CSA Global
Mining Industry Consultants

NI43 101 Technical Report

Mineral Resource and Mineral Reserve Update for the Balogo Project

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Certificate of Qualified Person – David Williams

As a Qualified Person of this Technical Report covering the Property named as Balogo, Burkina Faso I, David Williams do hereby certify that:

1. I am a Principal Resource Geologist with CSA Global Pty Ltd, and carried out this assignment for CSA Global Pty Ltd, Level 2, 201 Leichhardt St, Spring Hill, Brisbane, Queensland, 4000, Australia; ph +61 7 3106 1200; david.williams@csaglobal.com.
2. The Technical Report to which this certificate applies is titled "NI 43-101 Technical Report – Mineral Resource and Reserve Update for the Balogo Project" and is dated effective 15 June 2017.
3. I hold a B.Sc. (Hons) and am a registered Fellow in good standing of the Australian Institute of Geosciences, MAIG, 4176. I am familiar with NI 43-101 and, by reason of education, experience in exploration, evaluation and mining of mesozonal gold lode deposits, and professional registration; I fulfil the requirements of a Qualified Person as defined in NI 43-101. My experience includes 27 years in mine geology and Mineral Resource estimation.
4. I visited the project that is the subject of this Technical Report, on 2 February 2017 for a combined total of 0.5 days.
5. I am responsible for the following sections of this Technical Report; Sections 2.4.1, 4, 5, 6, 7, 8 ,9, 10 and 12.
6. I am independent of the issuer as described in Section 1.5 of NI 43-101.
7. I have not had prior involvement with the property that is the subject of this Technical Report.
8. I have read NI 43-101 and the parts of the Technical Report I am responsible for have been prepared in compliance with N1 43-101.
9. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report that I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 15th day of June, 2017.

"signed and sealed"

David Williams, B. Sc. (Hons)
Principal Resource Geologist
CSA Global Pty Ltd

Certificate of Qualified Person – Dr Matthew Randall

As a Qualified Person of this Technical Report covering the Property named as Balogo, Burkina Faso, I, Matthew Randall do hereby certify that:

1. I am an Associate Consultant Mining Engineer to CSA Global (UK) Ltd, and carried out this assignment for CSA Global (UK) Ltd, Suite 2, Springfield House, Springfield Road, Horsham, West Sussex, RH12 2RG, UK, +44 1403 255 969, axevalleymining@gmail.com.
2. The Technical Report to which this certificate applies is titled "NI 43-101 Technical Report – Mineral Resource and Reserve Update for the Balogo Project" and is dated effective 15 June 2017.
3. I hold a Hons BSc in Mining Engineering and a PhD in Rock Mechanics and am a registered Fellow in good standing of the Institute of Materials, Minerals and Mining (IMMM). I am familiar with NI 43-101 and, by reason of education, experience in exploration, evaluation and mining of gold, and professional registration; I fulfil the requirements of a Qualified Person as defined in NI 43-101. My experience includes 10+ years in gold.
4. I visited the project that is the subject of this Technical Report, between 26th January and 2nd February 2017 for a combined total of 6 days on site.
5. I am responsible for the following sections of this Technical Report; Sections 2.4.2, 15, 16, 21.1 and 22.
6. I am independent of the issuer as described in Section 1.5 of NI 43-101.
7. I have not had prior involvement with the property that is the subject of this Technical Report.
8. I have read NI 43-101 and the parts of the Technical Report I am responsible for have been prepared in compliance with N1 43-101.
9. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report that I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 15th day of June 2017.

"signed and sealed"

Dr Matthew Randall
Associate Consultant Mining Engineer
CSA Global (UK) Ltd.

Certificate of Qualified Person – Simon S. Meik

As a Qualified Person of this Technical Report covering the Property named as Balogo, Burkina Faso, I, Simon Meik do hereby certify that:

1. I am a Mineral Processing Consultant to CSA Global (UK) Ltd, and carried out this assignment for CSA Global (UK) Ltd, Suite 2, Springfield House, Springfield Road, Horsham, West Sussex, RH12 2RG, UK, +44 1403 255 969, simon.s.meik@gmail.com.
2. The Technical Report to which this certificate applies is titled "NI 43-101 Technical Report – Mineral Resource and Reserve Update for the Balogo Project" and is dated effective 15 June 2017.
3. I hold a BSc degree and PhD in Minerals Engineering from the University of Birmingham, UK. I am a Chartered Professional Member of the Australasian Institute of Mining and Metallurgy (FAusIMM (CP), Membership Number 106146). I am familiar with NI 43-101 and, by reason of education, and 40 years' experience in the mining industry I fulfil the requirements of a Qualified Person as defined in NI 43-101 for the evaluation of the project under consideration. My experience includes most aspects of study/project/plant operations management in many aspects of small and large mineral processing plants.
4. I have not visited the project that is the subject of this Technical Report.
5. I am responsible for the following sections of this Technical Report; Sections 13, 17 and 21.2.
6. I am independent of the issuer as described in Section 1.5 of NI 43-101.
7. I have not had prior involvement with the property that is the subject of this Technical Report.
8. I have read NI 43-101 and the parts of the Technical Report I am responsible for have been prepared in compliance with N1 43-101.
9. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report that I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 15th day of June 2017.

"signed and sealed"

Simon Meik - BSc (Hons), PhD, FAusIMM (CP)
Associate Mineral Processing Consultant
CSA Global (UK) Ltd.

Certificate of Qualified Person – Galen White

As a Qualified Person of this Technical Report covering the Property named as Balogo, Burkina Faso, I, Galen White do hereby certify that:

1. I am a Director and Principal Consultant of CSA Global (UK) Ltd, and carried out this assignment for CSA Global (UK) Ltd, Springfield House, Springfield Road, Horsham, West Sussex, RH12 2RG, UK Telephone +44 1403 255 969, e-mail: galen.white@csaglobal.com.
2. The Technical Report to which this certificate applies is titled "NI 43-101 Technical Report – Mineral Resource and Reserve Update for the Balogo Project" and is dated effective 15 June 2017.
3. I hold a BSc (Hons) degree in Geology from the University of Portsmouth, England and am a registered Fellow in good standing of the Australasian institute of Mining and Metallurgy (Membership Number: 226041). I am familiar with NI 43-101 and, by reason of education, experience in exploration, evaluation and mining of shear-hosted vein gold deposits, and professional registration; I fulfil the requirements of a Qualified Person as defined in NI 43-101. My experience includes 21 years in mineral exploration, mining and resource development with the last 11 years in technical consulting.
4. I have not visited the project that is the subject of this Technical Report.
5. I am responsible for the following sections of this Technical Report; Sections 1, 2, 3, 18, 19, 20, 23, 24, 25, 26 and 27.
6. I am independent of the issuer as described in Section 1.5 of NI 43-101.
7. I have not prior involvement with the property that is the subject of this Technical Report.
8. I have read NI 43-101 and the parts of the Technical Report I am responsible for have been prepared in compliance with N1 43-101.
9. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report that I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 15th day of June 2017.

"signed and sealed"

Galen White, BSc (Hons), FAusIMM, FGS
Principal Geologist
CSA Global (UK) Ltd}

Certificate of Qualified Person – Maria O'Connor

As a Qualified Person of this Technical Report covering the Property named as Balogo, Burkina Faso, I, Maria O'Connor do hereby certify that:

1. I am a Principal Resource Geologist of CSA Global (UK) Ltd, and carried out this assignment for CSA Global (UK) Ltd, Springfield House, Springfield Road, Horsham, West Sussex, RH12 2RG, UK Telephone +44 1403 255 969, e-mail: maria.oconnor@csaglobal.com.
2. The Technical Report to which this certificate applies is titled "NI 43-101 Technical Report – Mineral Resource and Reserve Update for the Balogo Project" and is dated effective 15 June 2017.
3. I hold a BSc (Hons) degree in Environmental Geochemistry from University College Dublin, Ireland (2004) and am a registered Member in good standing of the AIG (MAIG Member Number 5931) and a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM Membership Number 307704). I am familiar with NI 43-101 and, by reason of education, experience in exploration, evaluation and mining of hydrothermal gold deposits, and professional registration; I fulfil the requirements of a Qualified Person as defined in NI 43-101. My experience includes 12 years in mineral exploration and resource evaluation.
4. I have not visited the project that is the subject of this Technical Report.
5. I am responsible for the following sections of this Technical Report; Section 14.
6. I am independent of the issuer as described in Section 1.5 of NI 43-101.
7. I have not had prior involvement with the property that is the subject of this Technical Report.
8. I have read NI 43-101 and the parts of the Technical Report I am responsible for have been prepared in compliance with N1 43-101.
9. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report that I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 15th day of June 2017.

"signed and sealed"

Maria O'Connor BSc (Hons), MAIG, MAusIMM
Principal Resource Geologist
CSA Global (UK) Ltd

Certificate of Qualified Person – David Muir

As a Qualified Person of this Technical Report covering the Property named as Balogo, Burkina Faso, I, David Muir do hereby certify that:

1. I am a Senior Data Geologist of CSA Global (UK) Ltd, and carried out this assignment for CSA Global (UK) Ltd, First Floor, Suite 2, Springfield House, Springfield Road, Horsham, West Sussex, RH12 2RG, Tel: + 44 (0) 1403 255 969, e-mail: david.muir@csaglobal.com.
2. The Technical Report to which this certificate applies is titled "NI 43-101 Technical Report – Mineral Resource and Reserve Update for the Balogo Project" and is dated effective 15 June 2017.
3. I hold a BSc (Hons) degree in Geology from the University of Natal, Durban, South Africa and am a registered Member in good standing of the Australian Institute of Geoscientists (Membership Number: 9102). I am familiar with NI 43-101 and, by reason of education, experience in exploration, evaluation and data management, and professional registration; I fulfil the requirements of a Qualified Person as defined in NI 43-101. My experience includes 9 continuous years in the exploration and mining industry.
4. I have not visited the project that is the subject of this Technical Report.
5. I am responsible for the following sections of this Technical Report; Section 11.
6. I am independent of the issuer as described in Section 1.5 of NI 43-101.
7. I have not had prior involvement with the property that is the subject of this Technical Report.
8. I have read NI 43-101 and the parts of the Technical Report I am responsible for have been prepared in compliance with N1 43-101.
9. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report that I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 15th day of June 2017.

"signed and sealed"

David Muir BSc. (Hons), MAIG, FGS
Senior Data Geologist
CSA Global (UK) Ltd.

Purpose of this document

This report was prepared exclusively for Netiana Mining Co. and Avesoro Resources Inc. ("the client") by CSA Global (UK) Ltd ("CSA Global"). The quality of the information, conclusions and estimates contained in this Report are consistent with the level of work carried out by CSA Global to date on the assignment, in accordance with the assignment specification agreed between CSA Global and the Client and in accordance with the requirements of NI43-101 Technical Reporting.

Notice to Third Parties

CSA Global has prepared this Report having regard for the particular needs and interests of our client, and in accordance with their instructions. This report is not designed for any other person's particular needs or interests. Third party needs and interests may be distinctly different to the needs of Netiana Mining Co. and Avesoro Resources Inc's needs and interests, and the Report may not be sufficient not fir or appropriate for the purposes of a Third Party, other than its prescription as it relates to NI43-101 Technical Reporting.

Results are estimates and subject to change

The interpretations and conclusions reached in this Report are based on current scientific understanding and the best evidence available to the authors at the time of writing. It is the nature of all scientific conclusions that they are founded on an assessment of probabilities and, however high these probabilities may be, they make no claim for absolute certainty.

The ability of any person to achieve forward-looking production and economic targets is dependent on numerous factors that are beyond CSA Global's control and that CSA Global cannot anticipate. These factors include, but are not limited to, site specific mining and geological conditions, management and personnel capabilities, availability of funding to properly operate and capitalise the operation, variations in cost elements and market conditions, developing and operating the mine in an efficient manner, unforeseen changes in legislation and new industry developments. Any of these factors may substantially alter the performance of any mining operations.

Element of Risk

The interpretations and conclusions reached in this report are based on current geological theory and the best evidence available to the author at the time of writing. It is the nature of all scientific conclusions that they are founded on an assessment of probabilities and, however high these probabilities may be, they make no claim for absolute certainty. Any economic decisions which might be taken on the basis of interpretations or conclusions contained in this report will therefore carry and element of risk.

Glossary

US$	US dollars
%	percent
º	degrees (in Radians)
2D	two-dimensional
3D	three-dimensional
A$	Australian dollar
AAS	Atomic Adsorption Spectroscopy
Au	gold
BD	bulk density
BDL	below detection limit
BLEG	Bulk Leach Extractable Gold
CAPEX	Capital expenditure
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
cm	centimetre
°C	degrees Celsius
CRM	Certified Reference Material
CSA Global	CSA Global (UK) Ltd
CV	Coefficient of variation
DA	dynamic anisotropy
DBA	database administrator
DDH	diamond drillhole
Delta	Delta Exploration Inc.
DH	drillhole
E	East
EM	electromagnetic (survey)
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
g	gram
g/t	grams per tonne
GMR	Golden Rim Resources Ltd
GPS	Global Positioning Device
HARD	Half Absolute Relative Difference
IDW	Inverse Distance Weighting
IP	induced polarisation
IRR	Investment rate of return
JORC	Australasian Joint Ore Reserves Committee Code

KE	Kriging Efficiency
kg	kilograms
km	kilometre
km^2	square kilometres
KNA	kriging neighbourhood analysis
Kt	thousand tonnes
LOM	life of mine
m	metre
Ma	million years
mE, mN, mRL	metres east, north and relative level
mm	millimetre
MNG	MNG Gold Burkina Sarl
Moz	million ounces
MRE	Mineral Resource estimate
Mt	million tonnes
N	north
NI 43-101	National Instrument 43-101 for the Standards of Disclosure for Mineral Projects within Canada
NMC	Netiana Mining Company
NPV	Net Present Value
NSR	Net Smelter Return
OK	ordinary kriging
oz	troy ounce, 31.1034768 g
ppb	parts per billion
ppm	parts per million
pXRF	portable x-ray fluorescence
QAQC	quality assurance/quality control
QP	Qualified Person
RAP	Resettlement Action Plan
RC	reverse circulation (drillhole)
RC-DD	reverse circulation with diamond tail (drillhole)
RCP	Rehabilitation and Closure Plan
ROM	Run of Mine
RQD	Rock Quality Designation
S	South
SCR	Solid Core Recovery
SE	South East
SG	Specific Gravity

SQL	Structured Query Language (Database)
t/m^3	tonnes per cubic metre
t/a	tonnes per annum
t/hr	tonnes per hour
TR	trench
UTM	Universal Mercator Project
W	west
WGS1984	world geodetic system 1984
XRD	x-ray diffraction
XRF	x-ray fluorescence

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1 Summary

1.1 Overview

The Netiana Mining Company (NMC) commissioned CSA Global (UK) Ltd (CSA Global) to assist them with evaluating the Balogo Project and to complete the required technical evaluations, verification and review works to facilitate disclosure of an update to the Mineral Resource and Mineral Reserves inventory for the Project and to provide independent comment in relation to exploration potential in the near-mine environment.

In addition, and following the estimation of Mineral Resources and Mineral Reserves, CSA Global was commissioned to produce a Life-of-Mine (LOM) Schedule and prepare a financial model for the Project.

All technical works have been undertaken in under the guidelines of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council, and disclosed within the context of the Canadian Securities Administrators National Instrument 43-101 (NI 43-101).

In addition to the main Netiana deposit, the Balogo Project also includes a significant number of near-mine satellite prospects which have been the subject of various levels of exploration activity ranging from early-stage evaluation (surface works and defined anomalies), advanced exploration (drilling), resource development and mining.

Previous operator/owners include Golden Rim Resources Ltd (GMR), between 2010 and 2015 and MNG Gold Burkina Sarl (MNG) until 2016, following the creation of the Netiana Mining Company (NMC) to manage the development of the Netiana deposit.

1.2 Sources of Information

Sections 7, 8, 9, 10 and 11 of this NI 43-101 report are largely reliant on *MNG (2016) a Feasibility Study for the Balogo Project in Burkina Faso and GMR (2015)*. The Qualified Persons take responsibility for the content of these sections and believe they are accurate and complete in all material aspects.

Licence and tenure documents and exploration and resource data were provided and reviewed; however, no legal due diligence has been undertaken by CSA Global to independently verify the status of the Balogo Project licences.

Mr David Williams (Qualified Person for Mineral Resources) and Dr Matthew Randall (Qualified Person for Mineral Reserves) visited the Balogo Project on 2 February 2017.

1.3 Property Location, Description and Geology

The Balogo Project currently comprises two contiguous Exploration Permits: Balogo (due to expire in May 2018) and Dabinyan III (due to expire in February 2019) for a total area of 360 km^2. The renewal process must be completed 3 months prior to expiry.

These permits are in the Centre-Sud region of Burkina Faso, approximately 100 km south of the capital, Ouagadougou and about 22 km from the Nazinon River. Access from Ouagadougou is via sealed roads until after the town of Pô, 50 km from the Project.

The general climate for the region is semi-arid, with a rainy season lasting from June to October. The Project area is generally flat land with some minor undulating hills and lateritic mesas.

Resources and amenities are limited in the region. Pô, the nearest town to the Balogo Project, has a population of approximately 30,000. Ouagadougou, the capital city of Burkina Faso, is located 120 km to the north.

The principal gold producing areas of Burkina Faso are associated with Lower Proterozoic Birimian volcano-sedimentary units arranged in elongated greenstone belts across the West African Craton. The host geology at Netiana is a basement sequence of metasediments (talc chlorite/quartz sericite schists and quartzites) which have been intruded by dioritic plugs and dykes controlled by the northeast-trending regional shears. Mineralisation is typically associated with networks of quartz mineralisation or associated with disseminated sulphides within strongly deformed alteration zones.

1.4 Project History and Exploration

GMR acquired the Project in 2010 and conducted geochemical sampling, geological mapping, trenching, geophysical surveying and completed multiple reverse circulation (RC) and diamond drilling programs that led to the delineation of the Netiana and adjacent gold deposits.

In April 2015, MNG executed an agreement with GMR to acquire its entire interest in the Balogo Project.

Mining commenced in May 2017 and is currently in the "pre-stripping phase". Informal/artisanal mining is present and extensive around the Netiana deposit.

The Balogo Project also includes a significant number of near-mine satellite prospects which have been the subject of various levels of exploration activity ranging from early-stage evaluation (surface works and defined anomalies), advanced exploration drilling, resource development and mining. The only areas of the Balogo Project which contain enough detailed geological and drill data are the Netiana and Netiana South East (SE) deposits. Drill data at the Balogo Project are shown in Figure 1. The Mineral Resource drill database for Netiana and Netiana SE (Figure 1 inset) consists of 10 trenches, 202 diamond drillholes (DDH) and 140 RC holes. The total drilling available for the geological model and Mineral Resource estimate (MRE) update was 352 holes and trenches for 49,123 m.

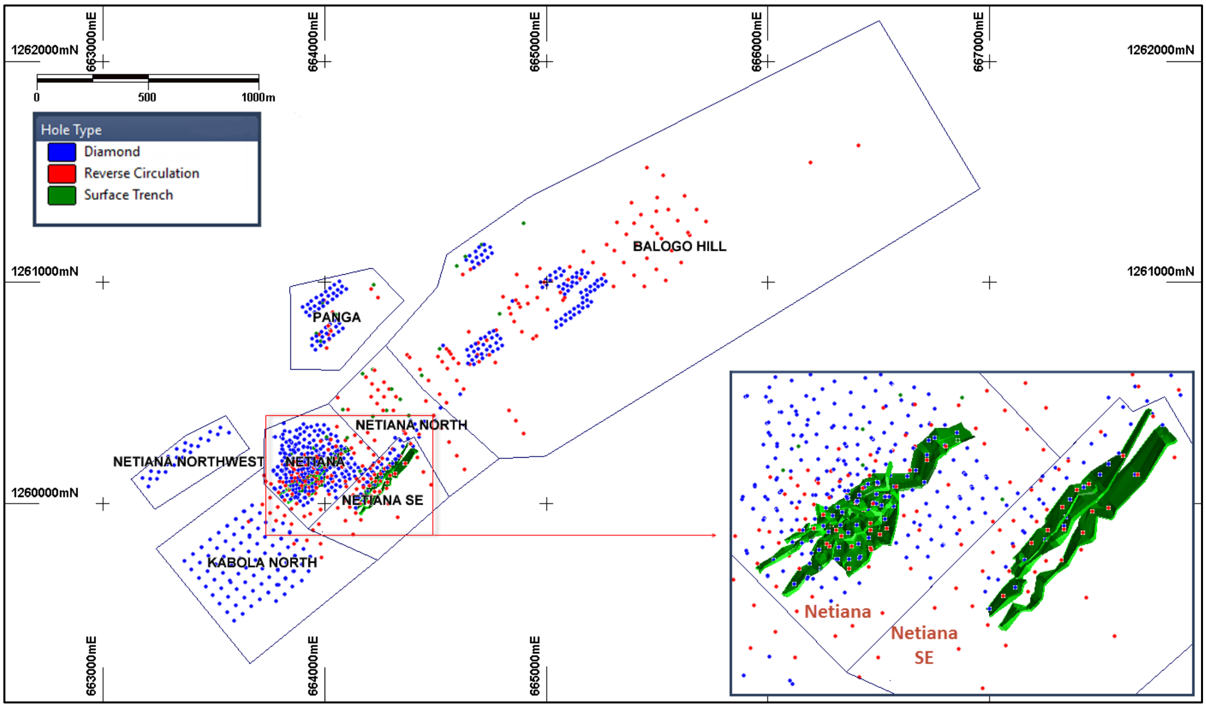


Figure 1: Drilling completed at the Balogo Project outlined by general project/prospect areas

Source: CSA Global, 2017

1.5 Drilling

Between 2011 and 2014, GMR drilled 376 drill holes and trenches and between 2016 and 2017, MNG drilled 209 drill holes and trenches. Procedures for all drilling completed at the Project follow those employed by GMR.

Drill hole collars were surveyed using a differential GPS and all project location data were collected in WGS 84, UTM Zone 30 North. Downhole surveying has been undertaken using a digital Reflex Ezy-shot camera. Core recovery, rock quality designation (RQD) and solid core recovery (SCR) is logged in the exploration camp with a mean recovery of >92% within mineralisation.

1.6 Sample Preparation, Analysis and Security

Sampling of RC chips is at 1 m sample intervals and the entire sample was transported under supervision to a central sample processing site where they were weighed and split through a riffle splitter to obtain a sub-sample of approximately 2 kg to 3 kg. Wet samples were collected at the drilling rig in their entirety and were sun-dried before being riffle-split. The remaining portions of the split samples were retained in the Balogo Sample Logging, Preparation and Storage Facility. To ensure drill-site quality control, a trained technician and/or a geologist is permanently on site during all reverse circulation drilling.

Fractured zones were re-constructed by joining pieces of core and wrapped with tape prior to cutting. Broken or soft sections of the core were sampled by the geologists using a spatula and spoon method before being placed in labelled sample bags and dispatched for analysis. After cutting, both pieces of core were replaced in the core tray. MNG geologists were required to supervise the technician sampling the drill hole. The technician was also responsible for the insertion of the required QAQC control samples.

Each sample was bagged and assigned a unique sample number (sample ID) and dispatched to the laboratory for analysis. The prepared samples were placed into empty rice-sacks for transport to the Laboratory in Ouagadougou.

GMR used five laboratories (BIGS, SGS, ACTLABS, ALS Ouagadougou and ALS Johannesburg) to prepare and analyse drilling and geochemical samples. ALS Ouagadougou was used by MNG for the 2016 diamond core and surface samples.

CSA Global separately reviewed the RC and diamond drilling gold blank, CRM and duplicate results. No QC results were available for the 2012 diamond drill holes and therefore, no comment on the quality of results from these drill holes can be made. Numerous instances of apparent misidentified/mislabelled CRMs and blanks were noted, particularly in the RC samples.

1.7 Data Verification

Verifications undertaken included the following:

- CSA Global loaded the NMC excel exploration and drill data into a Structured Query Language (SQL) relational database, which is an industry standard for exploration project databases. Minor validation issues were noted and resolved during the above process and a validated database provided for downstream work.
- Drillhole totals were verified against the 2015 GMR technical report and no significant differences were observed.
- Database gold assay results were compared against PDF assay certificates with no differences noted between the hard copy and the database assay results. However, no assay certificates were provided for any of the BIGS laboratory data.
- Mr David Williams (CSA Global Qualified Person, Mineral Resources) and Dr Matthew Randall (CSA Global Qualified Person, Mineral Reserves) visited the Balogo project on 2nd February 2017 for the

purposes of inspection, ground truthing, review of activities, procedural review and information data collection and collation and to satisfy NI 43-101 "personal inspection" requirements.

- Twin samples from 23 RC and DDH drill holes, of which eleven intersect mineralisation, were reviewed by NMC which resulted in the exclusion of several RC holes and one diamond hole. CSA Global agrees with the exclusion of these holes.
- A significant portion (30%) of the data are RC. To assess the compatibility between the RC and diamond drilling, procedures for both kinds of sample collection were reviewed and are considered appropriate.
- The composited drill hole data gold assay data were compared at each cut-off for each drill type. RC tended to have slightly more accumulated Au at higher cut-offs than DDH data but for the most part, the two datasets were found to be quite compatible at the cut-offs reviewed.
- A test estimate was run using only DDH data to assess the impact, if any, of using the combined dataset. The result was within 1% on metal (2,500 ounces Au) with the DDH only scenario reporting a slightly lower tonnage, and higher grade than the combined dataset. This, alongside the data review, supported the decision to proceed using RC, DDH and trench data in the MRE.

1.8 Mineral Processing and Metallurgical Testing

The diminishing ore grades at the current Youga operation will be upgraded by supplementing the feed material with higher grade material from the Netiana mine which will be trucked 154 km and dumped at the site.

- The Youga process plant comprises of a three-stage crushing, and single stage ball milling circuit; a gravity section; a single stage cyanide leach and a five-stage integral carbon-in-leach circuit (CIL).
- Operating performance since production start-up has confirmed the pre-production recovery assumptions (both gravity and leach extractions).
- Netiana samples contain higher levels of Tellurium (average of 30 g/t) and Sulphur (average of 1.75% S) compared to the Youga ore samples. However, the measured gold leach extractions averaged 90.6% and 91.8% after 24 and 48 hours respectively. The five higher grade samples (> 4 g/t) peaked at >94%, after 48 hours.
- Overall cyanide consumption in the Netiana samples tested considerably higher than those recorded for the Youga samples and actual ore treated in 2016.

1.9 Mineral Resource Statement

CSA Global considers that data collection techniques are consistent with industry good practice and suitable for use in the preparation of a Mineral Resource estimate to be reported in accordance with NI 43-101. QC data supports the integrity of the analytical data which has been utilised.

- A twinning program and QAQC review completed by NMC resulted in the exclusion of eight drillholes Global (seven RC, and one DDH) from use in the MRE. A comparison of RC vs. DDH data completed by CSA Global concluded that a combined drill type dataset was suitable for use in the estimation of Mineral Resources.
- A 3D block model representing the mineralisation has been created by CSA Global, in collaboration with NMC geologists, using Datamine™ software. High-quality RC and DDH samples were used to estimate grades into blocks using OK. The block model was validated visually and statistically.
- The total drilling available for the geological model and MRE update was 352 holes and trenches for 49,123 m.
- 2,981 samples in 12 domains were flagged within the mineralised volume and composited downhole to 1 m lengths. The resultant 3,004 composite samples were used in the estimate.

- A review of 798 in-situ dry BD measurements in mineralisation resulted in a BD of 2.86 t/m3 being assigned to fresh material, which aligns with the mineralisation hosted in diorite. A review of core photos indicated that the BD for oxide and transitional material based on measurements was likely to be too high, since competent pieces of core (often quartz vein) were used for the measurements, but these are not considered representative of the mixed nature of these zones. Geological logging of intensity of weathering was used to derive a length weighted average for oxide and transitional. Highly weathered material was assigned 2.00 t/m3; 2.14 t/m3 for oxide and 2.35 t/m3 for transitional.
- Following contact analysis, a decision was made to use hard boundaries between mineralisation domains and soft boundaries across weathering zones for all geostatistical analysis and estimation. A variogram was modelled for the largest domains in Netiana and Netiana SE for Au using 1 m top-cut composites, with outliers excluded where appropriate.
- Grade was estimated into parent blocks of 5 m x 5 m x 5 m (X x Y x Z) using OK, controlled by dynamic anisotropy (DA).
- Grade estimates were validated against drill data. There is good correlation between the input composites and output model for the estimated Au grade. Generally, the model grade trends follow the pattern of the drill samples grades, with acceptable levels of smoothing of the higher and lower grades.
- The Balogo MRE satisfies the requirements for Indicated and Inferred Mineral Resource categories as embodied in the NI 43-101 Canadian National Instrument for the reporting of Mineral Resources and Reserve.
- The MRE indicates reasonable prospects for economic extraction, supported by a resource shell produced in NPVS using a US$1,500 Au prices and basic assumptions regarding costs. While Netiana is located more than 100 km from the Youga Plant (operated by a related party), the assumptions around transport costs assume a closer plant location, to support the criteria that a Mineral Resource must have the potential for eventual economic extraction.
- The MRE for Netiana reports 0.45 Mt at 6.75 g/t for 98,600 ounces of Au of Indicated Mineral Resources and 0.1 Mt at 4 g/t Au for 15,000 ounces of Au of Inferred Mineral Resource. Mineral Resources are reported at a cut-off grade of 0.55 g/t Au.

Table 1: Netiana Mineral Resource estimate, reported at a 0.55 g/t Au cut-off, 28 February 2017

Mineral Resource Estimate for theBalogo Gold Project, Burkina Faso, as at 28th February 2017						
Deposit	Indicated			Inferred		
	Tonnes Mt	Au Grade g/t	Au Metal Koz	Tonnes Mt	Au Grade g/t	Au Metal Koz
Netiana	0.45	6.75	98.6	0.1	4.0	15
Total	**0.45**	**6.75**	**98.6**	**0.1**	**4.0**	**15**

Notes:
1. Reporting cut-off is 0.55 g/t Au.
2. The effective date of the Mineral Resource is February 28th, 2017.
3. Figures have been rounded to the appropriate level of precision for the reporting of Resources.
4. Due to rounding, some columns or rows may not compute exactly as shown.
5. The Mineral Resources are stated as in situ dry tonnes. All figures are in metric tonnes.
6. The Mineral Resource has been classified under the guidelines of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council, and procedures for classifying the reported Mineral Resources were undertaken within the context of the Canadian Securities Administrators National Instrument 43-101 (NI 43-101).
7. The model is reported above a surface based on the NPVS shell from a US$1,500 gold price pit optimisation run to support assumptions relating to reasonable prospects of eventual economic extraction.
8. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.
9. Mineral Resources have been reported inclusive of Mineral Reserves, where applicable.

1.10 Mineral Reserves

The Mineral Reserves for Netiana are supported by a Life of Mine (LOM) plan, which was developed using the following key parameters:

- The Overall Slope Angle (OSA) for the open pit was set to 38 degrees for the weathered material (Regolith and Oxide) and 45 degrees for the Transition and Fresh material.
- The pit limit design and Reserve estimate are based on a metal price of 1,250 US$/Troy Oz. A deduction of 4% was made to account for Royalty payments.
- The waste and ore-based costs applied for pit optimization and mine planning were based on a combination of a Mine Cost model developed by CSA Global and the 2017 Budget costs supplied by Avesoro Holdings, the holding company of Netiana Mining Company. The assumed mining cost was US$2.0/t with an additional appropriate incremental haulage cost per bench. The total ore-based costs (including processing and G&A) are US$22/t ore.
- Netiana ore-based costs include an additional US$15/t overland ore haulage cost from Netiana to the processing plant at Youga.
- A series of pit shells were determined by varying the Price Factor in steps of 2% up to a maximum of 100%. The pit limit was selected at a Price Factor of 100% in order to maximise the Reserve and a set of pushbacks were constructed based on the shells.
- Modifying factors of 90% mining recovery (i.e. 10% ore loss) and 10% waste dilution were included in the estimate of the Mineral Reserves.
- The Mineral Reserve for Netiana (Table 2) were converted from the Mineral Resource and are classified as Probable based on a Resource Classification of Indicated. Inferred and Unclassified Resources have been excluded from the conversion of Resources to Reserves.

Table 2: Netiana Converted Mineral Reserves

Ore Reserve Estimated for the Balogo Project, Burkina Faso, as at 28th February 2017							
Deposit	Cut-off Grade	Proved			Probable		
		Tonnes Mt	Au Grade g/t	Au Metal Koz	Tonnes Mt	Au Grade g/t	Au Metal Koz
Netiana	1.20				0.28	8.81	78.37
Total					**0.28**	**8.81**	**78.37**

Notes:
1. The Ore Reserve has been depleted for mining up to 28th February 2017
2. Figures have been rounded to the appropriate level of precision for reporting
3. Due to rounding, some columns or rows may not compute exactly as shown
4. The Ore Reserves are stated as in situ dry metric tonnes
5. The Ore Reserves were prepared under the guidelines of the CIM, for reporting under NI43-101
6. The Ore Reserve is reported at a US$ 1,250 gold price
7. Modifying factors of 90% mining recovery and 10% waste dilution have been applied
8. Probable Reserves were derived from Indicated Resources
9. Ore Reserves are inclusive of Mineral Resources
10. There are no known legal, political, environmental, or other risks that could materially affect the potential development mineral reserves.

Factors that may affect the assumptions in this report are:

- Commodity price and exchange rate assumptions are important factors that affect revenue and costs.
- The mine plan has been limited by an assumed annual Mill throughput of 1.1 Mtpa. No bulk metallurgical tests have, to date, been carried out.
- If certain delivered blends of rock types have lower throughputs than currently modelled, this would increase the processing cost, which would in turn increase the mill cut-off grade. If all other things held constant, this would tend to reduce the tonnage of the Mineral Reserve and the amount of contained metal.
- If the currently planned water management methods prove to be inadequate, additional sumps and pump systems may be required which would add to the capital and operating costs.
- Transport of ore between the Netiana and the process plant at Youga is a key part of the plan and relies on the efficient planning of the transport route, good road maintenance and proactive management of community relations.

1.11 Mining Methods

The proposed method of mining for Netiana is a conventional open pit method using drilling and blasting, loading with hydraulic excavators, and hauling with articulated dump trucks (ADT). Consideration of underground mining has not been necessary at this stage of the Project.

- The optimal production rate is constrained by the capacity of the plant at Youga.
- Datamine's mine "optimisation" software (NPV Scheduler) was used to determine the pit limit, using the industry standard Lerchs-Grossman algorithm.
- The pit was subdivided the pit into two stages with a smaller starter pit to allow the mining sequence to target high grade, low strip ratio material in the first year of production. The starter pit is mined out over a 6-month period and the Final Pit is mined out over the next 10 months.
- The optimal pit limit was selected at US$ 1,250 /tr Oz to maximise the Mineral Reserve.
- The cut-off grade at the reference bench was calculated to be 1.2 g/t Au which accounts for the additional cost of re-handling material during transport to Youga, and the incremental haulage cost

as the pit deepens. This is significantly higher than that at Youga, where the cut-off grade averages 0.7 g/t Au.

- Material that is normally classified as Low Low Grade (LLG - grade range of between 0.7 and 1.2 g/t Au) is stockpiled at Netiana as a potential future ore source and is not included in the Ore Reserve as it is currently uneconomic.
- Material with a grade ≥ 1.2 g/t Au is split into Low, Medium and High-Grade piles and stockpiled on a temporary Run of Mine (ROM) stockpile close to the pit exit.
- Geotechnical parameters used to describe the competency of the rocks are of international standard and are believed to be sufficiently comprehensive for the purposes of reporting Ore Reserves.
- A bench height of 5 m has been selected to ensure selective mining of the ore. The bench will be blasted on 5 m intervals and loaded on two flitches of 2.5 m. This is the practice at Youga where it works well for the given rock types and distribution of ore.
- A mining recovery and waste dilution of 90% and 10% respectively have been assumed.
- Considerable care needs to be taken with the blasting to minimise movement.
- The waste dump capacities have been based on a swell factor of 30% and no allowance for backfilling of the pits has been made, which may be a potential cost saving.
- As the Balogo project will be managed alongside the existing project at Youga, and the proposed project at Ouaré, the fleet should be standardised across the operations.
- Based on an average of 6,400 operating hours per year and an average cycle time of 15 minutes it is expected that 4 trucks will be required at the outset.
- The support equipment consists of drills, dozers, graders, Front End Loaders (FEL), light vehicles and other service equipment such as a fuel truck and service truck. The explosive truck is included with the blasting contract service.

1.12 Recovery Methods

The Youga processing plant uses a conventional gravity/CIL gold recovery process, which consists of a 3-stage crushing operation, ball milling, gravity concentration and cyanidation by carbon-in-leach (CIL). Pressure Zadra elution is utilized for recovery of gold from loaded carbon.

- Plant throughput has steadily increased over the period of operation (since 2008), whilst gold production peaked in 2013, and thereafter has steadily declined due to falling head grades as lower grade material is now being processed.
- The current mine plan projects the material from Netiana to be processed in 2017 and 2018 at the proportion of 10 and 16 percent respectively of the proposed mill annual throughput.
- Due to its lower intrinsic hardness, the new high-grade material will be processed through the existing Youga comminution circuit at a finer grind (a P80 of 75 microns) than is currently being achieved on the Youga material. This will ensure that the gold recovery is maximised, and an extraction of 94% is expected.

1.13 Project Infrastructure

The estimate of mine infrastructure is essentially unchanged from that of the Feasibility Study published in March 2016.

- Proposed infrastructure for the mining includes open pit, waste rock stockpile, ore stockpile and related facilities which include prefabricated office building and change house.
- Electrical power required for office building, change house and lighting will be sourced from a 150kVA diesel generator.

- There will be no camp facilities on site as the camping area will be located 6.3km east of the Balogo Project area. The camping area consists of prefabricated and containerised buildings.
- The ore from Netiana will be transported back to the processing plant at Youga. It is assumed that this fleet of trucks will be based at Youga.
- As processing and refining of the ore is done at Youga there will be no requirement for these facilities at Netiana.
- Other administrative functions, including HSE, will be sourced from Youga and there will be minimal need to accommodate additional staff at Netiana.

1.14 Market Studies

Ore from Netiana will be trucked to the Youga plant where the plant currently produces Dore bars which are sold to independent refineries under normal commercial conditions. The gold is collected from site and is transported to Ouagadougou, from where it is flown to Europe for further refining. Funds are repatriated into Burkina Faso.

1.15 Environmental Studies, permitting and Social or Community Impact

Climate and Hydrology baseline studies are detailed and there is a good understanding of the water resources in the area, with documented research into the hydrogeology and aquifers together with data from wells and boreholes, and surface flow data from existing flow gauges and stations. Groundwater is recharged through rainfall and the water table is relatively shallow.

The geology and mineralogy of the deposit is described but no geochemical studies were undertaken for the ESIA study. Soils and land-use studies are detailed and vegetation surveys were undertaken and inventories made.

The social study captured the demographics, ethnic, religious, and population dynamics; the social, administrative and political frameworks; traditional and social organisation in the study area. Land issues are complex but ownership is well defined with access to land via inheritance, gifting or borrowing. Traditional and modern systems are employed for conflict resolution.

Potential impacts are anticipated to be resettlement, compensation for loss of land and access to grazing, water and natural forest resources. Potential contamination of water resources and soils from acid mine drainage (AMD) and metal leaching from the open pit and WRD is identified, but has not be evaluated with test work and is a significant gap in the ESIA.

Other impacts include the lowering of water-table through pit dewatering drawdown affecting local wells and boreholes; and health and safety issues associated with road traffic accidents and access to mine infrastructure. Positive impacts from the operation will include creation of jobs; new business opportunities for local populations (trade, catering etc.); and economic benefits to the State and local authority from tax gains. The main additional impacts from the rehabilitation and closure phase include the loss of direct and indirect jobs and business opportunities for local populations.

The preliminary Environmental and Social Management Plan (ESMP) provides for the implementation of environmental and social mitigation measures, as well as for monitoring and supervision, and capacity-building. The overall budget for the implementation of the ESMP for the Project is estimated at US$1,454,514. A detailed Resettlement Action Plan (RAP) was developed for the Balogo Project in 2016.

In 2016/17 Société de Conseil et de Réalisation pour la Gestion de l'Environnement (Socrege) undertook an ESIA study on the proposed Balogo-Youga haul route, issuing the EIES Report in April 2017. The ore mined at the Netiana deposit will be transported by truck along a 154 km long route to the Youga mine for processing. Of this route, 150 km are on the existing national highway RN25 (from Koumbili to Youga), and the dirt road from the project site to the RN25 has been rebuilt.

1.16 Economic Analysis

The Netiana Economic Analysis is based on the Mineral Reserves and uses a discounted cash flow approach. Results are expressed as pre-tax and pre-financing terms, and the 4% royalty paid on revenue is taken into account. Project expenditures prior to March 2017 are considered as sunk costs and are excluded from the cash flow model. The model is developed in US Dollars at current prices and does not include considerations for exchange rate fluctuations.

The following pre-tax economic indicators were calculated, using US$1,250 gold price:

- Net cash flow of US$60.1 million.
- NPV at 6% discount rate of US$54.9 million.
- NPV at 8% discount rate of US$53.3 million.

IRR and payback period assessments are not applicable to the project as it is cash flow positive from year one.

The base case results were tested for sensitivities to:

- Gold price fluctuations in the range from US$1000/oz to US$1,350/oz and mining cost variation from 0% to an increase of 10% from the current level.
- Gold price fluctuations in the range from US$1000/oz to US$1,350/oz and processing recoveries change from -4% to +2% from the current base case.

The project shows its viability in both stress scenarios:

- NPV at 8% discount rate with project mining costs 10% higher than the base case and gold price at US$1000/ounce is at US$37 million.
- NPV at 8% discount rate with processing recoveries for Balogo ores at 4% lower than the base case and gold price at US$1000/ounce is at US$34 million.

1.17 Hydrology

CSA Global undertook a review of the Balogo Project deposit to evaluate the level of understanding of the hydrology and hydrogeology and to identify any potential mine water management issues and risks.

- The hydrogeological information available for the Balogo project area relies predominantly on literature values and limited site specific data.
- The ESIA and FS report for the Balogo Project contain short sections on aquifer properties, but are poorly referenced, and conclude that the three sub-basins that the Balogo Project area intersects have low interstitial porosity.
- Groundwater level data to a point, lacks spatial information and as a result it is not possible to infer groundwater flow direction.
- The Netiana mine water supply requirements will depend upon the operation of the mine and may include requirements for dust suppression, ablution and potable water. As the ore will be transported to the Youga mine for processing, the processing water requirements for Netiana are likely to be minimal.
- Water supply options for the Balogo Project are presented in the ESIA, however a water supply strategy including potential yields, quality and long-term sustainability of the water supply options have not been provided for review.

1.18 Conclusions

1.18.1 General

CSA Global considers the drill hole data for the Balogo project to be sufficiently reliable for Mineral Resource estimation and associated downstream work. Data management requires improvement, especially as the project moves from exploration to production. A centralised database should be implemented which can serve as a single point of truth for the project data.

1.18.2 Mineral Resources

A twinning program and quality assurance/quality control (QAQC) review completed by NMC resulted in the exclusion of eight drillholes (seven RC, and one DDH) from use in the MRE. By excluding these holes, a comparison of RC vs. DDH data completed by CSA Global concluded that a combined drill type dataset was suitable for use in the estimation of Mineral Resources.

A review of core photos indicated that the bulk density (BD) for oxide and transitional material based on measurements was likely to be too high, since competent pieces of core (often quartz vein) were used for the measurements, but these are not considered representative of the mixed nature of these zones. Geological logging of intensity of weathering was used to derive a length weighted average for oxide and transitional. Highly weathered material was assigned 2.00 t/m^3; 2.14 t/m^3 for oxide and 2.35 t/m^3 for transitional.

Apparently misidentified certified reference material (CRMs) reduces confidence in the Project data management and there are indications of lab drift. QAQC data should be continually collected and assessed during drilling, so that issues can be addressed, as they arise.

The current level of understanding of the Au distribution and geological controls are sufficient for mine planning purposes.

1.18.3 Mineral Reserves

Mineral Reserves are classified as Probable based on a Resource Classification of Indicated. Inferred and Unclassified Resources have been excluded from the conversion of Resources to Reserves. The QPs are of the opinion that potential modifying factors have been adequately accounted for using the assumptions in this report, and therefore the Mineral Resources within the mine plan can be converted to Mineral Reserves.

1.18.4 Recovery Methods

The current mine plan projects the material from Netiana to be processed in 2017 and 2018 at the proportion of 10 and 16 percent respectively of the proposed mill annual throughput. The new ore types should proceed through the existing Youga comminution circuit at a generally finer grind than currently being achieved, confirming that the higher ranges of extraction will be achieved.

1.18.5 Mining Methods

The proposed method of mining for Netiana is a conventional open pit method using drilling and blasting, loading with excavators, and hauling with articulated dump trucks (ADT). Consideration of underground mining has not been necessary at this stage of the Project. It has been assumed that that the ore will be transported to the processing facility at Youga and therefore the optimal production rate is constrained by the capacity limit of the transport fleet and the capacity of the plant at Youga.

Due to transport costs, the cut-off grade for Netiana (1.2 g/t) is significantly higher than that seen at Youga, where the cut-off grade averages 0.7 g/t Au. As a consequence of the raised cut-off grade for Netiana, the material that is normally classified as Low Grade (grade range of between 0.7 and 1.2 g/t Au) is stockpiled at Netiana as a potential ore source in the future as it is currently uneconomic.

1.18.6 Project Infrastructure

The estimate of mine infrastructure is essentially unchanged from that of the Feasibility Study published in March 2016. Proposed infrastructure includes open pit, waste rock stockpile, ore stockpile and related facilities which include prefabricated office building and change house. Ore from Netiana will be transported back to the processing plant at Youga. It is assumed that this fleet of trucks will be based at Youga. Other administrative functions, including HSE, will be sourced from Youga and there will be minimal need to accommodate additional staff at Netiana.

1.18.7 Environmental Studies, permitting and Social or Community Impact

In general, there has been a considerable amount of environmental and social work undertaken on the Project and EIA reports are of reasonable content and quality. Baseline data collection has been detailed and comprehensive and impact assessment and mitigations appropriate. While not to Standard Operating Procedure detail, the ESMPs are at an adequate level for implementation. Also, both the ESIA and RAP have been approved and an environmental permit has been granted for the Balogo Project.

1.18.8 Economic Analysis

The base case results were tested for sensitivities to gold price fluctuations in the range from US$1000/oz to US$1,350/oz and mining cost variation from minus 10% to an increase of 10% from the base case, as well as processing recoveries change from -4% to +2% from the current base case.

The project shows its viability in both stress scenarios.

1.18.9 Hydrology

Whilst hydrological and hydrogeological assessments have been completed for the Feasibility Study, significant uncertainty remains with respect to water management for the Balogo Project. Additional site specific assessments are recommended to ensure that the water management aspects of the project are fully understood and appropriate surface water and groundwater management strategies are developed and costed.

1.19 Recommendations

1.19.1 Data and QAQC

- A Structured Query Language (SQL) relational database is recommended for the secure storage of data to replace Microsoft Excel spreadsheets, which carry risks in terms of data security, verification and document control.
- QAQC data should be continually collected and assessed during drilling, so that issues can be addressed, as they arise.
- Preparation blanks should be included to monitor potential contamination.
- A high-grade gold CRM should be included with the samples to monitor samples >1.5 ppm Au.
- Ongoing vigilance is required to reduce CRM and blank misidentification.
- The proportion of field duplicates should be increased to 5% and biased towards mineralised samples.
- External check samples (umpires) should be sent to an accredited laboratory. CRMs must be included with these samples.

1.19.2 Mineral Resources

CSA Global recommends the following actions are completed prior to completing MRE updates in the future and to assist with current operations:

- Create a geological model to support and constrain the mineralisation model, to ensure that continuity and grade variability are well understood by correctly interpreting the structural and geological controls on high grades.
- Conduct a grade control program and estimate a grade control model to assist with short term planning.
- Create a set of procedures that allow for accurate end of month reconciliation and compare this with the long-term model.
- Additional BD data should be collected in oxide and transitional material during open pit production and reviewed regularly to build up a useful BD database of values that can be used to determine the tonnage factors for the Netiana deposit. Methodology and measurements should be verified and standardised in the resource model.
- CSA Global recommends that instead of additional infill drilling to upgrade Indicated Mineral Resources to Measured Mineral Resources, grade control drilling should be sufficient to delineated blast and dig lines during open cast mining.

1.19.3 Environmental Studies, permitting and Social or Community Impact

CSA Global recommends the following works be completed to address gaps in the Project environmental and social work:

- Establish, if not already in place, site meteorological stations at Balogo.
- Install permanent flow gauges at Project streams and depth rods at ponds/dams.
- Implement and publicise a formal grievance mechanism for all components of the Project.
- Undertake geochemical testing, including metal leaching tests on waste rock, ore material and tailings from Netiana ore.
- Define and implement ecological and social monitoring.
- Calculate Netiana Mine water requirements and identify supply source.
- Evaluate potential social impacts from influx of people to the Balogo area and develop measures to alleviate these.
- Assess impacts on and from artisanal mining in the Balogo area and establish dialogue to reduce environmental impacts and conflicts.
- Increase frequency of surface and groundwater quality and quantity; ecology and biodiversity; and social monitoring at Balogo.
- Develop measures for social interventions and community preparation for closure in the Netiana RCP.

1.19.4 Hydrology

Additional studies are recommended to improve the level of understanding relating to the hydrology and hydrogeology at Balogo. This additional information would also increase the confidence with regards to predictions for mine water management at Netiana. CSA Global recommends the following:

- Additional site investigations to improve the hydrological and hydrogeological understanding for the site.
- The current water monitoring programme should be reviewed in order to ensure that the programme enables the water management issues for the entire site to be fully evaluated.

- An assessment of pit inflows and dewatering requirements should be completed and an appropriate dewatering and depressurisation strategy developed.
- A surface water management plan should be developed for the proposed Netiana Mine site in order to minimise pit dewatering pumping requirements, enhance pit wall stability, maintain safe working conditions and minimise potential surface water related impacts on the environment.
- An assessment of the long-term water supply security of potential water supply options should be completed to ensure a sustainable water supply is available to meet local requirements for the life of the mine.

2 Introduction

2.1 Terms of Reference

The Netiana Mining Company (NMC) is a subsidiary of Avesoro Jersey Ltd (formerly MNG Gold), a wholly-owned subsidiary of Avesoro Holdings Ltd.

NMC commissioned CSA Global to assist them with evaluating the Balogo Project and:

- To complete the required technical evaluations, verification and review works to facilitate disclosure of an update to the Mineral Resource and Mineral Reserves inventory for the Project and;
- To produce a LOM Schedule and prepare a financial model for the Project, and;
- To provide independent comment in relation to exploration potential in the near-mine environment.

All technical works have been undertaken within the guidelines of the CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council, and disclosed within the context of the Canadian Securities Administrators NI 43-101.

The Balogo Project includes a significant number of near-mine satellite prospects which have been the subject of various levels of exploration activity ranging from early-stage evaluation (surface works and defined anomalies), advanced exploration (drilling), resource development and mining.

Previous operator/owners include Golden Rim Resources Ltd (GMR), between 2010 and 2015 and MNG Gold Burkina Sarl (MNG) between 2015 until 2016. During 2016 MNG Gold created the Netiana Mining Company (NMC) to manage the development of the Netiana deposit, located within the Netiana Exploitation permit, issued at the beginning of 2017.

2.2 Disclaimers

2.2.1 Independence

Neither CSA Global, nor the authors of this report, have any material present or contingent interest in the outcome of this report, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence in the preparation of this report. The report has been prepared in return for professional fees based upon agreed commercial rates and the payment of these fees is in no way contingent on the results of this report. No member or employee of CSA Global is, or is intended to be, a director, officer or other direct employee of the Client. No member or employee of CSA Global has, or has had, any shareholding in the Client. There is no agreement between CSA Global and the Client as to CSA Global providing further work for the Client.

2.2.2 Notice to Third Parties

CSA Global has prepared this report having regard to the particular needs and interests of our client, and in accordance with their instructions and in compliance with NI 43-101 Technical Reporting. This report is not designed for any other person's particular needs or interests. Third party needs and interests may be distinctly different to the Client's needs and interests, and the report may not be sufficient, fit or appropriate for the purpose of the Third Party, other than its prescription in relating to NI 43-101.

2.2.3 Results are Estimates and Subject to Change

The ability of any person to achieve forward-looking production and economic targets is dependent on numerous factors that are beyond CSA Global's control and that CSA Global cannot anticipate. These factors include, but are not limited to, site-specific mining and geological conditions, management and personnel capabilities, availability of funding to properly operate and capitalise the operation, variations in cost elements and market conditions, developing and operating the mine in an efficient manner, unforeseen changes in legislation and new industry developments. Any of these factors may substantially alter the performance of any mining operation.

