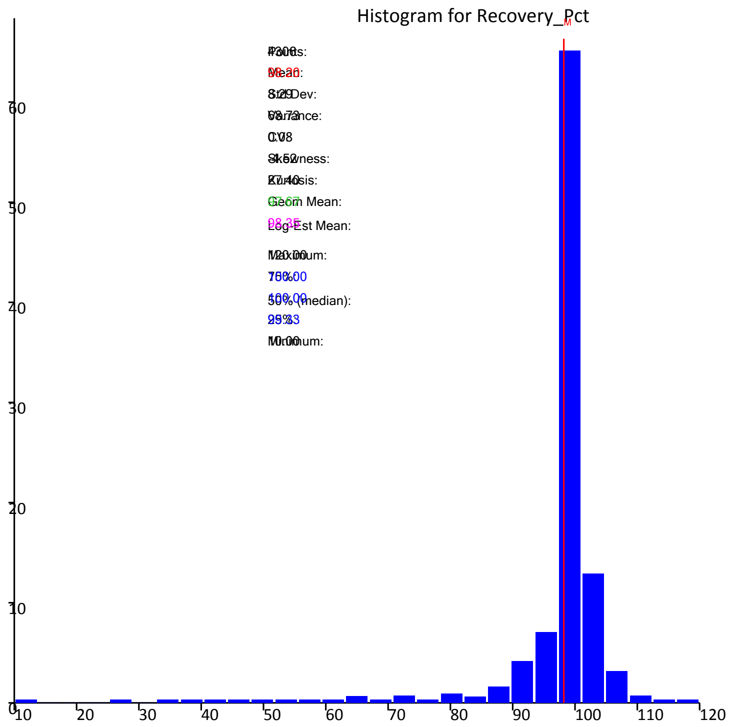
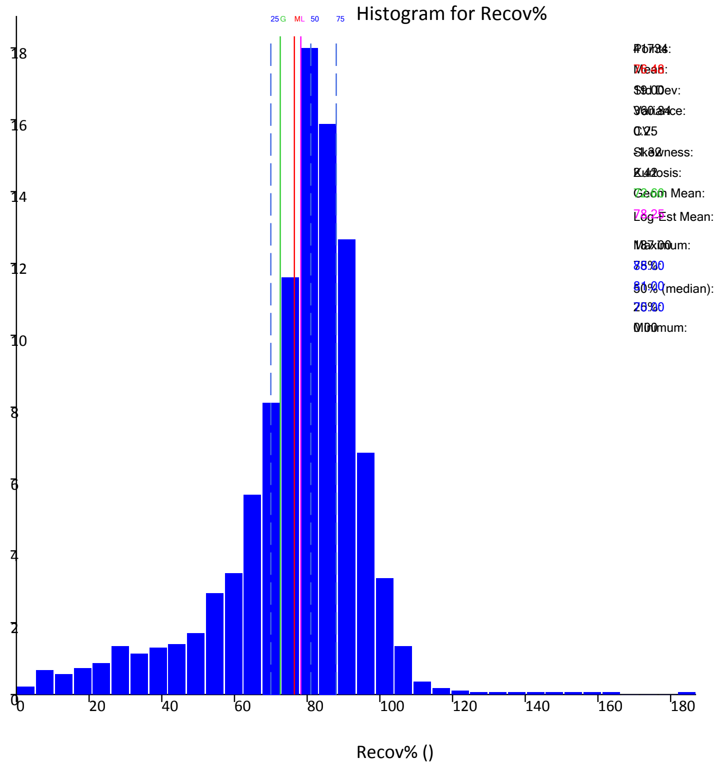


Figure 10.3 Histogram of RC drillling recoveries



10.3 Logging

Drill core and RC chips are logged according to lithology, alteration, sulphide percentage, vein composition and percentage, and structures. Prior to 2013, logging was hand written on a template and manually entered into the database, however from 2013 all logging is entered directly into Micromine Geobank Mobile using portable tablets. The logging geologist uses a library of geology codes to log in order to minimise subjectivity. RC chips are logged on site, whilst the diamond core is transported to the shed in camp for detailed logging. Upon completion of each hole, the responsible geologist will perform a 'quick log' on site prior to moving the core. This entails writing a brief description identifying the major rock units and the intervals containing mineralisation. A set of field photographs are also taken at this time. The 'quick log' and the field photographs were transferred to Orbis' Brisbane office for review on a daily basis.

10.4 Location data and survey methods

10.4.1 Data spacing and distribution

The dominant drillhole spacing at Natougou is 40 m along strike (315°) by 40 m across strike (045°). The drill spacing in the central area is up to 160 m along strike and 80 m across strike.

10.4.2 Location of data points

All drillhole collars were surveyed using a Geoexplorer 6000 differential global position system ("DGPS"). Data from the DGPS was downloaded directly to a laptop and processed using Geoexplorer's proprietary software.

The DGPS has a reported accuracy of ±1 cm horizontally and ±1.5 cm vertically. The coordinate system basis used is WGS84 Zone 31N. It is Snowden's opinion that the collar coordinates have been accurately surveyed and are appropriate for use in Mineral Resource estimate.

10.4.3 Downhole surveys

All drillholes are downhole surveyed using a Reflex EZ-shot electronic surveying tool. Both the azimuth and dip are recorded at 6 m (approximately) downhole, within the PVC casing, and then at 30 m intervals until the bottom of hole is reached. Magnetic susceptibility readings are taken by the Reflex EZ-shot device to indicate if the azimuth readings are being materially distorted by magnetic minerals. No readings have been rejected based on anomalous magnetic susceptibility. Readings with apparent errors were re-taken.

The Reflex EZ-shot camera has an accuracy of ±0.5° when measuring azimuth and ±0.2° when measuring dip angle.

10.4.4 Orientation of data in relation to geological structure

As the deposit is predominantly flat lying, 25% of drillholes have been drilled vertically. 25% have been drilled at -80° and 25% at -70°. Additionally, some holes have been drilled at an inclination of -60° towards a direction of either 045° or 235° magnetic, depending on which side of the fold hinge the hole has been drilled. All drillholes have been aligned to be near-perpendicular to the orientation of the mineralisation.

10.4.5 Topography

Orbis completed a preliminary ground based topographic survey of the Natougou gold deposit area that showed that existing baseline control was not considered accurate enough to define the topography. Snowden understands that SEMAFO plans to complete an aerial LiDAR survey as part of the feasibility study.

Snowden elected to use the drillhole collars to create a topographic surface for constraining the resource block model given the issues with the existing topographic survey and the fact that the area is relatively flat.

The absolute position of the collars has changed between the current resource estimate and the initial estimate reported by Orbis in 2013. The difference in absolute positioning is approximately 23 mRL (i.e. vertically) due to a change in the GEOID utilised when collecting the collar positions by the DGPS. As a result of the change in the basis of the survey coordinate space, all collars were re-surveyed by DGPS to ensure that a single GEOID system was used. The database was updated appropriately. While the absolute position has changed compared to 2013, the relative positions of the previous holes have not changed.

11 Sample preparation, analyses, and security

All drill core and RC samples were submitted to the SGS laboratory in Ouagadougou. The SGS Ouagadougou laboratory is not currently certified to ISO17025 standards, however Snowden understands that the certification process is currently underway but the process was delayed due to the Ebola outbreak in West Africa. It is anticipated by the laboratory that they will achieve certification during May 2015. Samples received in a pulp form (i.e. standards or blanks) are prepared by SGS as follows:

- One in 30 samples are screened to ensure 85% passing 75 µm.
- If the screen test fails the required particle size then all samples are screened.
- Any samples failing the screen test are milled to attain the required particle size.

If the samples are received as rocks, drill core or RC drill cuttings, SGS prepare the samples as follows:

- The samples are dried at 105°C for a minimum of six hours.
- Samples are weighed.
- Crushed to 80% passing 2 mm.
- 1.5 kg split by rotary splitter or riffle splitter.
- 1.5 kg split of 2 mm material is then pulverised to 85% passing 75 µm in a bowl and puck pulveriser.

A 200 g sub-sample is then collected (by scooping) from the 1.5 kg split. The remaining material is returned to the original bag (or a plastic bag if the original is not suitable). All preparation equipment is flushed with barren material prior to the commencement of the job. Cleaning of equipment (e.g. crushers and pulverisers) is by compressed air which is done between each sample.

Snowden visited the SGS Ouagadougou laboratory in April 2014 and March 2015.

11.1 Analytical techniques

11.1.1 Primary analysis

All samples submitted to SGS in Ouagadougou (herein referred to as “SGS”) are analysed for gold using fire assay with the gold content determined by atomic absorption spectroscopy (“AAS”). All samples are assayed by fusing a 50 g sample with a litharge based flux followed by cupellation, dissolving the prill in aqua regia and determining gold by AAS. This technique has a detection limit of 0.01 ppm Au.

It is Snowden’s opinion that the analytical technique used for Natougou samples is appropriate.

11.1.2 Handheld XRF analysis

All pulps from primary analysis are collected and returned to an Orbis warehouse in Ouagadougou. The pulps are then analysed by handheld XRF (Innov-X Omega series) for a suite of elements. The data is digitally downloaded from the machine and transferred to the database for storing with the primary analyses. The machine is calibrated by insertion of blanks and standards at positions in the sample sequence where primary blanks and standards were inserted. The calibration standards include NIST2702 and NIST2781, as well as SiO_2 as a blank.

The elements recorded and their detection limits are included in Table 11.1.

Table 11.1 Innov-X Omega series elements and detection limits

Element of interest	OMEGA Series LOD	Unit	Element of interest	OMEGA Series LOD	Unit
Mg	0.5	%	As	1	ppm
Al	0.1	%	Se	1	ppm
Si	0.1	%	Rb	1	ppm
P	250	ppm	Sr	1	ppm
S	105	ppm	Zr	1	ppm
Cl	30	ppm	Mo	0.5	ppm
K	15	ppm	Ag	4	ppm
Ca	15	ppm	Cd	4.5	ppm
Ti	2.5	ppm	Sn	7.5	ppm
V	2.5	ppm	Sb	8	ppm
Cr	2.5	ppm	W	8	ppm
Mn	1.5	ppm	Au	6	ppm
Fe	1.5	ppm	Hg	1	ppm
Co	5	ppm	Pb	2.5	ppm
Ni	2.5	ppm	Bi	1	ppm
Cu	2.5	ppm	Th	1	ppm
Zn	2.5	ppm	U	2	ppm

Orbis recognise the limitations of the handheld XRF data, which is primarily used to aid the geological interpretation and as an indicative assessment of the concentration of various elements within the rocks encountered at Natougou.

11.2 Quality of assay data and laboratory tests

11.2.1 Internal laboratory quality assurance and quality control

SGS undertake an internal QAQC process involving standards, blanks and duplicates. Each analysis batch consists of 84 samples, of which 10 are quality control (“QC”) samples, comprising four reference materials, two duplicates (taken before crushing), two pulp duplicates, one blank (pulp) and one coarse blank. SGS also participate in regular round robin programs to monitor for bias. A minimum of 5% additional check assays are performed on all batches (depending on the number of anomalies present within a given batch).

SGS provide Orbis with a monthly report of results from the internal QAQC program. Snowden have reviewed four of these reports and consider the results and the material within the reports informative and beneficial to Orbis.

11.2.2 Laboratory inspections

A brief laboratory inspection of the SGS facilities in Ouagadougou was completed by Mr John Graindorge (Snowden) and Ms Ann Ledwidge (Orbis) on 16 March 2015 with supervision by the Laboratory Manager, Helena Bouda. The sample preparation areas were organised and clean of excessive dust and many of the crushers included automated rotary splitting devices. The areas were clean and well maintained. The fire assay balances were clean and calibration records kept. All machines supported data capture directly into Laboratory Information Management System ("LIMS"). The flux addition area used a semi-automated multi pot system with mixing of the sample+flux in a tumbler. The fire assay process (fusion and cupellation) was well organised and maintenance records are kept. Acid digestion rooms had clearly set out equipment locations and suitable safety systems. Spectra atomic absorption machines are utilised for analysis and have clear maintenance and calibration records kept. In the majority of cases, laboratory procedures were visible and easily available to staff. Snowden considers SGS Ouagadougou to be a suitable laboratory to be the primary analysis facility for samples.

11.2.3 Assay reports

All assay reports from the primary assay laboratory (SGS) are submitted to Orbis as digital data files and as PDF certificates.

11.2.4 Certified reference materials

Since July 2013, there has been a total of 572 (2.8% of all samples to August 2014) certified reference material ("CRM") samples submitted with primary samples to the SGS laboratory in Ouagadougou.

Orbis have used six different CRMs since 2012. The CRMs (pulps) are purchased from Ore Research and Exploration Pty Ltd; details of the standards are listed in Table 11.2. One CRM sample was placed by Orbis at the end of each hole.

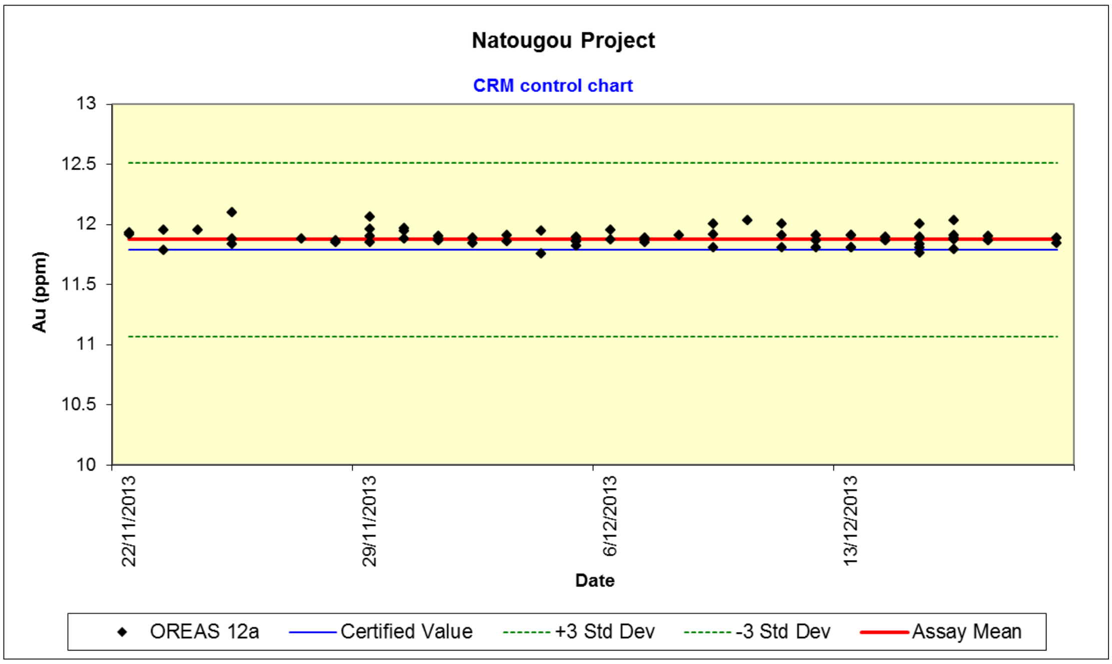
Table 11.2 CRM details for Natougou

Orbis standard ID	OREAS standard ID	Expected Au (ppm)	1 standard deviation	Source
STD12	OREAS 12a	11.79	0.24	Magdala Lode (Stawell Gold Mine, VIC Australia)
STD16	OREAS 16a	1.81	0.06	Magdala Lode (Stawell Gold Mine, VIC Australia)
STD17	OREAS 17c	3.04	0.08	Magdala Lode (Stawell Gold Mine, VIC Australia)
STD18	OREAS 18c	3.52	0.11	Magdala Lode (Stawell Gold Mine, VIC Australia)
STD62	OREAS 62c	8.79	0.21	Cracow epithermal gold mine, QLD Australia
STD204	OREAS 204	1.043	0.039	Magdala Lode (Stawell Gold Mine, VIC Australia)

Although the standards are not matrix matched, Snowden considers them appropriate for assessing laboratory analytical accuracy with respect to Natougou mineralisation. Snowden recommends Orbis generate a matrix matched CRM from the Natougou mineralisation at a range of grades including one close to the likely mine cut-off grade. Orbis should submit one of the three CRMs at the end of each drillhole sample sequence and every 50th sample.

The CRMs were analysed by examining control charts (Figure 11.1 to Figure 11.6) and the spatial location of their insertion to ensure the mineralisation is spatially representative.

