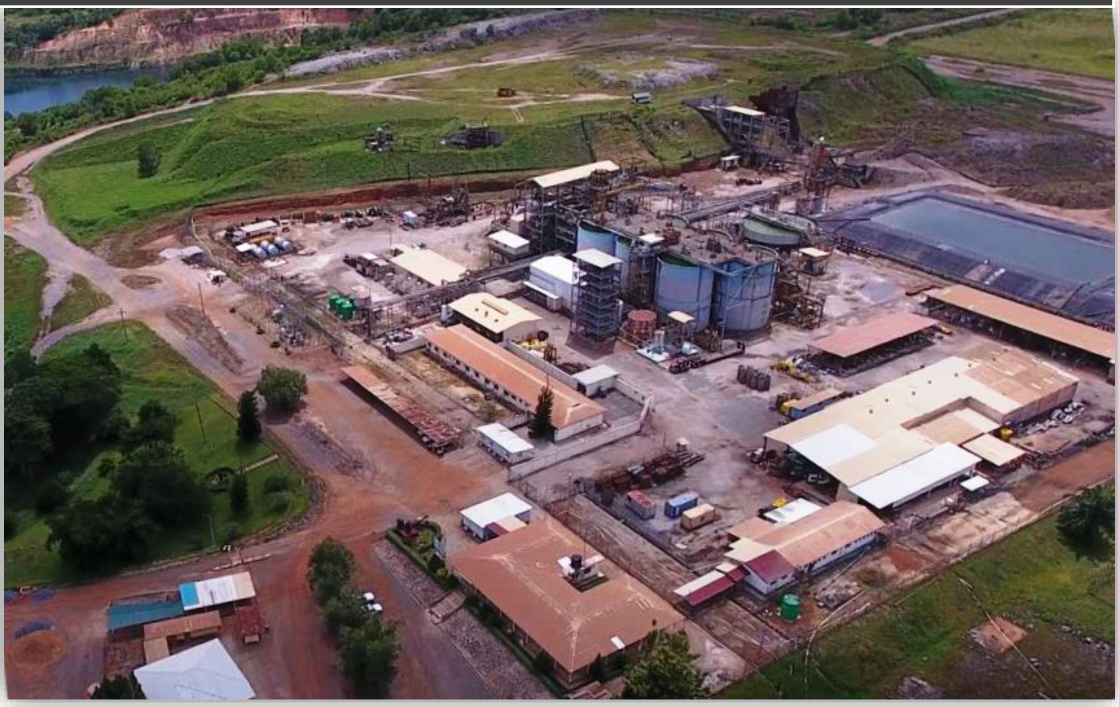
Asante Gold Corporation

Technical Report on the Bibiani Gold Mine, Ghana



Prepared for Asante Gold Corporation

Effective Date: 7 November 2021

Principal Author:

Ian M Glacken *FAusIMM (CP), FAIG, CEng*

Qualified Person:

Dan Bansah *MSc, MAusIMM (CP), FWAIMM, MGIG*

Doc Ref:
ASE_Technical_Report_Bibiani_211107_FINAL

Number of copies: 2

Optiro: 1

Asante Gold Corporation: 1

Optiro Perth Office

Level 1, 16 Ord Street
West Perth WA 6005

PO Box 1646
West Perth WA 6872
Australia

Tel: +61 8 9215 0000
Fax: +61 8 9215 0011

Optiro Pty Limited
ABN: 63 131 922 739
www.optiro.com

Principal author:	Ian Glacken *FAusIMM (CP), FAIG, CEng*	Signature:	
		Date:	7 November 2021
Qualified Person:	Dan Bansah *MSc, MAusIMM (CP), FWAIMM, MGIG*		

Technical Report on the Bibiani Gold Project, Ghana

The following Technical Report has been prepared for Asante Gold Corporation (Asante). It describes one of Asante's main projects – the Bibiani Gold Project, located in the western region of Ghana, approximately 80 km southwest of the Ashanti capital, Kumasi. Asante has recently acquired this property from Resolute Mining Limited.

Prepared for

Asante Gold Corporation

Authors		
Ian Glacken	Director, Optiro Pty Ltd	*MSc, FAusIMM (CP), FAIG, MIMMM, CEng*
Dan Bansah	Competent Person, Mineral Resources	*MSc, MAusIMM (CP), FWAIMM, MGIG*

Date of report: 7 November 2021

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1. SUMMARY

1.1. PROJECT DESCRIPTION

This Technical Report describes the Bibiani Project (Bibiani or the Project), owned by Mensin Gold Bibiani Limited (MGBL), a wholly owned subsidiary of Asante Gold Corporation (Asante, 90%) and the Government of Ghana (10%). The project is located 80 km southwest of Kumasi and 253 km northwest of the Ghanaian capital, Accra.

The Bibiani Project has a long history of gold mining, with commercial production starting in the early 1900s, continuing on and off up to 2012. The Bibiani mine and satellite pits are estimated to have produced over 5 Moz of gold during this period.

The Bibiani Project was placed into care and maintenance in 2013, during which Mensin Gold Bibiani Ltd took control of the Bibiani assets. The company is looking to reopen the mine following acquisition by Asante Gold Corporation from the vendor, Resolute Mining Limited (Resolute).

1.2. GEOLOGY AND MINERALISATION

The gold deposits at Bibiani are structurally controlled mesothermal lode-type deposits. The mineralisation is associated with quartz veins and quartz stockworks which are hosted within a sequence of Lower Birimian fine to medium grained turbiditic sandstones. The sedimentary turbidite sequence is tightly folded, with west-dipping axial planes and localised development of steep west-northwest dipping shear zones which have acted as conduits for the initial gold mineralisation.

1.3. MINERAL RESOURCES

The most recent Mineral Resources for Bibiani are presented in Table 1.1. These resources represent material to be mined via open pit and have been reported above a cut-off grade of 0.65 g/t gold inside an economic pit shell defined at a gold price of US$1,950. The Bibiani Main pit resource has been prepared by Competent Persons (Optiro, 2017) using accepted industry practices and have been classified and reported in accordance with the JORC Code (JORC, 2012). There are no material differences between the definitions of Measured, Indicated and Inferred Mineral Resources under the CIM Definition Standards and the equivalent definitions in the JORC Code. The Satellite pit resource is an update completed in 2018 by Resolute. The Satellite pit resource is also reported above a cut-off grade of 0.65 g/t gold inside an economic pit shell defined at a gold price of US$1,950.

Table 1.1 Bibiani project Mineral Resources reported at 18 October 2021

Bibiani Resource Tabulation - October 2021 above 0.65 g/t gold cut-off and within US$1,950 shell				
Area	**Classification**	**Tonnes**	**Au g/t**	**Ounces**
Bibiani main pit	Indicated	19,600,000	2.76	1,740,000
	Sub-total M + I	**19,600,000**	**2.76**	**1,740,000**
	Inferred	8,380,000	2.79	751,000
Satellite pits	Measured	783,000	1.77	44,600
	Indicated	396,000	1.89	24,100
	Sub-total M + I	**1,180,000**	**1.81**	**68,700**
	Inferred	33,700	2.13	2,310
Grand total		**29,000,000**	**2.73**	**2,560,000**

Note: Totals may not sum due to rounding. Reported above a cut-off of 0.65 g/t gold.

The Bibiani main pit resource block model was created using Surpac software, with a block size of 5 mE by 20mN by 20 mRL selected following the application of Kriging Neighbourhood Analysis techniques. The gold estimation used Ordinary Kriging (OK). The Bibiani Mineral Resource has been classified into Indicated and Inferred categories in accordance with the JORC Code (JORC, 2012), and as such is entirely equivalent to the Measured, Indicated and Inferred categories of the CIM Standards.

1.4. ENVIRONMENT

The proposed pit at Bibiani is expected to have limited impact on areas outside of the existing mine footprint. Primarily, a new waste dump will be required to the northwest of the Main Pit. Other cutbacks proposed for the satellite pits will fall within already disturbed areas. Existing offices and buildings will be utilised, with any new buildings being built on the existing site.

On 19 June 2018, the Environmental Permit for re-initiation of underground gold mining and processing at the Bibiani Project was approved by the EPA under pursuance of Sections 2 (i) and 12 (1) of the Environmental Protection Agency Act, 1994 (Act 490) and Part 1 of the Environmental Assessment Regulation 1999 (LI 1652). This was renewed for a further 18 months from 19th July 2021 to18th January 2023.

1.5. CONCLUSIONS

The Bibiani project has a long history of production through several owners since the 1900s, with a total historical production of around 5 Moz of gold. After the failure of the previous owner of the mine, Noble Mining Ghana in 2013, Resolute initially acquired a 20% stake in the local holding company and increased this to a controlling stake by early 2014. Since this time, Resolute's strategy has been to plan for a restart of the operations. This has been furthered by a number of studies, culminating in the 2018 Feasibility Study update, which showed that a relatively mechanised underground operation with ore hauled from two declines could generate a post-tax NPV of USD123M over an 11-year mine life, generating almost 1M oz gold at a forecast all-in sustaining cost of USD764/oz. The project returns are most sensitive to the gold price and metallurgical recovery. The overall forecast capital costs are relatively low at USD115M, reflecting that the mine and process plant are in place, but require refurbishment and further development. Resolute has sold the project to

Asante in 2021; Asante's strategy is to commence an open pit mine at Bibiani main and to deepen and extend the satellite pits.

This strategy is fully endorsed by the Qualified Person.

2. INTRODUCTION

2.1. SCOPE OF THE REPORT

This report was prepared for Asante Gold Corporation (Asante), a company currently listed on the Canadian Securities Exchange (CSE). The purpose of this Technical Report is to support a corporate transaction by Asante, namely the purchase of the Bibiani Gold Operation from Resolute, by providing a description of work to date and current resources at the Bibiani Gold Operation (Bibiani or the Operation) located in south central Ghana.

This Technical Report has been written to comply with the reporting requirements of National Instrument 43-101 *Standards of Disclosure for Mineral Projects* (NI 43-101 or the Instrument) and has an effective date of 7 November 2021.

2.2. AUTHORS

The principal author of this technical report is Ian Glacken (*FAusIMM (CP), FAIG, MIMMM, CEng*). Ian Glacken was assisted by Dan Bansah (*MAusIMM (CP), FWAIMM, MGIG*) of Minecon Resources and Services Ltd (Minecon), who is acting as Qualified Person. Dan Bansah meets the requirements and definition of Qualified Person as a member of an Accepted Foreign Association, as defined in Appendix A of the NI 43-101 documentation on QP Qualifications. The Certificate of Qualified Person for Dan Bansah is located in Section 28. Dan Bansah has visited the Bibiani site on multiple occasions.

The contributions of each of the authors to this Technical Report are detailed in **Error! Reference source not found.**.

Table 2.1 Bibiani Gold Operation Technical Report – authors and contribution

Name	Position	Qualifications and memberships	NI 43-101 contribution
Ian Glacken	Director, Optiro Pty Ltd	*MSc, FAusIMM (CP), FAIG, MIMMM, CEng*	Principal author
Dan Bansah	Chairman and MD, Minecon Resources and Services Ltd	*MSc, MAusIMM (CP), FWAIMM, MGIG*	Qualified Person, Mineral Resources

The effective date of this report is 7 November 2021.

2.3. PRINCIPAL SOURCES OF INFORMATION

Information used in compiling this report was derived from reports and data provided from various authors by Resolute and by MGBL. This report draws upon previous Mineral Resource estimates carried out by consultants and internally by Resolute staff.

Optiro has made all reasonable enquiries to establish the completeness and authenticity of the information provided. In addition, a final draft of this report was provided to Asante along with a written request to identify any material errors or omissions prior to lodgement.

2.4. SITE VISIT

The Mineral Resource QP, Dan Bansah, has visited the Bibiani Project many times, with the most recent visit on September 13, 2021

2.5. INDEPENDENCE

Optiro is an independent consulting and advisory organisation which provides a range of services related to the minerals industry including, in this case, independent geological services, but also resource evaluation, corporate advisory, mining engineering, mine design, scheduling, audit, due diligence and risk assessment assistance. The principal office of Optiro is at 16 Ord Street, West Perth, Western Australia, and Optiro's staff work on a variety of projects in a range of commodities worldwide.

The principal author is a full-time employee of Optiro and does not hold any interest in Asante Gold Corporation, its associated parties, or in any of the mineral properties which are the subject of this report. Fees for the preparation of this report are charged at Optiro's standard rates, whilst expenses are reimbursed at cost. Payment of fees and expenses is in no way contingent upon the conclusions drawn in this report. The principal author does not meet the requirements to be a Qualified Person, having not visited the Bibiani Operation.

The Qualified Person is a full-time employee of Minecon Resources and Services Limited. The Qualified Person is independent of Asante Gold Corporation pursuant to Section 1.5 of National Instrument 43-101.

3. RELIANCE ON OTHER EXPERTS

This report has been compiled by the principal author, an employee of Optiro, who is independent of Asante. Information that is of a general nature has been reprised from the work of other consulting groups or individuals or from exploration and mining company documentation. The material on which this report is based includes both internal and open-source documentation, technical reports, the projects' drillhole databases and resource models.

The authors consider that the information used to prepare this report, its conclusions and recommendations is valid and appropriate considering the nature of the project and the purpose for which the report is prepared.

The Qualified Person is assuming responsibility for all sections of the report.

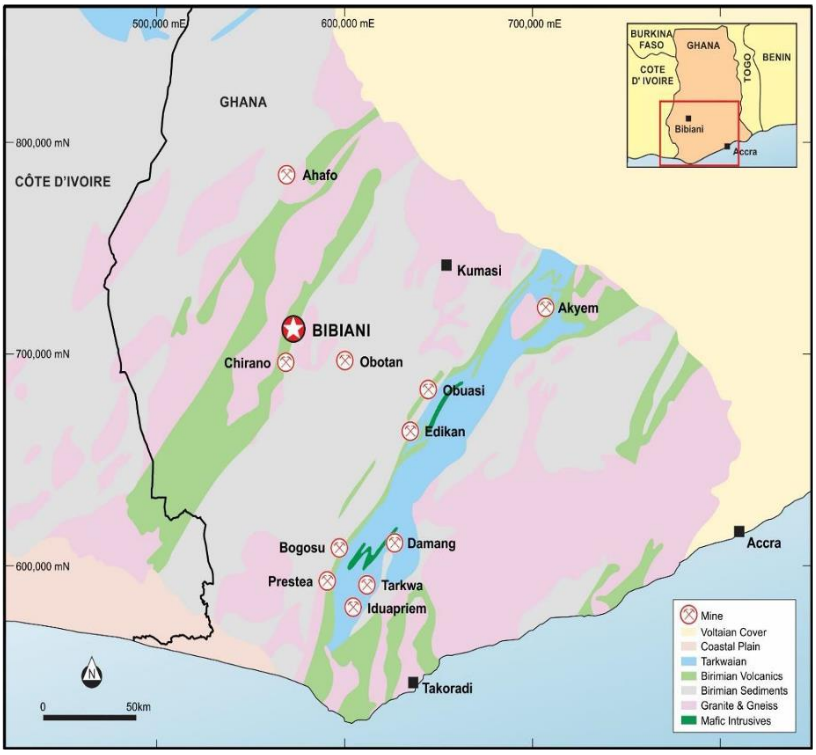
4. PROPERTY DESCRIPTION AND LOCATION

4.1. PROJECT LOCATION AND OWNERSHIP

Ghana is a west African country, situated approximately 600 km north of the equator on the Gulf of Guinea. It is bordered by Togo to the east, Burkina Faso to the north, and by Cote d'Ivoire to the west. Ghana has an area of approximately 239,000 km^2 and an estimated population of 25.9 million people.

The Bibiani Gold Project (Figure 4.1) is in the Western region of Ghana, Africa. The Bibiani mine is located at approximately 6^o 27' latitude north and 2^o 17' longitude west.

Figure 4.1 Bibiani Project location map (source: www.asantegold.com)



Asante has a 90% interest in the Bibiani Project, through its subsidiary company Mensin Gold Bibiani Limited (MGBL) and in the Mining Lease on which it is based. Mensin Gold Bibiani Limited (MGBL)is a 100% owned subsidiary of Asante Gold Corporation, the parent company, which is based in Canada. The Ghanaian Government holds a free carried 10% interest in MGBL.

4.2. PROJECT TENEMENTS

The Bibiani mine tenement lies approximately 80 km southwest of the Ashanti capital, Kumasi and 253 km northwest of the Ghanaian capital, Accra.

The property consists of the mining lease PL.2/15, which has an area of approximately 4,900 Ha. The lease was first issued to Ashanti Goldfields (Bibiani) Limited in 1997 by the then Minister of Mines and Energy. The lease is valid for a period of 30 years, commencing on 19 May 1997 and expiring on 18 May 2027. Exploration and exploitation is allowed for gold only.

4.2.1. MINING TENURE IN GHANA

A Mining Lease gives the holding company the exclusive right to work, develop and produce gold in the lease area. It also gives the company a first option to work minerals other than gold discovered in the lease area. However, failing satisfactory arrangements between the government and the company, the government reserves the right to grant licenses to third parties to prospect for or enter into agreements for the production of minerals other than gold within the lease area.

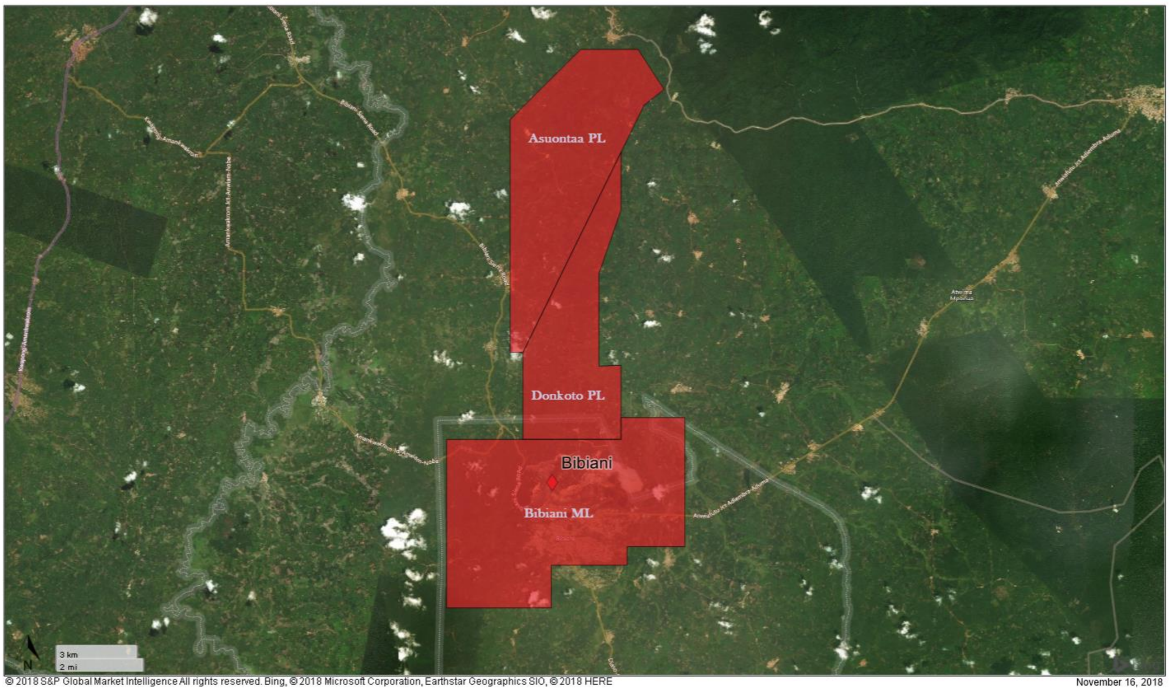
The Mining Lease owner is obliged to operate in a manner consistent with good commercial mining practice as stated in the conditions for the issuance of its Environmental Permit, in accordance with Environmental Assessment Regulations, LI 1652 of 1999 and Ghana's Mining and Environmental Guidelines (1994). Furthermore, the holding company shall pay the government of Ghana a royalty as prescribed on a quarterly basis. The registered holder for all tenure is MGBL.

MGBL currently hold two prospecting licences to the north of the Bibiani Mining lease (Asuontaa and Donkoto), details of these licences are in Table 4.1. Both prospecting licences have expired; however, renewal of these licences has been lodged. The current Bibiani concession plan is presented in Figure 4.2.

Table 4.1 MGBL details

Tenement number	Type	Permit name	Holder	Interest	Grant date	Expiry date	Area (km^2)
PL.2/15	Mining lease	Bibiani	Mensin Gold Bibiani Limited	90%	19 May 1997	18 May 2027	49.82
PL.6/44	Prospecting licence	Asuontaa	Mensin Gold Bibiani Limited	100%	16 June 2011	Renewal Pending	29.30
PL.6/353	Prospecting licence	Donkoto	Mensin Gold Bibiani Limited	100%	23 June 2011	Renewal pending	19.33
						Total	98.45

Figure 4.2 Bibiani concession plan (source S&P Global Market Intelligence)



4.3. LEGISLATION AND PERMITTING

4.3.1. STATE LANDS ACT (1963)

Section 6(1) provides that any person whose property is affected by a public project is entitled to compensation and provides mechanisms through which people not satisfied with compensation may seek redress. Dissatisfied compensation claimants may seek redress by first notifying the minister, who refers the case to a tribunal consisting of three persons appointed by the President.

Notwithstanding existence of these legal safeguards, and according to the World Bank, the records indicate that in the past the Ghanaian Government has defaulted in most cases and has failed to pay full compensation or help with the relocation of displaced persons.

4.3.2. MINERALS AND MINING ACT 703

The legislative framework for mining in Ghana is stated in this Act along with the provisions of the constitution of 1992. The act sets out statutory requirements for ownership of minerals and government rights of pre-emption, administration, mineral rights and other licences, the mining lease, surrender, suspension, and cancellation of mineral rights and surface rights. Pre-emption in this case is defined as the right by the Government to purchase the minerals before they are sold to other parties. The Minerals Commission (MINCOM) is mandated by the constitution to regulate and manage the exploitation of mineral resources and formulate policies in relation to minerals.

4.4. PERMITS AND AGREEMENTS

MGBL successfully renewed its Environmental permit in June 2021. The permit is valid for 18 months. MGBL also holds the necessary permits for the following:

- Water Abstraction – for both potable and dewatering requirements

- Operation of a fuel dispensing and storage facility
- On site medical facility permits (EPA & HeFRA)
- Municipal Business Operating permit.

MGBL is also in the process of renewing the annual Mining Operating Permit which will require:

- updating the Main Operating Plan in line with regulation 8 of L.I. 2182
- preparation and approval of a comprehensive Emergency Response Plan
- preparation and approval of a Tailings Storage Facility Management Plan
- review and approval by MINCOM.

4.5. ROYALTIES

The royalty payment made to the Government is 5% of the revenue gained from the sale of gold.

5. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1. ACCESSIBILITY

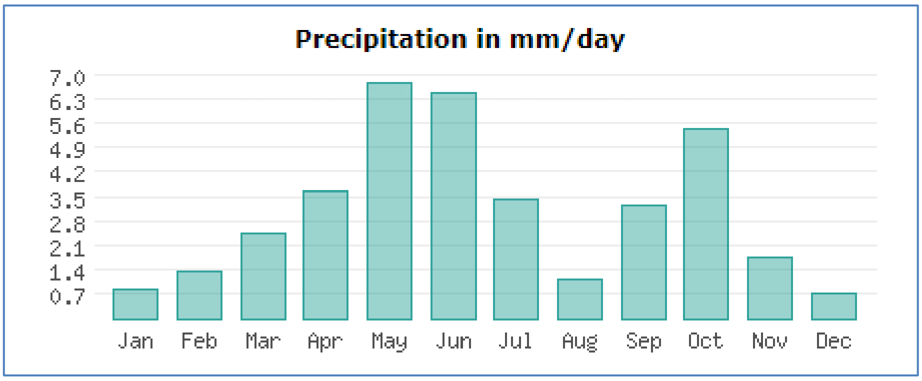
The main access to the mine is from the east, along the Kumasi-Bibiani – Sefwi Bekwai Highway. The Kumasi airport can be accessed from Accra by a 45-minute flight using various national airlines. Access to the Bibiani mine gate from the Kumasi Highway is excellent.

The mine is also serviced by two well equipped coastal ports, Tema which lies just to the east of the capital Accra, and Takoradi which lies 180 km to the south of Bibiani.

5.2. CLIMATE, PHYSIOGRAPHY AND VEGETATION

The Western Region of Ghana has an average daily temperature of 31°C, with average humidity above 80%. There are typically two seasons in Ghana: the dry and wet seasons. The wet season extends from May to October. Annual rainfall is depicted for the Western Region of Ghana in Figure 5.1.

Figure 5.1 Average monthly rainfall (Source: worlddata.info/Africa/ghana/climate-western)



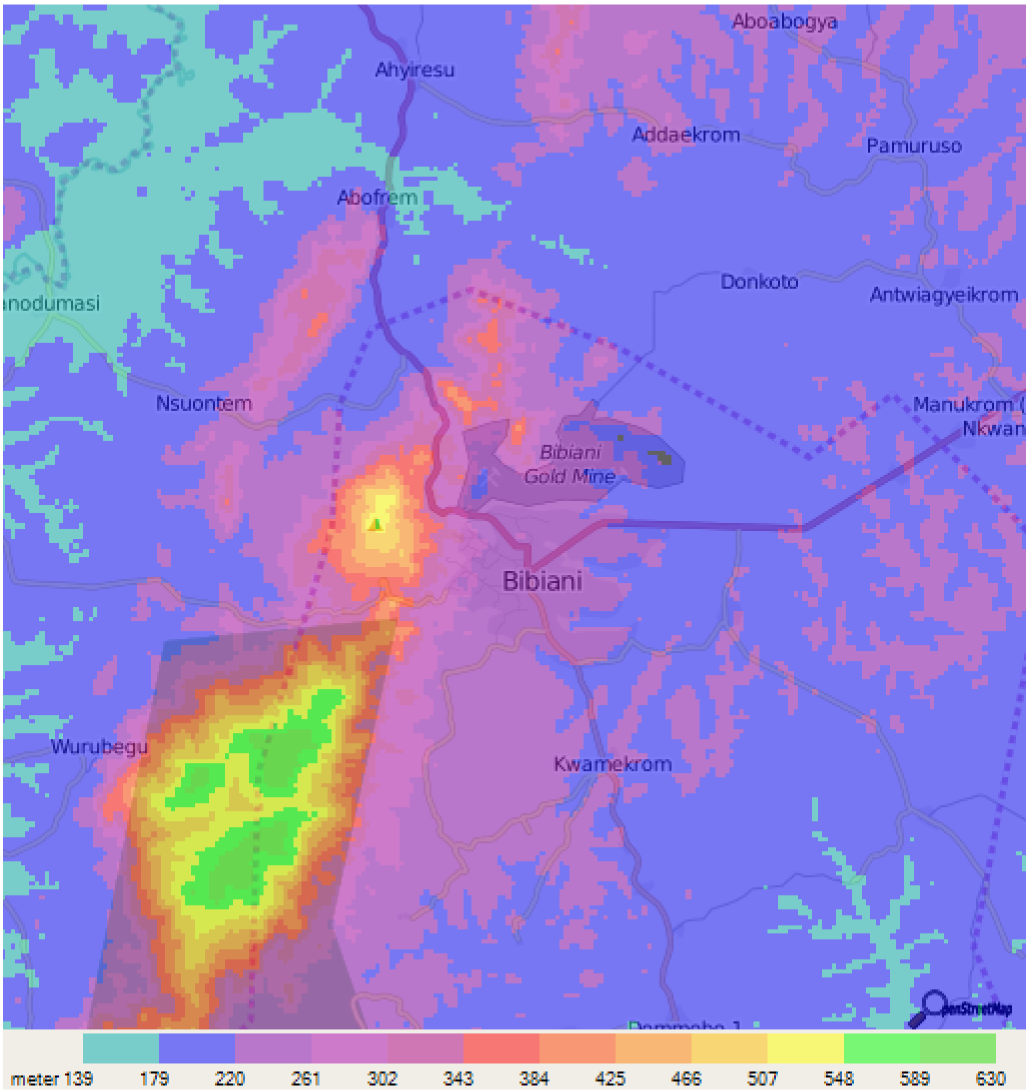
5.2.1. VEGETATION AND PHYSIOGRAPHY

The physiographic and topographic characteristics are exemplified by the Bibiani range, which trends southwest to northeast from Axim to Sunyani, a distance of about 200 km. Rugged terrain is characteristic of the range, with high peaks hovering above 600 m.

Figure 5.2 is a 230-metre elevation map of Bibiani taken from floodmap.net website. The map has been generated using elevation data from NASA's 90 m resolution SRTM data.

The Bibiani mine site is located on the eastern flank of the Bibiani range, to the north of the Bibiani township. There are both high and low land areas within the project area. The high lands are located to the southwest of the project area, with topography reaching above 500 m elevation. The peaks trend to the north-northeast, following the main structural trend in the area. The lower topography of the project is located to the east. The landscape comprises gentle undulating rolling topography formed by weathering processes.

Figure 5.2 230 metre elevation map of Bibiani, Ghana. (Source: floodmap.net/elevation/elevationmap)



The mining concession is located in five sub-catchments in the Tano River Basin of the southwestern basin system of Ghana. These sub-catchments are the Amponsah, Mpokwampa, Mensin, Kyirayaa, and Pamunu. The five rivers of these catchments flow in a westerly direction into the Tano river; these rivers are seasonal, sometimes drying up in the dry season between December and March.

The Tano river valley is about 3 km wide, and comprises the present river channel, a flood plain and a valley slope. The areas beyond the valley feature rolling hills which rise to 40 m above the river. The Pamunu river is perennial with many dendritic tributaries and meanders through the flood plain varying in width from a few metres to 50 m.

5.3. LOCAL RESOURCES AND INFRASTRUCTURE

The project is situated adjacent to the township of Bibiani, which has an approximate population of 50,000 people. The Bibiani mine receives electrical power from the national grid; however, the mine also owns and maintains several generators to supplement grid power when required. There are two freshwater dams on the property.

The mine and township have good infrastructure services necessary for reopening the mine. These include offices, residential areas, workshops, laboratories, mine roads, explosives magazines, fuel storage tanks and a medical clinic managed by a qualified doctor.

5.3.1. BIBIANI COMMUNITY SUPPORT

Since acquiring the Bibiani project, MGBL's aim is to focus on four community development pillars:

- water and sanitation
- community health
- education
- income generation.

Local representatives and MGBL staff have worked together to develop and implement projects around these development goals. In doing so, strong links are being built between the Bibiani community and the project to enable a lasting beneficial legacy.

6. HISTORY

6.1. OVERVIEW

There has been a long history of gold mining at Bibiani. Commercial gold production commenced in the early 1900s, with the local townsite growing adjacent to the mining operation over many years of intermittent mining history. Early mining was conducted by underground methods, which have since been supplemented by open pit mining of both oxide from smaller satellite pits and fresh rock material from the more significant Main Pit, which has extended over the old underground mine.