2.2.4 Element of Risk

The interpretations and conclusions reached in this report are based on current geological theory and the best evidence available to the author at the time of writing. It is the nature of all scientific conclusions that they are founded on an assessment of probabilities and, however high these probabilities might be, they make no claim for absolute certainty. Any economic decisions which might be taken on the basis of interpretations or conclusions contained in this report will therefore carry an element of risk.

2.3 Sources of Information

2.3.1 Exploration and Resources

The Qualified Persons take responsibility for the content of this section and believe it is accurate and complete in all material aspects. Sections 7, 8, 9, 10 and 11 of this NI 43-101 report are largely reliant on the following documents:

- MNG, 2016, Feasibility Study for the Balogo Project in Burkina Faso, prepared for MNG Gold Burkina, prepared by HCG Cement and Mineral Processing Technologies.
- GMR, 2015, Balogo Project Summary of Exploration, June 2015, by Golden Rim Resources, Balogo_Summary_of_Exploration_Report_June2015.

Licence and tenure documents and exploration and resource data were provided by Gökhan Kellecioglu to CSA Global via a CSA Global-NMC shared data room in February 2017. Additional data were provided via email correspondence from Gökhan Kellecioglu.

Exploration, drill, sampling, assay and QAQC data were loaded to SQL and validated by Dave Muir (Database Administrator – CSA Global) prior to evaluation and estimation of the Mineral Resources and Reserves.

See Sections 11.6 and 12.1 for further detail.

2.3.2 Environmental

Environmental data and reports on which the report is reliant include:

- Socrege, 2016; ETUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL DU PROJET DE REHABILITATION DE LA ROUTE DE TRANSPORT DU MINERAI DE NETIANA A YOUGA, April 2016.
- Socrege, 2016; Gold Project of Netiana, Resettlement Action Plan, Produced for MNG Gold, August 2016.
- Socrege, 2016; Environmental and Social Impact Study of the Netiana Gold Project, Produced for MNG Gold, August 2016.
- EIES on Balogo-Youga Ore Transport Route, Socrege, April 2017.

Other relevant documents also sighted:

- Signed Company Environmental Policy, Jan 2017.

- Balogo Environmental Permit, Sept 2016.

2.3.3 Metallurgical, Hydrogeology and Geotechnical

Hydrogeological and geotechnical data on which this report is reliant include:

- HGC Cement and Mineral Processing Technologies, 2016; Feasibility Study for the Balogo Project in Burkina Faso, Prepared for MNG Gold, 20 March 2016 - hereafter referred to as the MNG (2016) report or the 2016 Feasibility Study (FS).
- Socrege, 2016; Environmental and Social Impact Study of the Netiana Gold Project, produced for MNG Gold, August 2016.
- Wardell Armstrong, 2016; Review of Mine Closure, Youga Mine Burkina Faso, Prepared for Burkina mining Company SA, January 2017.

2.3.4 Reserves

Mining, recovery, infrastructure and economic parameters on which this report is reliant include:

- Client Communication, 2016; Excel Document Describing – Flowsheet; Operating Data – including schematic flowsheet, historical operating data, annual performance summary, and process unit operating costs for 2016 ($/t).
- Coffey, 2013; Scoping Study, on behalf of Golden Rim Resources, Report # MINEWPER01047AB, 1 March 2013.
- HCG Cement and Mineral Processing Technologies, 2016; Feasibility Study for the Balogo Project in Burkina Faso, Prepared for MNG Gold, 20 March 2016.
- SGS Test work Report, 2012; Gravity and Cyanidation Results on Gold Ore samples from Golden Rim Resources; Report Number 0104MP; 10th December 2012.
- Townend, 2012; Roger Townend Mineralogy Consultant; Letter Report for SGS and Coffey Mining, 26th November 2012.

2.4 Site Inspections

CSA Global visited the Balogo Project on 2 February 2017.

This visit was required for the purposes of inspection, ground truthing, review of activities, verification, procedural review and information data collection and collation in accordance with NI 43-101 “personal inspection” requirements.

Mr David Williams (Qualified Person) and Dr Matthew Randall (Qualified Person) carried out the site inspection on behalf of CSA Global.

2.4.1 Observations: Geology; David Williams

Meetings were held with key geological staff discussing project geology and data acquisition and storage. The following items were inspected or discussions held with NMC’s representatives:

- Discussions with staff on geological setting of the projects.
- Ground truthing the deposit locations for each project.
- Verifying drillhole collar locations with survey coordinates in drill database.
- Inspecting drill core.
- Discussing drilling and sampling procedures.
- Reviewing database management system for storage of drillhole data, and QAQC protocols.

- Inspecting general infrastructure (access roads, facilities, power, water).
- Forming an opinion for "social licence to mine", with respect to local villages and displacement of some population.

CSA Global inspected the core yard and viewed core from holes BDH188, BDH046 and BDH038R.

The following conclusions were noted during the visit, and recommendations made:

- NMC use QQ plots and "Half Absolute Relative Difference" (HARD) plots to monitor the performance of the field duplicates against the original sample.
- The Project campsite, offices and core yard are well laid out, although wooden core trays from recent drilling activities are already showing decay due to termite activity. NMC should review their manual handling and lifting procedures with regards to handling of core trays at their core storage facilities.
- NMC survey the locations of artisanal mine shafts and attempt to get depth measurements, from which they may be able to construct a model of underground voids.

Figure 2: Artisanal mine shafts at Netiana, Balogo Project (Dr Matthew Randall looking on)

2.4.2 Observations: Engineering; Matthew Randall

The objectives of the visit were:

- Review the exploration data.
- Visit the core shed.
- Inspect the prospective mine site.
- Review the resource model and pit design.
- Review available technical studies, namely GMR (2015), MNG (2016) and Bayram Kahraman (2016).

Observations from this initial site visit included:

- The proposed waste dump is located to the west of the pit. This area has been drilled to confirm that there is no possibility of sterilising any extension to the orebody.

- The Netiana ore appears to contain a much higher proportion of free gold and the gravity circuit at Youga may need to be expanded. The high-grade zones also appear to be clay like and may pose material handling issues.
- The sub-vertical nature of the Netiana deposit results in a high stripping ratio (30:1), which means that the positioning of the ramp system will be critical to the design. It will also necessitate diligent production staging due to high vertical sinking rates to achieve schedules.
- A higher cut-off grade is clearly required since the ore must be transported by road over a distance of around 154 km. Research is required to accurately estimate the US$/t cost to transport ore.
- Hauling on public roads, including passing through of at least five villages between Balogo and Pô, will pose a significant safety hazard to the locals. However, there is a police escort at the front of the convoy followed by a safety truck. A further safety truck also follows at the rear of the convoy. There is likely to be opposition to hauling through the night and hence restricting haulage to daylight hours seems reasonable.

3 Reliance on other Experts

CSA Global is relying on information provided by NMC, concerning legal, political, environmental, or tax matters relating to the Balogo Project. CSA Global has been provided scans of tenement/permit documents however CSA Global has not independently verified the status of nor legal titles relating to the mineral concessions.

CSA Global has also not independently verified nor undertaken any due diligence regarding the legal and tax aspects relating to the joint venture agreements pertaining to the Balogo Project.

In addition to this; no warranty or guarantee, be it express or implied, is made by CSA Global or the Author with respect to the completeness or accuracy of the legal or tax matters relevant to the Balogo Project. Neither CSA Global nor the author accepts any responsibility or liability in any way whatsoever to any person or entity in respect to these parts of this document, or any errors in or omissions from it, whether arising from negligence or any other basis in law whatsoever.

4 Property Description and Location

4.1 Property Location and Description

The Balogo Project currently comprises two contiguous Exploration Permits (Balogo and Dabinyan III) for a total area of 360 km^2 (250.5 km^2 for Balogo and 109.5 km^2 for Dabinyan III). These permits are located in the Centre-Sud region of Burkina Faso, approximately 100 km south of the capital, Ouagadougou, and about 22 km from the Nazinon River. The location of the Project is shown in Figure 3.

Between Ouagadougou and Pô, a good sealed road (N5) is used (about 120 km). After Pô, an unsealed road (about 50 km) is used to reach the Project area. The Kabore Tambi National Park separates Balogo from the Nazinon River.

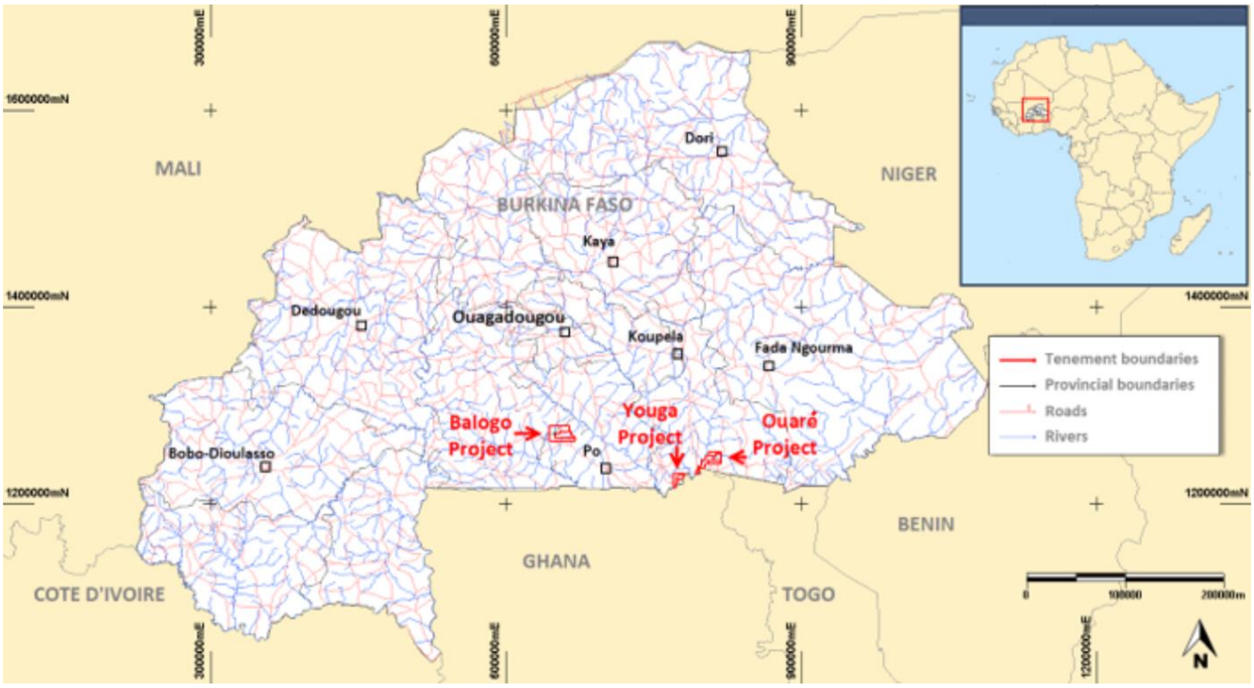


Figure 3: Location of the Balogo and Dabinyan III permits (Balogo) in southern Burkina Faso. Included for reference are the Youga and Ouare Projects (referenced elsewhere in this report) for clarity. (WGS1984, UTM Zone 30N)

Source: CSA Global, 2017

4.2 Mineral Tenure and Surface Rights

The Balogo Project is covered by two contiguous Exploration Permits (Balogo and Dabinyan III) held by MNG Gold Burkina and an Exploitation Licence held by NMC (see Figure 4). Details are tabulated in Table 3 and licence coordinates in Table 4 and Table 5.

Table 3: Balogo licence details

Company	Licence name	Licence status	Licence type	km²	Date granted	Expiry date
MNG Gold Burkina	Balogo	Active	Exploration	249	13/05/2015	13/05/2018
MNG Gold Burkina	Dabinyan III	Active	Exploration	109	18/02/2015	18/02/2019
Netiana Mining Company	Netiana	Active	Exploitation	2	23/01/2017	23/01/2021

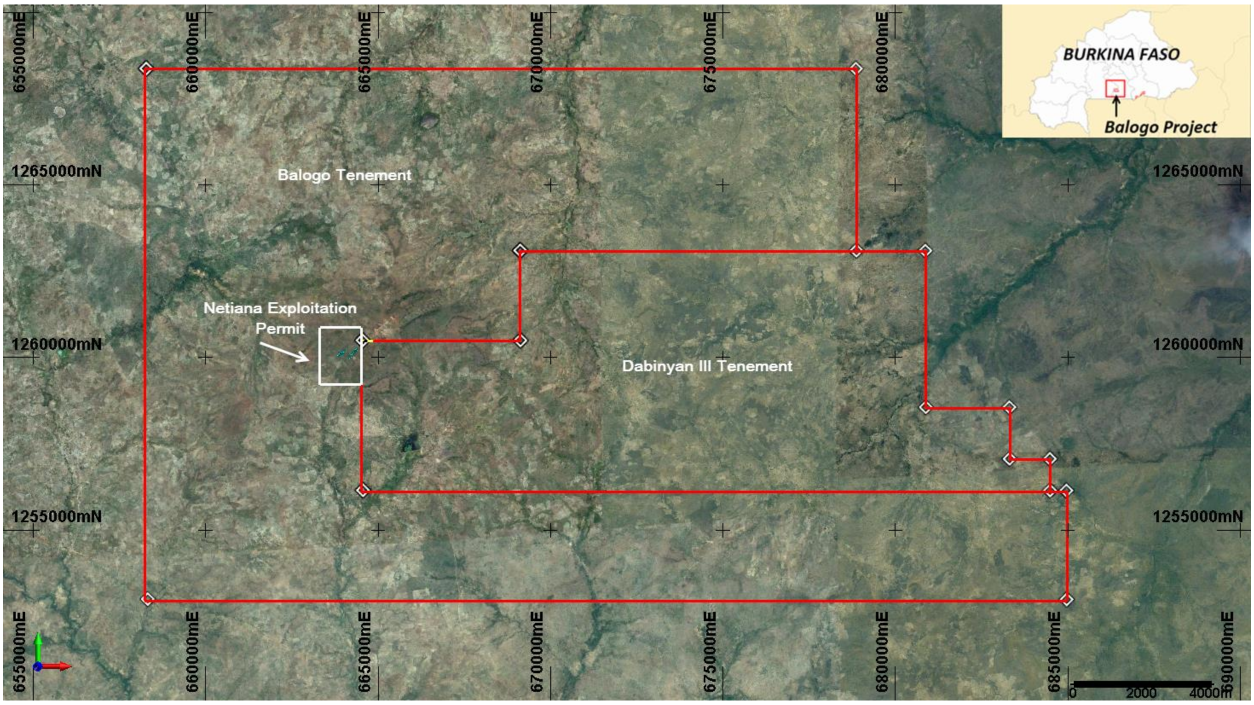


Figure 4: Balogo and Dabinyan III tenement corners (WGS1984, UTM Zone 30N)

Source: CSA Global, 2017

Table 4: Balogo and Dabinyan III Exploration permit details (WGS1984, UTM Zone 30N)

Licence	Corner	Easting	Northing
Balogo	1	658239	1268365
Balogo	2	678882	1268365
Balogo	3	678882	1263080
Balogo	4	669106	1263080
Balogo	5	669106	1260468
Balogo	6	664513	1260468
Balogo	7	664513	1256112
Balogo	8	684970	1256112
Balogo	9	684970	1252946
Balogo	10	658239	1252946

Licence	Corner	Easting	Northing
Dabinyan III	1	669106	1263080
Dabinyan III	2	680887	1263080
Dabinyan III	3	680887	1258532
Dabinyan III	4	683319	1258532
Dabinyan III	5	683319	1257032
Dabinyan III	6	684494	1257032
Dabinyan III	7	684494	1256112
Dabinyan III	8	664513	1256112
Dabinyan III	9	664513	1260468
Dabinyan III	10	669106	1260468

Table 5: Netiana Exploitation permit details (WGS1984, UTM Zone 30N)

Licence	Corner	Easting	Northing
Netiana	1	663313	1260871
Netiana	2	664513	1260871
Netiana	3	664513	1259209
Netiana	4	663313	1259209

4.3 Datum and Projection

All resource and exploration data are projected in WGS1984, Universal Mercator Project (UTM) Zone 30 North.

4.4 Royalties

At present the Burkina Faso government gross revenue royalty for gold projects is 4%. CSA Global is not aware of any other back-in rights, payments, or other agreements and encumbrances to which the property is subject.

4.5 Permitting

Exploration permits in Burkina Faso are granted for periods of three years and permits can then be renewed twice, each renewal being for another three-year period. The Balogo and Dabinyan III licences are valid until 13/05/2018 and 18/02/2019 respectively. The Netiana Exploitation licence is valid until 23/01/2021.

During the validity of an Exploration Permit, its holder also has the right to apply for an Industrial Operating Permit if, in conducting exploration activities, the holder has outlined a mineable reserve in compliance with the mining code. Industrial Operating Permits (Permis d'exploitation industrielle) are granted by the Council of Ministers on the proposal from the Minister of Mines, following the opinion of the Minister of the Environment and the National Commission on Mines. These are granted to holders of Exploration Permits who are in compliance with the Mining Code, and have submitted an application at least three months before the expiry of the validity period of the Exploration Permit. Applications must include a Feasibility Study and a mining and development plan, noting any environmental impacts with associated attenuation and monitoring plans. Any change to the Feasibility Study, ore deposit development, and production plan during the life of the permit must be approved by the Mining Administration and the National Mining Commission.

4.6 Liabilities

Baseline studies for the Project are detailed and the Environmental Permit was granted in September 2016 following submission and approval of the Project Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP), both conducted by Socrege. The ESIA Report is a comprehensive study of the baseline conditions at the site, identification and assessment of potential Project impacts, and proposed mitigations to address these. The ESIA also includes risk analysis, an Environmental and Social Management Plan (ESMP) and a preliminary Rehabilitation and Closure Plan (RCP). CSA Global undertook an environmental and social review as a part of this technical study and further comment is provided in Section 20.

The most notable environmental/social liabilities are in respect to areas where the potential impacts have not yet been adequately assessed, namely the potential geochemical-, artisanal mining- and in-migration risks; from insufficient monitoring plans; and from underestimated compensation, closure and social costs. Also, while hydrological and hydrogeological assessments have been completed for the Feasibility Study, CSA Global believes that significant uncertainty remains with respect to water management for the Balogo Project.

5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1 Accessibility

The Balogo Project is in southern Burkina Faso, in the "Centre-Sud" region. Road links between Ouagadougou and the project are good for the majority of the distance. Access to the Project is via sealed highway (N5) from Ouagadougou to Pô (approximately 120 km), then via unsealed road (R15) to the project area (approximately 50 km). The project area is accessible throughout the year on all-weather sealed and laterite roads (MNG, 2016).

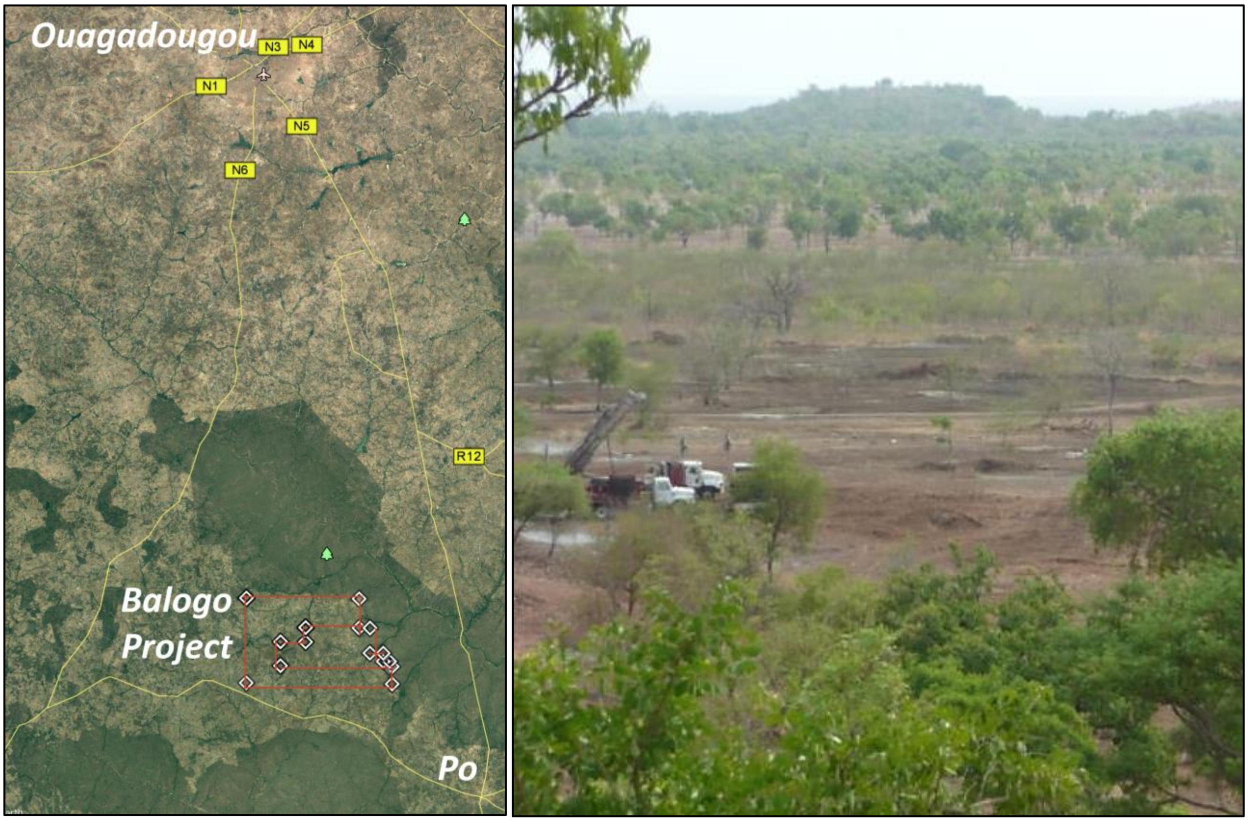
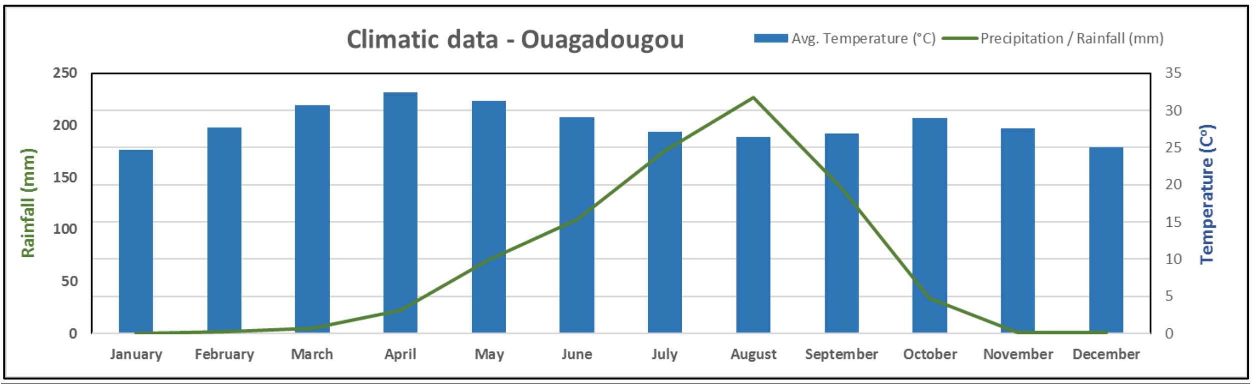


Figure 5: Left: Road access to the Balogo Project; Right: View of the local terrain at the Balogo Project
Source: MNG, 2016

5.2 Climate and Physiography

The Project area is located within the Sudanese climatic type of southern Burkina Faso but influenced by the south Sudano-Sahelian zone, where annual evaporation exceeds rainfall. The wet season runs from May to October, bringing around 900 mm rainfall on south and south-westerly winds, while the dry season from November to March, is associated with dusty north and northeast 'Harmattan' winds. Annual evaporation is around 2,870 mm. Highest temperatures occur at the end of the dry season with monthly maxima exceeding 39°C (Figure 6).



	January	February	March	April	May	June	July	August	September	October	November	December
Average temperature (°C)	24.7	27.7	30.7	32.4	31.3	29.1	27.1	26.4	26.9	29	27.6	25.1
Rainfall (mm)	0	2	5	22	71	110	176	227	139	34	1	1

Figure 6: Climatic data for Ouagadougou, 100 km to the north of the Balogo Project
Source: https://en.climate-data.org, 2017

Surface water is largely ephemeral and rain-fed groundwater fluctuates seasonally, giving rise to water supply issues for people, livestock and wildlife.

This part of Burkina Faso is entirely rural with savannah woodland cover but with rapidly expanding agricultural cultivation and pastoralist activities, as well as artisanal mining and felling of trees for firewood and charcoal, causing significant deforestation. On areas of transported black soil or alluvial flats, crops such as maize, millet, sesame, cotton and sorghum are grown.

There is minimal native wildlife remaining in the area; this is believed to be due to subsistence hunting.

5.3 Local Resources and Infrastructure

Population density is low and scattered with severely limited infrastructure and services. NMC have a two km^2 exploitation permit, with sufficient area for waste stockpiles. Ore is to be trucked to Youga and therefore no rights are required for tailings storage areas, heap leach pad areas or processing plant sites.

Resources and amenities are limited in the region immediately surrounding the Balogo Project, with subsistence farming being the main enterprise. Pô, the nearest town to the Balogo Project, has a population of approximately 30,000, a selection of basic shops and an airport with regional flight connections.

Ouagadougou, located 120 km to the north is the administrative, communications, cultural and economic centre of the nation with a population of approximately 1.5 million, an international airport and supports a wealth of modern industries.

The mining industry in Burkina Faso is active, and has been expanding as new mines are opened. There are an increasing number of local mining personnel available, as well as expatriate mine workers and professionals from neighbouring countries.

6 History

6.1 History Overview, Prior Ownership and Historical Exploration

Golden Rim Resources Ltd (GMR) acquired the Project area in 2010 and conducted geochemical sampling, geological mapping, trenching, geophysical surveying and multiple RC and diamond drilling programs that led to the delineation of the Netiana and adjacent gold deposits.

In April 2015, MNG Gold Burkina Sarl (MNG), the privately held Burkinabe gold exploration and development company, executed an agreement with GMR to acquire its entire interest in the Balogo Project.

6.2 Historical Mineral Resources and Mineral Reserves

In February 2013, GMR announced a maiden Mineral Resource estimate for the Netiana Lodes at Balogo. The Mineral Resource estimate was conducted by Mining Plus Pty Ltd. An Inferred Mineral Resource of 850,000 tonnes at 6.8 g/t gold for 185,000 ounces of contained gold reported above a 0.5 g/t gold cut-off was estimated and reported under the guidelines of the JORC Code (2004) (Coffey, 2013).

In November 2015, MNG commissioned HCG Cement & Mineral Processing Technologies to prepare a Feasibility Study for the Balogo Project in Burkina Faso. An Inferred Mineral Resource of 885,000 tonnes at 4.3 g/t gold for 122,000 ounces of contained gold reported above a 0.5 g/t gold cut-off was estimated.

In November 2016, MNG commissioned AMC Consultants Pty Ltd (AMC, 2016) to undertake an open pit mine planning study at Netiana. This work was completed on a Mineral Resource model produced internally by MNG. The study suggested that an open pit development on the Netiana Lodes would be robust, with an estimated net present value (NPV) of A$46 million (after tax and royalties) and an investment rate of return (IRR) of >100%, giving a Capital Cost (CAPEX) payback of <6 months.

6.3 Historical Production

No formal mining has occurred within the Balogo or the Dabinyan III licence, however informal/artisanal mining is present and extensive around the Netiana deposit.

7 Geological Setting and Mineralisation

7.1 Regional Geology

The geology of Burkina Faso can be subdivided into three major litho-tectonic domains:

- Lower Proterozoic (Birimian) basement underlying most of the country.
- Neoproterozoic sedimentary cover developed along the western, northern, and south- eastern portions of the country.
- Cenozoic belts located in small inliers in the north-western and extreme eastern regions of the country.

The principal gold producing areas of Burkina Faso are associated with Lower Proterozoic (Birimian) volcano-sedimentary units arranged in elongated 'greenstone' belts across the West African Craton.

The Youga and Ouaré Properties are located within a greenstone belt found on the south-eastern margin of the Archean-Proterozoic Man Shield (also known as the Leo Shield) which forms the southern half of the West African craton.

The Balogo licence area is crossed by a significant northeast trending fault splay which is connected to the major Markoye Fault system. This fault system controls many major gold deposits in Burkina Faso, such as Taparko/Bouroum (1.6 million ounces (Moz) gold), Kiaka (5.9 Moz gold), Bomboré (5.2 Moz gold) and Essakane (6.2 Moz gold). All ounces were current as at 2015, and are presented in Figure 7.

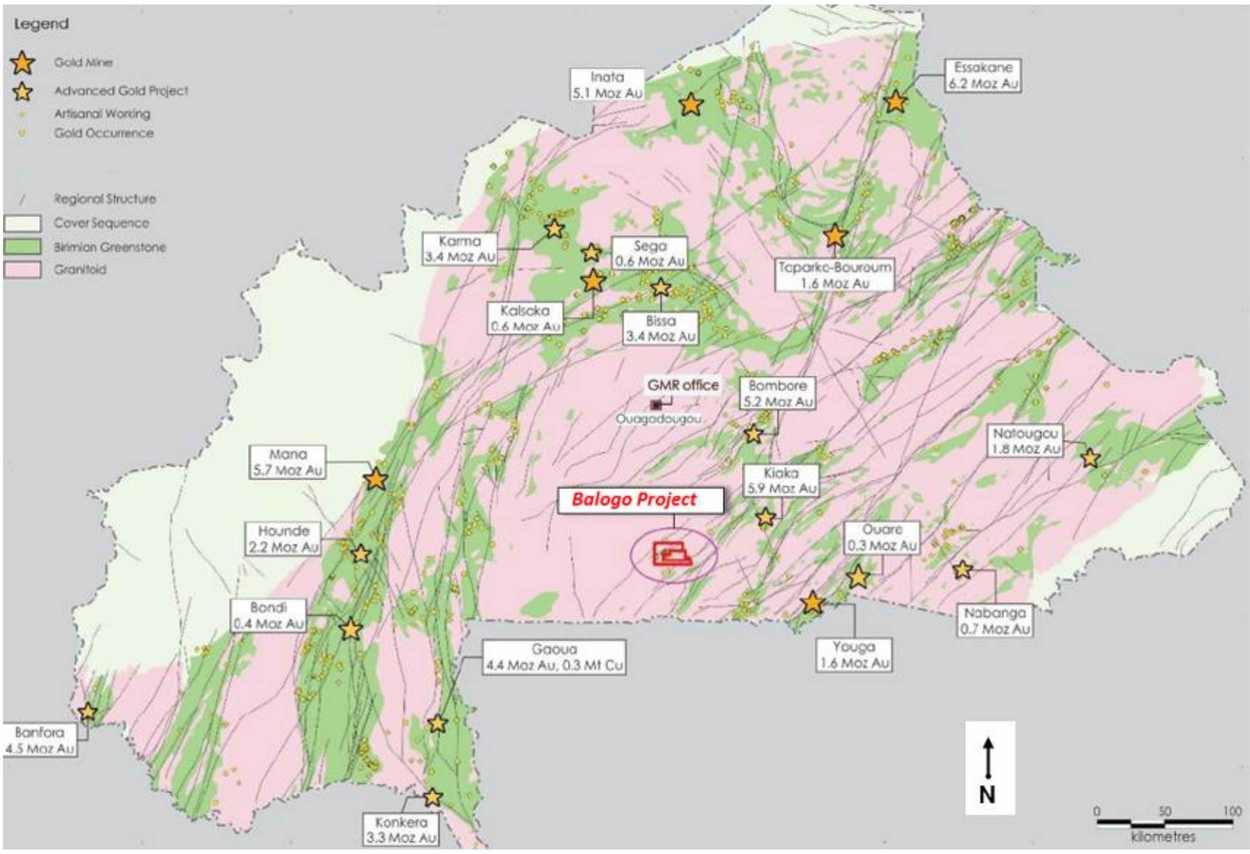


Figure 7: Distribution of Lower Proterozoic Birimian greenstone belts across Burkina Faso (the location of the Balogo Project is annotated)
Source: GMR, 2015

7.2 Project Geology

The geology of the Balogo Project area consists of mixed volcano-sedimentary sequences and dioritic to granitic basement rocks which have been multiply intruded by late-stage granites. Interpretation of detailed aeromagnetic data has identified two units of metavolcanics in the central part of the permit area which are predominantly sequences of schist, quartzites and mixed metavolcanics.

Late-stage granites occur as isolated plugs and small enclaves of mafic intrusives also occur in the area. The local geology map is given in Figure 8.

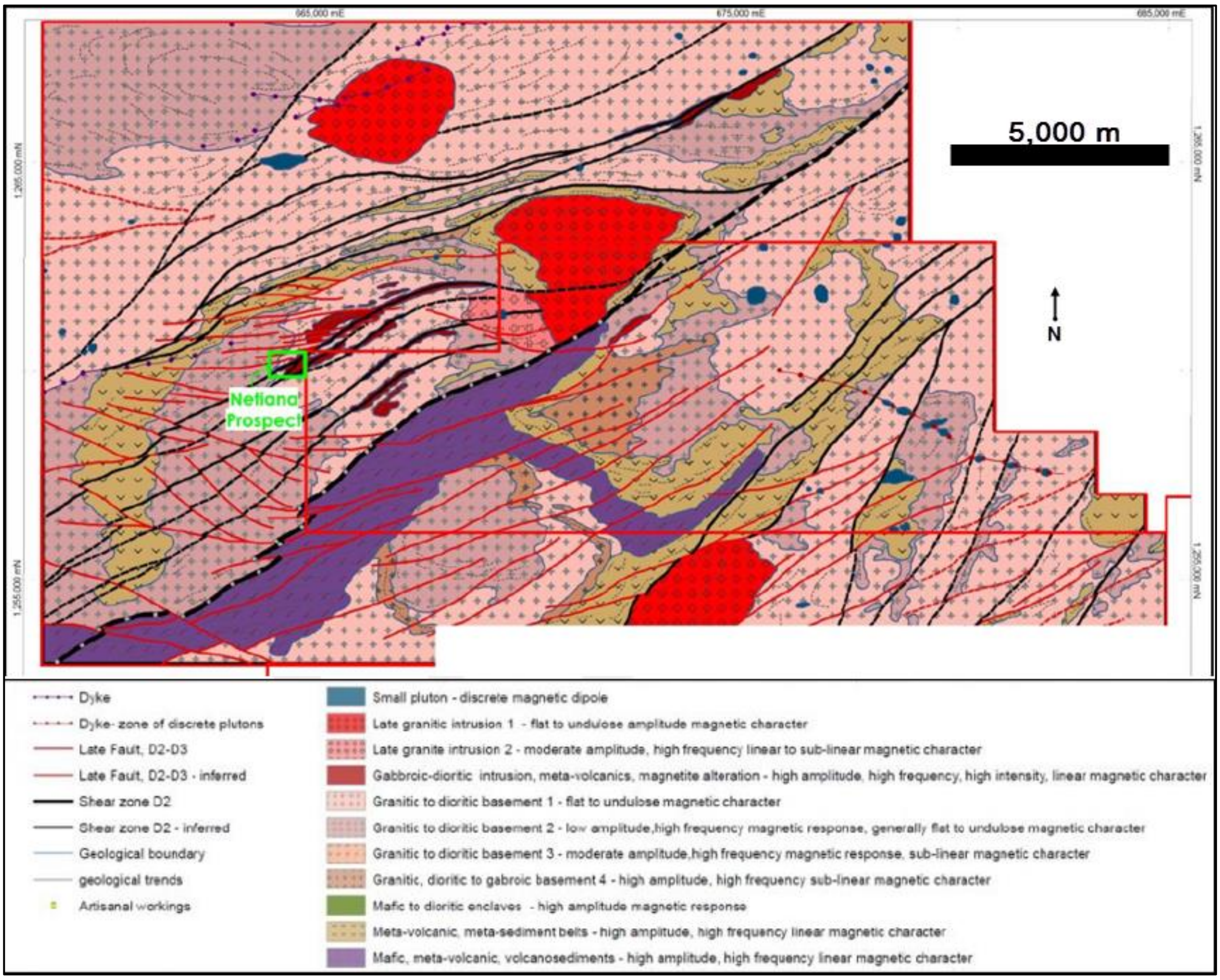


Figure 8: Local geology of the Balogo and Dabinyan III tenements (location of the Netiana deposit is annotated)
Source: GMR, 2015

7.3 Structure

The main structural trend in the area appears to be northeast trending sinistral shears and associated splays. Some later-stage northwest striking cross faults occur, but these are subordinate to the major northeast trending shears.

The host geology at Netiana is a basement sequence of metasediments (talc chlorite/quartz sericite schists and quartzites) which have been intruded by dioritic plugs and dykes controlled by the northeast-trending regional shears. Late-stage felsic porphyries/granites have intruded both the rock sequences.

The main area of interest is defined by a northeast trending, crescent shaped zone with a distinct magnetic signature which occurs over a strike length of about 6 km. This feature is a complex contact zone between predominantly meta-sedimentary units to the northwest and intrusives to the southeast. Late-stage intrusives occur at the southern end of this structural feature. Most of the mineralisation located to date occurs near the contact between metasediments and dioritic rocks. A prospect scale geological map is presented in Figure 9.

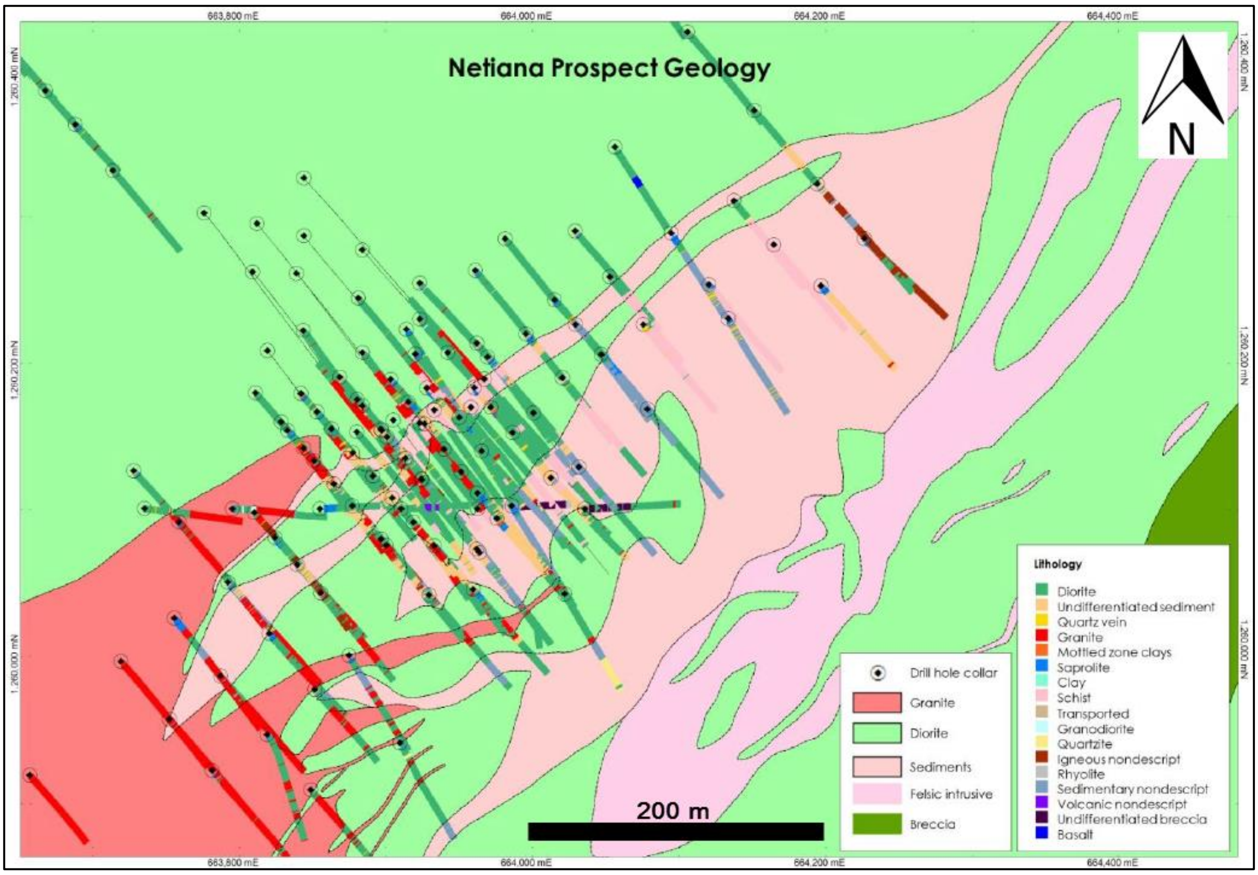


Figure 9: Geological map for the Netiana deposit
Source: GMR, 2015

7.4 Mineralisation

7.4.1 Overview

At Balogo there have been at least three distinct mineralisation styles recognised. These include:

1. High-grade gold mineralisation (+/- Cu, Bi, Te) hosted in a sequence of diorites (as defined by drilling at the Netiana deposit over a length of approximately 500 m to a depth of approximately 250m). Mineralisation is restricted to a single dioritic unit which has a structurally-controlled hanging-wall contact with a distinct unit of chloritic metasediments. High gold grades are typically associated with quartz veining within the dioritic rocks. Figure 10 shows diamond drill core with this style of lost lithology.
2. Massive magnetite associated copper-gold mineralisation. This style of mineralisation outcrops near Cobra Hill and occurs as generally massive magnetite (+/- copper) gold mineralisation. Mineralisation is probably shear controlled and generally is hosted in metasediments immediately above the structural contact between metasediments and dioritic intrusives.
3. Copper-gold mineralisation associated with disseminated cumulate magnetite in a porphyritic intrusive. Mineralisation consists of disseminated magnetite, pyrite +/ chalcopyrite in a moderately to strongly silicified porphyritic dyke. The dyke is around 40 m thick, strikes east-northeast and dips steeply west. Broad zones of low-grade copper/gold mineralisation are erratically distributed within the dyke unit.

Figure 10: Drill core from hole BDH188, Netiana Lodes, Balogo Project, 258.5 m to 262.4 m, showing thick quartz vein and possible high-grade mineralisation
Source: D. Williams, 2017

8 Deposit Types

8.1 Deposit Style

The project area is prospective for mesozonal “lode gold” deposits which typically have a structural component and display a strong relationship to regional scale shear zones. Similar deposits can be found in other areas of the late Proterozoic Birimian terranes of West Africa.

Gold mineralisation is typically associated with networks of quartz mineralisation or associated with disseminated sulphides within strongly deformed alteration zones.

8.2 Exploration Concept

CSA Global notes that surface geochemical data accompanied by geophysical surveys and followed by trenching and drill testing has been successful at identifying, evaluating and developing the Mineral Resources at Netiana. There remain several exploration targets within the Balogo and Dabinyan III licences that appear to have significant potential. However, CSA Global note there appears to be a general insufficiency of data (e.g. surface mapping, structural mapping, downhole structural data and sectional interpretations) to constrain the structural and mineralisation models at a local scale. This inhibits an estimation of Mineral Resources at these exploration targets.

9 Exploration

9.1 Summary and Overview

Regional exploration was largely undertaken by GMR between 2010 and 2014 and included:

- **Reconnaissance mapping and grab sampling**: Highlighted that quartz/sulphide magnetite mineralisation is hosted in a quartz diorite unit and striking northeast-southwest.
- **Soil geochemical surveys** (Figure 12 and Figure 14): Initial success was followed up with more soil sampling in 2011, which increased the size of the gold in soil anomaly to approximately 10 km long and between 500 m and 2,000 m in width.
- **Auger drill programs** (Figure 12**)**: Samples were initially spaced on 100 m x 50 m grids. When there were anomalous results, the sample grid was infilled to 100 m x 25 m and in some cases 50 m x 25 m.
- **Trench programs**: A total of 27 trenches (3,488 m) were excavated across the Balogo Project which allowed for direct observations of mineralisation at surface (alongside the artisanal workings). The best trench intercepts include: 12 m at 5.3 g/t, including 1 m at 60.4 g/t from BT27; 16 m at 0.6 g/t from BT31 and 3 m at 4.1 g/t, including 1 m at 10 g/t, and 10 m at 0.3 g/t from BT32.
- **Geophysical surveys** include:
    - **Aeromagnetic survey** (Figure 11 and Figure 14): outlined a major magnetic high anomaly that appeared to be associated with the Cobra Shear Zone. The anomaly extends for at least 5.4 km and appears to be locally folded or cross-faulted. The Cobra Shear Zone can be traced in outcrop for 1.1 km, with the remainder of the magnetic feature obscured by soil cover.
    - **High-resolution ground magnetics and gradient array IP** (Figures 12 and 13): completed at a 50 m line-spacing and highlighted the prospectivity of the Cobra Shear Zone and confirmed a further 1.3 km of strike with strong anomalies not yet tested by drilling (MNG, 2016).
    - **Ground gravity survey**: a survey identified several features which may represent new exploration targets. The main feature highlighted by the survey was a distinct linear feature which links the Netiana Lodes with the Cobra Shear zone.
    - **Ground Magnetic Survey**: MNG completed a ground magnetic survey at a 50 m line spacing on north-south orientated lines. A total of 1,191 km line and 58.8 km^2 area was surveyed.

Sampling quality and methods and survey procedures appear to be appropriate and representative. There is intrinsic sample bias and/or potential for contamination associated with soil, grab and auger sampling, however these datasets have not been used in the estimation of Mineral Resources and are for indicative/exploration purposes.

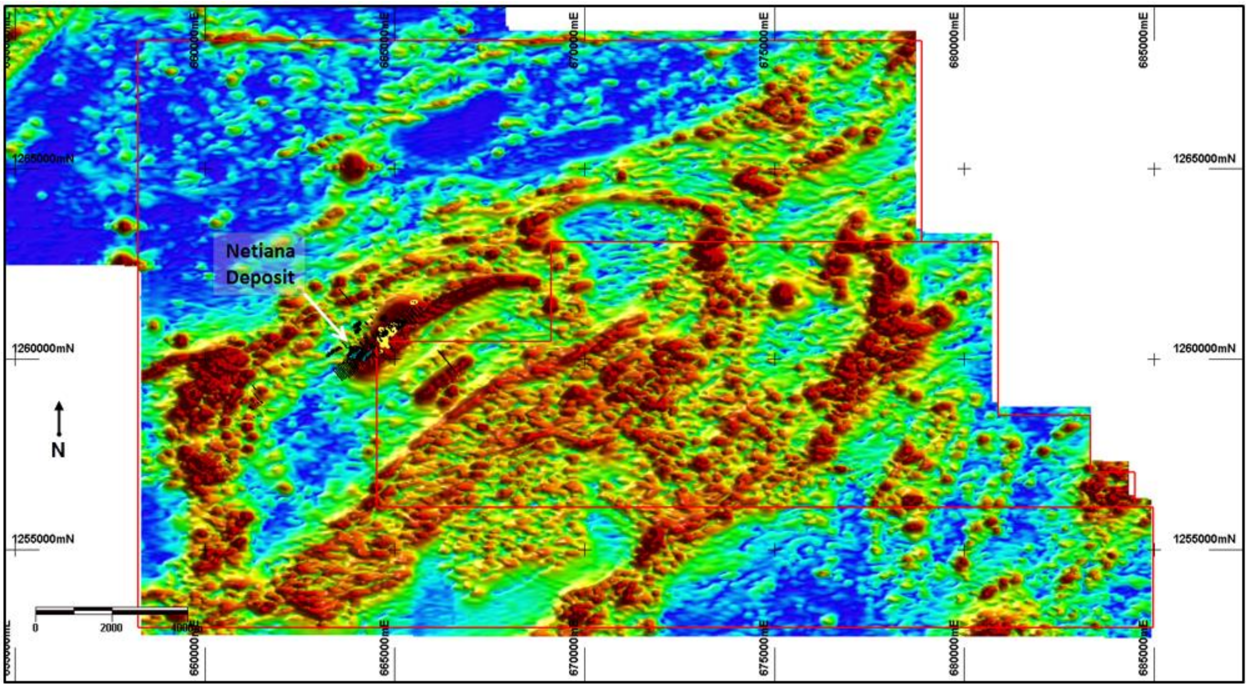


Figure 11: Regional aeromagnetic survey, with licence outlines in red (drilling at Netiana annotated where artisanal workings are coloured with yellow dots)
Source: CSA Global, 2017

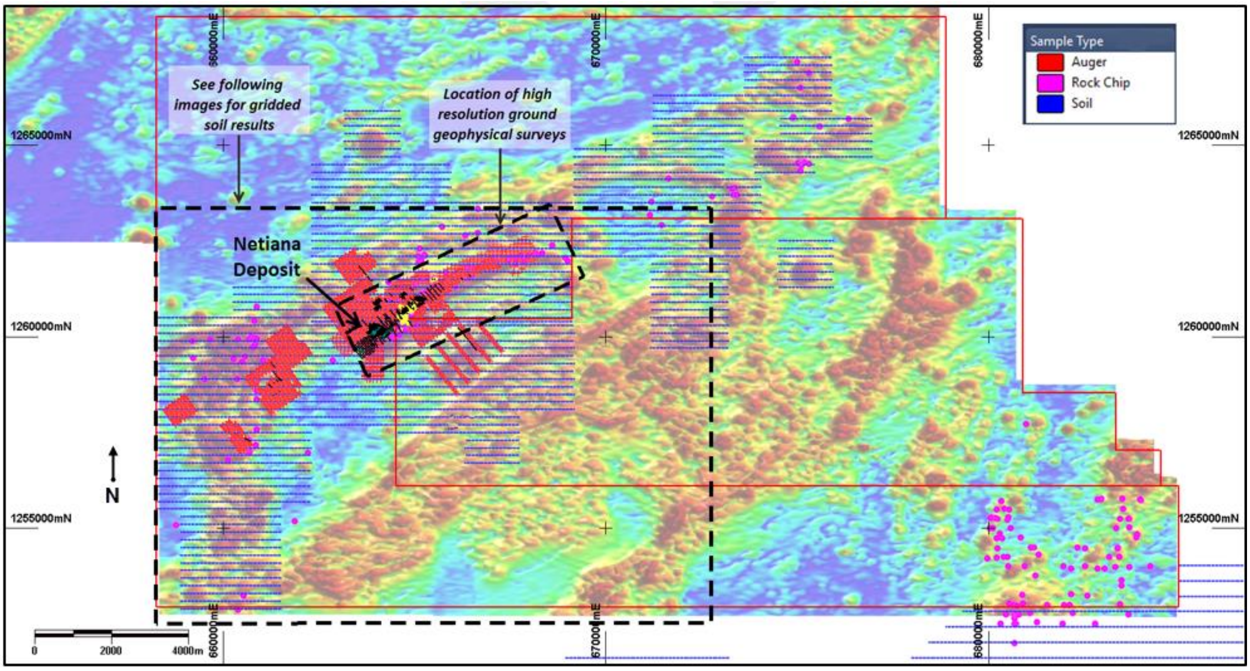


Figure 12: Location of rock chip, soil and auger drill programs. Dashed outline shows location of high-resolution ground magnetic survey and gridded soil results in the following images. Drilling at Netiana annotated black and artisanal workings coloured with yellow dots.
Source: CSA Global, 2017

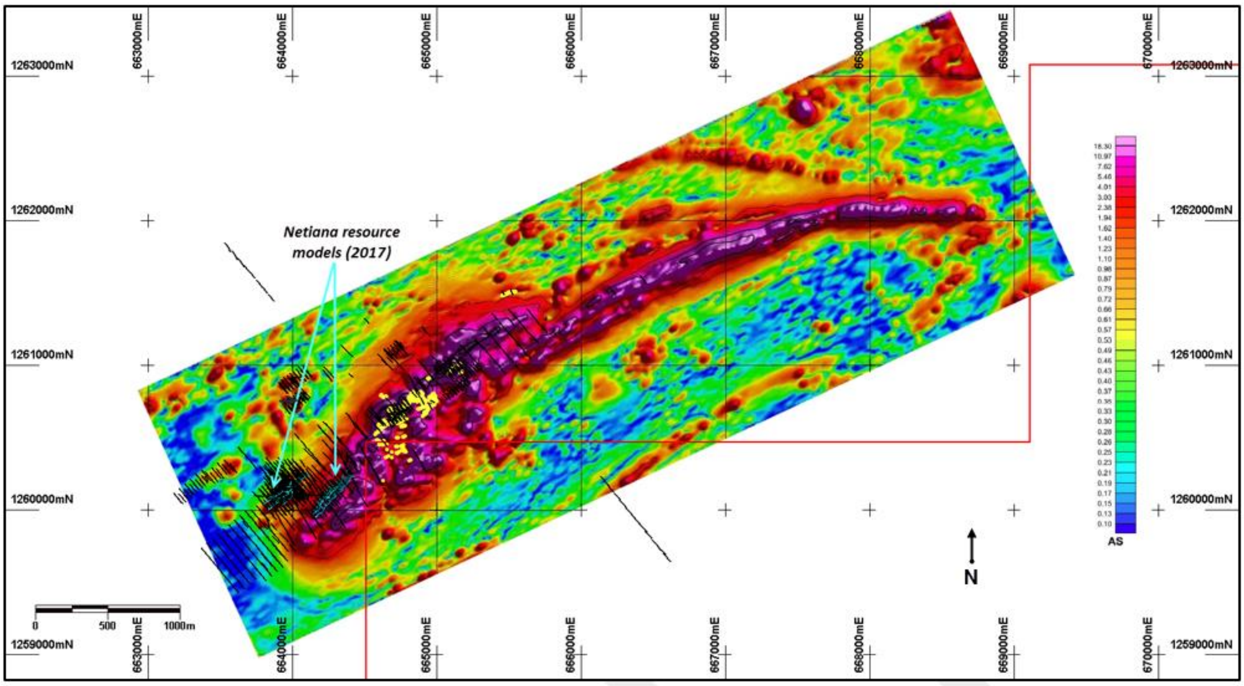


Figure 13: High-res (50 m line-spacing) ground magnetic results: analytical signal, for focus area shown in Figure 12. The 2017 Netiana 3D resource models are annotated. Artisanal workings plotted in yellow.
Source: CSA Global, 2017

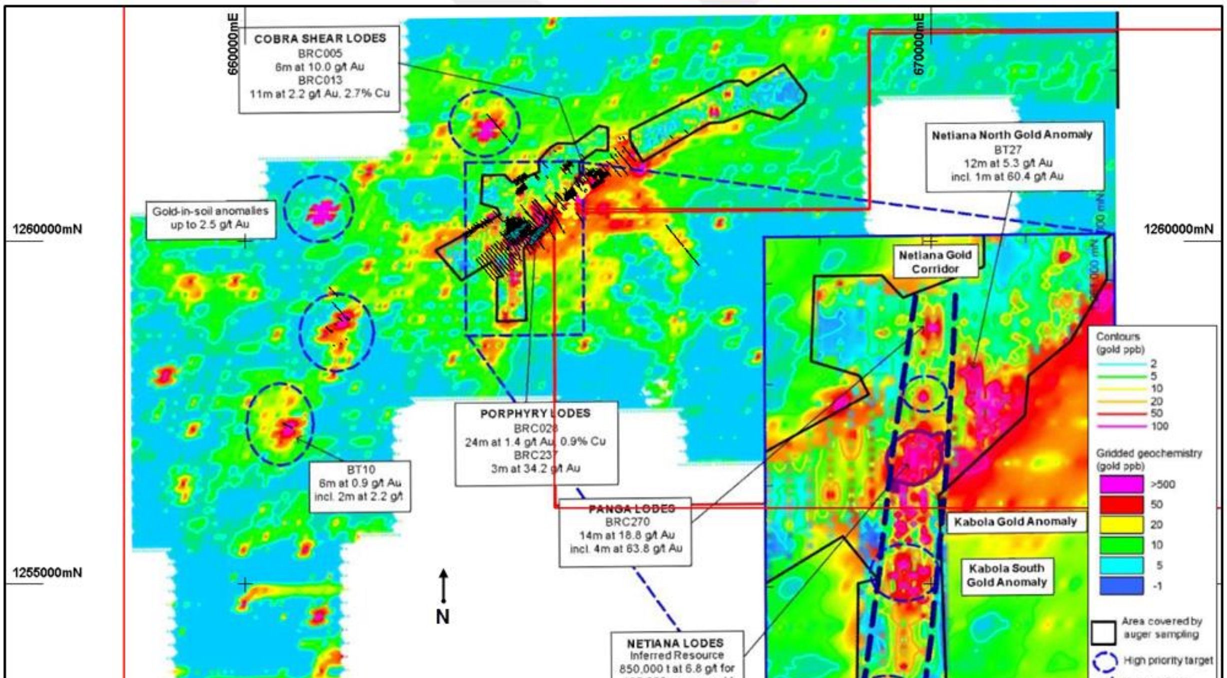


Figure 14: Gridded soil results (Au ppb) for focus area shown in Figure 12, showing along strike anomalies. Note: contamination of soils from artisanal workings to the south of the Netiana drill program
Source: GMR, 2015

9.2 Geochemical Surveys

9.2.1 Reconnaissance Mapping and Rock Chip Sampling

Reconnaissance mapping and geochemical sampling programs were carried out across the Project area. To date, approximately 549 rock chip sample have been collected across the Balogo Project area, with 84 sampled by MNG, the rest by GMR.