Figure 11.1 CRM STD12 control chart (SGS results; top = June 2013 to August 2014; bottom = 2012 to June 2013)



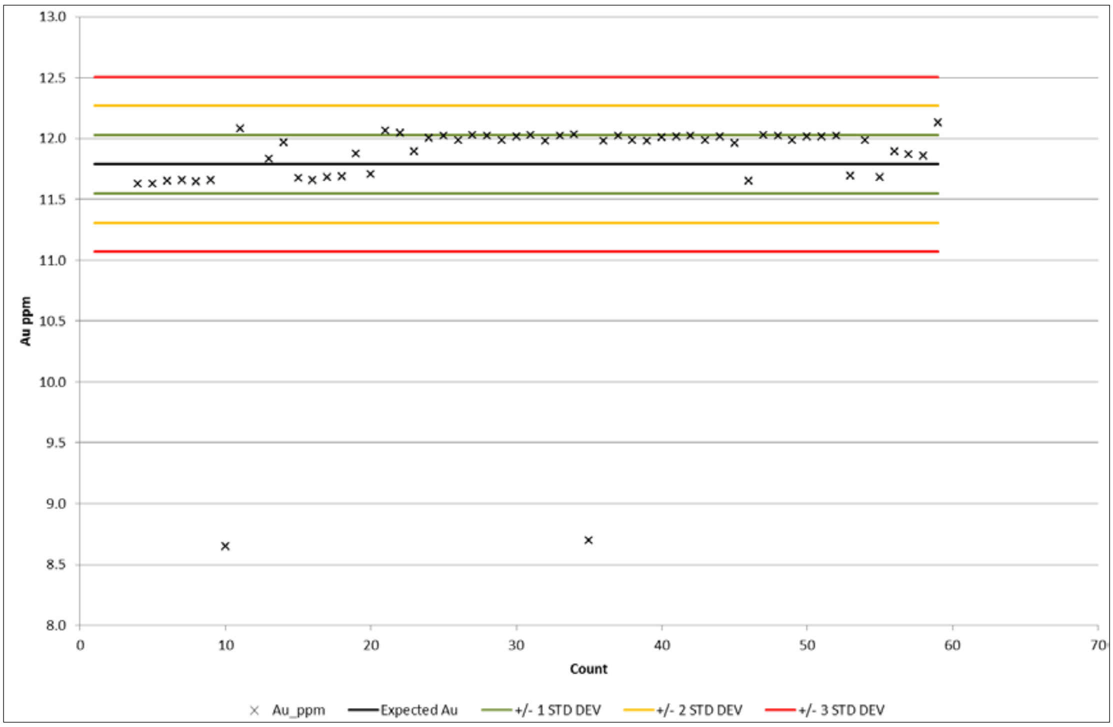


Figure 11.2 CRM STD16 control chart (SGS results, 2012 to June 2013)

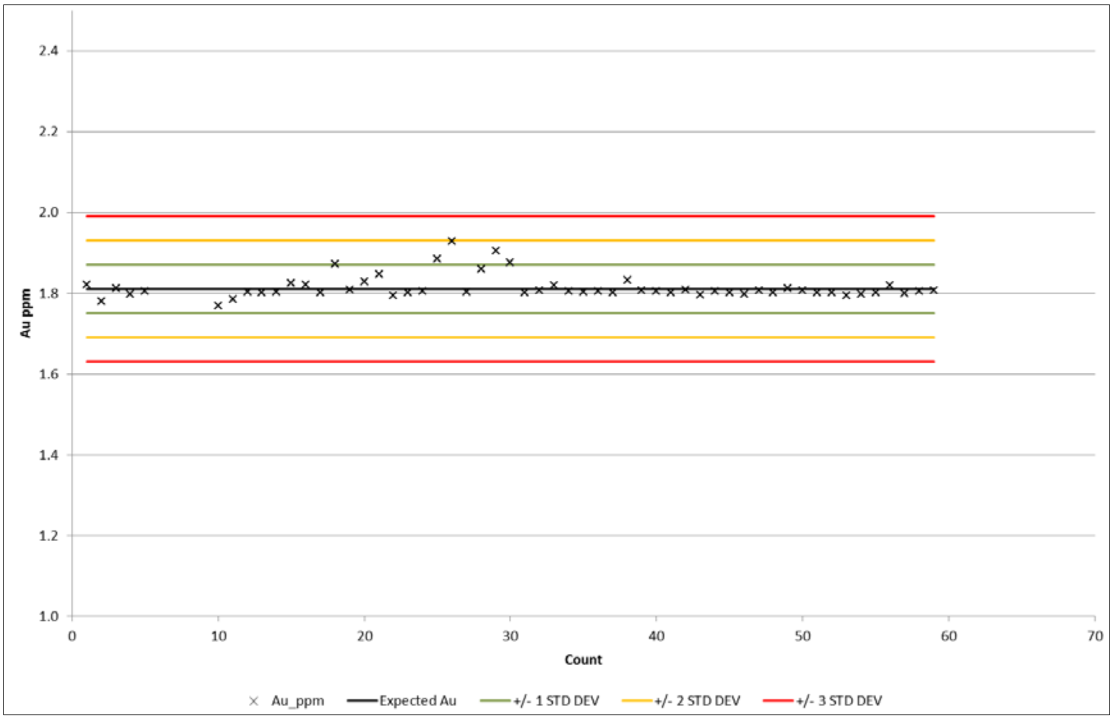


Figure 11.3 CRM STD17 control chart (SGS results, June 2013 to August 2014)

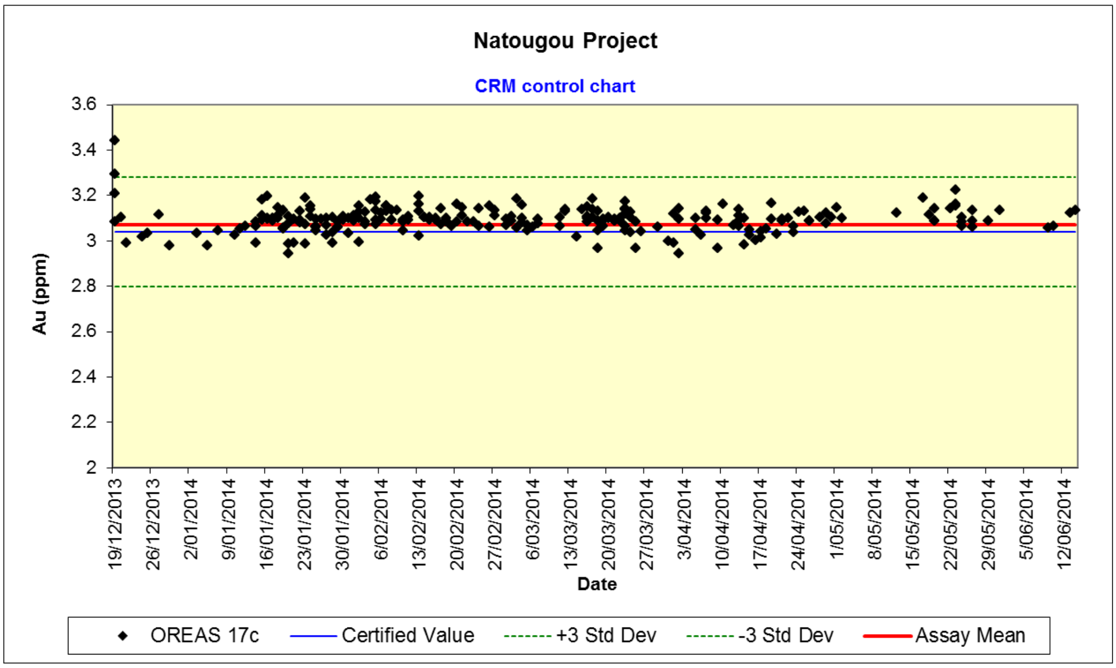


Figure 11.4 CRM STD18 control chart (SGS results, 2012 to June 2013)

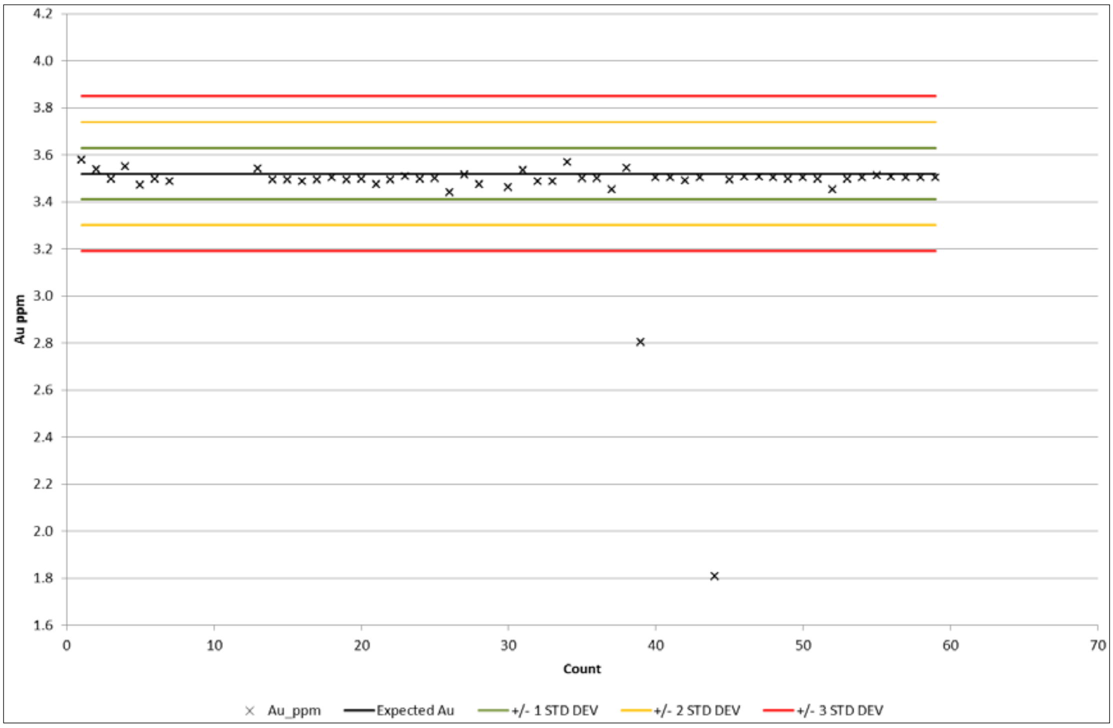


Figure 11.5 CRM STD62 control chart (SGS results, 2012 to June 2013)

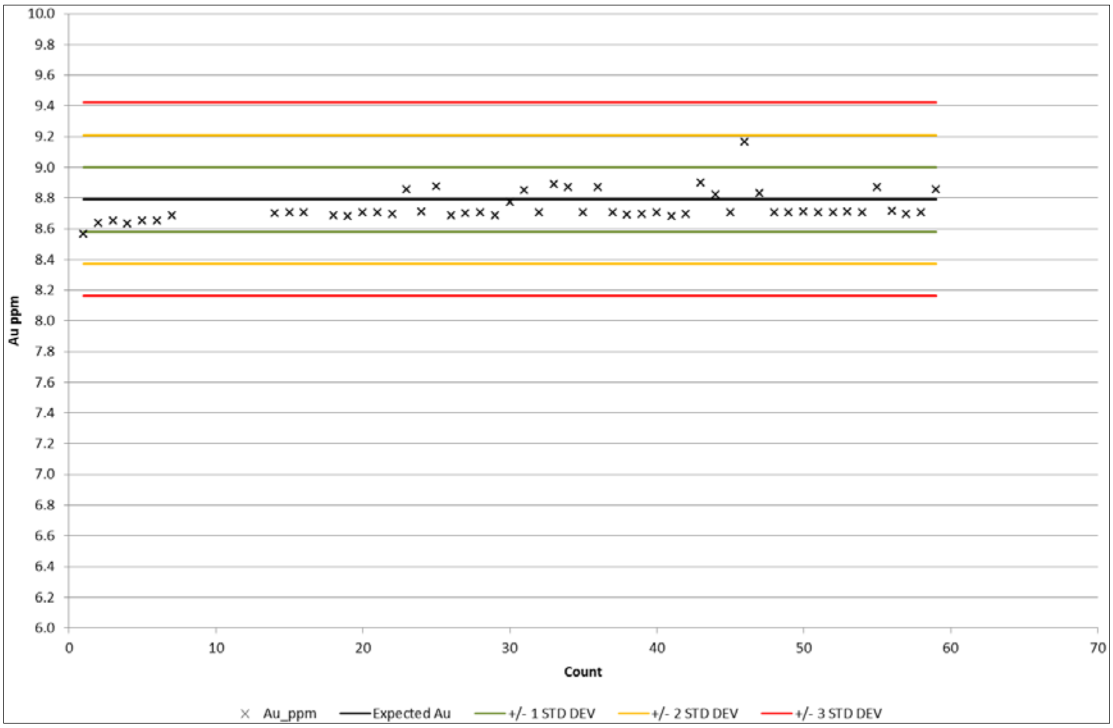
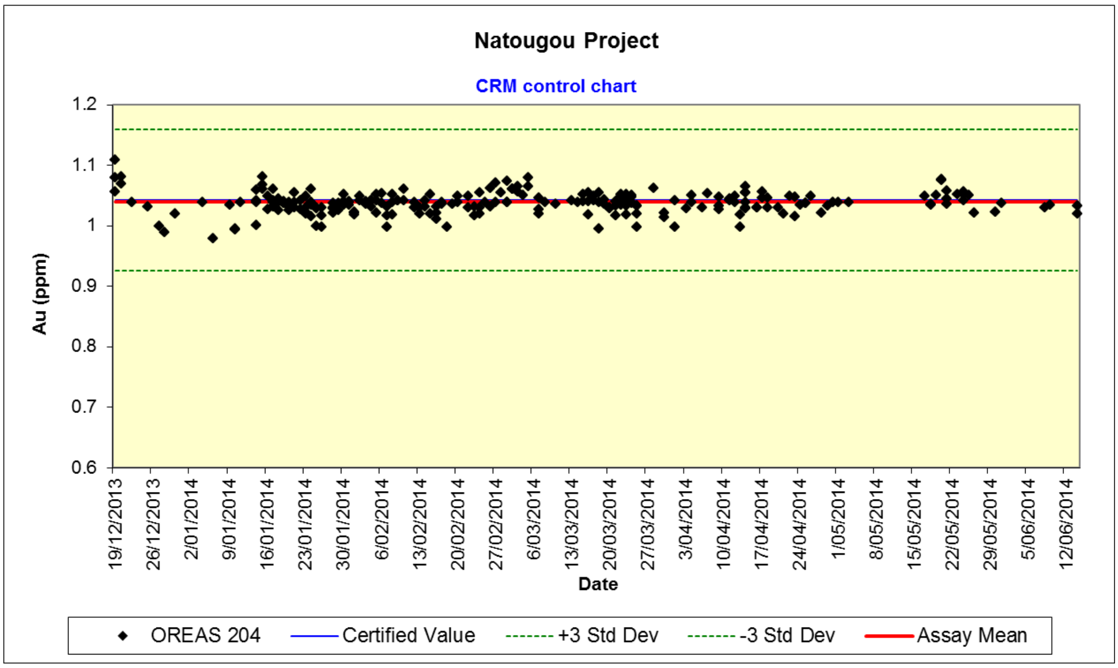


Figure 11.6 CRM STD204 control chart (SGS results, June 2013 to August 2014)

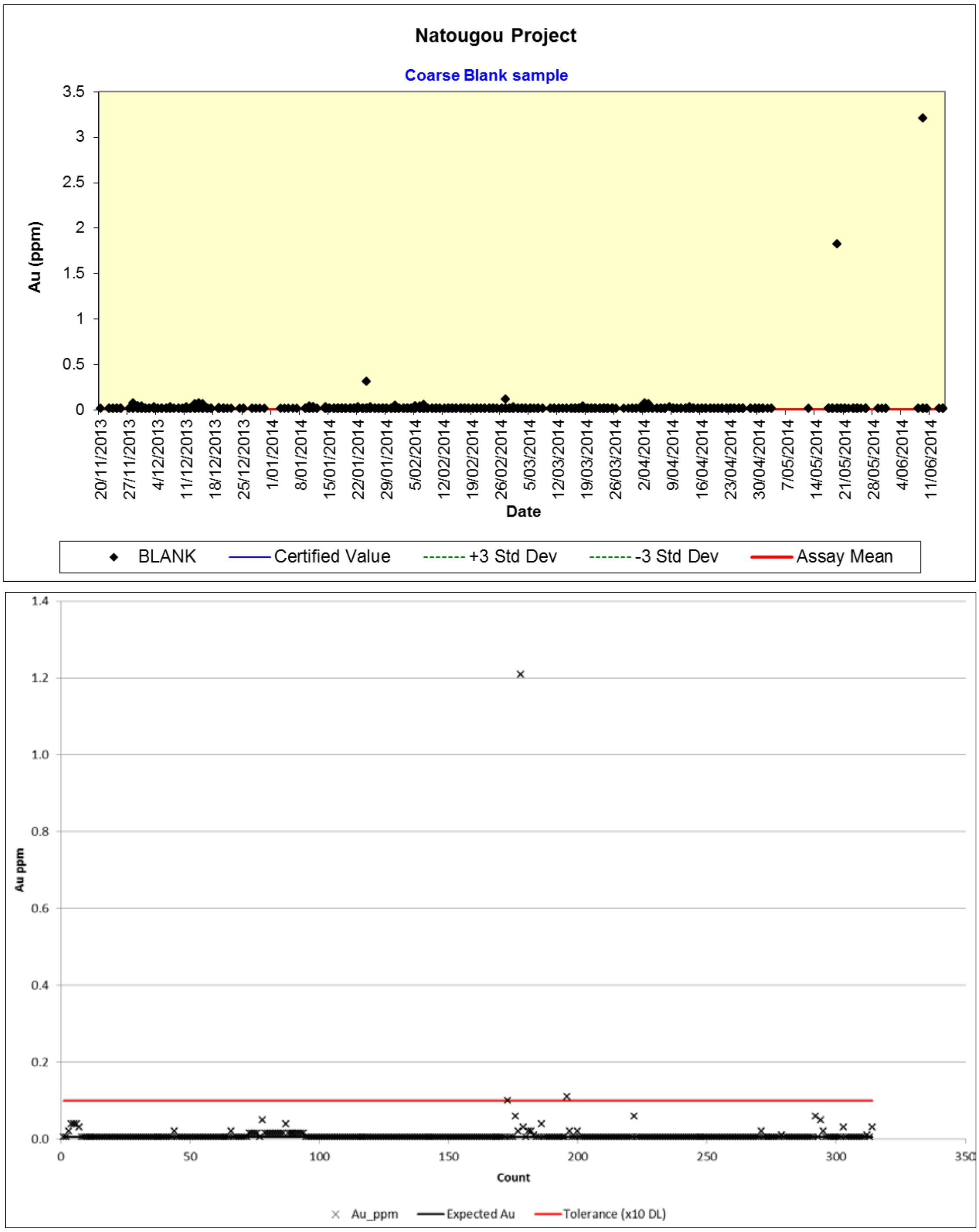


11.2.5 Blanks

Orbis submit blank samples at the start of each drillhole sample sequence and one in every 50 samples. The blank material is sourced from the Bobu quarry and comprises a sedimentary rock, which Orbis has ascertained does not contain gold mineralisation. The results are summarised in Figure 11.7.