6.2. PROJECT HISTORY

6.2.1. EARLY HISTORY

The Bibiani mineralisation was first prospected and worked in the 1800s on an extensive scale prior to the granting of the first concession in 1891. Official exploitation of the Bibiani deposit began in 1902 and ran to 1913, with the mining of surface sediments and oxidised ore at shallow levels. Approximately 70,000 oz of gold was recovered during this period.

Mining activities recommenced in 1927 as an underground mine, developed and operated by foreign investors until it was nationalised in 1958.

6.2.2. STATE GOLD MINING CORPORATION

After the deposit was nationalised, the mine was operated by the State Gold Mining Corporation (SGMC). The economic reserves at this time were within the scope of the already existing mine infrastructure. The old workings were also re-worked to recover pillars and remnant low grade material (probably +6 g/t) that was below the economic pay limit applied to the deposit prior to nationalisation.

The mine closed in 1973 following the depletion of economic reserves. It is estimated that during the 46 years of production the Bibiani deposit yielded approximately 2 Moz of gold.

6.2.3. GHANA LIBYA MINING CORPORATION AND INTERNATIONAL GOLD RESOURCES

In the late 1980s and early 1990s Ghana Libya Mining Corporation (GLAMCO) and International Gold Resources (IGR) acquired various rights to the Bibiani mine and respectively embarked on separate tailings reclamation and surface exploration programmes.

The surface exploration programme yielded a positive feasibility study for the development of an open pit resource around the historic underground Bibiani mine.

6.2.4. ASHANTI GOLDFIELDS

OPERATIONS

Ashanti Goldfields (AGA) purchased Bibiani from IGR in the mid-1990s for USD130M, financed an additional USD85M to capitalise the operation, and redeveloped the mine as an open pit operation with a modern processing plant. AGA began mining at Bibiani in 1997 and continued until 2003.

During this time, the Bibiani main pit was extended down to RL75 m, a depth of approximately 200 m below surface.

Mining production was brought to a halt in November of 2003, when there was a failure of the western pit slope. At the time of the wall failure there was still approximately 100,000 oz in broken ore remaining in the pit. Initially, an open pit cut back design was put in place by AGA to recover 67,000 oz of the buried ore, with the remaining 33,000 oz considered to be permanently lost by AGA. However, recovery of the ore required a considerable cut back on both pit walls, as well as the capital cost to procure new mining equipment. This, coupled with continued signs of deterioration of the east and west slopes including loss of the main ramp into the pit, led to this plan being abandoned.

After the cessation of open pit mining operations in the Bibiani Main Pit, AGA continued to feed the plant by exploiting a series of small, low grade satellite pits, as well as depleting the remaining ROM and low-grade ore stockpiles and the treatment of the old GLAMCO tailings resources.

During its period of operation AGA produced approximately 1.8 Moz of gold from the main and satellite pits.

EXPLORATION

Around 2001 AGA initiated an exploration and development programme to investigate the potential to recommence underground mining operations. The potential for further resource along the orebody strike length down to 12 level (RL-120M) was a trigger for this work.

A surface drilling programme was conducted with results establishing the presence of gold mineralisation below the existing open pit. A trackless decline was developed in 2004 and 2005 to provide access to the underground workings for further resource estimation and exploration work. Based on the outcomes of the pre-feasibility study to exploit the underground mine at a production rate of around 100,000t per month, the company commenced a mechanised ramp development project to provide access to the underground mine and allow access for further exploration and future mine production.

AGA released a Mineral Resource covering the Bibiani Main Pit orebody which included 1.6Mt at 3.9g/t containing 200,000 oz of gold directly beneath the base of the open pit to the 9 Level (RL-40M). In 2006, following a strategic review and prioritisation of its worldwide operations, AGA put the Project up for sale. At this point the Project had produced a total of approximately 4Moz of gold over its operational life.

6.2.5. CENTRAL AFRICAN GOLD

The Bibiani Project was purchased from AGA by Central African Gold (CAG), which continued with exploration to develop the underground potential of the mine. Due to financial problems at the end of 2008 the operation had deteriorated to the extent that CAG was unable to continue; the local subsidiary company, CAGGL, and its assets were handed over to principal financiers Investec Bank of South Africa, to whom CAG owed a significant debt. Investec subsequently put the mine on care and maintenance while it investigated its options with regards to operation or sale.

6.2.6. NOBLE MINERAL RESOURCES/NOBLE MINING GHANA

In late 2009, Noble Mineral Resources (Noble) signed a 'Sale of Shares' agreement to acquire CAGGL from Investec, subject to a number of conditions. In 2010 Noble commissioned SEMS Exploration Services Ltd (SEMS) to compile a detailed report on the Project, which included a technical review of the geology and a targeting exercise. SEMS developed a district-scale 2D structural interpretation from the aeromagnetic data for target generation.

Major Shears with north-northeast and northeast intersections were identified as structurally favourable for Bibiani-style deposits. This information was overlain on the distribution of anomalous gold in soil samples, and a series of targets were identified, which included many of the existing prospects.

Noble Mining Ghana Limited (NGML) commenced mining satellite open pits to the northeast of the Main Pit in 2010. In 2012 work commenced on expanding the processing plant to a capacity of 3Mtpa. While significant construction work was carried out on the processing plant, it remained incomplete and further work is required on parts of the processing circuit and the primary crushing circuit before it will be deemed to be fully operational. Following a period of declining gold price, Noble ran into financial difficulties, and as a result, suspended operations at Bibiani in May 2013.

6.2.7. MENSIN GOLD BIBIANI LIMITED

Resolute Mining Limited (Resolute) acquired a 20% stake in Noble during November 2012 backed by a AUD85M financing package. After the suspension of mining operations in 2013, Resolute was able to take over control of the Bibiani assets through a scheme of arrangement with creditors. This process was completed in early 2014. Resolute immediately embarked on a re-assessment of the underground potential and commenced an extensive resource drilling programme consisting of both surface and underground drilling.

In December 2013, pursuant to Section 52 of the Ghanaian Minerals and Mining Act 2006, Act 703, Resolute served notice to the Minister of Lands and Natural Resources of its intention to become a controller of NGBL (Noble Gold Bibiani Limited), the holder of the Bibiani Mining Lease. In June 2014, the Minister granted Resolute's request for approval of Material Change in Ownership of the company and changed the company name to Mensin Gold Bibiani Limited (MGBL).

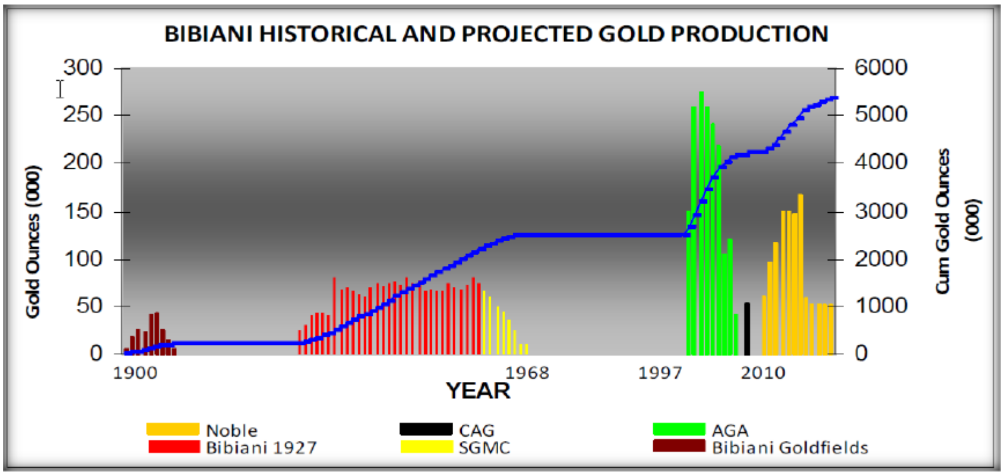
6.2.8. ASANTE GOLD CORPORATION

In August 2021, Asante bought all of Resolute's interest in Bibiani, through the purchase of 100% of the shares in Mensin Bibiani Pty Ltd, the owner of 100% of the shares of MGBL.

6.3. TOTAL HISTORICAL PRODUCTION

Up to 2012, the total gold production from the Bibiani mine and satellite pits was estimated at over 5 Moz of gold. Figure 6.1 shows the historical gold production at Bibiani by the various operators over the years.

Figure 6.1 Historical gold production at the Bibiani Gold Mine (source: Resolute 2016)



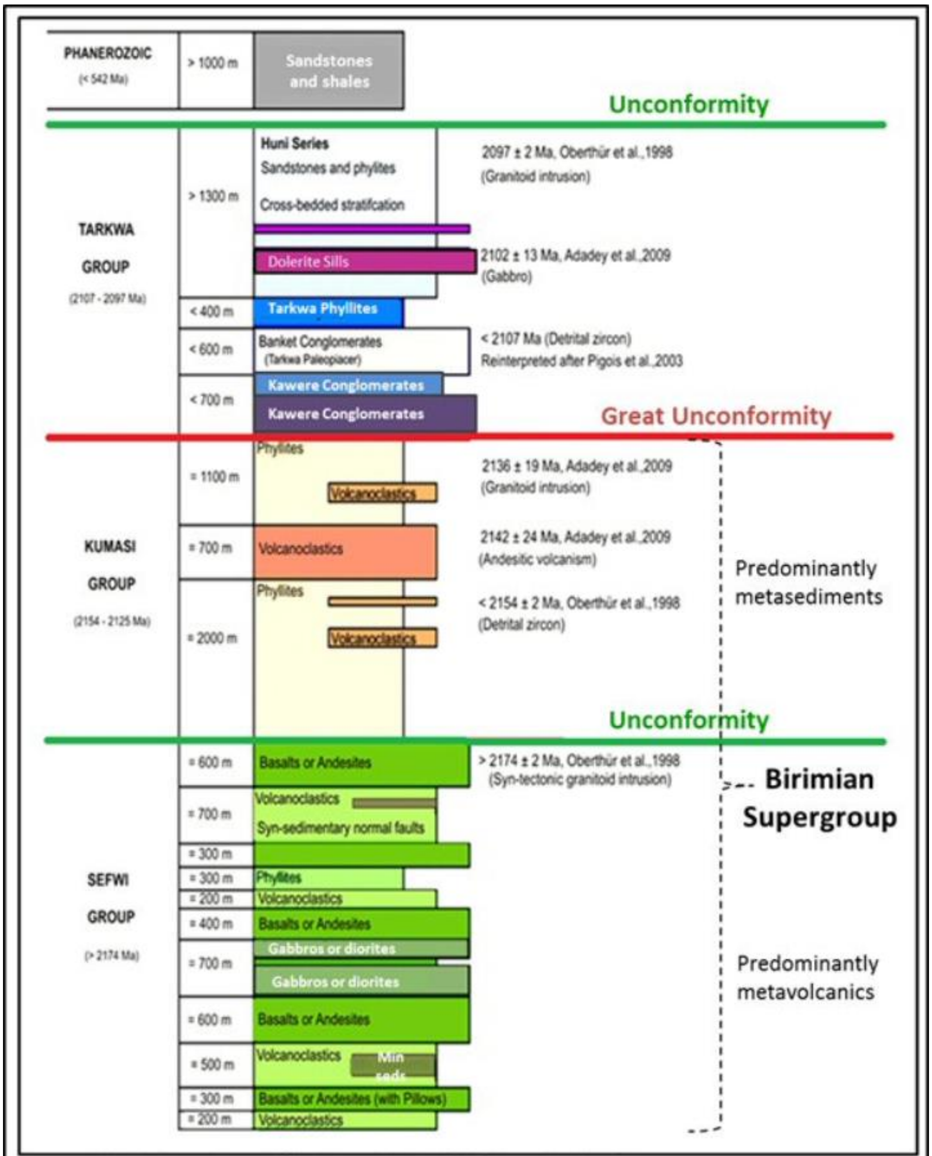
7. GEOLOGICAL SETTING AND MINERALISATION

7.1. REGIONAL GEOLOGICAL SETTING

On a regional scale, the Project is located on the eastern margin of the West African Precambrian Shield, which is a cratonised complex of Archaean basement. The main components are Proterozoic greenstone belts, granitoids and post-orogenic sediments that extend through Ghana, Burkina Faso, Mali, Guinea and the Ivory Coast.

The Upper Birimian Formation is dominantly volcanic in origin, although the sequence starts with conglomerates, grits, quartzites and tuffaceous wackes. The dominant components of the Upper Birimian are basaltic and andesitic lavas, tuffs and tuffaceous sediments with subordinate rhyolite, quartz-feldspar porphyry and felsite. The Birimian Formation rocks are unconformably overlain by the Tarkwaian, which is composed of dominant coarse-grained sediments (Figure 7.1).

Figure 7.1 Generalised stratigraphy of southwest Ghana (source: Precambrian Research, 2012)



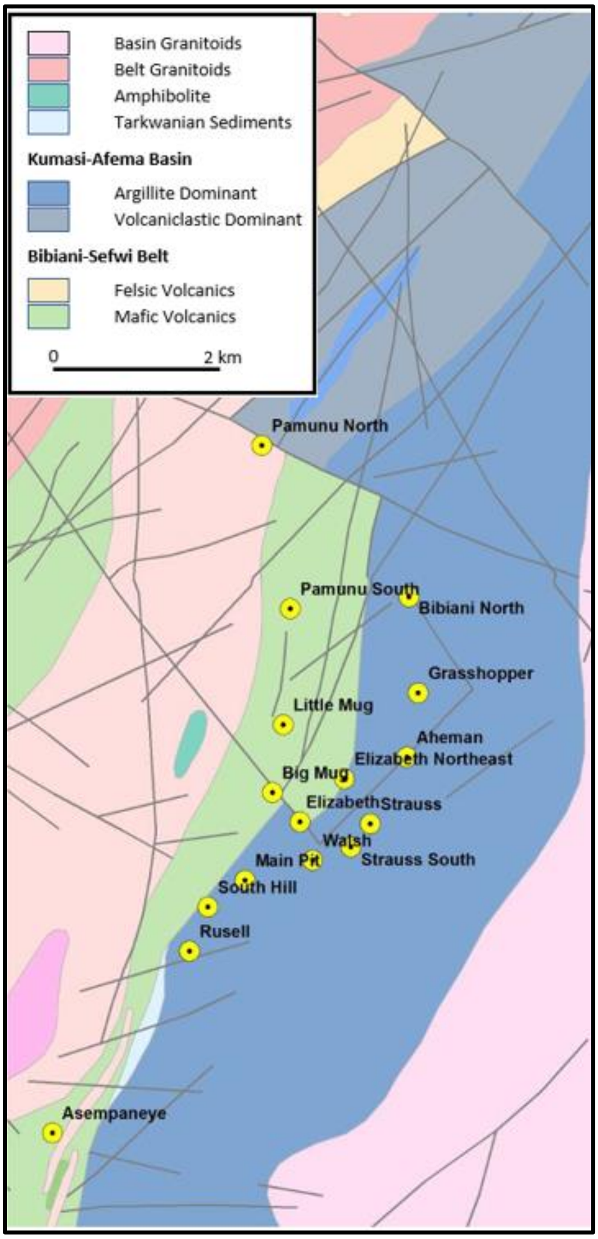
Scource: Adapted from Precambrian Research, May 2012, Perroutya, S. et al.

Primary gold mineralisation in the region is predominantly associated with northeast-southwest trending Proterozoic greenstone belts separated by basins, which together form part of the West African Craton. This craton is believed to have remained geologically stable for the last 1.7 billion years. The greenstone belts represent Proterozoic island arc volcanism which has been mildly metamorphosed to lower greenschist facies.

The Birimian geology throughout West Africa contains several significant gold deposits, including Obuasi, Tarkwa and Konongo. The Bibiani deposit is located in the Sefwi-Bibiani belt which is host to over 30 million ounces of gold (Figure 7.2). Bibiani is the second largest gold occurrence in the region after Newmont's Ahafo deposit.

The Tarkwaian Group, which is not well represented within the Bibiani tenements, is considered to have been deposited as a shallow deltaic sediment sequence within a graben setting and is at least partly coeval with the Birimian Formation.

Figure 7.2 Regional geological setting of the Bibiani Gold Project (source: www.asantegold.com)



7.2. LOCAL GEOLOGY

The Bibiani deposit is hosted within a thick sequence of fine-grained graded turbidites with localised thin interbeds of fine to medium-grained turbiditic sandstones. The sedimentary sequence is tightly folded, with west-dipping axial planes and localised development of steep west-northwest dipping shear zones which have acted as conduits for initial gold mineralisation.

The Bibiani orebody geometry is structurally controlled by a steep, north to northeast trending shear corridor 200 m to 400 m wide, within Lower Birimian sediments and close to the eastern contact of the Upper Birimian. The shear zone includes quartz infill as massive veins (up to 20 m) and quartz stockworks. In the widest parts of the orebody, two and locally three individual quartz reefs or lodes can be identified. Two highly graphitic fault zones, historically referred to as pug seams or fissures, are associated with the major shear zone on the footwall and hangingwall.

Three cross sections (looking north) through Bibiani are presented in Figure 7.3 to **Error! Reference source not found.**. These figures illustrate the structural geology as well as the geometry of the lodes in the deposit. Also displayed in the figures is drilling results reported from the recent 2017 exploration programme.

Figure 7.3 Cross section at 5150N (looking north) illustrating the structure and geometry of the Bibiani orebody (source:www.asantegold.com)

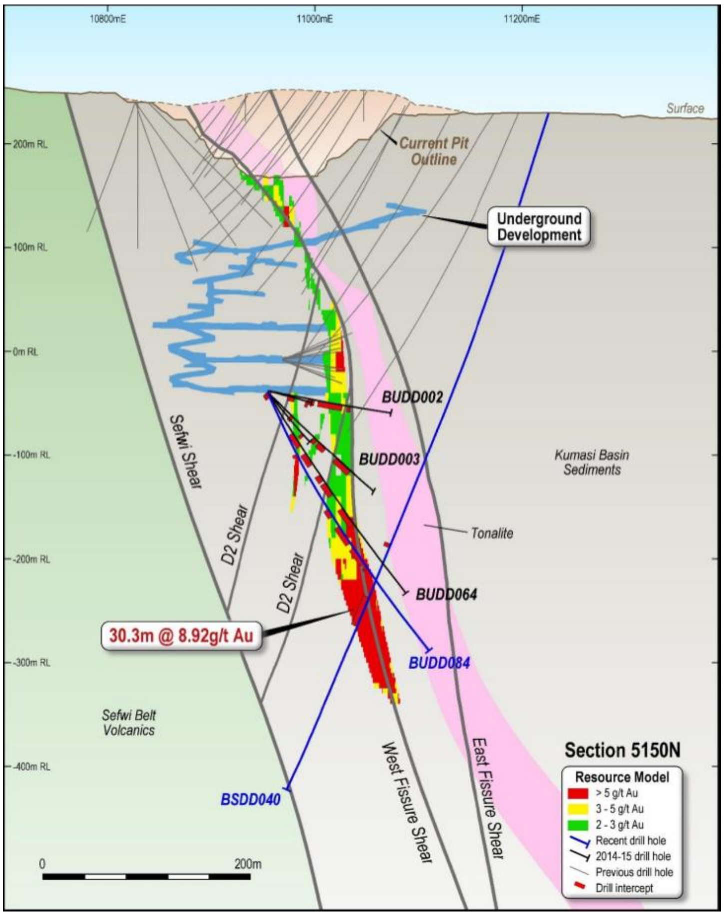


Figure 7.4 Cross section at 5300N, looking north (source:www.asantegold.com)

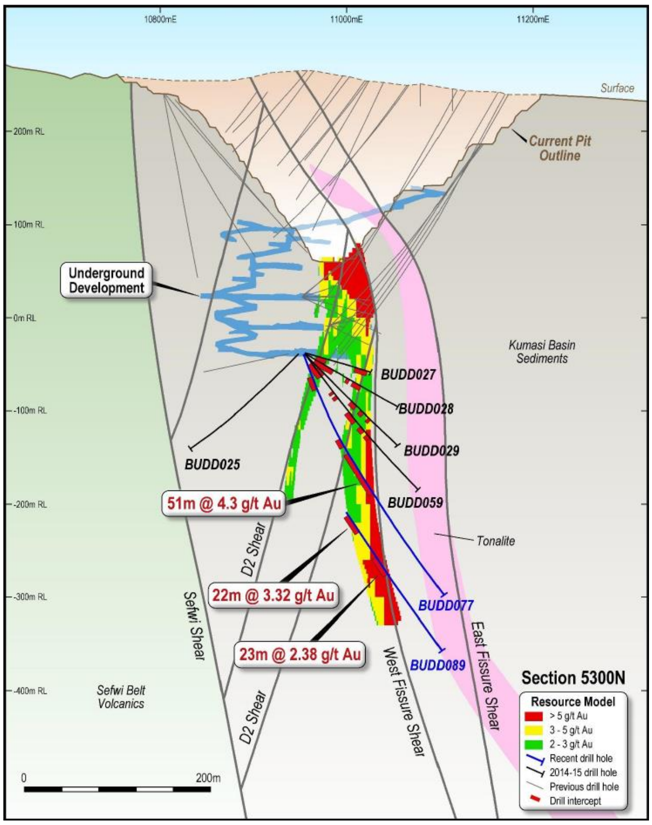
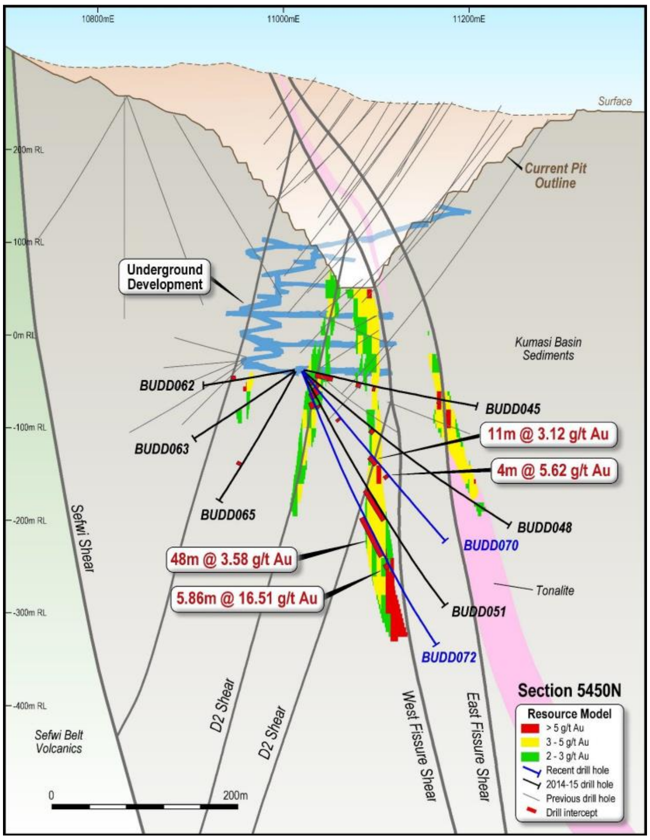


Figure 7.5 Cross section at 5450N, looking north (source:www.asantegold.com)



The Bibiani Main Zone orebody within the open pit and the underground zone is mineralised over a strike length of approximately 2 km. At the centre of the mine the orebody strikes 030° to 035° which changes to around 020° at the northern end of the mine. In general, the orebody dips east at 60° to 80°, crossing the regional structural fabric at acute angles.

Although mineralisation is essentially continuous, several main structures have been identified. The Central Lode hosts the most significant portion of the mineralisation. Other zones include the West and East lodes.

Traditionally the orebody has been divided into a northern and southern part based on the location of the central shaft, which lies on section line 5400 N (mine grid). The southern ore zone is around 180 m long and consists of a composite vein of quartz and mineralised country rock dipping about 60° to 70° to the east. The northern orebody consists of the continuation of the West Lode and of the East and Central lodes, which are less distinct toward the south. The latter reef lodes consist of more massive laminated smoky quartz with phyllite partings. Milky white quartz is also present but is generally barren.

The northern ore zone has been mapped at 20 to 40 m in width near the surface and widens substantially at depth. At around 100 m to 120 m relative level (mRL; the underground 4 and 5 Levels) the horizontal widths exceed 100 m. The mineralisation dips near vertical at surface, but the eastern boundary flattens moderately at depth to less than 65° around 150 mRL. The lodes merge approximately 400 m to 500 m north of the central shaft. Further to the north the orebody narrows and continues as one, near-vertical reef 15 m to 25 m in width.

The total strike length of the Bibiani mineralised trend is around 4,000 m, of which only 1,800 m has been exploited by historic mining operations. The mineralisation remains open at depth.

7.3. MINERALISATION

Most of the gold mineralisation at Bibiani is associated with quartz veins and quartz stockworks (Figure 7.6). Both vein types are associated with pyrite ± arsenopyrite. There is a positive relationship between the presence of gold and the presence of arsenopyrite. The maximum arsenopyrite content has been observed to be around 2% to 3%. Microscopic examination confirms that much of the gold occurs along edges or cracks within the sulphide grains as shown in Figure 7.7. The size of gold grains is typically less than 50 microns, generally observed to be between 1 to 10 microns in size.

Figure 7.6 Examples of large quartz veins with minimal sulphides (source:www.asantegold.com)

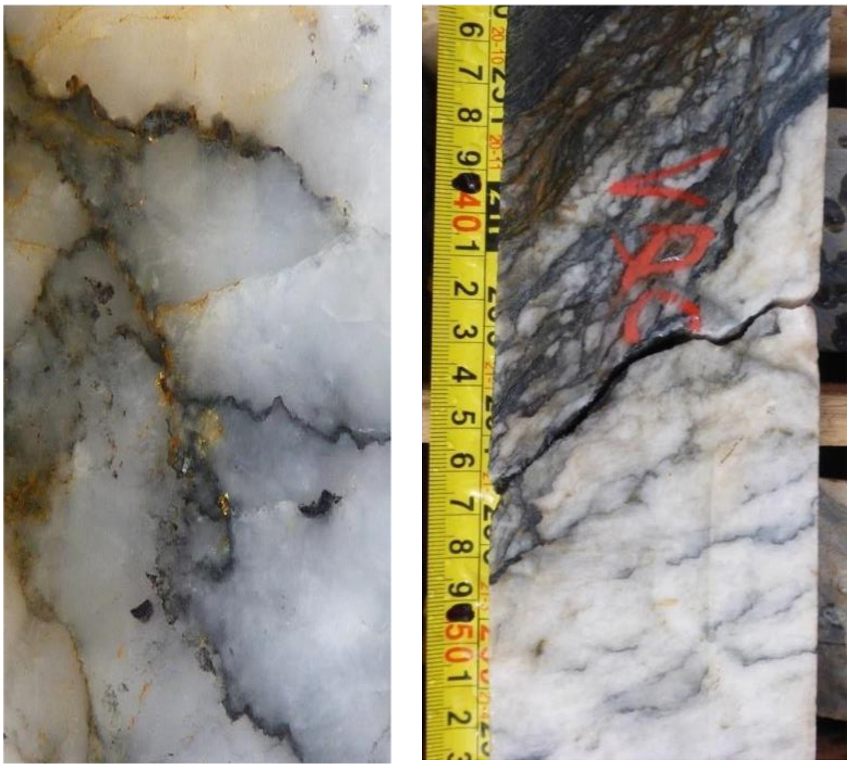
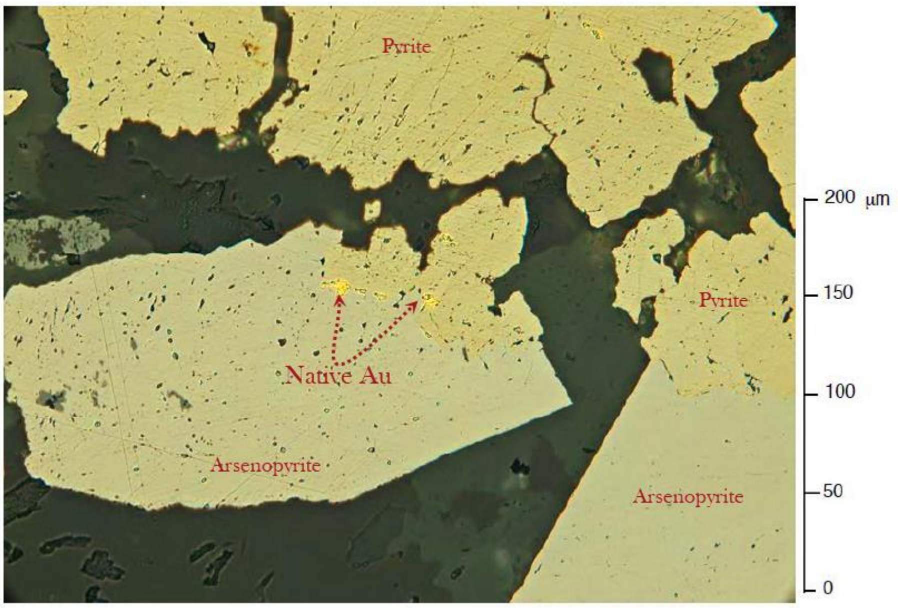


Figure 7.7 Photomicrograph showing native gold (bright yellow - centre) along the grain contacts of pyrite (cream - top) and arsenopyrite (off white – bottom) (source: Asante)



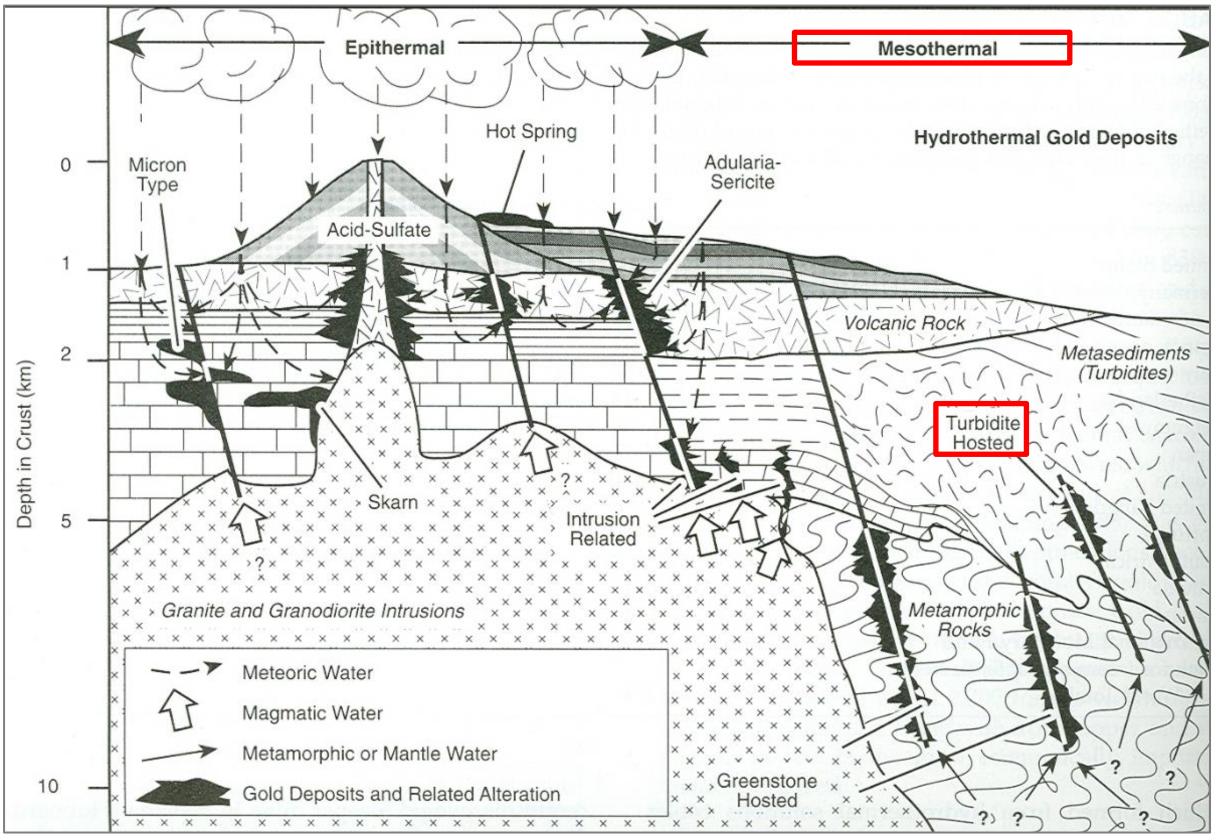
Visible gold can be seen in some mineralised quartz veins. It was noted from historical process plant records that around 15% of the total gold reports to the coarse size fraction, with the Knelson concentrator collecting up to 35% of the total gold recovered in the plant.