Geological mapping showed that quartz/sulphide magnetite mineralisation is hosted in a quartz diorite unit and strikes northeast-southwest. A zone of brecciated pegmatitic granite and a highly siliceous felsic intrusive unit run parallel to the trend of mineralisation. A discontinuous horizon of sulphidic magnetite occurs along the contact between the siliceous felsic unit and the brecciated pegmatite.

The geology is obscured to the southwest under residual cover sequences (MNG, 2016).

9.2.2 Soil Geochemistry

A program of wide spaced regional soil sampling was commenced in 2010. The initial grid was spaced at 50 x 200 m, over an area of 4.2 km x 2.6 km. Results indicated the presence of a major gold-in-soil anomaly, striking northeast-southwest, and open along strike in both directions.

This initial success was followed up with more soil sampling during the first quarter of 2011, which increased the size of the gold in soil anomaly to approximately 10 km long and between 500 m and 2,000 m in width. A second parallel gold in soil anomaly was outlined 1 km to the northwest. This anomaly extends for approximately 6 km and is around 500 m in width.

A total of 17,979 soil samples were collected and analysed at BIGS Laboratory in Ouagadougou for gold analysis. MNG collected a total of 201 soil samples from north of Seven Hill and south of the Wattle prospects. Several batches of soil samples were also assayed for base metals (MNG, 2016).

9.2.3 Auger Geochemistry

An extensive program of auger geochemistry was conducted in areas where it was believed soil sampling was not effective due to the transported nature of the sediments.

A total of 4,390 auger samples have been collected over the Balogo Project. Samples were initially spaced on 100 m x 50 m grids and infilled to 100 m x 25 m and in some cases 50 m x 25 m. A total of 2,405 of these auger samples were taken by MNG and the rest by the preceding owners of the project.

Several significant new auger gold anomalies exist adjacent to, and along strike of the Netiana Lode anomaly, and are of greater magnitude. They provide new targets for satellite gold deposits (MNG, 2016).

9.2.4 Trenching

To date, a total of 35 trenches, have been excavated across the Balogo Project, with 1,693 samples (4,364.20 m) taken. These trenches were channel sampled at either 1 m or 2 m intervals. Three of these trenches have been excavated by MNG, and 32 by GMR.

Trenches BT01, BT02, BT03, BT13 and BT15 were excavated above the Netiana Lodes and within the pit outline proposed in the Coffey 2013 Scoping Study.

The best trench intercepts above the Netiana Lodes include:

- 16 m at 0.7 g/t gold, including 2 m at 3.8 g/t gold (BT01)
- 10 m at 0.3 g/t gold (BT03)
- 31 m at 1.9 g/t gold (BT13).

Trench BT10 was excavated 4.2 km southwest along strike from the Netiana Lodes to test an area with a single anomalous soil result of 564 ppb gold. The trench returned 6 m at 0.9 g/t gold, including 2 m at 2.2 g/t gold. The mineralisation is open in all directions under the soil cover. Given the distance BT10 lies from the Netiana Lodes, this trench intercept is considered significant.

Ten trenches were excavated to test the new soil and rock chip anomalies, including the Netiana North anomaly. Extensive quartz-hematite-stockwork veining in several of these new trenches was mapped and is typical of the high-grade gold mineralisation identified in the drilling across the Netiana Lodes.

Since taking over the project, MNG have excavated three trenches (260.2 m) and collected 159 samples from the Panga prospect.

The best trench intercepts include:

- 12 m at 5.3 g/t, including 1 m at 60.4 g/t from BT27.
- 16 m at 0.6 g/t from BT31.
- 3 m at 4.1 g/t, including 1 m at 10 g/t, and 10 m at 0.3 g/t from BT32 (MNG, 2016).

9.3 Geophysical Surveys

9.3.1 Aeromagnetic Survey

A major high-resolution aeromagnetic survey was conducted by Xcalibur Airborne Geophysics (Pty) Ltd, South Africa over the Balogo Project area. The survey comprised more than 3,000 line-km and was flown on north-south, 200 m spaced lines with a nominal ground clearance of 30 m. The high-resolution aeromagnetic data was used to develop detailed structural interpretations and determine more favourable structural settings for gold mineralisation (MNG, 2016).

9.3.2 Ground Geophysical Surveys

Detailed ground geophysical surveys (gradient array induced polarisation (IP) and magnetics) were completed at Balogo in June 2011. The surveys were conducted by Terratec Geophysical Services from Germany over a 6 km x 1 km area. Both the magnetic and IP surveys were conducted on lines spaced at 50 m and orientated northwest, perpendicular to the trend of the Cobra Shear Zone. The detailed ground magnetics were highly successful in locating intensely magnetised parts of the Cobra Shear Zone and allowed the discrimination between the shear and the less prospective magnetic horizons in the adjacent diorite unit.

The ground magnetic data outlines a series of very strong magnetic high anomalies that are coincident with a series of strong copper-in-soil and gold-in-soil anomalies. The strongest portion of these anomalies lies along a 1.3 km long outcropping portion of the Cobra Shear Zone which consists of a low ridge of quartz-malachite-magnetite veining surrounded by a halo of strong disseminated pyrite and magnetite alteration.

The gradient array induced polarisation survey was completed to locate conductive units (potentially sulphide-bearing). A well constrained chargeability high/resistive low anomaly was identified over a strike length of approximately 2.8 km. Detailed ground geophysics surveys have highlighted the prospectivity of the Cobra Shear Zone and confirm a further 1.3 km of strike with strong anomalies not yet tested by drilling.

MNG conducted a ground magnetic survey on north-south orientated lines at a 50 m spacing. A total of 1,191 km line and 58.8 km^2 area was surveyed (MNG, 2016).

9.3.3 Gravity Survey

In November 2012, a detailed GPS gravity survey was conducted at the Balogo Project. The survey covered an area of 6 km x 1.8 km and included the Netiana, Porphyry and Cobra Lodes. The survey was conducted by an Australian company, Haines Survey Pty Ltd. The original proposed survey comprised 975 stations in 50 north-west to south-east lines with a line spacing of 100 m and 200 m and station spacing of 50 m coincident with UTM Zone 30 North.

The survey identified several features which may represent new exploration targets. The main feature highlighted by the survey was a distinct linear feature which links the Netiana Lodes with the Cobra Shear zone (MNG, 2016).

10 Drilling

Unless otherwise stated (i.e. reference to works completed by CSA Global) much of the content in this section has been summarised from GMR's 2015 Exploration Summary report (GMR, 2015). The Qualified Persons take responsibility for the content of this section and believe it is accurate and complete in all material aspects.

10.1 Drilling Summary

Between 2011 and 2014, GMR drilled approximately 65% of the holes and 27% of the metres as contained in the drill and trench database. From 2016 and 2017, all drilling was completed by MNG.

As per the 2016 Technical Report (MNG, 2016), procedures for all drilling completed at the Project follow those employed by GMR. These procedures have been reported in GMR's 2015 Exploration Summary report (GMR, 2015).

Core drilled by MNG were reviewed as part of the 2017 CSA Global site visit (see Section 12.2).

Table 6: Drillhole summary table

Phase	Company	Year	Drilling type	No. of holes	Metres (sum)	Hole IDs	Drilling company
RC01	GMR	2011	RC	32	3,099.00	BRC001 - BRC032	Boart Longyear
RC02*			RC	35	4011.00	BRC033 - BRC067	Boart Longyear
RC03*			RC	195	23906.00	BRC068 - BRC250	Forages Technique-Eau
DD01		2012	DDH	11	2,268.65	BDH001 - BDH008	Major Drilling
DD02			DDH	22	5,285.94	BDH009 - BDH030	Major Drilling
DD03			RC	13	1,346.00	DRC001 - DRC011B	Forages Technique-Eau
RC04			RC	8	1,073.00	BRC251 - BRC258	PPI
TR1		2012/2013	TR	27	3,512.00	BT01 - BT32	
RC05		2013	RC	22	2,081.00	BRC259 - BRC280	PPI
RC06		2014	RC	6	726	BRC281 - BRC286	PPI
TR2		2014	TR	5	492	BT33 - BT37	
TOTAL - GMR				**376**	**47,800.59**		
DD04	MNG	2016	DDH	76	9,397.95	BDH031 - BDH101	PPI
DD06			DDH	3	184.5	BMH001 - BMH003	FDC
ST			DDH	33	3,290.30	BSH001 - BSH032	FDC
TR3			TR	3	260.2	BT38 - BT40	
DD05		2016/2017	DDH	94	13,742.10	BDH102 - BDH195	FDC
TOTAL – MNG				**209**	**26,875.05**		
GRAND TOTAL				**750**	**74,675.64**		

** Minor differences in total metres from the GMR Exploration Report*

*** Grade Control (GC) drilling not provided to CSA.*

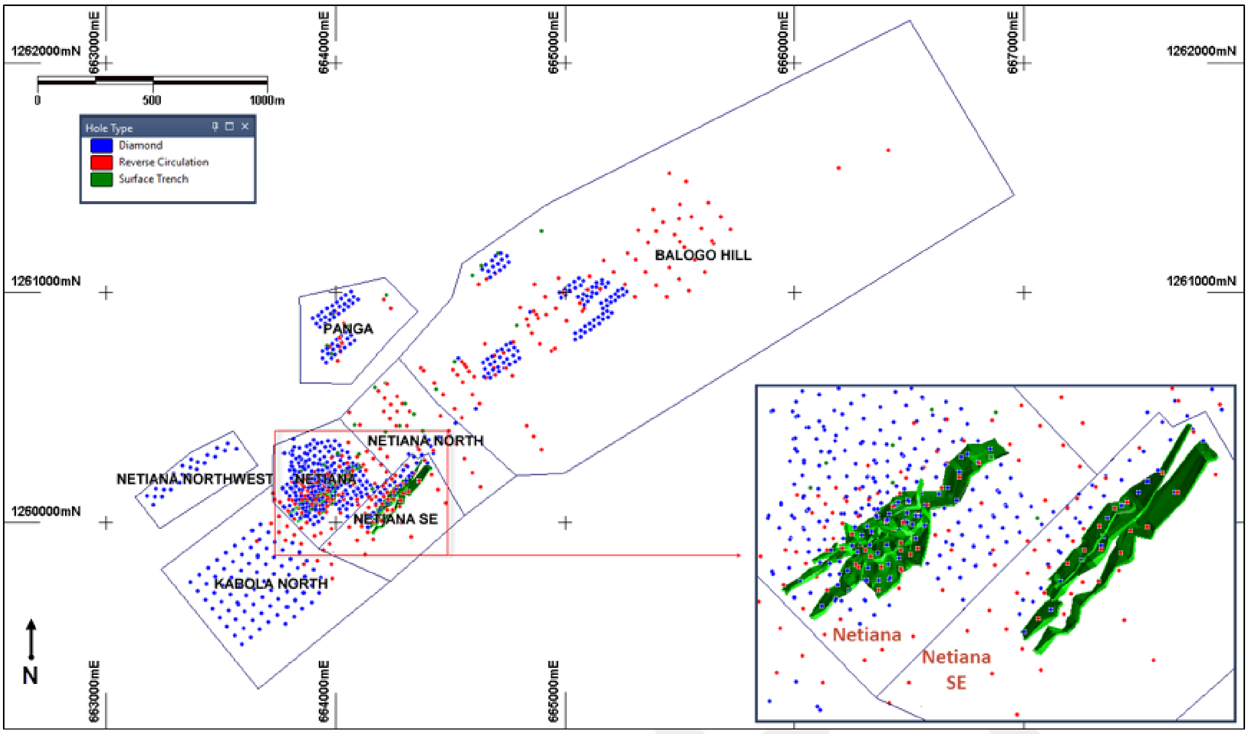


Figure 15: Drilling completed at the Balogo Project outlined by general project/prospect areas. Source: CSA Global, 2017

10.2 Significant Intercepts

Several exploration areas have been drilled and trench tested in the Balogo and Dabinyan III licences (Table 7) and further exploration work on these targets is warranted. A summary for these the exploration areas is provided in Table 8 with significant intercepts (1 g/t over 5 m) tabulated in Table 9. The orientation of mineralisation relative to the drill angle for these areas remains unconstrained and so their true thickness cannot be determined.

See Figure 16 for the locations of the exploration areas relative to the high-resolution ground magnetic survey.

Table 7: Drill summary by Type and Exploration Area

Project	DDH		RC		TR	
	Count	Total (m)	Count	Total (m)	Count	Total (m)
Balogo Hill	106	11,179	92	10,266	7	985
Kabola North			12	1,466		
Netiana	252	38,479	92	11,597	8	1,188
Netiana North	11	1,150	28	2,846	8	999
Netiana NW	25	3,133				
Netiana SE	39	3,796	45	5,577		
Panga	47	5,460	11	1,139		
Unknown	7	540	31	3,351	1	165
Total	487	63,736	311	36,242	24	3,337

Table 8: Exploration area summary

Area	Prospect	Comment	Dimension (approx.)
Balogo	Netiana NW	Gold in soils anomaly. Subtle magnetic signature. Off strike relative to Netiana. 1 hole high grade.	400 x 100 m
Balogo	Netiana North	Strong gold in soils (artisanals active). Strong magnetic signature. Along strike of Netiana in East and Balogo Hill in West. Very low grade drill results.	230 x 400 m
Balogo	Balogo Hill	Strong gold in soils (artisanals active). Strong magnetic signature. Along strike of Netiana in East and Balogo Hill in West. Very low grade drill results.	1,500 x 250 m
Balogo	Panga	Anomalous gold in soils with subtle magnetic signature (analytical signal).	230 x 200 m
Balogo	Kabola North	Gold in soils. No magnetic signature. Along strike of Netiana. Drilling almost completely barren, except discrete intersections. Soil anomalism potentially from artisanal contamination.	400 x 400 m

Table 9: Significant intercepts (1 g/t over 5 m) for exploration target areas at Balogo

Prospect	Hole_ID	Hole_Type	mFrom	mTo	Interval Width	Grade	Intercept Description
Panga	BRC270	RC	34	39	5	50.89	5.00 m @ 50.89 ppm
Panga	BRC281	RC	34	44	10	8.4	10.00 m @ 8.40 ppm
Balogo Hill	BRC013	RC	29	36	7	3.02	7.00 m @ 3.02 ppm
Netiana NW	BDH111	DDH	12.4	18.25	5.85	2.64	5.85 m @ 2.64 ppm
Netiana N	BT31	TR	16	24	8	1.11	8.00 m @ 1.11 ppm

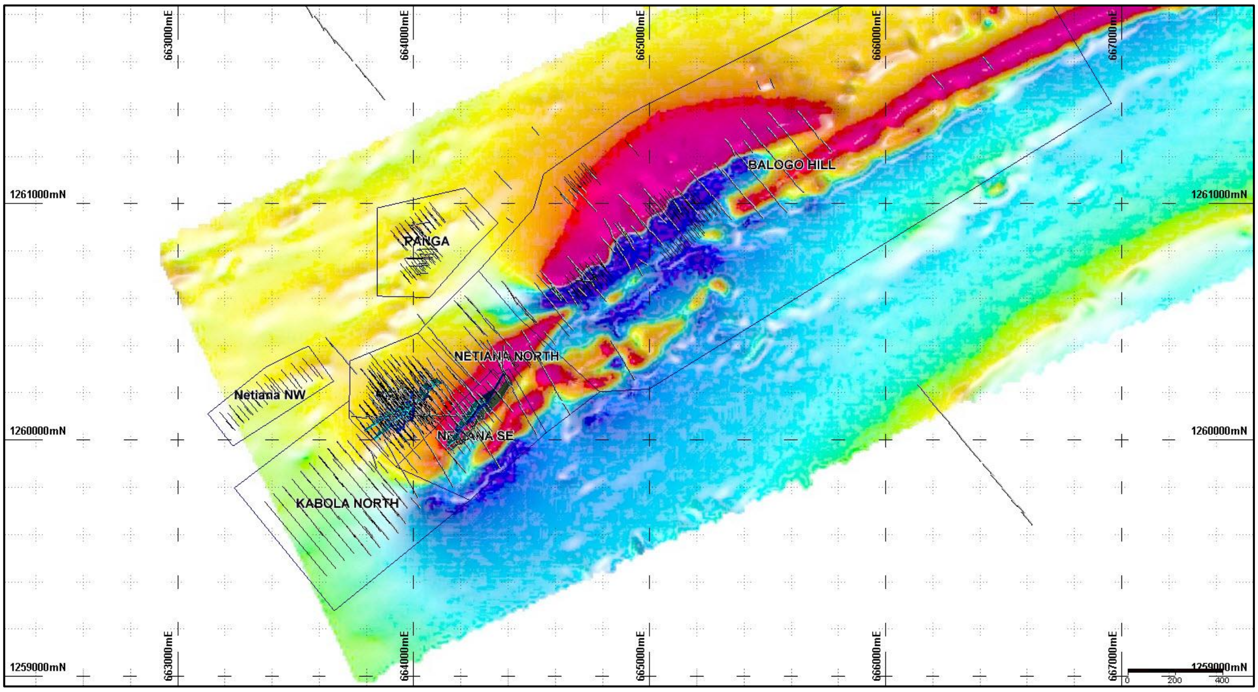


Figure 16: Exploration Areas shown with drillholes for the Balogo and Dabinyan III licences against magnetic ground survey data (gold in soils not shown due to significant artisanal contamination locally).
Source: CSA Global, 2017

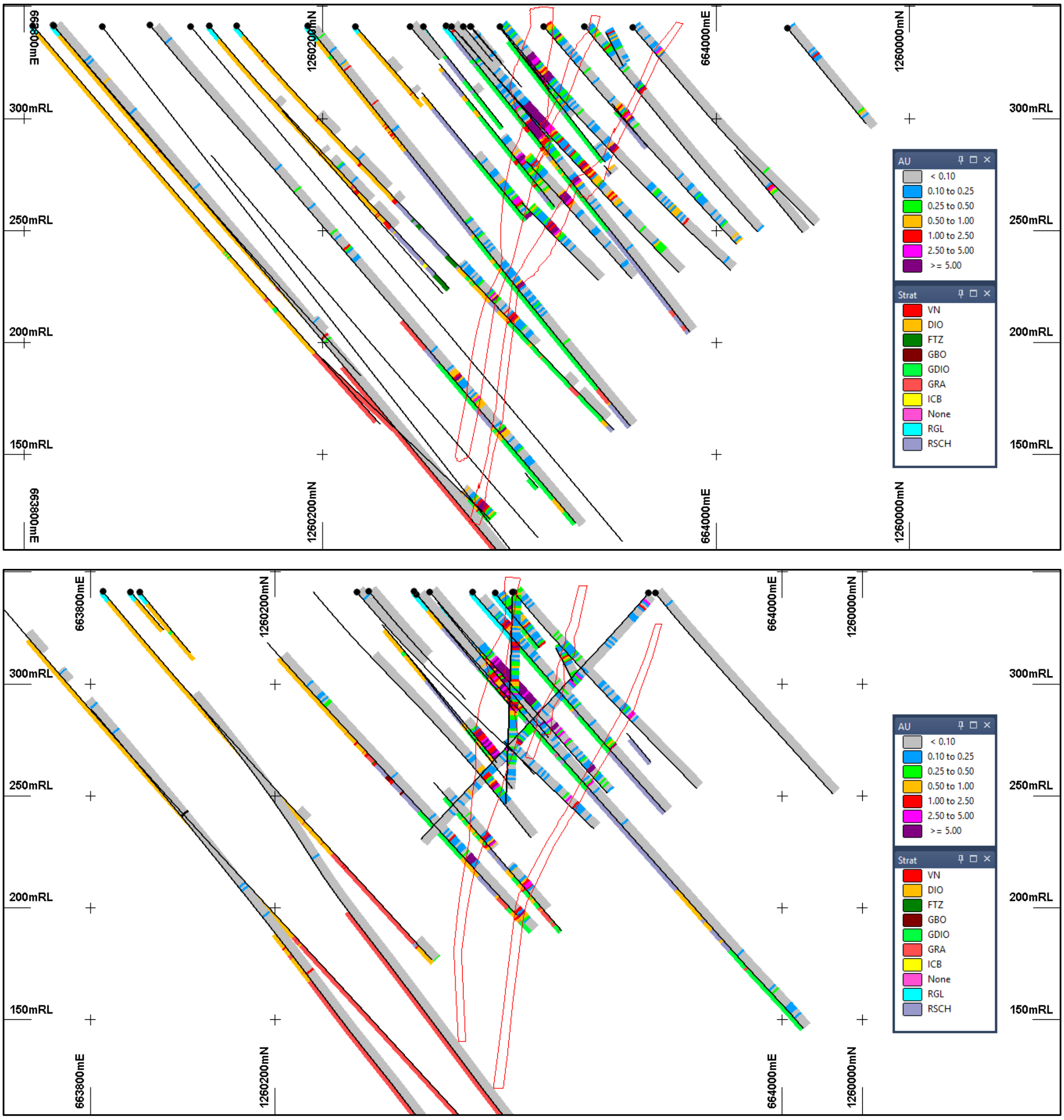


Figure 17: Representative sections through Netiana. Source: CSA Global, 2017

10.3 Survey Procedures

10.3.1 Collar Surveying

Drillhole collars were surveyed using a differential GPS method. All Project location data was collected in WGS 84, UTM Zone 30 North.

10.3.2 Downhole Surveying

Downhole surveying has been undertaken using a digital Reflex Ez-shot camera. The downhole survey procedure is described below:

- The azimuth provided by the camera was referenced to Magnetic North and corrected using the magnetic declination for the area at the time of drilling (approximately -2.2 degrees).
- For diamond drillholes, surveys are carried out at depths of 6 m, 30 m and thereafter every 30 m down the hole. In RC holes, downhole surveys are carried out every 12 m.
- Survey results were reviewed by company's representative at the drill rig who checked for unusual dip or azimuth changes. Downhole survey results are referenced against the planned survey and holes and re-surveyed if results are anomalous.

10.4 DDH Core Handling Procedures

10.4.1 Diamond Core Logging

Drill core is collected daily and brought to the exploration camp where it is placed onto logging tables and logging completed on paper forms to be later transcribed to a computer on an XLS based logging form. Geologists logging the core also mark the intervals for sampling and fill out the sample tag book. Core sampling is generally at 1 m intervals, although sampling intervals are adjusted to fit geological boundaries. Once logging was completed, core is photographed two boxes at a time.

10.4.2 Core Recovery and Rock Quality Designation

Core recovery, rock quality designation (RQD) and solid core recovery (SCR) is logged in the exploration camp and loaded into the sample database. Average recovery is excellent, with a mean recovery of >92% within mineralisation. Any poor core recovery, which is very limited, is generally limited to the first 1 m to 3 m, due to highly weathered material and in and around shear zones. Figure 18 shows SCR as logged from drill holes at Netiana.

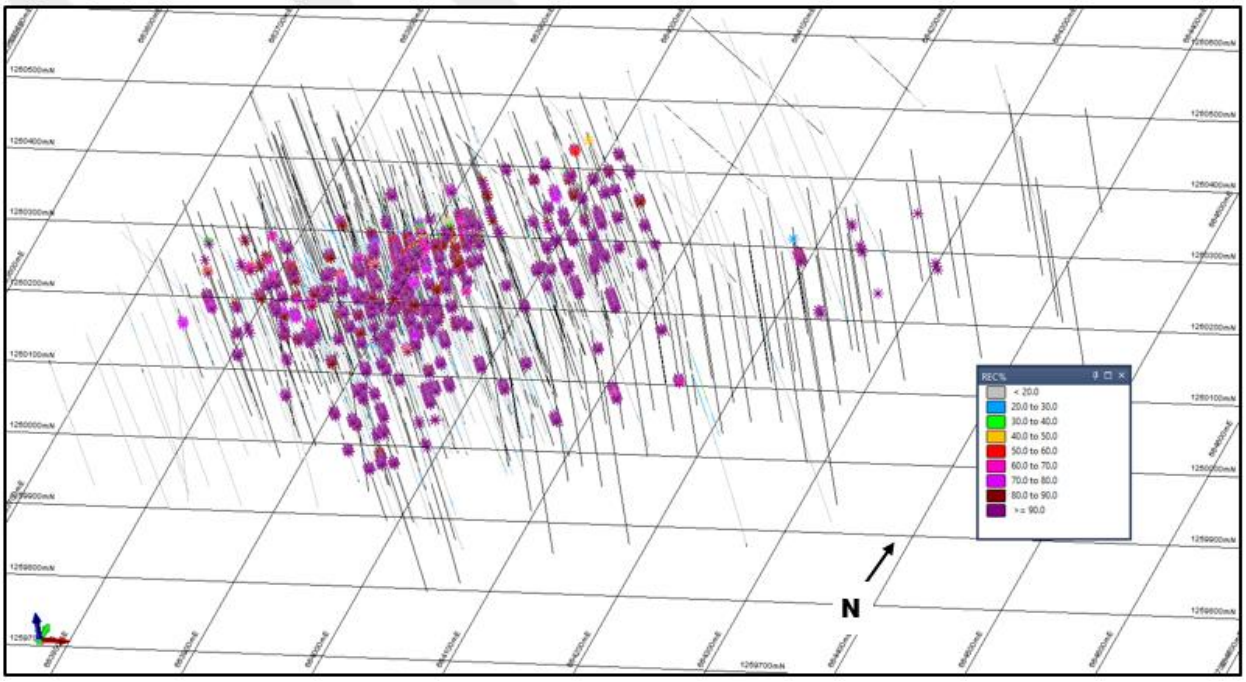


Figure 18: Recovery data within the mineralisation model, view towards northwest
Source: CSA Global, 2017

10.5 RC Chip Sample Handling Procedures

Sampling of RC chips is at 1 m sample intervals. The entire sample, typically weighing 40 kg, is collected from the drill rig cyclone and sealed rig-side. Entire samples are then transported under supervision to a central sample processing site.

To ensure drill-site quality control, a trained technician and/or a geologist is permanently on site during all RC drilling.

Note: CSA Global has received no details regarding the recoveries (mass %) and conditions (wet, damp or dry) of the RC samples which have been used in the estimation of Mineral Resources. While RC was the primary drill type at the start of exploration at Balogo, it has been superseded by DDH and at present RC data represents approximately 20% to 25% of the Mineral Resource database.

Some twinning of the RC data was undertaken by MNG and was reviewed by MNG, alongside the QAQC results. This resulted in the exclusion of seven RC holes, and one diamond hole due to uncertainty over their results. CSA Global has reviewed these holes and agrees with their exclusion. Further detail is documented in Section 12.3.1.

CSA Global also completed a general statistical review of RC, DDH drilling and TR data which is documented in Section 12.3.2, and the results support the use of the three datasets in the 2017 MRE, except for the eight excluded holes.

11 Sample Preparation, Analysis and Security

Unless otherwise stated (i.e. reference to works completed by CSA Global), much of the content below has been summarised from the GMR's 2015 Exploration Summary report (GMR, 2015). The Qualified Persons take responsibility for the content of this section and believe it is accurate and complete in all material aspects.

11.1 Sampling

11.1.1 DDH Diamond Core Sampling

Core was cut with a diamond saw with the blade cooled by a stream of non-recirculated water.

GMR geologists did not mark a cutting line on the core and the placement of the core on the saw is the responsibility of the trained core cutter. GMR sampled all drillholes from top to bottom, sampling the left-hand side of the core, retaining the right-hand side in the core tray for reference.

During core cutting, where there were occasionally intersections with fractured zones, where possible the core was re-constructed by joining pieces of core. To prevent breakage or contamination, and to stop parts of the sample being washed away during core cutting, the reconstructed core was wrapped with tape prior to cutting. Broken or soft sections of the core (typically the upper few metres of the holes) were sampled by the geologists using a spatula and spoon method before being placed in labelled sample bags and dispatched for analysis. After cutting, both pieces of core are replaced in the core tray.

The above GMR procedure differs from the MNG procedure in that a MNG geologist marked a cutting line on the core for the technician to cut along. MNG geologists were required to supervise the technician sampling the drillhole.

Split core samples were sampled by a technician who was also responsible for the insertion of the required QAQC control samples. Each sample was bagged and assigned a unique sample number (sample ID) and dispatched to the laboratory for analysis. The prepared samples were placed into empty rice-sacks for transport to the Laboratory in Ouagadougou.

11.1.2 RC Sampling

The 1 m sample bags collected from the rig (typically 40 kg) were transported under supervision to a central sample processing site where they were weighed and split through a riffle splitter until a sub-sample of approximately 2 kg to 3 kg was obtained. Wet samples were collected at the drilling rig in their entirety and were sun-dried before being riffle-split.

The 2 kg to 3 kg sample splits were collected into pre-labelled plastic sample bags and tags repeating the sample number were inserted into these bags. Every sample was sent to the laboratory for processing and assaying. The remaining portions of the split samples were retained in the Balogo Sample Logging, Preparation and Storage Facility as field duplicates. The rice sacks used to capture the samples from the base of the cyclone were used to store the remaining field duplicate split/rejects.

11.2 Sample Security

ALS Chemex organised sample pick-up from the Balogo camp where the samples for assaying were handed to an ALS Chemex staff member after checking the number of remitted sacks and duly signing an appropriate receipt. Sample submission sheets were completed for the laboratory, detailing the number of samples per batch which is cross checked against the number of samples received by the laboratory to ensure no samples have been lost in transit.

11.3 Dry Bulk Density Determinations

Specific gravity measurements were done on selected core samples by the hydrostatic immersion method. Solid pieces of core considered to represent the differing rock types and styles of mineralisation were selected. These were typically, solid pieces of core greater than 15 cm in length with no cavities. If the material was deemed to be porous or oxidised, the core was tightly wrapped with waterproof tape before measurements were done.

Dry core samples were weighed in air using a balance with accuracy to 0.5 g. The weight of a container filled with water was then measured. The core was then placed in the container of water and that weight was recorded. The specific gravity was calculated by dividing the dry sample weight with the sample weight in water.

Table 10 below lists the number of density measurements in the database for each project area.

Table 10: Count of Density Measurements in the NMC database

Project area	Density measurements (count)
Balogo Hill	191
Netiana	4,151
Total	**4,342**

11.4 Sample Analysis

11.4.1 Introduction

GMR used five laboratories (BIGS, SGS, ACTLABS, ALS Ouagadougou and ALS Johannesburg) to prepare and analyse drilling and geochemical samples. MNG used ALS Ouagadougou for the 2016 diamond core and surface samples.

Sample preparation at the laboratories involves the following steps:

- Samples receipt and primary weighing.
- Drying of the whole sample at 100°C to 110°C.
- The whole sample is crushed using jaw crushers >70% of the sample passing through a 2 mm sieve (checked at the start of a batch). The crusher is cleaned with compressed air between each sample and cleaned with sterile quartz between batches or more frequently if required.
- Sample split with a riffle splitter or directly from the crusher (using a Rocklabs crusher combined with a rotary splitter) to create a subsample of 250 g to 500 g.
- Pulverisation of the 250 g to 500 g subsample using "flying disc" or "ring and puck" style grinding mills to 85% of sample passing through a 75 µm (200 mesh) sieve or better (checked every 20th sample). The pulverisers are cleaned with compressed air between each sample and cleaned with sterile quartz between batches or more frequently if required.

Table 11 summarises the laboratories and analyses used for each sample type.Table 12 summarises the preparation and analytical laboratories used for the various phases of drilling.

Table 11: Laboratories and methods summary (adapted from GMR technical report)

Company	Laboratory	BIGS (www.bigsglobal.com/)		SGS (www.sgs.com/)		ACTLABS (www.actlabs.com/)		ALS (Ou and Jhb) (www.alsglobal.com/)	
	Sample type	**Element**	**Method and description**	**Element**	**Method and description**	**Element**	**Method and description**	**Element**	**Method and description**
GMR	DDH	Au	FPF500					Au	Au-AA26
		Au	FGV500					Au	Au-GRA21
		Cu	ADF020.3					Cu	ME-ICP41
								Cu	Cu-OG46
	RC	Au	FPF500	Au	FAA505				
		Au	FGV500	Au	FAG505				
		Cu	ADF020.3	Cu	ARA155				
	Auger	Au	BLC105						
		Cu	ADF020.3						
	Trench	Au	FPF500	Au	FAA505	Au	1A2-50		
	Pit	Au	BLC105						
	Rock chip	Au	FPF500					Au	Au-AA26
	Soil	Au	BLC105			Au	1A6-Au	Au	Au-AA15b
MNG	DDH							Au	Au-AA24
								Au	Au-Gra22

Table 12: Laboratories used for drillholes (adapted from GMR technical report)

Preparation laboratory	Analytical laboratory	Drillhole ID
ALS Ou	ALS Jhb	BDH001 to BDH005, BDH001R, BDH007 to BDH008, BDH006R and BDH007R
SGS	SGS	BRC127 to BRC172, BRC131B and BRC154B
BIGS	BIGS	BDH009 to BDH029, BDH001 to BDH126, BDH076B, BDH076R, BDH089R, BDH112R, BDH121B, BDH121R, BDH159R, BDH173 to BDH286, BDH148B, BDH185B and BDH 197R
ALS Jhb	ALS Jhb	BDH031 to BDH195, BMH001 to BMH003, BSH001 to BSH032

11.4.2 ALS Ouagadougou and Johannesburg

The Phase One GMR diamond core samples were prepared at ALS Ouagadougou, Burkina Faso and then shipped to ALS Johannesburg, South Africa for final analysis. The MNG 2016 diamond core samples were prepared and analysed at ALS Ouagadougou.

Samples have been analysed for gold using fire assay with an atomic absorption spectroscopy (AAS) finish with over limit assays by fire assay with a gravimetric finish. Per the 2015 GMR technical report, the Phase 1 core samples were analysed using methods Au-AA26 and Au-GRA21. The 2016 MNG diamond core samples were analysed with methods Au-AA24 and Au-GRA22. Details are in the tables below.

Table 13: ALS methods used for drillholes – GMR 2012 samples

Element	Method	Detection limits	Description
Au	Au-AA26	0.01 – 100 ppm	50 g Au by fire assay and AAS
Au	Au-Gra21	0.05 – 1000 ppm	Over limit – 30 g Au by fire assay and gravimetric finish
Cu (ME)	ME-ICP41	Various	Aqua Regia trace level with ICP-AES finish (35 elements)
Cu	Cu-OG46	0.001 – 40%	Aqua Regia digest with ICP-OES or AAS finish

Table 14: ALS methods used for drillholes – MNG 2016 samples

Element	Method	Detection limits	Description
Au	Au-AA24	0.005 – 10 ppm	50 g Au by fire assay and AAS
Au	Au-Gra22	0.05 – 1000 ppm	Over limit – 50 g Au by fire assay and gravimetric finish

MNG surface samples were also analysed at ALS Ouagadougou using a gold fire assay and a trace multi-element method for 53 elements. Details are in Table 15 below.

Table 15: ALS methods used for MNG surface samples

Element	Method	Detection limits	Description
Au	Au-ICP22	0.001 – 10 ppm	50 g trace level Au by fire assay and ICP-AES
ME	ME-MS41L	Various	Aqua Regia super trace level with ICP-MS finish (53 elements)
Au	Au-TL44	0.001 - 1 ppm	50 g trace level Au by Aqua Regia extraction and ICP-MS finish
ME	ME-ICP41	Various	Aqua Regia trace level with ICP-AES finish (35 elements)

Internal QC samples included pulp duplicates, blanks and standards.

11.4.3 BIGS Global, Ouagadougou

BIGS is an independent, ISO-17025 accredited (http://www.bigsglobal.com/) laboratory located in Burkina Faso. The majority of the GMR samples (RC, DDH, Auger, Trench, Pit and surface samples) were analysed at BIGS. The table below lists the analytical methods used.

Table 16: BIGS methods used for samples (summarised from 2015 GMR report)

Element	Method	Lower detection limits	Description
Au	BLA100 to BLA515	0.001 – 0.01 ppm	Bulk Leach Extractable Gold (BLEG), cyanide partial leach with a flame AAS finish
Au	FPF300 to FPF500	0.005 ppm	30 or 50 g fire assay with AAS finish
Au	FGV300, FGV500	0.003 ppm	30 or 50 g fire assay with gravimetric finish
Cu (ME)	ADF010 to ADF021	Various	Aqua Regia digest with AAS finish

Internal quality control (QC) from the sample preparation stage includes preparation repeats (duplicate sample) crushing and pulverising blanks and flushing samples. QC materials introduced at the assay stage include blanks, standards and pulp repeats.

11.4.4 SGS Laboratory, Ouagadougou

SGS laboratory was used during the GMR RC drilling campaign (holes BRC127 to BRC172) when BIGS laboratory was experiencing high demand and had longer than usual turnaround times.

Samples were analysed for gold using fire assay with an AAS finish with over limit assays by fire assay with a gravimetric finish (methods FAA505 and FAG505, respectively). Samples were also assayed for copper using SGS method ARA155 (Aqua Regia digest with an AAS finish). Details are in the table below.

Table 17: SGS methods used for drillholes

Element	Method	Detection limits	Description
Au	FAA505	0.01 – 10 ppm	50 g Au by fire assay and AAS
Au	FAG505	0.5 – 3000 ppm	50 g fire assay with a gravimetric finish
Cu (ME)	ARA155	0.5 – 50000 ppm	50 g Aqua Regia digest with AAS finish

Internal checks include preparation blanks, blanks, standards, coarse duplicates (Au(S)) and pulp duplicates (Au(R)).

11.4.5 Activation Laboratories

Activation Laboratories (Act Labs) was used by GMR for trench and surface soil samples. Analytical methods are listed below.

Table 18: ALS methods used for drillholes – GMR 2012 samples

Element	Method	Detection limits	Description
Au	1A2-50	0.005 – 5 or 10 ppm	50 g Au by fire assay and AAS
Au	1A6-Au	0.0001 – 10 ppm	BLEG, cyanide partial leach with an ICP-MS finish

11.5 QAQC Procedures

The QAQC procedures below have been summarised from the GMR Technical Report ("Balogo Project, Summary of Exploration, June 2015"). However, CSA Global has undertaken its own assessment of the QAQC procedures.

11.5.1 Certified Reference Material

CRMs are included with the primary samples to monitor assay accuracy and are homogenous pulp material with certified concentrations and expected standard deviations of the elements of interest. They were sourced from Ore Research and Exploration Pty Ltd in Melbourne (Oreas) and Geostats Pty Ltd in Perth (Geostats). Table 19 below lists the CRMs used, as well as their expected values and which drillhole types they were used for. There are four CRMs listed in the table which were not included in the NMC data provided to CSA Global, but were listed in the 2015 GMR report. These have been included at the end of Table 19.

Table 19: CRMs with expected values and permitted minimum and maximum values

CRM	Unit	Expected value	Expected SD	Minimum (-3SD)	Maximum (+3SD)	Drillhole use type
G308-5	ppm	13.30	0.56	11.62	14.98	RC
G310-4	ppm	0.43	0.03	0.34	0.52	DDH
G311-5	ppm	1.32	0.06	1.14	1.50	DDH
G312-10	ppm	24.94	0.94	22.12	27.76	RC
G312-4	ppm	5.30	0.22	4.64	5.96	RC
G314-1	ppm	0.75	0.04	0.63	0.87	DDH
G909-1	ppm	1.02	0.06	0.84	1.20	RC/DDH
G910-1	ppm	1.43	0.06	1.25	1.61	RC
G910-6	ppm	3.09	0.13	2.70	3.48	RC
GLG312-1	ppm	0.021	0.003	0.01	0.03	DDH
GLG910-2	ppm	0.024	0.004	0.01	0.04	DDH
Oreas 15d	ppm	1.559	0.04	1.44	1.68	RC
Oreas 15f	ppm	0.33	0.02	0.27	0.39	RC/DDH
Oreas 15g	ppm	0.53	0.02	0.47	0.59	RC
Oreas 15h	ppm	1.02	0.03	0.93	1.11	RC
Oreas 16b	ppm	2.21	0.07	2.00	2.42	RC
Oreas 17c	ppm	3.04	0.08	2.80	3.28	RC
Oreas 18c	ppm	3.52	0.11	3.19	3.85	RC
Oreas 19a	ppm	5.49	0.10	5.19	5.79	RC
Oreas 502	ppm	0.49	0.02	0.43	0.55	RC/DDH
Oreas 503	ppm	0.69	0.02	0.63	0.75	RC
Oreas 504	ppm	1.48	0.04	1.36	1.60	RC
G310-10*	ppm	48.53	1.67	43.52	53.54	Unknown
G907-2*	ppm	0.89	0.06	0.71	1.07	Unknown
G909-7*	ppm	0.49	0.03	0.40	0.58	Unknown
G908-2*	ppm	0.21	0.01	0.18	0.24	Unknown

** CRMs included in 2015 GMR report, but not included with those provided by NMC*

GMR inserted QC samples (blanks, CRMs, duplicates) at a ratio of one to every ten primary diamond core samples and at a ratio of one to every 30 RC primary samples. MNG insert four CRMs per batch of 100 samples.

11.5.2 Blanks

Coarse blanks are used to monitor potential contamination and undergo the same sample preparation process as the primary samples. Blanks should have negligible concentrations of the elements of interest. Concrete was initially used as course blanks, but this was discontinued at the end of Phase 3 drilling, when it became apparent that some of the concrete samples contained assayable levels of copper. Three commercially available pulp blanks were obtained from Oreas and are listed in Table 20 below.

Table 20: Blanks with expected values

Blank	Unit	Expected value	Expected max (10 x detection limit)	Drillhole use type
Oreas 22b	ppb	<2	100 (0.10 ppm)	RC
Oreas 22c	ppb	<2	100 (0.10 ppm)	RC
Oreas 24c	ppb	<1	10 (0.01 ppm)	DDH

However, pulp blanks do not undergo the same sample preparation process as the primary samples as they do not pass through the crushers, and therefore the control on potential contamination is inadequate.

MNG insert two blanks per batch of 100 samples.

11.5.3 Duplicates

Duplicate samples are used to measure precision (i.e. repeatability of results).

Field Duplicates

Field duplicate samples, comprising a second riffled sample split were routinely submitted with the RC samples. No duplicate samples were submitted with the 2012 diamond drillholes, and some (161) were included with the recent diamond drilling. The MNG procedure states that a minimum of 4% of the samples will have duplicates (either ¼ core or rejects), but based on the number of diamond duplicate results provided, this procedure doesn't appear to have been followed.

External Check Samples (Umpires)

No information available.

11.5.4 QAQC Failures and Resolution

As per the 2015 GMR report, the following checks were undertaken upon receipt of assay data from the labs:

- CRM results were reviewed to see whether the assayed value falls within the +/- 3 standard deviation range.
- Blanks were checked to confirm that the blank values fall within acceptable limits.
- Duplicate samples were checked to ensure that the values agree with the original value.
- Normal assay values were checked to ensure that the values fall within expected limits; any values outside expected limits were investigated and if there was no obvious reason for differences, the sample could be re-submitted for assay. Individual outliers were examined to determine why the assay value may have fallen outside the acceptable limits.

If more that 10% of the standards in a single batch of samples fell outside the acceptable range, new CRMs were inserted and re-assay of that batch was requested from the laboratory. These repeat results were again checked to ensure that the assayed value of newly inserted CRMs fell within the acceptable range. Also; if any CRM in a batch falls outside of its standard deviation limits, samples from the last accurate CRM reading to next accurate CRM reading are re-assayed within the same batch.

11.6 CSA Global: QAQC Review

CSA Global used QAQC Reporter (QAQCR) to review the gold blank and CRM results, and Microsoft Excel to analyse the duplicate results. RC and diamond drillhole QC results were reviewed separately. No QC results were available for the 2012 diamond drillholes (BDH001 to BDH030); therefore, no comment on the quality of results from these drillholes can be made.

Numerous instances of apparent misidentified/mislabelled CRMs and blanks were noted, particularly in the RC samples which reduces confidence in the overall data management. This issue was noted in the 2015 GMR report and appears to have been mostly resolved in the 2016 diamond core samples with only one clear example noted of a misidentified blank.

11.6.1 Cross Contamination

No coarse blank (preparation blank) results were provided and as pulp blanks do not undergo the same sample preparation process as the primary samples **the control on potential contamination is inadequate**. Pulp blank Oreas 22C had four significant failures, but these appear to be misidentified CRMs. Once these outliers have been removed, the pulp blanks show acceptable performance.

11.6.2 Assay Accuracy

CRM control charts were plotted and failures and biases calculated and tabulated below (Table 21). Any CRM that had an assayed value outside of three standard deviations of the expected value is deemed to have failed and any CRM with a mean grade outside 5% of the expected value has also exceeded permitted tolerances.

Table 21: CRM Results showing bias and CRM failures (red is a bias of > 5% and failed CRMs)

CRM	Expected value	No. of samples	Mean Au	SD	CV	Mean bias	Drill type	No. of failures	Failure %
G308-5	13.300	6	13.054	0.231	0.018	-2%	RC	0	0%
G312-10	24.940	5	25.108	0.453	0.018	1%	RC	0	0%
G312-4	5.300	6	5.233	0.243	0.046	-1%	RC	0	0%
G909-1	1.020	66	1.031	0.034	0.033	1%	RC	0	0%
G910-1	1.430	6	1.417	0.075	0.053	-1%	RC	0	0%
G910-6	3.090	6	3.011	0.063	0.021	-3%	RC	0	0%
Oreas 15d	1.559	287	1.520	0.120	0.079	-3%	RC	24	8%
Oreas 15f	0.334	83	0.351	0.031	0.089	5%	RC	24	29%
Oreas 15g	0.527	192	0.533	0.054	0.101	1%	RC	20	10%
Oreas 15h	1.019	141	1.008	0.039	0.039	-1%	RC	12	9%
Oreas 16b	2.210	163	2.215	0.243	0.110	0%	RC	21	13%
Oreas 17c	3.040	143	3.132	0.426	0.136	3%	RC	63	44%
Oreas 18c	3.520	190	3.402	0.389	0.114	-3%	RC	14	7%
Oreas 19a	5.490	168	5.535	0.343	0.062	1%	RC	72	43%
Oreas 502	0.491	25	0.491	0.021	0.042	0%	RC	0	0%
Oreas 503	0.687	137	0.700	0.056	0.080	2%	RC	36	26%
Oreas 504	1.480	122	1.504	0.082	0.055	2%	RC	14	11%
G310-4	0.430	91	0.411	0.050	0.120	-4%	DDH	0	0%
G311-5	1.320	65	1.306	0.022	0.016	-1%	DDH	0	0%
G314-1	0.750	73	0.812	0.018	0.022	8%	DDH	0	0%
G909-1	1.020	60	1.033	0.034	0.033	1%	DDH	0	0%
GLG312-1	0.021	28	0.019	0.005	0.270	-8%	DDH	1	4%
GLG910-2	0.024	46	0.020	0.008	0.413	-19%	DDH	7	15%
Oreas 15f	0.334	15	0.339	0.012	0.034	2%	DDH	0	0%
Oreas 502	0.491	14	0.498	0.025	0.050	1%	DDH	0	0%

Diamond core CRMs mostly returned acceptable results. Conclusions are summarised below:

- The only failures in the diamond core CRMs were in the low grade Geostats CRMs
- G314-1 over reported by 8% (Figure 19)
- No CRM greater than 1.5 ppm Au has been included with the core sample assays.

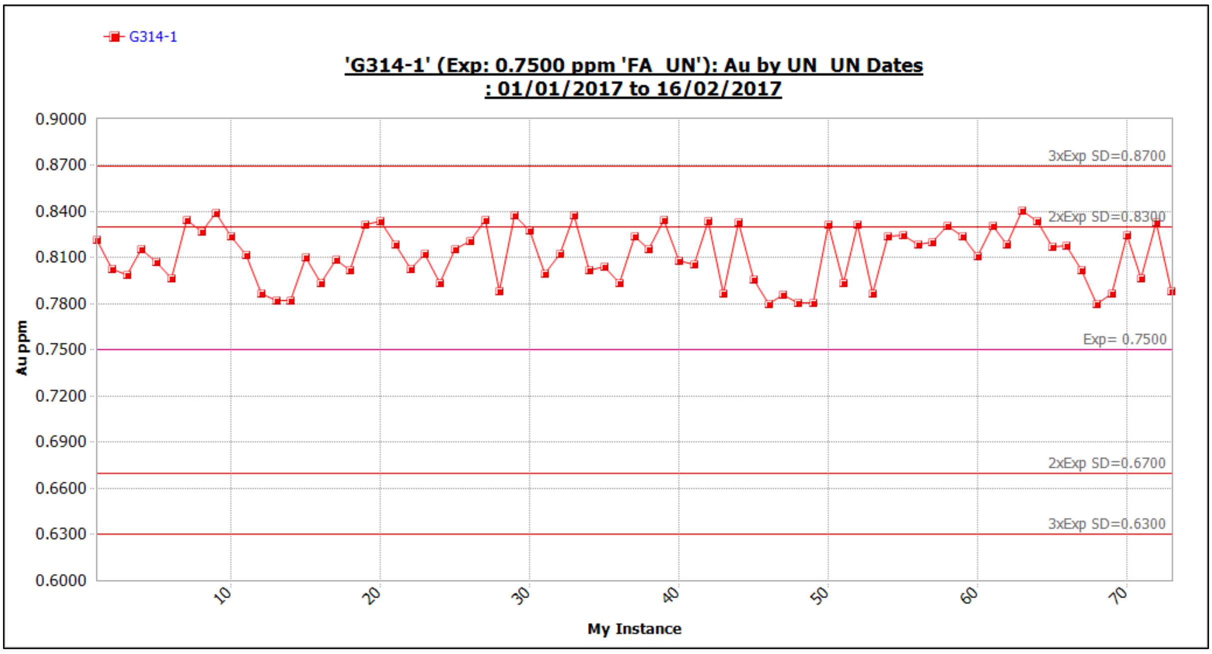


Figure 19: CRM G314-1 used in diamond core drilling showing bias (over reporting).
Source: CSA Global, 2017

CRMs included with the RC samples had numerous failures, but no absolute bias >5%:

- Geostats CRMs had no significant issues.
- Most (10 out of 11) Oreas CRMs had failure rates from 7% to 44% which include apparent misidentified CRMs and blanks.
- **Areas of bias (Figure 20) and drift (Figure 21) were observed.**
- Most failures and bias were from batches 1201, 1202, 1203, 1880, 1886, 1891, 1894, 7705, 7714.