There were two samples picked up in the 2013 to 2014 data provided that showed some evidence of sample misclassification. Subsequent checking of physical pulps at the laboratory indicated that the sample sequence had become displaced and assay results were assigned to the incorrect sample numbers. All coarse rejects for the batch have been selected for re-assaying. The primary database was updated to fix these discrepancies.

Figure 11.7 Coarse blank control charts (SGS results; top = June 2013 to August 2014; bottom = 2012 to June 2013)

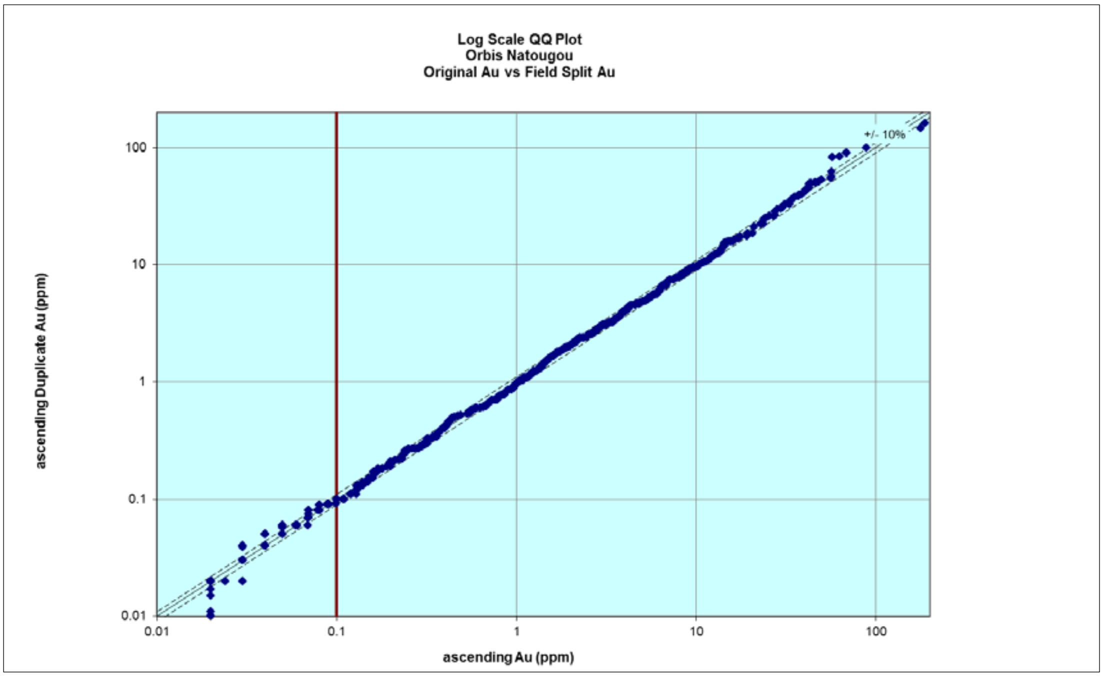


11.2.6 Field duplicates

Since 2012, there have been a total of 1,113 field duplicate samples (RC riffle split, or quarter core duplicate for diamond core) submitted with the primary RC/core samples, 886 of which were submitted as part of the June 2013 to August 2014 drilling.

A quantile-quantile ("QQ") plot is used to compare population distributions in order to assess potential bias. For results to be considered unbiased, they should plot along the 1:1 line. A QQ plot for the 2013 to 2014 field duplicate results (Figure 11.8) indicates no significant bias exists between the sample populations.

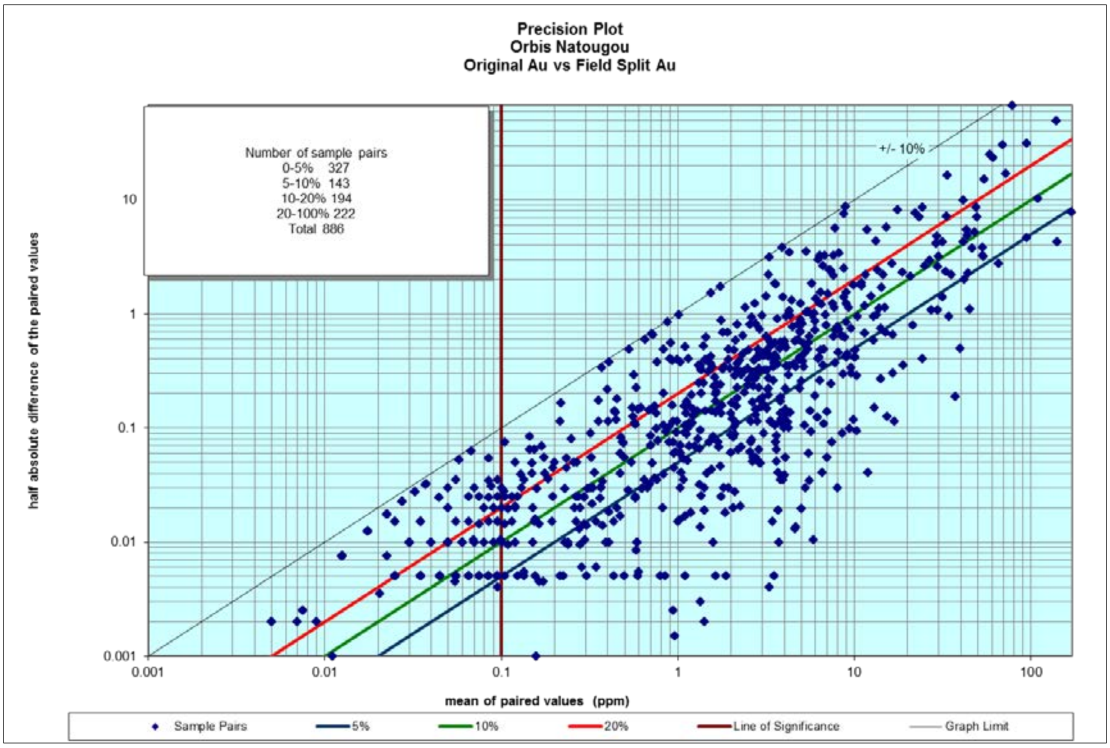
Figure 11.8 Original vs. field duplicate – log QQ plot



Precision plots are used to assess the repeatability (precision) of the duplicate results by plotting the average of the duplicate results against the half absolute difference of the pair. The number of sample pairs plotting between 5%, 10%, 20% and 100% difference lines are assessed as a measure of the precision of the results. As assay results approach the limits of the analytical technique the precision decreases. A line of significance is typically plotted on the graph to exclude any results close to the detection limit to account for this.

Field duplicate results plotted on a precision plot show approximately 25% of the duplicate results plotting above the 20% difference line (Figure 11.9). Field duplicate results are typically associated with a lower degree of precision compared to pulp duplicates, especially for deposits where visible gold is present.

Figure 11.9 Original vs. field duplicate – precision plot



Overall the populations compare well, with some outliers at higher grades typical of gold deposits containing visible gold particles. Snowden considers there is no evidence to suggest that the primary sample varies significantly from the duplicate sample and that Orbis have achieved reasonable precision during the sampling and assaying process.

11.2.7 Umpire laboratory checks

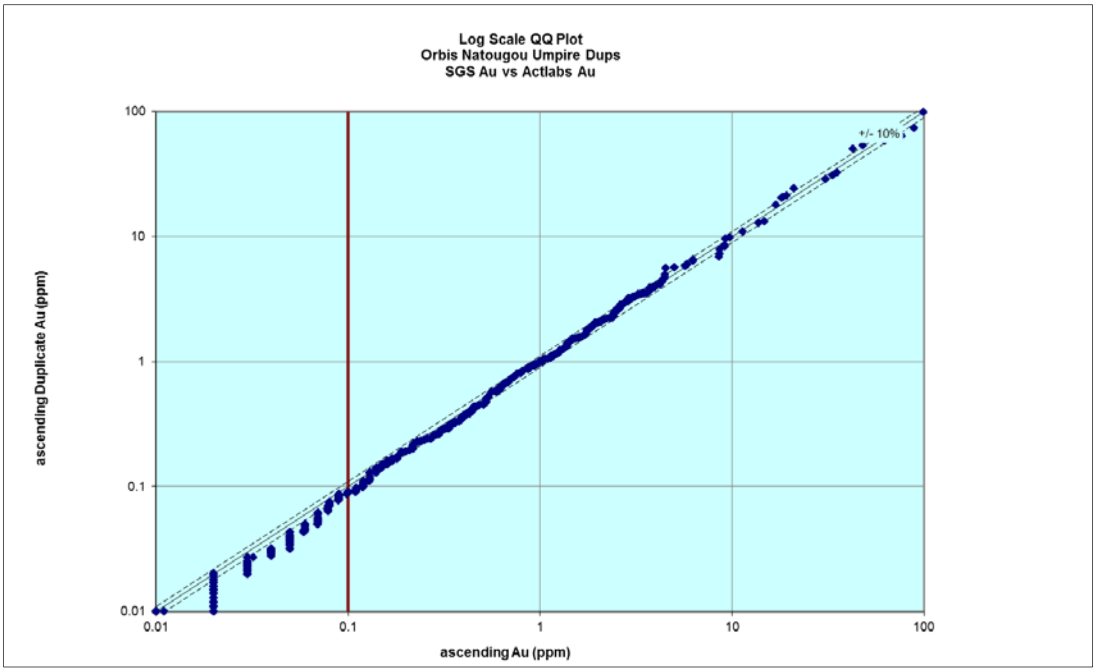
A set of 744 pulp duplicate samples were submitted to the Actlabs Laboratory in Ouagadougou as an umpire check of results from the primary laboratory. Basic statistics are shown in Table 11.3 and a log QQ plot in Figure 11.10.

Table 11.3 Comparison between primary and umpire assays

Statistic	Primary Au (FA)	Umpire Au (FA)
Total number of pairs	744	744
Minimum	<0.01	<0.01
Lower quartile	0.03	0.02
Median	0.12	0.10
Mean	1.54	1.51
Geometric mean	0.14	0.13
Upper quartile	0.79	0.80
Maximum	99.16	98.30
Coefficient of variation	4.59	4.45
Standard deviation	7.07	6.70
Variance	49.93	44.86
Correlation coefficient	**0.99**	

Basic statistics show no significant difference between the two populations.

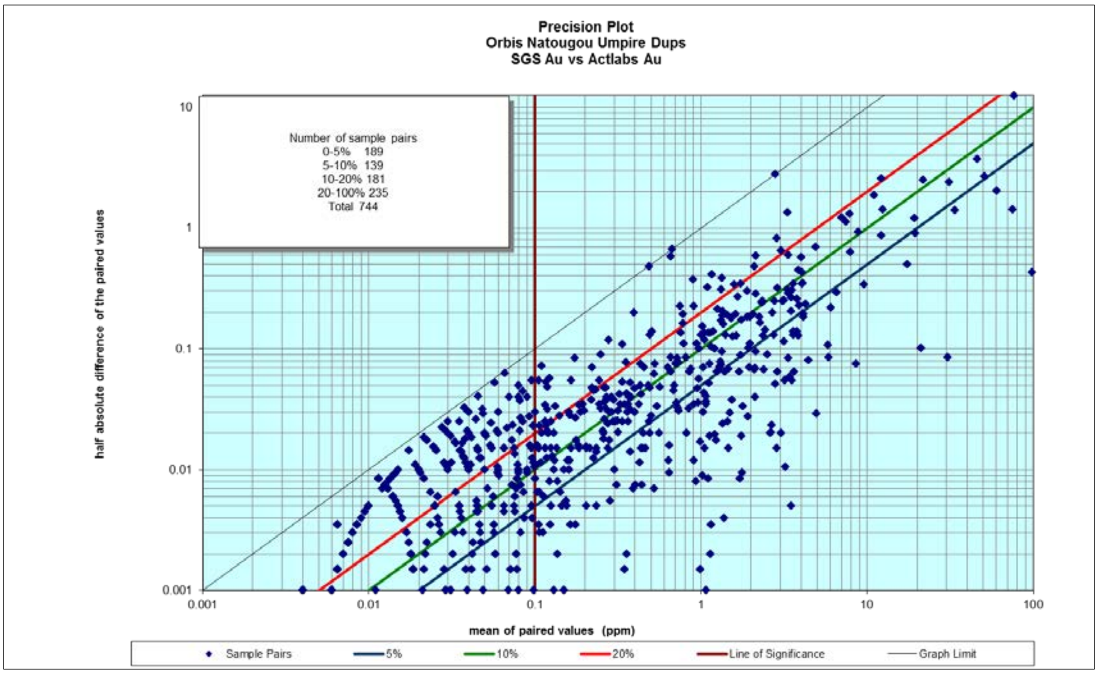
Figure 11.10 Umpire vs. original pulp duplicate – log QQ plot



Overall the populations compare very well. Snowden considers there is no evidence to suggest that the primary laboratory has any issues with a bias at any grade range material to the Mineral Resource.

A precision plot of the results indicates approximately 30% of the results falling above the 10% precision line (Figure 11.11), the majority of which fall below 0.1 ppm Au. These results indicate acceptable precision is being achieved at the primary laboratory (SGS Ouagadougou).

Figure 11.11 Umpire vs. original pulp duplicate – precision plot



11.1 Sampling security

Orbis store all samples securely on site (additionally, standards are stored in a locked room) and the transportation of samples was overseen by security guards. Personnel releasing the samples for shipment to the laboratory assume responsibility for the sample security and paperwork with recorded sample numbers are accounted for prior to shipment to the laboratory. The SGS laboratory in Ouagadougou checks the received samples against the paperwork and sign-off on the receipt.

11.2 Bulk density

Orbis collected bulk density measurements on site by using the Archimedes immersion technique (weight in air divided by the difference between the weight in air and the weight in water). The methodology is as follows:

- Select 10 cm to 15 cm core samples in fresh, altered and mineralised shear zones.
- Set scale to zero and place the sample directly on the scale and record the reading.
- Set the scale to zero and:
  - put the sample on the cradle and ensure sample is fully immersed in the water (the cradle should not touch the bottom or the sides of the water bucket)
  - wait until reading is stable and then record the reading.
- Calculate the bulk density (weight of sample in air divided by weight of sample in air minus weight of sample in water).
- If weathered and/or porous core samples were encountered, plastic wrap was used as follows:
  - Weigh the dry sample to obtain the weight in air.
  - Weigh the sample with the plastic wrap in water.
  - Calculate the bulk density (weight of sample in air divided by weight of sample in air minus weight of sample in water).

Snowden notes that this method for porous/friable samples will tend to bias the sample weight in water due to excess trapped air in the plastic wrap, resulting in the bulk density being understated for those samples where plastic wrap was required. Given the shallow nature of the weathering profile, Snowden does not believe that the low bulk density values within the weathered material will materially impact on the Mineral Resource global tonnage.

The equipment, whilst not in use at the time of the site visit, was inspected and found to be suitable. It is Snowden's opinion that the procedure for measuring bulk density is appropriate for Mineral Resource estimation, however there is scope for improvement (as discussed in Section 19).

11.3 Qualified Person's opinion on adequacy of sampling

The sampling practices and assaying practices used for the trench, rock chip and soil sampling programs are, in the author's opinion, adequate for the purposes of early exploration (i.e. to define areas of anomalous gold concentration for exploration targeting). While some minor errors are likely to be present in the geochemical assay data, the author believes these are minimal and not material to the assay data for the purposes of early exploration.

The RC and diamond core drilling completed by Orbis between 2010 and 2014 included independent QC samples with the sample batches, the results of which show reasonable precision and accuracy have been achieved. Additionally, the diamond core drilling, which comprises the majority of mineralised intersections at Natougou, is achieving excellent core recovery.

Assaying for gold has primarily been completed at the SGS laboratory in Ouagadougou, which, based on the results of the QC samples and multiple inspections, has achieved reasonable precision and analytical accuracy.

Handheld XRF analysis of sample pulps by Orbis is completed on a number of additional elements to assist with the geological interpretation and as an aid for rock characterisation. It is the author’s opinion that handheld XRF results are often somewhat erratic and should only be used as an indicative assessment of the geochemical properties of a sample. This limitation of the handheld XRF data is recognised by Orbis.

In the author’s opinion, the drillhole data for the Natougou deposit is reasonable for use in Resource estimation.

12 Data verification

12.1 Drillhole twinning

Twinning of two drillholes was undertaken in 2012 and 2013. Results indicate there is reasonable repeatability of gold grades between the twinned holes. The absolute differences in grades is noted and attributed to the inherently variable nature of gold deposits.

Snowden notes that at this stage, there is not enough twin-hole data to enable a statistical comparison to be completed. Orbis informed Snowden that future drilling of the Natougou mineralisation will likely be primarily completed by diamond coring techniques (with an RC pre-collar). Should RC drilling be used in future drilling programs, it is recommended that Orbis include provision for a number of twin holes so that a statistical assessment of the two drilling methods can be conducted. Twin diamond holes should be drilled as close as possible to the original RC drillhole, ideally within 3 m.

12.2 Assay data validation

Assay data validation has been completed through the umpire and field duplicate sampling programs, along with inspections of the primary laboratory. Additionally, a random selection of 10 assay certificates was checked by Snowden in 2013 against the data within the database, with zero discrepancies identified from this validation. A further four assay certificates were checked by Snowden in March 2015 against the values in the database provided by Orbis. Similarly, zero discrepancies were identified. The assay certificates were sourced by Snowden directly from the SGS Ouagadougou laboratory.

Snowden believes the assay data within the database is robust. Snowden has not conducted any independent sampling or assaying to verify the gold tenor of the samples. Given the results of the assay certificate checks and QAQC results, Snowden does not believe that independent sampling is required at this stage.