Wall rocks adjacent to the quartz veining demonstrate fine-grained disseminated iron-carbonate and sericite alteration with associated sulphide mineralisation. These alteration haloes can also contain gold values up to 2 g/t.

8. DEPOSIT TYPE

The gold deposits at Bibiani are structurally controlled mesothermal lode-type deposits which are similar to the lode deposits in the Konongo-Axim belt hosting the significant Obuasi deposit. The mineralisation is associated with quartz veins and quartz stockworks which are hosted within a thick sequence of fine-grained graded turbidites with localised thin interbeds of fine to medium-grained turbiditic sandstones. Figure 8.1 illustrates the generic hydrothermal environments in which the styles of mineralisation seen at Bibiani occur.

Figure 8.1 Schematic illustration of geologic environments in which hydrothermal gold deposits form. (Source: serc.carleton.edu)



The orebody geometry is structurally controlled by a steep, north to northeast trending shear corridor which is 200 m to 400 m wide, and which sits within Lower Birimian sediments close to the eastern contact of the Upper Birimian. Two highly graphitic fault zones are associated with the major shear zones on the footwall and hangingwall of the deposit.

9. EXPLORATION

The first mining concession at Bibiani was granted in 1891; however, the orebody was prospected and worked on an extensive scale prior to this date. Between 1900 and 1973, the principal focus for exploration was the Bibiani main orebodies. Exploration work carried out was mainly via underground development and diamond drilling, which was subsequently followed up by channel sampling of crosscuts and reef drives. In parallel with the underground exploration, the surface of the lease was subjected to systematic prospecting, mapping and a number of limited exploration programmes were undertaken over identified targets. The main prospects evaluated, principally by trenching and a small number of diamond drillholes, were:

- South Hill
- Pale Ale
- Big Mug
- The Ahiman
- Strauss
- Walsh Reefs.

Some of these prospects are illustrated in Figure 9.1.

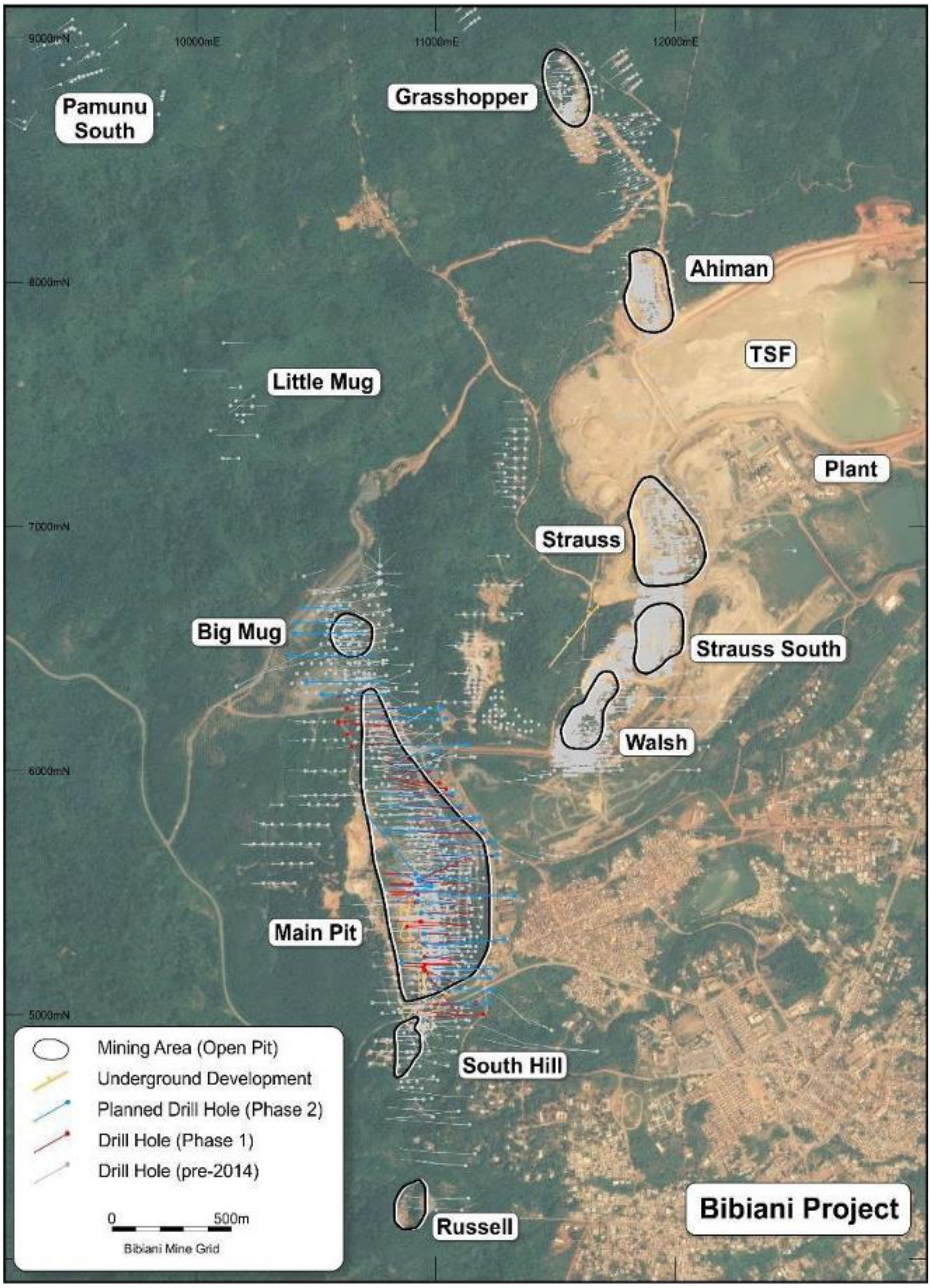
After 46 years of production, in 1973 the Bibiani underground mine was shut down due to depletion of the Mineral Reserves. Despite the significant amounts of work completed by a number of parties including the owners (State Gold Mining Corporation), no potentially economic orebodies in either size or grade were discovered to prevent the closure of the mine.

Years later, in the late 1980s and early 1990s, Ghana Libya Mining Corporation (GLAMCO) and International Gold Resources (IGR) acquired various rights to the Bibiani mine and respectively embarked on separate tailings reclamation and surface exploration programmes. A number of geological reviews were conducted, which used modern exploration practices, including aerial and ground geophysics. The field work conducted by geologists at the time included soil geochemistry, coupled with RC and Diamond drilling. The primary focus of the exploration programmes was the main Bibiani orebodies, which resulted in a positive Feasibility Study for the development of an open pit resource around the historic underground Bibiani mine.

The mine was purchased by Ashanti Goldfields which re-opened the mine in 1997 and produced close to 2 million ounces of gold. The mine was closed in 2003 following the failure of the western wall of the main pit. Around 2001, AGA initiated an exploration and development programme to investigate the potential to recommence underground mining operations. The potential for further resource along the orebody strike length down to the 12 level (RL-120m) was a trigger for this work.

A surface drilling programme was conducted; the results established the presence of gold mineralisation below the existing open pit. A trackless decline was developed in 2004 and 2005 to provide access to the underground workings for further resource estimation and exploration work.

Figure 9.1 Plan of the main prospects at Bibiani (source:www.asantegold.com)



Following the sale of the project to CAGR and thence to Noble (Section 6), in 2010 Noble commissioned SEMS to compile a detailed report on the project that included a technical review of the geology and a targeting exercise. SEMS developed a district-scale 2D structural interpretation from aeromagnetic data for target generation. Intersections of "Major Shears" with "NNE-NE intersections" were overlain on the distribution of anomalous gold in soil samples to produce a series of targets, which included many of the existing prospects.

10. DRILLING

10.1. HISTORICAL DRILLING

Prior to 2012, a total of 1,464 exploration drillholes were completed by previous owners. These include both diamond (DD) and reverse circulation (RC) drillholes, as well as RC collared holes with diamond tails (RCD) and underground channel samples. Details of the drilling and sampling campaigns are summarised in Table 10.1.

Table 10.1 Bibiani Resource drill campaigns (Source: Resolute Unpublished Bibiani Analytical QC Report May 2016)

Company	Years	Hole type	Holes	Metres drilled	Metres sampled
Anglo Ashanti	1993 to 2005	DD RC RCD	140 185 174	29,183 18,387 53,750	18,544 17,380 22,804
Central African Gold	2007 to 2008	DD RC RCD UG Diamond UG Channel	2 10 24 230 265	217 1,440 8,360 16,858 3,027	69 1,440 5,661 14,220 2,921
Noble	2010 to 2012	DD RC	29 299	4,378 34,753	2,955 33,700
Mensin Gold Bibiani	2014 to 2015	DD RC	93 13	21,110 5,174	19,267 5,016
Mensin Gold Bibiani	2016 to 2017	DD	55	22,884	22,712
Total			1,519	219,521	166,689

10.2. MENSIN GOLD BIBIANI LIMITED EXPLORATION AND DRILLING ACTIVITIES

During 2014 and 2015, MGBL carried out a data validation and verification process to increase confidence in the historical data collected between 1993 and 2012. This process involved cross-checking co-ordinates, surveys, samples, void intervals and assays against the original data sources, including old MS Access databases, MS Excel files, reports, and original laboratory assay certificates, both in hardcopy and digital format.

Upon the purchase of the Bibiani assets MGBL immediately embarked on a re-assessment of the underground potential and commenced an extensive resource drilling programme consisting of both surface and underground drilling. This was broken up into two phases:

- Phase 1: MGBL completed 26,284 m of RC and diamond drilling at Bibiani, with the aim of enhancing the estimated Mineral Resource (announced 15 August 2014).
- Phase 2: Further exploration drilling at Bibiani commenced in December 2016 and was completed in June 2017, with 22,884 m of diamond drilling undertaken from both surface and underground positions. The primary focus of the programme was to convert existing Inferred Resources to Indicated Resources and to explore for new unmined mineralised lodes.

Significant results from the Phase 2 drilling included the following:

- BSDD040 30 m @ 8.9 g/t Au from 498.7 m
- BSDD060 26 m @ 5.0 g/t Au from 347 m
- BSDD068 15 m @ 8.5 g/t Au from 488 m

- BUDD072 48 m @ 3.6 g/t Au from 171 m; and 6 m @ 16.5 g/t Au from 227.14 m
- BUDD077 51 m @ 4.3 g/t Au from 117 m
- BUDD087 29 m @ 9.0 g/t Au from 279 m

The procedures used to collate the data from these drill campaigns is described below.

10.2.1. DOWNHOLE SURVEYING

At the Bibiani project, downhole surveying methods have varied between the various project owners and the different drilling programmes. The database that was received from the previous owners included some historic holes with limited downhole survey data. Where possible, paper records were used to verify the downhole survey information. In some cases, underground holes could be located and resurveyed using modern surveying equipment. Where historic data could not be adequately verified or conflicted with recent drilling, the records were removed from the database.

The downhole surveys from the recent Phase 1 and Phase 2 MGBL drilling campaigns were collected using a Reflex EZTrac electronic magnetic survey tool. Surveys are obtained every 30 metres during drilling (single shot mode) and every 6 metres at the completion of drilling (multi-shot mode). Survey data is checked and verified using the Reflex SProcess software, with survey readings outside of expected magnetic intensity values flagged and excluded. A time-dependent declination has been applied to the magnetic readings to determine UTM azimuth.

Coordinates and azimuths are reported in UTM WGS84 Zone 30 North.

10.2.2. CORE PROCESSING AND LOGGING

MGBL established a core logging area close to the drilling site for the preparation and logging of all drilling conducted during the 2013 to 2017 campaigns. The previous owners used a designated core yard for the storage of all historic core and for logging and sampling operations.

CORE MARK-UP

After drilling, the core is cleaned to remove any grease, oil, mud or debris. Once clean, work on the core mark-up commences with core orientation. The core is then inscribed with downhole metre marks according to measurements between the drill core blocks. An orientation line is added to the top of the core to assist with any sampling operations.

Core loss is the amount of core missing between two core blocks which should be recorded by the driller on the core block. Confirmation of the core loss is undertaken by measuring the core length and documenting any differences.

Each core tray was marked with identification details, including the drillhole number and tray number on the front panel and again on the top rim of the front panel. It will also have “start” and an arrow indicating the downhole direction at the front of the top rim of the left-hand side of the core tray. Because this information can be lost over time the hole ID, tray number and depths (from – to) are engraved onto the tray while in the core shed.

CORE ORIENTATION

The majority of core orientation in the drilling conducted by MGBL uses the Reflex ACT III tool, or its equivalent. The orientation tool attaches to the back end of the drilling core tube and remains down the hole during drilling of each core length. Once activated the tool is constantly recording. At the end of the core run, the tube is retrieved as normal back on the surface. When the tube is opened, the handpiece is reconnected to the orientation tool and the BOH line marked onto the core run (Figure 10.1). After marking, the core is transferred to core tray.

Figure 10.1 Orientation marks on diamond core

The MGBL procedures also require the driller to make a reference mark on the core block confirming the success or failure of the orientation measurement designated as 'ORI OK' or 'ORI FAIL'.

In the core shed, lengths of core are re-assembled using V-rails with the aim being to get as many orientation marks aligned as possible working down the hole (Figure 10.2). The orientation was matched on the rack to ensure the "best fit" alignment before transcribing the bottom of hole line onto the drill core.

Figure 10.2 Diamond core illustrating the metre mark up, orientation line and down hole arrows

LOGGING

All of the drillholes completed during the Phase 1 and 2 campaigns for Bibiani have been logged by the MGBL geology team. Logging is the practice of recording detailed geological information from drilled core or samples. The type of information recorded includes, but is not limited to:

- lithology
- colour
- grain size
- alteration
- mineralisation
- vein type and percentage
- weathering.

The logging process on diamond holes is completed on the full core prior to any cutting or sampling, and the RC holes were either logged at the drill rig during drilling or from chip trays at a later stage. Logging data from diamond core and RC chips was captured digitally using LogChief logging software and then validated. The validated data was then imported into the digital drillhole database, which is a relational SQL2012 digital database supported by DataShed data management software.

All diamond core drilled and sampled by MGBL includes readings of sample bulk density. In total 37,123 determinations were derived from drill core by measuring the weight in air and weight in water. For the in-situ mineralisation a density value of 2.75 t/m^3 was assigned. Density readings were found to vary between 2.30 and 3.00 g/cm^3.

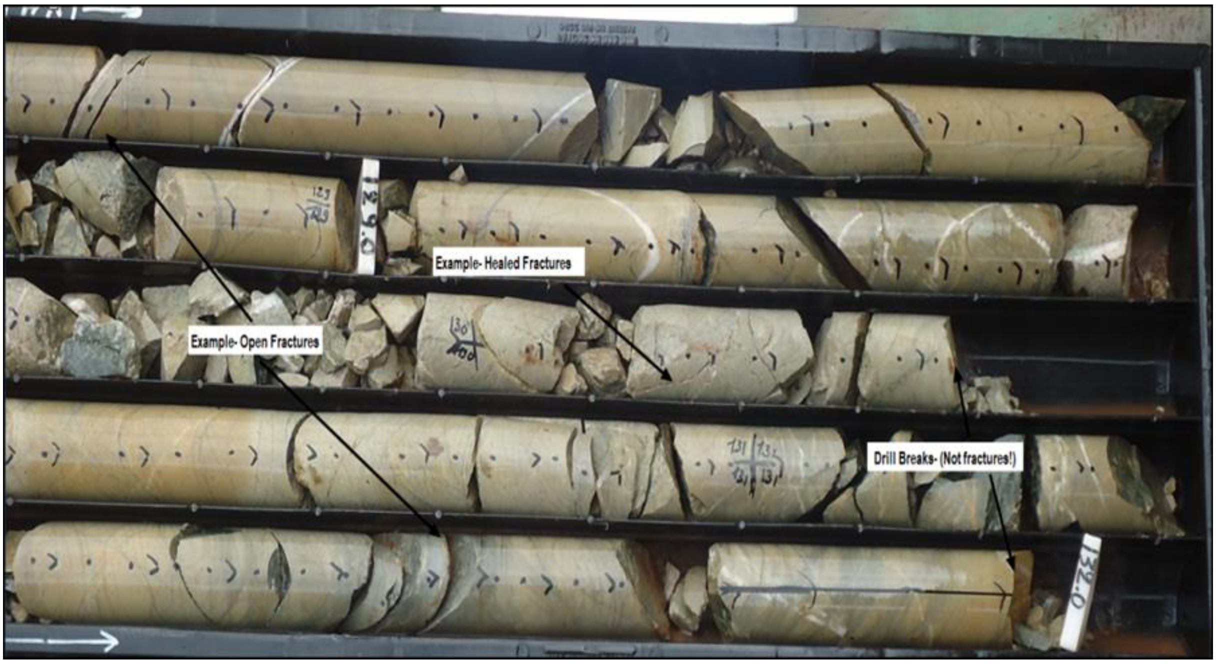
For selected diamond drilling intervals geotechnical logging and structure orientation data has been measured and logged. Geotechnical logging is conducted to assess the rock mass with regard to strength and rock stability. This information is used during mine planning and mine design for pit slope stability and blasting patterns. Routine geotechnical logs include the following observations:

- core recovery
- RQD (rock quality designation)
- defect type and number
- fracture frequency
- strength.

Diamond core interval recovery has been estimated by measuring from core block to core block using a tape measure. Drilling in the Bibiani project area intersected areas of historic mining with interpreted stopes and voids identified as separate intervals.

The rock quality designation (RQD) provides a numeric value to quantify the mechanical quality of rock material by measuring the length of sticks of drill core recovered from the rock mass. Good quality rock with few fractures will have a high RQD, while poor quality or strongly fractured rock will have a low RQD value (Figure 10.3). It should be noted that drilling or core handling induced breaks are not included in the fracture frequency measurement or RQD.

Figure 10.3 Example of diamond core with various degrees of fracturing, and the impact it has on the quality of the orientation mark-up



To provide a permanent visual record, all drill core was photographed both dry and wet. Two core trays are photographed at the same time within one frame, with an identifier included in the image which shows the drillhole number. Each tray is given a permanent aluminium tag placed at the beginning of the tray with drillhole number, tray number and depths at the start/end of the tray clearly written or engraved on it.

11. SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1. SAMPLE DISPATCH

11.1.1. HISTORICAL DATA

Sample data pertinent to the Bibiani Main Pit Mineral Resource is from drilling conducted over a broad history with numerous project owners. In 2012 Coffey Mining completed an assessment of sampling procedures during an external audit for the previous owners, Noble Mineral Resources. The Coffey report concluded that the procedures of the former owners prior to 2008 were not verifiable; however, the data collected by Noble Mineral Resources between 2008 and 2012 was deemed to be of an appropriate industry standard.

11.1.2. MENSIN GOLD BIBIANI LTD PROCEDURES

For resource drilling conducted between 2014 and 2017 by MGBL, the samples dispatched for assay were collated in a dispatch report created within DataShed software. The dispatch report included all the drill sample identification records including quality control samples, details of the analysis laboratory and the required analysis profile. Completing the dispatch form with DataShed software provided a confirmed link with sample intervals (from and to depths) and logging data already loaded within the database by the logging geologist. The Sample Dispatch form is an extension in DataShed designed for capturing all dispatch data required for submission of samples to the laboratory.

All samples for dispatch were collected into groups and sealed in bags for shipment. The number of packages for shipment was also recorded as part of the dispatch report. The laboratory was provided with an email and electronic listing of the dispatched samples.

The transport carrier was arranged by the destination laboratory and was used exclusively for the transport of project samples. Relevant information regarding the transport company was included in the dispatch report. The procedure for the arrival of the transport vehicle at the project site included the driver's name, registration of the vehicle, and the completion of a site entry permit specific to each dispatch. The vehicle was escorted through the project site and MGBL personnel conducted the loading and unloading of sample packages.

All aspects of the sampling and dispatch process were supervised and tracked by MGBL personnel. When the samples were received by the destination laboratory, a list of received sample numbers was compiled, and any differences to the dispatch report were noted and investigated.

11.2. SAMPLE PREPARATION

The RC drill samples were riffle split (dry) at the rig to obtain a sample of 2 – 4 kg suitable for laboratory submission, and then dispatched as per the procedure described in Section 11.1.2.

After the diamond core was logged and photographed, the core was cut in half prior to sampling. One half of the core was retained for future reference and the other half was sampled. The sample intervals were set at one metre, and this ensured that each sample weighed between 2 and 4 kilograms. The one metre nominal interval lengths were adjusted around voids, to ensure samples were at least 0.5 m in length.

All the resource samples were analysed for gold at Intertek Tarkwa, which is an independent laboratory. The method used for analysis was the industry standard, 25 g fire assay technique with Atomic Absorption Spectrometry (AAS) analysis to finish. The sample preparation consisted of the following steps:

- the samples were dried in an oven
- samples were crushed to 10 mm
- samples were split
- the split sample was pulverised to generate a pulp with 85% passing 75 microns.

For diamond core, coarse duplicates were split by the laboratory after crushing at a rate of 1 in 20 samples. Reverse circulation field duplicates were collected by MGBL personnel prior to dispatch at a rate of 1 in 20 primary samples.

11.3. ANALYSIS

Coffey's 2012 review of the analysis procedures concluded that the data was found to be of industry standard for the Noble Mineral Resources data (2011-2012); however, data that pre-dated Noble from 1994 to 2008 was not verifiable.

After MGBL took ownership of the Bibiani project in 2014, a data validation and verification process was initiated for available stored historical drillholes. All MGBL samples have been assayed for gold by 25g fire assay with an AAS instrument finish. The analytical method is appropriate for the style of mineralisation and constitutes a total gold extraction.

11.4. SECURITY

For all MGBL drilling programmes sample security was maintained by MGBL personnel during all stages of on-site preparation and dispatch.

All samples for dispatch were sealed in bags and the number of packages included in the shipment were recorded as part of the dispatch report. The laboratory was provided with an email and electronic listing of the dispatch advice. The company used for transporting the samples from site to the laboratory was used exclusively, and relevant information regarding the transport company was included in each dispatch report.

All aspects of the sampling and dispatch process were supervised and tracked by MGBL personnel. The procedure for the arrival of a transport vehicle at the Bibiani project site included greeting the vehicle at the site entrance where the driver's name, registration of the vehicle, and the completion of a site entry permit was completed. The vehicle was then escorted through the project site and MGBL personnel conducted the loading and unloading of sample packages.

12. DATA VERIFICATION

12.1. DATA MANAGEMENT

12.1.1. MENSIN GOLD BIBIANI LTD DRILLHOLE DATA MANAGEMENT

All data and interpretative inputs to Bibiani Main Pit Mineral Resource estimates are checked and verified in accordance with a range of MGBL standard operating procedures (SOP). Core is marked up, and photographed with geology, bulk density and geotechnical information being recorded digitally using LogChief logging software. All logging and assay data is stored in a Datashed SQL database, to which login and access permissions are limited to control access and to maintain integrity of the resource data. Data access is generally limited to the geologists and database administrators.

The Datashed SQL database has several inbuilt data validation checks that run when data is imported. Any discrepancies in the data return an error and must be corrected before the database will accept the new information into the system.

12.2. VERIFICATION

12.2.1. HISTORICAL DRILL DATA

MGBL initiated a data validation and verification process in 2014 and 2015 to increase confidence in the historical data collected from 1993 to 2012. This process involved cross-checking co-ordinates, surveys, samples, void intervals and assays against the original data sources, including old MS Access databases, MS Excel files, reports, and original laboratory assay certificates, both in hardcopy and digital format.

The validation of the assay data was achieved through recompiling the historical assay data from the original data sources to obtain analytical techniques, job numbers and dates, repeat assays, screen fire assay fractions and laboratory repeats, standards and blanks, as well as resampling and assaying the historical diamond core. The outcome of the assay verification process was that 38% of the assays from the historical drillholes included in the resource estimate were either sampled by or validated by MGBL.

DIAMOND CORE RESAMPLING RESULTS

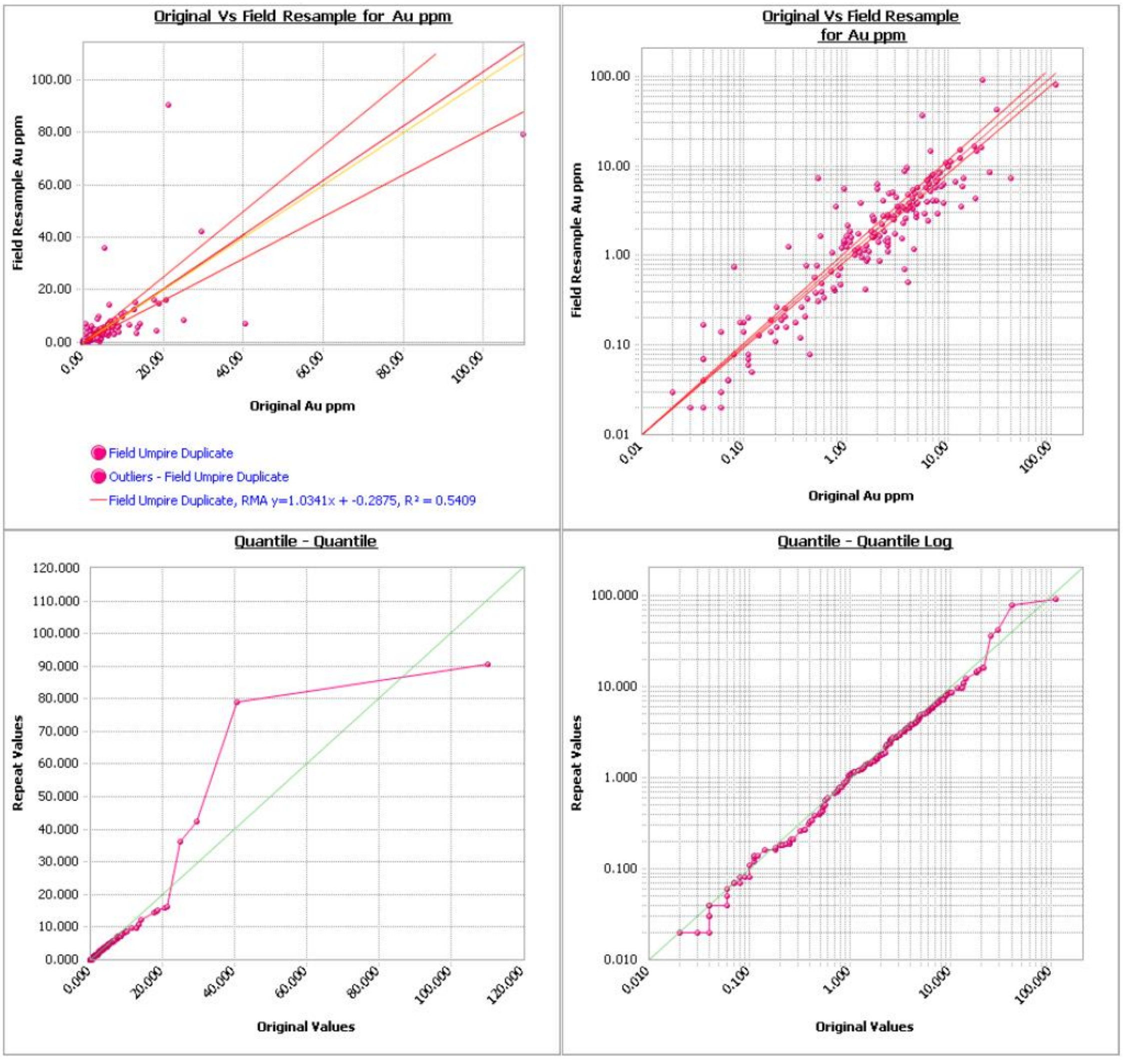
MGBL resampled 4 historical holes (8LN10W05, 8LN8W03, 8LN8W04 and MPD26) which were originally drilled by CAG during 2007 and 2008. Resampling was completed to verify the original SGS Bibiani fire assay values. All samples had an average interval length of 1 m and were remnant core samples. Samples were submitted to Intertek Tarkwa for analysis by FA25/AAS, and included in each dispatch were coarse duplicates, certified reference materials (CRMs) and blank samples.

A comparison between the original samples (Au1) and resamples (Au2), for sample pairs >0.01 ppm, is summarised in Table 12.1. Figure 12.1 illustrates the duplicate pairs as scatter and QQ plots. The pairs exhibit correlation that is consistent with core duplicates. The QP considers that the study has demonstrated the veracity of the original SGS Bibiani assays.

Table 12.1 Field resample summary (source: Rock Solid Data Consultancy Pty Ltd, 2016)

Range Au	No of samples	Mean Au1	Mean Au2	SD Au1	SD Au2	CV Au1	CV Au2	Mean HRD
Pairs >0.01 ppm	201	3.91	3.42	9.18	7.32	2.35	2.14	16.78

Figure 12.1 Field resample scatter plot and Q-Q plot (source: Rock Solid Data Consultancy Pty Ltd, 2016)



12.2.2. MENSIN GOLD BIBIANI LTD QAQC PROCEDURES AND RESULTS

MGBL completed two drilling campaigns. Phase 1 saw 106 resource drillholes completed for 26,284 metres of drilling in 2014- 2015, and Phase 2 added a further 55 drillholes for 22,844 metres in June 2017. Both programmes were undertaken from a combination of surface and underground positions.