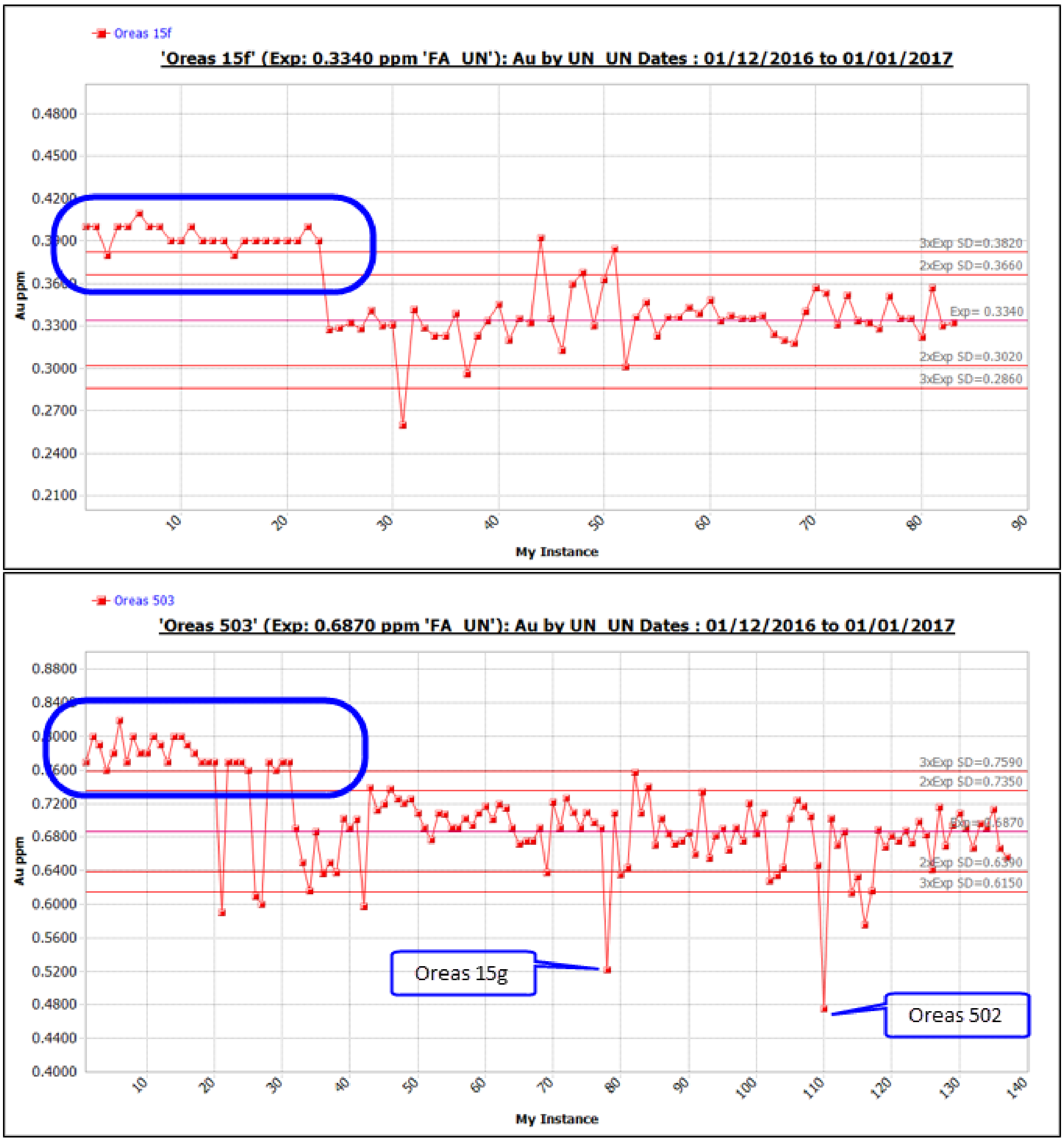


Figure 20: Oreas 15f and Oreas 503 showing initial bias (over reporting) and apparent misidentified CRMs. Source: CSA Global, 2017

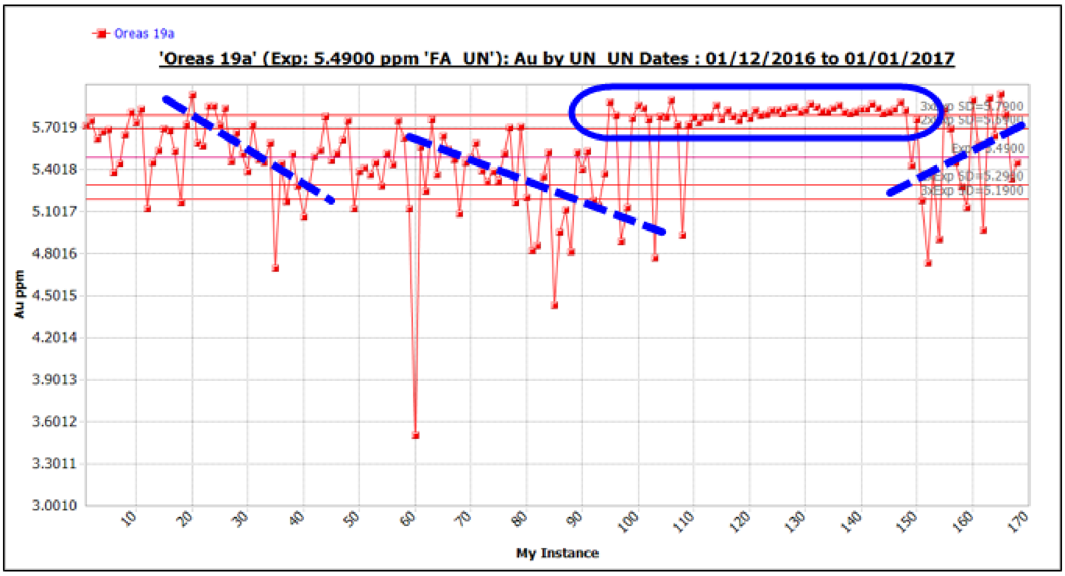


Figure 21: Oreas 19a showing failures, drift and bias
Source: CSA Global, 2017

11.6.3 Precision

Precision error can be estimated by measuring the precision error at each stage of the sampling and assay process. Field duplicates contain all sources of error (sampling error, sample reduction error and analytical error), laboratory duplicates contain sample reduction error and analytical error, pulp duplicates contain analytical error only. Only field duplicate data were available for review.

The data were assessed using coefficients of variation (CV = std dev/average – also known as relative standard deviation) calculated from individual duplicate pairs and averaged using the RMS (root mean squared) approach. This approach is recommended by Stanley and Lawie (2007) and Abzalov (2008) as a way of defining a fundamental measure of data precision using duplicate paired data.

Precision errors (CV_{AVR}(%)) were calculated for duplicates with mean values ≥10 times the analytical detection limit and compared to acceptable limits. Acceptable and best practice limits are obtained from Abzalov's 2008 paper, "Quality Control of Assay Data: A Review of Procedures for Measuring and Monitoring Precision and Accuracy". Scatter plots, relative difference plots and quantile-quantile (QQ) plots were produced. Results are listed in Table 22 below.

Table 22: Gold duplicate precision errors (with acceptable limits)

Duplicate type	CV($_{AVR}$)% best practice	CV($_{AVR}$)% acceptable practice	Pairs (total)	Count of pairs (>10 x DL)	CV($_{AVR}$) %	Mean Au Orig.	Mean Au Dup.	Bias
F Dup DDH	20	40	161	153	17	14.170	16.464	16%
F Dup RC	20	40	1680	192	37	0.397	0.311	-22%

Results of the gold duplicate pair comparison are summarised below:

- No laboratory coarse or pulp duplicate data provided.
- No external check (umpire) data available.
- **The proportion of diamond drill hole field duplicate pairs is low.**
- **Diamond pairs have a CV($_{AVR}$)% of 17%, i.e. within best practice limits.** Samples have a significant bias to the duplicates of 16%, but if one high grade pair is removed, the bias is only 2% (to the original results).
- RC duplicate pairs are mostly low grade and therefore most of them had to be excluded from precision calculations.
- RC field duplicate repeatability was 37% and within Abzalov's acceptable practice limits for nuggety gold. There was a significant bias (-22%) to the original results. If three high grade outliers are removed the bias decreases slightly to 17% to the duplicates.

11.7 CSA Global: Comment regarding Adequacy of Sampling, QAQC, and Data Management

QAQC procedures appear to have some gaps and areas for improvement. Overall there are issues with CRM performance with numerous failures and biases. Many of the failures appear to be due to misidentified CRMs and blanks as opposed to outright failures. However, this misidentification reduces confidence in the project data management.

CSA Global concludes the following:

- No QC data provided for drillholes BDH001 to BDH030 and therefore no conclusion can be made as to the reliability of these assay results.
- The pulp blanks showed no indication of contamination at the analytical stage.
- Numerous failures in the RC Oreas CRMs.

- The diamond core CRMs are mostly precise and accurate, but no high-grade CRM has been used with these samples.
- **Precision is acceptable, with some bias**. However, high grade pairs tend to disproportionately influence the mean grades.
- **Data management requires improvement,** especially as the project moves from exploration to production. A centralised database should be implemented which can serve as a single point of truth for the project data.

CSA Global recommends the following:

- Preparation blanks should be included to monitor potential contamination.
- **A high-grade gold CRM should be included with the samples to monitor samples >1.5 ppm Au.**
- An industry standard database package is recommended to host the data. Currently, Microsoft Excel sheets are used which are inadequate to securely host the project data. CSA Global can advise if required.
- Ongoing vigilance is required to reduce CRM and blank misidentification.
- The proportion of field duplicates should be increased to 5% and biased towards mineralised samples.
- Laboratory QC results should be routinely reviewed and captured in the database.
- External check samples (umpires) should be sent to an accredited laboratory. CRMs must be included with these samples.

12 Data Verification

12.1 Database Verification

NMC provided CSA Global with data in Microsoft Excel spreadsheets. CSA Global notes that: as per the GMR 2015 technical report, prior to 2012 all field data were captured into a Microsoft Access database which included collar, assay, geology, survey, density, recovery, structure, QAQC and geochemical sampling tables. Data management was completed under the guidance of the Exploration Manager and the Database Administrator. In 2012, GMR migrated from the in-house database system to one managed by IoGlobal Consulting (name has now changed to REFLEX). As part of the migration to the new database structure a review of data capture, logging codes and importing routines was completed. To reduce overheads, a corporate decision was made to stop using the services of IoGlobal in early 2014.

CSA Global loaded the NMC Excel exploration and drill data into a Structured Query Language (SQL) relational database, which is an industry standard for exploration project databases. The database schema used was the Maxwell DataShed format, which contains validation constraints and triggers, ensuring that data loaded meets standard validation rules. Minor validation issues were noted and resolved during the above process and a validated database provided for downstream work.

Drillhole totals were verified against the 2015 GMR Technical Report, and apart from minor differences in the total metres drilled in the 2011 RC drillholes, no significant differences were observed.

In addition to the above, database gold assay results were compared against PDF assay certificates for a random selection of four certificates from ALS (2016) and six from SGS (2012), covering 25 drillholes. No differences were noted between the hard copy and the database assay results. However, no assay certificates were provided for any of the BIGS laboratory data.

12.2 Site Visit Data Verification

12.2.1 Geology and Mineral Resources

CSA Global visited the Balogo project on 2nd February 2017.

This visit was required for the purposes of inspection, ground truthing, review of activities, procedural review and information data collection and collation and to satisfy NI 43-101 "personal inspection" requirements.

Mr David Williams (CSA Global Qualified Person, Mineral Resources) and Dr Matthew Randall (CSA Global Qualified Person, Mineral Reserves) carried out the site inspection on behalf of CSA Global, as described in Section 2.4. CSA Global was met by the site Project Geologist, Ilker Bayraktar, and spent approximately three hours on site.

The following was completed as part of the data verification:

- Ground truthing the deposit locations and layout for each project.
- Verification of drill hole collar locations with survey coordinates in the drill database.
- Inspection of drill core.
- Inspection of artisanal activities.
- Discussion of drilling and sampling procedures.
- Reviewing database management system for storage of drill hole data, and Quality Assurance / Quality Control protocols.

CSA Global inspected the core yard and viewed core from holes BDH188, BDH046 and BDH038R. Photographs for BDH188 and BDH046 showing mineralisation styles and host lithologies are presented in Figure 22 and Figure 23.

Through inspection of the drill core, CSA Global verified that in-situ dry bulk density measurements are taken in competent pieces of core within oxide material. This has led to the conclusion that the measured BD is likely to be overstated in oxide and transitional zones.

Figure 22: Drill hole BDH046 (Netiana Lode, Balogo Project) showing weathering profile and billets chosen for BD measurement.

Source: D Williams, 2017

Figure 23: Drill hole BDH046 (Netiana Lode, Balogo Project) very high grade Au (>500 g/t) 43.5 m - 44.2 m

Source: D Williams, 2017

CSA Global verified the locations of three collars and the handheld GPS coordinates are presented with those recorded in the database in Table 23.

Table 23: Comparison of drill collar coordinates

BHID	GPS Coordinates		Database Coordinates	
	Easting	Northing	Easting	Northing
BMH001	663943	1260144	663942.94	1260144.23
BDH039	663941	1260143	663941.81	1260143.95
BDH122	664010	1260152	664010.64	1260151.37

12.3 Verification of RC Drilling

12.3.1 Twin Drillholes

There are 23 RC and DDH drillholes from which pairs are suitable for comparison, with the "twin" samples within 2.5 m of each other (Table 24). Of these, only eleven intersect mineralisation. An NMC review of these twin holes and RC QAQC resulted in the exclusion of several RC holes and one diamond hole. CSA Global agrees with the exclusion of these holes.

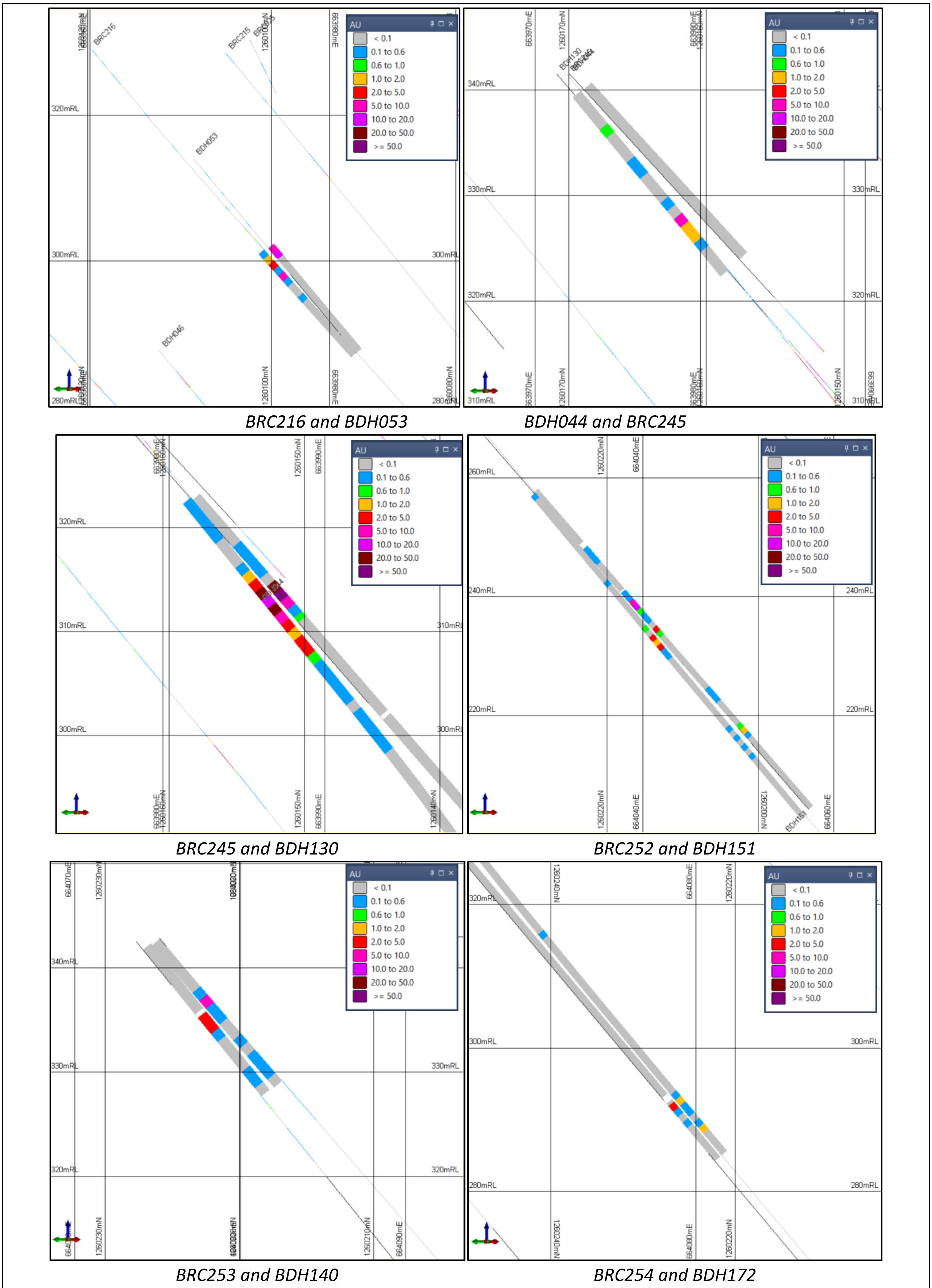
Table 24: Twin drillholes

Twin ID	BHID 1 (DDH)	BHID 2 (RC)	Comment
1	BDH064	BRC024	
2	BDH041	BRC042	Excluded RC
3	BDH040	BRC068	Excluded RC
4	BDH119	BRC068	Excluded RC
5	BDH031	BRC071	Excluded RC
6	BDH001R	BRC111	Excluded RC
7	BDH032	BRC112R	Excluded RC
8	BDH060	BRC113	Excluded RC
9	BDH010	BRC113	Excluded RC
10	BDH001R	BRC113	Excluded RC
11	BDH001	BRC113	Excluded RC
12	BDH053	BRC216	
13	BDH039	BRC217	Excluded RC
14	BDH037	BRC218	
15	BDH035	BRC219	
16	BDH036	BRC220	
17	BDH042	BRC221	
18	BDH048	BRC221	
19	BDH130	BRC245	
20	BDH044	BRC245	
21	BDH130	BRC245	
22	BDH140	BRC253	
23	BDH172	BRC254	

Figure 24 shows the cross sections of twinned pairs for the five sets of drillholes that intersect mineralisation and Figure 25 presents the log probability plot comparing the Au grades, with top cuts applied to control the influence of outliers.

Despite what appears to be extensive twinning, because only some intersect mineralisation, it is not possible to draw conclusions from the statistical comparison of the twins, due to paucity of data, and nuggety style of the deposit.

Further analysis of the RC vs. DDH comparison had to be conducted to ensure compatibility between the two datasets for use in the MRE. This work is outlined in Section 12.3.2.



BRC216 and BDH053 — BDH044 and BRC245

BRC245 and BDH130 — BRC252 and BDH151

BRC253 and BDH140 — BRC254 and BDH172

Figure 24: Cross sections showing twin pairs – DDH vs. RC

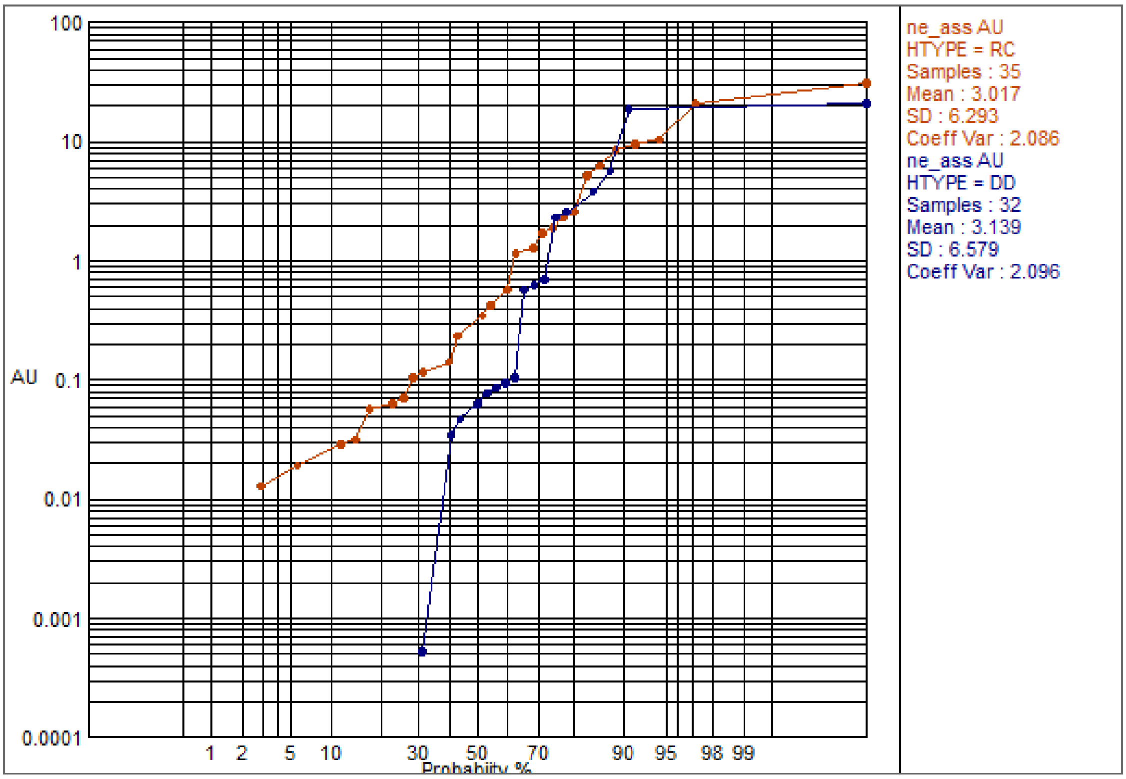


Figure 25: Probability plot of RC and DDH twinned samples within mineralisation zone; top cut to control influence of outliers

12.3.2 RC vs. DDH

A significant portion of the data are RC, with approximately 30% at Netiana (Table 25). To assess the compatibility between the two datasets, procedures for both kinds of sample collection were reviewed and are considered appropriate.

Table 25: Drill type data by year

Area	Year	DDH		RC		Trench		TOTAL	
		No.	Metres	No.	Metres	No.	Metres	No.	Metres
Netiana	2011			46	5,505			46	5,505
	2012	8	1,541	36	4,888			44	6,429
	2013			2	220			2	220
	2016	158	21,434					158	21,434
	2017	6	991					6	991
	-	24	5,595	8	1,073	10	1,538	42	8,206
	Subtotal	**196**	**29,561**	**92**	**11,686**	**10**	**1,538**	**298**	**42,785**
Netiana SE	2011			30	3,607			30	3,607
	2012			17	2,160			17	2,160
	2013			1	104			1	104
	2016	2	145					2	145
	2017	3	240					3	240
	-	1	83					1	83
	Subtotal	**6**	**468**	**48**	**5,871**			**54**	**6,339**
TOTAL		**202**	**30,028**	**140**	**17,557**	**10**	**1,538**	**352**	**49,123**

The drillhole data were run through a selective compositing process in Datamine Studio RM™ (CompSE) to generate minimum thickness and minimum grade intercepts at various Au cut-off grades to compare drillhole type datasets. The accumulated Au was compared at each cut-off for each drill type (Figure 26). RC tended to have slightly more accumulated Au at higher cut-offs than DDH data but for the most part, the two datasets were found to be quite compatible at the cut-offs reviewed.

Trench data are very minor and while shows slightly lower grades, it reflects the lower grades found at surface, rather than bias in the dataset. Trenches tend to reflect the grade tenor of nearby holes.

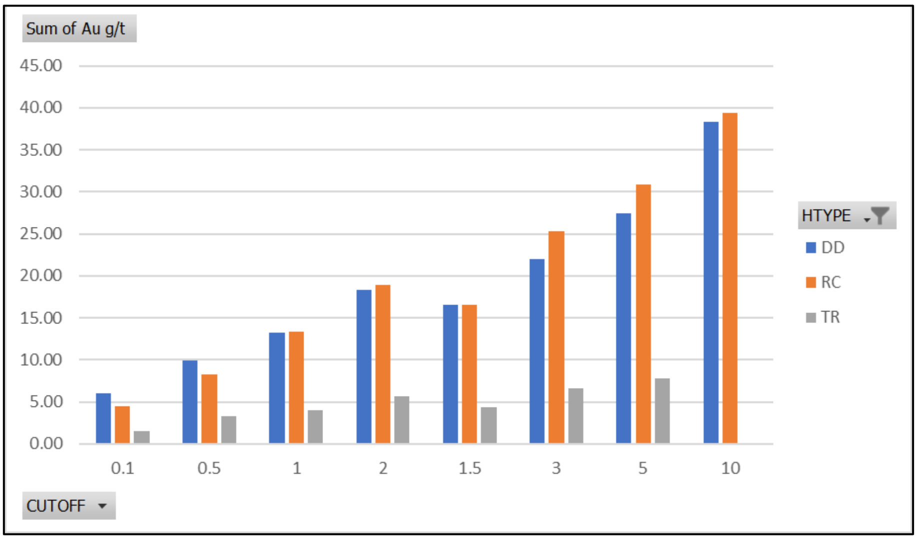


Figure 26: Comparison of hole types at a range of cut-offs

In addition to the review of the data, a test estimate was run using only DDH data, and using the combined dataset to assess any impact if any, of using the combined dataset. The result was within 1% on metal (2,500 ounces Au) with the DDH only scenario reporting a slightly lower tonnage, and higher grade than the combined dataset. This, alongside the data review, supported the decision to proceed using RC, DDH and trench data in the MRE.

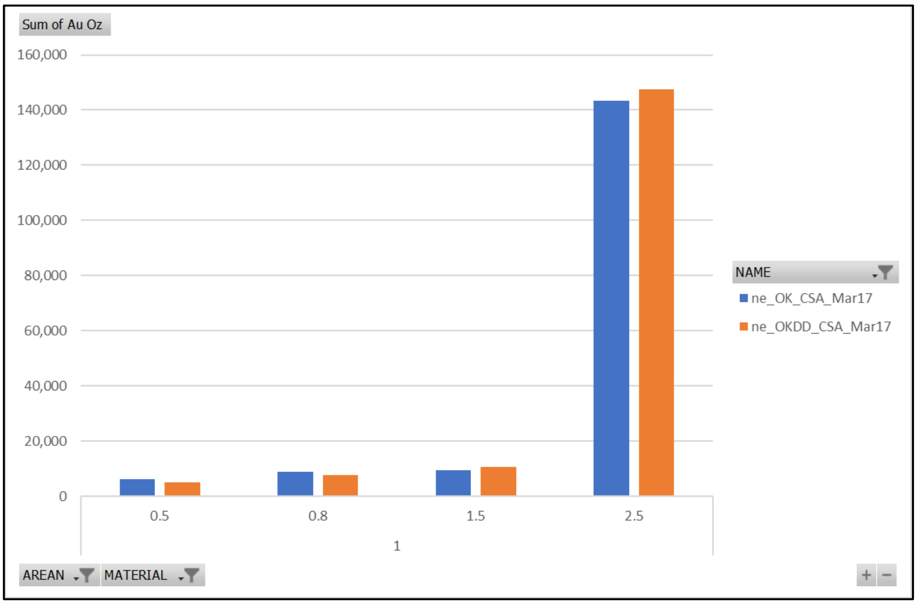


Figure 27: Comparison of estimation scenarios at a range of cut-offs; combined dataset (blue) and diamond only (orange)

12.4 Limitations

Limitations of the data verification completed include:

- There was no drilling or sampling happening during the site visit. Therefore, it was not possible to verify drilling, trenching and sampling practices as they were happening. Verification was restricted to discussions with geologists and reviews of the 2013 Scoping Study and 2016 Internal Report.
- No drill database tables were available for review during the site visit. These were subsequently provided to CSA Global and underwent the data verification outlined in Section 12.1.
- No written procedures were available for review. Reports were reviewed to enable CSA Global to take an informed decision on the quality of data available.

12.5 Conclusions

Subject to the limitations listed above, and based on the outcomes of the above data verification undertaken, as well as discussions with NMC geologists; CSA Global considers the drill hole data for the Balogo project to be sufficiently reliable for Mineral Resource estimation and associated downstream work.

13 Mineral Processing and Metallurgical Testing

13.1 Introduction

The project is planning to upgrade the diminishing ore grades at the current Youga operation by supplementing the feed material with higher grade material from the Netiana mine. This will be trucked 154 km and dumped at the site. The new feed will comprise up to 50,000 tonnes of Netiana material per quarter going forward, equivalent to a target blend proportion of 10% in 2017 and 16% in 2018.

13.2 Youga Processing Plant

13.2.1 Youga Ore Characteristics

Eight Youga core samples and three composite pit samples were tested at Mintek (1999 and 2004), and three core samples at Hazen Research at a previous date (Ref. HGC Cement and Mineral Processing Technologies – Section 15.4). These reported:

- An average Bond Ball Mill Work Index of 15. 9, with a range of 17.1 to 19.4 kWh/t.
- Potential gravity circuit recoveries of 40 - 50%.
- Leach Extractions ranged from 88 to 96% on 10 samples of gravity tailing, after 24 hours and at low CN consumptions (<0.04kg/t).
- The mineralogical report indicated the gold occurrence as both coarse and fine liberated particles between 40 and 100 microns in size, and as fine inclusions (1 – 12 microns) in pyrite.

This was the basis of design for the Youga process plant, which commenced operation in 2008. The flowsheet comprises of a three-stage crushing, and single stage ball milling circuit; a gravity section recovering between 25 and 33% of the gold present, from a portion of the current cyclone underflow recycle stream; the cyclone overflow reports to a single stage cyanide leach and five stage integral carbon-in-leach circuit (CIL). Loaded carbon is removed from the first CIL tank and the gold recovered in a 'Zadra' elution system with gold recovery by electrowining, while the leached product from the CIL circuit is pumped to the tailings management facility (TMF).

Production highlights for the operation since commencement of production in 2008 are shown in Table 26 below:

Table 26: Youga Mine Operation - Production History (Client Communication).

Year	Tonnes Milled	Au Recovery	Oz Produced
2008	663,334	92.8%	45,264
2009	871,740	91.6%	65,648
2010	891,202	93.6%	82,405
2011	940,168	93.8%	87,266
2012	1,012,829	93.6%	89,022
2013	1,005,876	92.4%	89,448
2014	990,852	91.0%	76,561
2015	1,058,326	89.8%	68,407
2016	1,119,197	88.5%	44,403

The operating performance since production start-up has confirmed the pre-production recovery assumptions (both gravity and leach extractions). The reduction in production in 2015/16 was due to the significant decrease in milled head grade, which was partially offset by an increase in plant throughput.

13.2.2 Netiana Ore Characteristics

SGS Program, December 2012 (Coffey Mining, Netiana Scoping Study)

Gravity and Leach tests were completed on a series of six samples at this time. Two samples each of Oxide, Transition and Fresh ores were tested, with Gold and Tellurium head assays as outlined in Table 27.

Table 27: Netiana Ore Test results, December 2012

Ore Type	Sample Number	Au Grade, g/t	Te, g/t
Oxide	BRC - 217 03551	17	47
	BRC - 071 03554	186	663
Transition	BRC - 218 03552	155	461
	BRC - 112 03555	17	68
Sulphide	BRC - 220 03553	5.8	16
	BRC - 196 03556	2.5	11

In addition to a 'gold occurrence' leach program on each of the samples, diagnostic mineralogy (Townend, Letter Report for SGS and Coffey Mining) identified the tellurium occurrence as substantially associated with Bismuth minerals, containing only very fine (<10 micron) particles of gold.

Tellurium minerals are normally 'refractory' (i.e. non-leachable in cyanide), with the corresponding reductions in recovery of most of the gold associated with these minerals. However, the identification that only minor proportions of the gold present in the feed are associated with the 'tellurides' indicates their presence should not be detrimental to conventional leaching in cyanide.

Summary results of the program were:

- Standard comminution tests were completed on two lithological types (quartz and diorite), with the Bond Ball Mill Index being measured at 14.83 and 14.69 kWh/t respectively. These are below those currently being treated at Youga.
- Gravity Testing – each sample was ground to 850, 250 and 75 microns, and subjected to standard laboratory tests which showed recoveries (averaged for the six samples) of 34, 21 and 50 for the three grind sizes respectively. While not optimised, these results confirm the requirement for the inclusion of a gravity recovery circuit in the flowsheet for these ore types.
- Leach testing on the gravity tails. Extractions of greater than 90% were achieved after the standard 24 hours leach time in all samples. The timed/sample curve also showed that extraction continued after the 24-hour period.
- One sample of the gravity concentrate was subjected to intensive leaching (ICN), with the result that >98% of the gold was leached after 72 hours.

13.2.3 SGS Testing on 12 Samples – August 2014 (HGC Cement and Mineral Processing Technologies, pages 98 – 103)

The results of the leaching tests on 'as received' samples undertaken on twelve Netiana core samples are summarised in Table 28. Gravity tests were not carried out for this series, however the relatively high leach extractions achieved after 24 hours do not indicate the presence of significant coarse gold. It is noted that leaching was not complete after 24 hours, and an additional 1 to 2% extraction was achieved by doubling the leach time to 48 hours.

Table 28: SGS Testing on 12 Samples – August 2014 (HGC Cement and Mineral Processing Technologies, pages 98 – 103)

	Calculated Head Grades			**Residue Grades**		**Au Extraction, %**	
Sample No	Au g/t	Te, g/t	S%	Te, g/t	S%	24	48
105452	4.06	27.6	3.18	21.1	3.39	84.8	85.6
105453	10.8	16.6	0.11	14.6	0.08	93.2	93.5
105454	8.73	13.4	1.24	11.9	0.08	97.1	97.5
105455	12.2	15.3	0.06	15.8	0.03	92.2	93.5
105456	1.25	9.81	0.64	9.52	0.06	86.4	89.1
105459	36.4	97.7	1.43	>100	1.35	93.3	93.8
105463	2.54	17	0.02	33.3	<0.01	91.1	92.7
105466	1.23	12.5	0.11	10.3	0.07	88.1	89.5
105468	3.69	15.4	2.7	15.5	2.29	87.1	89.2
105470	86.43	61.2	6.03	>100	5.38	75.2	82.8
105471	10.77	39.6	5.49	>101	5.13	91.6	92.2
105473	1.63	40.1	0.03	20.9	0.03	92.1	93.5
Ave.	14.98	30.52	1.75	16.99	1.63	89.35	91.08

As shown in the table, the Netiana samples contain significant levels of Tellurium (average of 30 g/t) and Sulphur (average of 1.75% S) compared with <1 g/t and 0.23% S for the Youga ore samples respectively. As discussed in section 13.2.2, gold leaching extractions from Telluride and Sulphide minerals can be relatively low, depending on the gold occurrence within the minerals. However, the measured gold leach extractions averaged ~89% after 24 hours, and are only slightly below those obtained from the Youga samples.

Table 29: Extractions based on head grades

		Average		
Sample No	**Au g/t**	**Au g/t**	**24**	**48**
105466	1.23			
105456	1.25			
105473	1.63	1.4	88.9	90.7
105463	2.54			
105468	3.69			
105452	4.06	3.4	87.7	89.2
105454	8.73			
105471	10.77			
105453	10.8			
105455	12.2			
105459	36.4	15.8	93.5	94.1

The extractions obtained on the various head grade ranges tested shows these increase with the higher grades, and 94 % has been used in the production schedule.

The presence of Te and S (and the base metals Cu and Zn) are more significant in the Netiana samples tested than those recorded for Youga. Seven of the twelve samples tested had copper head grades between 0.10 and 0.27% Cu (average of 0.16% Cu), and these resulted in greater than 100 ppm of copper in the leached solutions. Cyanide consumption were correspondingly high (2.7 kg/t) after 24 hours leaching. The five remaining samples with a head grade of 0.04% Cu consumed marginally less cyanide

(1.8 kg/t) for the same leach time. Overall consumption tested to be considerably higher than that for the Youga samples and actual ore treated in 2016 (0.35 – 0.4kg/t, Client Communication slide#8).

14 Mineral Resource Estimates

14.1 Overview

The following section describes the methodology, parameters and key assumptions regarding the preparation of the MRE for the Balogo Project. The only area of the Balogo Project which contain enough detailed geological and drill data is the Netiana deposit.

The estimation of Mineral Resources at Netiana was undertaken by CSA Global.

The MRE work has been based on interpretations from assaying, and geological logging. Apart from the initial sample data preparation and intermediate spreadsheet processing, all the Mineral Resource interpretation, modelling, and estimation work was conducted using CAE Mining's Datamine Studio software package.

The deposits have been evaluated regarding the Universal Transverse Mercator (UTM) grid (Zone 30 North in WGS 84 datum), and all directional references in the Mineral Resource estimates portions of this report are per this grid.

14.2 Database Validation

14.2.1 Data Summary

CSA Global was initially provided with a series of Microsoft Excel files containing the Balogo data. These comprised collar, downhole survey, lithology, recovery, density and assay data. The drill data was imported into SQL and Datamine Studio RM™ software for validation.

14.2.2 Data Loading and Validation

Data was loaded into a SQL database which has constraints and triggers, ensuring that only validated data was included in the database. During the validation process issues were highlighted and corrected where possible. Exports of the clean, verified data were provided to the resource geologists for the MRE.

The list below includes the validation and checks completed:

- Collar table: Incorrect coordinates (not within known range), duplicate holes.
- Survey table: Duplicate entries, survey intervals past the specified maximum depth in the collar table, overlapping intervals, abnormal dips and azimuths.
- Geotechnical table: Overlapping intervals, missing collar data, negative widths, geotechnical results past the specified maximum depth in the collar table.
- Geology, Sample and Assay tables: Duplicate entries, lithological intervals past the specified maximum depth in the collar table, overlapping intervals, negative widths, missing collar data, missing intervals, correct logging codes, duplicated sample IDs, missing samples (assay results received, but no samples in database), missing analyses (incomplete or missing assay results).
- QAQC material: A QAQC report is generated in which results of the standards (CRMs), blanks and duplicates are reviewed (includes client QAQC material and lab checks where applicable).

There are 360 drillholes in the collar file and all of them had coordinate data. Eight holes were excluded from the dataset due to uncertainty over their reliability that was highlighted during a twin drilling program undertaken by NMC. Poor QAQC results highlighted certain RC holes as being potentially unreliable. These holes are presented in Table 30.

Table 30: Excluded drillholes

BHID
BDH001R
BRC071
BRC113
BRC112R
BRC111
BRC042
BRC217
BRC068

A summary of the drillhole data used is shown in Table 31 and a plan view of the drillhole collars is shown in Figure 28.

Table 31: Drillhole summary – Netiana and Netiana South East

Area	Hole type	No. of drill holes	Metres	No. of assays
Netiana	DDH	196	29,561	14,572
	RC	92	11,686	11,621
	TR	10	1,538	1,041
	Subtotal	**298**	**42,785**	**27,234**
Netiana South East	DDH	6	468	134
	RC	48	5,871	5,860
	Subtotal	54	6,339	**5,994**
TOTAL		**352**	**49,123**	**33,228**

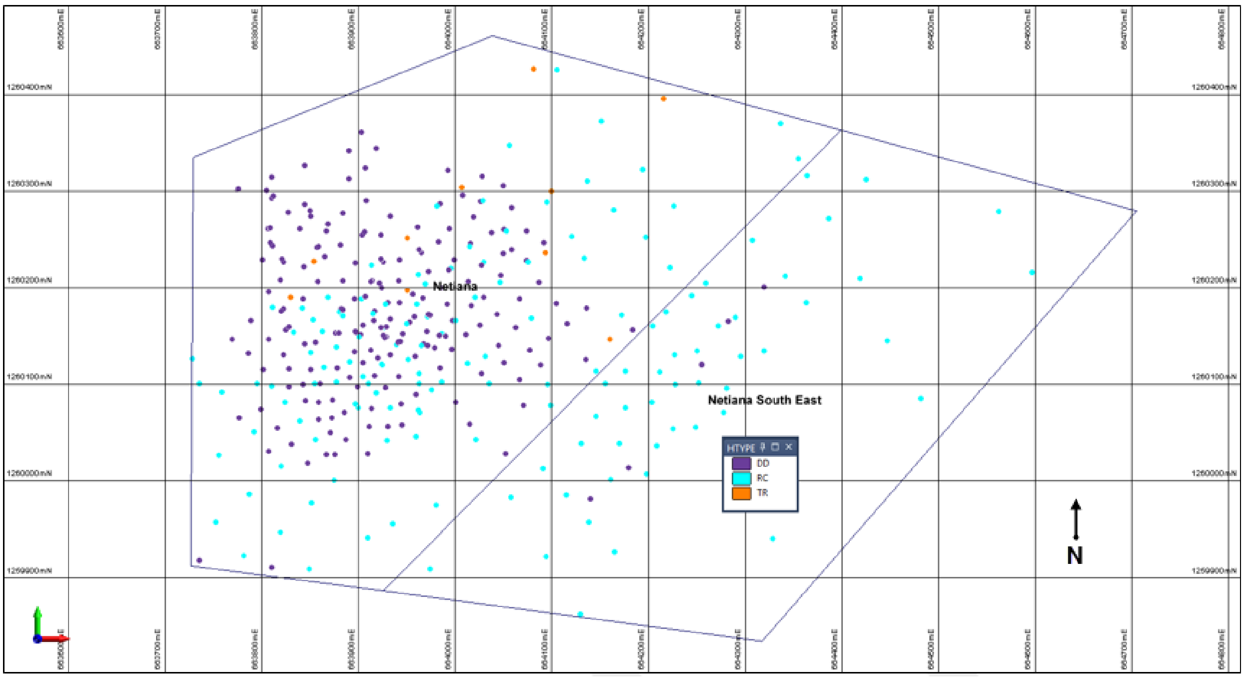


Figure 28: Plan view of drillhole collars

Source: CSA Global, 2017

Within the raw assay file (USE=1), there are 66 absent Au values and 616 intervals that have not been sampled (gaps) representing 13,046 m. The absent values were left as absent during the data load, as these are represented lost or missing sample intervals as communicated by NMC. The gaps were filled and Au values for those samples were set to half the detection limit to a value of 0.0005 g/t Au.

The CSA Global data load validations showed the following:

- 24 collars with no assays
- 173 collars with no logged lithology
- One duplicated density measurement.

14.3 Density

Dry in-situ bulk density (BD) measurements for the Netiana deposit were estimated using the water immersion method. The density is calculated with the following formula:

$$Density = \frac{Weight\ in\ air}{Weight\ in\ air\ -\ Weight\ in\ water}$$

Table 32 summarises the BD statistics for samples measured within mineralisation zones, with an outlier where BD was greater than 4 t/m^3 were excluded (one sample). The high BD for fresh material is characteristic of the mineralisation host which is diorite. The BD for oxide and transitional were considered very high for these material types. Core photos were reviewed to assess what type of material had been measured for BD. It was clear that the samples tend to be very competent pieces of core, and are not necessarily representative of the softer, less dense parts of these zones. Therefore, to apply these values to non-fresh material would likely overestimate tonnages of the resource.

To mitigate this, CSA Global reviewed the codes assigned to the OXIDE field in the geological logging. These are numeric codes used to characterise intensity of weathering within what is defined as oxide. Codes of one represents a low intensity of weathering, two is moderate and three is high. These codes were verified through the review of core photos for several holes.

The geological logging was flagged with the oxidation surfaces and mineralisation wireframes and the proportion of weathering intensity was used to derive a length weighted BD for oxide. Table 33 summarises the BD derived for use in the MRE.

Table 32: In-situ dry bulk densities

OXIDN	No. of samples	In-situ dry bulk density (t/m³)			
		Minimum	Maximum	Mean	Median
Laterite/Overburden					
Oxide	116	1.96	3.10	2.60	2.60
Transitional	151	2.06	3.20	2.77	2.82
Fresh	530	2.36	3.38	2.88	2.91

Table 33: Length weighted in-situ dry bulk densities used in MRE

OXIDN	In-situ dry bulk density (t/m³)
Laterite/Overburden	2.00
Oxide	2.14
Transitional	2.35
Fresh	2.86

Additional dry BD data should be collected routinely during grade control and/or mine production and reviewed to build up a useful bulk density database of values that can be used to improve the confidence of the tonnage factors for the oxide/transitional portions of the Netiana deposit. The methodology and measurements should be verified and standardised in the MRE.

14.4 Geological and Mineralisation Modelling

14.4.1 Mineralisation Model

CSA Global created mineralisation solids through cross sectional-interpretations and implicit modelling using Micromine™ software. These interpretations were based on logged lithologies and chemical Au assays. NMC provided two oxidation surfaces representing base of complete oxidation ("boco") and top of fresh rock ("tofr"), which CSA Global verified matched the oxidation logging.

The mineralisation is hosted within strongly silicified, strongly sheared zones with pyrite. In the absence of silica or pyrite, grades are elevated e.g. 1 g/t to 5 g/t. Massive quartz veins with visible gold are also mineralisation hosts.

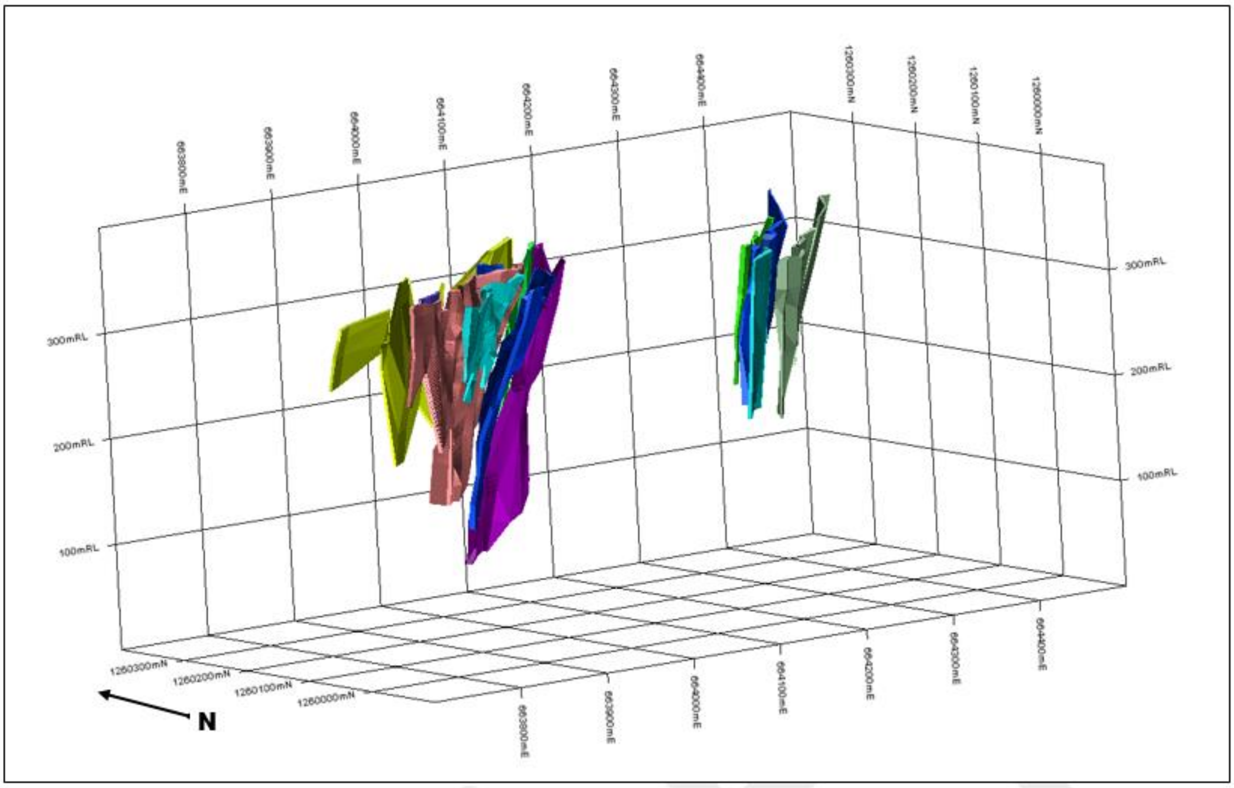


Figure 29: 3D view of the Netiana and Netiana SE mineralisation domains (looking north)

14.4.2 Oxidation Model

The modelled weathering profiles comprise a bottom of oxidation ("boco") surface and a top of fresh ("tofr") surface (Figure 30).

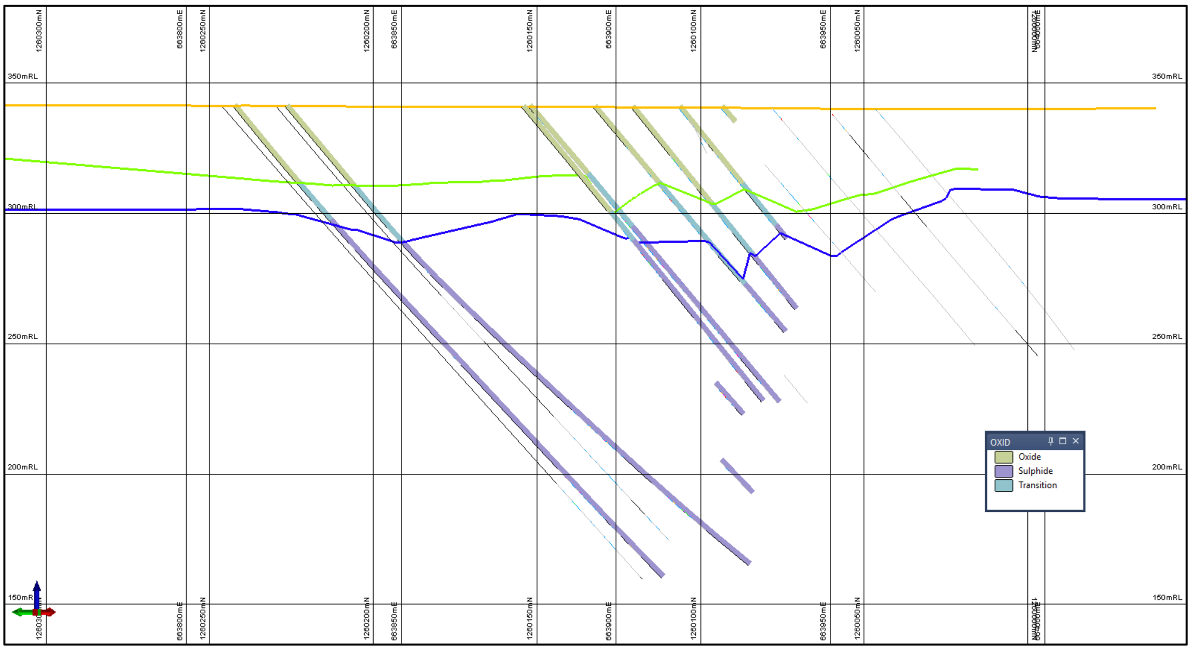


Figure 30: Section view of the Netiana weathering profiles and drillholes; oxide (green), transitional (blue) and fresh (purple)

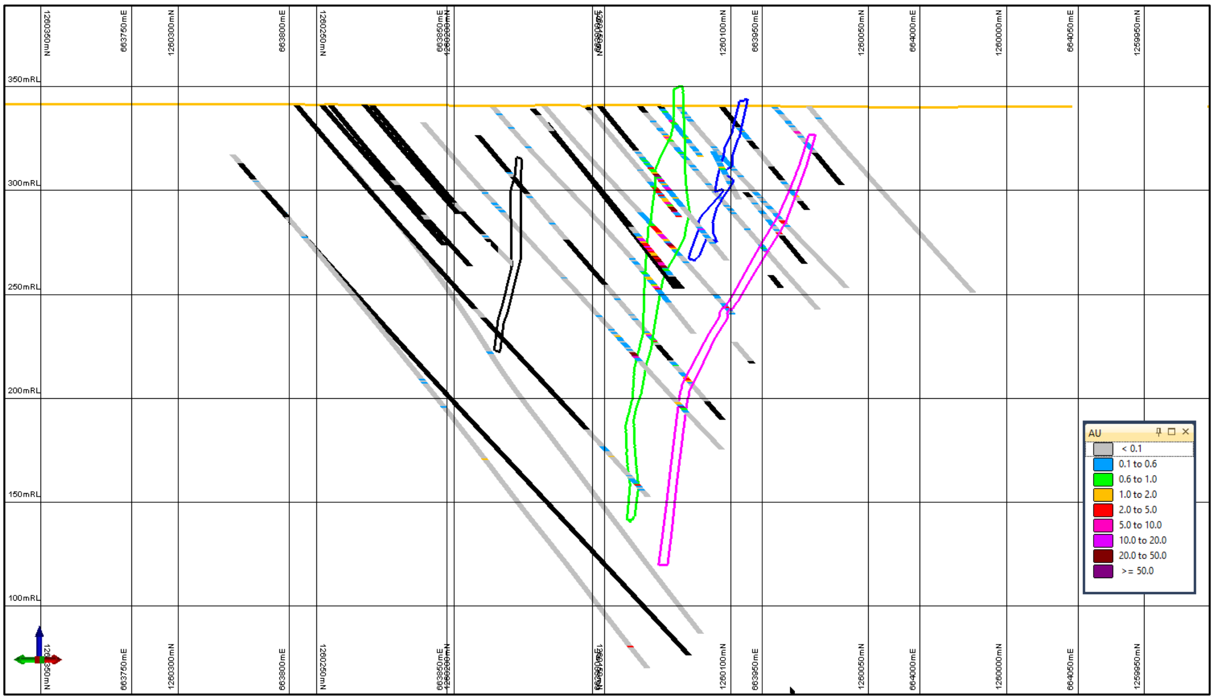


Figure 31: Section view of the Netiana mineralisation and drillholes; mineralisation (black, green, purple, pink), drillholes coloured by Au grade

14.5 Statistical Analysis

14.5.1 Summary

Before undertaking the estimate, the data was first analysed to understand how the estimate should be accomplished. Drillhole samples were statistically reviewed, and variograms were calculated to determine spatial continuity for Au.