12.3 Qualified Person's opinion

The Snowden site visits included reviews of site, drilling, interpretation, sampling and analysis. All aspects of on-site data collection and management were reviewed. The primary analysis laboratory in Ouagadougou was inspected. Snowden considers that all protocols and procedures for Natougou data are completed in line with industry best practice and are suitable for use in Mineral Resource estimation.

13 Mineral processing and metallurgical testing

The following section is taken from an Independent Technical Report (ITR) and Valuation of the mineral assets of Orbis Gold Ltd (Snowden, 2014a), which was prepared by Snowden at the request of Orbis in December 2014.

13.1 Metallurgical testwork

Testwork for the 2013 scoping study report (Lycopodium, 2013) was conducted at ALS Metallurgy in Perth (Western Australia) and JK Tech in Brisbane (Queensland). Key elements of the initial program were:

- determination of comminution parameters for crushing and milling circuit design
- leaching and gravity separation testwork to provide design parameters for the leach and gold recovery circuits.

Samples for the metallurgical testwork were selected only from fresh drill core, as the fresh material represents a significant majority of the mineralisation observed within the orebody.

Key comminution parameters determined at both ALS and JK Tech were:

- Bond ball mill work index (BWi) – 19.65 kWh/t
- Bond abrasive index (Ai) – 0.1905
- JK drop-weight index (DWi) – 10.53 kWh/m^3
- a x b value 27.1 – categorised as a hard ore

Results highlighted that:

- The Natougou mineralisation is hard and competent and should be suitable for SAG milling. A high aspect mill was recommended due to the competent nature of the material.
- Abrasiveness is considered average and media and liner consumption rates are not expected to be excessive.
- The BWi is relatively high and grinding energy requirements are expected to be high.
- The relatively low a x b value of 27.1 suggests that the mineralisation has a high resistance to impact breakage.

13.2 Leaching testwork

Leach tests were conducted across five grind sizes, P_{80} of 106 µm, 75 µm, 53 µm, 25 µm and 10 µm. After 24 hours of leaching, gold recoveries for all samples were averaging 88% and after an additional 24 hours the gold recoveries increase to an average of 93%. The tests showed the following results:

- Gravity recovery of gold was determined as 25%.
- Gold recovery was high, even without a gravity circuit.
- Gold recovery increased for the finer grind sizes, suggesting that the grind size plays a more important part than cyanide concentration or gravity recovery on the overall gold recovery from the feed ore.
- Lime consumption ranged from 0.23 kg/t to 0.42 kg/t.

- Leach kinetics appeared to be faster with the inclusion of gravity recovery, suggesting that a gravity recovery circuit should be considered.
- Initial leach kinetics were slower, suggesting the presence of some coarse gold or gold locked to some extent in sulphide minerals.

13.3 Future testwork program

The scoping study recommended additional testwork for a Definitive Feasibility Study to confirm comminution parameters, process parameters for optimised gold extraction, variability testwork, ore thickening testwork for optimal use of process water, tailings disposal testwork, slurry characteristics for pumping and mixing parameters and enhanced leach kinetics testwork. To accommodate this testwork, a comprehensive testwork and sampling plan was prepared by Orbis detailing the samples to be taken and the testwork to be conducted as part of the current Feasibility Study program.

Snowden has reviewed the testwork program and found the plan to be comprehensive and, once concluded, should provide the data required for detailed design of the plant and equipment as appropriate for a Feasibility Study level.

The testwork program is currently underway and some of the preliminary results have been reviewed by Snowden. Although not analysed in detail, Snowden makes the following observations:

- Sample selection appears to be appropriate to allow for expected variability in the orebody during operations.
- The mineralisation is generally hard, and energy requirements for the crushing and milling circuit will be high. Due to the hardness of the mineralisation, it will be suitable for a SAG mill application, providing the media required for semi-autogeneous milling.
- Early leach test results are confirming the high recovery values, with many tests achieving above 90% gold recovery after 24 hours and most of the tests achieving more than 93% recovery after 48 hours.

13.4 Process design criteria

Key preliminary process design criteria are shown in Table 13.1.

It should be noted that some of the testwork conducted during the development of the Feasibility Study will provide updated data for the design criteria and some of the values are thus expected to be updated as part of the Feasibility Study.

Table 13.1 Preliminary process design criteria (from October 2013 scoping study)

Criteria	Units	Value	Source
Annual capacity	Mtpa	2.00	Orbis
Gold head grade	g/t Au	3.50	Orbis
Silver head grade	g/t Ag	0.6	Orbis
Gold recovery	%	94	Orbis
Silver recovery	%	73	Orbis
Crushing circuit utilisation	%	80	Assumption
Plant availability	%	91.3	Assumption
BWi	kWh/t	19.6 to 20.8	Testwork
CWi	kWh/t	20.0	Assumed
Ai		0.1905	Testwork
Grind size	µm	75	Orbis
SAG mill grinding medial consumption	kg/t	0.46	OMC
Ball mill grinding media consumption	kg/t	0.81	OMC
SG		2.88	Testwork
Leach circuit residence time	h	48	Assumption
Leach slurry density	% w/w	50	Assumption
Number of CIL tanks		6	Assumption
Cyanide consumption	kg/t	0.28	Testwork
Lime consumption	kg/t	0.33	Testwork
Elution circuit		AARL	Assumption
Elution circuit size	t	7	Assumption
Frequency of elution	strips/week	7	Assumption
Tailings thickener loading	t/m^2h	1.0	Assumption

14 Mineral Resource estimates

Mineral Resources reported in Section 14 were prepared by Mr John Graindorge, Principal Consultant, a full-time employee of Snowden. The Mineral Resources for the Natougou deposit were estimated by Snowden in August 2014 (Snowden, 2014b) for Orbis. Snowden is independent of SEMAFO.

Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

Snowden is unaware of any issues that could materially affect the Mineral Resources in a detrimental sense. These conclusions are based on the following:

- SEMAFO has an Exploration Permit (Boungou Permit) covering the Natougou deposit in good standing. The second renewal for the Boungou Permit was submitted to the relevant authorities in February 2015, however the renewal had not been granted at the time of this report.
- Snowden is not aware of any outstanding legal issues relating to the project.
- There are no known marketing, political or taxation issues.
- There are no known infrastructure issues.
- SEMAFO is currently operating the Mana Mine in Burkina Faso.

14.1 Geological interpretation

Orbis provided Snowden with a geological interpretation of the mineralised structures as .dxf surfaces and by flagging the mineralised intervals in the assay dataset in Access format. The interpretation was based on a variety of criteria such as the geological field logging of drill core and RC chips, trace element data collected from pulps using an Innov-X Omega series handheld XRF and drill core photographs.

Core was oriented during drilling for all angled diamond drillholes. Alpha and beta measurements were collected on the shear fabric developed in the shear zone as well as on lithological contacts as part of the geological logging procedure. Measurements were plotted as apparent dips on drill sections to assist with interpretation. Oriented core in angled drillholes allowed Orbis geologists to plot strike and dip measurements for the mineralised lode. The plotting of apparent dips on cross-sections corresponded with the orientations of the interpreted mineralised lode.

An offset to the main lode was interpreted in the northwest corner of the deposit. A review of photographs identified zones of broken core (and what may be silica-sericite healed fault gouge) possibly identifying the fault zone. For the most part the core at Natougou is extremely competent and it is highly unusual to encounter zones of broken core. The fault appears to be a relatively steeply dipping reverse fault.

Orbis reports that the mineralisation is open to the west, north and east. For further details relating to the geological interpretation refer to Section 7.3.

14.2 Data analysis

14.2.1 Drill sample analysis

A collar location plan of drillholes used for the Natougou Mineral Resource estimate (i.e. up to August 2014) is presented in Figure 14.1. A total of eight additional drillholes were completed by Orbis after the Mineral Resource was completed. These holes targeted the mineralisation in the southeast corner of the Natougou mineralisation and are not considered material to the Mineral Resource estimate.

Sample compositing

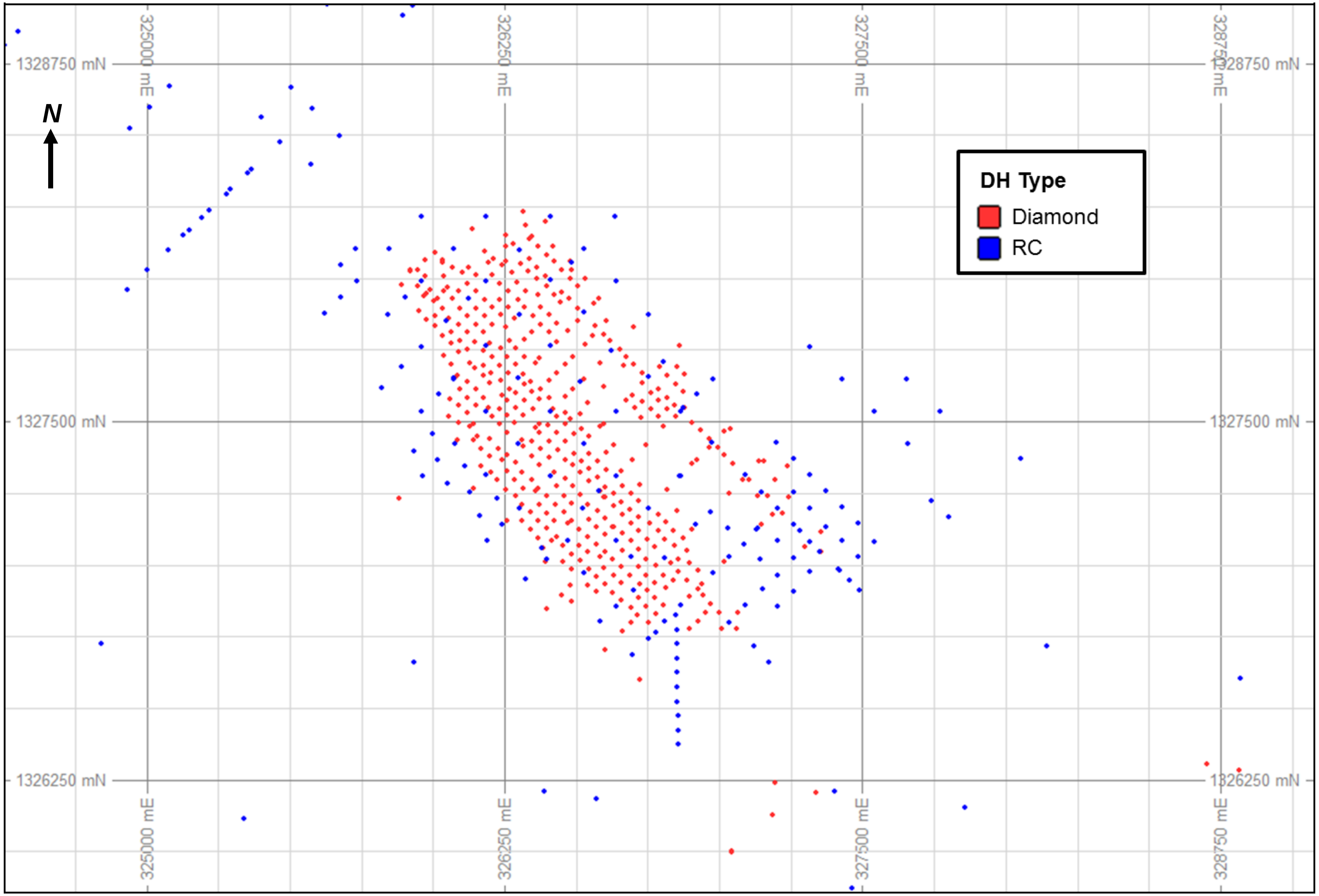
The drillhole data was composited downhole prior to running the estimation process using a 1 m sample interval to minimise any bias due to sample length. The compositing was run within the attribute fields to ensure that no composite intervals crossed any lithological or grade boundaries. To allow for uneven sample lengths within each of the domains, the CAE Studio (Datamine) composite process (COMPDH) was run using the variable sample length method (@MODE=1). This adjusts the sample intervals, where necessary, to ensure all samples are included in the composite file (i.e. no residuals) while keeping the sample interval as close to the desired sample interval as possible.

The compositing process was checked by:

- Comparing the lists of attribute field values in the raw and composite files, these should match.
- Comparing the sample length statistics in the raw and composite files, the two total length values should match and the mean composite interval should be one.

The total length after compositing is slightly less than the raw samples for the unmineralised samples (MINZONE=0) as some large, unsampled intervals were removed. No significant discrepancies were identified in the mineralised domains.

Figure 14.1 Collar location plan for drilling at Natougou up to August 2014 (WGS-84 Zone-31N)



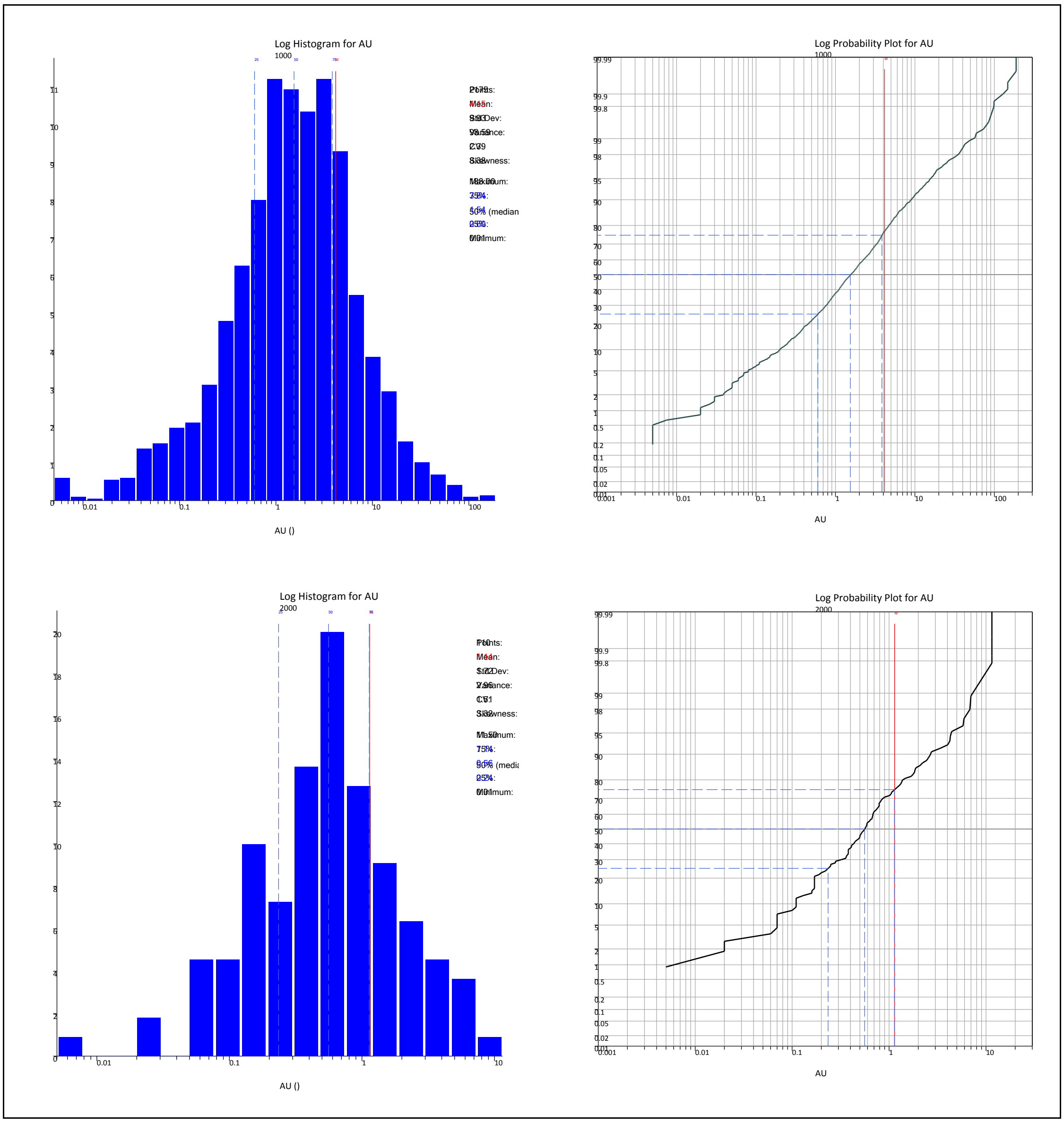
Statistical analysis

Summary statistics of composites for Au for the two mineralised domains are presented in Table 14.1 and log histograms and log probability plots are presented in Figure 14.2. The statistics show that the Natougou mineralisation has a positively skewed gold grade distribution with a high coefficient of variation ("CV" = ratio of the standard deviation to the mean).

Table 14.1 Summary statistics for gold composites

Domain (MINZONE)		Main mineralisation (1000)	Minor footwall mineralisation (2000)	Waste (0)
Samples		2,175	110	24,472
Minimum		0.01	0.01	0.02
Maximum		188.00	11.50	236.65
Mean		**4.15**	**1.14**	**0.15**
Standard deviation		9.93	1.72	1.73
CV		**2.39**	**1.51**	**11.75**
Variance		98.59	2.96	3.00
Skewness		8.38	3.32	111.95
Percentiles	10%	0.20	0.11	0.02
	20%	0.45	0.17	0.02
	30%	0.77	0.32	0.03
	40%	1.11	0.43	0.04
	50%	1.54	0.56	0.05
	60%	2.23	0.68	0.06
	70%	3.26	0.86	0.08
	80%	4.67	1.37	0.12
	90%	8.82	2.66	0.22
	95%	15.27	4.35	0.44
	97.5%	25.28	6.14	0.77
	99%	43.62	6.97	1.46

Figure 14.2 Log histogram and log probability plot for main mineralised domain (top) and minor footwall mineralised domain (bottom)



Top cut analysis

No top cutting of composite gold grades was performed for the multiple indicator kriged grade estimates.