A combined total of 46,995 diamond core samples and 953 RC samples were collected between the two drill programmes. The average sample interval was 1 m. Samples were analysed at Intertek Tarkwa for gold using a 25 g fire assay charge, with AAS instrument finish.

The MGBL Quality Control (QC) protocol is designed to assess the accuracy and precision of the assay results reported by Intertek Tarkwa. QC samples were included with the main batch when submitted to the laboratory. The rates at which they were inserted into the main sample stream are detailed below:

- Coarse duplicate samples – 1 every 20 samples, duplicate samples, to test the ability of the lab to repeat the same assay result i.e. the precision of the assays.
- blank samples – 1 every 20 samples; blanks test for any smearing of grade or cross-contamination from one sample to another through the sample preparation and/or analysis process.
- Certified Reference Material (CRM) – 1 every 20 samples; these samples have a certified gold value which is unknown to the laboratory. This QAQC type tests for the accuracy of the results returned.

As part of the quality control procedures a total of 495 coarse rejects and 1,388 pulps were re-submitted to Intertek for gold analysis. A further 316 pulps were sent to SGS Tarkwa for gold analysis.

A total of 611 gold batches were received from Intertek Tarkwa between 2014 and 2017, and SGS Tarkwa received 9 quality control batches. QC samples were included in all 611 batches and the QAQC samples represent 19% of the total MGBL samples analysed. The total number of drillholes, metres drilled, and metres sampled is summarised in Table 12.2.

Table 12.2 Summary table for the Resolute Phase 1 and 2 drilling campaigns

Campaign	Hole type	Holes	Metres drilled	Metres sampled
Phase 1	Diamond	93	21,110	19,267
	RC-Diamond tail	13	5,174	5,016
Phase 2	Diamond	55	22,884	22,712
Total		161	49,168	46,995

The performance of the CRMs, blanks, and duplicates have all been evaluated. The QP believes that the overall assessment of the quality control data is positive and provides confidence in the veracity of the gold assays used in the resource estimate.

CERTIFIED REFERENCE MATERIAL (CRM) ANALYSIS

CRMs were included in the MGBL drilling samples at regular intervals and represent 3 percent of samples analysed. Up to 13 different CRMs were used in the MGBL drilling campaigns; these were sourced from Rocklabs Limited in Auckland, New Zealand.

The CRMs, with expected gold values ranging from 0.599 ppm to 8.671 ppm, were used during the programme and were included in each dispatch to the laboratory. The CRMs provide a good indication of the overall accuracy and precision of each batch of analytical results.

CRM performance was monitored throughout the drilling programmes by charting the analytical results over time compared with the control limits. The overall performance of the CRMs is illustrated in Figure 12.2 below. The summary table (Table 12.3) shows the Rocklabs certified value versus the calculated mean, standard deviation and bias for the data.

A total of 1,921 CRMs were analysed; of these 96% reported within 3 standard deviations from the certified expected value. Intertek Tarkwa reported 32 significant outliers, 28 of which can be attributed to standard mix-ups either during dispatch or laboratory preparation processes.

Figure 12.2 Bibiani CRM performance chart (source: Resolute Bibiani Resource QC Report 2016)

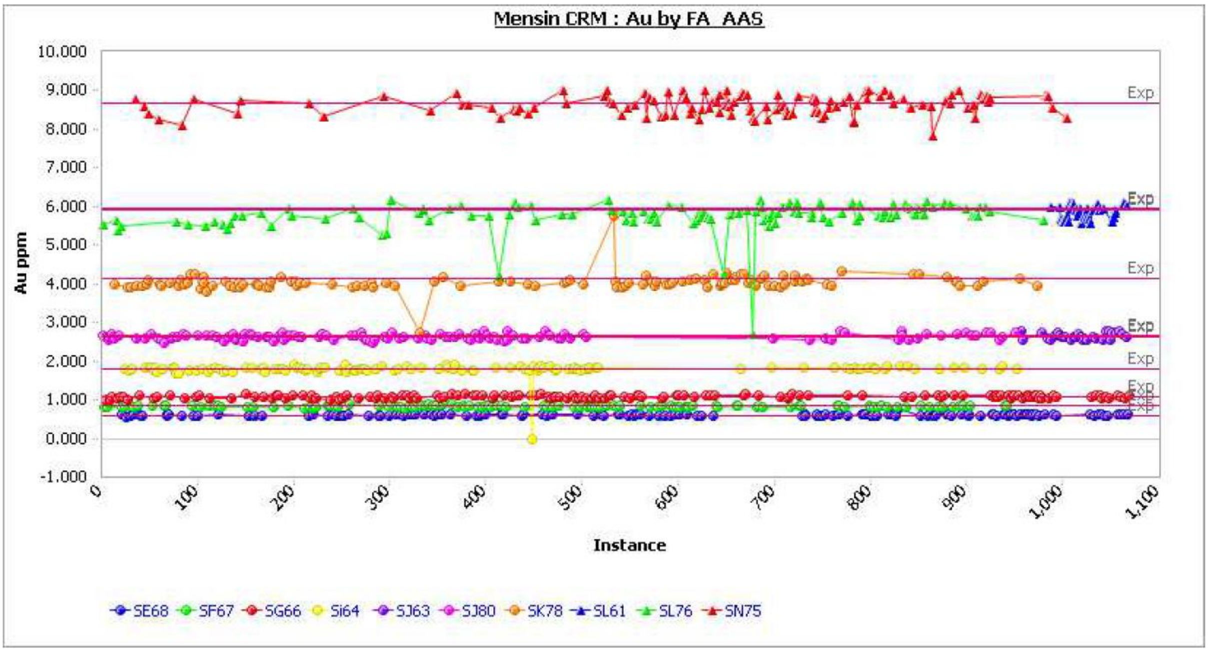


Table 12.3 Bibiani CRM performance summary (source: Asante)

Standard ID	Method	Expected Au ppm	Expected SD	No. of samples	Mean Au ppm	SD	CV	Mean bias%
SE68*	FA_AAS	0.6	0.013	65	0.62	0.04	0.06	3.94%
SE86	FA_AAS	0.6	0.015	74	0.6	0.02	0.03	1.41%
SF67*	FA_AAS	0.83	0.021	46	0.85	0.04	0.05	1.72%
SF85*	FA_AAS	0.85	0.018	56	0.84	0.04	0.05	-1.03%
SG66*	FA_AAS	1.09	0.032	64	1.09	0.05	0.04	0.53%
SG84*	FA_AAS	1.03	0.025	48	1.04	0.04	0.04	1.45%
Si81*	FA_AAS	1.79	0.03	134	1.8	0.06	0.03	0.56%
SJ63*	FA_AAS	2.63	0.055	12	2.63	0.07	0.03	-0.01%
SJ80*	FA_AAS	2.66	0.057	95	2.68	0.07	0.03	1.01%
SK78	FA_AAS	4.13	0.138	78	4.12	0.17	0.04	-0.37%
SL61*	FA_AAS	5.93	0.177	5	6.01	0.13	0.02	1.37%
SL76*	FA_AAS	5.96	0.192	69	6.01	0.19	0.03	0.76%
SN75	FA_AAS	8.67	0.199	78	8.67	0.29	0.03	-0.01%
* Outliers excluded from statistics								

BLANK MATERIAL

MGBL submitted barren coarse material during the two phases of drilling, to test for inter-sample contamination. The gravel used for this purpose was from a single source supply, but it was not certified.

The blanks were inserted at regular intervals and represent approximately 2% of the samples dispatched. The lower limit of acceptance was derived from the lower limit of detection (0.01 ppm) of the laboratory analytical equipment. The upper limits of acceptance of 0.05 ppm and 0.04 ppm were applied to the blanks in the Phase 1 and Phase 2 drilling respectively.

The performance of the blanks is illustrated in Figure 12.3 and Figure 12.4.

Figure 12.3 Blank performance for Phase 1 drilling (source: Resolute Bibiani Resource QC Report 2016)

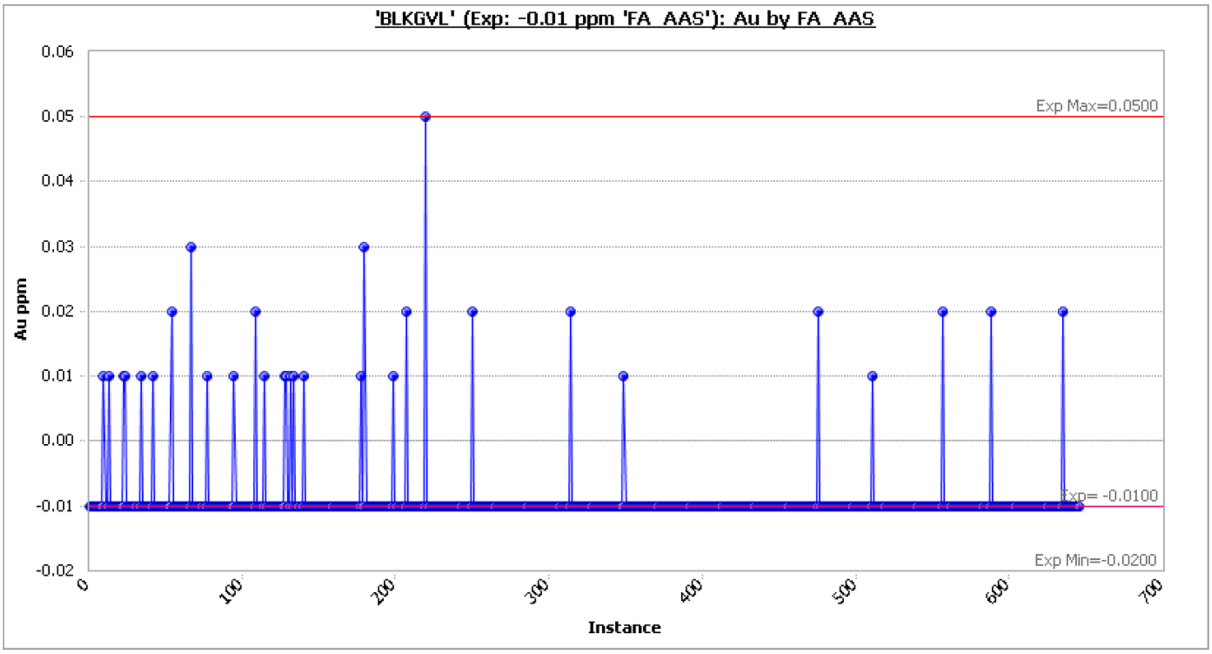


Figure 12.4 Blank performance for the Phase 2 drilling (source: Resolute Bibiani Resource QC Report 2018)

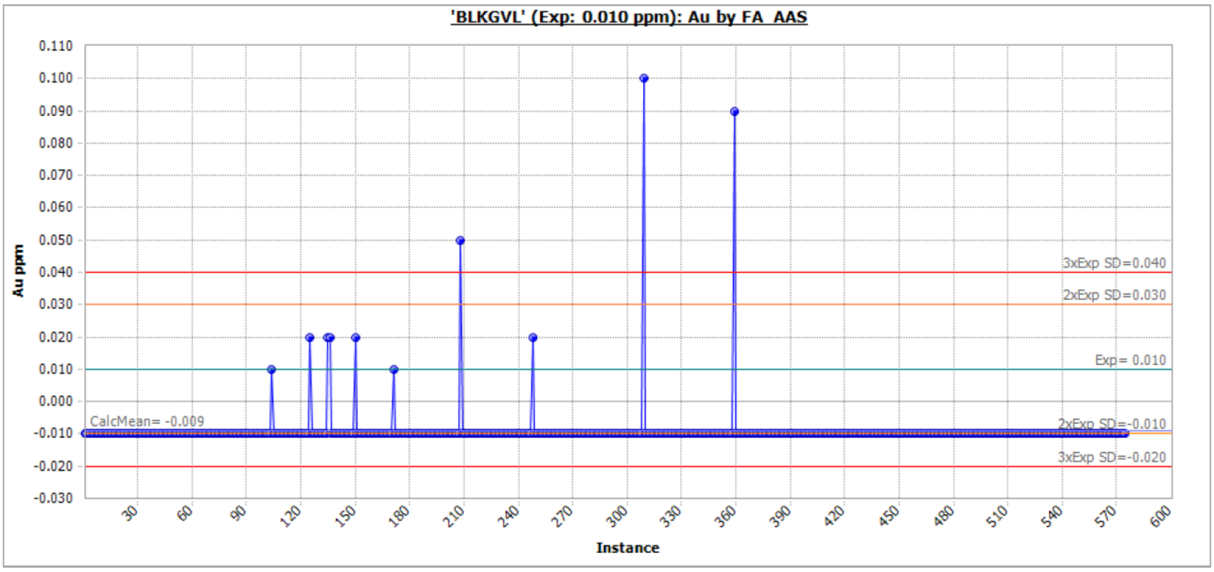


Table 12.4 summarises the performance of the blank gold results, including the expected value, calculated mean, standard deviation, and the percentage of samples that reported gold results below the upper limit of acceptance.

Table 12.4 Bibiani blanks performance summary (source: Asante)

Drilling campaign	Standard	No. of samples	Expected Au ppm	Mean Au ppm	Min Au ppm	Max Au ppm	SD	CV	% < Upper limit
Phase 1	BLKGVL	648	-0.01	-0.01	-0.01	0.48	0.02	-	99.00%
Phase 2	BLKGVL	503	0.01	-0.01			0.01	0	99.00%

Of the 1,151 results reported for the blanks, only 5 exceeded the expected maximum limit; these results are reported in Table 12.5.

Table 12.5 Bibiani blank outliers (source: Asante)

Standard	Lab	Batch no.	Sample ID	Exp	Au ppm
BLKGVL	ITK_TK	1884/1400874	B107770	<0.05	0.48
BLKGVL	ITK_TK	1884/1550030	B117530	<0.05	0.35
BLKGVL	ITK_TK	1884/1750539	B142030	<0.04	0.05
BLKGVL	ITK_TK	1884/1750961	B149770	<0.04	0.1
BLKGVL	ITK_TK	1884/1751238	B150330	<0.04	0.09

COARSE DUPLICATES

During the MGBL resource drilling programs, every 1 in 20 diamond core samples was designated as a routine coarse reject duplicate. This indicates to the laboratory that these samples are to be split after the crushing stage during sample preparation and analysed by the same method in the same batch as the original parent sample.

A comparison between the original assays (Au1) and the coarse duplicates (Au2), for sample pairs >0.01 ppm, is summarised in Table 12.6. A total of 1,787 sample pairs reported above 0.01 ppm. The coarse duplicate assay results exhibit good correlation with the original assays, with no indication of bias.

Table 12.6 Bibiani coarse duplicate summary (source: Asante)

Drilling campaign	No. of samples	Mean Au1	Mean Au2	SD Au1	SD Au2	CV Au1	CV Au2	sRPHD (mean)	HRD (mean)
Phase 1	537	2.11	2.1	9.35	9.32	4.43	4.44		0.1
Phase 2	1250	0.32	0.32	2.95	3.16	9.31	9.9	0.04	

The duplicate pairs are illustrated in Figure 12.5 for the phase 1 drilling and Figure 12.6 for the phase 2 drilling.

Figure 12.5 Coarse reject duplicate scatter plot and QQ plot for the Phase 1 drilling (Source: Resolute Bibiani Resource QC Report 2016)

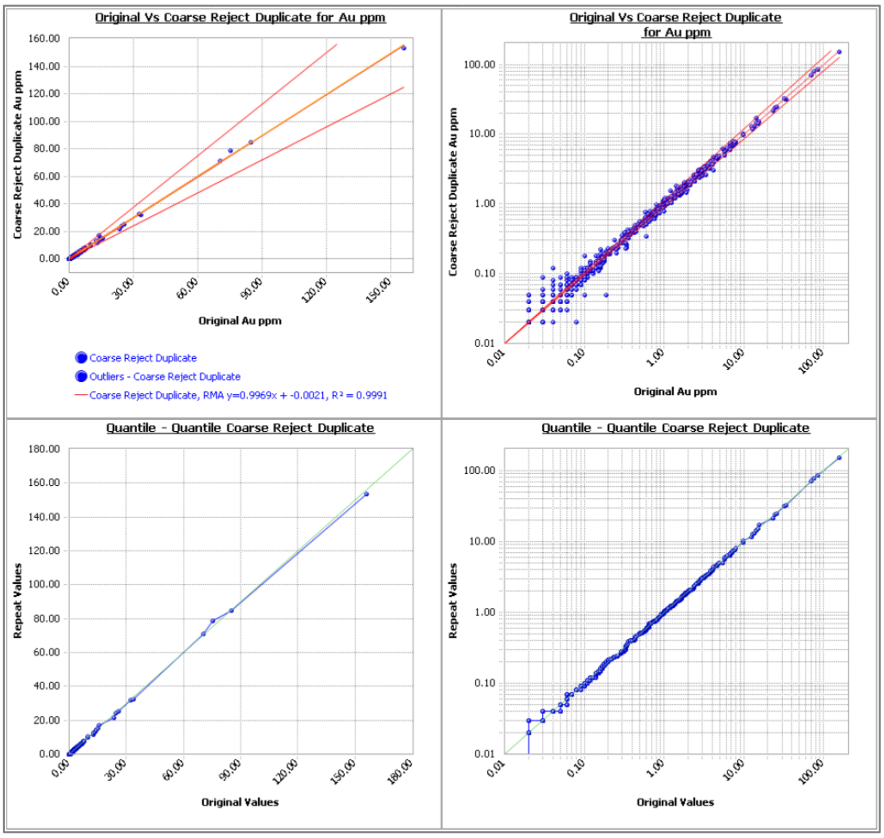
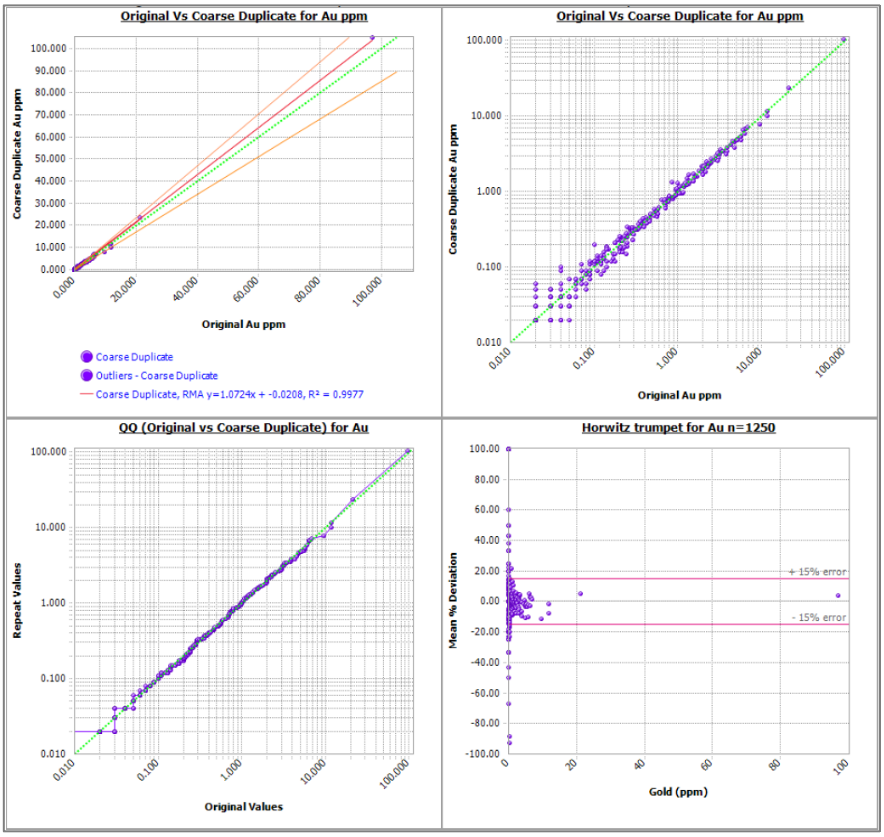


Figure 12.6 Coarse duplicate scatter plot, Horwitz Trumpet and QQ plot for the Phase 2 drilling (Source Resolute Bibiani Resource QC Report 2018)



FIELD DUPLICATES

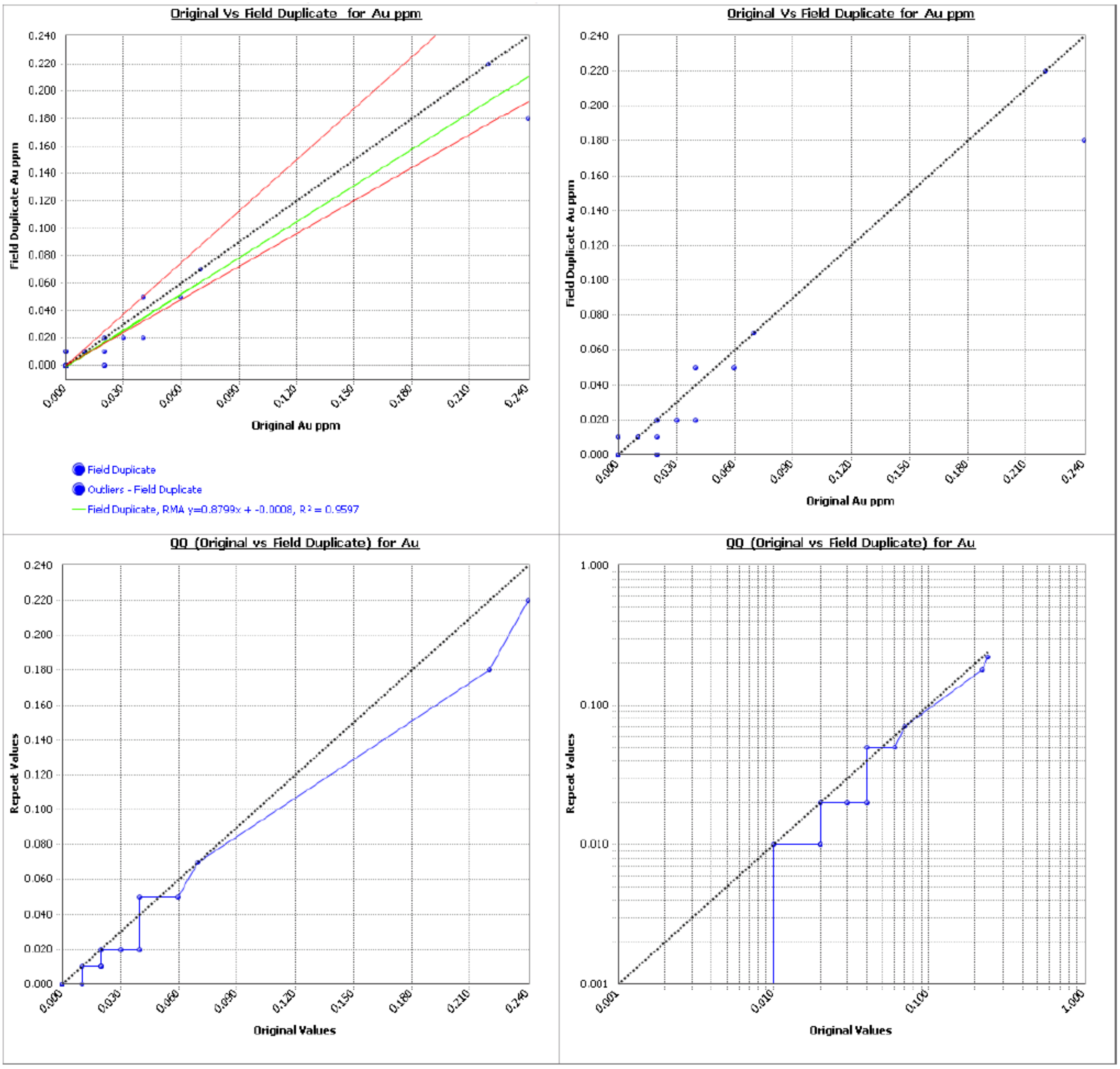
MGBL collected 52 routine RC field duplicates during the Phase 1 drilling campaign in 2014-2015. Duplicates were collected at the same time as the original sample and were analysed at Intertek Tarkwa by the same analytical method and reported in the same batch as the original parent sample.

A comparison between the original assays (Au1) and the field duplicates (Au2), for sample pairs >0.01 ppm, is summarised in Table 12.7 below. The QP considers that the QAQC reflects reliable accuracy and precision.

Table 12.7 Field duplicate summary for sample pairs above 0.01 ppm Au (source: Asante)

Drilling campaign	No. of samples	Mean Au1	Mean Au2	SD Au1	SD Au2	CV Au1	CV Au2	HRD (mean)
Phase 1	11	0.07	0.06	0.08	0.07	1.13	1.15	8.99

Figure 12.7 Field duplicate scatter plot and QQ plot for the Phase 1 drilling (Source: Resolute Bibiani Resource QC Report 2016)



13. MINERAL PROCESSING AND METALLURGICAL TESTING

13.1. ORE CHARACTERISATION

Fresh rock ores at Bibiani have, on average, a low-sulphide sulphur value around 0.6% and a component of refractory gold occluded within the sulphide minerals (mainly pyrite) that requires grinding to approximately P_{80} 25 µm to enable high cyanide leach extraction. Coarse gold exists, and gravity gold recovery has proven to be significant, albeit variable in both testwork on future ore samples and in historic operating data.

Unconfirmed mild preg-robbing components are indicated in some sample tests. This may be related to organic carbon, which is present in low levels in most samples, and/or graphitic material which is noted in geological records within the Western footwall shear zones. Organic carbon tends to upgrade in the flotation concentrate.

The fresh rock is of moderate rock competency (resistant to coarse rock breakage) with a high Bond ball milling work index. Primary grinds in the range of P_{80} 106 to 150 µm enable similar flotation performance in terms of achieving high-sulphide sulphur and gold recovery to concentrate. Gold recovery appears to be more sensitive to the concentrate regrind size (P_{80} 106 to P_{80} 25 µm) relative to the primary grind size (P_{80} 75 to 150 µm) or the flotation mass recovery.

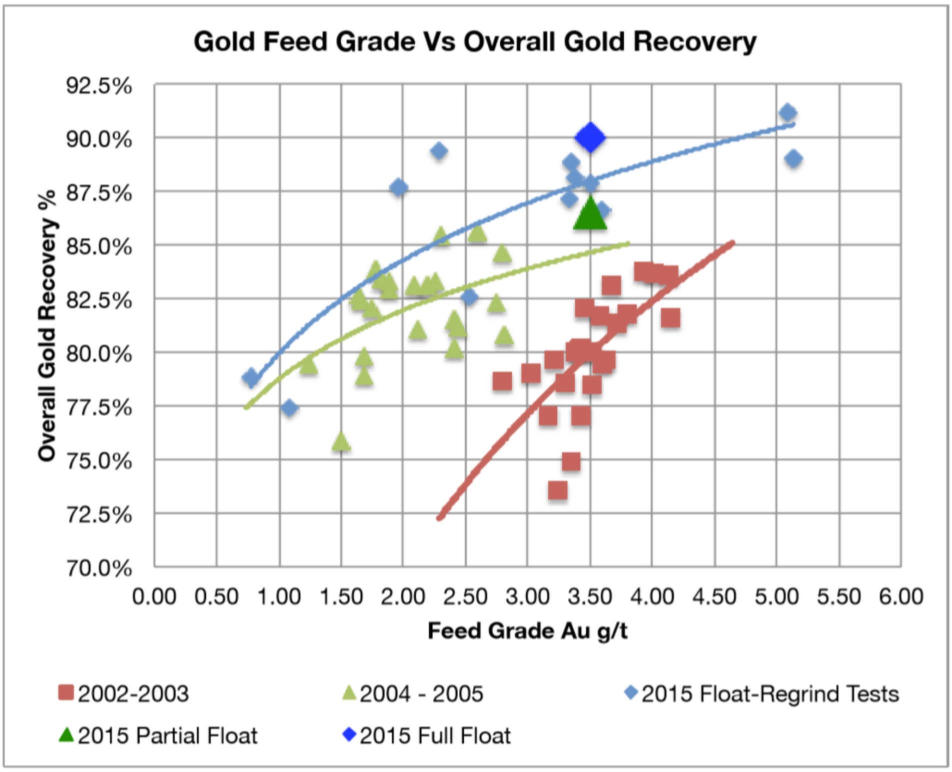
13.2. METALLURGICAL TESTWORK AND GOLD RECOVERY

A reasonable body of metallurgical testing has been completed on mineralised samples from the Bibiani project since 2001. The programmes aimed to determine the effectiveness of traditional unit processes such as gravity concentration, flotation, fine grinding and intense leaching on samples of flotation concentrate and flotation tails as the open cut ore sources became increasingly transitional in nature.

In 2015, a metallurgical testwork programme consisting of two phases was commissioned by MGBL and completed at the ALS metallurgy laboratory in Western Australia. The first phase considered three composite samples and was completed between March 2015 and May 2015. These samples were residues from underground drillholes and were selected to provide a comparison between northern and southern mineralisation zones. The second phase considered a further 14 composite samples commencing in May 2015, also at ALS. This phase of metallurgical testwork focused on the variability of the deposit to aid the flowsheet development for plant re-commissioning.

The combined results from the two phases compares the variability and amenability of the ore to conventional processing and resulted in the development of an alternative flowsheet to previous extraction at Bibiani. The basis of the alternative flowsheet was the use of flotation to concentrate the majority of the gold and sulphides to allow targeted fine grinding of the valuable minerals for CIL treatment, separately from the flotation tailings. Results of the 2015 float-regrind testwork demonstrated a higher order gold recovery at the feed grades tested. The testwork flowsheet incorporating full flotation recovers almost all sulphide minerals for regrinding and resulted in approximately 90% overall gold recovery, significantly improved from historical averages of between 75% and 85% (Figure 13.1).

Figure 13.1 Gold feed grade versus overall gold recovery



No deleterious elements have been identified from the testwork or historical processing.

14. MINERAL RESOURCE ESTIMATES

14.1. OVERVIEW

The Bibiani Main Pit Mineral Resources comprise the open pit resource, which has been classified as Indicated and Inferred only. No Measured Mineral Resources have been defined for Bibiani. The Bibiani Mineral Resources have been prepared under the direction of Competent Persons under the JORC Code (2012) using accepted industry practices and have been classified and reported in accordance with the JORC Code. There are no material differences between the definitions of Measured, Indicated and Inferred Mineral Resources under the CIM Definition Standards and the equivalent definitions in the JORC Code (2012).

The Satellite Pit (Walsh and Strauss) Mineral Resource is an updated resource done by Resolute in 2018. It has been classified as Measure, Indicated and Inferred Mineral Resources, there is no documentation or validation associated with this resource.