The statistical analysis was carried out by CSA Global using Datamine Studio RM™, Supervisor v8.4™ and GeoAccess Professional™ software packages.

14.5.2 Boundary Analysis

Boundaries are either classified as "hard" or "soft". Where hard boundaries are abrupt, they generally represent a sharp geological contact such as the edge of a quartz vein on its host rocks and where the boundary marks the margin of metal grade. A soft boundary is a gradational one, and represents a gradual reduction in grade, for example as one would find in the alteration zone of a copper porphyry system.

It is important to understand the nature of the boundaries between domains. If domain boundaries are gradational, then data from the adjacent domains should be used during estimation (soft boundary). If there are distinct grade boundaries, then estimation should be restricted to only use the data within that domain (hard boundary).

Contact analysis for Au g/t between the oxidation zones within the modelled mineralisation was carried out to assess the nature of the domain boundaries by graphing the average grade with increasing distance from the domain boundary. The contact analysis results for the Netiana deposit is shown in Figure 32. Based on the results of the boundary analysis between oxidation zones, the boundary was interpreted to be soft.

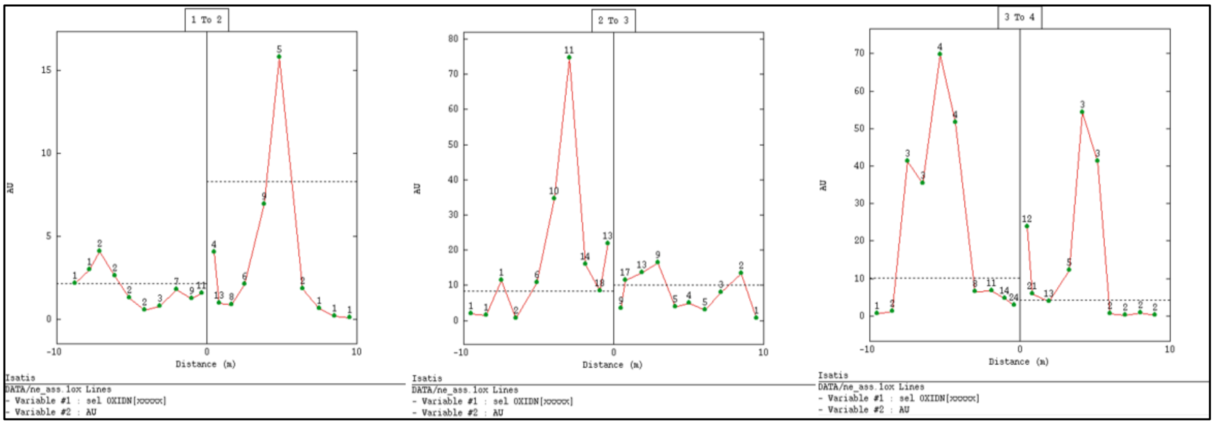


Figure 32: Oxidation boundary test graph for Netiana – Au g/t overburden/laterite vs. oxide, oxide vs. transitional, transitional vs. fresh

The boundary between mineralisation and waste has been interpreted to be hard. Waste at Netiana was not estimated. It was assigned a default value of 0.001 g/t Au for mine planning purposes.

14.5.3 Naïve Statistics

Drillhole coding is a standard procedure which ensures that the correct samples are used in statistical and geostatistical analyses, and grade interpolation. The mineralised envelope was used to select drillhole samples. The samples were coded by geological domain and oxidation state.

A summary of the domain codes, used to distinguish the data during geostatistical analysis and estimation, is shown in Table 34 below.

Table 34: Data field flagging and description

Field	Code	Description
OXIDN	100	Laterite/Overburden
	200	Oxide
	300	Transitional
	400	Fresh

Field	Code	Description
MINZON	10 – 18	Mineralisation in Netiana
	21 – 24	Mineralisation in Netiana SE
	99	Waste
AREAN	1	Netiana
	2	Netiana South East (SE)

14.5.4 Compositing

Assays that fall within the modelled mineralisation envelope were downhole composited to 1 m prior to statistical review, top-cutting, variography and grade estimation. Sampling was undertaken at other sampling lengths, with the dominant sampling lengths being 1 m and 2 m. The dominant as well as the mean length within the mineralisation envelope is 1 m, with insignificant splitting likely. As such, compositing to 1 m was selected as the most appropriate for use in estimation (Figure 33). Residuals less than 0.85 m and greater than 1.15 m were excluded to limit any potential bias in the sample support during kriging. Fourteen samples were removed. The composite statistics, per MINZON, are given in Table 35 and shown in Figure 36.

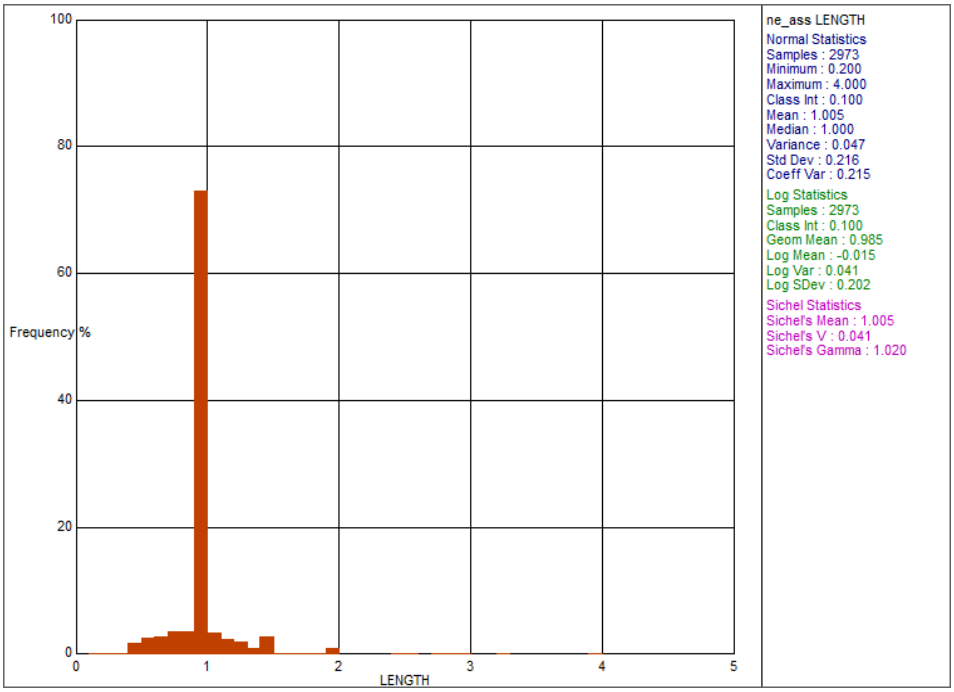


Figure 33: Histogram of sample lengths for mineralisation

Table 35: Composite statistics – MINZON

Parameter	11	12	13	14	15	16
Number	993	39	306	537	283	129
Minimum	0.001	0.001	0.001	0.001	0.001	0.001
Maximum	783.00	0.97	64.51	477.05	231.00	10.17
Mean	10.06	0.27	1.08	6.00	2.15	0.54
Median	0.59	0.27	0.29	0.42	0.27	0.14
Standard deviation	46.71	0.23	4.32	32.57	15.52	1.39
Coefficient of variation	4.65	0.83	4.01	5.43	7.22	2.59

Parameter	17	18	21	22	23	24
Number	252	69	133	221	40	94
Minimum	0.001	0.001	0.008	0.024	0.037	0.021
Maximum	3.69	19.73	9.05	10.16	1.93	6.24
Mean	0.22	0.63	0.50	0.58	0.72	0.62
Median	0.02	0.18	0.30	0.43	0.52	0.26
Standard deviation	0.50	2.38	0.89	0.78	0.53	0.89
Coefficient of variation	2.29	3.79	1.79	1.35	0.74	1.45

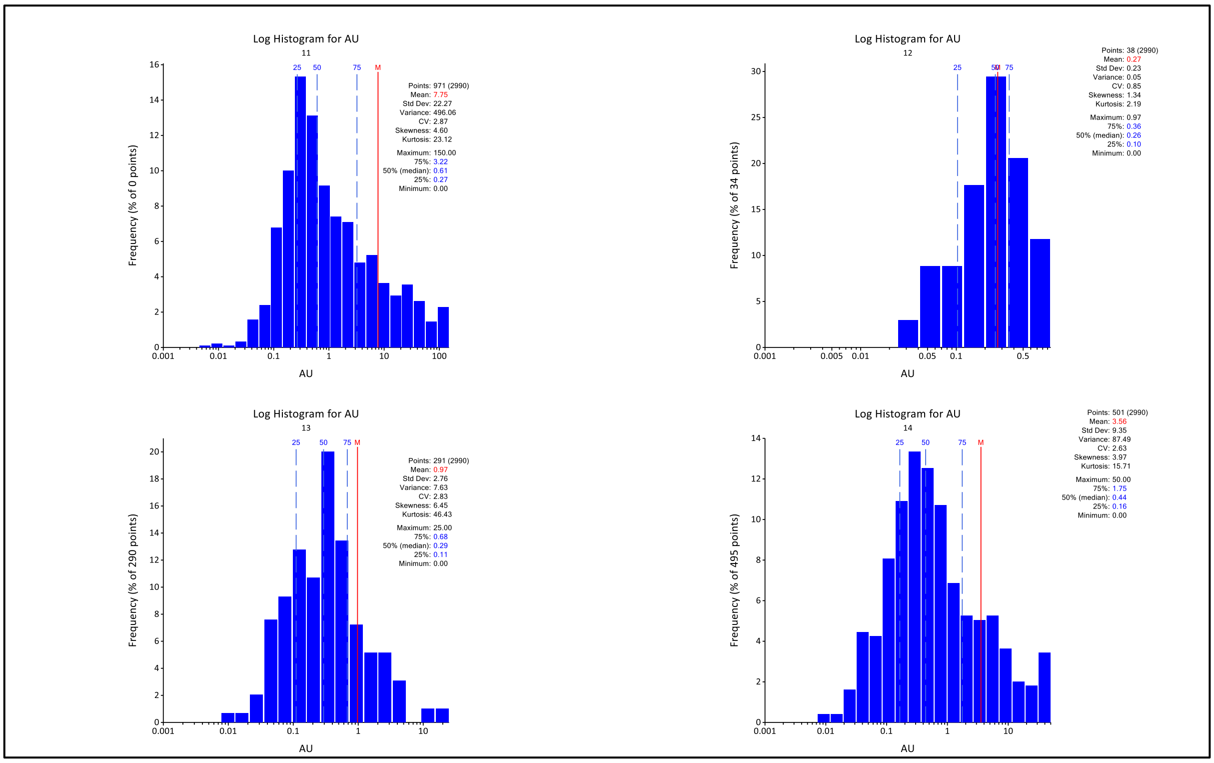


Figure 34: Log histograms for mineralisation domains 11 to 14

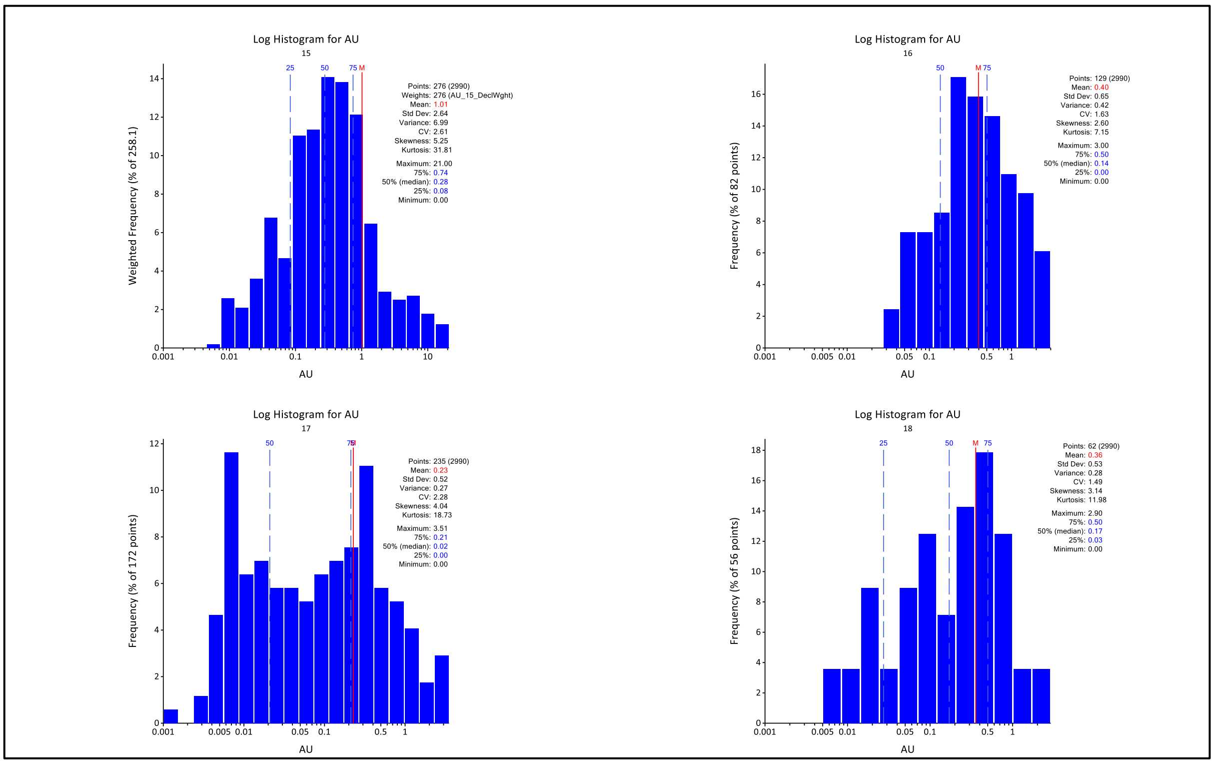


Figure 35: Log histograms for mineralisation domains 15 to 18

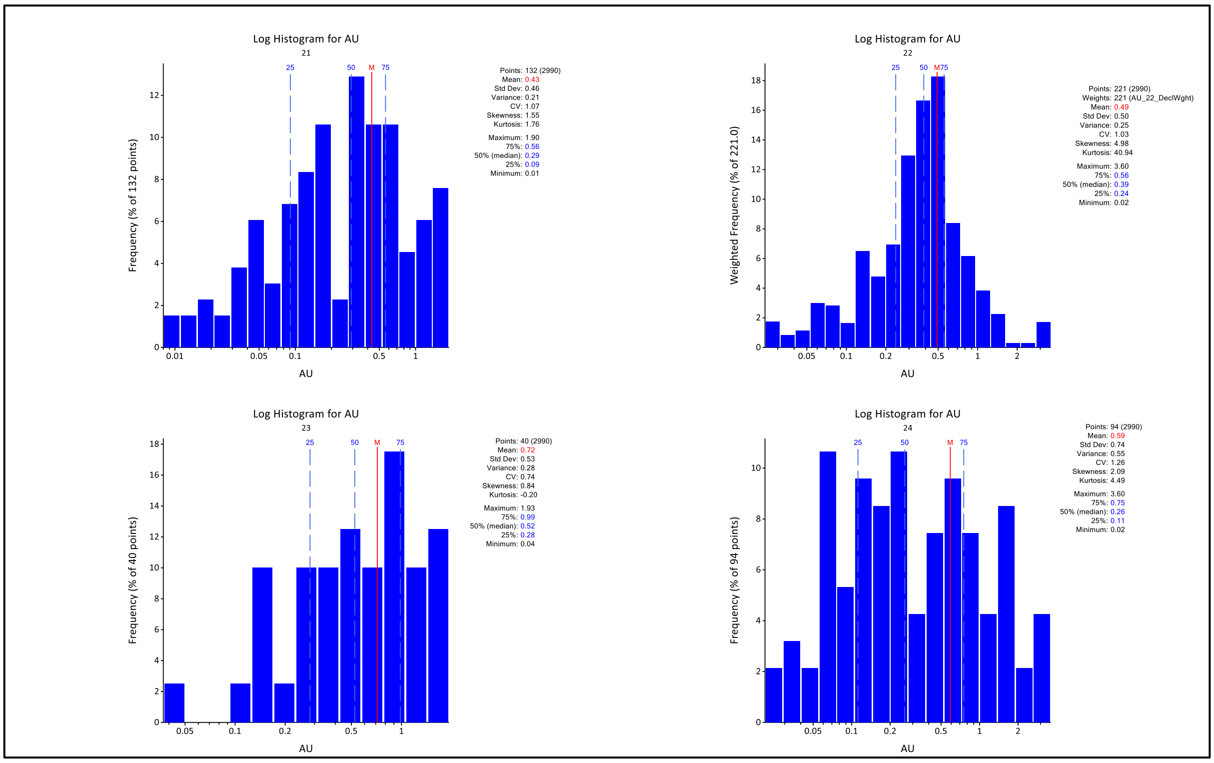


Figure 36: Log histograms for mineralisation domains 21 to 24

14.5.5 Variography

The variograms were modelled for Au on 1.0 m composites within the estimation domain. Nuggets were obtained from the downhole variograms, where the lag was set equal to the composite length of 1.0 m. Normal scores transform was used for modelling the variograms.

To ensure there was no bias introduced by splitting the limited number of 2 m intercepts to 1 m, the variograms modelled from 1 m data were tested on 2 m composites and were found to be compatible.

The semi-variograms were well structured, with a high nugget and moderate ranges. The variogram was back transformed prior to estimation and is presented in Figure 37 and Figure 38. The variogram parameters are detailed in Table 36.

Variograms were modelled on the largest domain in Netiana (MINZON 11) and the largest domain in Netiana SE (MINZON 22). The variogram from MINZON 11 was applied to all domains within Netiana, while the variogram modelled for MINZON 22 was applied to all domains within Netiana SE.

Outliers were removed from the dataset to prevent their undue influence on the variogram model. For MINZON 11, composites with a gold grade exceeding 150 g/t Au were excluded, while in MINZON 22, composites with a gold grade exceeding 5 g/t Au were excluded.

Table 36: Variogram parameters

MINZON	Datamine orientation (ZXY)	Nugget	Structure 1		Structure 2	
			Partial sill	Range	Partial sill	Range
11	-110˚	0.33	0.27	10.5	0.40	39.5
	0˚			16		27.5
	100˚			7		9
22	84.56˚	0.35	0.27	18	0.38	57.5
	-75.89˚			22.5		49.5
	-135.44˚			5		10

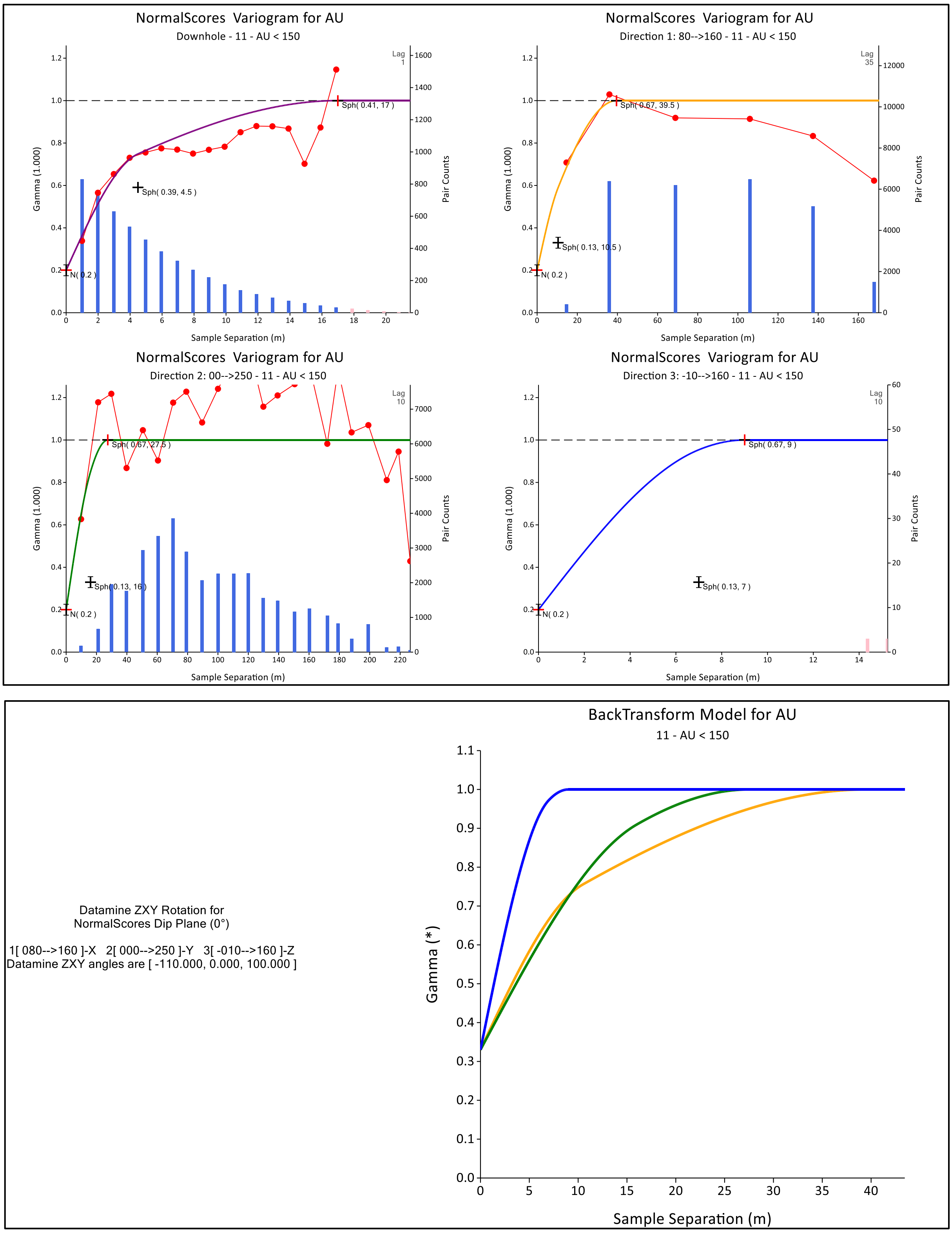


Figure 37: Experimental variogram (normal score) and back-transformed models used for Au g/t estimation (Netiana)

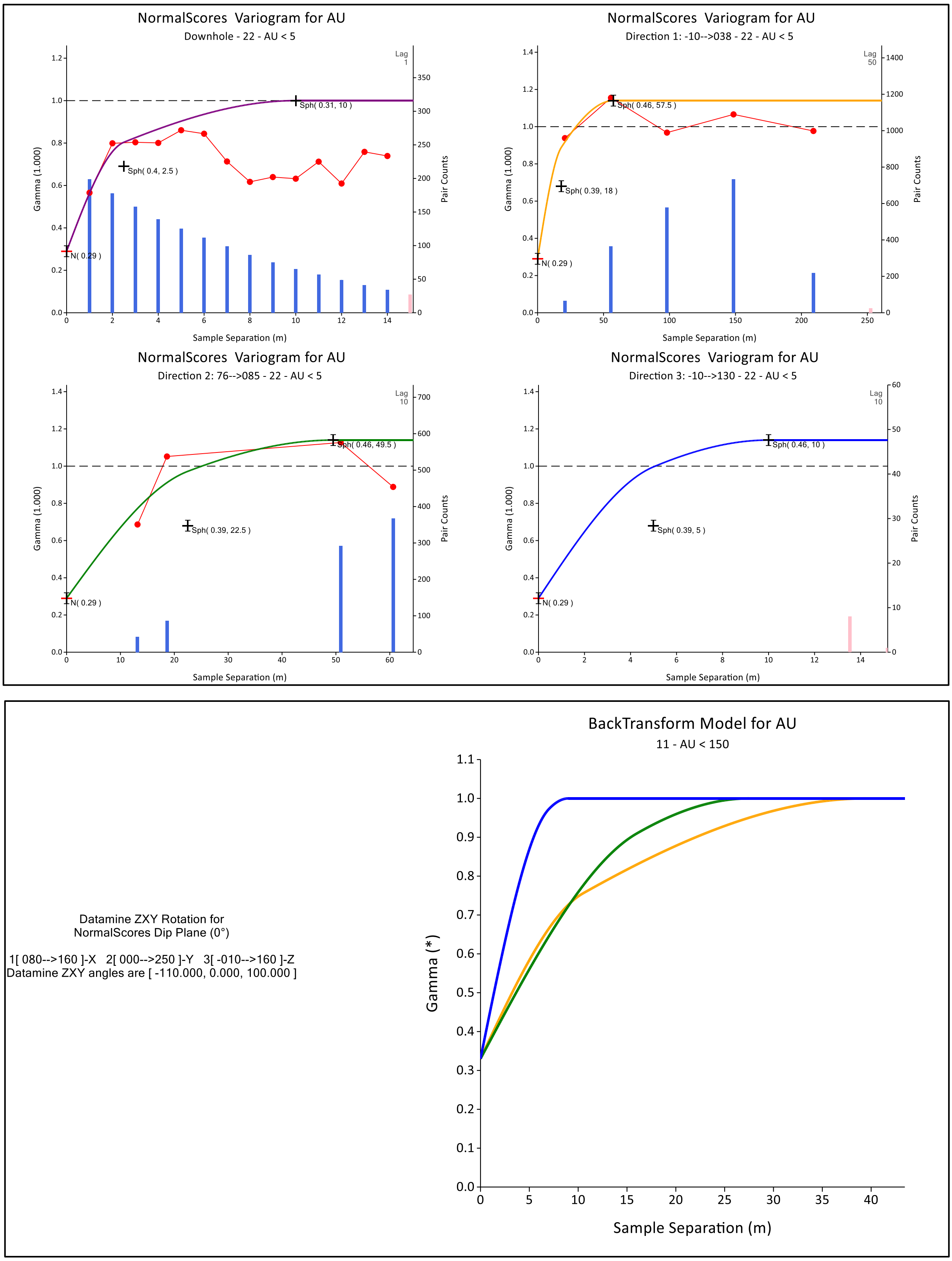


Figure 38: Experimental variogram (normal score) and back-transformed models used for Au g/t estimation (Netiana SE)

14.5.6 Top-cut Analysis

Grade cutting (top cutting) is generally applied to data used for grade estimation to reduce the local high grading effect of anomalous high-grade samples in the grade estimate. In cases where individual samples would unduly influence the values of surrounding model cells, without the support of other high-grade samples, top cuts are applied. These top cuts are quantified according to the statistical distribution of the sample population.

Cutting strategy was applied based on the following:

- Skewness of the data.
- Probability plots.
- Spatial position of extreme grades.

Histograms and probability plots were reviewed for Au within the estimation domain to determine the top cut. A summary of the top-cuts applied are shown in Table 37. The top cuts for certain domains had a substantial effect on the metal, however, these values cannot be considered as representative and must be controlled in the estimate.

Table 37: Top-cut statistics

MINZON	Top cut	No. cut	Data	Cut mean	Uncut mean	% Metal cut
11	150.00	10	953	7.88	10.47	-25%
13	25.00	1	290	0.99	1.12	-12%
14	200.00	2	488	5.39	6.63	-19%
15	21.00	3	276	1.07	2.20	-51%
16	3.00	4	121	0.41	0.56	-27%
18	2.90	1	55	0.39	0.69	-44%
21	1.90	3	132	0.44	0.50	-13%
22	3.60	1	221	0.55	0.58	-5%
23	3.60	1	94	0.59	0.62	-5%

14.6 Block Model and Grade Estimation

14.6.1 Summary

Estimation of Au grade was carried out using Ordinary Kriging (OK) into parent cell panels. Grade was estimated into all estimation domain blocks (MINZON 10–18 and MINZON 21–24), using available data within the mineralisation domain. The parameters used for grade estimation are summarised in Table 38. These are discussed in the sections below.

The MRE was completed by CSA Global using the Datamine Studio RM™ software package.

Table 38: Estimation parameters summary

MINZON	Attribute	Description
All	Parent cells (block sizes X, Y, Z)	5 mN x 5 mE x 5 mRL
	Estimation method	Ordinary Kriging
	Discretisation	5 x 5 x 1
	Search range multiplier	Pass 2 – 1.5x; Pass 3 – 3x
	Maxkey	3
11 – 18	Minimum number of samples	9 (3 on search pass 3)
	Maximum number of samples	20
	Search ranges	26 m x 18 m x 6 m
21 – 24	Minimum number of samples	9
	Maximum number of samples	16
	Search ranges	39 m x 33 m x 7 m

14.6.2 Block Modelling

The model was cut to below the topographic surface. A model prototype with parent cells of 5 mN x 5 mE x 5 mRL, with sub-celling to 2.5 mN x 2.5 mE x 1 mRL, was created. The model prototypes parameters, including cell dimensions and model extents, are shown in Table 39.

Panel sizes for grade estimation (5 mN x 5 mE x 5 mRL) were based on the following:

- Results of Kriging Neighbourhood Analysis (KNA).
- The density of the drilling grids.
- The geometry of the mineralisation.
- The mining parameters.

Table 39: Netiana – block model dimensions

Axis	Origin	Model extent (m)	No. of blocks	Block dimension (m)
Easting	663600	664600	200	5
Northing	1259800	1260600	160	5
RL	0	350	70	5

14.6.3 Kriging Neighbourhood Analysis

KNA on the 1 m composites was used to optimise the parent cell sizes and to determine the optimal theoretical estimation and search parameters during kriging.

The following was reviewed for each of the variables per selected domain:

- Slope and Kriging Efficiency (KE) statistics for a well-informed block for different block sizes.
- On choosing a block size (5 m x 5 m x 5 m, X x Y x Z), optimum minimum and maximum samples were chosen. The maximum was set at the lowest number of samples from which consistently good slopes and KE could be derived. The minimum was defined as the lowest minimum from which moderate to good statistics could be derived.
- On choosing the minimum/maximum samples, search ellipse ranges were defined. The quality of the statistics was least sensitive to this parameter. The ranges chosen approximated the ranges of the first structure of the variogram.
- Negative weights were reviewed at each stage to ensure the parameters chosen were not leading to excessive negative weights.
- Discretisation was defined at 5 x 5 x 1 (X x Y x Z).
- Maximum number of samples allowed per each individual drillhole, per estimate, was set to three.

The KNA results show that the search parameters and block size selected are suitable for use in the MRE and adequately take drill spacing, geology and practicality into account. The plots with the selected estimation parameters are shown in Figure 39.

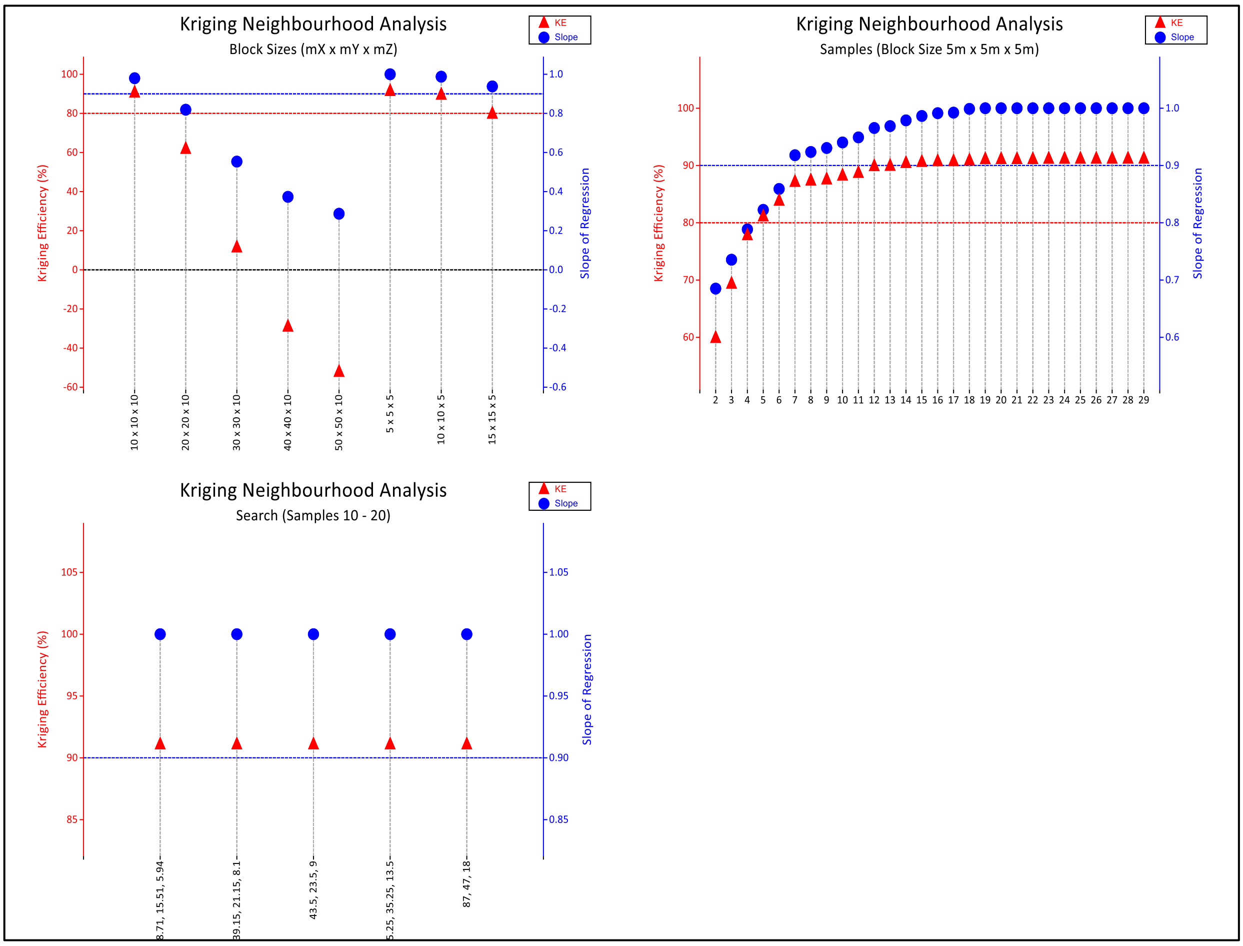


Figure 39: KNA block size, samples, search and discretisation results (MINZON 11)

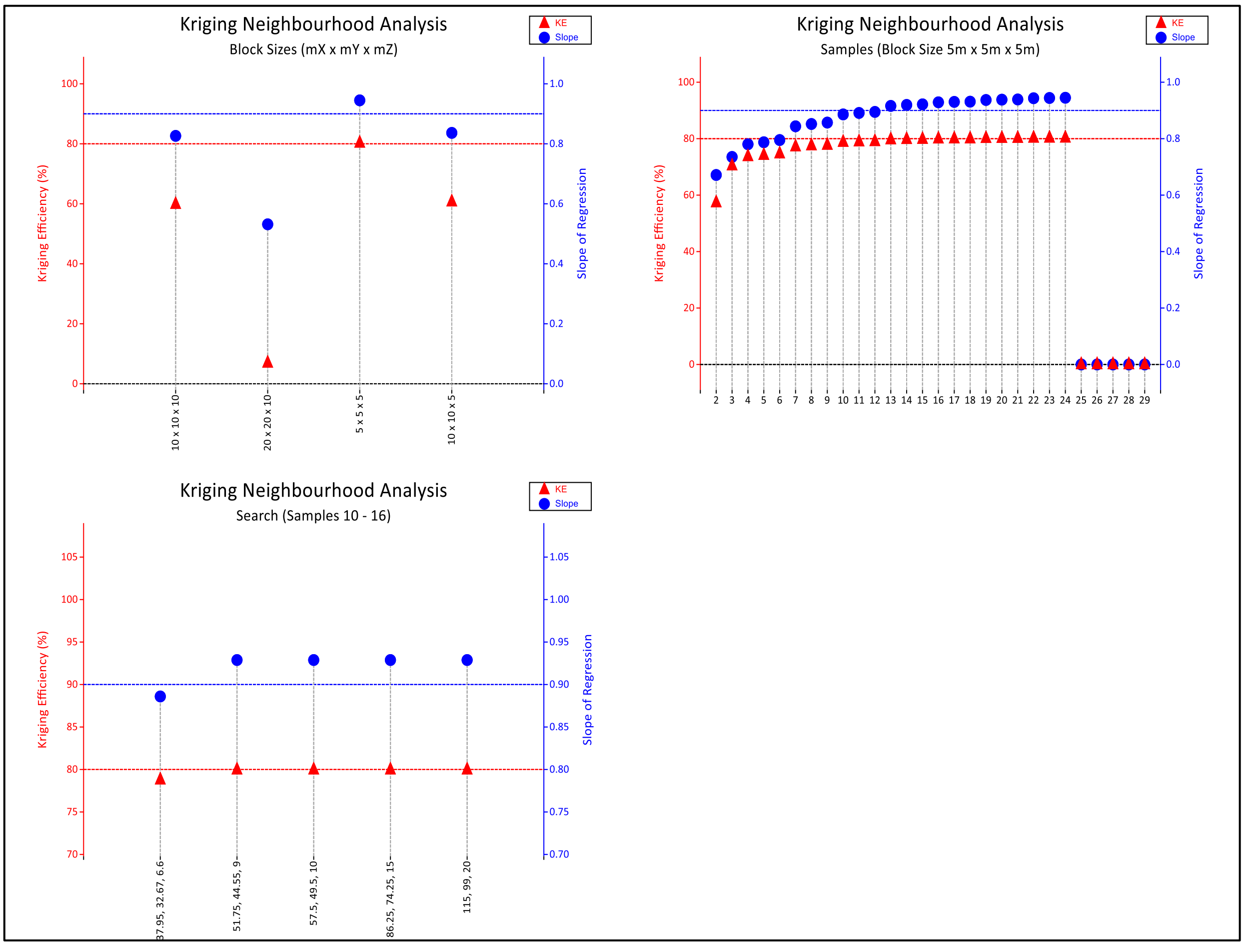


Figure 40: KNA block size, samples, search and discretisation results (MINZON 22)

The number of composites used for the Au grade estimation is presented in Table 40. The modelled variogram parameters together with the selected estimation panel size and number of samples was used to determine the appropriate search ellipse for the primary search pass. This is also presented in Table 40.

The search ranges for search pass 1 were set to two-thirds the variogram ranges. Search pass 2 ranges were set to the variogram range, and search pass 3 was expanded to three times the variogram range to estimate all blocks to a low level of confidence.

Table 40: Search neighbourhood parameters for Au

MINZON	Search ranges (SVOL1)			Search ranges (SVOL2)			Search ranges (SVOL3)			Composites	
	1	2	3	1	2	3	1	2	3	Min.	Max.
11 – 18	26	18	6	39	27	9	78	54	18	9	20
21 – 24	39	33	7	59	50	11	117	99	21	9	16

14.6.4 Grade Estimation

Estimation of Au grade was carried out using OK into parent cell panels. Zonal control with a hard boundary between mineralisation domains was used during the grade estimation. MINZON was used as the estimation domain for Netiana.

A three-phased search pass was applied and the orientation of the search ellipsoid was aligned to the modelled variography. This process involves the estimation being performed three times, where two expansion factors are used. During each individual estimation run this factor increases the size of the search ellipse used to select samples. This method ensures that blocks which are not estimated and populated with a grade value in the first run, are populated during one of the subsequent runs (Pass 1 37% / 21%, Pass 2 34% / 43% and Pass 3 29% / 35% at Netiana/Netiana SE).

The mineralised areas were estimated using dynamic anisotropy. This process allows the rotation angles for the search ellipsoid to be defined individually for each cell in the models, so that the search ellipsoid is aligned with the axes of mineralisation. This therefore requires the rotation angles to be interpolated into the model cells, which in turn requires a set of angles as the input data file for interpolation. The dip and dip direction of the major axis of anisotropy were defined by digitising strings in section perpendicular to the strike of the mineralisation. These strings were converted to points that contained the true dip and dip direction of the mineralisation and stratigraphy (fields SANGLE1_F and SANGLE2_F in the search parameter files).

The rotations of the modelled variograms aligned with the dominant orientation of the mineralisation. Therefore, the variogram also used dynamic anisotropy.

14.7 Validation

Validation of the block model was completed by comparing input and output means. Several techniques were used for the validation. These included visual validation of block grades, global grade comparisons and swath plots.

14.7.1 Visual Validation

The block model was visually reviewed section by section to ensure that the grade tenor of the input data was reflected in the block model (example shown in Figure 41). Figure 42 shows a 3D view of the block model for Au g/t. Generally, the estimates compare well with the input data. The grades in the composites align with the corresponding grades in the block models.

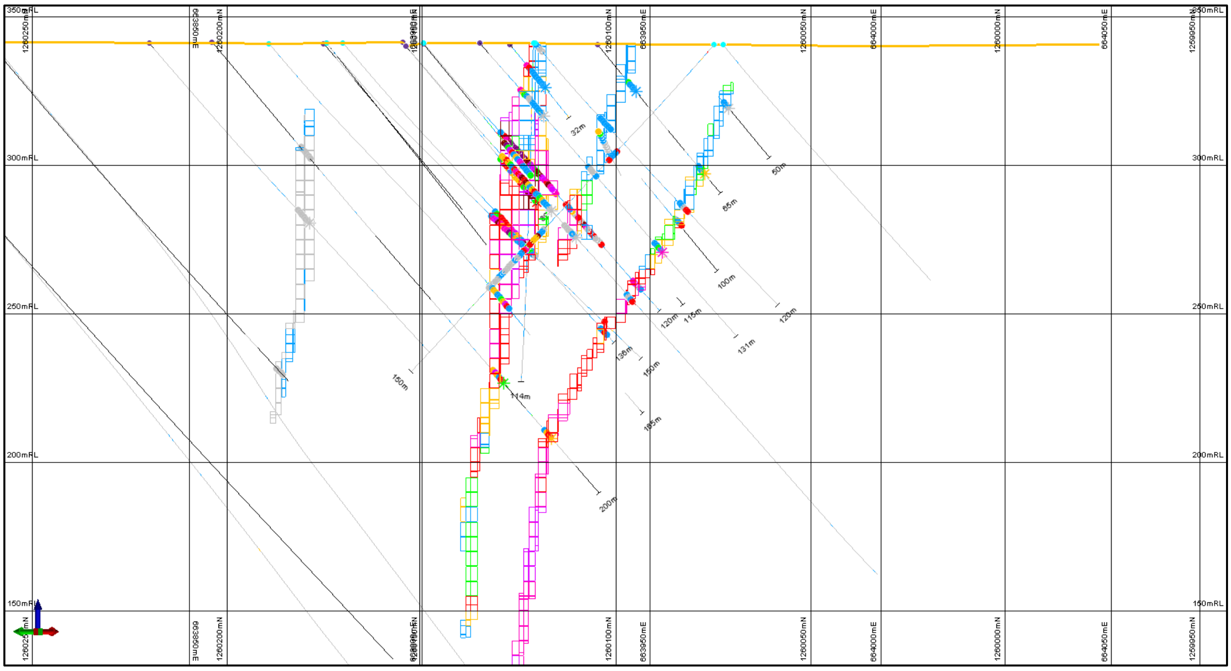


Figure 41: Section view – grade model and composites

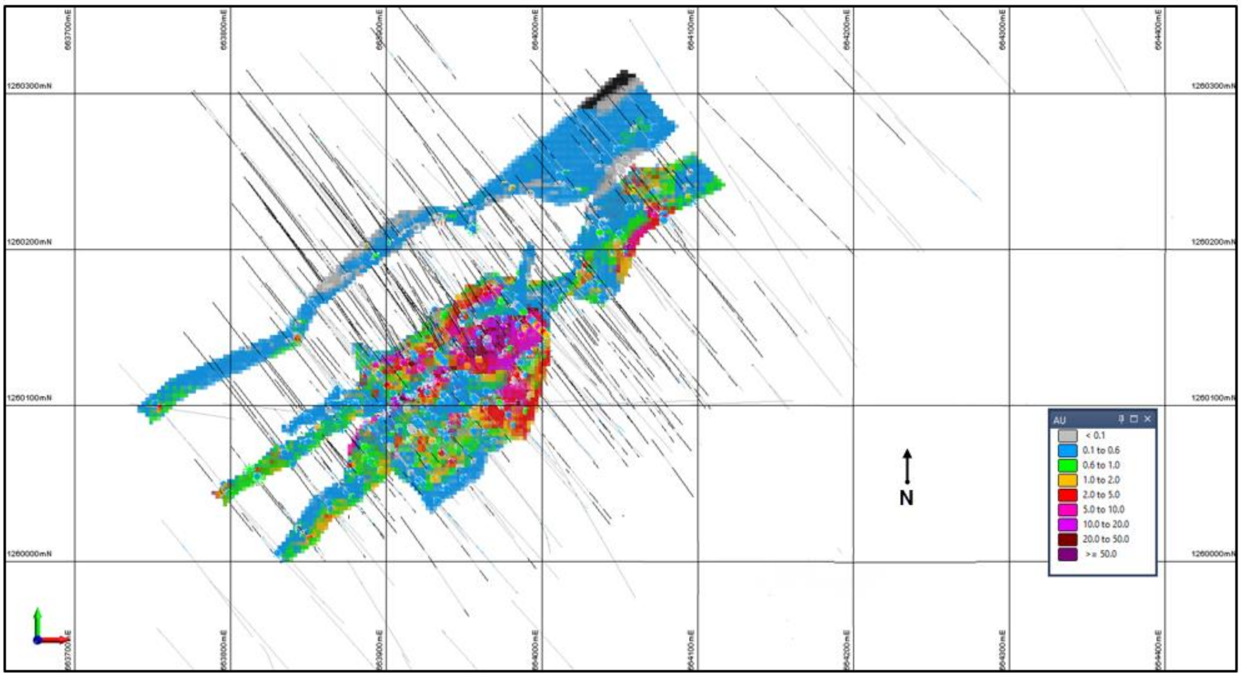


Figure 42: 3D view – grade model and composites

14.7.2 Statistical Validation

De-clustering

Irregular sampling of a deposit, most commonly through infill drilling or drilling in multiple orientations, causes clustering. Clustering results in a disproportionate distribution grades (usually high grades from the infill drilling) in the dataset used for statistical analysis. Mixed populations in the histogram can create a bias when comparing the drillhole sample distribution with the block model distribution (which is de-clustered) and distort the calculated mean grades and variance.

Different ways of de-clustering data each give different results. These include interactive filtering, polygonal de-clustering, nearest neighbour de-clustering and cell-weighted de-clustering.

The method used for geostatistical analysis and validation for the current MRE update is nearest neighbour de-clustering to the block size, whereby the sample nearest the centroid of the block is used.

The OK grade estimation process is an efficient way of data clustering, therefore de-clustering before grade estimation is not necessary. De-clustering of the input data gives a good indication of the global mean. It is used in the validation of the estimate (comparison of the means). De-clustering was applied to remove any bias due to drill spacing prior to validation.

Results

The global statistics of Au g/t were reviewed and the results are reported below in Table 41.

All estimated block grades are included. The mean grades in the estimated model block parent cells were compared to the raw, as well as the de-clustered, top-cut composite data.

Generally, the model validates well, and domains were reviewed individually. Domains with the largest number of samples are presented in Table 41.

Table 41: De-clustered mean grade comparison for Au g/t

Domain	Block Au g/t	De-clustered composite Au g/t	% Difference
11	6.02	6.88	-12%
14	3.66	3.62	1%
15	0.95	1.05	-10%
22	0.51	0.47	9%

14.7.3 Swath Plots

Swath plots were created as part of the validation process, by comparing the model parent block grades and input composites (de-clustered and top cut) in spatial increments. These plots display northing, easting and elevation slices throughout the deposit (Figure 43 to Figure 46).

The plots show that the distribution of block grades honours the distribution of input composite grades. There is a minor degree of smoothing evident, which is to be expected from the estimation method used, with block grades showing lower overall variance. The general trend of the composite grades is reflected in the block model.