A comparative ordinary kriged gold grade estimate was requested by Orbis for validation purposes. Due to the skewed distribution and high CV, for the ordinary kriged estimate, a top cut of 30 g/t Au was applied. The top cut value was based on an assessment of the histogram and log probability plot for the main mineralised domain. A 30 g/t Au top cut value equates to approximately the 98th percentile, with a total of 47 composites affected. The application of the top cut reduces the mean grade of the main mineralised domain from 4.15 g/t Au to 3.59 g/t Au and reduces the CV from 2.39 to 1.58.

14.2.2 Unfolding

Introduction

Variograms were generated to assess the grade continuity of the various elements and as inputs to the kriging algorithm used to interpolate grades. Snowden Supervisor software was used to generate and model the variograms.

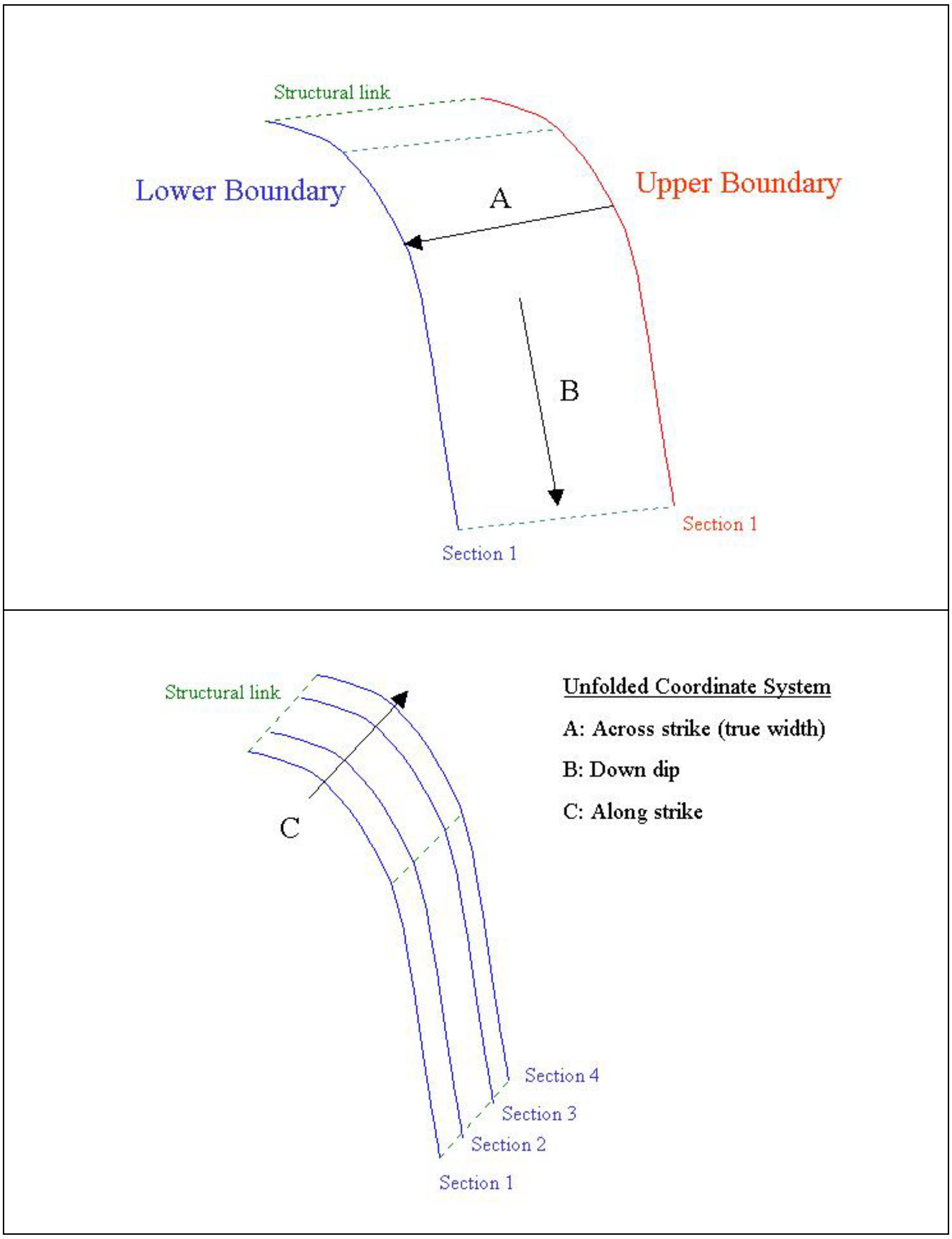
Snowden elected to use the Datamine unfold process to address the impact of the variable dip on the modelling of variograms and the estimation of grades. Unfolding improves the grade estimation process as it transforms the sample coordinates into their original pre-folded state. This allows variogram analysis and grade estimation to be carried out using the pre-folding coordinates, which are then converted back to the folded (local) coordinate system. The unfolding process results in more samples being available for variogram modelling and grade estimation than would have been the case if standard resource estimation methods were used.

Principles of unfolding

The basics of the unfolding approach are shown in Figure 14.3, which shows a typical cross section with folded strata. The folded units (expressed as strings) are divided into consistent units by means of structural links; each of these units has similar dip, strike, and true width characteristics. Structural links are also applied along strike and within the section plane. In areas of complex folding, more links and more structural zones may be required. The unfolding process then generates an unfolded coordinate system (“UCS”), comprising A, B and C coordinates. The A coordinate pertains to the distance across strike in the true thickness (width) direction, the B coordinate represents the down dip direction, and the C coordinate represents the along strike direction (between cross-sections).

By making this coordinate transformation, both the informing sample data and the discretisation points within the blocks to be estimated are converted into unfolded space. Thus the spatial continuity may be determined in the plane of the fold rather than using geometrical distances. Grade interpolation also takes place in this unfolded plane and the resultant grades are then mapped back into the real space block model.

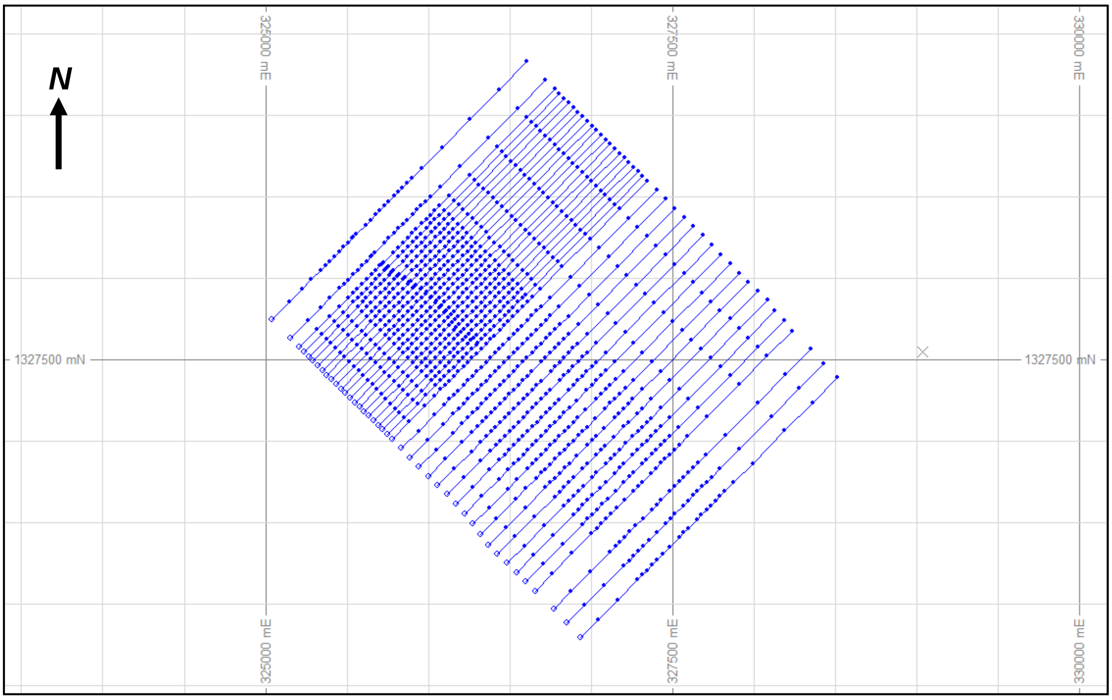
Figure 14.3 Schematic illustration of the unfolding process in Datamine



Creation of strings for unfolding

Control strings, defining the upper and lower contacts (hangingwall and footwall) of the deposit to be unfolded, are required for the unfolding process. The control strings were created on a sectional basis using a set of vertical sections orientated perpendicular to the strike of the stratigraphy around the curve of the fold. The sections are located approximately 40 m to 80 m apart (Figure 14.4). The distance between the hangingwall and footwall strings was set to ensure that all of the mineralised horizons and the immediate surrounding host rocks were enclosed by the two sets of strings. These control strings define the UCSB (down dip) direction.

Figure 14.4 Plan view of the unfold control strings

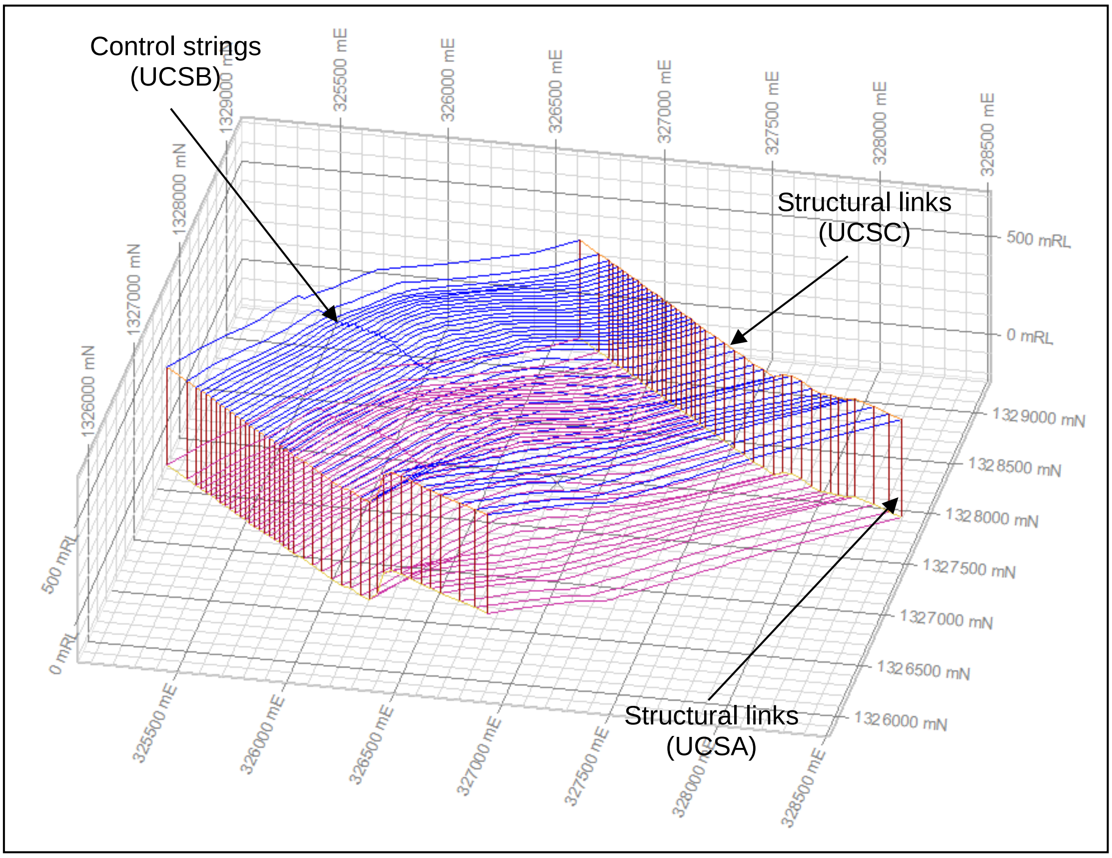


Structural links (strings) were applied to the control strings as follows:

- Two point strings were snapped between the hangingwall and footwall strings within each section plane to define the true thickness orientation (UCSA). These strings were placed at the start and end of each pair of sectional strings
- Strings were snapped along the first and last points of each hangingwall and footwall string to define the along strike direction (UCSC).

The final set of unfold strings are displayed in Figure 14.5. The Datamine Unfold process uses the strings and desurveyed drillhole data to produce an “unfolded” drillhole file with three new coordinate fields, labelled UCSA, UCSB and UCSC respectively.

Figure 14.5 Isometric view of the unfold strings looking from the south-southeast



The variograms were modelled using the unfolded coordinate fields instead of the original X, Y and Z fields. The three axes were assigned to the Cartesian grid used by Snowden Supervisor software as listed in Table 14.2.

Table 14.2 Relationship between the variogram modelling software coordinate fields and the unfold coordinate fields

Cartesian (variogram) axis	UCS axis	Description
X	UCSB	Down dip
Y	UCSC	Along strike
Z	UCSA	True thickness

Effectively the variograms are modelled within the dip plane.

14.2.3 Variography

The variograms were modelled using Snowden Supervisor software.

Gold

Indicator variograms were generated for the main mineralised domain (MINZONE=1000). Due to the low number of samples within the minor footwall mineralisation (MINZONE=2000), this zone was not modelled. The indicator variogram models from the main zone were applied to the footwall and waste domains based on the threshold grades within each distribution (Table 14.3).

Table 14.3 Indicator variogram thresholds and variogram model mapping

Threshold percentile	Main mineralised domain (MINZONE=1000)		Minor footwall mineralised domain (MINZONE=2000)		Waste domain (MINZONE=0)	
	Au (g/t)	Variogram reference number	Au (g/t)	Variogram reference number	Au (g/t)	Variogram reference number
10%	0.20	1	0.11	1	0.005	1
20%	0.45	2	0.17	1	0.005	1
30%	0.77	3	0.32	2	0.005	1
40%	1.11	4	0.43	2	0.007	1
50%	1.54	5	0.56	2	0.02	1
60%	2.23	6	0.68	3	0.03	1
70%	3.26	7	0.86	4	0.04	1
80%	4.67	8	1.37	5	0.06	1
90%	8.82	9	2.66	6	0.13	1
95%	15.27	10	4.35	8	0.24	1
97.5%	25.28	11	6.14	9	0.47	2
99%	43.62	12	6.97	9	0.98	4

Variograms were modelled based on the following general approach:

- The drillhole composites were unfolded and modelled using the UCS coordinate fields.
- All variograms were standardised to a sill of one.
- The nugget effect was modelled from the true downhole variogram.
- Variograms were modelled using two nested, spherical structures.
- The variograms were evaluated using indicator variograms for a total of 12 grade thresholds.
- Variograms were only modelled for the main mineralised domain.

The maximum and intermediate directions of continuity were generally aligned with the overall strike (UCSC) and down dip (UCSB) directions respectively. The minor direction of continuity was aligned in the true thickness direction (UCSA). The variogram directions did not change for different thresholds (i.e. no rotating anisotropy).

The indicator variogram models for the main mineralised domain are summarised in Table 14.4.

Table 14.4 Indicator variogram models for the main mineralised domain

Element	MINZONE	Threshold		Variogram reference number	Rotation angles (unfolded)			Nugget	1st Spherical variogram structure				2nd Spherical variogram structure			
		Percentile	Au (g/t)		UCSA	UCSB	UCSA		Sill	Range UCSA	Range UCSB	Range UCSC	Sill	Range UCSA	Range UCSB	Range UCSC
Au	1000	10%	0.20	1	0	0	-90	0.40	0.33	3	50	40	0.27	5	850	130
Au	1000	20%	0.45	2	0	0	-90	0.40	0.38	3	50	40	0.22	5	850	130
Au	1000	30%	0.77	3	0	0	-90	0.40	0.42	3	50	40	0.18	5	750	130
Au	1000	40%	1.11	4	0	0	-90	0.40	0.44	3	40	40	0.16	5	500	130
Au	1000	50%	1.54	5	0	0	-90	0.40	0.45	3	40	40	0.15	4	350	130
Au	1000	60%	2.23	6	0	0	-90	0.40	0.48	3	40	40	0.12	4	250	130
Au	1000	70%	3.26	7	0	0	-90	0.47	0.41	3	40	40	0.12	4	115	50
Au	1000	80%	4.67	8	0	0	-90	0.55	0.33	3	40	40	0.12	4	75	50
Au	1000	90%	8.82	9	0	0	-90	0.60	0.28	1	20	20	0.12	3	50	50
Au	1000	95%	15.27	10	0	0	-90	0.65	0.23	1	10	10	0.12	3	40	40
Au	1000	97.5%	25.28	11	0	0	-90	0.75	0.13	1	10	10	0.12	2	30	30
Au	1000	99%	43.62	12	0	0	-90	0.80	0.08	1	10	10	0.12	2	20	20

Upper and lower tail modelling

The upper and lower tails of the gold grade distributions, above the 99th percentile and below the 10th percentile, were modelled using a hyperbolic and power model respectively. Grades were modelled up to the maximum composite grade for the mineralised domains, as per Table 14.1, while for the waste domain the grades were limited to a maximum of 45 g/t Au, to avoid excessive influence on the grade estimates of a few isolated high grade samples.

The model parameters are summarised in Table 14.5.

Table 14.5 Distribution tail modelling

Domain (MINZONE)	Tail	Model type	Model parameter
0	Lower	Power	1.00
0	Upper	Hyperbolic	3.19
1000	Lower	Power	0.80
1000	Upper	Hyperbolic	1.65
2000	Lower	Power	1.00
2000	Upper	Hyperbolic	4.00

Density

Variograms for density were generated using the UCS coordinates, for the main mineralised domain (MINZONE=1000) and waste domain (MINZONE=0). Due to the low number of density samples within the minor footwall mineralisation (MINZONE=2000), the variogram from the main mineralised domain were used.

A normal scores transform was used, with the model sill values back-transformed. The variogram models are presented in Table 14.6.