14.2. MINERAL RESOURCE TABULATION

The Mineral Resource for Bibiani, as reported at 18 October 2021, is presented in Table 14.1. The Mineral Resource has been reported above a 0.65 g/t gold cut-off and has been depleted for both historical open pit and underground development as at 31 August 2017. Currently there are no ongoing mining operations at Bibiani, with production stopping in 2013. The Bibiani Mineral Resources have been classified as Measured, Indicated and Inferred Resources, as defined both by JORC (2012) and according to the CIM Definition Standards. Totals may not sum due to rounding.

Table 14.1 Bibiani project Mineral Resources reported at 18 October 2021

Bibiani Resource Tabulation October 2021 above 0.65 g/t gold cut-off and within US$1,950 shell				
Area	**Classification**	**Tonnes**	**Au g/t**	**Ounces**
Bibiani Main Pit	Indicated	19,600,000	2.76	1,740,000
	Sub total M + I	**19,600,000**	**2.76**	**1,740,000**
	Inferred	8,380,000	2.79	751,000
Satellite pits	Measured	783,000	1.77	44,600
	Indicated	396,000	1.89	24,100
	Sub total M + I	**1,180,000**	**1.81**	**68,700**
	Inferred	33,700	2.13	2,310
Grand total		**29,000,000**	**2.73**	**2,560,000**

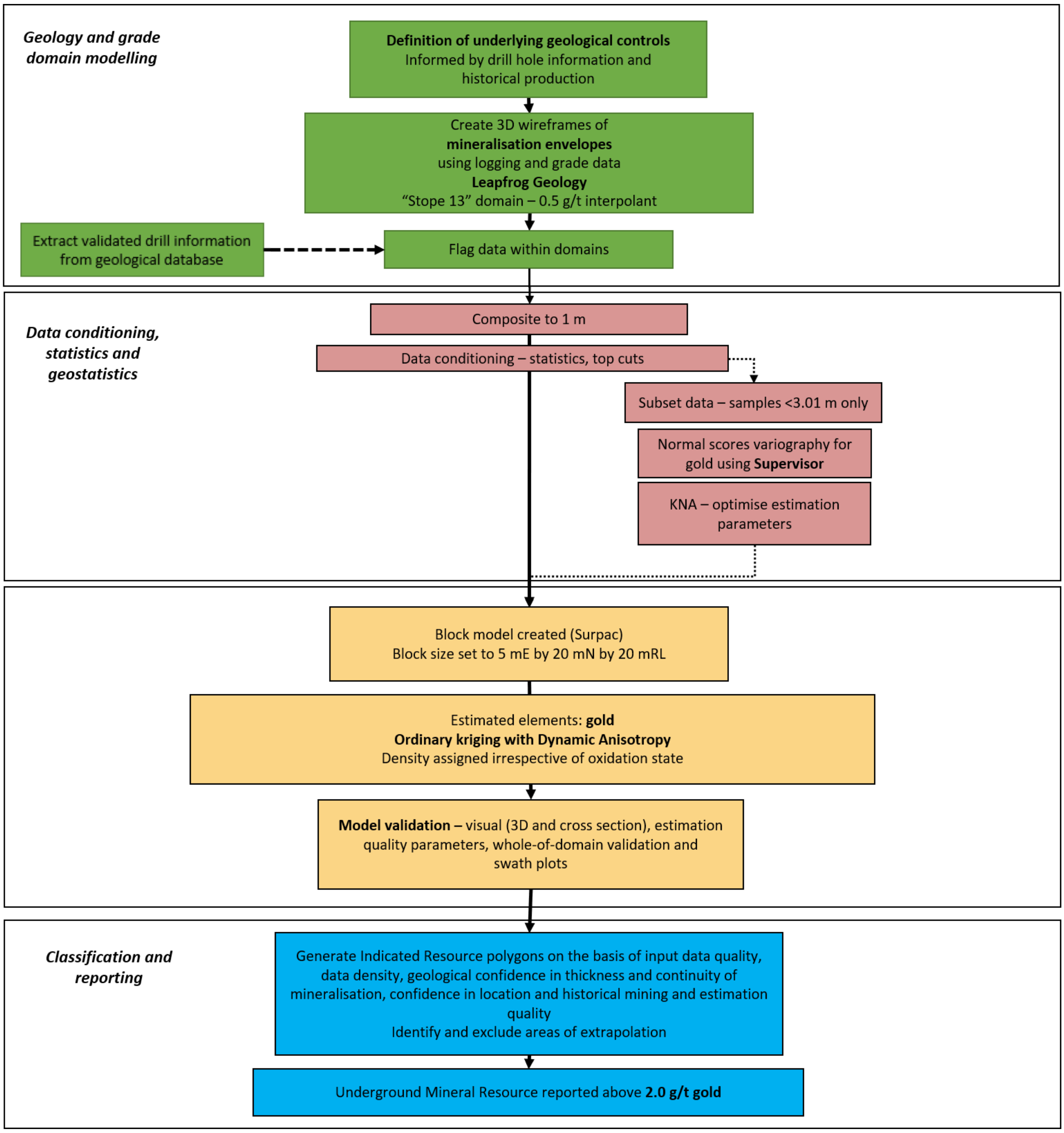
Note: Totals may not sum due to rounding. Reported above a cut-off of 0.65 g/t gold.

14.3. BIBIANI MAIN PIT RESOURCE ESTIMATION

14.3.1. MINERAL RESOURCE WORKFLOW

A simplified workflow of the current Mineral Resource process is presented in Figure 14.1.

Figure 14.1 Mineral Resource workflow



14.3.2. GEOLOGICAL MODEL AND MINERALISATION DOMAINS

The geological understanding of the Bibiani deposit is well defined and has been informed by geological observations from both the historical open pit and underground mining operations, as well as drill data and underground channel sampling. The Bibiani deposit is hosted within a thick sequence of fine-grained graded turbidites, interspersed with thin, localised, fine- to medium-grained turbiditic sandstones. The geometry of the mineralisation is structurally controlled, and is hosted in a steep, north to northeast trending shear corridor ranging in width of 200 m to 400 m. In general, mineralisation lodes dip east at between 60° to 80°, cross-cutting the regional shear structure at low angles. In the widest parts of the orebody, two (and locally up to three) individual quartz reefs or lodes have been identified.

Three-dimensional mineralisation interpretations were generated using Leapfrog Geology software by MGBL geologists based upon the available diamond and RC drilling, as well as underground channel sampling. Interpretations were geology based, guided by the presence of a logged structure, with or without quartz veining, and combined with gold grade. Eleven mineralised domains were created using this method (Table 14.2). One domain, 'Stope 13' was created using a 0.5 g/t gold interpolant in Leapfrog Geology. This process generated multiple wireframes (Figure 14.2); however, only wireframes considered to be well supported (pink), informed by multiple drillholes and samples, were used in the Mineral Resource. Both plan and oblique views of the domains modelled at Bibiani are presented in Figure 14.3 and Figure 14.4 respectively.

Table 14.2 Mineralisation domains

Zone code	Description
1010	Central lode - south
1020	Central lode - north
1030	Central lode - hangingwall
1040	Central lode - north, footwall
1050	Central lode - south, footwall
3010	Eastern lode
3020	Eastern lode - hangingwall
4013	Stope 13
5010	West lode - north
5020	West lode
5030	West lode - footwall
5040	West lode - hangingwall

Figure 14.2 Stope 13 wireframes categorised by supporting information (source: Optiro, 2017)

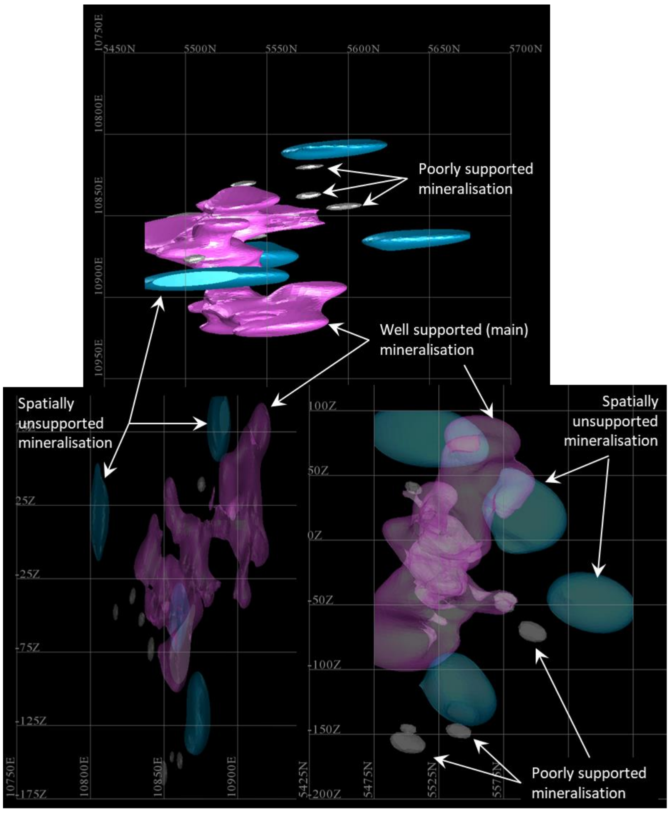


Figure 14.3 Plan view of Bibiani mineralisation domains (source: Optiro, 2017)

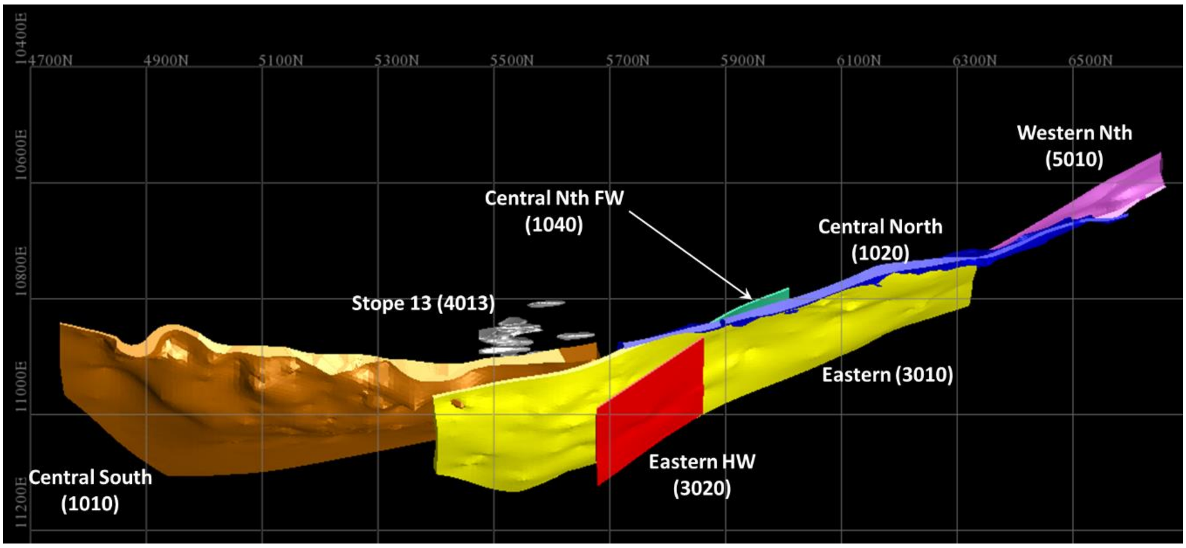
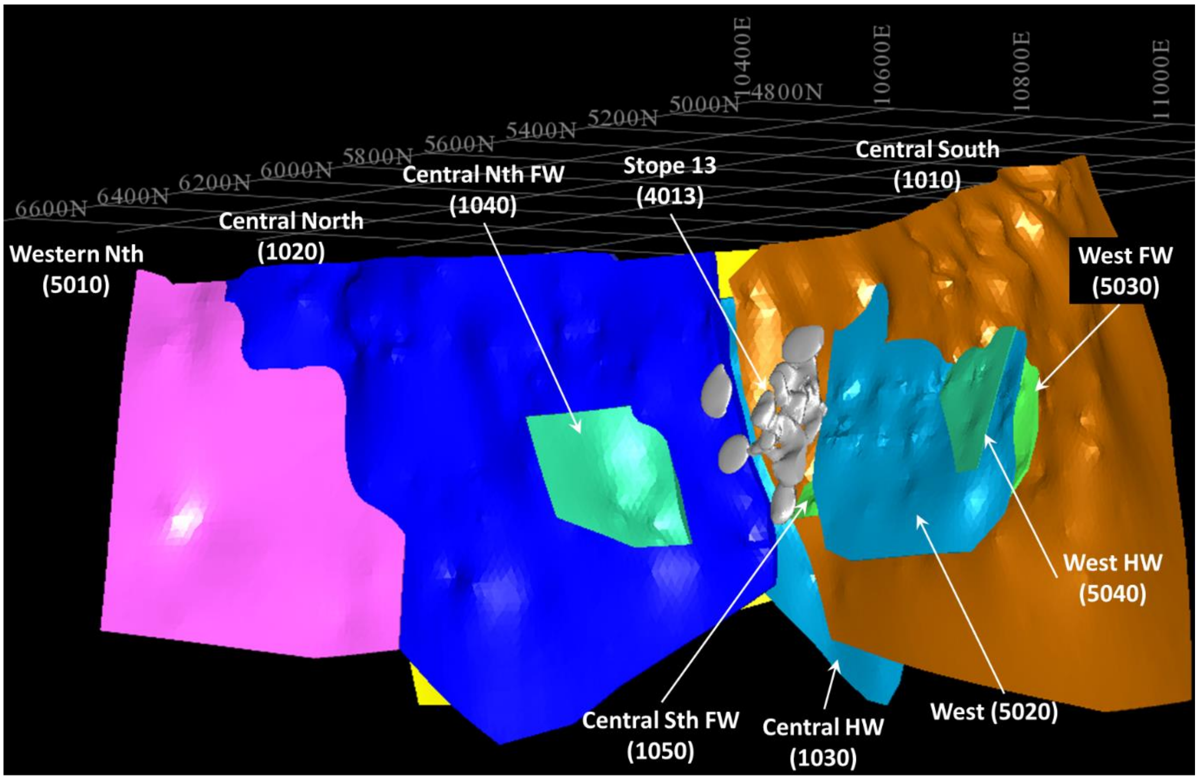


Figure 14.4 Oblique view of Bibiani mineralisation domains looking northeast (source: Optiro, 2017)



14.3.3. DATA CONDITIONING

Data for the Mineral Resource is comprised of diamond and RC drilling, as well as a proportion of underground channel sampling from either face, wall or back exposures. Using Surpac software, the data was flagged inside the three-dimensional wireframes and coded by domain. A composite length of 1 m was selected as appropriate; however, prior to compositing, it was noted that many samples had sample lengths exceeding 1.5 m, including approximately 16 % (by length) of samples which exceeded 3.0 m. After investigation by MGBL geologists, these samples were determined to be predominantly underground channel samples or intercepts from mineralised fill material from within mined voids and were included. Compositing of these larger samples to 1 m has the potential to bias the statistical and variography analysis and, as such, samples greater than 3.01 m were excluded from this analysis.

All samples were composited to 1 m using a best-fit approach using a minimum composite length of 0.30 m. Comparisons between the raw and composited sample lengths and grade (metal) were used to validate the compositing process. Naïve composite statistics for all samples and the subset used for variography are presented in Table 14.3. Overall, the coefficients of variation (CV) for each domain are considered relatively low for shear-hosted gold mineralisation (Optiro, 2017), with all domains having large positive coefficients of skewness.

Table 14.3 Composite statistics (source: Optiro, 2017)

Domain	1010	1020	1030	1040	1050	3010	3020	4013	5010	5020	5030	5040
1 m composites (all)												
Samples	7,739	3,497	1,210	94	197	2,156	136	953	593	1,805	787	280
Minimum	0.001	0.001	0.001	0.06	0.009	0.001	0.005	0.01	0.005	0.001	0.005	0.005
Maximum	154.8	155.9	123.9	25.1	13.6	190	164.8	54.5	52.2	44.7	21.8	14.9
Mean	**3.26**	**2.75**	**4.01**	**2.89**	**1.27**	**2.48**	**2.35**	**3.78**	**1.86**	**2.39**	**1.74**	**1.61**
Standard deviation	5.87	6.87	10.65	3.77	1.72	8.96	14.24	5.69	4.65	2.9	2.36	1.99
CV	1.8	2.5	2.7	1.3	1.4	3.6	6	1.5	2.5	1.2	1.4	1.2
Variance	34.42	47.25	113.45	14.18	2.96	80.27	202.69	32.42	21.57	8.41	5.57	3.98
1 m composites (variography subset)												
Samples	7,414	3,128	1,144	94	197	2,028	128	950	541	1,766	776	280
Minimum	0.001	0.001	0.001	0.06	0.009	0.001	0.005	0.01	0.005	0.001	0.005	0.005
Maximum	154.85	155.89	123.87	25.05	13.59	190	164.75	54.5	52.21	44.71	21.8	14.94
Mean	**3.23**	**2.89**	**4.18**	**2.89**	**1.27**	**2.56**	**2.5**	**3.79**	**1.93**	**2.4**	**1.76**	**1.61**
Standard deviation	5.8	7.11	11.02	3.77	1.72	9.18	14.67	5.7	4.82	2.91	2.37	1.99
CV	1.8	2.5	2.6	1.3	1.4	3.6	5.9	1.5	2.5	1.2	1.3	1.2
Variance	33.64	50.6	121.49	14.18	2.96	84.31	215.11	32.48	23.27	8.49	5.61	3.98

Top-cut analysis was completed using a combination of approaches, including examination of the grade distributions (histograms and probability plots), domain statistics and population disintegration. Although many of the statistical measures of outlier grade distribution were not extreme, all domains contained some outlier values when compared with the overall domain population. As such, top-cutting (or capping) of these identified outliers was completed to minimise the local impact of these samples on the estimate. The top-cuts selected, and the impact on the domain statistics for all composites and the variography subsets, are presented in Table 14.4.

Table 14.4 Domain top-cuts

Domain	No. composites	Top-cut			Mean			Coefficient of variation		
		Value	# cut	Percentile	Uncut	Cut	% diff.	Uncut	Cut	% diff.
1 m composites (all)										
1010	7,739	**60**	16	99.8%	3.26	3.21	-2.0%	1.8	1.59	-12%
1020	3,497	**30**	40	98.8%	2.75	2.49	-10.0%	2.5	1.77	-29%
1030	1,210	**48**	16	98.6%	4.01	3.57	-11.0%	2.66	2.1	-21%
1040	94	**12**	2	97.9%	2.89	2.69	-7.0%	1.3	1.06	-18%
1050	197	**8**	2	99.0%	1.27	1.23	-3.0%	1.36	1.23	-10%
3010	2,156	**22**	29	98.6%	2.48	1.94	-22.0%	3.61	1.97	-45%
3020	136	**10**	3	98.4%	2.35	1.13	-52.0%	6.05	1.79	-70%
4013	953	**42**	4	99.6%	3.78	3.74	-1.0%	1.51	1.45	-4%
5010	593	**20**	9	98.5%	1.86	1.67	-10.0%	2.5	2.01	-20%
5020	1,805	**30**	1	99.9%	2.39	2.38	-0.3%	1.21	1.18	-3%
5030	787	**12**	4	99.5%	1.74	1.71	-2.0%	1.36	1.28	-5%
5040	280	**9**	3	99.1%	1.61	1.57	-3.0%	1.24	1.12	-10%
Variography subset										
1010	7,414	**60**	14	99.8%	3.23	3.18	-2.0%	1.8	1.57	-12%
1020	3,128	**30**	37	98.8%	2.89	2.6	-10.0%	2.46	1.71	-30%
1030	1,144	**48**	17	98.5%	4.18	3.7	-12.0%	2.64	2.07	-22%
1040	94	**12**	2	97.9%	2.89	2.69	-7.0%	1.3	1.06	-18%
1050	197	**8**	2	99.0%	1.27	1.23	-3.0%	1.36	1.23	-10%
3010	2,028	**22**	30	98.5%	2.56	1.98	-23.0%	3.59	1.92	-47%
3020	128	**10**	3	98.3%	2.5	1.2	-52.0%	5.87	1.73	-71%
4013	950	**42**	4	99.6%	3.79	3.76	-0.9%	1.5	1.45	-3%
5010	541	**20**	9	98.4%	1.93	1.73	-11.0%	2.49	2	-19%
5020	1,766	**30**	1	99.9%	2.4	2.39	-0.3%	1.21	1.18	-3%
5030	776	**12**	4	99.5%	1.76	1.73	-2.0%	1.34	1.27	-5%
5040	280	**9**	3	99.1%	1.61	1.57	-3.0%	1.24	1.12	-10%

14.3.4. VARIOGRAPHY

Variography for the mineralised domains was completed in Supervisor v8.7 using normal score transformed data, with the variogram model back-transformed prior to use. For domains with insufficient samples (1040, 1050 and 3020) variogram orientations were borrowed from similarly orientated domains, and the variogram model applied from the zone which best matched the statistical parameters. For domain 4013 (Stope 13), created using the 0.5 g/t interpolant in Leapfrog, the directions of maximum continuity in both the horizontal and across strike variograms were oblique to the modelled geometries. As such, both directions were realigned to fit the overall geology of the mineralised package.

Although there is an overall arcuate geometry to the more strike extensive domains, the rate of change did not justify the use of an unfolding approach and the variography was prepared in Euclidean space (Optiro, 2017). The downhole variogram was used to define the nugget component of the modelled variogram and the spatial variograms were modelled using spherical structures. All back-transformed variogram models are presented in Table 14.5.

Table 14.5 Domain variogram models (back-transformed) (source: Optiro, 2017)

Zone	Directions	C_0	Structure 1		Structure 2		Structure 3	
			C_1	A_1	C_2	A_2	C_3	A_3
1010	-10°/350°	0.13	0.61	17	0.2	188.5	0.05	329.5
	-80°/170°			5.5		112		256
	00°/260			4.5		33		33.5
1020	-10°/168°	0.08	0.65	19.5	0.21	92	0.06	560
	76°/215°			11.5		93.5		102.5
	-10°/260°			26		26.5		26.5
1030	-76°/040°	0.09	0.53	15.2	0.27	16.4	0.11	128.5
	-10°/173°			46.3		46.4		46.5
	-10°/265°			3.5		11		11.1
1040 *(directions 1020, model 5030)*	-10°/168°	0.05	0.46	23.4	0.31	60.3	0.18	209.3
	76°/215°			8.3		85.6		85.7
	-10°/260°			2.5		22.2		22.3
1050 *(directions and model 5040)*	-46°/348°	0.11	0.3	8	0.39	8.5	0.19	51.5
	-37°/206°			7.8		21.6		35.5
	20°/280°			1		8.5		8.5
3010	00°/340°	0.13	0.57	68.2	0.16	99.9	0.14	139.6
	-70°/070°			9.4		68.4		68.5
	-20°/250°			4.7		30.5		30.6
3020 *(directions 1020, model 5030)*	-10°/168°	0.05	0.46	23.4	0.31	60.3	0.18	209.3
	76°/215°			8.3		85.6		85.7
	-10°/260°			2.5		22.2		22.3
4013	-80°/270°	0.35	0.27	5.7	0.27	9.7	0.11	36.7
	00°/180°			5.5		15.5		27.7
	10°/270°			2.8		11.3		21.4
5010	-40°°/340°	0.06	0.71	43.1	0.23	198.6		
	-50°/160°			51.2		54.5		
	00°/250°			9.9		10		
5020	-49°/192°	0.18	0.6	15.8	0.22	33.1		
	39°/172°			8.1		19		
	10°/270°			3.5		9.2		
5030	-29°/166°	0.05	0.46	23.4	0.31	60.3	0.18	209.3
	59°/143°			8.3		85.6		85.7
	10°/250°			2.5		22.2		22.3
5040	-46°/348°	0.11	0.3	8	0.39	8.5	0.19	51.5
	-37°/206°			7.8		21.6		35.5
	20°/280°			1		8.5		8.5

14.3.5. BULK DENSITY

A database containing 39,862 density determinations exists for the Bibiani deposit. Approximately 1% of the density data (2,509) was excluded during the validation process, which identified issues including erroneous hole locations, duplicates, sampling issues or suspect readings. A total of 37,123 data points were categorised into material type, with no statistical differences observed. As such, a density value of 2.75 t/m^3 was assigned to in situ mineralisation, irrespective of oxidation/weathering. This remains unchanged from previous estimates.

Procedures detailing the collection of the bulk density information are unavailable, and it is noted that some determinations were whole runs along a drillhole while others were 'spot' density readings, measured at a fixed distance downhole or at identified features in the core. Past production at Bibiani and reconciliation has confirmed that the assigned density value is appropriate.

14.3.6. BLOCK MODELLING

A block model was created in Surpac utilising the block model parameters presented in Table 14.6. The block model is not rotated and was created using the local mine grid. Comparison between the domain wireframes and block model volumes confirms that these parameters appropriately capture the mineralisation.

Table 14.6 Bibiani block model parameters

	Northing (mN)	Easting (mE)	Elevation (mRL)
Minimum coordinates	4,500	10,400	-500
Maximum coordinates	7,000	11,400	420
Parent block size (m)	20.0	5.0	20.0
Minimum block size (m)	5.0	0.625	5.0

Kriging Neighbourhood Analysis (KNA) was undertaken using Supervisor v8.7 to ensure the optimal block size and estimation parameters (minimum and maximum numbers of informing samples, search radius and discretisation) were selected. Domain 1010, the Central South domain which had the greatest gold accumulation (volume x mean grade), was selected to test the optimal block size. Using the domain variography and several block locations, comparative metrics (kriging efficiency, slope of regression and number of negative weights) were analysed. In summary, a block size of 5 mE by 20 mN by 20 mRL was selected, with testing on other significant domains supporting its suitability.

The number of informing samples were then tested for the selected block size and consistently a minimum of 8 samples was required. No significant improvement in the estimation metrics was observed for any of the zones once there were at least 36 samples, and so these limits were selected as the minimum and maximum number of informing samples for estimation.

14.3.7. GRADE ESTIMATION

The block model was exported into Datamine Studio RM for estimation of gold using Ordinary Kriging (OK). Both the cut and uncut gold grades have been estimated to assist mine planning in an assessment the associated grade risk. No other elements have been estimated. Due to the arcuate overall geometry of the mineralisation, dynamic anisotropy (DA) was adopted for grade estimation. DA uses local orientation information to transform the search and variogram ellipses for estimation for each block, optimising the estimation for domains with varying geometry like that at Bibiani. Centreline wireframes were prepared (Figure 14.5) and used to estimate the true dip and true dip direction (Figure 14.6) for each domain.

Search parameters are presented in Table 14.7. A maximum of 4 samples per drillhole was used to ensure that at least two drillholes were informing each block estimate. A total of three search passes were used; if blocks remained un-estimated after the final pass blocks were assigned the grade of the nearest informed block. Of the total model, 82% (by volume) was estimated in the first pass, 7% in the second pass, 10% in the third pass and 2% had grades assigned.