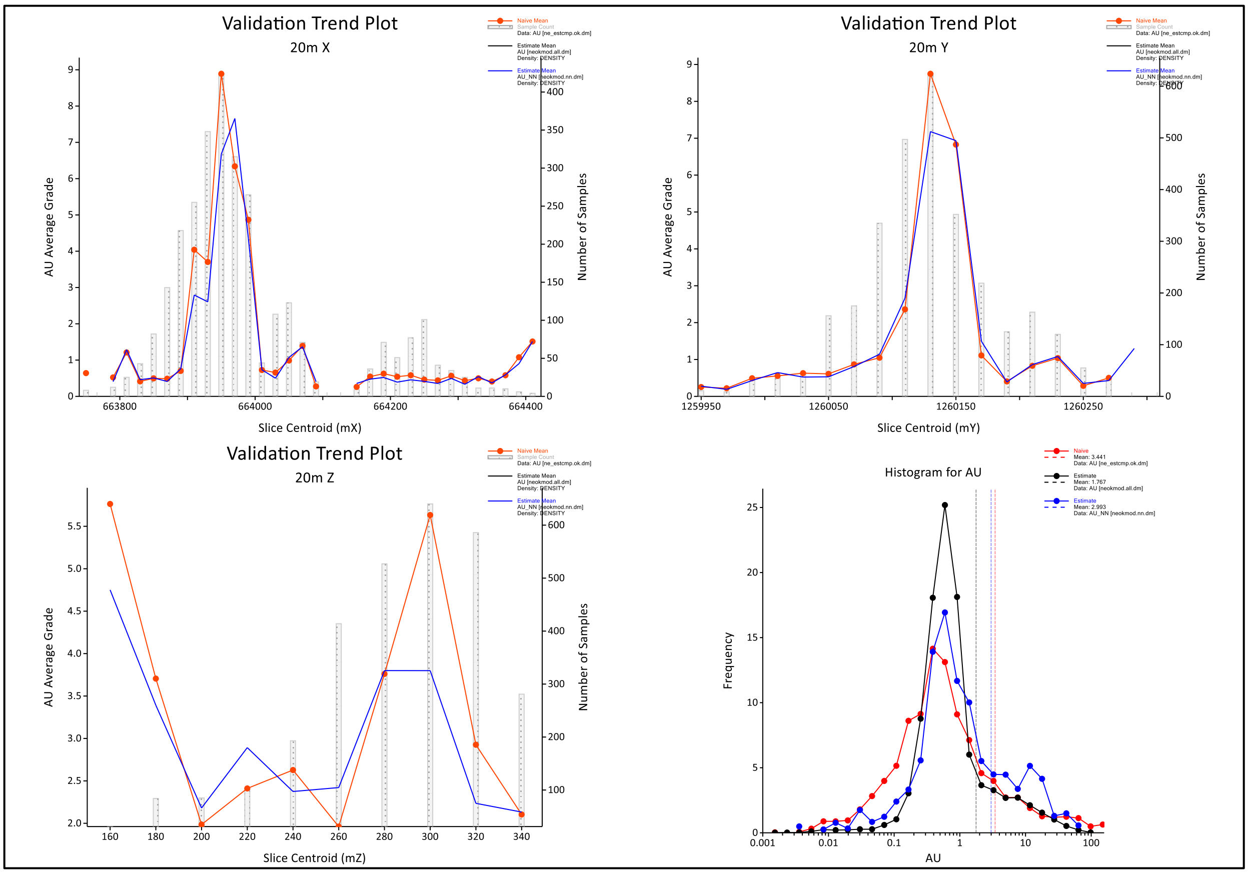


Figure 43: Swath plot for Au g/t (global)

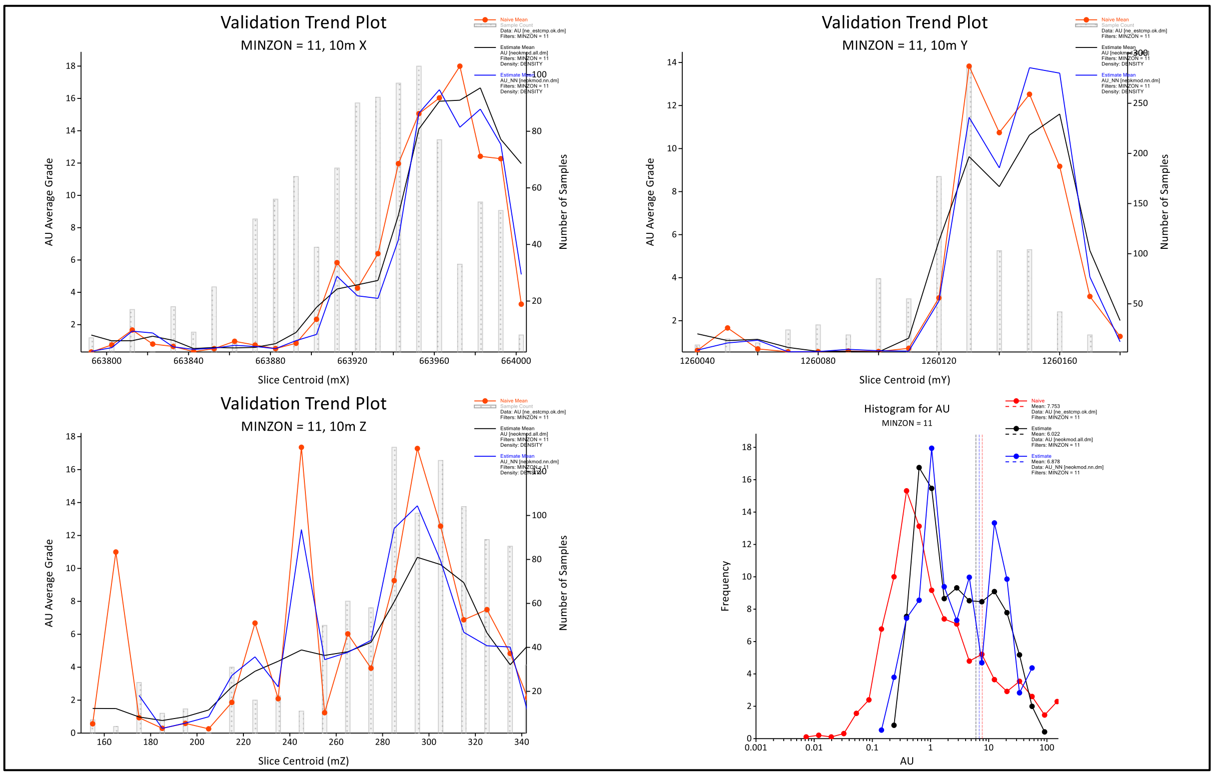


Figure 44: Swath plot for Au g/t (MINZON 11)

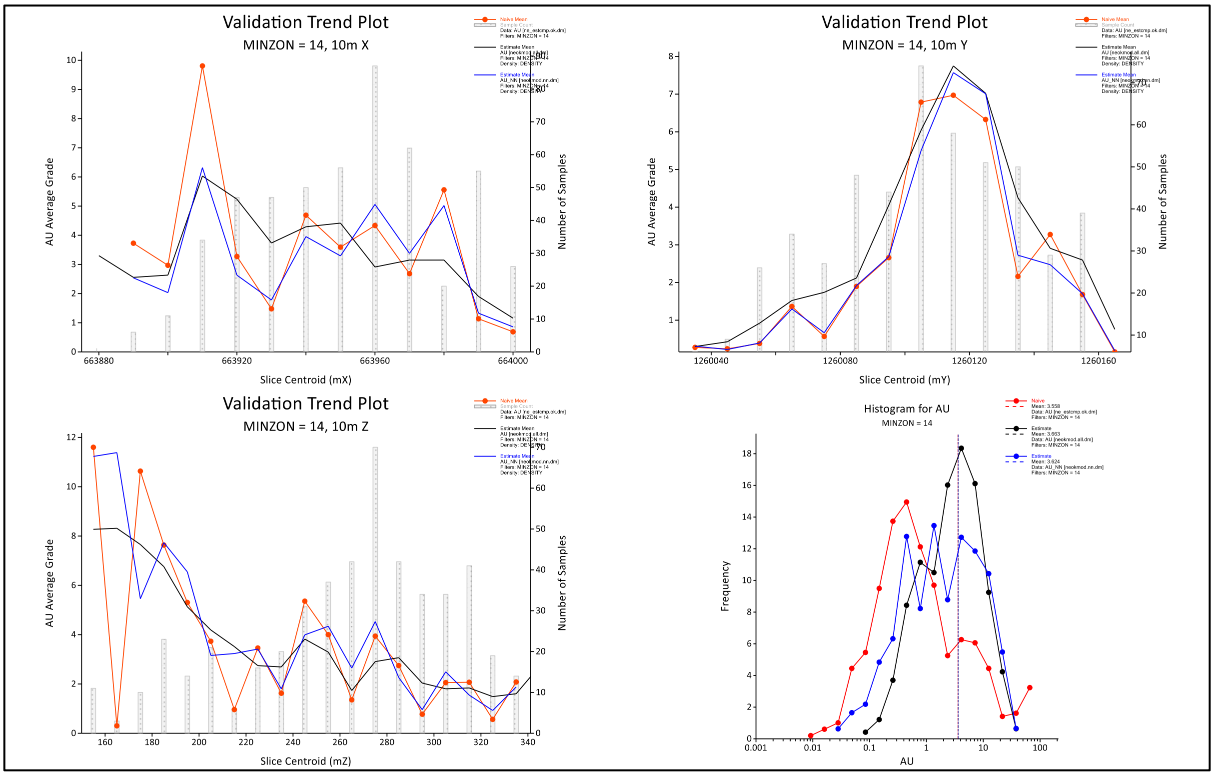


Figure 45: Swath plot for Au g/t (MINZON 14)

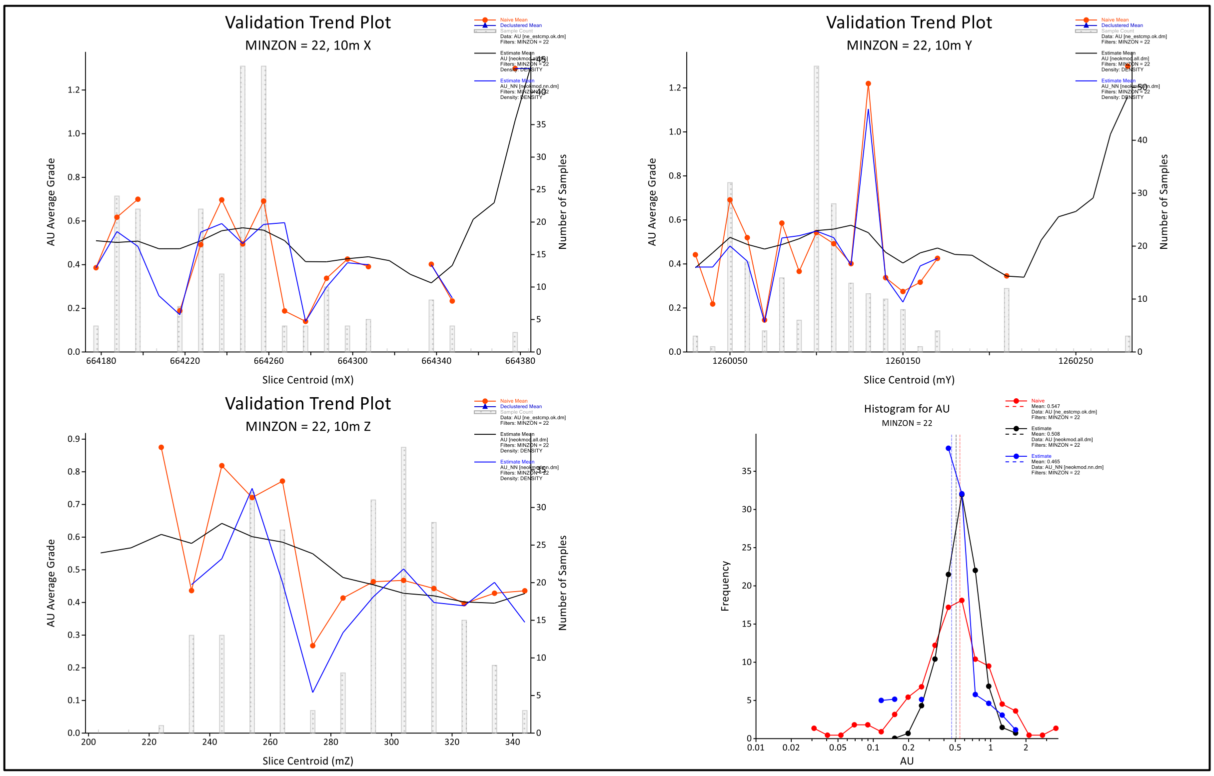


Figure 46: Swath plot for Au g/t (MINZON 22)

14.8 Mineral Resource Classification

The Mineral Resource has been classified as Indicated Mineral Resources and Inferred Mineral Resources under the guidelines of the CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council, and procedures for classifying the reported Mineral Resources were undertaken within the context of the Canadian Securities Administrators NI 43-101.

The classification level is based upon an assessment of geological understanding of the deposit, geological and mineralisation continuity, drillhole spacing, quality control results, search and estimation parameters and an analysis of available density information.

The Netiana deposit shows continuity of mineralisation within reasonably well-defined geological constraints. Drillholes are located at a nominal spacing of 10 m on 10 m sections extending out to 25 m to 50 m on the peripheries of the deposit. The drill spacing is sufficient to allow the geology and mineralisation zones to be modelled into coherent wireframes for each domain. Reasonable consistency is evident in the orientations, thickness and grades of the mineralised zone.

Validation of the historical drill holes, particularly in relation to the exact collar locations and assay results, and the availability of QAQC information, has allowed for the classification of Indicated Mineral Resources. Indicated Mineral Resources were classified using a set of cookie-cut strings digitised around continuous parts of the deposit where the slope of regression exceeded 0.70 and blocks were estimated in either the first or second search pass, i.e. up to the limit of the variogram range. Portions of the Mineral Resources of six domains have been classified as Indicated Mineral Resources – 11, 13, 14, 15, 17 and 18.

The MRE has been constrained by a pit shell produced in NPV Scheduler based on assumptions regarding operating costs, metallurgical recovery based on appropriate test work and a gold price of US$1,500. While Netiana is located more than 100 km from the Youga Plant, the assumptions around transport costs assume a closer plant location, to support the criteria that a Mineral Resource must have the potential for eventual economic extraction. No part of Netiana SE was within the constraining resource shell, and therefore, no part of it can be considered having the potential for eventual economic extraction. Netiana SE has no Mineral Resources.

A summary of the classification codes applied in the model are shown in Table 42. Figure 47 and Figure 48 show the classified block model in plan and 3D view.

Table 42: CLASS field and description

RESCAT	Description
1	Measured Mineral Resource (None defined)
2	Indicated Mineral Resource
3	Inferred Mineral Resource
9	Unclassified – Estimated Material outside a Whittle US$1500 gold price and assumptions regarding operating costs and recoveries pit shell, as well as all waste material not estimated

Table 43: Input parameters for resource shell (NPVS)

Parameter	Units	Value
Price	US$/troy oz	1,500
Selling cost	%	4.0
Mining cost	US$/t mined	2.2
Process cost	US$/t ore	17
G&A	US$/t ore	5.0
Transport cost	US$/t ore	2.0
Pit slope angle	degrees	45
Mining recovery	%	95
Mining dilution	%	5
Process recovery	%	91

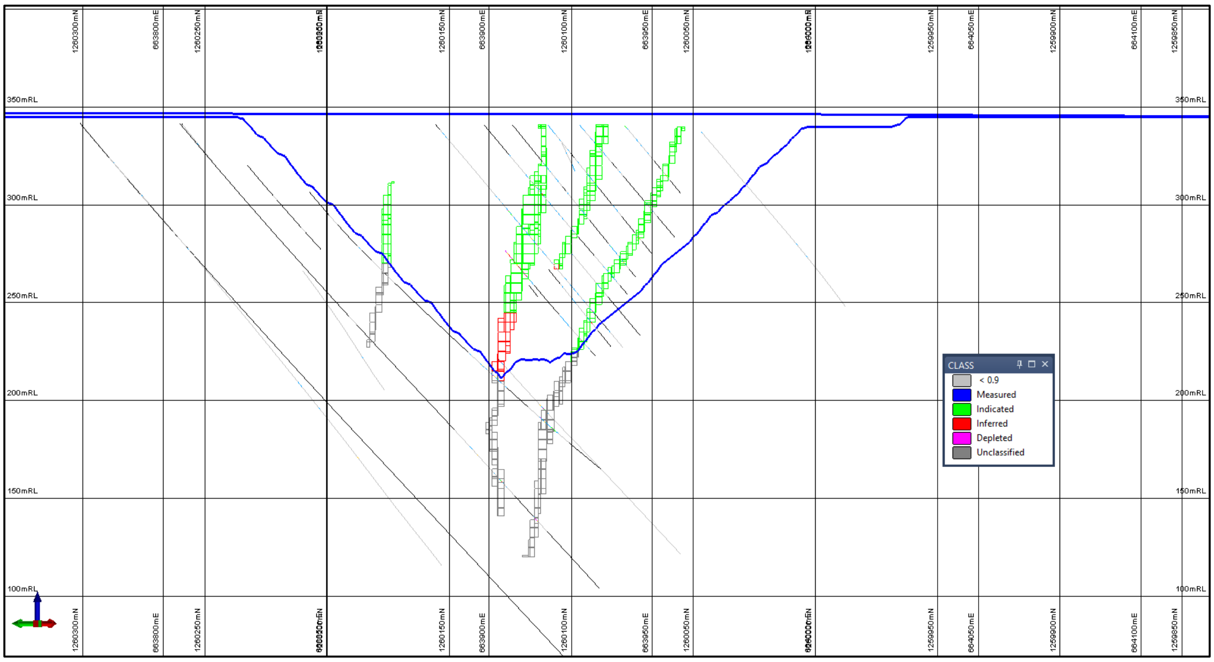


Figure 47: Section view of classified grade model; NPVS pit shell (blue)

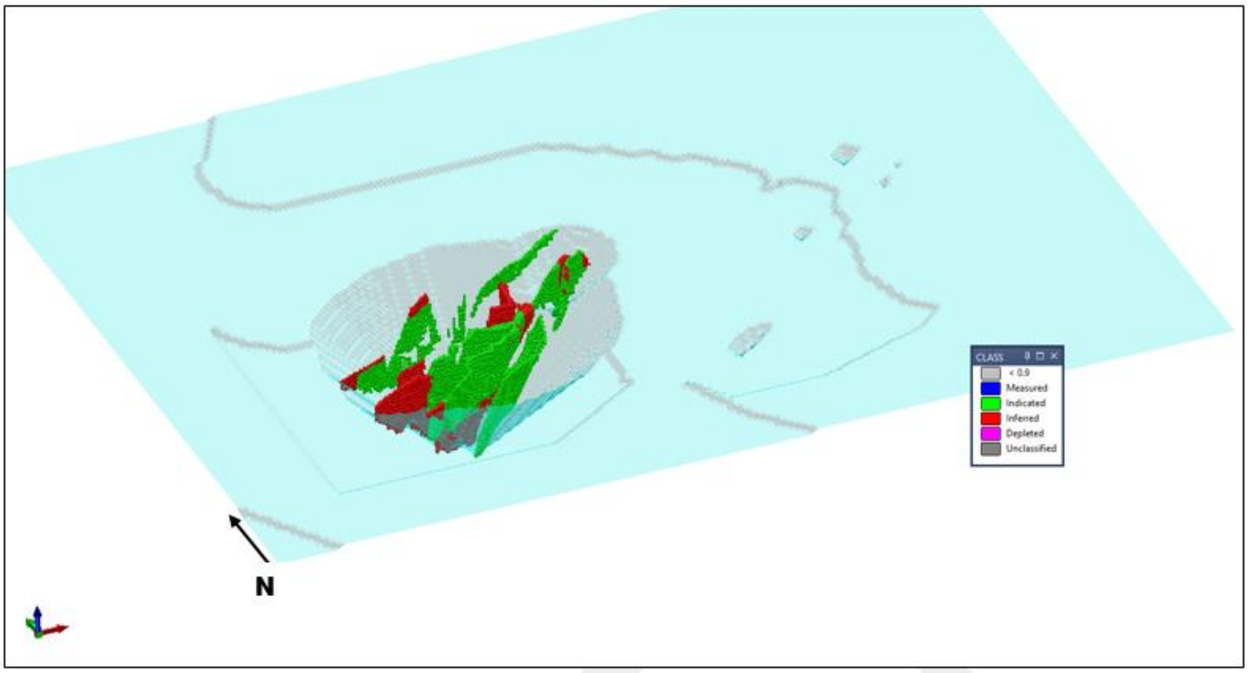


Figure 48: 3D view of classified grade model; NPVS pit shell (cyan)

14.9 Mineral Resource Statement

The total Mineral Resource estimate is shown in Table 44 as at 28 February 2017. The MRE compiled by CSA Global has been classified and is reported as Indicated Mineral Resources and Inferred Mineral Resources based on CIM guidelines.

Table 44: Netiana Mineral Resource estimate, reported at a 0.55 g/t Au cut-off, 28 February 2017

Mineral Resource Estimate for theBalogo Gold Project, Burkina Faso, as at 28th February 2017						
Deposit	Indicated			Inferred		
	Tonnes Mt	Au Grade g/t	Au Metal Koz	Tonnes Mt	Au Grade g/t	Au Metal Koz
Netiana	0.45	6.75	98.6	0.1	4.0	15
Total	**0.45**	**6.75**	**98.6**	**0.1**	**4.0**	**15**

Notes:
1. Reporting cut-off is 0.55 g/t Au.
2. The effective date of the Mineral Resource is February 28th, 2017.
3. Figures have been rounded to the appropriate level of precision for the reporting of Resources.
4. Due to rounding, some columns or rows may not compute exactly as shown.
5. The Mineral Resources are stated as in situ dry tonnes. All figures are in metric tonnes.
6. The Mineral Resource has been classified under the guidelines of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council, and procedures for classifying the reported Mineral Resources were undertaken within the context of the Canadian Securities Administrators National Instrument 43-101 (NI 43-101).
7. The model is reported above a surface based on the NPVS shell from a US$1,500 gold price pit optimisation run to support assumptions relating to reasonable prospects of eventual economic extraction.
8. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.
9. Mineral Resources have been reported inclusive of Mineral Reserves, where applicable.

The grade vs. tonnage curves for the Indicated Mineral Resources and Inferred Mineral Resource categories are shown in Figure 49.

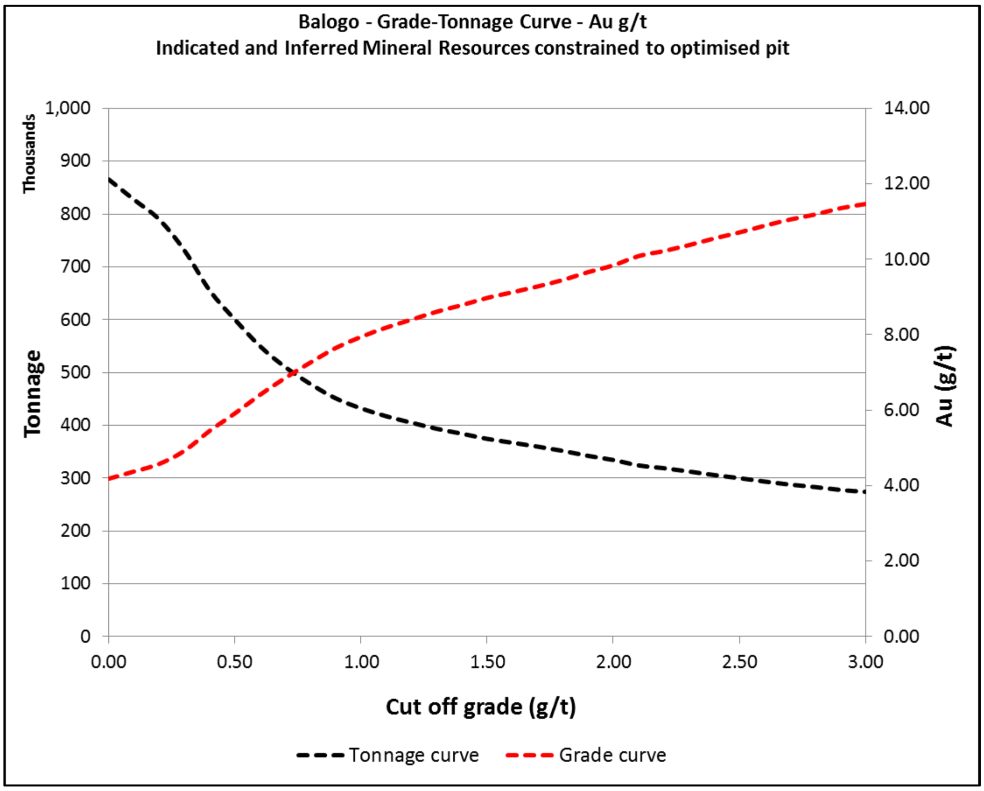


Figure 49: Netiana grade-tonnage curve

14.10 Risk - Mineral Resource

Project	Data Management System	Geology	QAQC	Artisanal Workings	Nature of Gold Mineralisation	Dry in-situ bulk density	Topography
Balogo	Opportunity to improve on excel and passport-based data capture and storage, with a move towards more secure relational database structure to improve integrity and more efficiencies in data management, storage and security.	No digital geology data provided.	Past QAQC failures has led to the exclusion of eight drill holes from the MRE database.	No survey data for artisanal workings. Surface metal may be at risk.	Visible Au and extremely high grade Au mineralisation may be discontinuous. Close spaced grade control required.	Oxide and transitional density is not based on actual measured values, due to likely oversampling of competent material in core. This leads to uncertainty in the density values used for approx. 30% of the mineralisation, but based on CSA Global's experience, these values are unlikely to be too high.	Topography based on drill hole collars. Has had to be expanded for mine planning work. May place some oxide mineralisation at risk.

Risk Category	Definition
(red)	Fatal Flaw (significant material risk to metal)
(orange)	Moderate (metal may be at risk)
(yellow)	Low (unlikely to have material affect on metal)
(green)	Insignificant (errors detected, but immaterial)
(blue)	Potential upside or opportunity

15 Mineral Reserves

15.1 Reserve Assumptions, Key Parameters and Methodologies

The Mineral Reserves for Netiana are supported by a Life of Mine (LOM) plan, which was developed using the following key parameters.

15.1.1 Pit Slopes

The Overall Slope Angle (OSA) for the open pit was set to 38 degrees for the weathered material (Regolith and Oxide) and 45 degrees for the Transition and Fresh material. These material types were coded into the block model.

15.1.2 Metal Price and Selling Cost

The pit limit design and Reserve estimate are based on a metal price of 1,250 US$/Troy Oz. A deduction of 4% was made to account for Royalty payments.

15.1.3 Operating Costs

The waste and ore-based costs applied for pit optimization and mine planning were based on a combination of a Mine Cost model developed by CSA Global and the 2017 Budget costs supplied by MNG. The mining cost (inclusive of ore control, geology, lab services, and a mining equipment-sustaining capital allowance) was US$2.0/t, plus an appropriate incremental haulage cost per bench. The total ore-based costs (including processing and G&A) are US$22.0/t ore.

Netiana ore-based costs include an additional US$15.0/t overland ore haulage cost from Netiana to the processing plant at Youga.

15.1.4 Pit Optimisation and Phase Design

The standard Lerchs Grossman (LG) pit optimisation was run to determine the economic limits for the deposit. The block value for ore was estimated from the revenue and costs discussed above and Inferred Mineral Resources were treated as waste.

The start face was assumed to be 1st March 2017 consequently no mining was assumed to have taken place.

A series of pit shells were determined by varying the Price Factor in steps of 2% up to a maximum of 100%. The pit limit was selected at a Price Factor of 100% to maximise the Reserve and a set of pushbacks were constructed based on the shells. Suitable minimum mining widths and practical ramp access constraints were applied in the selection of the pushbacks.

15.1.5 Mining Recovery and Dilution

Modifying factors of 90% mining recovery (i.e. 10% ore loss) and 10% waste dilution were included in the estimate of the Mineral Reserves. These were based on relevant mining experience at Youga and the typical configuration of the mineralised zones. It is assumed that the mining method chosen for Netiana supports the assumptions regarding selective mining to minimise ore loss and waste dilution.

15.1.6 Conversion Factors from Mineral Resource to Mineral Reserve

Mineral Reserves have been modified from Mineral Resources by considering geological, mining, processing, and economic parameters and permitting requirements, and are therefore classified in accordance with the CIM Definition Standards for Mineral Resources and Mineral Reserves.

15.2 Mineral Reserve Statement

The Mineral Reserve for Netiana (Table 45) were converted from the Mineral Resource using the modifying factors discussed in Section 16. All Mineral Reserves are classified as Probable based on a Resource Classification of Indicated Mineral Resources. Inferred and Unclassified Mineral Resources have been excluded from the conversion of Resources to Reserves.

Table 45: Netiana Converted Mineral Reserves

Ore Reserve Estimated for the Balogo Project, Burkina Faso, as at 28th February 2017							
Deposit	Cut-off Grade	Proved			Probable		
		Tonnes Mt	Au Grade g/t	Au Metal Koz	Tonnes Mt	Au Grade g/t	Au Metal Koz
Netiana	1.20				0.28	8.81	78.37
Total					**0.28**	**8.81**	**78.37**

Notes:
1. The Ore Reserve has been depleted for mining up to 28th February 2017
2. Figures have been rounded to the appropriate level of precision for reporting
3. Due to rounding, some columns or rows may not compute exactly as shown
4. The Ore Reserves are stated as in situ dry metric tonnes
5. The Ore Reserves were prepared under the guidelines of the CIM, for reporting under NI43-101
6. The Ore Reserve is reported at a US$ 1,250 gold price
7. Modifying factors of 90% mining recovery and 10% waste dilution have been applied
8. Probable Reserves were derived from Indicated Resources
9. Ore Reserves are inclusive of Mineral Resources
10. There are no known legal, political, environmental, or other risks that could materially affect the potential development mineral reserves.

15.3 Factors affecting the Mineral Reserve Estimate

Factors that may affect the Mineral Reserve estimates include:

- Dilution.
- Metal prices.
- Refining, and shipping terms.
- Metallurgical recoveries.
- Geotechnical characteristics of the rock mass.
- Capital and operating cost estimates.
- Effectiveness of surface and groundwater management.

The QPs are of the opinion that these potential modifying factors have been adequately accounted for using the assumptions in this report, and therefore the Mineral Resources within the mine plan can be converted to Mineral Reserves. Factors that may affect the assumptions in this report are:

- **Commodity price and exchange rate assumptions are important factors that affect revenue and costs. It has been shown that Price is a significant driver to the project economics and that a 10% change in price could result in at least a 10% change in the Reserve.**
- The mine plan has been limited by an assumed annual Mill throughput of 1.1 Mtpa. However, Mill throughput may prove to be higher or lower than this depending on the ore type. This is particularly relevant to the new deposits such as Netiana, as bulk metallurgical tests have not, to date, been carried out.

- If certain rock types or delivered blends of rock types have lower throughputs than currently modelled, this would increase the processing cost, which would in turn increase the mill cut-off grade. If all other things remained constant, this would tend to reduce the tonnage of the Mineral Reserve and the amount of contained metal. If throughput reductions are significant, this could reduce the size of the economic pit limits, further reducing the Mineral Reserve. Furthermore, a reduction in throughput would delay cash flow, resulting in a negative impact on Project economics.
- Effective surface and groundwater management is important to the safety and productivity of the mining operation. Although this is only really an issue during the rainy season, if the currently planned water management methods prove to be inadequate, additional sumps and pump systems may be required. This would add to the capital and operating costs, resulting in a negative impact on Project economics and a potential reduction in the Mineral Reserves.
- **Transport of ore between the Netiana and the process plant at Youga is a key part of the plan and relies on the efficient planning of the transport route, good road maintenance and proactive management of community relations. The 154 km route passes through many villages and there is a high risk of road traffic accidents. It is acknowledged that a police escort and safety truck accompanies haulage plant. Major public unrest because of injury or fatality could easily disrupt the transport of ore to Youga. Additional comment regarding this risk is highlighted in Section 20.6.**

16 Mining Methods

16.1 Mining Method

The proposed method of mining for Netiana is a conventional open pit method using drilling and blasting, loading with excavators, and hauling with articulated dump trucks (ADT). The ore will be extracted by hydraulic excavators (30 to 40t) to maximise selectivity where the ore body is narrow, and the waste will be loaded by slightly larger hydraulic excavators (60 to 80t) to allow for higher productivity.

There is potential for additional Mineral Resources to be exploited by open pit mining methods, although this is dependent on improved project economics and/or reclassification of the Inferred Mineral Resources through additional drilling. Consideration of underground mining has not been necessary at this stage of the Project, although if the minerals were found to continue at depths beyond economic open pit limits then this could be considered in the future.

The evaluation of Netiana assumes that the ore will be transported to the processing facility at Youga. The optimal production rate is constrained by the capacity limit of the plant at Youga. Consideration also has to be given to the maximum vertical advance rate as the pit limit at surface is relatively small in area (250 m x 300 m) and the pit extends to a depth of 100 m below topographic surface. The mining rate was therefore set at between 300 and 680 Kt/month.

16.2 Pit Optimisation

The open pit has been optimised using the geological model and Mineral Resource estimate completed by CSA Global, as well as industry standard methods (pit shell selection, mine design, mine layout) that are based on criteria discussed in the following sections.

16.2.1 Optimisation Parameters and Inputs

Datamine's mine "optimisation" software, NPV Scheduler (NPVS) was used to determine the pit limit based on the input parameters listed in Table 16.1. This software uses the industry standard Lerchs-Grossman algorithm and has been shown to give near identical results to the Whittle™ pit optimiser.

The input values used in the determination of the pit limit and the development of the mine design presented in this report are shown in Table 46.

Table 46: Open Pit Optimisation Parameters

Parameter	Unit	Value
Start Date		1st March 2017
Overall Slope Angle - Weathered	Degrees	38
Overall Slope Angle – Transition/Fresh	Degrees	45
LOM Metal Price	US$/tr Oz	1,250
Royalty/Selling Cost	%	4.0
Mining Cost – Reference at Pit Exit	US$/t mined	2.0
Mining Cost Increment per 5m bench	US$/t mined	0.02
Processing Cost	US$/t ore	17.0
G&A	US$/t ore	5.0
Process Recovery	%	91
Mining Recovery	%	90
Mining Dilution	%	10
Bench Height	m	5

The output from the NPVS optimisation process is used to select the pit limit for subsequent detailed design as well as the identification of the options for subdivision of the pit into stages or pushbacks.

In the case of Netiana this was limited by the practicalities of access space on a bench and it was only possible to subdivide the pit into two stages. The smaller starter pit allows the mining sequence to target high grade, low strip ratio material in the first year of production.

16.2.2 Selling Price

The LOM metal price is based on the World Gold Council Price (http://www.gold.org/investment) for the period 2014 to 2017. The price used in this study was US$ 1,250 /tr Oz, which was agreed with MNG as an appropriate price to be used for determining the Mineral Reserves.

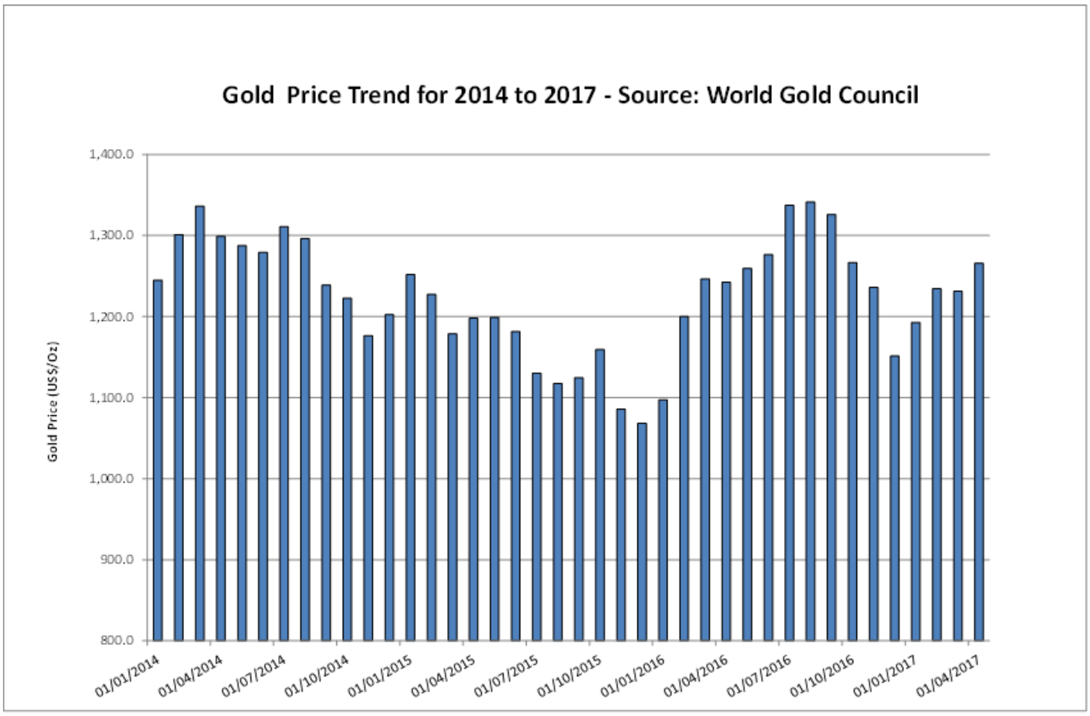


Figure 50: Gold Spot Price (2014 to 2017)

16.2.3 Pit Shell Selection

Using the parameters listed in Table 46 the optimal pit limit was selected at US$ 1,250 /tr Oz (Price Factor of 1.0) in order to maximise the Mineral Reserve. There is an opportunity to reduce the size of the pit, whilst marginally reducing the contained metal (Figure 50), however this was not regarded as practical due to the size of the pit and the minimum pushback width.

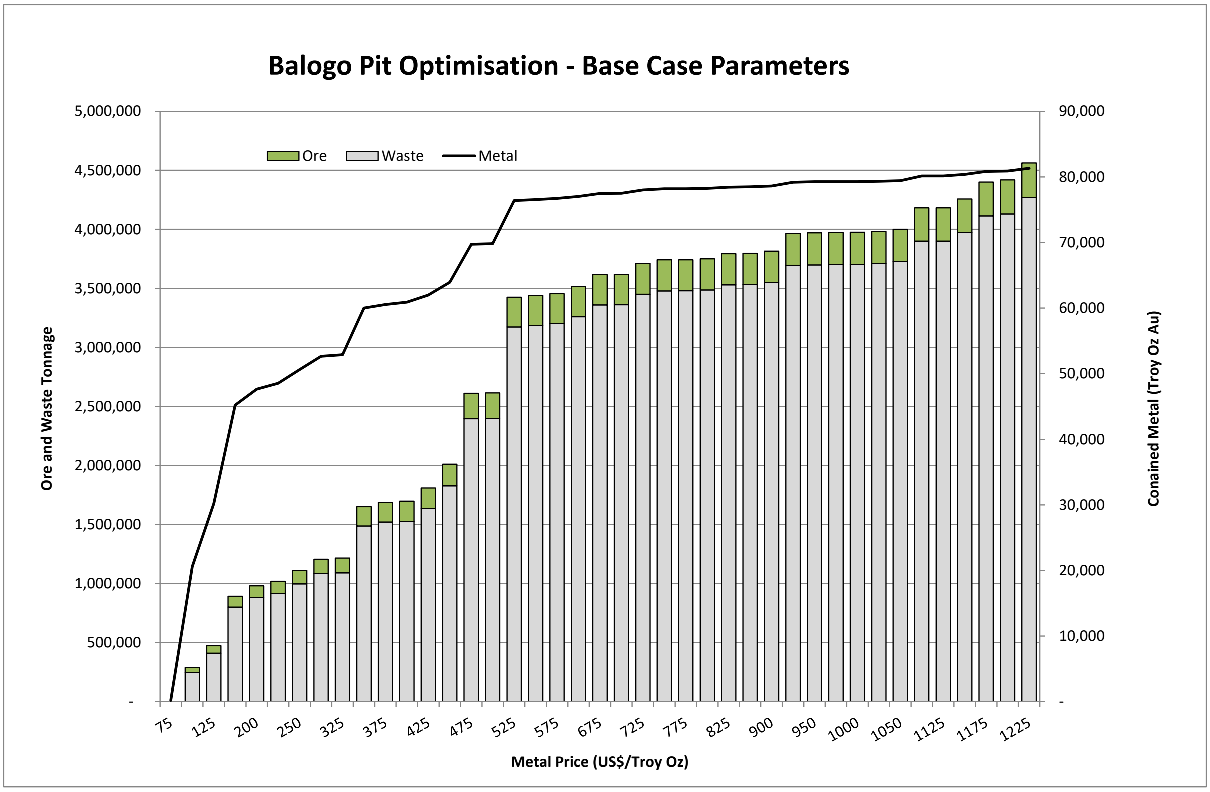


Figure 51: Graph of Cumulative Ore, Waste and Contained Metal for Netiana

A reduction in the pit limit would have also limited the opportunity to create a starter pit, which would have meant that it would not have been possible to high grade in the early months. This was regarded as a key strategy in the development of Netiana.

16.2.4 Cut-off Grade

Using the parameters in Table 46, the cut-off grade at the reference bench was calculated to be 1.16 g/t Au. This was rounded up to 1.20 g/t Au to account for the additional cost of re-handling material during transport to Youga, and the incremental haulage cost as the pit deepens.

A significant factor in determining the cut-off grade is the inclusion of the transportation cost between Netiana and Youga. This has been estimated at 14.1 US$/t hauled, for a haul distance of approximately 154 km.

This means that the cut-off grade for Netiana is significantly higher than that seen at Youga, where the cut-off grade averages 0.7 g/t Au.

16.2.5 Stockpiling Strategy

As a consequence of the raised cut-off grade for Netiana, the material that is normally classified as Low Grade (grade range of between 0.7 and 1.2 g/t Au) is stockpiled at Netiana as a potential ore source in the future. The Low Low Grade (LLG) material is not included in the Ore Reserve as it is uneconomic at this time. Similarly, Marginal material (grade range between 0.5 and 0.7 g/t Au) is also stockpiled separately at Netiana.

Material with a grade ≥ 1.2 g/t Au is mined and stockpiled on a temporary Run of Mine (ROM) stockpile close to the pit exit. This material is split into Low, Medium and High-Grade piles with cut-off grades of 1.2, 1.8 and 2.5 g/t Au respectively.

By segregating the ROM material into several stockpiles, it is possible to prioritise transport of the higher-grade material in the early periods. It also provides the opportunity to blend the feed to the Youga plant to control the mix of ore from Netiana and other deposits.

16.3 Geotechnical Investigations

16.3.1 Review of Previous Studies

The Netiana Mine is located in Burkina Faso, to the north of the southern border with Ghana. The initial geotechnical parameters, described in the HCG 2016 Feasibility Study report, were subsequently updated with a more detailed geotechnical investigation in 2016. This work, detailed in a report dated November 2016, was performed by the Dokuz Eylül University, Faculty of Engineering. The report was compiled in Turkish and had to be translated to gain some insight into the detail.

It could be established that rock mass classification data and mechanical properties of the rocks, to be encountered in the slopes, were effectively quantified. Data and samples were collected from core, recovered from purpose drilled exploration drill holes. The parameters used to describe the competency of the rocks are of international standard and are believed to be sufficiently comprehensive for the **purposes of reporting the Ore Reserves**.

The report details the stable slope angle design and describes numerical modelling that was conducted to obtain the optimal slope angles, through the quantification of the factor of safety. The methodology followed is sufficiently detailed for the report to be considered at **Bankable Feasibility Study (BFS) level** of reliability.

16.3.2 Recommendations

From the recommendations contained in the report, slope design angles for each of the identified geotechnical domains are detailed in Tables 47 to 49.

Table 47: Slope design angle for Regolith

Parameter	Units	Value
Material Type		Regolith
Bench Height (maximum)	m	15
Batter Angle	Degrees	45
Berm Width	m	5
IRA	Degrees	36
OSA	Degrees	36

Table 48: Slope design angles for Magmatic rocks

Parameter	Units	Value
Material Type		Magmatics
Bench Height	m	20
Batter Angle	Degrees	70
Berm Width	m	4
IRA	Degrees	60
OSA	Degrees	60

Table 49: Slope design angles for Metamorphic rocks

Parameter	Units	Value
Material Type		Metamorphics
Bench Height	m	20
Batter Angle	Degrees	65
Berm Width	m	4
IRA	Degrees	56
OSA	Degrees	56

As the report does not specifically specify an Inter Ramp Slope Angle (IRA), it may be assumed that the pit shells should be designed with an IRA as specified. Following which, the inclusion of the ramp will yield an Overall Slope Angle (OSA) that will be shallower than the specified IRA.

16.4 Mine Design Parameters

16.4.1 Design Criteria

Having established the pit extent from the optimised pit limit; the ramps, batter and berms were included in the final pit design. The pit parameters were split into weathered/oxidised and magmatic/metamorphic for transitional and fresh rock.

The design parameters were as follows:

Table 50: Netiana Pit Design Parameters

Material Type		Batter Angle	Bench Height	Berm width	Inter ramp Angle	Overall Slope Angle	Ramp Width
Weathered		45	10	5	34	42/45	15
Transition/Fresh	Magmatics	70	10	4	52		15
	Metamorphics	65	10	4	49		15

Note: The Overall Slope Angle (OSA) depends on how many ramps there are per wall.

16.4.2 Geotechnical and Safety Berms

With respect to the design of the ramps it was assumed that no additional geotechnical berms will be required. This is reasonable given that the maximum pit depth is 100 m and that the pit slopes are only open for a limited period (< 2 years).

In order to provide substantial width for the safety berm it is proposed that the final pit wall is double benched to 10 m. This will provide a wide catch bench every 10 m that will have sufficient capacity to contain localised failures.

The ramp also acts as a catch bench that can be regularly cleaned. The configuration of this ramp system means that the maximum inter-ramp stack height is general less than 50 m. This is an important factor when considering the potential for failure of the rock mass.

16.4.3 Primary Mining Equipment

The Netiana project will be managed alongside the existing project at Youga, and the proposed project at Ouaré. These projects will share a lot of the same infrastructure and therefore it makes sense to try to standardise the fleet across the operations.

The mining fleet was therefore standardised on a mix of 35 to 75t hydraulic excavators, loading 40 t articulated trucks. The smaller hydraulic excavators are well suited to selective mining of the ore on 2.5 m flitches, whilst the larger excavators are predominately used for waste due to their higher productivity.

Due to the size of the pit the mining rate has been limited to less than 950 tph, which can be accommodated by two excavators (1 x 35t and 1 x 75t) and up to 8 trucks. A Front-End Loader (FEL) is used at the ROM pad to load the ore into the trucks for transport of ore from Netiana to Youga.

16.4.4 Benches

A bench height of 5 m has been selected in order to ensure selective mining of the ore. The bench will be blasted on 5 m intervals and loaded on two flitches of 2.5 m. This is the practice at Youga and it can be demonstrated that this works well for the given rock types and distribution of ore.

This bench height is well suited to the selected excavators, each having a maximum reach between 5 and 6 m (Figure 52).

16.4.5 Minimum Mining width

The minimum mining width has been designed at 35 m to allow turning of the trucks (SAE turning radius of 8.7 m). This also allows sufficient clearance during normal operations for the minimum distance from the highwall and allowance for safety berms at the crest.

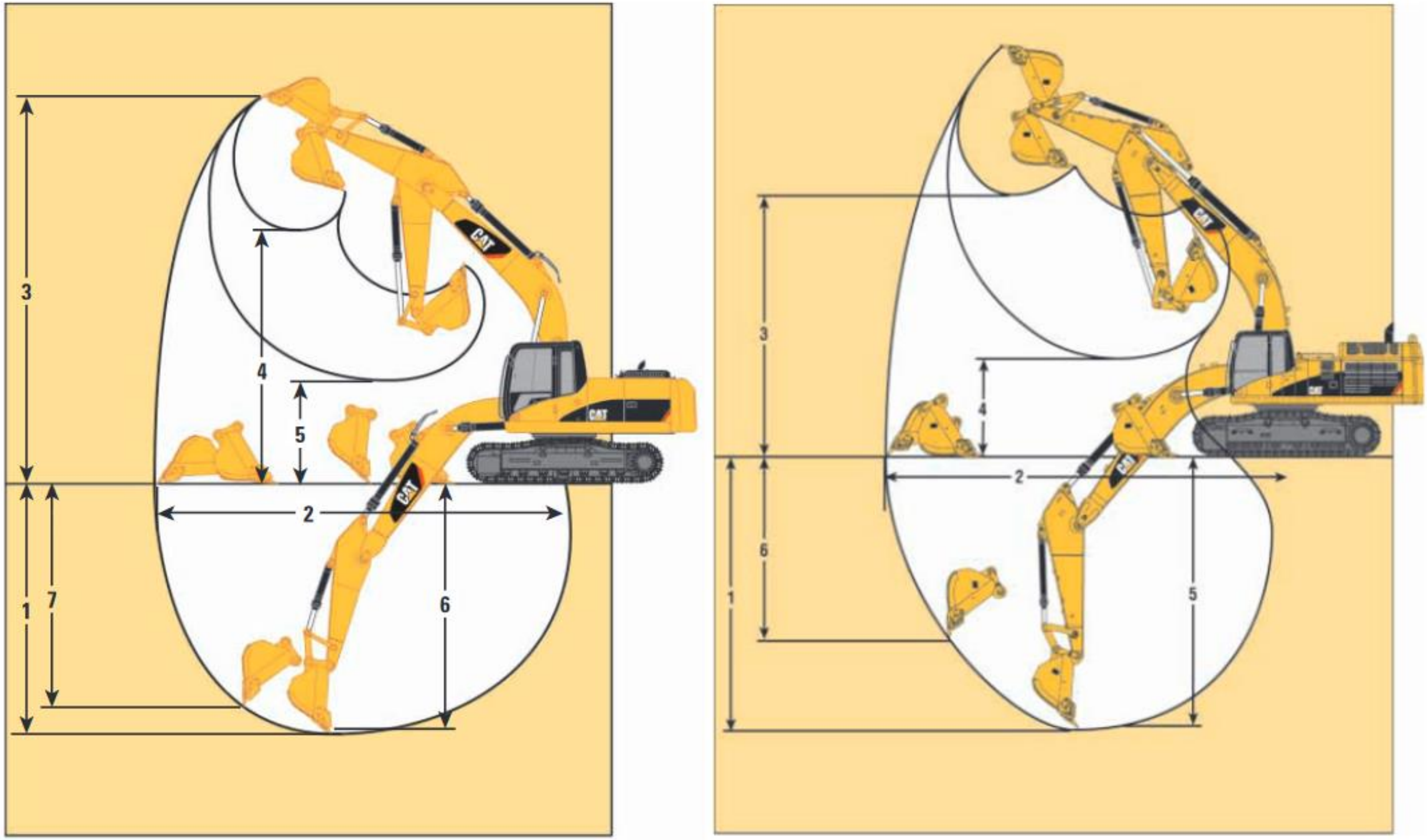


Figure 52: Maximum Reach for a Cat 336 (35t) and a Cat 374 (75t) Hydraulic Excavator

16.4.6 Pit Dewatering

Burkina Faso has a relatively dry climate with a total rainfall of less than 800 mm per year. The majority of the rainfall is between June and October (Figure 53).

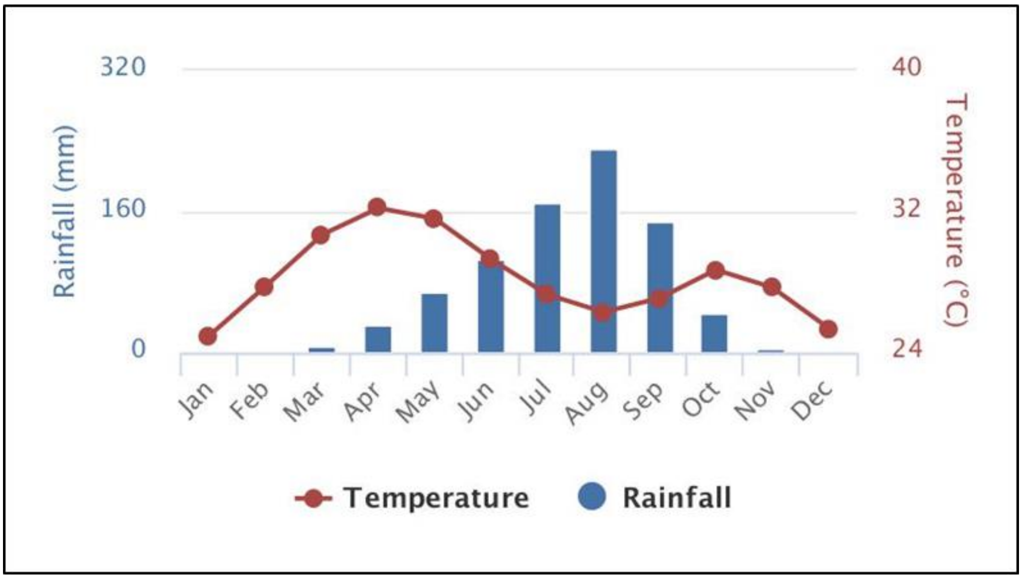


Figure 53: Average Monthly Temperature and Rainfall for Burkina Faso (1991 to 2015)

Source: Climate Change Knowledge Portal (http://sdwebx.worldbank.org/climateportal)

The stream beds are typically dry for the majority of the year but there is a need to provide for water diversion to avoid inflow into the pit. Surface runoff that is captured by the pit is collected in a sump and provision has been made for pumping as required.

16.4.7 Haul Roads and Ramps

To meet the production targets and to match the selected loading machines, a 40 t articulated haul truck has been selected. This truck has an overall operating width of 4.16 m, which means that the minimum ramp width at 2.5 x truck width is 10.4 m. Ideally the width should be at least 3.5 x truck width (14.6 m), to allow passing on the ramp. However, it is accepted that 12 m will be sufficient for the shallower pits if passing places are provided for, and a lower operational efficiency is accepted.

On the lower benches the ramp width has been reduced to 10 m on the assumption of a single lane. This helps to maximise the ore recovery and minimise the waste stripping.

Ramp gradients will be established at a maximum gradient of 10% (1 in 10). To facilitate drainage of the roadway a 2% cross slope on the ramp should be included.

It is necessary to have a safety bund equivalent to at least half the tire height on the low-wall side and preferably an allowance for a drainage ditch on the highwall side of the ramp. With this configuration, it is possible to attain a road width of 15 m (2.75 x Truck width), which is an acceptable compromise.

Truck	Operating Width (m)	Tyre Size	Tyre Dia (m)	Bund Height (m)	Bund Width (m)	Road Width (m)	Drain Width (m)	Width (m)
Cat 740	4.16	29.5R25	1.87	0.93	2.9	11.44	0.5	15.1

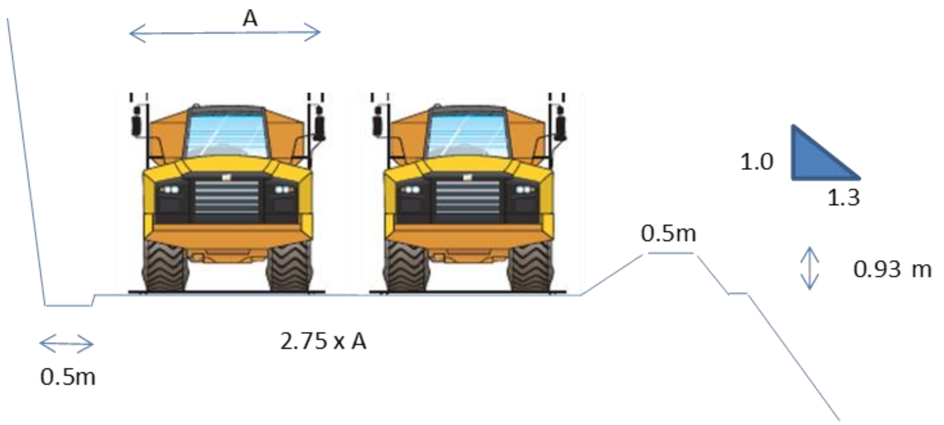


Figure 54: Proposed Haul Road Dimensions for a Cat 740 Truck

16.4.8 Mining Recovery and Waste Dilution

The mining recovery and waste dilution have been set to 90% and 10% respectively. This takes into account that ore mining will be with the smaller hydraulic excavator (1.6 to 2.5 m^3 bucket) on 2.5 m flitches. Considerable care needs to be taken with the blasting to minimise movement, and therefore the blast design assumes choke blasting with a relatively low powder factor of 0.29 Kg/m^3.