Similar to the gold grade continuity, the maximum and intermediate directions of continuity were generally aligned with the overall strike (UCSC) and down dip (UCSB) directions respectively. The minor direction of continuity was aligned in the true thickness direction (UCSA).

Table 14.6 Density back-transformed variogram model parameters

Element	MINZONE	Rotation angles (unfolded)			Nugget	1st Spherical variogram structure				2nd Spherical variogram structure				3rd Spherical variogram structure			
		UCSA	UCSB	UCSA		Sill	Range UCSA	Range UCSB	Range UCSC	Sill	Range UCSA	Range UCSB	Range UCSC	Sill	Range UCSA	Range UCSB	Range UCSC
Density	0	0	0	-90	0.38	0.28	3	20	20	0.18	18	80	50	0.16	22	400	300
Density	1000	0	0	-90	0.41	0.44	2	40	60	0.14	3	600	160	-	-	-	-

14.3 Block modelling and grade estimation

14.3.1 Kriging neighbourhood analysis

A kriging neighbourhood analysis (“KNA”) was performed using Snowden Supervisor software to optimise various kriging parameters, based on the median (50th percentile) indicator variogram for gold. The KNA assesses the impact of the parameters on the kriging efficiency and slope of regression statistics. The main aim of a KNA is to assess the level of conditional bias (i.e. degree of oversmoothing) induced by various kriging parameters such as the parent block size, number of informing samples and search ellipse radii. Snowden used the results of the KNA to verify the choice of parent block size, number of informing samples and the search ellipse radii. Based on the KNA results along with consideration of the geometry of the mineralisation the following parameters were selected:

- Parent block size of 40 mE by 40 mN by 1 mRL.
- A minimum of 10 samples and maximum of 24 samples for the initial search pass.
- Search ellipse radii of 5 m in the true thickness direction (UCSA) by 80 m along strike (UCSC) by 40 m down dip (UCSB) for the initial search pass.

14.3.2 Volume model construction

The block model extents, along with parent and sub-cell sizes are listed in Table 14.7.

Table 14.7 Block model prototype settings

Model setting	Value
X Origin	325,380 mE
Y Origin	1,326,200 mN
Z Origin	50 mRL
Maximum easting	327,860 mE
Maximum northing	1,328,600 mN
Maximum elevation (RL)	350 mRL
Parent cell size – X	40 m
Parent cell size – Y	40 m
Parent cell size – Z	1 m
Minimum cell size – X	10 m
Minimum cell size –Y	10 m
Minimum cell size – Z	0.5 m

Block model coding

The block model was coded based on the wireframe surfaces of the gold mineralisation and oxidation zones, along with the topographic surface and surfaces defining the western hangingwall mineralisation.

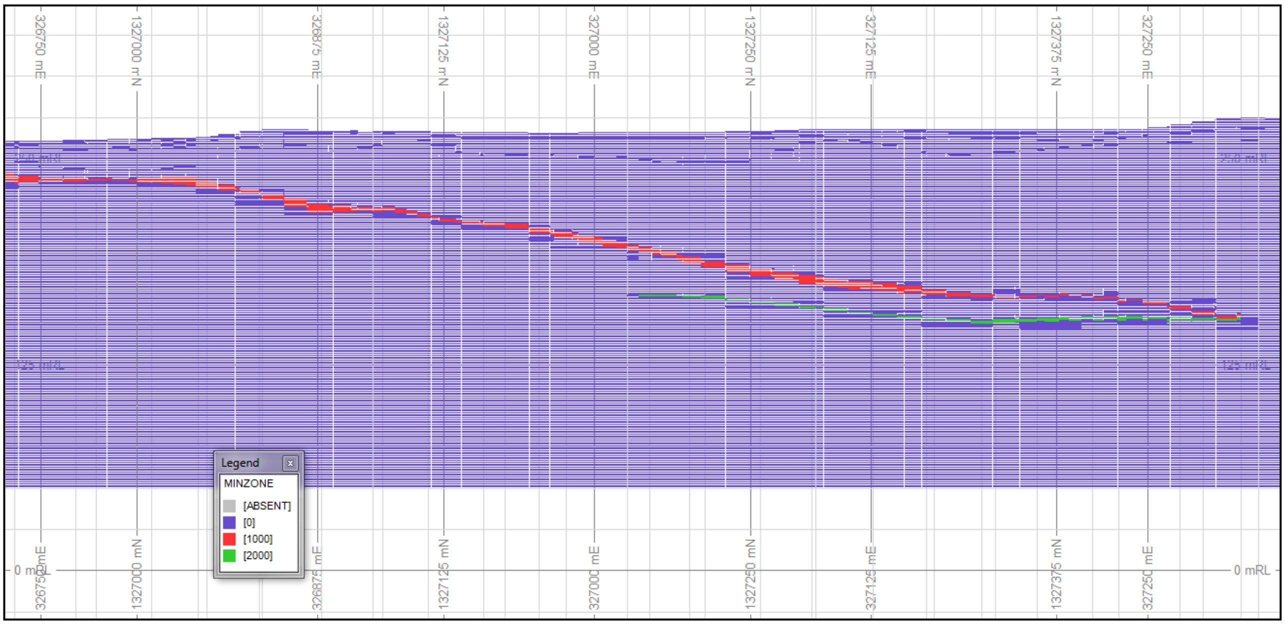
<u>Mineralisation</u>

The gold mineralisation was coded using a field called MINZONE. Field codes are summarised in Table 14.8. An example cross-section showing the MINZONE field coding is presented in Figure 14.6.

Table 14.8 MINZONE field coding

Field	Value	Description
MINZONE	0	Unmineralised
MINZONE	1000	Main mineralised zone
MINZONE	2000	Minor footwall mineralisation

Figure 14.6 Example oblique section (looking northwest) showing MINZONE field coding



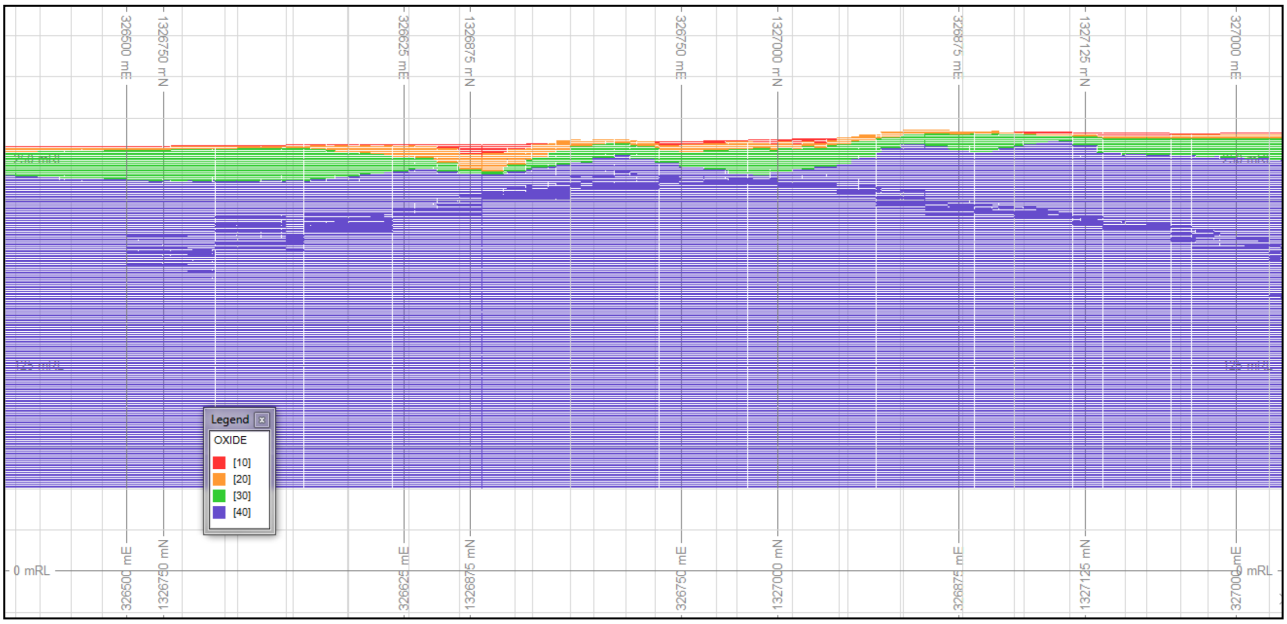
Oxidation

The oxidation zone was coded using a field called OXIDE. Field codes are summarised in Table 14.9. An example cross-section showing the OXIDE field coding is presented in Figure 14.7.

Table 14.9 OXIDE field coding

Field	Value	Description
OXIDE	10	Strongly oxidised zone
OXIDE	20	Moderately oxidised zone
OXIDE	30	Weakly oxidised zone
OXIDE	40	Fresh

Figure 14.7 Example oblique section (looking northwest) showing OXIDE field coding



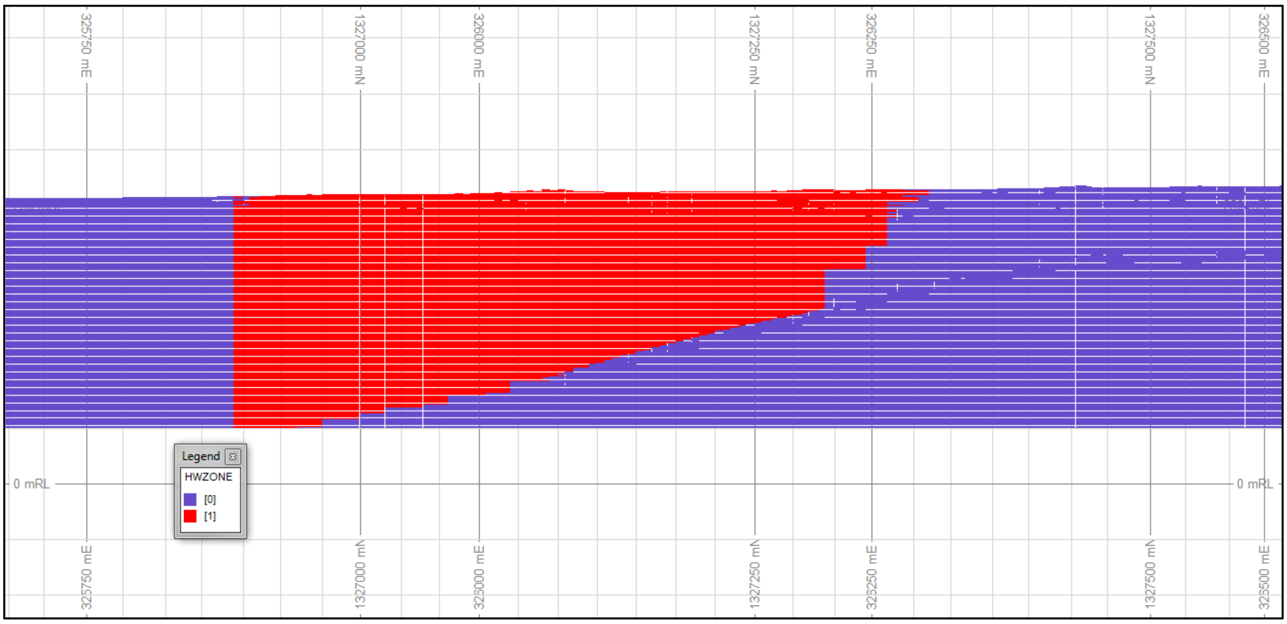
Western hangingwall mineralisation

The western hangingwall mineralisation was coded using a field called HWZONE, primarily for internal reporting purposes. Snowden notes that the western hangingwall mineralisation does not form part of the Natougou Mineral Resource. The zone is bounded by the top contact of the main mineralised zone, and is bounded to the east by an interpreted feature that is evidenced by marked decreases in potassium and gold values. Snowden notes that the eastern boundary of the hangingwall mineralisation carries significant uncertainty and further work will be required to adequately define the nature of this zone. Field codes are summarised in Table 14.10. An example-cross section showing the HWZONE field coding is presented in Figure 14.8.

Table 14.10 HWZONE field coding

Field	Value	Description
HWZONE	0	Not within hangingwall mineralised zone
HWZONE	1	Hangingwall mineralised zone

Figure 14.8 Example oblique section (looking northwest) showing HWZONE field coding



14.3.3 In situ bulk density

As discussed in Section 11.2, Orbis collect bulk density measurements from core using the Archimedes method. Whilst the samples are limited in terms of sample size (typically only 10 cm to 15 cm lengths are measured), a total of 11,073 measurements have been collected. A visual assessment of the density data shows areas of lower and higher density, with continuity between adjacent drillholes. As such, Snowden elected to estimate the bulk density using ordinary kriging to ensure that the local variations in the core density measurements are reflected in the resource model.

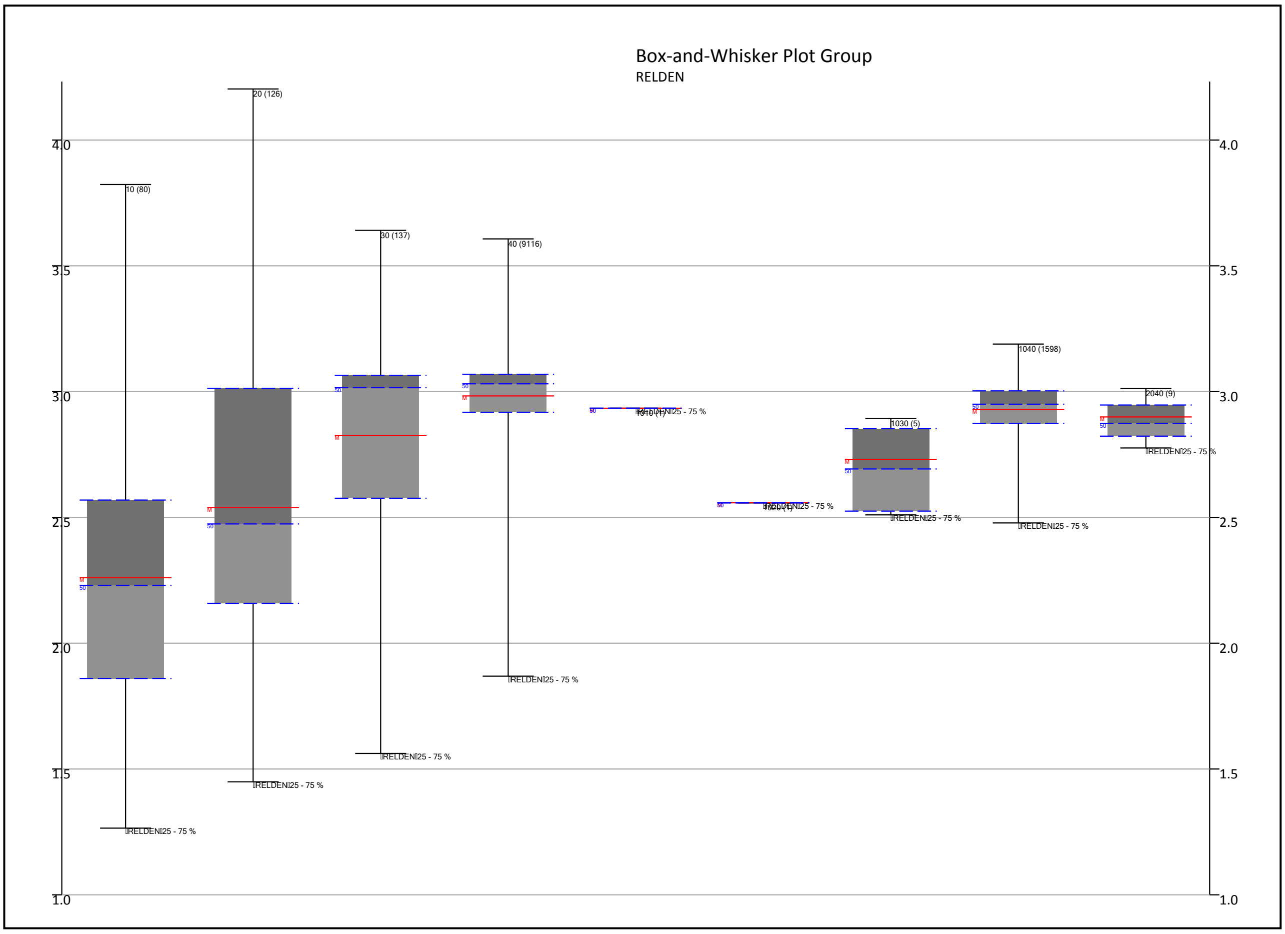
Summary statistics are provided in Table 14.11. A box and whisker plot of the density samples coded by MINZONE and OXIDE is presented in Figure 14.9.

Table 14.11 Summary statistics for bulk density samples[1]

Statistic	Waste domain MINZONE=0				Main mineralised domain MINZONE=1000				Minor footwall mineralisation MINZONE=2000
	SOX	MOX	WOX	FR	SOX	MOX	WOX	FR	FR
Samples	80	126	137	9,116	1	1	5	1,598	9
Minimum	1.27	1.45	1.56	1.87	2.93	2.56	2.51	2.48	2.78
Maximum	3.82	4.2	3.64	3.61	2.93	2.56	2.89	3.19	3.01
Mean	2.26	2.54	2.83	2.98	2.93	2.56	2.73	2.93	2.90
Standard deviation	0.51	0.51	0.38	0.12	0	0	0.18	0.10	0.08

[1] SOX = strongly oxidised; MOX = moderately oxidised; WOX = weakly oxidised; FR = fresh

Figure 14.9 Box and whisker plot of density measurements[2]



14.3.4 Search neighbourhood parameters

A three-pass search strategy was utilised for all estimates with the same search neighbourhood parameters applied to all domains. Details of the estimation search neighbourhood parameters are presented in Table 14.12. The number of samples per drillhole was limited to six to ensure that a reasonable number of holes were used to estimate each block.