Figure 14.5 Dynamic anisotropy centreline examples (upper left oblique view, lower left plan view and right cross-section view) (source: Optiro, 2017)

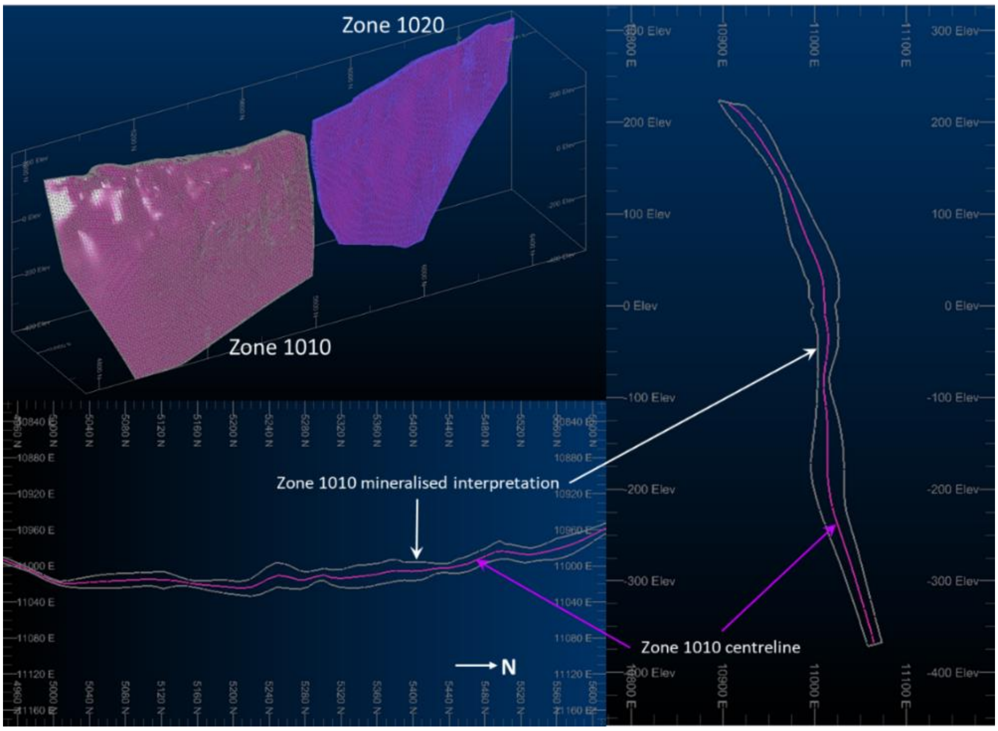


Figure 14.6 Domain 1010 long-section and cross-section views showing true dip (upper) and true dip direction (lower) (source: Optiro, 2017)

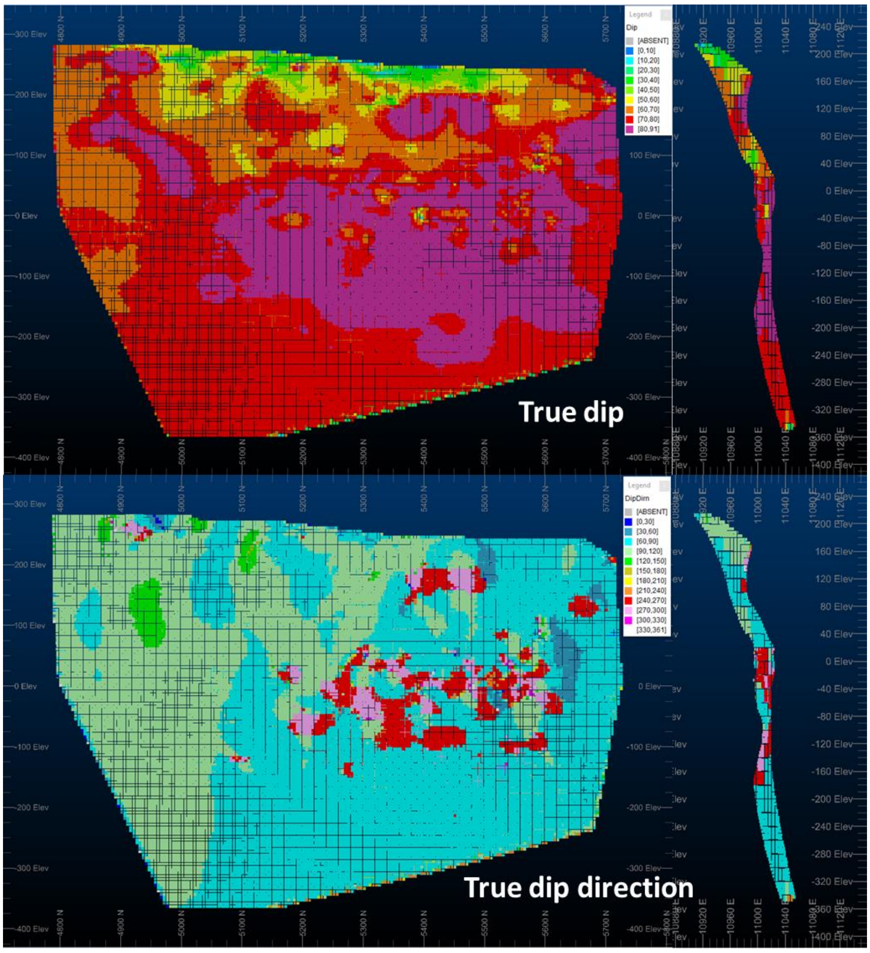


Table 14.7 Search parameters

Zone	Pass 1	Pass 2	Pass 3
	8 to 36 samples	**8 to 36 samples**	**8 to 24 samples**
1010	175 m by 85 m by 20 m	218.75 m by 106.25 m by 25 m	437.5 m by 212.5 m by 50 m
1020	175 m by 85 m by 20 m	218.75 m by 106.25 m by 25 m	437.5 m by 212.5 m by 50 m
1030	150 m by 50 m by 15 m	187.5 m by 62.5 m by 18.75 m	375 m by 125 m by 37.5 m
1040	150 m by 50 m by 15 m	187.5 m by 62.5 m by 18.75 m	375 m by 125 m by 37.5 m
1050	75 m by 50 m by 10 m	93.75 m by 62.5 m by 12.5 m	187.5 m by 125 m by 25 m
3010	150 m by 50 m by 15 m	187.5 m by 62.5 m by 18.75 m	375 m by 125 m by 37.5 m
3020	150 m by 50 m by 15 m	187.5 m by 62.5 m by 18.75 m	375 m by 125 m by 37.5 m
4013	75 m by 50 m by 10 m	93.75 m by 62.5 m by 12.5 m	187.5 m by 125 m by 25 m
5010	75 m by 50 m by 10 m	93.75 m by 62.5 m by 12.5 m	187.5 m by 125 m by 25 m
5020	75 m by 50 m by 10 m	93.75 m by 62.5 m by 12.5 m	187.5 m by 125 m by 25 m
5030	175 m by 85 m by 20 m	218.75 m by 106.25 m by 25 m	437.5 m by 212.5 m by 50 m
5040	75 m by 50 m by 10 m	93.75 m by 62.5 m by 12.5 m	187.5 m by 125 m by 25 m

14.3.8. MODEL VALIDATION

Initial validation consisted of a visual comparison of the input samples and the estimated block grade in cross section (Figure 14.7 and **Error! Reference source not found.**). Global domain comparisons between the top-cut composites and the block model estimates were also completed (Figure 14.8

Visual comparison of samples and block model in plan view

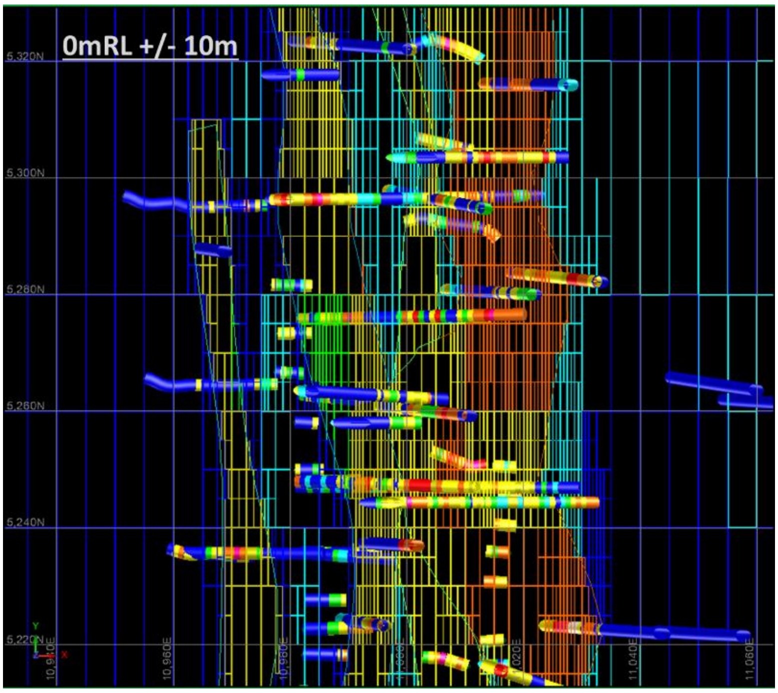


Table 14.8). Composites were also declustered, using both cell and polygonal declustering for this comparison. Swath or profile plots were generated for each domain along easting, northing and elevation dimensions. An example from domain 1010 is presented in Figure 14.9.

No reconciliation between historical production and the 2017 Mineral Resource has been completed to date.

Figure 14.7 Comparison between composites and block grades in cross section (source: Optiro, 2017)

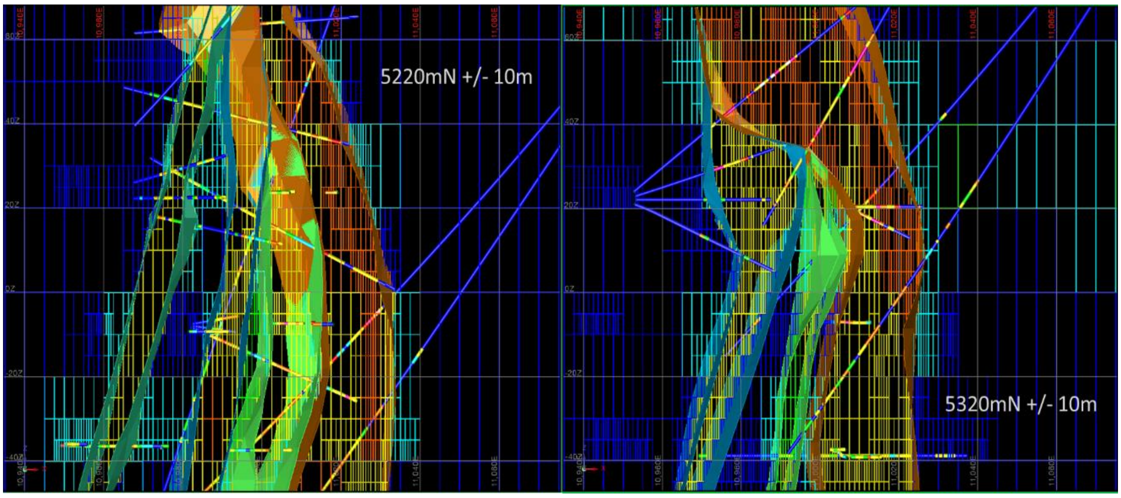


Figure 14.8 Visual comparison of samples and block model in plan view

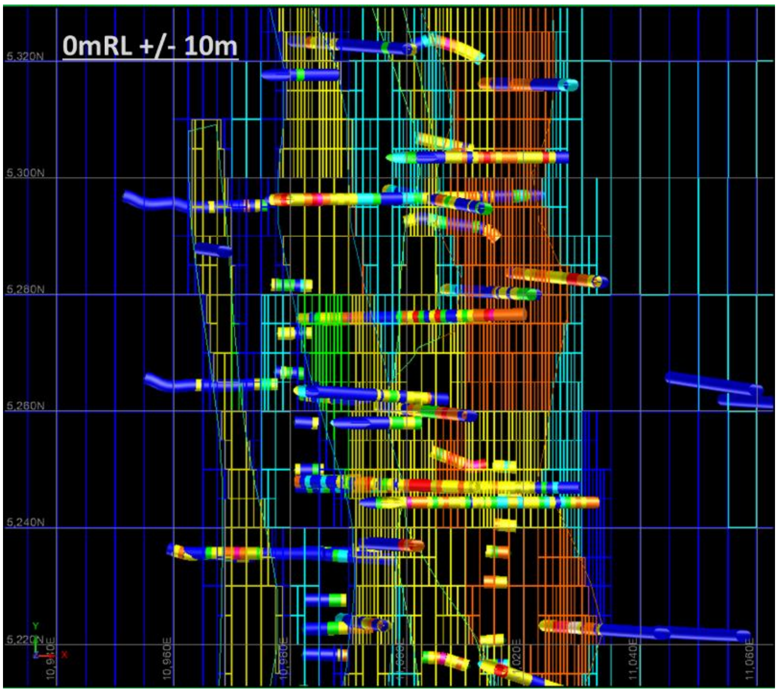
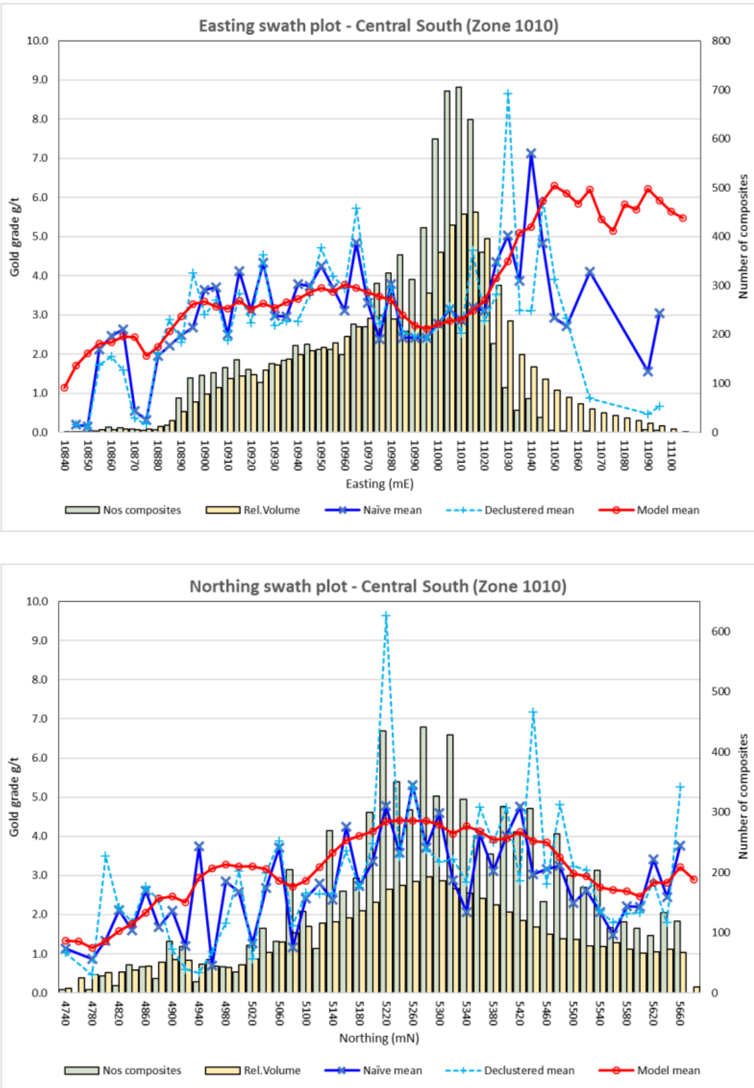


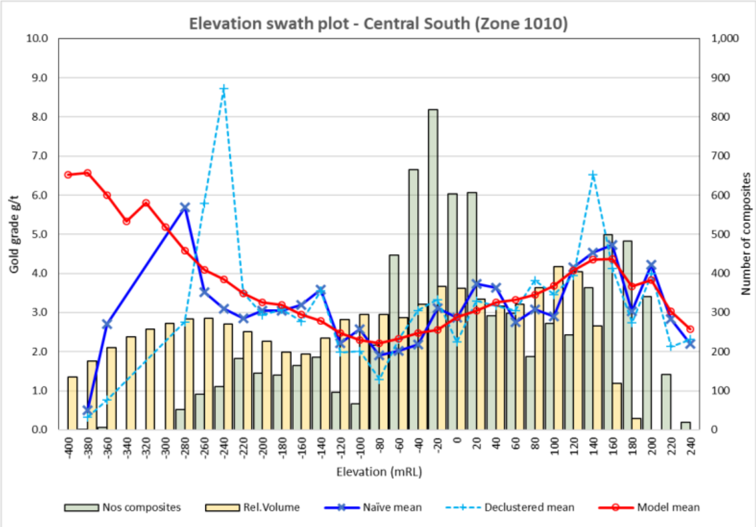
Table 14.8 Global composite and block estimate comparisons (source: Optiro, 2017)

Zone	Estimate	Input data						
		No. samples	Top-cut (g/t)	% diff.	Cell declustered mean (g/t)	% diff.	Polygonal declustered mean (g/t)	% diff.
1010	**3.55**	7,739	3.21	10%	3.34	6%	3.53	1%
1020	**2.57**	3,497	2.49	3%	2.58	0%	2.52	2%
1030	**3.73**	1,210	3.57	4%	4.11	-9%	3.34	12%
1040	**2.39**	94	2.69	-11%	2.56	-6%	2.85	-16%
1050	**1.31**	197	1.23	7%	1.2	10%	1.26	4%
3010	**1.92**	2,156	1.94	-1%	2.03	-5%	2.05	-6%
3020	**1.55**	136	1.13	37%	1.21	28%	1.6	-3%

Zone	Estimate	Input data						
		No. samples	Top-cut (g/t)	% diff.	Cell declustered mean (g/t)	% diff.	Polygonal declustered mean (g/t)	% diff.
4013	**2.88**	953	3.74	-23%	2.86	1%	3.09	-7%
5010	**1.62**	593	1.67	-3%	1.6	2%	1.37	18%
5020	**2.36**	1,805	2.38	-1%	2.41	-2%	2.41	-2%
5030	**1.58**	787	1.71	-8%	1.64	-4%	1.58	0%
5040	**1.52**	280	1.57	-3%	1.33	14%	1.45	5%

Figure 14.9 Swath plots for domain 1010; easting (top), northing (middle) and elevation (bottom) (source: Optiro, 2017)





14.3.9. DEPLETION

The 2017 Mineral Resource has been depleted for both the open pit and underground workings to 31 August 2017.

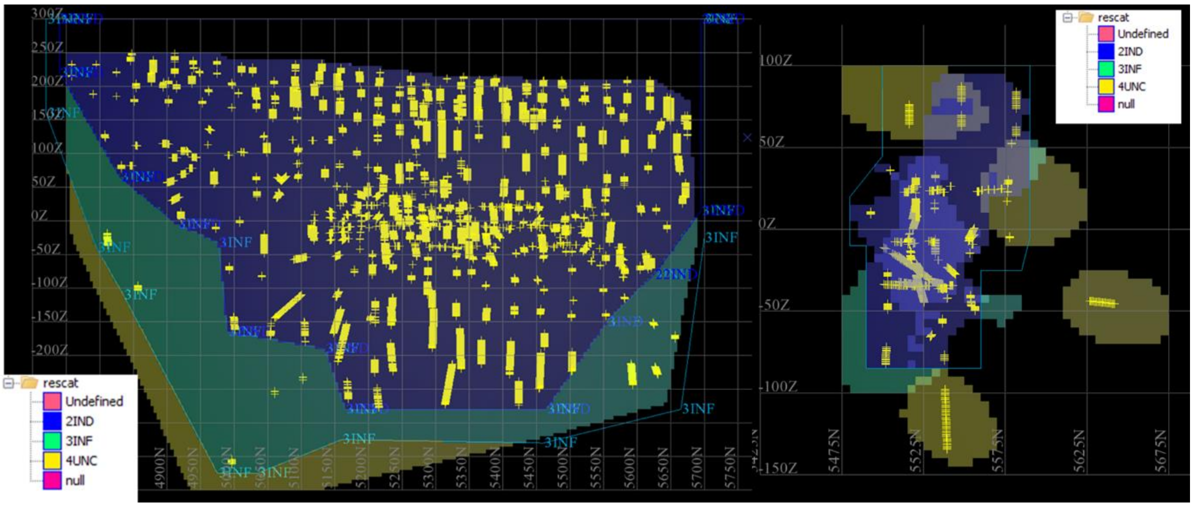
14.3.10. CLASSIFICATION

The 2017 Bibiani Mineral Resource has been classified into Indicated and Inferred categories in accordance with the JORC Code (2012). There are no material differences between the definitions of Indicated and Inferred Mineral Resources under the CIM Definition Standards and the equivalent definitions in the JORC Code (2012). Currently no Measured Mineral Resources have been classified at Bibiani. The Mineral Resource QP endorses the classification applied at Bibiani.

Indicated Mineral Resources have been defined within a contiguous zone where the approximate drillhole density is less than a nominal 30 m to 50 m spacing, in conjunction with a kriging efficiency greater than 30%. Down dip the informing drillholes intersect the mineralisation at a very oblique angle; this is the interface between the Indicated and Inferred classification, where there is a reduced confidence in the interpretation and/or grade estimate due to the sub-optimal drilling angle.

Some areas of the interpreted mineralisation have been excluded from the Mineral Resource due to the degree of extrapolation and the lack of support for the interpretation. These zones are unclassified and have not been reported; they include portions of the 1010 and 4013 domains (Figure 14.10). All other areas have been classified as an Inferred Mineral Resource.

Figure 14.10 Applied Mineral Resource classification (Domain 1010 (left), Domain 4013(right)) (source: Optiro)



14.4. SATELLITE DEPOSITS RESOURCE ESTIMATION

Limited information is available for the Strauss and Walsh (Satellite pits) resource estimation. the information that follows has been summarised from files supplied to MGBL. No resource estimation report was supplied as part of the data package.

The latest resource model for the Satellite pits was completed by Resolute in May 2018.

14.4.1. GEOLOGICAL DOMAINING

Sixteen wireframes were supplied for review (**Error! Reference source not found.**), representing discrete mineralised domains; these wireframes appear to have been generated using Leapfrog software. There is no information on how the wireframes were constructed and what cut-off grade was used. The mineralisation appears to be structurally-controlled; the shoots are oblique to the main Bibiani mineralisation (Figure 14.11). In general, the Walsh/Strauss mineralisation domains are parallel and dip to the east at around 30° to 60°. The lodes vary in thickness between 1 m and 36 m, with the average width being around 5 m. The strike of the deposits is around 30° for Walsh and north – south for Strauss. The total strike extent is 1,200 m.

Plan and cross-section views of the domains modelled at the Satellite pits are presented in Figure 14.12 and Figure 14.13 respectively. The domains are coloured according to **Error! Reference source not found.**.

Table 14.9 Satellite Resource model domain codes

Domain	Sub domain	Wireframe colour
Walsh	Main lode	
	North lode	
	South east	
Strauss	St1a	
	St1b	
	St1c	
	St2a	

	St2b	
	St3a	
	St4a	
	St4b	
	St1	
	St2	
	St3	
	St4	
	St5	

14.4.2. DATA CONDITIONING

Data for the Mineral Resource is comprised of RC and diamond drilling. Data was flagged inside the three-dimensional wireframes and coded by domain. A composite length of 2 m was selected as appropriate. All samples were composited to 2 m using a best-fit approach within Datamine software. Comparisons between the raw and composited sample lengths and grade (metal) were used to validate the compositing process. Naïve composite statistics for all the samples are presented in Table 14.10. The coefficients of variation (CVs) for each domain are considered low to moderate for shear-hosted gold mineralisation.

Figure 14.11 Location of the Satellite domains in relation to Bibiani Main Zone (in grey) – grid squares are 100 m

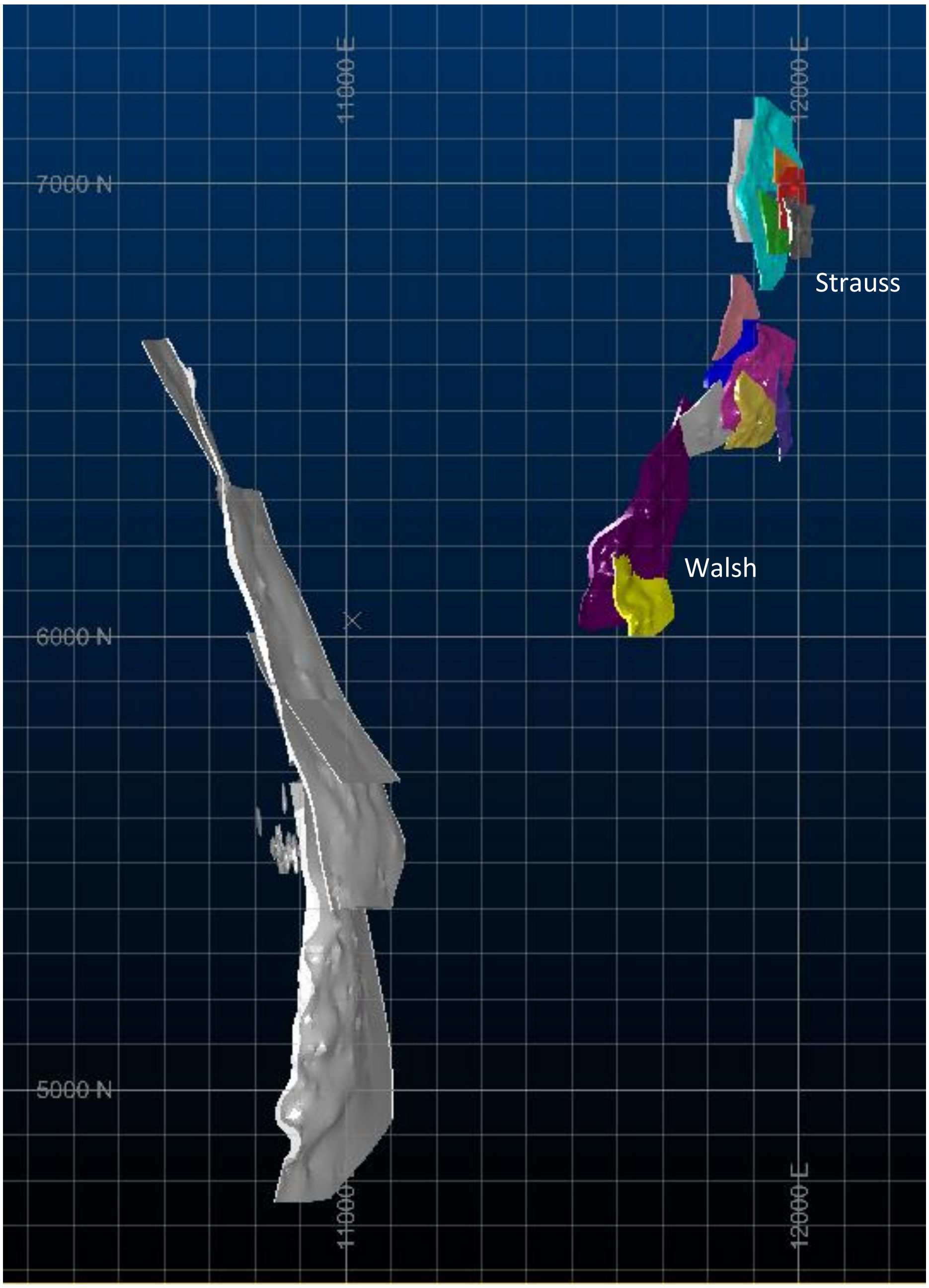


Figure 14.12 Plan view of Satellite deposits – grid squares are 50 m

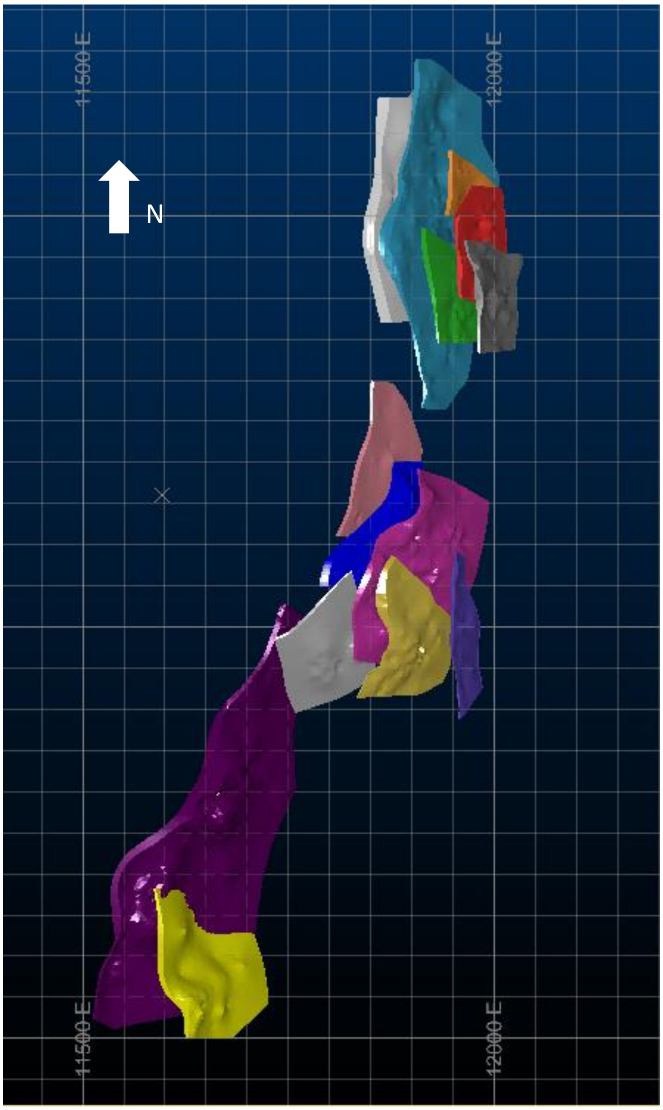


Figure 14.13 Cross- section view of Satellite deposits looking north (6,900 mN) – grid squares are 10 m

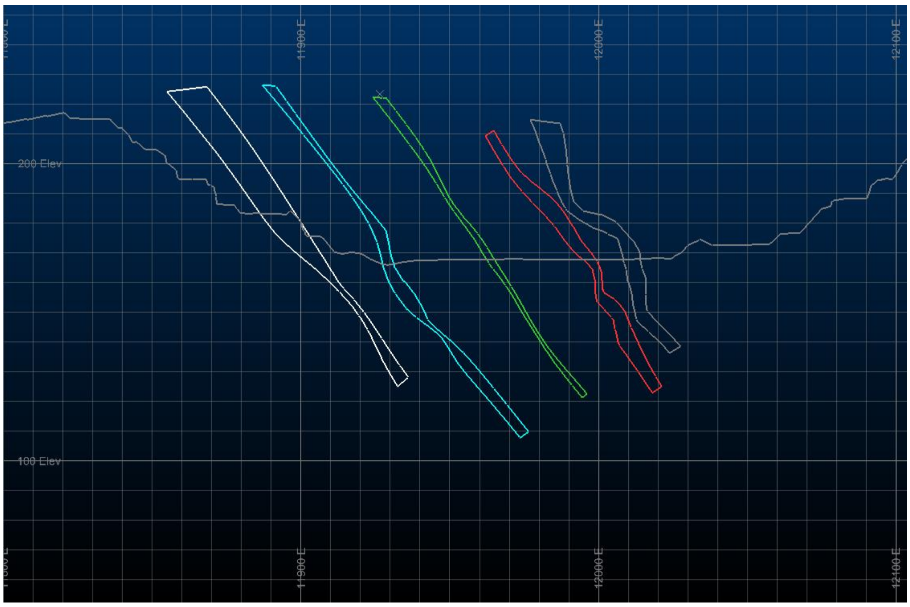


Table 14.10 Satellite deposits 2 m composite statistics of gold grades

Domain	Samples	Minimum	Maximum	Mean	Standard Deviation	CV	Variance
Main	2,123	0.01	161.59	1.15	5.33	4.64	23.37
North	219	0.01	8.00	0.64	1.11	1.74	1.24
SE	404	0.01	45.88	1.38	4.08	2.95	16.60
St1	114	0.01	4.45	0.50	0.69	1.39	0.48
St1a	222	0.01	60.09	2.37	6.62	2.80	43.81
St1b	247	0.01	45.20	2.32	4.97	2.14	24.67
St1c	69	0.02	11.49	1.10	1.48	1.34	2.18
St2	334	0.01	32.62	0.90	3.12	3.48	9.74
St2a	152	0.01	23.63	1.91	3.26	1.71	10.65
St2b	18	0.01	14.79	1.77	3.59	2.03	12.92
St3	769	0.01	16.69	0.73	1.28	1.76	1.64
St3a	630	0.01	38.00	1.12	2.47	2.20	6.08
St4	197	0.01	3.71	0.22	0.51	2.39	0.27
St4a	632	0.01	19.57	0.70	1.61	2.29	2.60
St4b	43	0.01	4.80	0.54	0.88	1.62	0.77
St5	206	0.01	10.59	0.34	1.06	3.13	1.12

Top-cut analysis was completed. Many of the statistical measures of outlier grade distribution were not extreme, but all domains contained some outlier values with respect to the overall domain population. As such, top-cutting of these identified outliers was completed to minimise the impact of these samples on the estimate. The top-cuts selected, and the impact on the domain statistics for all composites, are presented in Table 14.11. The Competent Person endorses the top-cuts chosen.

Table 14.11 Satellite deposits domain top-cuts

Domain	No. composites	Top-cut			Mean			Coefficient of variation		
		Value	# cut	Percentile	Uncut	Cut	% diff.	Uncut	Cut	% diff.
St1	114	2	4	96.5%	0.50	0.46	92%	1.39	1.16	84%
St1a	222	15	8	96.4%	2.37	1.77	75%	2.80	1.91	68%
St1b	247	15	6	97.6%	2.32	2.06	89%	2.14	1.74	81%
St1c	69	5	1	98.6%	1.10	1.01	91%	1.34	0.89	67%
St2	334	15	3	99.1%	0.90	0.77	85%	3.48	2.62	75%
St2a	152	12	4	97.4%	1.91	1.80	94%	1.71	1.52	89%
St2b	18	5	1	94.4%	1.77	1.23	69%	2.03	1.47	72%
St3	769	5	8	99.0%	0.73	0.68	93%	1.76	1.39	79%
St3a	630	8	4	99.4%	1.12	1.00	90%	2.20	1.31	60%
St4	197	2	5	97.5%	0.22	0.20	92%	2.39	2.17	91%
St4a	632	10	5	99.2%	0.70	0.68	96%	2.29	2.04	89%
St4b	43	2	3	93.0%	0.54	0.47	87%	1.62	1.29	80%
St5	206	5	2	99.0%	0.34	0.29	86%	3.13	2.30	73%
Main	2,123	15	16	99.2%	1.15	0.91	79%	4.65	2.17	47%
North	219	5	3	98.6%	0.64	0.62	96%	1.74	1.60	92%
SE	404	15	7	98.3%	1.38	1.18	85%	2.95	2.30	78%

14.4.3. VARIOGRAPHY

Variography was completed for the mineralised domains. Table 14.12 shows the variography used in the estimation process for the Satellite deposits. The nugget variances are in line with Birimian shear-hosted mineralisation.