Experience at Youga in similar conditions suggests that these factors are reasonable for the conditions. However, on a local scale the mining recovery and dilution factors are likely to vary considerably, depending on the width of the veins and the amount of internal waste.

16.4.9 Pit Limit

Figure 55 illustrates the development of the practical pit limits, which include an initial starter pit that targets the high-grade core of the deposit. The vertical section (Figure 56) shows the distribution of mineralised blocks (> 0.7 g/t Au) with respect to the pit limit. It can be seen that the width of the orebody varies considerably across the deposit, but typically exceeds 5 m.

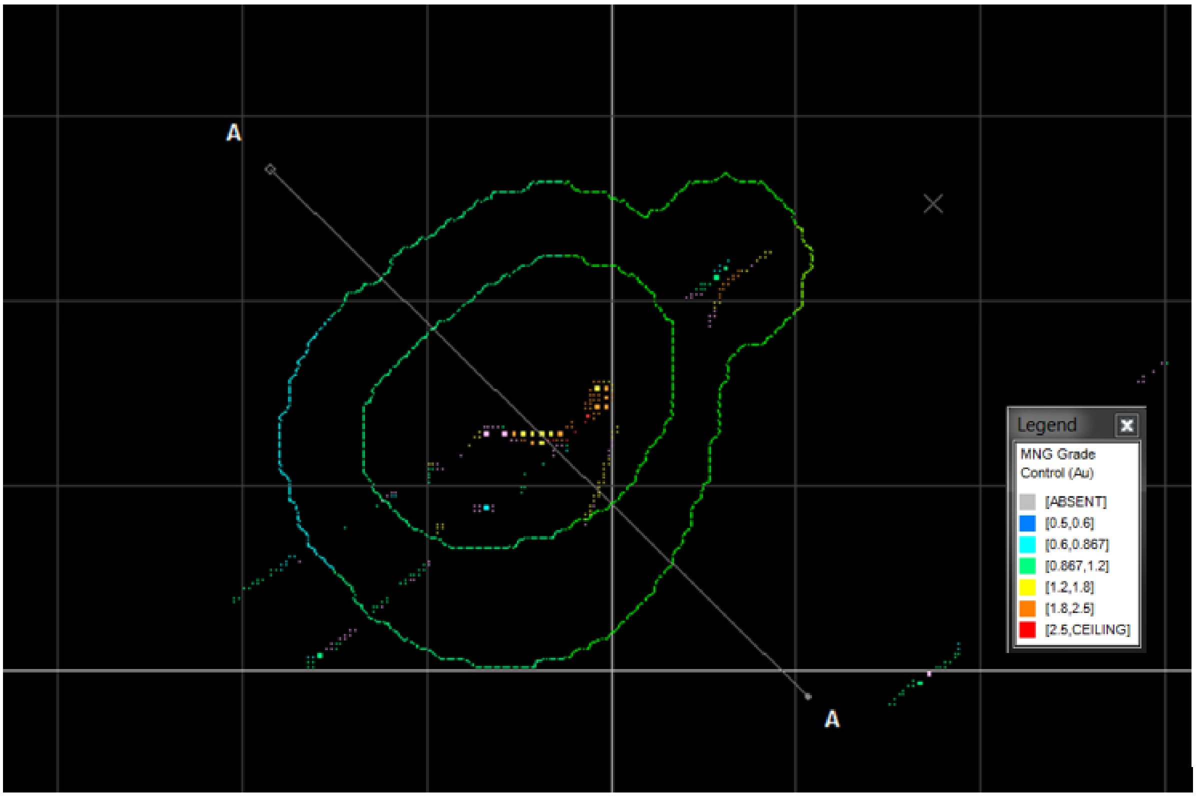


Figure 55: Plan View at RL 335 Showing the Starter Pit and Pit Limit

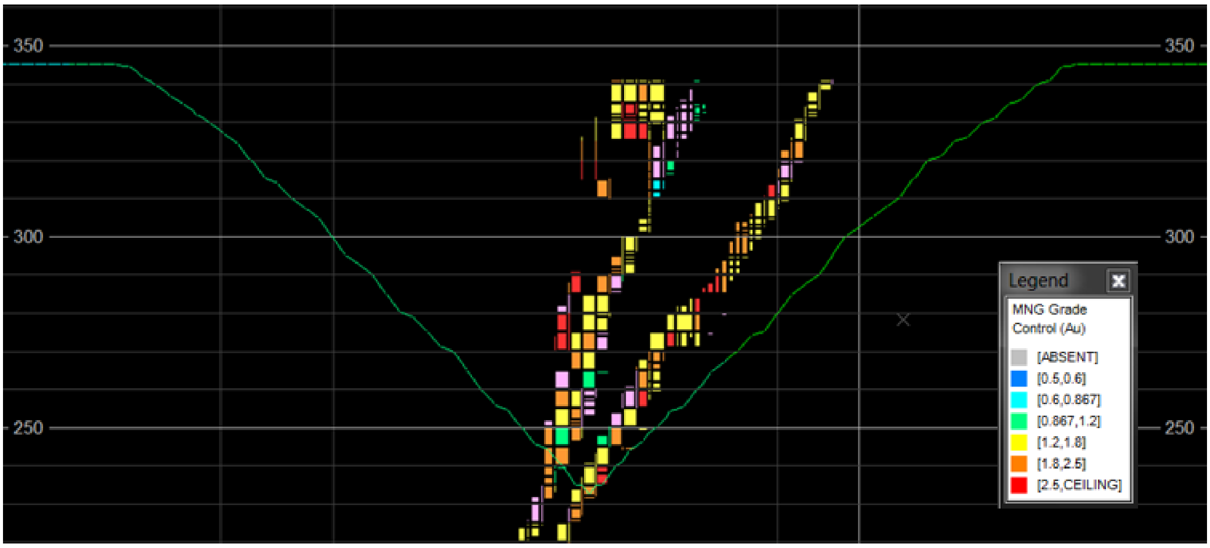


Figure 56: Section A-A showing Mineralised Blocks (> 0.7 g/t Au) and the Pit Limit

16.4.10 Topsoil

There is a thin layer of topsoil (< 0.5 m) covering the mining area. This will be stripped off and stored separately for rehabilitation at a later date.

16.5 Mine Design

16.5.1 Phases/Pushbacks

As shown in Figure 57 the pit was divided into a starter pit and a pushback to the final pit limit.

The initial starter pit was selected using the pit shells generated by NPVS. The selected shell (Pit 7) was chosen so that it included at least 100,000 tonnes of high grade ore. The total rock quantity for the starter pit was 1.1 Mt, giving a strip ratio of 8.7:1.

Figure 57 shows the designs of the starter pit and the final pushback.

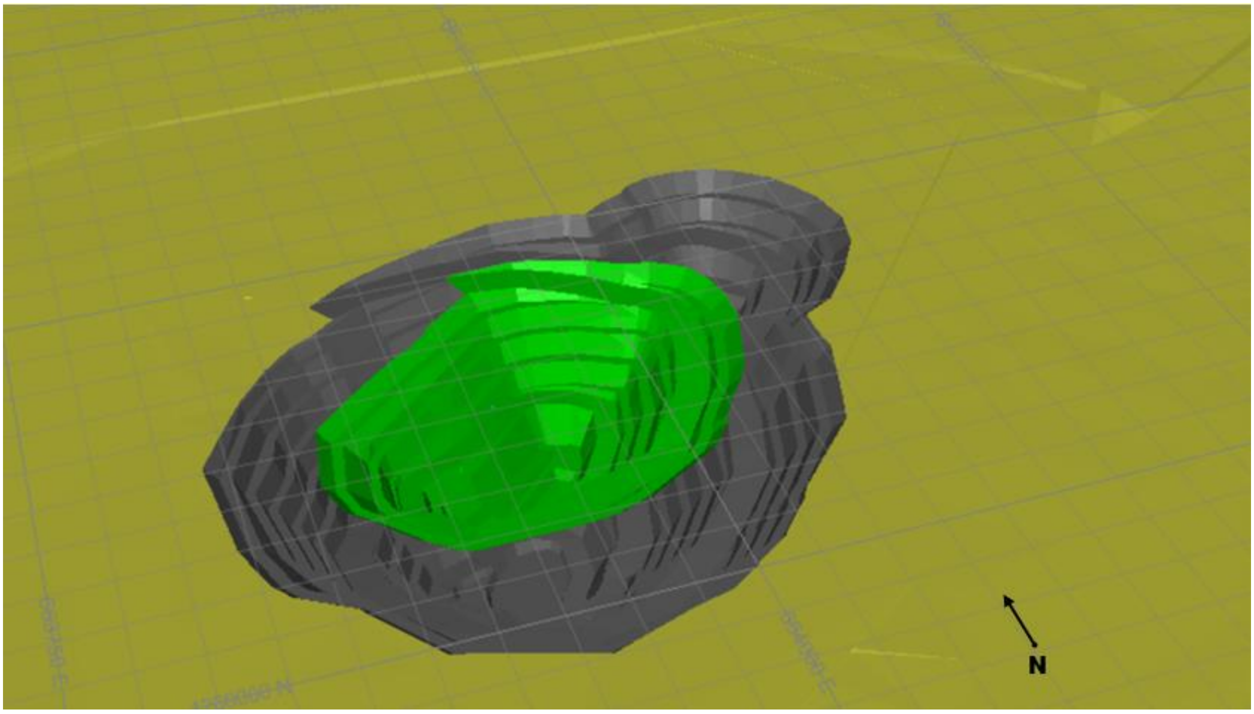


Figure 57: Netiana Starter pit and final pushback.

The topographic surface is at an RL of 343 m. The first pushback and last pit reach RLs of 285 m and 245 m above sea level respectively. In the final pushback the road width changes from 15 to 10 m in the last two benches.

16.5.2 Pit Design Quantities

The quantities in the starter and final pits were calculated using the block model values and the engineered pit design surface for Netiana. The quantities shown in Table 51 are after applying the modifying factors of 90% Mining Recovery and 10% Mining Dilution.

Table 51: Pit Design Quantities for Netiana

	Starter Pit			Final Pit			Total		
	(tonnes)	(tr Oz)	(g/t)	(tonnes)	(tr Oz)	(g/t)	(tonnes)	(tr Oz)	(g/t)
High Grade	87,146	44,390	15.8	127,352	30,763	7.5	214,498	75,153	10.9
Medium Grade	5,787	365	2.0	23,283	1,430	1.9	29,070	1,795	1.9
Low Grade	9,847	424	1.3	23,204	994	1.3	33,051	1,418	1.3
Total Ore	**102,780**	**45,179**	**13.7**	**173,839**	**33,187**	**5.9**	**276,619**	**78,366**	**8.8**
Low Low Grade	11,397	300	0.8	40,533	1,095	0.8	51,930	1,395	0.8
Marginal	8,643	147	0.5	37,948	657	0.5	46,592	805	0.5
Total Stockpile	**20,041**	**447**	**0.7**	**78,481**	**1,752**	**0.7**	**98,522**	**2,200**	**0.7**
Waste	1,024,769			4,018,300			5,043,070		
Grand Total	**1,147,590**			**4,270,620**			5,418,210		

16.6 Waste Rock Dumps

The waste dump capacities have been based on a swell factor of 30%. No allowance for backfilling of the pits has been made. The waste dump position has been selected based on the Report "Balogo Mine Planning, AMC 2016" to target barren areas. However, sterilization drilling is required to confirm this. Marginal stockpiles have been designed to be situated adjacent to the waste dumps.

16.6.1 Design parameters

The design parameters for waste dumps are based on the recommendations from the Wardell-Armstrong report "Review of mine Closure, Youga mine Burkina Faso. November 2016".

A 25 m wide ramp has been selected for the waste dump designs to permit truck double lanes together with simultaneous works, such as maintenance, drainage and rehabilitation; for the stockpiles the ramp width has been reduced to 12 m wide.

Table 52 shows the design parameters used for waste dump and stockpiles at Netiana.

Table 52: Profile selected for design parameters

Design parameters	Units	Waste dumps	Stockpiles low grade and Marginal
Batter angle	Grade	20	35
Swell factor	%	30	30
Bench height	m	15	15
Berm width	m	30	30
OSA	Grade	11.3	24/35
Road width	m	25	12

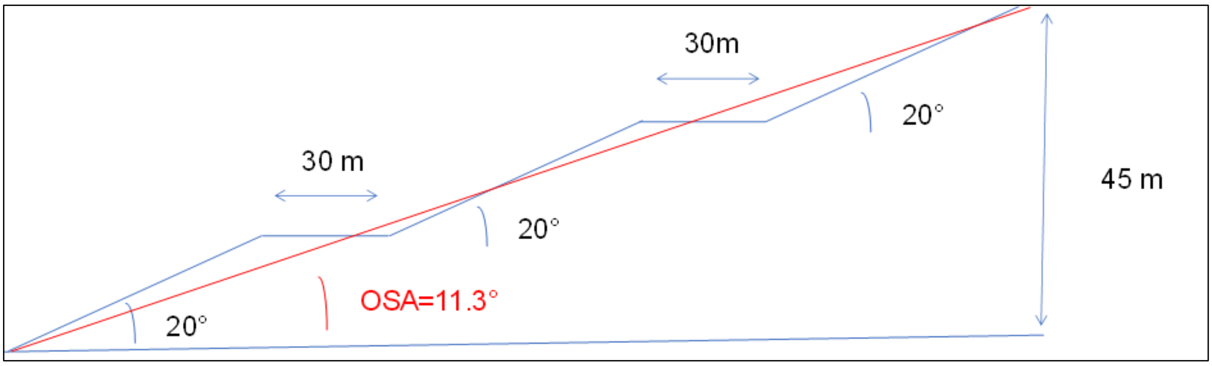


Figure 58: Waste dump profile

16.6.2 Capacity of the waste dump

Capacity and projected area for waste dumps and stockpiles have been summarized in Table 53.

Table 53: Capacity and projected area of Netiana waste dumps and stockpiles

Balogo		Capacity m3	Maximum Height m	Projected Area Ha	Grade g/t
Waste dump		3,545,874	30	21.17	
Stockpile	Low grade	27,727	5	0.69	0.7 to 1.2
	Marginal	25,825	5	0.66	0.5 to 0.7

Figure 59 shows the location of the waste dump and stockpiles (marginal and low grade ore). The pit is shown in order to provide an overview of the project.

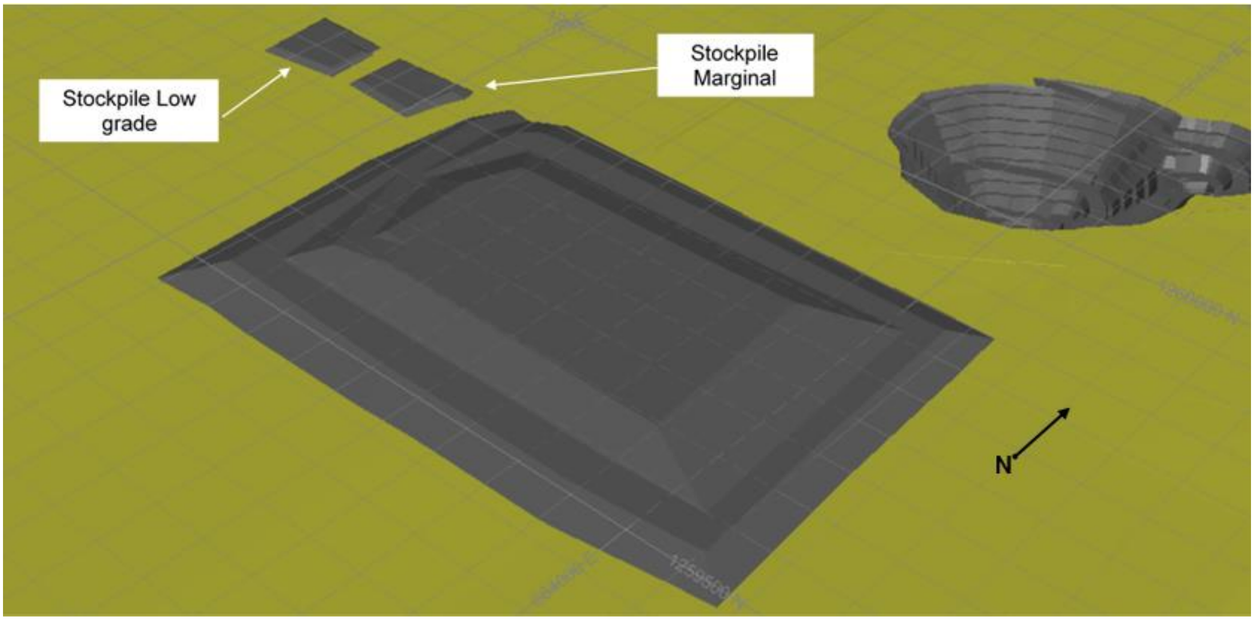


Figure 59: Waste Dump and Stockpiles relative to the Pit (view looking NW)

16.7 Mine layout

The Mine layout is shown in Figure 60 and consists of the following:

- Waste dump.
- Final Pit.
- Low grade stockpile.
- Marginal stockpile.

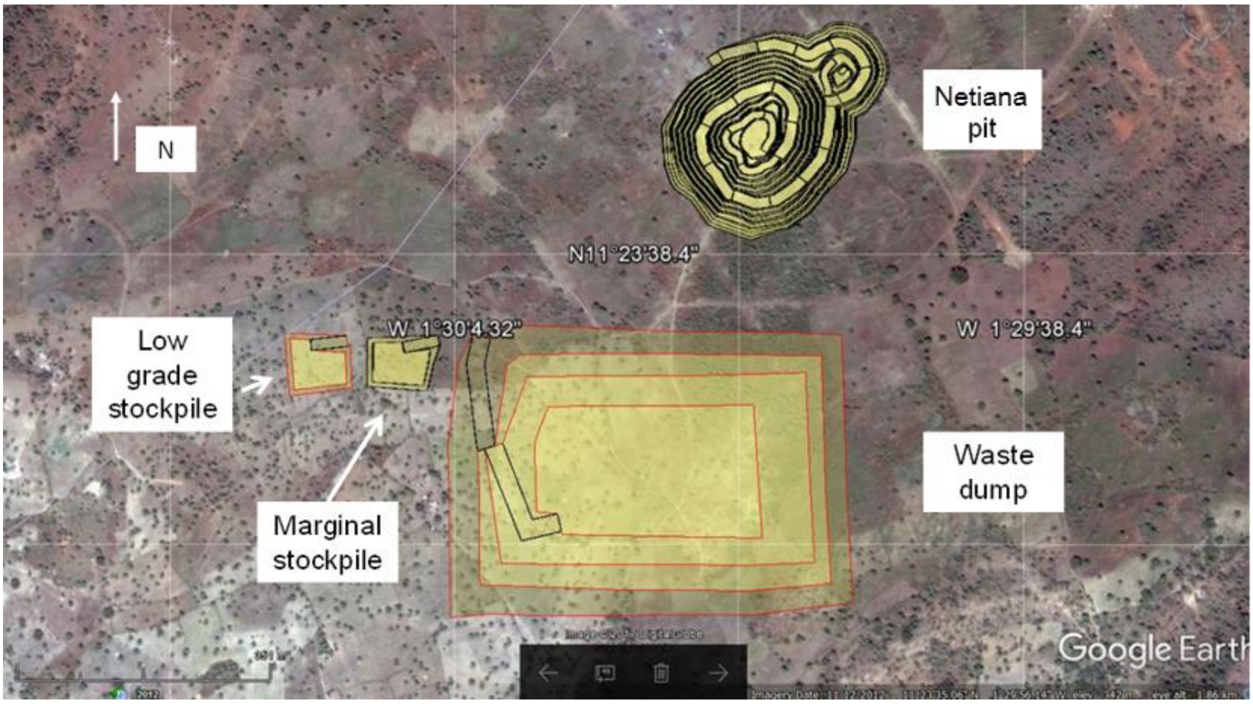


Figure 60: Mine layout showing pit, waste dump and low grade and marginal ore stockpiles.

16.8 Mining Sequence

Mining of the starter pit commences in May 2017 at a rate of 400 t/hr and is mined out over a 6 month period. Mining of the second pushback commences in August 2017, also at a rate of 400 t/hr, and the mining rate is gradually increased to 800 t/hr. The Final Pit is mined out over the next 10 months.

16.9 Mining Equipment

16.9.1 Drill and Blast

Drilling is with an Atlas Copco D60 rig that drills a 105 mm diameter hole on 5 m benches with a 0.3 m sub-drill. The design parameters for the production shots are shown in Table 54.

Table 54: Drill & Blast Parameters – Production Shots

Project Assumptions	Units	Oxide Ore Dry	Fresh Ore Dry	Oxide Waste Dry	Fresh Waste Dry
Production Patterns					
Input Parameters					
Drill	-	Primary Drill	Primary Drill	Primary Drill	Primary Drill
Proportion of material	(%)	100.0	100.0	100.0	100.0
Bench Height	(m)	5.0	5.0	5.0	5.0
Hole Diameter	(mm)	105.0	105.0	105.0	105.0
Subdrill	(m)	0.3	0.30	0.30	0.30
Spacing	(m)	3.2	3.20	3.20	3.20
Burden	(m)	3.6	3.60	3.60	3.60
Stemming Height	(m)	3.2	3.20	3.20	3.20
Re-drill	(%)	10.0	10.0	10.0	10.0
Rod Length	(m)	7.50	7.50	7.50	7.50
Hoisting Rate	(m/min)	27.70	27.70	27.70	27.70
Cleaninng, retract, tramming, etc	(min.)	3.25	3.25	3.25	3.25
Add/remove rods	(min.)	2.50	2.50	2.50	2.50
Sampling	(%)	100.0	20.0	20.0	20.0
Samples per Hole	(#)				
Primers per Hole	(#)	1	1	1	1
Explosive Product		ANFO	ANFO	ANFO	ANFO
Checks					
Bench Height : Hole Diameter	(m:m)	48	48	48	48
Subdrill to Hole Diameter	(m:m)	2.9	2.9	2.9	2.9
Stemming to Burden	(m:m)	0.89	0.89	0.89	0.89
Drilling					
Hole Depth	(m)	5.3	5.3	5.3	5.3
Volume Rock per Hole	(m3)	57.6	57.6	57.6	57.6
Quantity Rock per Hole	(t)	121.0	150.9	121.0	150.9
Yield of Rock	(m3 rock/m drilled)	10.9	10.9	10.9	10.9
Yield of Rock	(t rock/m drilled)	22.8	28.5	22.8	28.5
Penetration Rate	(m/hr)	33.5	33.5	33.5	33.5
Drill time per Hole	(min.)	12.9	12.9	12.9	12.9
Productivity per meter	(m/doh)	24.6	24.6	24.6	24.6
Productivity per tonne	(t/doh)	561	700	561	700
Blasting					
Stemming Volume	(m3)	0.03	0.03	0.03	0.03
Volume of Charge	(m3)	0.02	0.02	0.02	0.02
Charge Height	(m)	2.1	2.1	2.1	2.1
Charge per Hole	(kg)	14.5	14.5	14.5	14.5
Powder Factor	**(kg/m3)**	**0.25**	**0.25**	**0.25**	**0.25**
Powder Factor	**(kg/t)**	**0.12**	**0.10**	**0.12**	**0.10**

The explosive selected is a heavy ANFO product (Emunex 7000), which has a density of 1.2 t/m3 and VoD of 4,600 m/s. This product is mixed on site by the contractor (Maxam).

The drill pattern for wall control (trim blasting) is also drilled with a 105 mm diameter hole and assumes a three row shot with no sub-drill. The parameters are shown in Table 55.

Table 55: Drill & Blast Parameters – Wall Control

Project Assumptions	Units	Oxide Ore Dry	Fresh Ore Dry	Oxide Waste Dry	Fresh Waste Dry
Trim Patterns					
Wall Control					
Drill Patern		1.8 x 2.0	1.8 x 2.0	1.8 x 2.0	1.8 x 2.0
Drill	-	Primary Drill	Primary Drill	Primary Drill	Primary Drill
Bench Height	(m)	5.0	5.0	5.0	5.0
Hole Diameter	(mm)	105.0	105.0	105.0	105.0
Spacing	(m)	1.8	1.8	1.8	1.8
Burden	(m)	2.0	2.0	2.0	2.0
Stemming Height	(m)	3.5	3.5	3.5	3.5
Subdrill	(m)	0.0	0.0	0.0	0.0
Charge Height	(m)	1.5	1.5	1.5	1.5
Re-drill/Drilling Overlap Factor	(%)	10.0	10.0	10.0	10.0
Rod Length	(m)	7.50	7.50	7.50	7.50
Hoisting Rate	(m/min)	27.70	27.70	27.70	27.70
Cleaninng, retract, tramming, etc	(min.)	3.25	3.25	3.25	3.25
Add/remove rods	(min.)	2.50	2.50	2.50	2.50
Sampling	(%)	0.0	0.0	0.0	0.0
Samples per Hole	(#)				
Primers per Hole	(#)	1	1	1	1
Explosive Product		ANFO	ANFO	ANFO	ANFO
Drilling					
Hole Depth	(m)	5.00	5.00	5.00	5.00
Volume Rock per Hole	(m3)	18.0	18.0	18.0	18.0
Quantity Rock per Hole	(t)	37.8	47.2	37.8	47.2
Yield of Rock	(m3 rock/m drilled)	3.6	3.6	3.6	3.6
Yield of Rock	(t rock/m drilled)	7.6	9.4	7.6	9.4
Penetration Rate	(m/hr)	33.5	33.5	33.5	33.5
Drill time per Hole	(min.)	12.4	12.4	12.4	12.4
Blasting					
Stemming Volume	(m3)	0.03	0.03	0.03	0.03
Volume of Charge	(m3)	0.01	0.01	0.01	0.01
Charge Height	(m)	1.5	1.5	1.5	1.5
Charge per Hole	(kg)	10.4	10.4	10.4	10.4
Productivity per meter	**(m/doh)**	**24.22**	**24.22**	**24.22**	**24.22**
Productivity per tonne	**(t/doh)**	**183.11**	**228.46**	**183.11**	**228.46**

16.9.2 Loading & Hauling

The primary loaders for Netiana are assumed to be 35 to 75t hydraulic excavators, which will load 40 tonne articulated trucks. This combination has been tried and tested at Youga and has been shown to provide a good compromise between productivity and selectivity.

Based on a loader utilisation of 74% it can be shown that the theoretical loader productivity ranges between 480 t/doh for weathered material (Regolith or Oxide) to 600 t/doh for Transition or Fresh material.

Table 56: Equipment Productivity Factors – Load & Haul

	Units					
Material Type	-	Fresh Waste	Fresh Ore	Oxide Waste	Oxide Ore	RoM Rehandle
Loading						
Loading Unit		Primary Excavator	Primary Excavator	Primary Excavator	Primary Excavator	Primary Excavator
Bucket Size	(m3)	3.5	3.5	3.5	3.5	3.5
Loading Spot Time	(min.)	0.50	0.50	0.50	0.50	0.50
Loading Cycle Time	(min.)	0.50	0.50	0.50	0.50	0.50
First Bucket Dump	(min.)	0.05	0.05	0.05	0.05	0.05
Haulage						
Truck		Primary Truck	Primary Truck	Primary Truck	Primary Truck	
Capacity	(t)	40.00	40.00	40.00	40.00	
Capacity	(m3)	14.00	14.00	14.00	14.00	
Dump & Spot Time	(min.)	1.20	1.20	1.20	1.20	
FEL Travel Time	(min)					1.00
Bucket Fill Factor	(%)	90	90	90	90	95
In-Situ Density	(t/bcm)	2.62	2.62	2.10	2.10	2.00
Swell Factor	(lcm/bcm)	1.40	1.40	1.40	1.40	1.40
Loose Density	(t/lcm)	1.87	1.87	1.50	1.50	1.43
Moisture Factor	(%)	5.0	5.0	5.0	5.0	5.0
Passes	(#)	4.4	4.4	4.4	4.4	
Passes (Rounded)	(#)	4	4	4	4	
Passes (Override)	(#)					
Loaded Quantity	(t)	26.2	26.2	21.0	21.0	5.0
Loaded Volume	(m3)	14.0	14.0	14.0	14.0	3.5
Loading Productivity						
Total Loading Cycle Time	(min.)	2.05	2.05	2.05	2.05	1.05
Loader Operator Efficiency	(%)	83	83	83	83	83
Loader Productivity	**(t/doh)**	**606**	**606**	**486**	**486**	**226**
Loader Productivity	(lcm/doh)	324	324	324	324	158
Loading Unit Utilisation	(%)	73.7	73.7	73.7	73.7	73.7
Loading Productivity	**(Mtpa)**	**3.9**	**3.9**	**3.1**	**3.1**	**1.5**

Haul truck productivity is primarily based on the cycle, which in the case of Netiana is relatively short. The ore is dumped at the pit exit onto the temporary ROM pad for rehandling into the trucks used to transport ore from Netiana to the ROM pad at Youga.

Based on an average of 6,400 operating hours per year and an average cycle time of 15 minutes it is expected that 4 trucks will be required at the outset.

16.9.3 Support Equipment

The support equipment consists of drills, dozers, graders and Front End Loaders (FEL). The proposed equipment list is shown in Figure 57.

The number of units is kept constant over the life of the mine and will only be reduced once the pit is mined out. At this time reclaiming of any remaining stocks will continue with a reduced fleet of a FEL, two trucks, one grader and one track dozer.

Table 57: Support Equipment

Equipment	Model/Size	Units
Drills	Atlas Copco D60	1
FEL	Cat 988	1
Track Dozer	Cat D8	1
Grader	Cat 14M	1

16.9.4 Service Equipment

The proposed service equipment list for Netiana is shown in Table 58.

Table 58: Service Equipment

Equipment	Model/Size	Units
Service Truck	Man	1
Fuel Truck	Man	1
Light Vehicles	Toyota	3
Personnel Carrier	Toyota	1

16.10 Operational Considerations

16.10.1 Blasting

For the production shots it is assumed that 105 mm diameter holes are drilled on 5 m benches with a 0.3 m sub-drill. The stemming length has adjusted to account for the air gap that is typically left in the column so that the total explosive per hole is approximately 14 Kg.

The normal practice is to "paddock" blast ore and waste together with no free face. This minimises the movement during blasting and limits the mixing of ore and waste at the contacts.

It was observed at Youga that with a relatively low powder factor the heave is typically less than 1 m. This also helps with the grade control as the bench preparation for loading is fairly minimal, which avoids contamination of the ore during dozing.

The blast pattern for Wall Control uses close spaced holes with a reduced charge per hole. These shots are typically taken in advance of the production shots so as to limit the damage to the final wall.

16.10.2 Grade Control

The grade control process is based on a combination of interpretation of ore composites from the block model, in-fill drilling with RC holes and trench sampling of the working bench.

By applying a range of cut-off grades the mineralise material is split into the following categories.

Table 59: Material Categories for Grade Control

Category	Material Code	Grade Range	
		(g/t Au)	(g/t Au)
High High Grade	HHG	≥ 15.0	
High Grade	HG	≥ 10.0	< 15.0
Low High Grade	LHG	≥ 5.0	< 10.0
Medium	MG	≥ 1.8	< 5.0
Low Grade	LG	≥ 1.2	< 1.8
Low Low Grade	LLG	≥ 0.7	< 1.2
Marginal	Marginal	≥ 0.5	< 0.7

At Netiana the Cut-off grade was estimated as 1.2 g/t Au. Therefore, Low Grade material and above are fed to the plant whilst LLG and Marginal are stockpiled at site as a Resource. Material with a grade less than 0.5 g/t Au is sent to the Waste dump.

16.11 Production Schedule

16.11.1 Methodology

The production schedule was created in Excel by first importing the bench reserves for each pushback. These bench reserves are split into the following material categories.

Table 60: Material Categories and Destinations for Scheduling

Category	Material Code	Grade Range		Destination
		(g/t Au)	(g/t Au)	
High Grade	HG	≥ 2.5		ROM
Medium	MG	≥ 1.8	< 2.5	ROM
Low Grade	LG	≥ 1.2	< 1.8	ROM
Low Low Grade	LLG	≥ 0.7	< 1.2	LLG Stocks
Marginal	Marginal	≥ 0.5	< 0.7	Marginal Stocks
Waste	Waste		< 0.5	Waste Dump

The schedule is driven by the specified mining rate (tonnes/hr) in a scheduling period. For Netiana the scheduling periods were months and the first period of mining was May 2017.

The Excel scheduler automatically selects material from the bench reserves to match the specified production for a scheduling period. This means that the mining progresses bench by bench and that a proportion of a bench can be mined in a scheduling period.

Based on the total rock moved, the quantities of each material type that are sent to each destination (ROM pad, stockpile or waste dump) are computed and the cumulative quantities recorded. The reclaim from the ROM stockpile is then automated such the highest grade material is reclaimed first.

The main constraints on the mine schedule are:

- Maximum bench sinking rate.
- Maximum ore transport rate.

The maximum vertical sinking rate has been set at 10 m/month per pushback, which equates to a vertical sinking rate of 2 benches of 5 m. On the uppermost benches, it may be possible to exceed this rate by using temporary ramps. However, as the pushback deepens the access constraint to a bench becomes the limiting factor, which is particularly true of the bottom benches, where single lane ramps are used and the area of each bench diminishes with depth.

The constraint on ore transport from Netiana to the ROM pad at Youga is dependent on;

- Number of trucks.
- Truck availability.
- Truck size.
- Shifts per day.
- Cycle time.

The current thinking is to use up to 30 Volvo trucks (40 t capacity) on two shifts per day. It is estimated that each truck will be able to complete 1 trip per shift, or 2 trips per day. With an 80% availability, this translates into a capacity of 1,920 tonnes/day or a maximum 58,400 tonnes/month.

16.11.2 Stockpiling

The ore grade material from the pit will be stockpiled near to the pit exit on a ROM pad. This material will then be loaded into the Volvo trucks and transported to the ROM pad at Youga. Final blending of the crusher feed is performed at the Youga ROM pad, as there will be multiple ore sources from the Youga and Ouaré projects.

Sub-economic mineralised material (LLG and Marginal) will be stockpiled at Netiana as a potential Resource should the price increase or a buyer is found for the raw material. The low-grade material should be split into at least two stockpiles in order to provide flexibility.

16.11.3 Production

The production profile for Netiana commenced in May 2017 with stripping of the starter pit. It is estimate that 300,000 tonnes need to be stripped to expose 9,200 tonnes of ROM stocks. This is less than 1 month of production and it will mean that it will be possible to start feeding ore from Netiana (at a reduced rate) from June 2017.

The transport rate between Netiana and Youga varies considerably over time and is used as a means of controlling the average feed grade to the plant.

The stockpile levels are shown in Figure 61. Note that the LLG stocks are not reclaimed as they are not economic at this time.

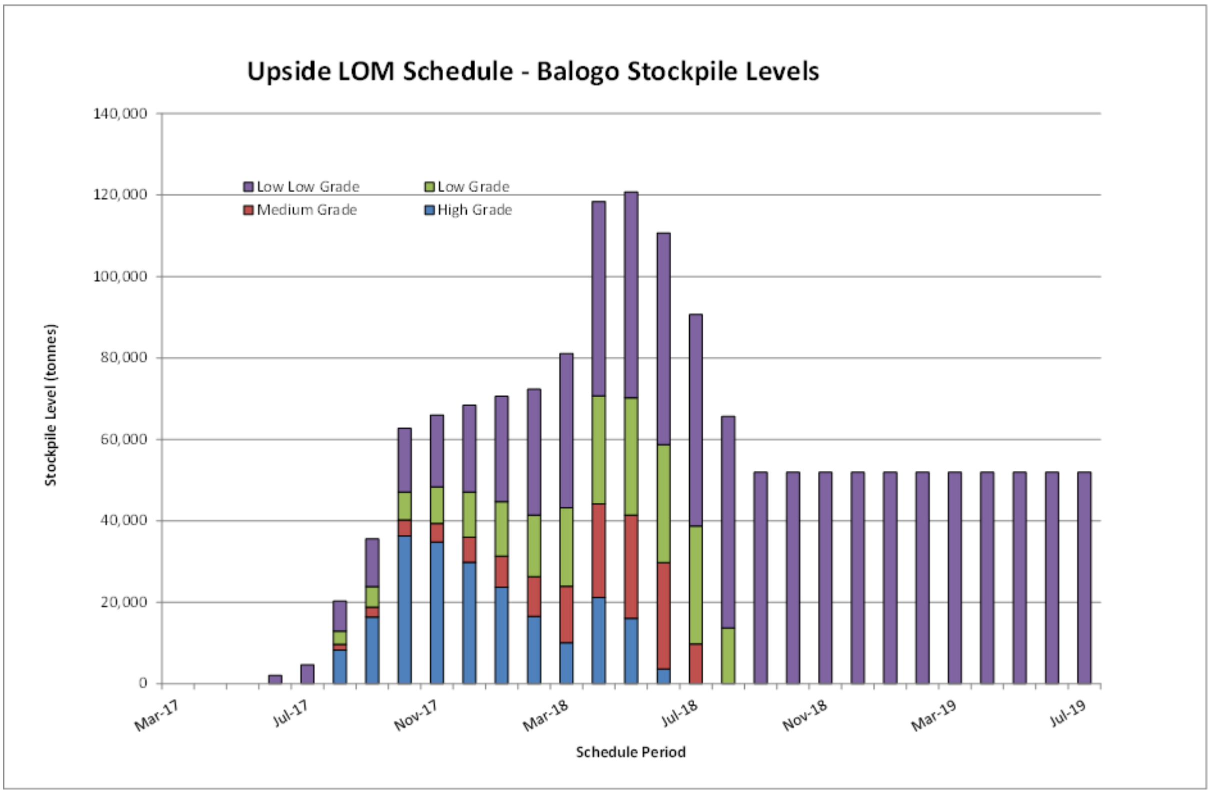


Figure 61: Stockpile levels for the Balogo Project

The mine production for the Netiana is shown in Figure 61.

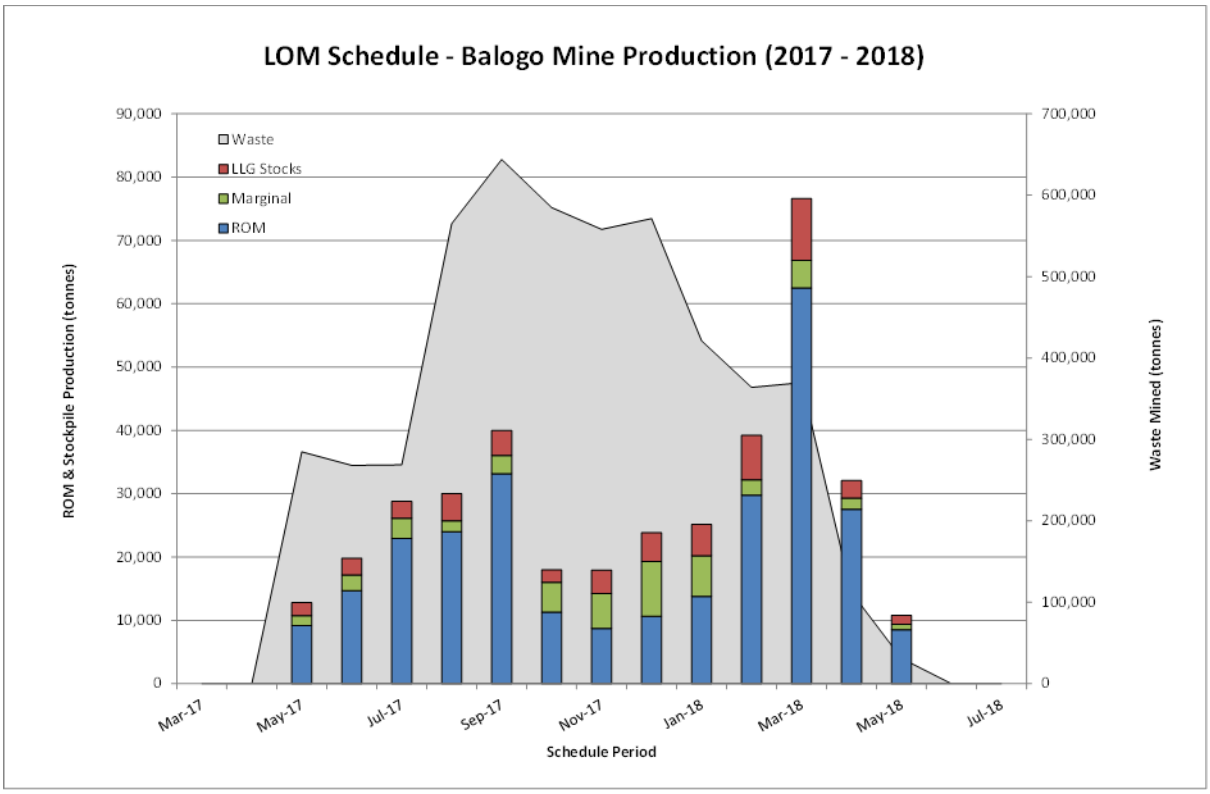


Figure 62: Netiana Mine Production

Points to note are:

- Mining rate is limited to 400 Kt/month when mining out the starter pit. This allows this pit to be mined over a 6-month period and assumes that temporary ramps can be developed for the first 2 benches so as to maximise the mining rate.
- The mining rate is increased to around 600,000 tonnes/month from September 2017 and the final pushback is mined out by June 2018.
- The timing of exposing ore in Pushback 2 is critical and relies on the ROM stocks being built up during the first few months.
- During the period May to December 2017 a total of 125,000 tonnes of ore are mined, which implies an average rate for the transport of ore of 12,500 tonnes/month.
- The transport rate for the following 6 months (January to June 2018) will average around 25,000 tonnes/month, based on an Ore Reserve of 276,600 tonnes.

With a fleet of 20 to 30 trucks to transport ore from Balogo to Youga there is sufficient for the planned transport rates. The constraint on feed to the plant at Youga therefore comes down to the mining rate, which is primarily controlled by the maximum bench sinking rate. It is believed that the assumed maximum mining rate for Netiana is reasonable and there is limited opportunity to optimise the schedule beyond that shown.

The ore feed from Netiana to the plant at Youga will be combined with the ore feed from other deposits at Youga and Ouaré. The overall plant feed is shown in Figure 63.

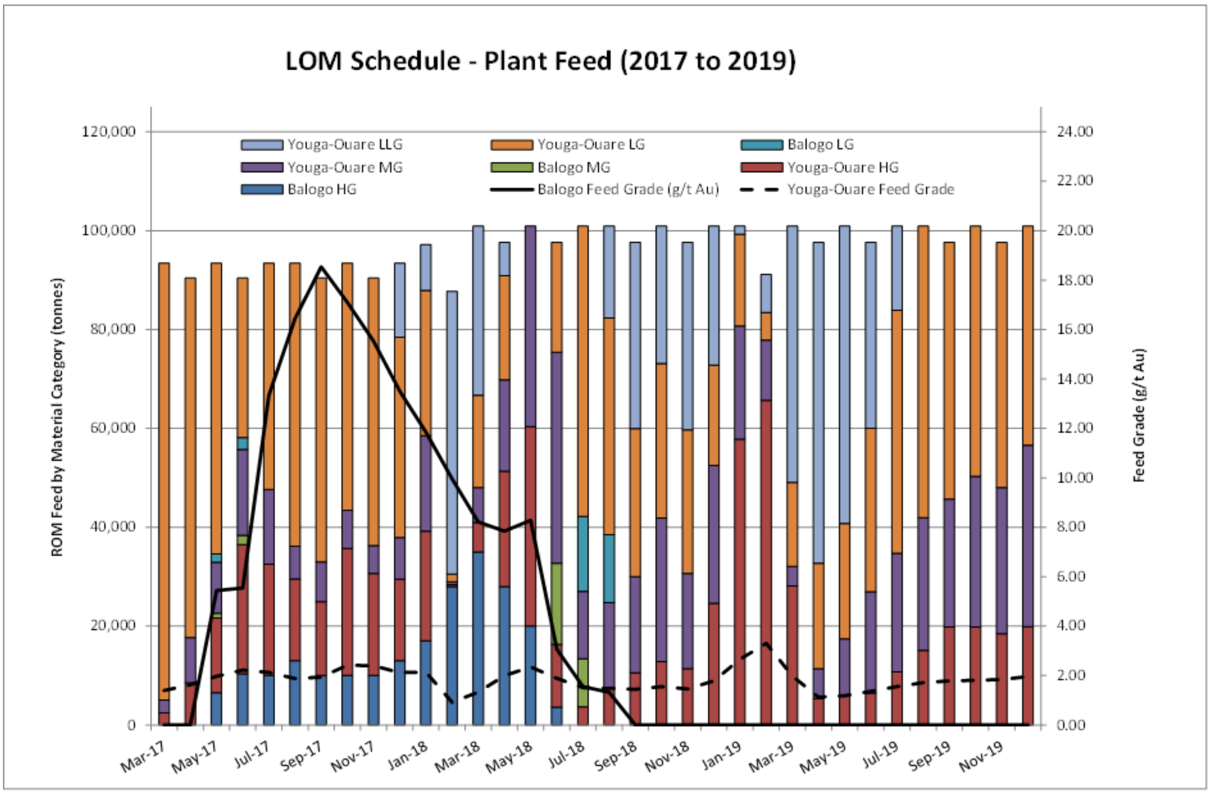


Figure 63: Overall Plant Feed (2017 to 2019)

It can be seen that the feed from Netiana has a significant impact on the overall feed grade to the plant over the period June 2017 to September 2018.

16.11.4 Equipment Requirements

The major items of equipment are summarised in Table 61.

Table 61: Equipment List

Equipment Type	Model/Size	Units
Excavator	Cat 374	1
Excavator	Cat 345	1
Haul Trucks	Cat 745	4
Drill	Atlas Copco D60	1
FEL	Cat 988	1
Track Dozer	Cat D8	1
Grader	Cat 14M	1
Service Truck		1
Fuel Truck		1
Light Vehicles		3
Personnel Carrier		1

Note that the Explosive truck is supplied by the contractor and has not been included in this list as it is provided as part of a fixed price contract for a down the hole service.

16.11.5 Consumables

Fuel and lube were estimated from first principles from the industry standard consumption figures for each equipment type. Provision is also made for wear parts.

The blasting consumables (ANFO, primers, detonators and cord) were also calculated from first principles using the yield per hole (t/m drilled) and the power factor. These were split into production shots and wall control.

16.11.6 Labour

The labour requirements were estimated as follows:

- Managerial staff
- Supervisors
- Engineer/Geologist
- Operators

For non-shift pattern workers, a 6 and 2 rotation is assumed and there is no additional coverage during leave. Sufficient managerial or supervisory staff has been allowed for to cover operations for 365 days per year.

For shift workers, the number of Full Time Employees (FTE) was estimated on the basis of 2 shifts per day and a 3-crew roster. Provision is also made for coverage for leave and absenteeism.

Table 62: Labour Requirements

Labour Group	Expat or Local	Full Time Employees	
		2017	2018
Mine Ops Supervisors	Expat	1	1
Production Engineers	Local	2	2
Trainer	Local	2	2
Mine. Admin Assistant	Local	1	1
Excavator Operators	Local	3	3
Truck Operators	Local	12	9
Dozer Operators	Local	3	3
Grader Operators	Local	3	3
Other Equipment	Local	18	18
Blast Crew	Local	1	1
Drillers	Local	3	3
Maint. Supervisor	Expat	1	1
Maint. Admin Assistant	Local	3	3
Mine Maintenance	Local	3	3
Planning Eng.	Local	1	1
Mine Surveyor	Local	2	2
Mine Geologist	Local	2	2
Grade Control	Local	4	4
Samplers	Local	2	2
Tech Admin Assistant	Local	1	1

17 Recovery Methods

The following section is reproduced from the September 2016 Feasibility Study Report (HGC, 2016). The sub-sections below summarise aspects of the processing plant, and recent and current plant performance. The QP does not disclaim responsibility for the information contained in this section.

17.1 General Description of the Process Plant

The Youga processing plant uses the conventional gravity/CIL gold recovery process, similar to various facilities in operation in West Africa. This consists of a 3-stage crushing operation, ball milling, gravity concentration and cyanidation by carbon-in-leach (CIL). Pressure Zadra elution is utilized for recovery of gold from loaded carbon.

17.1.1 Crushing Circuit

Run of Mine (ROM) ore is delivered to the primary crusher feed bin by front-end loader (FEL). Ore is withdrawn by a variable speed apron feeder to the primary (jaw) crusher. The crushed ore is conveyed to the secondary (cone) crusher, which operates in open circuit. The secondary crushed product is fed to a single deck screen (14 mm openings to produce a nominal -12.5mm crushed product), with the screen oversize reporting to the tertiary crusher section (two cone crushers in parallel) feed bins, while the screen undersize reports to the fine ore stockpile feed conveyor. The tertiary crushed products report back to the single deck screen, completing the circuit.

17.1.2 Milling Circuit

The crushing circuit product reports to the fine ore stockpile, from which feed to the grinding circuit is withdrawn by one of three vibrating feeders onto the mill feed conveyor. Hydrated lime is added via a rotary valve onto the conveyor to ensure the ground ore is fed to the leaching circuit at the correct pH (>10.5). The ball mill discharge is pumped to a 'cluster' of hydro-cyclones, the overflow product from which forms the feed to leach circuit. The underflow product returns to the mill feed after a portion (approximately 20%) is diverted to the gravity circuit.

17.1.3 Gravity Circuit

The bleed stream is passed over a vibrating scalping screen to remove coarse (+2mm) particles, which gravitate back to the mill inlet chute. The underflow feeds the centrifugal bowl type concentrator for recovery of the coarse free gold and other particles of sufficiently high specific gravity. Concentrator tails gravitate to the mill feed inlet, while the concentrate is periodically discharged from the concentrator and flows into a storage tank located in the gold room for upgrading by further gravity devices.

17.1.4 Leaching circuit

The cyclone overflow slurry flows onto a linear trash screen for removal of natural and mining debris such as woodchips, cloth, plastic and wire which can cause operating issues in the downstream stages. The slurry gravitates through a sampler and into the first leach tank (mechanically agitated) where cyanide solution is added. From there it overflows and gravitates through five subsequent, mechanically agitated, Carbon-in-Leach (CIL) tanks to enable maximum possible dissolution of gold as a cyanide complex and subsequent adsorption onto activated carbon. Each CIL tank is equipped with an interstage screen mechanism, with a cylindrical basket-type stainless steel wedge-wire screen surface for retention of activated carbon in the tank. Air blowers installed on the top of the CIL tank platform provide air in the slurry through the agitator shaft in order to improve oxygenation of the slurry and enhance the dissolution process.

17.1.5 Tailings

The barren slurry from the last CIL tank gravitates to a vibrating screen (Carbon Safety Screen) prior to a sampler, and then to the tailings pumping station from where it is pumped to the slimes dam. Any carbon recovered from the screen will be re-circulated as required.

17.1.6 Carbon Treatment

Barren carbon is added to the last of the CIL tanks and advanced through to the first where the loaded carbon is routinely removed from the circuit, washed in acid, and the adsorbed gold removed by washing in cyanide under pressure and temperature. The desorbed gold is recovered by electrowinning onto steel wool. The electrodes are routinely 'harvested', and, combined with the separately collected gravity concentrate, converted to bullion by smelting.

17.1.7 Supplementary Systems include:

Raw Water

This is taken from the Nakambé River, stored in a desanding holding tank from where it is pumped over 11 km to the site raw water pond. Distribution points include: Elution - for making up acid wash and carbon desorption solutions, gland service, reagent preparation, and the fire water head tank.

Process Water

Decanted excess settled water from the tailings dam pool gravitates to the return water dam. A return water pump at the dam recycles water to the plant process water tank. Process water is reticulated throughout the plant where required, servicing specific process requirements, as well as general hose points.

Potable Water Supply

Raw water is treated through a filtration and sterilisation system before being stored in a dedicated tank. Potable water is reticulated to the various drinking water and ablution facilities throughout the plant and offices, and all safety showers on site.

Fire-water Supply

The fire system consists of a main fire pump, an electric jockey (pressure booster) pump, a diesel driven pump, a fire pipe manifold and hydrants in chosen locations throughout the plant.

Compressed Air

Standard air compressed air systems are supplied for a plant of this type, including leach air compressors, high pressure and instrument air. Later in 2017, the operation proposes to install an oxygen separation plant to supplement the air supply to the leach circuit.