Given the low variance of the density composite data, the minimum and maximum number of samples was reduced to five and 15 respectively, for the initial search. This was done to ensure that the local variations in density were reflected in the block estimates. In Snowden's opinion, using more samples would likely result in oversmoothing the density estimate.

[2] First four boxes show the strongly oxidised, moderately oxidised, weakly oxidised and fresh samples from the waste domain. The eighth box is fresh samples from the main mineralised domain. All remaining boxes have too few samples to obtain reliable statistics.

Table 14.12 Search neighbourhood parameters

Estimate	Rotation about UCSA	Initial search pass					Second search pass					Third search pass				
		Axis lengths (m)			No. of samples		Axis lengths (m)			No. of samples		Axis lengths (m)			No. of samples	
		UCSA	UCSB	UCSC	Min.	Max.	UCSA	UCSB	UCSC	Min.	Max.	UCSA	UCSB	UCSC	Min.	Max.
Au	90°	5	80	40	10	24	5	80	40	2	24	10	160	80	1	24
Density	90°	5	80	40	5	15	7.5	120	60	2	15	10	160	80	1	15

14.3.5 Grade estimation methodology

Due to the strongly skewed nature of the gold grades (CV>2) in both the main mineralised domain and the waste domain, Snowden elected to use MIK to estimate the block gold grades. The MIK estimate was compiled using a total of 12 grade thresholds, based on the deciles (10%, 20%,…, 80%, 90%) with additional thresholds at the 95%, 97.5% and 99% included to model the higher grade portion of the distribution.

Datamine software was used to:

- Unfold the sample data.
- Estimate the gold grade (using unfolding) of the MINZONE domains using MIK using the AU field in the drillhole file. The results were written to a field called MIKAU. The MINZONE field was used to constrain the MIK Au grade estimation with hard boundaries between all domains.
- Estimate the bulk density (using unfolding) of the MINZONE domains using ordinary kriging using the RELDEN field in the drillhole file. The results were written to a field called DENSITY. The MINZONE field was used to constrain the density estimation with hard boundaries between all domains.

The estimated domains and the percentile bins used for each MIK estimate are listed in Table 14.3. All estimates were parent cell estimates.

The POSTIK process in the GSLIB suite of software was used for post-processing the MIK output from Datamine to enable order relation corrections to be applied (see Deutsch and Journel, 1992, p77 for details) and to allow the skewed tails of the gold grade populations to be modelled and used as part of the estimation process. The upper tail was modelled with a hyperbolic function between the last indicator cut-off and the maximum composite grade, while the lower tail was modelled with a power function below the first indicator cut-off. The final MIK product was an e-type estimate which was subsequently imported back into Datamine. No change of support was applied to the MIK estimates, however the global change of support validation (Section 14.3.6) shows that there is an appropriate level of smoothing to the block estimates.

Where no gold or density estimate could be made due to sparse data, a default value was applied, as per Table 14.13 and Table 14.14. The median value for each domain was used for the default gold grade due to the skewed nature of the grade distributions, whereas the mean was used for the density default values.

Table 14.13 Default gold grade values for unestimated blocks

MINZONE	Default MIKAU value (g/t Au)
0	0.02
1000	1.50
2000	0.60

Table 14.14 Default density values for unestimated blocks

MINZONE	OXIDE	Default DESNITY value (t/m^3)
0, 1000, 2000	10	2.26
0, 1000, 2000	20	2.54
0, 1000, 2000	30	2.83
0	40	2.98
1000, 2000	40	2.93

14.3.6 Model validation

The estimates were validated using:

- A visual comparison of the block grade estimates and the drillhole composite data.
- Generation of east-west, north-south and horizontal section plots of the estimates, declustered and naïve composite grades, along with the number of composite samples available.
- A global comparison of the average composite (naïve and declustered) and estimated grades.
- An ordinary kriged gold estimate (top cut to 30 g/t Au) as a comparison to the MIK gold estimates.
- A global change of support (discreet Gaussian method) to validate the grade-tonnage curve of the block model against the theoretical grade-tonnage curve of the sample data at the scale of the parent block size. The objective was to check that the appropriate level of smoothing of the block grades had been achieved.

Plots of the average naïve and declustered composite and model grades for gold and density are presented in Figure 14.10 and Figure 14.11 respectively[3]. A summary of the grade comparison statistics from the estimation domains is presented in Table 14.15. An example cross-section is shown in Figure 14.12. The results of the global change of support are presented in Figure 14.13.

[3] Legend for Figure 14.10: solid red line = naïve composites; solid blue line = declustered composites; dashed purple line = declustered and top-cut (30 g/t Au) composites; solid black line = MIK block grade estimates (tonnage weighted); grey line = OK block grade estimates; grey bars = number of composites.

Figure 14.10 Grade trend plots – Au, MINZONE 1000

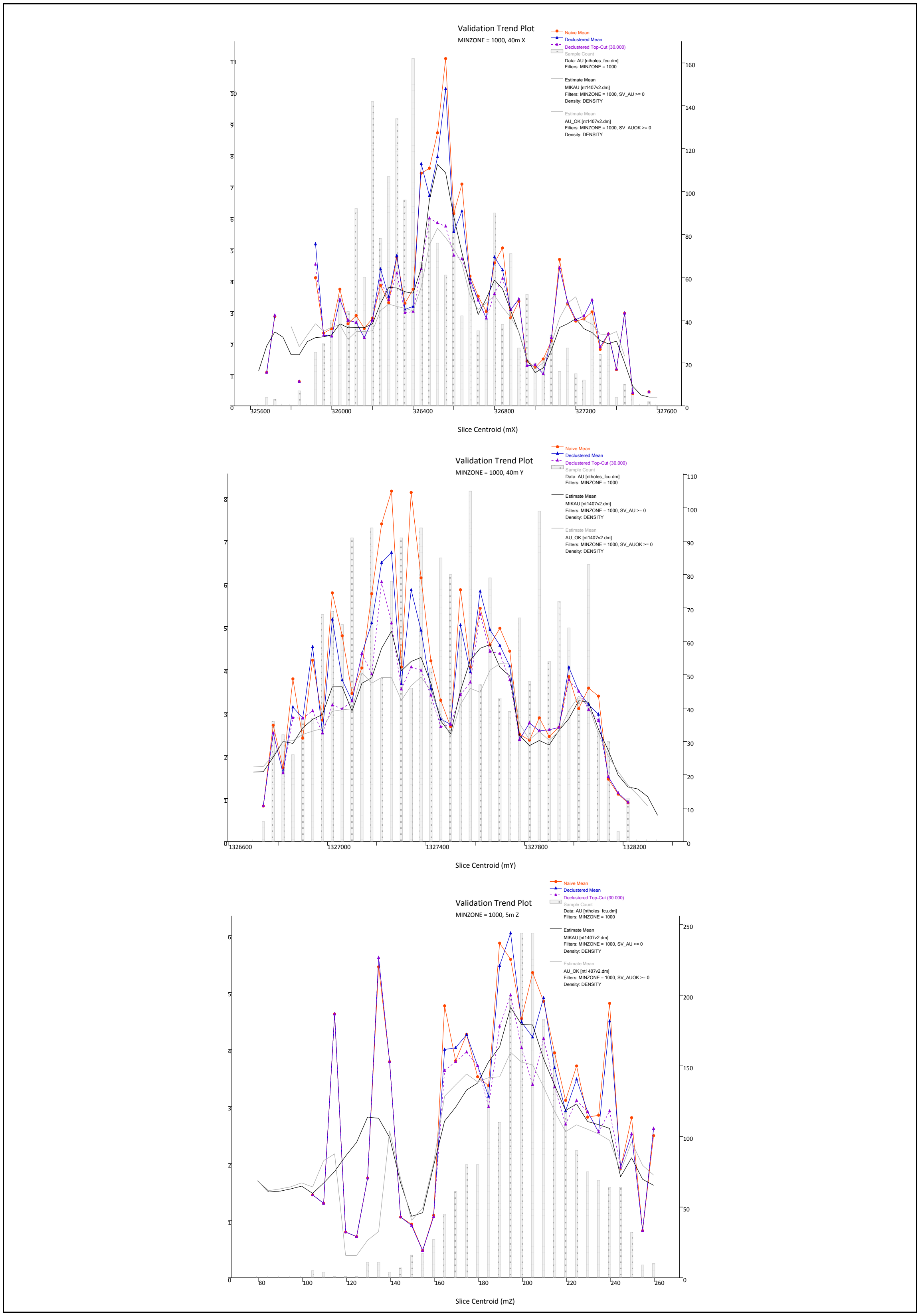


Figure 14.11 Grade trend plots – density, MINZONE 1000

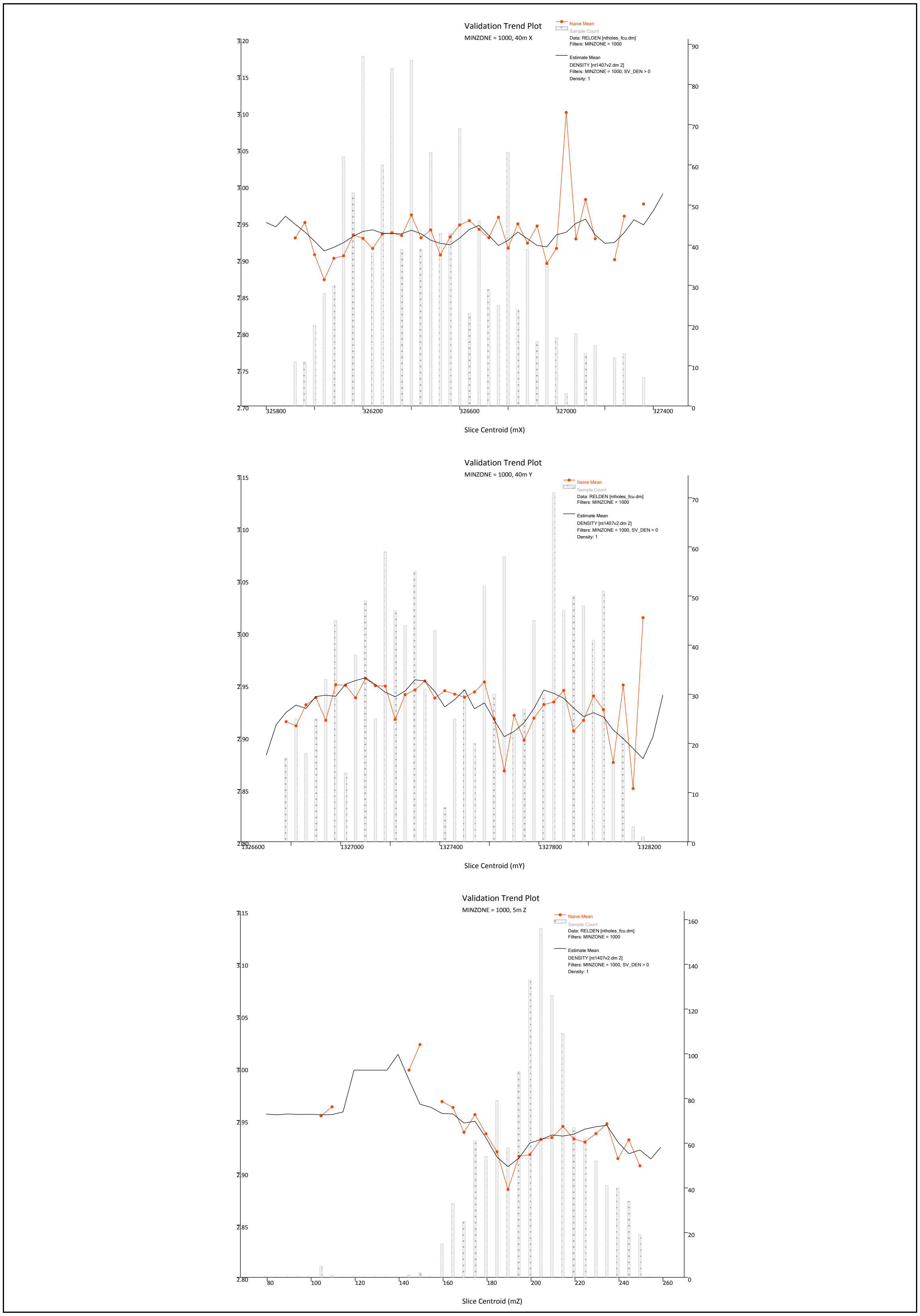


Table 14.15 Statistical validation comparing input sample data against block model estimates

Grade	MINZONE	Statistic	Sample data		Block model	Difference	
			Naïve	Declustered		Block vs. naïve	Block vs. declustered
Au (MIK)	0	Mean	0.08	0.07	0.06	-28%	-19%
		Variance	1.61	1.21	0.01		
		Maximum	236.65	236.65	1.42		
		Minimum	0.00	0.00	0.01		
Au (MIK)	1000	Mean	4.15	3.81	3.29	-21%	-14%
		Variance	98.54	79.10	14.60		
		Maximum	188.00	188.00	88.42		
		Minimum	0.01	0.01	0.09		
Au (MIK)	2000	Mean	1.14	1.12	1.14	0%	2%
		Variance	2.96	2.74	1.69		
		Maximum	11.50	11.50	7.93		
		Minimum	0.01	0.01	0.06		
Density	0	Mean	2.97	2.97	2.98	0%	0%
		Variance	0.03	0.03	0.02		
		Maximum	4.20	4.20	3.21		
		Minimum	1.29	1.29	1.35		
Density	1000	Mean	2.93	2.93	2.93	0%	0%
		Variance	0.01	0.01	0.00		
		Maximum	3.16	3.16	3.09		
		Minimum	2.56	2.56	2.71		
Density	2000	Mean	2.90	2.90	2.90	0%	0%
		Variance	0.01	0.01	0.00		
		Maximum	3.01	3.01	3.01		
		Minimum	2.78	2.78	2.85		

Figure 14.12 Example oblique section (looking northwest) showing block MIK Au estimates

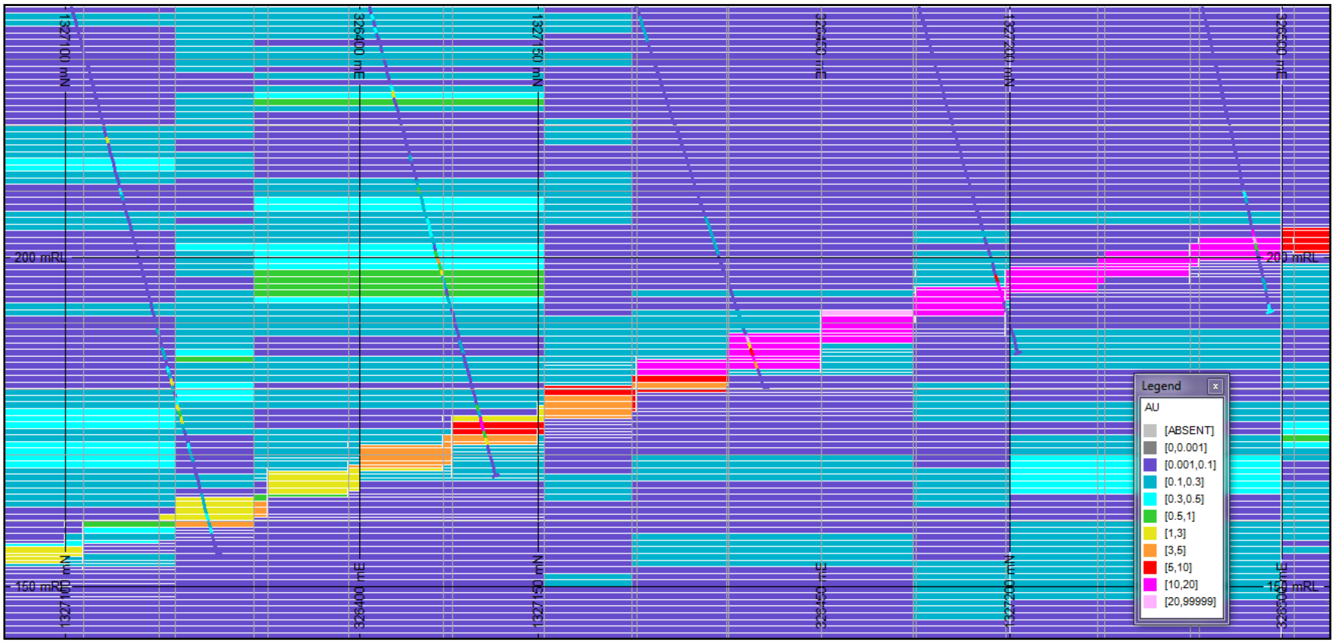
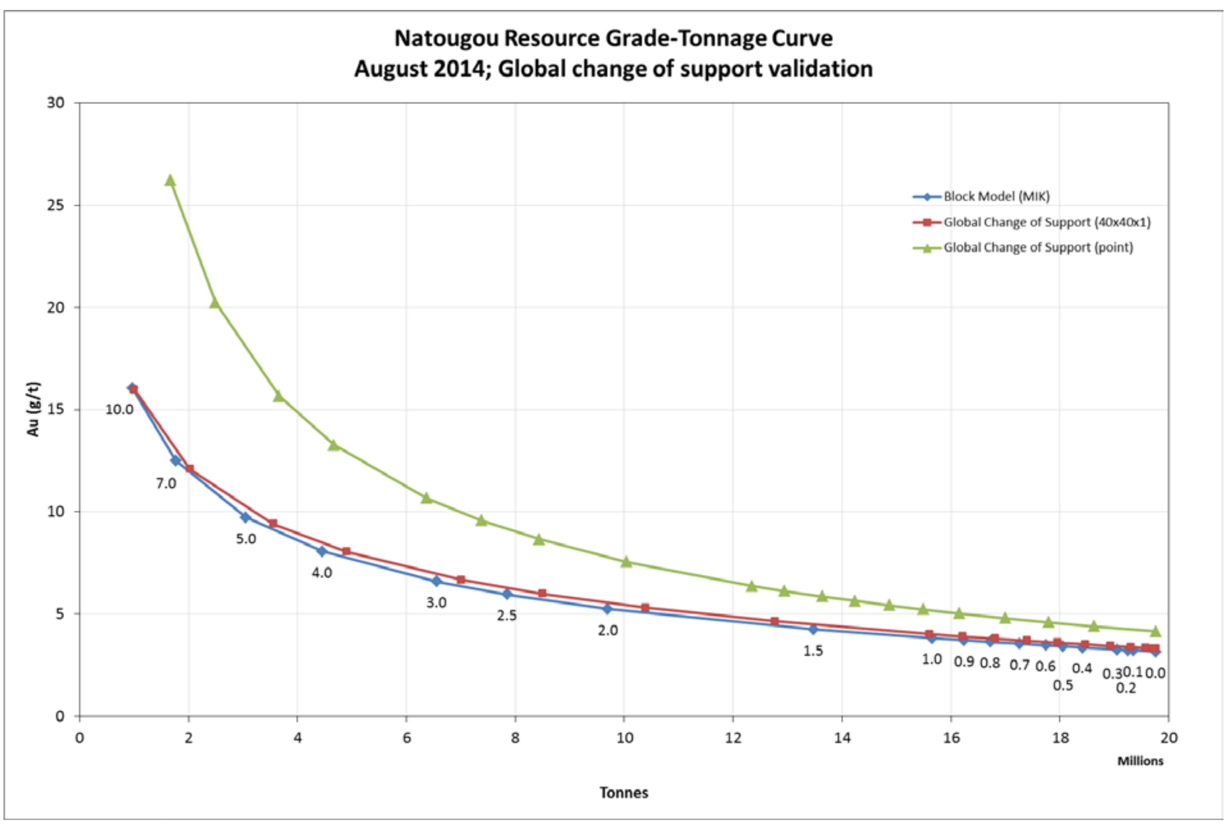