Table 14.12 Satellite deposits variogram parameters

Domain	Rotations	C_0	Structure 1	
			C_1	A_1
St1	90 – axis 2	0.45	0.55	40
	0 – axis 1			20
	40 – axis 3			5
St1a	90 – axis 2	0.55	0.45	40
	0 – axis 1			20
	70 – axis 3			5
St1b	90 – axis 2	0.29	0.71	45
	0 – axis 1			40
	10 – axis 3			5
St1c	90 – axis 2	0.35	0.65	65
	0 – axis 1			27
	10 – axis 3			5
St2	90 – axis 2	0.38	0.62	35
	0 – axis 1			55
	80 – axis 3			5
St2a	90 – axis 2	0.50	0.50	45
	0 – axis 1			45
	20 – axis 3			5
St2b	90 – axis 2	0.6	0.4	20
	0 – axis 1			20
	0 – axis 3			5
St3	90 – axis 2	0.25	0.75	40
	0 – axis 1			30
	0 – axis 3			5
St3a	90 – axis 2	0.15	0.85	47
	0 – axis 1			18
	30 – axis 3			7.5
St4	90 – axis 2	0.08	0.92	25
	0 – axis 1			40
	0 – axis 3			5
St4a	90 – axis 2	0.29	0.71	45
	0 – axis 1			75
	60 – axis 3			10
St5	90 – axis 2	0.75	0.25	35
	0 – axis 1			55
	30 – axis 3			5
Main	90 – axis 2	0.33	0.67	100
	0 – axis 1			110
	40 – axis 3			20
North	90 – axis 2	0.30	0.70	85
	0 – axis 1			75
	70 – axis 3			5
SE	90 – axis 2	0.20	0.80	140
	0 – axis 1			50
	10 – axis 3			5

14.4.4. BULK DENSITY

A bulk density of 2.75 t/m^3 was used in the fresh (this is consistent with the density used in the Bibiani Main pit model), transitional used 2.5 t/m^3 and oxide used 2.0 t/m^3.

14.4.5. BLOCK MODELLING

A block model was created in Datamine Studio RM software utilising the parameters presented in Table 14.13.

Table 14.13 Satellite deposit block model parameters

	Northing (mN)	Easting (mE)	Elevation (mRL)
Minimum coordinates	5,900	11,410	50
Maximum coordinates	7,310	12,150	300
Parent block size (m)	2.5	2.5	2.5
Minimum block size (m)	0.5	0.1	0.1

14.4.6. GRADE ESTIMATION

Gold was estimated using Ordinary Kriging (OK) into the mineralised blocks. No other elements were estimated. Search parameters are presented in Table 14.14. Three search passes were used to inform the blocks. Of the mineralised model, 97% was estimated in the first pass, 3% in the second pass and less than 1% in the third pass.

Table 14.14 Satellite Deposits search parameters

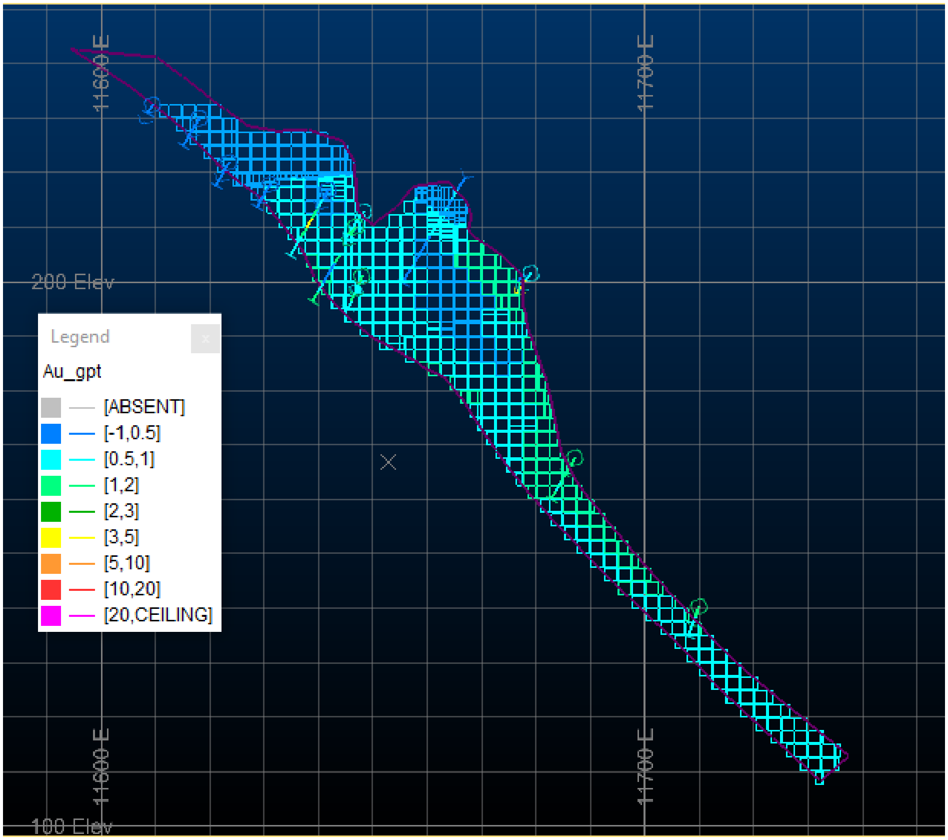
Domain	Pass 1		Pass 2		Pass 3	
	Max Samp	Min 6 samples	Max Samp	Min 4 samples	Max Samp	Min 1 sample
St1	32	40 m by 20 m by 5 m	32	60 m by 30 m by 7.5 m	32	80 m by 40 m by 10 m
St1a	32	40 m by 20 m by 5 m	32	60 m by 30 m by 7.5 m	32	80 m by 40 m by 10 m
St1b	24	45 m by 40 m by 5 m	24	67.5 m by 60 m by 7.5 m	24	90 m by 80 m by 10 m
St1c	32	65 m by 27 m by 5 m	32	97.5 m by 40.5 m by 7.5 m	32	130 m by 54 m by 10 m
St2	24	35 m by 55 m by 5 m	24	52.5 m by 82.5 m by 7.5 m	24	70 m by 110 m by 10 m
St2a	32	45 m by 45 m by 5 m	32	67.5 m by 67.5 m by 7.5 m	32	90 m by 90 m by 10 m
St2b	32	20 m by 20 m by 5 m	32	30 m by 30 m by 7.5 m	32	40 m by 40 m by 10 m
St3	16	40 m by 30 m by 5 m	16	60 m by 45 m by 7.5 m	16	80 m by 60 m by 10 m
St3a	16	47 m by 18 m by 7.5 m	16	70.5 m by 27 m by 11.25 m	16	94 m by 36 m by 15 m
St4	16	25 m by 40 m by 5 m	16	37.5 m by 60 m by 7.5 m	16	50 m by 80 m by 10 m
St4a	16	45 m by 75 m by 10 m	16	67.5 m by 112.5 m by 15 m	16	90 m by 150 m by 20 m
St4b	32	22 m by 22 m by 5 m	32	33 m by 33 m by 7.5 m	32	44 m by 44 m by 10 m
St5	32	35 m by 55 m by 5 m	32	52.5 m by 82.5 m by 7.5 m	32	70 m by 110 m by 10 m
Main	20	100 m by 110 m by 20 m	20	150 m by 165 m by 30 m	20	200 m by 220 m by 40 m
North	24	85 m by 75 m by 5 m	24	127.5 m by 112.5 m by 7.5 m	24	170 m by 150 m by 10 m
SE	16	140 m by 50 m by 5 m	16	210 m by 75 m by 7.5 m	16	280 m by 100 m by 10 m

14.4.7. MODEL VALIDATION

Initial validation consisted of visual comparison of the input samples and the estimated block grade in cross section (Figure 14.14 shows an example). The Walsh pit has been backfilled and that material has been set to a grade of 0 g/t in the block model. Global domain comparisons between the top-cut composites and the block model estimates were also completed (Table 14.15). Composites were also declustered for this comparison. Profile plots were generated for each domain along easting, northing and elevation dimensions. An example from the Main domain (at Walsh) is presented in Figure 14.15.

No reconciliation between historical production and the 2018 Mineral Resource has been completed to date.

Figure 14.14 Section view looking north (6,250 mN) of Main domain (Walsh) showing composites and block model grades; note that the grades above 220 mRl have been set to zero



14.4.8. DEPLETION

The model has been depleted for historic mining. The Walsh pit has also been backfilled and the grade of that material has been set to a grade of 0 g/t.

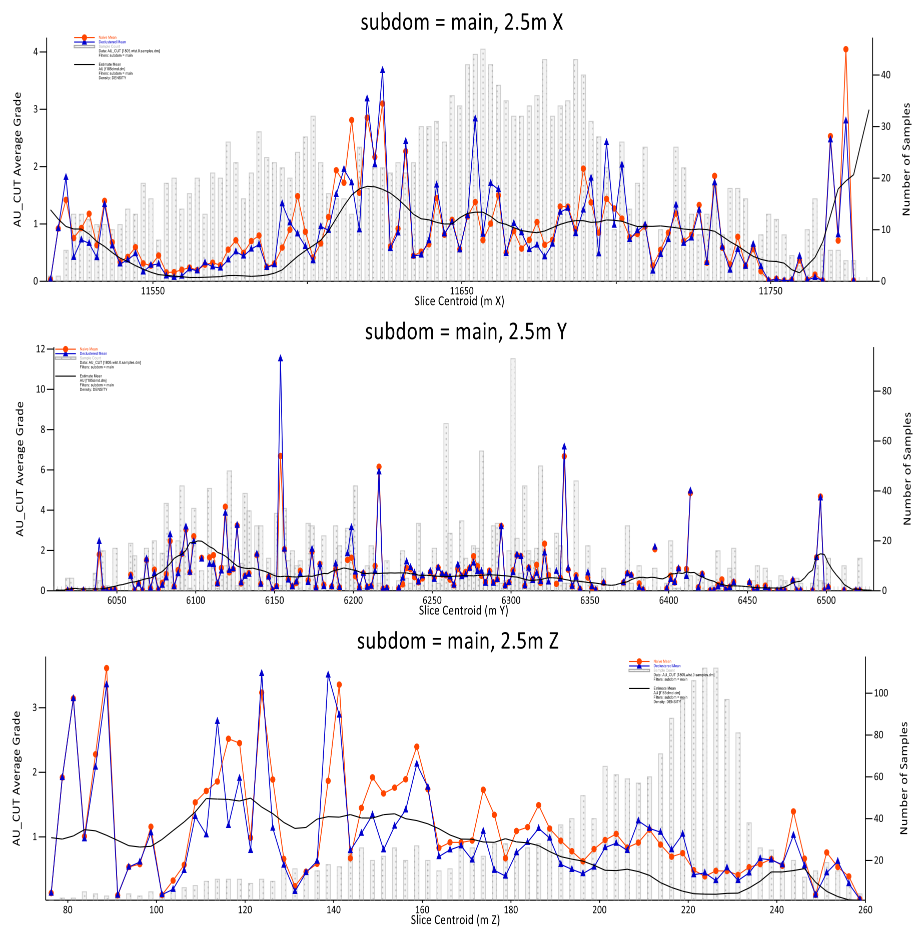
14.4.9. CLASSIFICATION

The 2018 Satellite deposits Mineral Resources have been classified into Measured, Indicated and Inferred categories on the basis of drill spacing and the quality of geological interpretation.

Table 14.15 Global composite and block estimate comparisons for Satellite deposits

Domain	Estimated mean	Composites - cut naïve		Composites - cut declustered	
		mean	% difference	Declustered mean	% difference
St 1	0.51	0.46	11%	0.5	2%
St1a	2.23	1.77	26%	1.41	58%
St1b	2.02	2.06	-2%	1.97	3%
St1c	1.21	1.01	20%	0.991	22%
St2	1.19	0.77	55%	0.81	47%
St2a	1.7	1.8	-6%	1.79	-5%
St2b	2.12	1.23	72%	1.13	88%
St3	0.64	0.68	-6%	0.61	5%
St3a	0.85	1	-15%	0.91	-7%
St4	0.22	0.2	10%	0.18	22%
St4a	0.56	0.68	-18%	0.66	-15%
St4b	0.42	0.47	-11%	0.5	-16%
St5	0.38	0.29	31%	0.34	12%
Main	0.89	0.91	-2%	0.87	2%
North	0.6	0.62	-3%	0.43	40%
SE	1.16	1.18	-2%	1.19	-3%

Figure 14.15 Profile plots for Main domain; easting (top), northing (middle) and elevation (bottom)



15. MINERAL RESERVE ESTIMATES

MGBL is yet to define a Mineral Reserve Estimate.

16. MINING METHODS

MGBL has re-evaluated the main orebody and plans to proceed with open pit mining at Bibiani Main, with potential cut-backs to the Walsh and Strauss pits once the backfill has been removed to waste.

17. RECOVERY METHODS

17.1. INTRODUCTION

In 2012 work commenced on expanding the processing plant to a capacity of 3 Mtpa. Although significant construction work was carried out on the processing plant, it remained incomplete and further work is required on parts of the processing circuit and the primary crushing circuit before it is fully operational. The Bibiani processing plant is currently on care and maintenance (**Error! Reference source not found.** and **Error! Reference source not found.**), following the suspension of mining operations at Bibiani in May 2013. Information presented below is current as of 30 June 2018 and is based on an Operational Readiness Study completed by Wood (formerly Amec Foster Wheeler, 2018) on the refurbishment, upgrade and operational readiness of the Bibiani processing plant (Resolute, 2018).

Figure 17.1 Bibiani mine and processing facilities (source: Resolute, 2018)

Figure 17.2 Bibiani processing plant (source: Resolute, 2018)

17.2. PROPOSED PLANT OPERATIONS

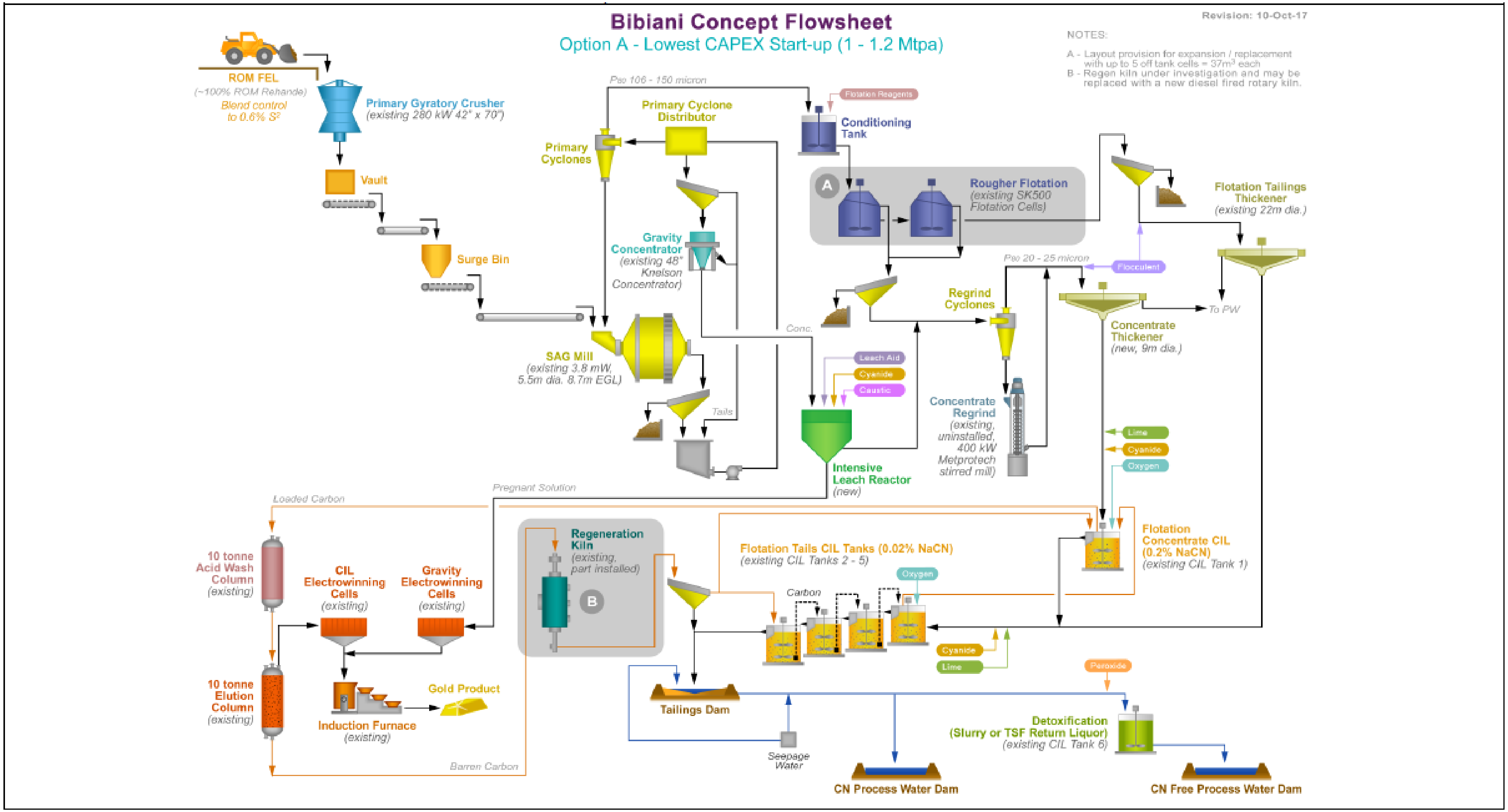
The proposed processing route for Bibiani underground fresh ore utilises the well-known and traditional technology of gold extraction incorporating comminution, gravity concentration, flotation, cyanide leaching of concentrate and flotation tails and gold recovery via carbon-in-leach. The processing rate is expected to match the underground mine production of a nominal 1 to 1.2 Mtpa.

The flowsheet for the Bibiani processing plant is presented in Figure 17.3, and has been designed based on the existing plant setup (with minimal recommissioning costs) and the 2015 metallurgical testwork programme of 17 variability samples and a Master Composite in grinding, floatation and leaching (see Section 13.1). Key unit operations are:

- Ore is primary crushed to nominal P_{80} of 120 mm for direct feeding to the milling circuit or to a crushed ore stockpile whenever the mill is unavailable
- A 1 Mtpa milling circuit consists of the existing SAG mill in closed circuit with classification cyclones. The existing ball mill is no longer required.
- Coarse gold in the cyclone feed stream is removed using a gravity concentrator.
- Rougher flotation is used on the grinding circuit product (cyclone overflow at P_{80} 106 µm) to produce a gold and sulphide rich concentrate at a target 8 - 10% mass recovery with respect to the feed tonnage.
- The flotation concentrate is cycloned to remove already fine particles, with the cyclone underflow reporting to the existing Metprotec stirred mill, which operates in open circuit. The mill discharge at P_{80} 25µm is thickened to nominally 65% (w/w) solids prior to intense cyanidation.
- Flotation tailings are also thickened in a separate thickener to nominally 65% (w/w) solids, which reclaims the non-cyanide containing water for reuse in the milling and flotation circuits.
- Concentrate is leached in a carbon-in-leach (CIL) circuit with 12 hours residence time. Concentrate leach tail joins the flotation tail in a CIL circuit for a further 24 hours leaching time.

- Carbon is stripped in 10 tonne batches and metallic gold is produced using traditional electrowinning cells. Gravity gold recovered in the cyclone feed stream is leached in an intense leach reactor (ILR), with the pregnant solution combined with the eluate from the stripping column.
- The Final CIL tailings are pumped to the existing tailings storage facility with decant return water reclaimed and reused to dilute the leach feed densities to nominally 45% (w/w) solids. Remaining decant water is detoxified using hydrogen peroxide and copper sulphate to remove residual cyanide before being recycled to the Process Water Dam.

Figure 17.3 Simplified process flow sheet (source: Wood)



17.3. PLANT UPGRADES

Prior to recommissioning, a series of upgrades and maintenance will be required.

New plant equipment is proposed for the following areas:

- primary classification
- scavenger flotation and associated equipment
- regrind classification
- concentrate thickening
- concentrate and tails leach tanks and associated equipment.

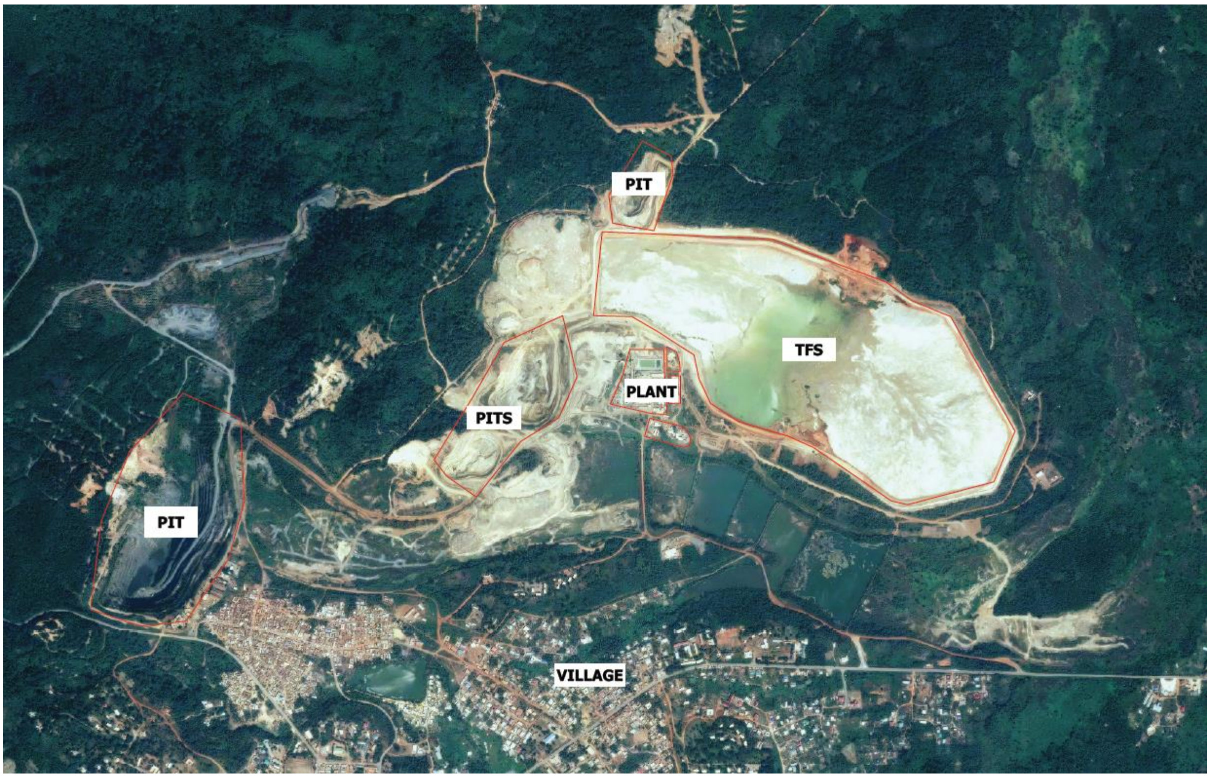
The following areas and plant equipment are planned to be refurbished and reused:

- primary crusher and associated equipment
- reclaim bin and associated
- SAG and associated equipment
- one Skim-Air flotation machine
- Metprotec stirred regrind mill
- tailings thickener
- one leach tank (for cyanide detoxification)
- carbon elution, regeneration and gold room
- reagents and services
- Tailings Storage Facility (TSF).

18. PROJECT INFRASTRUCTURE

The proposed Project is similar in nature and scale to previous operations at Bibiani, and as such it is not expected to require any significant new surface infrastructure or services. Existing surface infrastructure is located adjacent to the Bibiani Main Pit and includes offices, meeting rooms, change rooms, workshops, mines rescue and medical facilities. Most of the facilities are in reasonable condition but will require refurbishment and upgrading to cater for full scale production. The current site layout is presented in **Error! Reference source not found.**.

Figure 18.1 Current Bibiani site layout (source: Asante)



Mine infrastructure, including ventilation, dewatering, and re-establishment of the GH decline, still requires further work before mining can recommence.

18.1. PROCESSING FACILITIES

The Bibiani processing facilities have been on care and maintenance since 2013. A recent (2018) operational readiness study completed by Wood (Amec Foster Wheeler) has assessed the current status of the processing facilities and the requirements to prepare them for operation. Plant upgrade details are summarised in Section **Error! Reference source not found.**. Work has been categorised into the following broad areas:

- Addition of new systems: installation of new components to meet the flowchart requirements.
- Commissioning: installation of equipment acquired under previous projects, which has largely been delivered to site but not been fully installed or commissioned.
- Modifications and upgrades: Existing equipment that needs to be modified, upgraded or relocated to meet flowsheet requirements.

- Decommissioning: Existing equipment that is not part of the flowchart and needs to be decommissioned or put into long-term care if potentially required for future upgrades.
- Major work to refurbish and commission equipment placed into care and maintenance.

Cost estimates for recommissioning of the Bibiani plant have been updated for the 2018 FS (Resolute, 2018).

18.2. TAILINGS STORAGE

The current Bibiani Tailings Storage Facility (TSF), originally designed by Knight Piesold (KP) in the mid-1990s, requires expansion to store the additional material arising from the reopening of the mine. The current proposal, produced for the purposes of regulatory approval, is to store 5.4 Mt of tailings in the TSF, with an option to increase this to 11 Mt. The current study by Advisian (formerly Worley-Parsons Consulting, 2018) has investigated a proposal for the raising of the TSF embankment to accommodate the additional tailings requirement. The actual storage volume occupied by tailings is a function of the deposited in situ dry density and the current TSF surface. Using an in situ dry density of 1.55 t/m^3 a proposed embankment raise of 2.5 m to RL 212.9 m is required (Advisian, 2018). Stability analyses have been completed and suggest that an expansion of the buttress is also required. Modelling determines that the existing buttress of 6 m will need to be expanded to a total of 10 m width to support the proposed embankment rise of 2.5 m.

18.3. WATER SUPPLY

To recommence the sinking of the GH decline, the Strauss pit and existing GH decline will require dewatering. The water generated from dewatering processes (raw water) will be used within the underground operations, as well as for dust suppression, domestic use and the process plant. The existing water storage system currently provides a secure plant supply in case of extended drought conditions. Raw water will be stored in the mine dewatering settling pond and the seven levees that were historically constructed as tailings storage ponds (**Error! Reference source not found.**). Levee embankments are well vegetated, which protects them from erosion and subsequent sedimentation, as well as improving water quality by removing trace metals and nutrients. From the settling pond and levees, water is pumped to a 5,000 m^3 raw water pond (HDPE lined earth dam) located at the plant site. Most of the direct run-off from the mine area is collected in the levees; however, incident rainfall runoff in the Mineral Processing Plant will be contained and discharged to the TSF.

Figure 18.2 Two co-joined levees (source: Asante)

Water originating from the processing circuit is categorised into Raw, Process and TSF Return water. TSF Return water is used for CIL slurry dilution, with any excess detoxified, then used to supplement the Process water. During mine operation it is envisaged that the processing plant will reuse the dewatering supply; hence minimal release of water into the environment will occur, with all decant water from the TSF being reused by the plant.

18.4. POWER SUPPLY

Electricity for the Bibiani Project will be supplied by an existing 33 kV grid by the Electricity Company of Ghana (ECG). A formal letter from ECG confirming the likely tariff arrangements has been received by Resolute. The 33 kV overhead power line terminates at the main plant substations located outside the lease, near the Main Pit. Electricity is then reticulated to the mine by 11 kV overhead power lines.

ECG has undertaken significant refurbishment of the 33kV substation at Asawinso and a new substation has been constructed in Bibiani to ensure continuous and quality power for the project. A dedicated 33kV powerline from Asawinso to Bibiani is proposed for construction during the latter half of 2021. This line will have no T-offs and will bring even further power stability to the project. Reticulation of the power from the new Bibiani substation to the project site is also being upgraded by ECG.

Currently, a standby 1 MVA diesel-fuelled generator provides power to the processing plant tank agitators and essential ancillary services, should there be a supply disruption. In addition, there are eight other diesel generators, ranging in size from 30 kVA to 651 kVA for use on the mine property.

The main consumers of electrical power at the project will be the processing plant, underground operations and auxiliary services (offices, workshops, accommodation etc.) The processing plant is estimated to require 5,900 kW of power, and taking utilisation into consideration, the average power consumption is expected to be 4,146 MWhrs per month (Wood, 2018). For underground operations the main use of power will be the drills, pumps and fans. To estimate the power consumption, utilisation rates have been used to modify the underground requirements. Currently the 11 kV feed to five existing substations located underground will be sufficient for the initial works in the Main Pit. Over the life of the mine, power consumption is expected to rise as the underground workings become deeper, then reduce near the end of the life of mine as the development requirements are reduced. As such, upgrading the current 440 V system to a 1,000 V supply will be required at some stage. Auxiliary power consumption has been estimated to be 220 kW per hour, approximately a 25% increase to the baseline power consumption while those services were on care and maintenance. No power infrastructure is currently located in the Strauss Pit for the GH decline recommencement.

19. MARKET STUDIES AND CONTRACTS

The Bibiani Project will produce uniform "good delivery" doré bars of varying purity in the onsite gold smelting facility as the final stage of the ore processing. A third party will market and further refine the doré bars, with by-product credits such as recovered silver paid to MGBL.

Gold is the principal commodity at Bibiani and is freely traded at prices that are widely known, so that prospects of all production being sold are virtually assured. Prices are usually quoted in US dollars per ounce.

19.1. CONTRACTS

Contracts will be negotiated at a future date for the provision of goods and services.

20. ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

20.1. BACKGROUND

Completion of an Environmental Impact Assessment (EIA) for developments, projects or undertakings is required by law, under the Environmental Assessment Regulation, Legislative Instrument 1652, which was passed by Parliament in June 1999. Requirements of the Environmental Assessment Regulations 1999 include:

- Initial notification of a proposed project for screening.
- Preparation of a scoping report that outlines the scope or extent of the environmental impact assessment to be carried out. This includes a draft terms of reference document indicating the essential issues to be addressed in the Environmental Impact Statement (EIS).
- Environmental Protection Agency (EPA) to review and provide recommendations and/or direction for progress to EIA.
- EIA to be completed as specified by the approved scoping study, completed by recognised professionals and experts in the relevant fields and addressing the possible direct and indirect impact of the proposed operation on the environment at all phases of the project.

20.2. ENVIRONMENTAL STUDIES

The Bibiani Project is an historic mining site with production dating back to the early 1900s. Existing baseline data from previous Environmental Studies has been well-documented and includes the whole of the lease area. While the mine has been on care and maintenance, Resolute has continued to conduct environmental monitoring, with this data being added to the previous EIS to strengthen the baseline data.

Current environmental assessments used to inform the EIS have covered the following aspects:

- **Air quality**: Results from the air quality monitoring programme of MGBL for the period 2013-2016 indicate that the levels of TSP recorded for 24-hour periods are within the World Health Organisation (WHO) acceptable standards of 500 µg/m3 and EPA Ghana guideline levels of 150 $\mu g/m^3$ for residential and 230 $\mu g/m^3$ for industrial operations respectively.
- **Measured integrated noise levels**: all the baseline noise level measurements showed levels which fall within the relevant EPA and Department of Factories Inspectorate Guidelines.
- **Water quality**: The mine concession is drained by a series of tributary streams. The quality of water in these streams have been affected by previous mining activities and galamsey (artisanal) miners. Efforts have been made to divert some streams to minimise contamination and routine water quality monitoring is undertaken. Monitoring had demonstrated that levels of both the analysed physico-chemical and bacteriological parameters were within the EPA-Ghana Guidelines values. Sediment concentrations were found to be very low in the surface waters. Vegetation around the levee system actively reduces trace element levels in water leaving the concession.
- **Biological Environment**: The majority of the flora in the area (68.3%) were found to fall within the Green Star status. This implies that they were common in Ghana and also were of no conservation concern. None of the trees identified on the concession, whether or not of

commercial importance, are classified as endangered or rare in Ghana. Fauna surveys have not identified any species which are considered endangered or of conservation significance.

20.3. ENVIRONMENTAL MANAGEMENT

The proposed surface Project is expected to have limited impact on areas outside of the existing mine footprint. Primarily a new waste dump will be required to the northwest of the Main Pit. Other cutbacks proposed for the satellite pits will fall within already disturbed areas. Existing offices, and buildings will be utilised, with any new buildings being built on the existing mine footprint.

MGBL has identified three phases of operations at Bibiani; Preconstruction/Construction, Operation and Decommissioning/Closure. Key potential environmental and social impacts within each phase have been identified, described and their significance level of impact rated in the EIA. Where the significance level of the impact is low-medium or above mitigation measures must be outlined and put in place.

MGBL has committed to develop a provisional Environmental Management Plan (EMP) which addresses all identified risks and subsequent mitigation outlined in the EIA. The EMP will apply to activities during the first 18 months of construction and operation, after which the EMP will be reviewed and updated to cover the subsequent three years of operation. This will continue through the life of the Bibiani Project in response to significant amendments or modifications. It will contain all pertinent sections and will include but not be limited to:

- ambient and workplace air quality
- water resource quality
- noise and vibration
- hazardous chemical substance control and monitoring
- health and safety including physical injury, fire hazard etc.
- socio-economic conditions.

20.3.1. AIR QUALITY

Historically the mining activity has centred around surface mining; thus, it is expected that there will be dust generated by the proposed surface mining activities. The main source of dust is likely to be the open pit, crushing and screening plant. The use of dust control measures and maintaining vegetative barriers around the project is expected to mitigate any issues.

The main potential impacts on workplace air quality would include increased use of diesel equipment for blasting and excavations/drilling surface, as well as for running of electric generators, submersible water pumps used for pit dewatering and the use of diesel and other petroleum hydrocarbon products for haulage from pit to the ROM pad. Mitigation of these issues includes monitoring of all equipment performance, and provision of adequate safety equipment to persons working in the mine who are likely to be working in conditions which exceed the regulations.

20.3.2. WATER RESOURCE QUALITY

The Project's Water Management Plan will be developed to ensure that the use of and discharge of water on the site would satisfy the Environmental Protection Agency Act, 1994 (Act 490), Environmental Assessment Regulations, 1999 (LI 1652), Environmental Guidelines and Water

Resources Commission Act, 1996 (Act 522), Ghana Minerals and Mining (Health, Safety and Technical) Regulations, 2012 and any regulations or standards related to these as a minimum.

The Bibiani concession covers five sub-catchments of the Tano River Basin of the Southwestern Basin System of Ghana. These sub-catchments are the Amponsah, Mpokwampa, Mensin, Kyirayaa and Pamunu rivers. The Amponsah and the Mpokwampa drain various areas of the mine before joining the Mensin through the levees. Historically the quality of water in these rivers has been affected by previous mining activities and galamsey workings.

In the original EIS submitted by Ashanti Goldfields Limited on the Project to the Environmental Protection Agency in 1997, arsenic concentrations of 40 ppm were reported from the Mpokwampa basin which were introduced into the surface water network. The high levels of conductivity and total dissolved solids (TDS) are generated from three main sources:

- naturally from the source of the Mpokwampa stream
- enrichment of the "spring" originating from the old underground mine structure
- contact with the old tailings scattered on the mine.

Previous operators, AngloGold Ashanti Bibiani Limited, undertook a consistent quality monitoring programme over the concession surface and underground waters from the onset of operations. Monitoring is based on sample stations established by SGS in 1995, which have been maintained by subsequent owners, including MGBL. The aim of the programme is to determine seasonal quality variations.

Surface water samples are collected from the various streams and reservoirs which drain the concession area. Effluent water samples are collected at the process plant water pond, the tailings return water and the seepage collection sump. There are also three monitoring boreholes downstream of the exiting TSF to ensure that seepage is not entering the environment. Historically, samples were also collected from six different wells and boreholes used largely by the local inhabitants at various locations.

Microbiological and physico-chemical analyses, including arsenic and cyanide, have been conducted on the samples according to their respective location and use as domestic water by the local inhabitants. The effects of the old mine activities at Bibiani on surface water quality are still measurable. It appears there are high amounts of TDS which have been introduced from the Mpokwampa basin into the surface water network of the concession area. The levels decrease significantly before the Mensin and the Kyirayaa main channels. Conductivity values are also higher in the Mpokwampa and the underground water in the settling tanks. Analyses of water sampled from boreholes downstream of the concession and used by MGBL show stability in pH, turbidity, conductivity and TSS below WHO drinking water guidelines.

When operations commence, the intent will be to recycle process water and limit any discharge to those that have been accepted before and shown not to adversely affect the quality of water downstream. The piezometers, monitoring bores and seepage collection system around the TSF are adequate and maintained, and will be used once the project recommences operations to monitor and control water levels and water quality.

20.3.3. NOISE AND VIBRATION

Being an open pit operation, the mining-related sources of noise are likely to be blasting, surface haulage, crushing and screening, exploration activities, mine traffic, horns, compressors, conveyors, mills, and pumping facilities. Most of this noise will be centred around the existing processing plant, which is isolated from the community. Vibrations may be felt by surrounding communities at blasting times; however, these are not expected to have a significant impact and measures to control it will be in place. These will include conducting blasting at times that will cause the least disruption, controlled blasting techniques and monitoring.

20.4. PERMITTING AND APPROVALS

20.4.1. PERMITS AND APPROVALS

MGBL submitted the Bibiani EIS in March 2018, followed by the Bibiani EIA in May 2018. On 19 June 2018 the Environmental Permit for re-initiation of underground gold mining and processing at the Bibiani Project was approved by the EPA pursuant to Sections 2 (i) and 12 (1) of the Environmental Protection Agency Act, 1994 (Act 490) and Part 1 of the Environmental Assessment Regulation 1999 (LI 1652). This was renewed for a further 18 months from 19th July 2021 until 18th January 2023. It allows the recommencement of underground mining at Bibiani down to Level 18 only and is subject to further review by the EPA if any of the following conditions vary:

- changes to the project concept
- changes in environmental monitoring point locations
- installation and/or decommissioning of any facility
- groundwater drawdown effects on the local community
- development of sinkholes/subsidence
- changes in methods of mining
- mining below Level 18 (-320.6 mRL) depth
- any other activity other than underground gold mining and processing project work.

The permitting will need to be resubmitted to the EPA now that the project concept (i.e. open pit instead of underground) has changed and the mining method has also changed.

In accordance with Regulation 23 of the Environmental Assessment Regulation 1999 (LI 1652), a reclamation bond of USD9.8M has already been posted covering the previous surface operations. This bond is in the form of a cash deposit (USD2.7M) and bank guarantee (USD7.1M). When the EPA permit was issued in 2018 the bond was restated at a lower figure due to rehabilitation already completed. The bond is now set at USD6.9M.

20.5. COMMUNITY

MGBL respects the history, culture and the values of its host communities. MGBL’s operations will adapt to take cognizance of historic sites with cultural, religious, and heritage significance. This approach will reduce actual or potential harm to sites. Important heritage sites include Amponsah Shrine, Mensin Stream Shrine, Adzenkye cemetery and Old Admin cemetery.

As part of its corporate social responsibility, MGBL has assisted the communities in diverse ways over the past years in the provision of portable water, sponsorship package for Gold Stars, provision of transport – community bus, health, education, community projects, donation and assistance, employment, etc. Should mining and processing operations recommence at Bibiani, MGBL would continue to work with the local communities. The focus would be based around the follow areas:

- **education and training:** with an emphasis on helping to make future generations job ready
- **health:** assisting communities to educate and control the incidence of disease and illness
- **water:** assisting communities to develop suitable sources of water for domestic use
- **business development and income diversification:** helping local groups to develop sustainable business and develop business skills.

Prior to re-establishment of the mining operations, a Community Management Plan (CMP) will be drafted. The CMP will outline the operations strategy for working with the local communities, the processes to be followed, the levels of authority, and importantly how communication and consultation with the local community groups will be maintained.

Initially, key posts requiring specific skills or experience will most likely be filled by expatriates. In addition to performing their job function, expatriate personnel will be expected to transfer knowledge and expertise to develop the capabilities of their Ghanaian staff. In the longer term, it is anticipated that Ghanaian nationals will fill most operating and management positions within the company.

20.6. CLOSURE

At the end of the projected mine life, the rehabilitation and decommissioning plan of all disturbed areas will attempt to balance the respective interests of a variety of existing land users and other stakeholders, including the EPA, Minerals Commission, Inspectorate Division of the Minerals Commission and the Bibiani-Anhwiaso-Bekwai Assembly. The essence of the company’s reclamation programme is to return disturbed lands to a stable and safe condition, as well as to any appropriate use, including agricultural, industrial, residential and/or reforestation. This includes mined-out pits, waste rock dumps, haul roads, the TSF and all levees.

Reclamation costs have been calculated, independent of the proposed mining operations, in that the estimated costs would still be incurred whether the Project is approved or not. The total reclamation cost has been estimated at USD6.9M. The financial calculations for the project have assumed that the sale of fixed and mobile assets at Bibiani at the end of production will provide the funds required to undertake the mine rehabilitation process.

21. CAPITAL AND OPERATING COSTS

MGBL is in the process of organising a study to determine capital and operating costs.

22. ECONOMIC ANALYSIS

An economic analysis will be carried out as part of the mining study.

23. ADJACENT PROPERTIES

Properties adjacent to the Bibiani Operation have no material impact on the Mineral Resources and are not considered relevant.

24. OTHER RELEVANT DATA AND INFORMATION

There is no other data which is relevant either to Bibiani at the effective date of the report.

25. INTERPRETATION AND CONCLUSIONS

The Bibiani project has a long history of production through several owners since the 1800s, with a total historical production around 5 Moz of gold. After the failure of the previous owner of the mine, Noble Mining Ghana in 2013, Resolute initially acquired a 20% stake in the local holding company and increased this to a controlling stake by early 2014. Since this time, Resolute's strategy was to plan for a restart of the operations. This has been furthered by a number of studies, culminating in the 2018 Feasibility Study update, which showed that a relatively mechanised underground operation with ore hauled from two declines could generate a post-tax NPV of USD123M over an 11-year mine life, generating almost 1M oz gold at a forecast all-in sustaining cost of USD764/oz. The project returns are most sensitive to the gold price and metallurgical recovery. The overall forecast capital costs are relatively low at USD157M, reflecting that the mine and process plant are in place, but require refurbishment and further development.

Resolute has drilled a number of holes since assuming control of the project and several Mineral Resource and Mineral Reserve updates have been estimated. The current Mineral Resource contains around 2.5 Moz gold, with 1 Moz of this being in the lower-confidence Inferred category.

Resolute has sold the Bibiani project to Asante gold in mid-2021; Asante's strategy is to recommence open pit operations at Bibiani Main pit, and at the Walsh and Strauss satellite pits, which are currently filled with backfill. Current permitting (for an underground mine) will need to be reviewed by the EPA given the proposed change in mining method.

26. RECOMMENDATIONS

MGBL should proceed to a pre-feasibility study, which will enable the declaration of a Mineral Reserve for the Bibiani Main, Walsh and Strauss pits. This study will then act as a trigger for the recommencement of operations.

MGBL will need to carefully consider the environmental and social impacts of recommencing open pit mining. The environmental licence to operate will need to be resubmitted to the EPA for review and re-certification.

MGBL will need to update and reissue a revised NI 43-101 Technical Report which incorporates the findings of the Pre-Feasibility Study, the subsequent Mineral Reserve and the results of the re-permitting.

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28. CERTIFICATES OF QUALIFIED PERSONS

Daniel Bansah

As the Qualified Person for Mineral Resource for the report "Technical Report on the Bibiani Gold Mine, Ghana", dated effective 7 November 2021 (the "Technical Report") prepared for Asante Gold Corporation, I hereby certify that:

1. My name is Daniel Bansah, Chairman and Managing Director of Minecon Resources and Services Limited, with a business address at No 8 Kweku Mensah Street, Adjiringanor, East Legon, Accra, Ghana.
2. I am a graduate of Leicester University, UK with a Msc in Mineral Exploration with Distinction in Mineral Exploration.
3. I am a Member and a Chartered Professional of AusIMM (Member number 208213), a Fellow of the West African Institute of Mining, Metallurgy and Petroleum (WAIMM) and a Member of the Ghana Institute of Geoscientists.
4. I have over 30 years experience in the gold mining industry in Africa.
5. 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 (as defined in the Instrument) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of the Instrument.
6. I have visited the Bibiani Project more than 10 times, the most recent being September 13, 2021
7. I have been a full time employee of Minecon Resources and Services Limited since 2018.
8. As of the effective date of the report, to the best of my knowledge, information and belief the Technical Report contains all relevant scientific and technical information that is required to make the Technical Report not misleading.
9. I have read the Instrument and Form 43-101 F1 (the "Form") and the Technical Report has been prepared in compliance with the Instrument and the Form.

Dated at West Perth, Western Australia, on 7 November 2021.

Daniel Bansah *MSc, MAusIMM(CP), FWAIMM, MGIG*

29. GLOSSARY

29.1. ABBREVIATIONS

Abbreviations	Explanation
%	percentage
µm	one millionth of a metre
AAS	Atomic Absorption Spectrometry
AC	Aircore drilling
Ag	Silver
As	arsenic
Au	Gold
AUD	Australian Dollars
AusIMM	Australian Institute of Mining and Metallurgy
CP	Chartered Professional of the AusIMM
DD	Diamond drilling
EM	elctromagnetic
Ga	Billion years
GHS	Ghanaian Cedis
g/t	grams per tonne
IOCG	iron oxide, copper, gold (deposits)
IRG	intrusion-related gold
JV	joint venture
km	kilometre
km^2	square kilometre
kt	kilotonnes
ktpa	kilotonnes per annum
m	metre
M	million
m^2	square metre
m^3	cubic metres
Ma	million years
mm	millimetres
Mo	molybdenum
MOU	Memorandum of understanding
Moz	Million ounces

Abbreviations	Explanation
MPa	Megapascals, a unit of rock strength
mRL	meters Reduced Level
Mt	million tonnes
Mtpa	million tonnes per annum
MW	Megawatt, one million watts
Ni	nickel
Pb	lead
QAQC	quality assurance, quality control
RAB	Rotary Air Blast drilling
RC	Reverse Circulation drilling
RL	Reduced Level
t	metric tonnes
t/m^3	tonnes per metre cubed
TSX	Toronto Securities Exchange
TSX-V	Toronto Venture Exchange
USD	United States Dollars
Zn	zinc

29.2. TERMS

Term	Explanation
3D geological model	Computerised representation of the geology, incorporating stratigraphy, structural features and other important geological features
aerial photography	Photographs taken from an aircraft or other flying object
aeromagnetic	A geophysical exploration technique which maps the magnetic signature of rocks from an aeroplane or drone.
alluvial	Associated with sedimentary processes involving water
alluvial gold	An accumulation of alluvium (sediment), sometimes containing gold in the bed or former bed of a river.
alluvium	Loose, unconsolidated sediment that has been eroded by water
antiform	An arched shape formed by folded or faulted rocks, with a crest (high point) and limbs.
aquifer	A rock layer or stratum which preferentially channels water or other deleterious fluids
Archaean	A geological period from 4,000 to 2,500 million years before present day.
assay	The process of determining the content of a mineral or metal through a range of physical or chemical techniques.
backfill	Broken and/or cemented waste rock or processing residue pumped underground and used to fill relatively small voids (stopes), allowing rocks next to the filled stope to be mined by blasting.
basalt	A fine-grained igneous rock consisting mostly of plagioclase feldspar and pyroxene.
basement	The surface beneath which sedimentary rocks are not found; the igneous, metamorphic, or highly deformed rock underlying sedimentary rocks.
basement/bedrock	In general terms older, typically crystalline rocks which are often covered by younger rocks.

Term	Explanation
basin	Large low-lying area, often below sea level, in which sediments collect
basin (sedimentary)	Refers to any geographical feature exhibiting subsidence (downward shift) and consequent infilling by sedimentation.
basin inversion	A phase of movement where rocks in a basin shape are lifted by tectonic forces to remove the basin.
beneficiation	The process of concentrating the elements or minerals of interest through a wide range of physical or chemical separation techniques.
block model	A model comprised of rectangular blocks, each with attributes such as grades, rock types, codes that represents a given mineral deposit.
breccia	Fractured or broken rocks, cemented or formed into a solid layer.
brecciated	Converted into or resembling a breccia.
brecciated siltstone	A siltstone containing small fragments of breccia.
brecciation	Converted into or resembling a breccia.
brine	A salt- and metal-rich mineralising aqueous solution.
bulk density	A property of particulate materials. It is the mass of many particles of the material divided by the volume they occupy. The volume includes the space between particles as well as the space inside the pores of individual particles.
carbonate rock	A sedimentary rock generally formed in shallow marine conditions which is characterised by the presence of varying amounts of calcium carbonate or magnesium carbonate. Coral reefs and/or marine creatures may contribute to the constituents in the rock.
Carboniferous	A geological period comprising rocks aged between 345 and 280 million years before the present day.
CIM Definition Standards	The CIM Definition Standards on Mineral Resources and Reserves (CIM Definition Standards) establish definitions and guidance on the definitions for mineral resources, mineral reserves, and mining studies used in Canada. The Mineral Resource, Mineral Reserve, and Mining Study definitions are incorporated, by reference, into National Instrument 43-101 – Standards of Disclosure for Mineral Projects (NI 43-101). The CIM Definition Standards can be viewed on the CIM website at www.cim.org.
clastic	Composed of fragments or particles of various sizes.
comminution	reduction in the particle size of crushed rock in a process plant.
craton	An old stable portion of the earth's crust, generally of Archaean age
Cretaceous	A geological period after the Jurassic and before the Tertiary, containing rocks aged between 135 and 65 million years before the present.
cut-off grade	The grade that differentiates between mineralised material that is economic to mine and material that is not.
deformation	Term used to describe changes in rocks after their formation, usually caused by tectonic forces.
deltaic sediment	Sediments deposited in deltaic plains. See delta plain
delta plain	A low-lying coastal plain, formed where a river empties into the sea (or, rarely, into a freshwater body).
de-stress	A mining approach which excavates an opening below the orebody to be mined in order to relieve the pressure in the rocks, making safe for excavation.
Devonian	A geologic period after the Silurian and before the Carboniferous periods, representing rocks aged between 400 and 345 million years before present.
diamond drilling	Drilling method that uses a rotating bit encrusted with diamonds to collect a cylinder of rock. Drilling fluids may be used.
dolomite	A carbonate rock consisting of calcium magnesium carbonate.
drillhole data	Data collected from the drilling, sampling and assaying of drillholes.
en echelon fractures or veins	Structural features within rock which appear as a set of short, closely-spaced parallel or sub-parallel lenses. They originate as tension fractures that are parallel to the major stress orientation in a shear zone. They are subsequently filled by precipitation of a mineral, typically quartz or calcite to form veins.
exploration licence	Rights to explore for minerals in an area, granted by a government to an individual/company.
exploration licence application	Application of an individual/company to a government to obtain the rights to explore for minerals.
facies	A condition or set of conditions in which a specific sedimentary rock was deposited; a generic name for a type of rock.

Term	Explanation
feasibility study	A mining and or processing study into the economic development of a project for which the inputs have an accuracy of 5% to 10%.
fire assay	The quantitative determination in which a metal or metals are separated from impurities by fusion processes and weighed in order to determine the amount present in the original sample
flotation	A metallurgical concentration method whereby bubbles of air are used to separate crushed sulphide particles from waste rock of a different density or different physical characteristics.
fluorite	A mineral, calcium fluoride.
foliation	Parallel orientation of platy minerals or mineral banding in rocks.
galena	Lead sulphide, the main ore of lead.
gangue	The non-economic portion of a mineralised rock.
geotechnical	A generic term for work carried out using the mechanical properties of rocks.
geotechnical analysis	Analysis of the factors affecting the stability of a rock mass.
geotechnical core logging data	Data collected on the geotechnical properties of rock mass by examining diamond drill core.
geotechnical strength testing	Analysis of the factors affecting the stability of a rock mass.
geothermal	The heating of rocks or groundwater from natural sources deep in the earth.
graben	A crustal block that has been depressed relative to the blocks on either sides. The bordering faults (on the long side of the graben) are usually of near-parallel strike and steeply dipping. In its initial surface form, it is typically a linear structural depression.
grade cap (top cut)	Restriction of the influence of very high grades, designed to avoid over smoothing of these grades into too large an area.
grade control	The process of collecting geological, sample and assay information for the delineation of mineable ore boundaries; the minimization of dilution and ore loss, and the reconciliation of the predicted grade and tonnage to the grade and tonnage mined and milled.
greenschist facies	Assemblage of minerals formed during regional metamorphism. The rocks of the greenschist facies form under the lowest temperatures (300 - 450 celcius) and pressure (1 to 4 kilobars) conditions usually produced regional metamorphism.
greenstone belt	Zones of variably metamorphosed mafic to ultramafic volcanic sequences with associated sedimentary rocks that occur within Archaean and Proterozoic cratons between granite and gneiss bodies.
greenstones	Zones of variably metamorphosed mafic to ultramafic volcanic sequences with associated sedimentary rocks that occur within Archaean and Proterozoic cratons between granite and gneiss bodies
HQ, BQ, NQ	Diamond drill core diameters – 63.5, 33.5 and 45.1 mm respectively.
hydrothermal	Relating to fluids which contain minerals of interest and water, generally at elevated temperatures.
igneous	Rock is formed through the cooling and solidification of magma or lava.
Indicated Mineral Resource	An Indicated Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation. (CIM Standards, 2014)
Inferred Mineral Resource	An Inferred Mineral Resource is based on limited information and sampling gathered through appropriate sampling techniques from locations such as outcrops, trenches, pits, workings and drillholes. Inferred Mineral Resources must not be included in the economic analysis, production schedules, or estimated mine life in publicly disclosed Pre-Feasibility or Feasibility Studies, or in the Life of Mine plans and cash flow models of developed mines. Inferred Mineral Resources can only be used in economic studies as provided under NI 43-101. (CIM Standards, 2014)
instrument	The guidelines and rules of the National Instrument 43-101 Rules and Policies
intercept	Mineralised intersection in a borehole.
intrusion	The action or process of forcing a body of igneous rock between or through existing formations, without reaching the surface
inverse distance estimation	A method for interpolation, which assigns values to unknown points by using values from a set of known points. The value at the unknown point is a weighted sum of the values of the known points.
island arc volcanism	Offshore volcanoes form islands, which result over time in a volcanic island arc. Generally, volcanic arcs result from the subduction of an oceanic tectonic plate under another tectonic plate, and often parallel to an oceanic trench.

Term	Explanation
isotropic	The same in all directions.
JORC Code	The JORC Code is an Australian reporting code which is applicable for companies listed on the Australian Securities Exchange. It provides minimum standards for public reporting to ensure that investors and their advisers have all the information they would reasonably require for forming a reliable opinion on the results and estimates being reported. The current version is dated 2012.
Jurassic	A geological period after the Triassic and before the Cretaceous, comprising rocks aged between 190 and 135 million years before the present day.
kriging	A geostatistical estimation method using a distance weighting technique which is based upon the relative spatial continuity of the samples.
lithology	The study and description of rocks, including their mineral composition and texture.
lode	Ore zone.
Measured Mineral Resource	A Measured Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation. (CIM Standards, 2014)
metallurgy	Study of the physical properties of metals as affected by composition, mechanical working and heat treatment.
mica	One of a family of platy minerals.
mica schist	A group of medium-grade metamorphic rock, chiefly notable for the preponderance of lamellar minerals such as micas, chlorite, talc, hornblende, graphite, and others.
Mineral Reserve	Mineral Reserves are those parts of Mineral Resources which, after the application of all mining factors, result in an estimated tonnage and grade which, in the opinion of the Qualified Person(s) making the estimates, is the basis of an economically viable project after taking account of all relevant Modifying Factors. Mineral Reserves are inclusive of diluting material that will be mined in conjunction with the Mineral Reserves and delivered to the treatment plant or equivalent facility. The term 'Mineral Reserve' need not necessarily signify that extraction facilities are in place or operative or that all governmental approvals have been received. It does signify that there are reasonable expectations of such approvals. (CIM Standards, 2014).
Mineral Resource	The term Mineral Resource covers mineralization and natural material of intrinsic economic interest which has been identified and estimated through exploration and sampling and within which Mineral Reserves may subsequently be defined by the consideration and application of Modifying Factors. The phrase 'reasonable prospects for eventual economic extraction' implies a judgment by the Qualified Person in respect of the technical and economic factors likely to influence the prospect of economic extraction. The Qualified Person should consider and clearly state the basis for determining that the material has reasonable prospects for eventual economic extraction. Assumptions should include estimates of cut-off grade and geological continuity at the selected cut-off, metallurgical recovery, smelter payments, commodity price or product value, mining and processing method and mining, processing and general and administrative costs. The Qualified Person should state if the assessment is based on any direct evidence and testing. (CIM Standards, 2014)
mineralisation	The process by which a mineral or minerals are introduced into a rock, resulting in a valuable deposit.
mineralisation solid	See wireframe.
nugget effect	A variability component reflecting the short-scale differences in grade for a set of assays.
Ordovician	A geological period after the Cambrian and before the Silurian periods, representing rocks between 500 and 440 million years ago.
ore sorting	A generic term for one of a number of techniques for separating rocks based upon one or a combination of physical, chemical or electrical properties, e.g. density, brightness, conductance.
ore zone /ore body	Zone of mineralised material.
orogeny	The process of mountain building, and may be studied as a tectonic structural event, as a geographical event and a chronological event, in that orogenic events cause distinctive structural phenomena and related tectonic activity, affect certain regions of rocks and crust and happen within a time frame.
orogeny/orogenic	Relating to tectonic forces resulting in large scale deformation of portions of the earth's crust.
panel	A mining unit underground.
Phanerozoic	A general term for geologic time younger than the Archaean era.
polygonal	A grade estimation technique whereby each block assumes the grade of the closest sample to the block centre.

Term	Explanation
PQ	Diamond drill core - internal diameter of 85 mm
Precambrian	The Precambrian is the earliest part of the Earths history, and denotes rocks older than the Cambrian age. This time period is subdivided into three eons (Hadean, Archean, and Proterozoic) of the geologic timescale. It spans from the formation of the Earth to about 4.6 billion years ago (Ga) to the beginning of the Cambrian about 541 million years ago (Ma).
Prospecting Licence	Authorization granted by a government to an individual permitting the person to prospect for minerals.
Proterozoic	Era of the geological time scale within the Precambrian eon containing rocks of approximately 1000 – 2500 million years old.
Pulp	Pulverised rock sample, generally with a size of 100 micron or finer.
QAQC	Quality Assurance/Quality Control – a set of tests to ensure precision, accuracy and lack of bias of grade and bulk density measurements.
range	The maximum distance within which a set of grades are correlated with itself.
recovery	A generic term for the extraction and retrieval of a metal (e.g. zinc) from the broken rock fed into a processing plant, expressed as a percentage.
recovery (metallurgy)	The percentage of metal that can be recovered given the limitations of the processing equipment.
reef	A carbonate rock comprised of ancient corals or other massive limestone, including the shells of micro-organisms.
room-and-pillar	A reasonably intensive underground mining method where areas of waste rock or pillars are left at regular intervals in an orebody. It is used for relatively flat or tabular orebodies.
scavenger cleaning	A second phase of flotation which recovers minerals not extracted during the initial phase.
sedimentary	Rock forming process where material is derived from pre-existing rocks by weathering and erosion.
sediments	Loose, unconsolidated deposit of debris that accumulates on the Earth's surface.
seismic survey	A geophysical exploration technique based on tracking the movement of shock waves from exploration or impact through the earth. It is used to highlight faults or areas of different density.
stratabound (stratiform)	Rocks or mineralisation which sits within and conformable with sedimentary layered rocks.
sub-level cave	A mining method generally initiated from the bottom upwards and comprising a column of broken rock (broken by explosives) recovered from the base of the column.
sulphide	Economic minerals comprising a metal (such as lead, iron, zinc) and sulphur.
tenement	A generic term for an exploration or mining licence or lease.
testwork	A generic term for a wide range of metallurgical tests applied to rock samples designed to predict the performance of a processing plant.
top cut	A process that reduces the effect of isolated (and possible unrepresentative) outlier assay values on the estimation.
tramming	Transport of broken rock underground, by rail or in trucks or loaders.
turbidites	a sedimentary rock deposited by a turbidity current.
turbidity current	A rapid, downhill gravity flow of water and sediment. Turbidity currents can be caused by earthquakes, collapsing slopes, and other geological disturbances. They are responsible for distributing vast amounts of unconsolidated clastic sediment into the deep ocean.
variography	Definition of the three-dimensional grade continuity of drillhole samples by estimating and modelling the relationship between grade similarity and distance in every direction and at every sample spacing.
volcanic	An igneous rock of volcanic origin.
volcaniclastics	Sedimentary rocks derived from erosion of volcanic rocks.
volcanics	Sequence of strata formed from an erupting volcano.
wedge	A branch off a diamond drillhole providing a second orebody intersection from the main hole.
wireframe	A surface or 3D volume formed by linking points together to form triangles. Wireframes are used in the construction of block models.