Figure 14.13 Global change of support grade-tonnage curves for main mineralised domain (MINZONE=1000)



The conclusions from the model validation work are:

- Visual comparison of the model grades and the corresponding drillhole grades shows a good correlation.
- A comparison of the global drillhole and model domain grades for the MIK Au estimate within the main mineralised domain shows that the estimates are within 15% which is considered a good outcome.
- With the exception of poorly sampled regions the grade trend plots show a good correlation between the patterns in the model cell grades compared with the drillhole grades.
- The choice of MIK to estimate the Au grades is validated by the top cut ordinary kriged estimate, which, while reasonable, does not appear to adequately reproduce the higher grade regions of the mineralisation.
- The validation of the block density estimates shows a good correlation between the block estimates and the input sample data.
- The global change of support shows that the grade-tonnage curve from the block model matches well with the theoretical grade-tonnage curve based on the sample data.

14.4 Mineral Resource classification

14.4.1 Natougou Mineral Resource classification scheme

The Natougou Mineral Resource estimate has been classified as a combination of Indicated and Inferred Resources in accordance with CIM guidelines. The Mineral Resource has been limited to within a pit shell provided by SEMAFO, based on a gold price of $1,300/oz and pit optimisation parameters described in a scoping study completed by Lycopodium Minerals Qld Pty Ltd in 2013 (Lycopdium, 2013).

The classification was developed based on an assessment of the following criteria:

- Nature and quality of the drilling and sampling methods.
- Drilling density.
- Confidence in the understanding of the underlying geological and grade continuity.
- Analysis of the QAQC data.
- A review of the Orbis drillhole database and the company's sampling and logging protocols.
- Confidence in the estimate of the mineralised volume.
- The results of the model validation.
- Results of a pit optimisation completed by SEMAFO using a gold price of $1,300/oz. The pit shell parameters are detailed in Table 14.16. For the optimisation, SEMAFO reblocked the resource model to 10 mE by 10 mN by 2.5 mRL.

Table 14.16 Pit optimisation parameters

Parameter	Value
Physical inputs	
Mining dilution	20%
Mining recovery	95%
Mining slopes (overall)	60°
Processing recovery	94%
Financial inputs	
Gold price	$1,300/oz
Mining cost (waste)	$2.95/t
Mining cost (ore)	$3.08/t
Rehabilitation	$0.10/t
Processing cost	$23.87/t
General and administration costs	$5.25/t
Selling cost	$2.18/oz
Royalties (4%)	$52/oz

The resource classification scheme adopted by Snowden for the Natougou Mineral Resource estimate is outlined as follows:

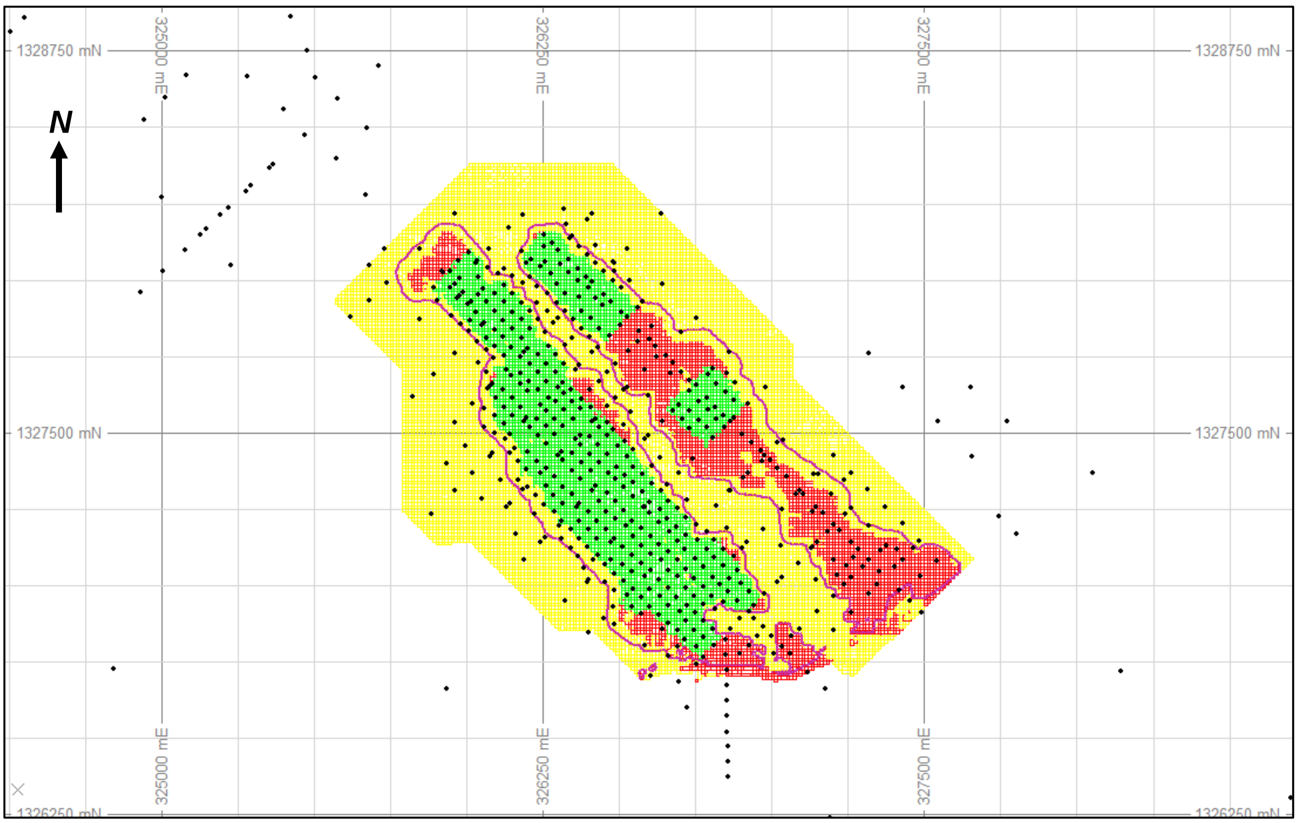
- Where the drilling density was approximately 40 mE by 40 mN (or less), mineralisation within the main lode (i.e. MINZONE=1000) was classified as Indicated.
- Where the drilling density was greater than 40 mE by 40 mN, the mineralisation was classified as Inferred.
- The footwall mineralised domain (MINZONE=2000) was classified as Inferred in its entirety.
- The edge of the interpreted mineralisation, where the model was deemed to be largely extrapolated beyond the data, and areas of mineralisation outside the $1,300/oz pit shell, were not classified and as such do not form part of the stated Mineral Resource.
- The western hangingwall mineralisation (HWZONE=1) remains unclassified due to the unconstrained nature of the block grade estimates in this area, and as such does not form part of the stated Mineral Resource.

The classification was recorded in the model using a field called RESCAT, which is described in Table 14.17. The Natougou Mineral Resource classification scheme is depicted in Figure 14.14.

Table 14.17 Resource classification model field values

RESCAT	Description
0	Not classified (waste)
2	Indicated
3	Inferred
4	Unclassified mineralisation

Figure 14.14 Plan view showing Natougou Mineral Resource classification scheme[4]



[4] Green = Indicated Resource; red = Inferred Resource; yellow = unclassified mineralisation; black dots = drillhole collars; magenta line = approx. extent of $1,300/oz pit shell

14.5 Mineral Resource reporting

14.5.1 Cut-off grade

The Natougou Mineral Resource has been reported above a 0.77 g/t Au cut-off grade. The cut-off grade is based on the optimisation completed by SEMAFO using the parameters defined in Table 14.16.

Snowden notes that the Mineral Resource is relatively insensitive to the reporting cut-off grade at cut-offs below 1.0 g/t Au, in terms of contained metal.

14.5.2 Moisture

All Mineral Resources have been reported on a dry mass basis.

14.5.3 Natougou Mineral Resource statement

The Natougou Mineral Resource comprises 5.79 Mt at 5.87 g/t Au of Indicated Resources and 3.93 Mt at 3.49 g/t Au of Inferred Resources, reported above a 0.77 g/t Au cut-off grade. The Mineral Resource statement is detailed in Table 14.18.

Table 14.18 Natougou Mineral Resource as at March 2015, reported above a 0.77 g/t Au cut-off grade

Classification	Oxidation state	Tonnes (Mt)	Au g/t	Ounces (koz)
Indicated	Fresh	5.79	5.87	1,092
Indicated total		**5.79**	**5.87**	**1,092**
Inferred	Weakly oxidised	0.20	2.70	17
	Moderately oxidised	0.30	2.13	21
	Strongly oxidised	0.15	2.12	10
	Fresh	3.28	3.73	393
Inferred total		**3.93**	**3.49**	**442**

** Small discrepancies may occur due to rounding*

15 Mineral Reserve estimates

No Mineral Reserves have been defined on the property.

16 Adjacent properties

There is no information from adjacent properties applicable to the Tapoa Permit Group for disclosure in this report.

17 Other relevant data and information

As far as Snowden is aware, there is no other relevant data or information to disclose that makes the Technical Report not misleading.

18 Interpretation and conclusions

The Tapoa Permit Group, including the Natougou project, is located in a well-known gold province and the property has a history of artisanal mining. Results from the exploration rock chip and soil sampling programs conducted by Orbis between 2010 and 2014 across the Tapoa Permit Group, indicate that there are multiple targets which warrant further exploration to assess the potential of additional gold mineralisation in the area.

The Natougou deposit represents a significant gold discovery in the area. The project has been drilled using diamond core and RC drilling techniques down to a nominal spacing of 40 m by 40 m in a significant portion of the deposit area. The author is satisfied that the drill sample database and geological interpretations are sufficient to enable the estimation of Mineral Resources and sample security procedures provide confidence in the integrity of the samples and assay results. The geological interpretation carried out by Orbis has considered all material items and represents an accurate reflection of the current geological understanding.

Accepted estimation methods have been used to generate a 3D block model of gold values. In Snowden's opinion, the use of MIK estimation technique with unfolding is appropriate for the highly skewed population distribution and folded nature of the deposit. The estimate has been classified with respect to CIM guidelines with the resources classified at an Indicated and Inferred status, according to the geological confidence and sample spacings that currently define the deposit. Snowden believes that SEMAFO should be able to increase the confidence and size of the Natougou Mineral Resource through additional drilling.

Twin drillhole results indicate reasonable repeatability of gold grades on the property, although only minimal twin holes have been completed to date. SEMAFO indicated that RC drilling may be used in future exploration and infill drilling at the Natougou deposit. RC drilling at Natougou typically shows poorer sample recovery than the diamond core drilling, which generally has excellent recovery (see Section 10.2). The limited number of twin holes completed so far do not allow an adequate assessment of the RC drilling quality and if further RC drilling is to completed, Snowden believes that additional twin holes are required to ascertain if there is any material bias present in samples collected from the RC drilling at Natougou.

Based on the early stage metallurgical testwork results, Snowden considers that high recovery of gold from the Natougou mineralisation should be viable, however further work will be required to ensure ore characteristics and variability are fully understood and that selected processing options have sufficient flexibility to maintain recovery as the mineralisation varies within the orebody. Samples for the metallurgical testwork were selected only from fresh drill core, as the fresh material represents a significant majority of the mineralisation observed within the orebody. Comminution tests show that the Natougou mineralisation is hard and competent and should be suitable for SAG milling. Leach tests were conducted across five grind sizes, P_{80} of 106 µm, 75 µm, 53 µm, 25 µm and 10 µm. After 24 hours of leaching, gold recoveries for all samples were averaging 88% and after an additional 24 hours the gold recoveries increase to an average of 93%.

19 Recommendations

The following recommendations are made with respect to ongoing work at the Natougou gold project:

- It is recommended that larger intervals of core be used to measure the bulk density to provide a more representative measurement.
- To date, only two twin diamond holes have been drilled to validate the RC drilling results. If further RC drilling is to be completed, it is recommended that SEMAFO increase the number of twin holes so that a meaningful statistical assessment of the two drilling methods can be conducted. Twin diamond holes should be drilled as close as possible to the original RC drillhole, ideally within 3 m.
- Snowden recommends that SEMAFO generate a geological interpretation of the western hangingwall mineralisation to constrain the gold grade estimates in this area, with the ultimate aim of potentially including this material in future Mineral Resource estimates.
- A comprehensive topographic survey is recommended to ensure all mine planning and infrastructure requirements are planned for using reliable data.
- Snowden recommends that SEMAFO complete a pattern of closer spaced drilling (down to a 10 m by 10 m spacing) in a portion of the resource to better define the short range grade continuity.

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21 Certificates

CERTIFICATE OF QUALIFIED PERSON

I, John Graindorge, Principal Consultant of Snowden Mining Industry Consultants Pty Ltd, 181 Adelaide Terrace, East Perth, Western Australia, do hereby certify that:

(a) I am the co-author of the technical report titled “Tapoa Permit Group, Natougou Gold Deposit, NI43-101 Technical Report” and dated 30 March 2015 (the “Technical Report”) prepared for SEMAFO Inc.

(b) I graduated with a Bachelor’s degree in Geology from the University of Western Australia. I also completed a Post-Graduate Certificate in Geostatistics in 2007 at Edith Cowan University. I am a Member of the Australasian Institute of Mining and Metallurgy and a Chartered Professional Geologist. I have worked as a Geologist continuously for a total of 15 years since my graduation from university. I joined Snowden in 2005 and have been involved in resource estimation and evaluation for 10 years.

(c) I have read the definition of ‘qualified person’ set out in National Instrument 43-101 (“the Instrument”) and certify that by reason of my education, affiliation with a professional association and past relevant work experience, I fulfil the requirements of a ‘qualified person’ for the purposes of the Instrument. I have been involved in resource evaluation consulting practice for 10 years, including gold projects for at least five years.

(d) I have made a current visit to the Tapoa Permit Group property in Burkina Faso from 13 March 2015 to 17 March 2015.

(e) I am responsible for the preparation of all sections of the Technical Report except Section 13 and Section 1.4.

(f) I am independent of the issuer as defined in section 1.4 of the Instrument.

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

(h) I have read the Instrument and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

(i) As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all the scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed and dated this 30th day of March of 2015 at Perth, Western Australia.

(*signed*) John Graindorge
John Graindorge, BSc (Hons), MAusIMM(CP)

CERTIFICATE of QUALIFIED PERSON

I, Harald Muller, Senior Principal Consultant and Divisional Manager – Metallurgy of Snowden Mining Industry Consultants Pty Ltd, 104 Melbourne Street, South Brisbane, Queensland, Australia, do hereby certify that:

(a) I am the co-author of the technical report titled "Tapoa Permit Group, Natougou Gold Deposit, NI43-101 Technical Report" and dated 30 March 2015 (the "Technical Report") prepared for SEMAFO Inc.

(b) I graduated with a Bachelor's degree in Chemical Engineering from Pretoria University and a Master's degree in Business Leadership from the University of South Africa. I am a Fellow of AusIMM, a Fellow of IChemE, a Chartered Engineer and a registered Professional Engineer, as well as a Fellow of SAIChE. I have worked as a metallurgist continuously for a total of 30 years since my graduation from university. I have worked in the process and project development of precious metals for at least five years.

(c) I have read the definition of 'qualified person' set out in National Instrument 43-101 ("the Instrument") and certify that by reason of my education, affiliation with a professional association and past relevant work experience, I fulfil the requirements of a 'qualified person' for the purposes of the Instrument. I have been involved in resource evaluation consulting practice for 10 years, including gold projects for at least five years.

(d) I have not made a current visit to the Tapoa Permit Group property in Burkina Faso.

(e) I am responsible for the preparation of Section 1.5 and Section 13 of the Technical Report, and contributed to the preparation of Section 18 of the Technical Report.

(f) I am independent of the issuer as defined in section 1.4 of the Instrument.

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

(h) I have read the Instrument and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

(i) As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all the scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed and dated this 30th day of March of 2015 at Brisbane, Queensland.

(signed) Harald Muller
Harald Muller, B Eng (Chem), MBL, FAusIMM, FIChemE, FSAIChE, C Eng, Pr Eng