17.2 Current Process Plant Performance

Processing operations commenced in 2008, ramping up to a throughput of 1 Mt in 2012, and 1.12 Mt in 2016. Figure 64 shows how the plant throughput has steadily increased over the period, while gold production peaked in 2013 at 89,000 oz, and thereafter steadily declining due to falling head grades as the current ore sources moved into lower grade zones.

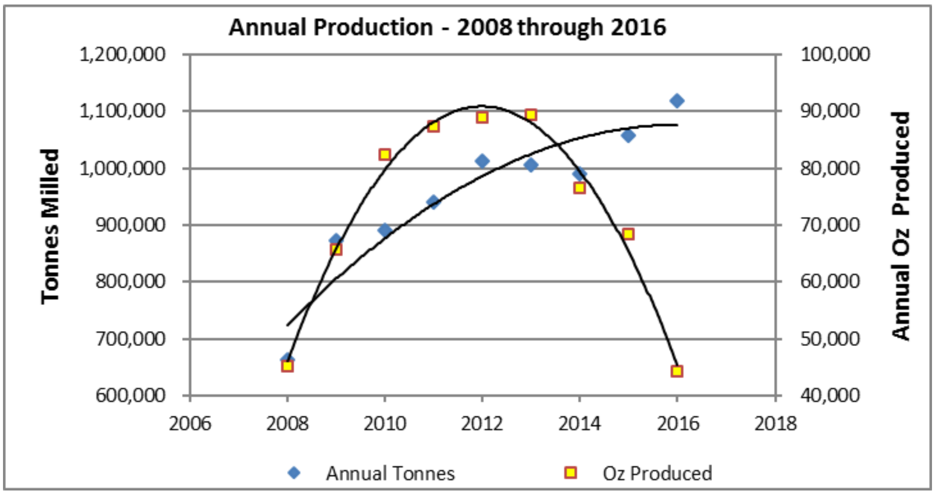


Figure 64: Annual Tonnes Processed and Gold Produced

The decrease in production is principally due to the falling off in feed grades during the latter years, and the relative effect of decreasing head grades on overall recovery is shown in Figure 65 below. The decrease in production was only partially offset by an increase in tonnes milled (+10% in 2016 over 2012).

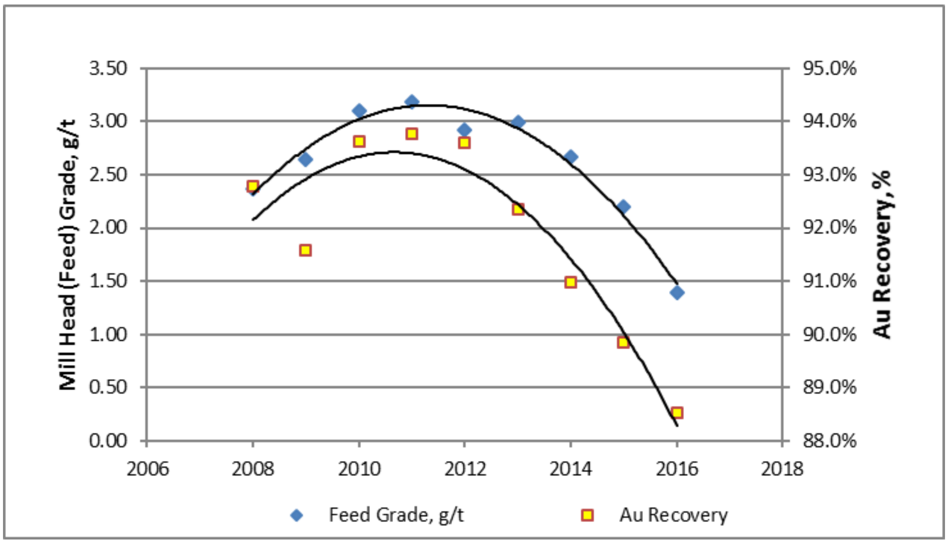


Figure 65: Youga Operation - Annual Mill Feed Grade and Gold Recovery

Examination of the tailings grades recorded over the same period (shown below) shows a gradual increase as the feed grades have decreased while circuit throughput has increased.

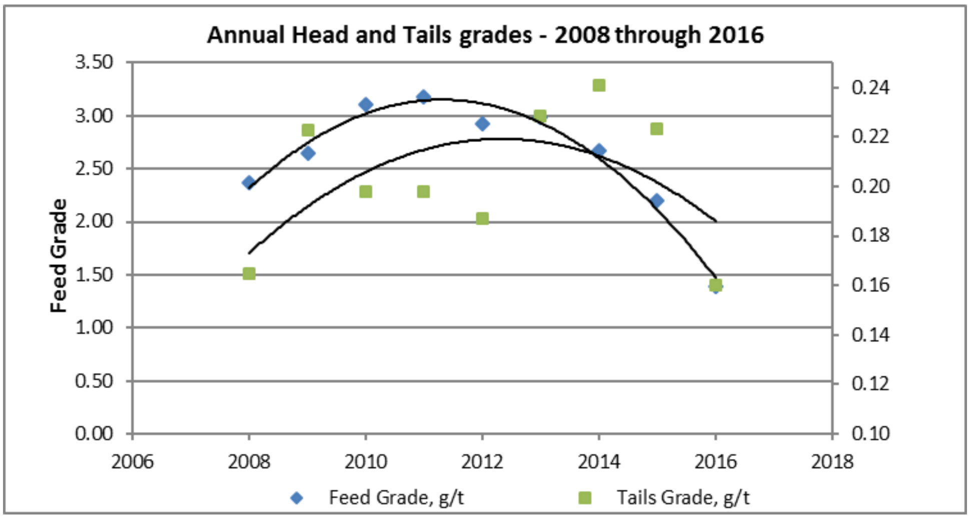


Figure 66: 2017 Operating Performance

17.3 Projected Plant Throughput

The current mine plan (Figure 63) is projecting the material from Netiana to be processed in 2017 and 2018 at the proportion of 10 and 16 percent respectively of the proposed mill annual throughput. The 2012 test program measured the Bond Ball Mill index for the Netiana samples tested (average of 14.76 kWh/t), which are significantly lower than those from the existing Youga ores currently being treated. At this hardness, the Netiana ore types should proceed through the existing Youga comminution circuit at the tested grind size (80% passing 75 microns) at between 170 and 190 t/operating hour, and will still achieve gold extraction of 94%.

18 Project Infrastructure

18.1 Mine Infrastructure

Since Netiana is well advanced and came in to production (pre-stripping) in May 2017 the estimate of mine infrastructure is essentially unchanged from that of the Feasibility Study published in March 2016.

The infrastructure for mining includes open pit, waste rock stockpile, ore stockpile and related facilities. These facilities include prefabricated office buildings and change house. The infrastructure on site is designed to support an efficient mining operation. Electrical power for office building, change house and lighting is sourced from a 150kVA diesel generator.

There will be no camp facilities on site. The camping area is located at 6.3km east of the Balogo Project area. The camping area consists of prefabricated and containerised buildings for the following:

- accommodation of mine staff.
- accommodation and office space for the engineers.
- Laundry.
- Kitchen.
- Bathroom.
- dining hall.

Provision for a total of up to 40 mine staff and 10 engineers is accommodated in the camping area. Electrical power required for the camping area is sourced from two diesel generators of 100kVA and 150kVA.

The mine fleet at Netiana consists of 2 hydraulic excavators, 4 to 6 haul trucks, 1 FEL, 1 Dozer, 1 Grader, Service truck, Water truck, Fuel truck, Explosive truck, light vehicles and other support equipment. Routine servicing will need to be done at site and this can be done with a simple setup with containers joined together and covered with a metal roof.

There is a fuel and lube station at site as well as a simple tyre bay. This is constructed from containers so that it can be relocated after 18 months.

The ore from Netiana is transported back to the processing plant at Youga. It is assumed that this fleet of trucks will be based at Youga and will utilise the facilities, including the workshops, at Youga. There should be no need to include additional facilities at Netiana.

Equally as all the processing and refining of the ore is done at Youga there will be no requirement for these facilities at Netiana.

Other administrative functions, including HSE, will be sourced from Youga and there will be minimal need to accommodate additional staff at Netiana except for routine visits of inspection.

19 Market Studies and Contracts

19.1 Market Studies

Gold is a freely traded commodity and as such there's been no market study made nor is one proposed.

Ore from Netiana is trucked to the Youga plant where the plant currently produces Dore bars that are sold to independent refineries under normal commercial conditions. The gold is collected from site and is transported to Ouagadougou, from where it is flown to Europe for further refining. The funds flow back into Burkina.

As soon as the gold is collected from the gold room at Youga, all risks are transferred to the security company / refinery.

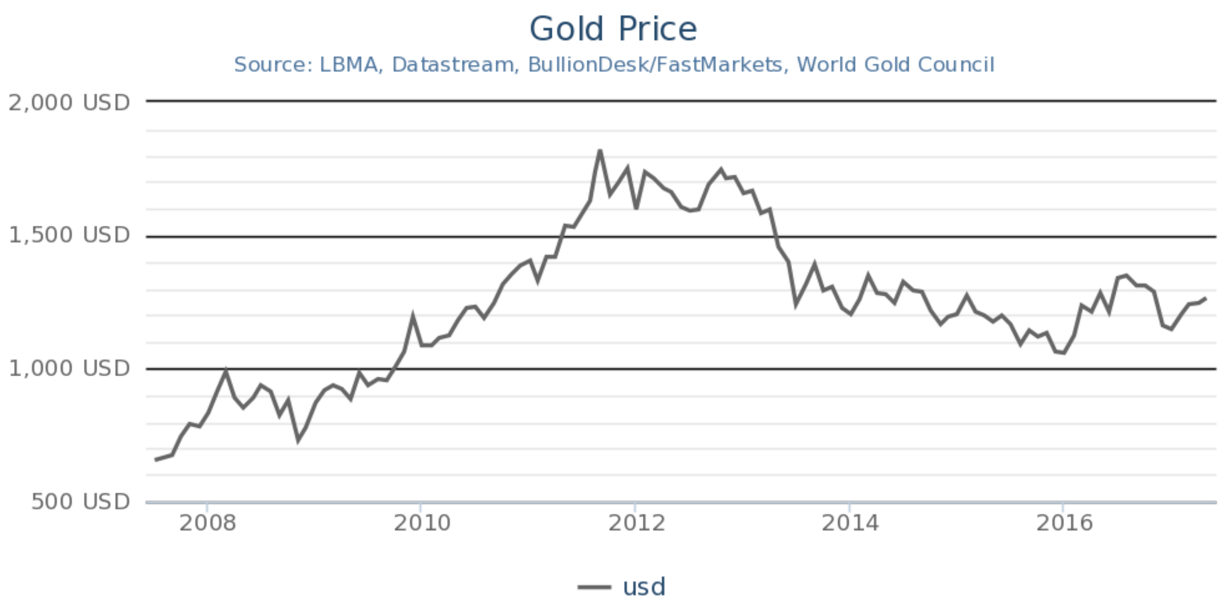


Figure 67: Gold price in USD for the past 10 years

Source: World Gold Council web site (http://www.gold.org/investment/interactive-gold-price-chart), accessed on June 1st 2017.

The gold price dynamics (Figure 67) suggests that the base case scenario gold price of US$1,250/ounce is within the current market trends.

19.2 Contracts

Currently there are no long-term contracts in place for the project.

20 Environmental Studies, Permitting and Social or Community Impact

20.1 Overview

This Environmental and Social review comments on the level of environmental permitting and study work completed, to inform the Reserve reporting, sufficient to meet or exceed Prefeasibility Study standard work.

The review is based on the following main documents:

- Youga EIA Report, SGS Environmental (Ghana), February 2005.
- Youga EMP (version 1), Date unclear but pre-2012.
- Review of Mine Closure, Youga Mine, Wardell Armstrong, January 2017.
- Balogo EIA, Socrege, August 2016.
- Balogo RAP, Socrege, August 2016.
- EIES on Balogo-Youga Ore Transport Route, Socrege, April 2017.
- Ouaré Preliminary E&S Assessment Report, Socrege, November 2012.

Other relevant documents also sighted:

- Copy of Youga Mining Permit, 2003.
- Signed Company Environmental Policy, January 2017.
- Youga EMP, 2016.
- Youga 'Respect to Commitments' (Social Mitigations), 2015.
- Youga Environmental Program Organisation, 2016.
- Balogo Environmental Permit, September 2016.

20.2 Area Context

The Project is located within the Sudanese climatic type of southern Burkina Faso but influenced by the south Sudano-Sahelian zone, where annual evaporation exceeds rainfall. The wet season runs from May to October, bringing around 900 mm rainfall on south and south-westerly winds, while the dry season from November to March, is associated with dusty north and northeast "Harmattan" winds. Annual evaporation is around 2870 mm. Highest temperatures occur at the end of the dry season with mean monthly maxima exceeding 39°C. Surface water is largely ephemeral and rain-fed groundwater fluctuates seasonally, giving rise to water supply issues for people, livestock and wildlife.

The Project area is entirely rural with savannah woodland cover but with rapidly expanding agricultural cultivation and pastoralist activities, as well as artisanal mining and felling for firewood and charcoal, causing significant deforestation. Population density is low and scattered with severely limited infrastructure, social structures and services.

An Environmental Permit was granted to the Project in September 2016 following submission and approval of the Project Environmental and Social Impact Assessment (ESIA) and RAP, both conducted by Socrege. The ESIA Report is a comprehensive study of the baseline conditions at the site, identification and assessment of potential Project impacts, and proposed mitigations to address these. The ESIA also includes risk analysis, an ESMP and preliminary Rehabilitation and Closure Plan (RCP).

20.3 Environmental and Social Impact Assessment

20.3.1 Baseline Studies

Baseline studies are detailed. The climate study was based on 34 years of data from three government met stations, all within 47 km of the Project area. This data shows the effects of climate change, with weather becoming more erratic over the last decade, with unexpected and spasmodic heavy rain events. Five measuring stations were established for air quality and noise, located based on source and receptors, and two campaigns of measurement were undertaken and showed ambient conditions are within standards.

There is a good understanding of the water resources in the area, with documented research into the hydrogeology and aquifers together with data from wells and boreholes, and surface flow data from existing flow gauges and stations in the area. There are no perennial rivers or major reservoirs but ephemeral streams exist with small riverbed ponds persisting into the dry season. Several small reservoirs have been created for wildlife in the Nazinga Hunting Reserve and Tambi Park and there are three agro-pastoral water dams, the Boala dam being the main reservoir near the Project area.

Groundwater is recharged through rainfall and the water table is relatively shallow. A water quality sampling campaign was undertaken in June 2016 at 10 sites including surface water, wells and boreholes. The pH varied from 6 to 7.5, surface water had high turbidity and all samples had faecal bacterial pollution. Water usage in the area is collated but mine water requirements are not calculated or Project supply source identified. Three options are considered: using the existing Boala dam; raising the Boala dam wall; or construction of a new site dam.

The geology and mineralogy of the deposit is described but no geochemical studies were undertaken for the ESIA study despite recognised abundance of pyrite and chalcopyrite. Soils and land-use studies are detailed with characterisation and mapping. Vegetation surveys were undertaken from August 2013 to March 2014 and inventories made of gallery forests, wooded savannahs, shrubby savannahs, grassy savannahs, cultivated fields and forest plantations and protected flora species. Forest resources and different uses are described and listed, with almost all species occurring in the Project area. Seven protected and conservation areas are recognized: pastoral, energy services access, development project, seven village hunting zones, the National Park (10 km from the Project site), the Nazinga Game Ranch (11 km) and Elephant Migration Corridor No 1 (23 km).

The fauna studies are relatively detailed provide an initial status of the wildlife populations and biodiversity in the study area. Only three small mammal species were observed in the Project area during field surveys in 2015: red patas monkeys, hare and rat. However, the nearby Game Ranch have a reasonable diversity of large mammals, including elephant, hippos, various antelope species, warthog, monkeys and several predators including lion, leopard, caracal and hyena. 25 bird species were identified in the study area, but the Park and Ranch are known to have abundant birdlife, with over 300 recognised species. The Boala dam has three species of fish and a crocodile population (44 and 63 recorded at two different survey periods). Three traps were set at 14 sites to survey insects and snakes, catching and identifying 29 species.

The social study involved research and interviews and captured the demographics, ethnic, religious, and population dynamics; the social, administrative and political frameworks; traditional and social organisation in the study area.

The rural population of the wider area is around 20,000 in 19 villages, plus ≈56,000 in the main town of Sapouy. The Project area has between 5,500 and 6,000. Basic services and facilities for education and literacy, health, planning, use of land and resources, and infrastructures are given together with description of the economic sectors (agriculture, livestock, other primary production, crafts, tourism, artisanal mining and trade). Land issues are complex but ownership is well defined with access to land via inheritance, gifting or borrowing. Access to pasture is free but any damage to farm land requires compensation. There are some issues over these land transfers, but most conflict is between farmers and breeders. Traditional and modern systems are employed for conflict resolution. The cultural heritage and archaeology study identified 19 iron reduction workshop sites as well as cemeteries and sacred sites.

20.3.2 Impact Assessment

Potential impacts generated by Project activities are identified and assessed across the Project timeline from site preparation and construction, operations and decommissioning, closure and rehabilitation.

Major challenges are anticipated to be resettlement, compensation for loss of land and access to grazing, water and natural forest resources. Relocation of three traditional households and the economic displacement of 39 other households are required, together with expropriation of 71 fields covering an area of 101.59 ha, as well as loss of grazing for livestock where right-of-way is restricted. The EIA proposed minimum exclusion from other project areas to reduce socio-economic impacts on livelihoods and the exploitation of natural flora resources. Apart from displacements, other impacts from Project construction are identified as:

Air quality from dust and exhaust emissions:

- Noise.
- Soil erosion and contamination of soils.
- Sedimentation and turbidity in water resources.
- Deforestation and clearance of vegetation cover (including 11,376 feet of tree removal of major significance).
- Disturbance of wildlife and deterioration of habitats.

Many of these impacts are continued or exacerbated during operations, as well as landscape changes from pit excavation and waste rock dump (WRD) construction. Potential contamination of water resources and soils from acid mine drainage (AMD) and metal leaching from the open pit and WRD is identified, but has not be evaluated with testwork and is a significant gap in the ESIA.

Other impacts include lowering of water-table through pit dewatering drawdown affecting local wells and boreholes; and health and safety issues associated with road traffic accidents and access to mine infrastructure. Haulage of ore from Netiana to the Youga plant requires the passing through of at least five villages between Balongo and Pô, and may pose a significant safety hazard to the locals. There is likely to be opposition to hauling through the night and hence restricting haulage to daylight hours seems reasonable.

There is little evaluation of the potential Project social impacts from the expected influx of people, or of impacts on and from artisanal mining in the area.

Positive impacts from the operation will include creation of 100 jobs; new business opportunities for local populations (trade, catering etc.); and economic benefits to the State and local authority from tax gains.

The main additional impacts from the rehabilitation and closure phase include the loss of direct and indirect jobs and business opportunities for local populations.

The ESIA risk analysis identifies social disorder from conflicts over compensation; conflicts with farmers and pastoralists; and traffic accidents as significant issues. It also includes evaluation of geotechnical risks from the pit and WRD; fire, explosion and flooding; chemical/hydrocarbon spills; drawdown depletion of groundwater resources; and health issues from microbial contamination.

CSA Global comment: The ESIA proposes suitable measures to prevent, eliminate, mitigate or compensate for adverse impacts, as well as measures to increase the positive impacts of the project. These relate to protection against air, water and soil pollution as well as management measures for solid and liquid waste from the mine and for combating the risks of fires and other accidents. Measures to strengthen the capacity of stakeholders are also proposed.

However, given the lack of geochemical testing, the potential impacts from ARD and/or metal leaching has not been assessed; impacts from- and to the artisanal miners in the area are not addressed; and the effects of in-migration due to Project development are not evaluated nor mitigations described.

20.3.3 Environmental and Social Management Plan

The preliminary Environmental and Social Management Plan (ESMP) provides for the implementation of environmental and social mitigation measures, as well as for monitoring and supervision, and capacity-building. The overall budget for the implementation of the ESMP for the Project is estimated at US$1,454,514, including nearly US$750K for mitigation and compensation plans; US$560K for resettlement; US$120K for monitoring; and US$33K for capacity building.

The participation and public consultation section of the ESIA identifies Project stakeholders and describes the methodology, protocols and means of communication for stakeholder engagement, including the required consultation for scoping terms of reference, ESIA and Project disclosure. The main concerns raised by initial meetings with local communities included relocation of families; destruction of vegetation and loss of fields; nuisance/disturbance from the Project and risk of accidents; impacts to sacred sites and places of worship; loss of income from artisanal gold mining on the Project site; access to drinking water; and employment, development of income-generating activities and training of young people in skilled trades.

The preliminary RCP in the ESIA gives closure objectives and the progressive rehabilitation options and closure activities to achieve these. The plan details actions for the pit and WRD and post-closure monitoring, at an estimated cost of US$1,444,803, but does not include any social interventions or community preparation for closure.

20.4 Balogo Resettlement Action Plan

Experience of compensation issues at Youga has informed and guided the approach to stakeholder engagement and compensation at Balogo and a detailed Resettlement Action Plan (RAP) was developed for the Balogo Project by Socrege in 2016. The proposed duration of the RAP is five months for all the resettlement and compensations, at an estimated cost of just over US$560K. In addition to the Project, environmental and social descriptions, the RAP includes detailed inventories of the footprint areas, with land take; number of fields; number and type of trees; number of buildings, huts and sheds, sheepfolds and henhouses; and number of people displaced by the pit, WRD, run of mine (ROM), offices and roads of the Project. The plan looked at alternatives to reduce the affected area and minimise the required relocations. The policy and legal framework for displacement and compensation are described together with details of eligibility, cut-off dates, evaluation methods and compensation rates. The RAP covers resettlement measures and selection of sites; integration with host communities; public involvement; gender and vulnerable people issues. It also identifies responsibilities and describes litigation management.

20.5 Balogo – Youga Haul Route ESIA

In 2016/17 Socrege undertook an ESIA study on the proposed Netiana-Youga haul route, issuing the EIES Report in April 2017. The Socrege work on this ESIA has again been thorough and detailed, with the 217-

page report covering the main aspects of baseline data collection, impact assessment and proposed mitigation.

Two alternative routes for the ore haulage were evaluated with the chosen route being shorter; crossed less populated areas and so impacted fewer communities; and was economically more feasible. The ore mined at the Netiana deposit will be transported by truck along a 154 km long route to the Youga mine for processing. Of this route, 150 km are on the existing national highway RN25 (from Koumbili to Youga), but the dirt road from the project site to the RN25 which has been rebuilt. The road will be used by a range of vehicles aside from the haul trucks, including heavy equipment and fuel delivery, light vehicles and buses for personnel movements and is critical to the development of the Balogo Project.

The study area for the ESIA was appropriately set for each of the component studies, varying from 30 m to 400 m either side of the road central axis. Extensive desktop studies have been augmented by a field study undertaken in October 2016 for dust and noise measurement along the route; observations on the surface water intersected by the 14 km rebuild section of the route; vegetation and fauna surveys; and stakeholder engagement. Relevant baseline data from the Balogo studies were collated for the portion of road close to the mining area.

Impact assessment includes identification of sources and receptors through construction and operations. Potential impacts on-going maintenance of the route include:

- Air quality, primarily from dust.
- Construction noise and vibration.
- Soil erosion from deforestation and increased runoff.
- Accidental hydrocarbon spills; siltation and increased turbidity of water resources.
- Temporary water shortages due to construction water use.
- Wildlife in close proximity to the works.

Haulage operations are expected to transport around 18,000 tonnes per month in 30 tonne trucks, with an average of 20 round trips per day. There will be two convoys per day, supported by police escort and safety trucks. These will pass each haul route village four times in 24 hours, assuming haulage continues on both day and night shift. Operational impacts from ore haulage along the 154 km of the route will affect six main settlements, with a total population of nearly 240 thousand people. These include:

- Noise.
- Vibration.
- Light pollution at night.
- Dust and other air quality particulates.
- Deterioration of the road.
- Road safety/traffic accidents involving people, property and loss of livestock (provoking conflicts/compensation), as well as to wildlife.

The ESIA study risk analysis identified several potential risks from developing the ore transport route for the Balogo-Youga Project, but the two main issues were:

- Road traffic accidents.
- Risk of social disorder from:
    - Economic displacement and compensation disputes.

  - Nuisance and disruption from convoy traffic through towns and villages, and resulting from traffic incidents.

Positive outcomes of rehabilitating the road and ore haulage on the RN25 include:

- Improved access and connectivity for rural populations.
- Economic and employment benefits from allowing development of the mining project.
- Possible business, catering and trade opportunities for communities along the haul route.

Appropriate mitigation measures are proposed for the construction and operational phases that relate to protection against air-, water- and soil pollution as well as road safety awareness and accident risk management measures and capacity building amongst the impacted communities.

Stakeholder engagement has included public consultations to provide information on the project together with gathering opinions, concerns and to identify suggestions and recommendations from the public. Socrege identified the direct and indirect project stakeholders and undertook individual and group meetings with various level authorities and animal resources- and educational services; public meetings in all of the villages crossed by the route; targeted meetings with women and youth groups; and visits to various hamlets and settlements in the area of influence of the project. The main concerns were associated with road safety and dust.

The report includes an ESMP for the implementation of environmental and social mitigation, compensation, monitoring and capacity-building measures. This framework includes a table of specific measures, as well as details for both internal monitoring and surveillance and external verification and project transparency monitoring, and of the capacity building program (mainly focussed on road safety). The overall budget for the implementation of the haul road ESMP has been estimated at CFA 245,361,130 (approximately US$420,750), of which US$41K is for the monitoring plan, and US$17K is allocated for the capacity building program, in addition to the amount already committed for the original Balogo CSR budget.

20.6 CSA Global Conclusions

In general, there has been a considerable amount of environmental and social work undertaken on the Project and EIA reports are of reasonable content and quality. Baseline data collection has been detailed and comprehensive and impact assessment and mitigations appropriate. While not to Standard Operating Procedure detail, the ESMPs are at an adequate level for implementation. Also, both the ESIA and RAP have apparently been approved and an environmental permit has been granted for the Balogo Project.

However, CSA Global raises the following concerns:

- **CSA Global believe that there is some additional work required to properly assess and address the geochemical-, artisanal mining- and in-migration risks.**
- **CSA Global believe that the indicated monitoring frequency is believed to be insufficient, especially for surface and groundwater quality and quantity; ecology and biodiversity; and social monitoring. The overall budget for the implementation of the ESMP for the Project is also believed to be underestimated, given the experience from Youga.**
- **CSA Global believe that additional social considerations should take the total closure costs closer to US$2 million. A financial guarantee for the RCP is to be paid by instalment over the Project lifetime (four years), but the total amount must be paid at least one year before the end of the project.**

20.7 CSA Global Recommendations

CSA Global recommends the following works be completed to address gaps in the Project environmental and social work:

- Establish, if not already present, site meteorological stations at Balogo.
- Install permanent flow gauges at Project streams and depth rods at ponds/dams.
- Implement and publicise a formal grievance mechanism for all components of the Project.
- Undertake geochemical testing, including metal leaching tests on waste rock, ore material and tailings from Netiana ore.
- Define and implement ecological and social monitoring.
- Calculate Netianao Mine water requirements and identify supply source.
- Evaluate potential social impacts from influx of people to the Balogo area and develop measures to alleviate these.
- Assess impacts on and from artisanal mining in the Balogo area and establish dialogue to reduce environmental impacts and conflicts.
- Increase frequency of surface and groundwater quality and quantity; ecology and biodiversity; and social monitoring at Balogo.
- Develop measures for social interventions and community preparation for closure in the Balogo RCP.

21 Capital and Operating Costs

21.1 Capital Expenditure

The proposed capital expenditure for Netiana has been limited to the purchase of the initial mining equipment which is detailed in the mine costs model for Netiana and totals US$ 5,863 k. The main items are:

- 1 x Excavator.
- 4 x Haul trucks.
- 1 x Drill.
- 1 x Track Dozer.
- 1 x Grader.

Allowance is also made for service equipment and light vehicles and additional equipment will be transferred from Youga as the mining rate at Netiana is gradually increased from May 2017 onwards.

It is assumed that the existing exploration camp facilities will be repurposed for day to day operation of Netiana. This includes:

- Mine office buildings.
- Canteen and lunch room.
- Accommodation block.
- Fuel station.

It is assumed that major overhauls will be carried out at the Youga workshops if required and that routine maintenance can be done with the existing facilities. Given that the equipment is new, and the mine life is short (12 months), this should be minimal.

21.2 Operating Costs

The mine operating costs were estimated from first principles from the required mine equipment to support the schedule. A breakdown of the costs for 2017 and 2018 is shown in Table 63.

Table 63: Summary of Mine Operating Costs for Netiana

	Units	Total	Mar-17	Jan-18
Operating Costs - Category	**(USD/t)**	**1.59**	**1.46**	**1.67**
Labour	(USD/t)	**0.38**	0.31	0.39
Overhaul	(USD/t)	**0.08**	0.07	0.08
Maintenance	(USD/t)	**0.11**	0.11	0.12
Fuel	(USD/t)	**0.64**	0.59	0.69
Lubricants	(USD/t)	**0.07**	0.07	0.08
Tires	(USD/t)	**0.03**	0.03	0.03
Wear Parts	(USD/t)	**0.08**	0.07	0.08
Explosives	(USD/t)	**0.19**	0.20	0.18
Miscellaneous	(USD/t)	**0.02**	0.02	0.02

The Miscellaneous category includes the annual fixed costs for provision of contract services to supply fuel and explosives.

A summary of the operating costs is given in Table 64.

Table 64: Summary of Operating Costs for Netiana

Cost Area	Units	2017	2018
Mining Cost	US$/t mined	1.46	1.67
Ore Transport	US$/t ore	14.06	14.06
Processing (variable)	US$/t ore	17.60	17.60
Processing (fixed)	KUS$/annum	4,040	4,040
G&A	KUS$/annum	2,209	2,209

Note that open pit mining of Netiana ceases in mid-2018 and reclaiming of the ROM stockpiles continues until the first quarter of 2019. The annual fixed costs have been adjusted accordingly.

22 Economic Analysis

This Economic Analysis of the Netiana gold project is based on the Mineral Reserves presented in Section 16 and uses a discounted cash flow approach. Results are expressed as pre-tax and pre-financing terms. However, the analysis takes into account the 4% royalty paid on revenue. No inflation or escalation of revenue or costs has been incorporated into the base case economic model. Project expenditures prior to March 2017 are considered as sunk costs and are excluded from the cash flow model.

The model is developed in US Dollars at current prices and does not include considerations for exchange rate fluctuations.

22.1 Inputs and assumptions

Inputs to the cash flow model include

- Mining operations in 2017 and 2018.
- Total LoM production of 276 kt with average grade of 8.8 g/t containing 2.4 t of gold.
- No processing facilities on the Netiana site, the ore is transported to the Youga processing plant.
- The cost of ore transportation is at US$14/t based on the information provided by the Client.
- No additional CAPEX is provisioned for the ore transportation.
- No cost is allocated to the Netiana project with regards to tailing dams on the processing facility in Youga.
- Processing recovery at 91% for 2 g/t or less feed grade, 92% for the feed grade between 2 and 3 g/t, 93 % for the feed grade between 3 and 4 g/t and 94 % for the feed grade above 4 g/t with average recovery for the life of mine of 94%.
- Revenue based on a gold price of US$1,250 / ounce.
- Sales cost of US$7 / ounce.
- Contingency on mining OPEX of 10% has been provisioned to factor in risk of salary increases.
- Total Expenditures related to Environmental and Social impact of US$4.4 million over 3 years.
- Mineral royalty of 4% of revenue.
- Initial mining CAPEX of US$5,863 k in 2017 that is offset by the sale of all equipment to the Youga project in 2018 for US$5,277 k.
- NPV assessment at 2 discount rate levels of 6% and 8%.

22.2 Cash Flow Model and Economic Result

The Netiana deposit cash flow model is shown in Table 65.

The following pre-tax economic indicators were calculated, at a gold price of US$1,250:

- Undiscounted cash flow of US$60.1 million.
- NPV at 6% discount rate of US$54.9 million.
- NPV at 8% discount rate of US$53.3 million.

IRR and payback period assessments are not applicable to the project as its cash flow positive from year one.

Table 65: Netiana deposit cash flow model

Group	Item		Total	2017	2018	2019
Mining Summary	Ore	*Unit*	***553.24***	269.10	284.13	-
	Expit to Stockpile	*kt*	***276.62***	134.55	142.07	-
	RoM Rehandle	*kt*	***276.62***	134.55	142.07	-
Waste	Waste	*kt*	***5,089.66***	2,664.10	2,425.56	-
Processing Summary	Ore to plant	*kt*	***276.62***	89.87	186.74	-
	Head grade	*g/t*	***8.81***	12.97	6.81	-
	Gold content	*kg*	***2,437.46***	1,165.86	1,271.60	-
	Recovery	*%*	***0%***	94%	94%	
	Gold recovered	*kOz*	***73.66***	35.23	38.43	-
CAPEX	Mining Equipment Capital	*kUSD*	***586.40***	5,864.00	-5,277.60	
	Sustaining CAPEX - Mining	*kUSD*	***-***			
	Sustaining CAPEX - Processing	*kUSD*	***-***			
	Waste dumps	*kUSD*	***478.59***	250.51	228.08	
E&S	Environmental and rehabilitation	*kUSD*	***3,481.00***	1,533.67	973.67	973.67
	COGS to BF	*kUSD*	***915.65***	437.96	477.68	-
	Total	***kUSD***	***5,461.64***	**8,086.14**	**-3,598.17**	**973.67**
OPEX	Mining cost	*kUSD*	***8,383.57***	4,091.21	4,292.36	-
	Mining cost per ton	*USD/t*		1.46	1.67	
	Contingency on mining OPEX	*kUSD*	***838.36***	409.12	429.24	-
	Transportation (Balogo to Youga)	*kUSD*	***3,889.57***	1,263.74	2,625.84	-
	Ore rehandling	*kUSD*	***-***			-
	Processing cost	*kUSD*	***4,862.32***	1,579.79	3,282.53	-
	G&A	*kUSD*	***4,316.20***	2,106.32	2,209.88	-
	Total	***kUSD***	***22,293.16***	**9,451.65**	**12,841.51**	**-**
Revenue	Gold sold	*kOz*	***73.66***	35.23	38.43	-
	Sell cost (USD7/oz)	*kUSD*	***515.65***	246.64	269.01	-
	Gold price	*$*	***1250***	1250	1250	1250
	Total revenue	*kUSD*	***91,564.58***	43,796.12	47,768.46	-
Royalties	Royalty	*kUSD*	***4%***	1,751.84	1,910.74	-
Cashflow		*kUSD*	***60,147.20***	24,506.49	36,614.38	-973.67
NPV	***Discount rate of 8%***	*kUSD*		$53,309.19		
NPV	***Discount rate of 6%***	*kUSD*		$54,888.49		

22.3 Sensitivity Analysis

The base case results shown in Table 65 were tested for sensitivities to:

- Gold price fluctuations in the range from US$1000/oz to US$1,350/oz and mining cost variation from minus 10% to an increase of 10% from the base case. See Table 66 for the results.

- Gold price fluctuations in the range from US$1000/oz to US$1,350/oz and processing recoveries change from -4% to +2% from the current base case. See Table 66 and Table 67 for the results.

The project shows its viability in both stress scenarios:

- NPV at 8% discount rate with project mining costs 10% higher than the base case and gold price at US$1000/ounce is at US$37 million.
- NPV at 8% discount rate with processing recoveries for Netiana ores at 4% lower than the base case and gold price at US$1000/ounce is at US$34 million.

Table 66: Netiana Project NPV (at 8%) sensitivity to mining cost increase and gold price fluctuations (NPV in $1000)

Mining Cost Variation	***Gold Price (per ounce)***							
	$1,000.00	***$1,050.00***	***$1,100.00***	***$1,150.00***	***$1,200.00***	***$1,250.00***	***$1,300.00***	***$1,350.00***
10%	$36,989.08	$40,103.74	$43,218.40	$46,333.06	$49,447.72	$52,562.38	$55,677.04	$58,791.70
5%	$37,362.49	$40,477.15	$43,591.81	$46,706.47	$49,821.13	$52,935.79	$56,050.45	$59,165.10
0%	$37,735.90	$40,850.56	$43,965.22	$47,079.88	$50,194.53	**$53,309.19**	$56,423.85	$59,538.51
-5%	$38,109.31	$41,223.96	$44,338.62	$47,453.28	$50,567.94	$53,682.60	$56,797.26	$59,911.92
-10%	$38,482.71	$41,597.37	$44,712.03	$47,826.69	$50,941.35	$54,056.01	$57,170.67	$60,285.33

Table 67: Netiana Project NPV (at 8%) sensitivity to processing recovery rate change and gold price fluctuations (NPV in $1000)

Processing Recovery Variations	***Gold Price (per ounce)***							
	$1,000.00	***$1,050.00***	***$1,100.00***	***$1,150.00***	***$1,200.00***	***$1,250.00***	***$1,300.00***	***$1,350.00***
-4%	$35,103.68	$38,085.80	$41,067.92	$44,050.04	$47,032.16	$50,014.28	$52,996.40	$55,978.52
-2%	$36,419.79	$39,468.18	$42,516.57	$45,564.96	$48,613.35	$51,661.74	$54,710.13	$57,758.52
0%	$37,735.90	$40,850.56	$43,965.22	$47,079.88	$50,194.53	**$53,309.19**	$56,423.85	$59,538.51
1%	$38,393.95	$41,541.75	$44,689.54	$47,837.33	$50,985.13	$54,132.92	$57,280.72	$60,428.51
2%	$39,052.01	$42,232.94	$45,413.86	$48,594.79	$51,775.72	$54,956.65	$58,137.58	$61,318.51

23 Adjacent Properties

There are no adjacent properties.

24 Other Relevant Data and Information

24.1 Hydrology

24.1.1 Overview

CSA Global undertook a review of the available hydrological and hydrogeological aspects of the Netiana deposit. The aim of the review was to evaluate the level of understanding of the hydrology and hydrogeology and to identify any potential mine water management issues and risks. To complete the review the available hydrological and hydrogeological data were compiled and are summarised in this report.

The scope of work for the review includes the following tasks:

- Review all hydrological and hydrogeological information currently available relating to the Balogo Project.
- Identify any gaps in the data currently available and put forward recommendations to address these data gaps.
- Prepare a technical memorandum detailing the findings of the above.

The data available for review included the following:

- MNG, 2016; Feasibility Study for the Balogo Project in Burkina Faso, HCG Cement & Mineral Processing Technologies, March 2016.
- Socrege, 2016; Environmental and Social Impact Study of the Netiana Gold Project, produced for MNG Gold, August 2016.

24.1.2 Conceptual Hydrological and Hydrogeological Model

Climate

A climatological assessment for the Balogo Project area is presented in Section 5.

Hydrology

The MNG (2016) Feasibility Study contains a short section on hydrology; however, the report refers to proposed monitoring measures rather than providing actual field results. The ESIA details literature review data and limited site specific data. Per the Feasibility Study, the Balogo Project area is located within the sub-catchment areas of three small ephemeral streams, which drain the site to the south, eventually feeding in to the larger Sissili and Nazinon Rivers. These sub-basins are reported as the West Koumbili, East Koumbili and Koro.

Primary hydrometric data areprovided in the ESIA from the following gauging stations:

- Nazinon station in Nobéré.
- Sissili station in Nebbou.
- Sissili station in Kounou.

A review of the Direction Générale des Ressources (DGRE) inventory identifies 14 surface water reservoirs in the rural commune (department) of Guiaro. These are listed in Table 12-2 of the Feasibility Study and may provide local hydrometric data. They are tabulated below.

Table 68: List of surface water reservoirs of the rural commune of Guiaro (source MNG,2016)

REGION	PROVINCE	MUNICIPALITY	VILLAGE	NAME OF WORK	TYPE	DIKE LENGTH	VOLUME (m3)	REAL YEAR	MAIN PURPOSE	SUSTAINABILITY	NATIONAL BASIN
CENTRE-SUD	NAHOURI	GUIARO	BOALA	SANTUOGE	Barrage	887	-	2007	Agricole	Permanent	NAKANBE
			OUALEM	AKALON	Barrage	256	87 000	1986	Faunique	Permanent	
			OUALEM	AKAWAZENA	Barrage	225	-	1977	Faunique	Permanent	
			OUALEM	BARKA	Barrage	140	-	1983	Faunique	Permanent	
			OUALEM	BOUDJERO	Barrage	60	-	1985	Faunique	NPE	
			OUALEM	CENTRALE	Barrage	437	169 000	1987	Faunique	Temporaire	
			OUALEM	KADRO	Bouli		-	2009	Agricole	Permanent	
			OUALEM	KALIÉBOULOU	Barrage	405	1 465 000	1987	Faunique	Permanent	
			OUALEM	KOUZOUGOU	Barrage	80	-	1981	Faunique	Permanent	
			OUALEM	MARE DES PHACOCHERES	Mare					Permanent	
			OUALEM	NAGGIO	Barrage	160	-		Faunique	Permanent	
			OUALEM	NAKURU	Barrage	30	-	1981	Faunique	Permanent	
			OUALEM	POUPANGA	Barrage	310	-	1986	Faunique	Permanent	
			OUALEM	TALANGA	Barrage	100	-	1984	Faunique	Permanent	

Hydrogeology

Overview: Within the Balogo Project area, a significant number of exploration boreholes have been drilled using a combination of reverse circulation and diamond drilling. Investigations to date have focused on the geotechnical properties of the subsurface rather than hydrogeological parameters. The hydrogeological information available for the Balogo project area relies on literature values and limited site specific data.

The literature data used in the MNG (2016); Feasibility Study includes six piezometers in the Nazinon and Sissili sub-basins, an inventory of water access points in the municipality of Guiero and 19 water access points visited by the SOCREGE mission. Tables 12-4 to 12-6 of MNG (2016) provide a listing of potential groundwater data sources. No site-specific water level measurements or borehole hydraulic testing results are provided and limited site-specific water level measurements are available.

Aquifers: The FS and ESIA reports for the Balogo Project contain a short section on aquifer properties. The section is poorly referenced and the data sources used in the interpretation are unclear. Per the report, the three sub-basins that the Balogo Project area intersects have low interstitial porosity, although it is identified that there is potential for enhanced groundwater flow in fracture zones.

The west and east Koumbili sub basins are cited as poorly productive, with water yields during drilling reported as being 3-7 m^3/sec. These yields do not seem reasonable for the hydrogeological environment as this flow rate corresponds to a maximum yield exceeding 700,000 m^3/day. Therefore, the quoted yields are considered questionable and there is likely to be some unit or calculation error.

The Koro sub-basin is classified as having good potential for extensive exploitation with a yield rate of 3-9 m^3/sec (again the quoted yields are considered questionable and there is likely to be some unit or calculation error). No information was provided regarding how the yield rate was calculated i.e. via pumping test, or whether the provided rates relate to the weathered zone or competent bedrock.

Groundwater Levels and Flow Direction: Except for the 19 SOCREGE data points, all referenced groundwater data points lack spatial information. One monitoring point is located on the periphery of the Balogo Project area, while there appear to be two surface water monitoring points on watercourses which are hydrologically connected to the mine site.

Of the 19 SOCREGE points, piezometric water levels are provided for three of the points which range from 0 to 24.7mbgl (note: assumed to be mbgl, units given as m). Given the lack of spatial or topographical information, it is not possible to infer groundwater flow direction.

24.1.3 Water Management and Supply

Water Supply

The Balogo mine water supply requirements will depend upon the operation of the mine and may include requirements for dust suppression, ablution and potable water. As the ore will be transported to the Youga mine for processing, the processing water requirements for the Netiana site are likely to be minimal.

Water supply options for the Balogo Project are provided in the ESIA however a water supply strategy for the Balogo Project, including potential yields, quality and long-term sustainability of the water supply sources has not been provided for review.

Water Quality

Groundwater and surface water quality measurements were collected near the Balogo Project area from the 19 SOCREGE monitoring points.

Water quality samples were collected from 4 boreholes, 3 wells and 3 surface water locations in the vicinity of the project area. Of the available water quality parameters, the dissolved oxygen concentrations represent a potential concern. Dissolved oxygen concentrations detected in groundwater wells and drilling water ranged from 1.15 - 2.96 mg/l (mean 2.06 mg/l) and 1.49 - 3.58 mg/l (mean 2.18 mg/l) respectively. Dissolved oxygen concentrations less than 2mg/l are considered anaerobic. In anaerobic groundwater, reducing conditions increase the solubility of naturally occurring metals. Anaerobic groundwater can therefore exhibit elevated concentrations of reduced iron, manganese and hydrogen sulphide. Water treatment may be required if this water is to be used as a water supply for the proposed Netiana mine.

Water Management

A specific water management plan is not provided for the Netiana site. The proposed SOCREGE monitoring programme does not contain either on-site boreholes or a targeted surface water monitoring regime (i.e. upstream and downstream of on-site activities).

24.1.4 Conclusions

In summary; while hydrological and hydrogeological assessments have been completed for the Feasibility Study, significant uncertainty remains with respect to water management for the Balogo Project. Additional site-specific assessments are recommended to ensure that the water management aspects of the project are fully understood and appropriate surface water and groundwater management strategies are developed and costed.

Additional observations include:

- The assessment of the hydrology and hydrogeology for the Balogo project area appears to be based predominantly on literature values and limited site-specific data. Significant uncertainty remains regarding the hydrological and hydrogeological understanding of the Balogo Project area due to the lack of site specific data.
- An assessment of design rainfall events, design flood events, derivation of peak flow rates and peak flood heights is not included in the MNG (2016); Feasibility Study and a surface water management plan for the Balogo project is not included in the FS.
- An assessment of potential pit inflows (derived from both rainfall runoff/surface water and groundwater) is not included in MNG (2016) and a dewatering strategy for the proposed open pit is not included in the FS.
- The water demands for the Balogo project are not detailed in the FS, although it is identified that water for dust suppression will be required. In addition, it is likely that there will be a water demand associated with the administration and mine camp. The camp is proposed to accommodate a total of 40 mine staff and 10 engineers. Water supply options for the project are not detailed in MNG (2016). A water balance for the Netiana Mine has not been provided for review.
- The potential impact of mine water management on the water environment was included in the ESIA.
- Capital and operating costs for the Netiana mine have been developed. However, the costs are not presented in sufficient detail to determine whether they include an adequate provision for water management for the project.
- A water monitoring programme for the Balogo Project has been proposed, although uncertainty remains as to whether water monitoring is being completed in accordance with the proposed programme. The proposed monitoring programme does not include on-site boreholes or targeted surface water monitoring (i.e. upstream and downstream of on-site activities).

24.1.5 Recommendations

Additional studies are recommended to improve the level of understanding relating to the hydrology and hydrogeology at Balogo. This additional information would also increase the confidence with regards predictions for mine water management at Balogo. More specifically; CSA Global recommends the following:

- Additional site investigations to improve the hydrological and hydrogeological understanding for the site, including:
    - Installation of an on-site rain gauge to record site specific rainfall data relating to both individual storm events and daily rainfall totals.
    - Monitoring of flows and water quality associated with surface water features in the immediate project area.
    - Mapping of the depth to bedrock across the project area in order to identify the depth of the weathered zone and the position of the weathered rock/fresh rock contact (transition zone) which often represents a zone of enhanced permeability and preferential groundwater flow and is important in terms of managing pit inflows and as a target depth for potential water supply bores.
    - A site specific hydrogeological field investigation programme, including:
        - installation of site specific monitoring boreholes upstream and downstream of mine activity.
        - site specific aquifer parameters for the various lithologies across the project site.
        - investigate the hydraulic connection between different units.
        - groundwater levels and groundwater flow direction.
        - groundwater quality.
- The current water monitoring programme should be reviewed in order to ensure that the programme enables the water management issues for the entire site to be fully evaluated.
- An assessment of pit inflows and dewatering requirements should be completed and an appropriate dewatering and depressurisation strategy developed.
- A surface water management plan should be developed for the proposed Netiana Mine site to minimise pit dewatering pumping requirements, enhance pit wall stability, maintain safe working conditions and minimise potential surface water related impacts on the environment.
- An assessment of the long-term water supply security of potential water supply options should be completed to ensure a sustainable water supply is available to meet local requirements for the life of the mine.

25 Interpretations and Conclusions

25.1 General

Subject to the limitations listed above, and based on the outcomes of the data verification undertaken, as well as discussions with NMC geologists; CSA Global considers the drill hole data for the Balogo project to be sufficiently reliable for Mineral Resource estimation and associated downstream work. The following conclusions apply to the Balogo Project:

- CSA Global concludes that the sampling quality and methods and survey procedures appear to be appropriate and representative. There is intrinsic sample bias and/or potential for contamination associated with soil, grab and auger sampling, however these datasets have not been used in the estimation of resources and are for indicative/exploration purposes only.
- Between 2011 and 2014, GMR drilled approximately 65% of the holes and 27% of the metres in the drill and trench database. From 2016 and 2017, all drilling was completed MNG.
- Procedures for all drilling completed at the Project follow those employed by GMR.
- QAQC was reviewed and the following noted:
  - Overall there are issues with CRM performance with numerous failures and biases. Many of the failures appear to be due to misidentified CRMs and blanks as opposed to outright failures. However, this misidentification reduces confidence in the project data management.
  - No QC data were provided for drillholes BDH001 to BDH030 and therefore no conclusion can be made as to the reliability of these assay results.
  - The pulp blanks showed no indication of contamination at the analytical stage.
  - Numerous failures in the RC Oreas CRMs.
  - The diamond core CRMs are mostly precise and accurate, but no high-grade CRM has been used with these samples.
  - Precision is acceptable, with some bias. However, high grade pairs tend to disproportionately influence the mean grades.
- Data management requires improvement, especially as the project moves from exploration to production. A centralised database should be implemented which can serve as a single point of truth for the project data.
- Database gold assay results were compared against PDF assay certificates for a random selection of four certificates from ALS (2016) and six from SGS (2012), covering 25 drillholes. No differences were noted between the hard copy and the database assay results. However, no assay certificates were provided for any of the BIGS laboratory data.

25.2 Mineral Processing and Metallurgical Testing

- Netiana samples contain significant levels of Tellurium (average of 30 g/t) and Sulphur (average of 1.75% S) compared with <1 g/t and 0.23% S for the Youga ore samples respectively. Gold leaching extractions from Telluride and Sulphide minerals can be relatively low, depending on the gold occurrence within the minerals. However, the measured gold leach extractions for the twelve samples tested averaged ~89% after 24 and 91% after 48 hours respectively. Extractions from the five samples of above 4 g/t were 94%, and this level has been used for the production schedule and economic analysis.
- Seven of the twelve samples tested had higher copper head grades (average of 0.16% Cu), which resulted in greater than 100 ppm of copper in the leached solutions and higher cyanide consumption (2.7 kg/t) after 24 hours leaching. The five remaining samples (average head grade of 0.04% Cu)

consumed marginally less cyanide (1.8 kg/t) for the same leach time. Overall consumption tested to be considerably higher than that for the Youga samples and actual ore treated in 2016.

25.3 Mineral Resources

CSA Global considers that data collection techniques are consistent with industry good practice and suitable for use in the preparation of a Mineral Resource estimate to be reported in accordance with NI 43-101. QC data supports the integrity of the analytical data which has been utilised.

- A twinning program and QAQC review completed by NMC resulted in the exclusion of eight drillholes Global (seven RC, and one DDH) from use in the MRE. A comparison of RC vs. DDH data completed by CSA Global concluded that a combined drill type dataset was suitable for use in the estimation of Mineral Resources.
- Data verification included spot checks on three drill hole collars during a site visit, verification of core, review of core photos for several drill holes and review of core recovery. These checks support the use of the data for Mineral Resource and Mineral Reserve work.
- A 3D block model representing the mineralisation has been created by CSA Global, in collaboration with NMC geologists, using Datamine™ software. High-quality RC and DDH samples were used to estimate grades into blocks using OK. The block model was validated visually and statistically.
- The total drilling available for the geological model and MRE update was 352 holes and trenches for 49,123 m.
- 2,981 samples in 12 domains were flagged within the mineralised volume and composited downhole to 1 m lengths. The resultant 3,004 composite samples were used in the estimate.
- A review of 798 in-situ dry BD measurements in mineralisation resulted in a BD of 2.86 t/m3 being assigned to fresh material, which aligns with the mineralisation hosted in diorite. A review of core photos indicated that the BD for oxide and transitional material based on measurements was likely to be too high, since competent pieces of core (often quartz vein) were used for the measurements, but these are not considered representative of the mixed nature of these zones. Geological logging of intensity of weathering was used to derive a length weighted average for oxide and transitional. Highly weathered material was assigned 2.00 t/m3; 2.14 t/m3 for oxide and 2.35 t/m3 for transitional.
- Following contact analysis, a decision was made to use hard boundaries between mineralisation domains and soft boundaries across weathering zones for all geostatistical analysis and estimation. A variogram was modelled for the largest domains in Netiana and Netiana SE for Au using 1 m top-cut composites, with outliers excluded where appropriate.
- Grade was estimated into parent blocks of 5 m x 5 m x 5 m (X x Y x Z) using OK, controlled by dynamic anisotropy (DA).
- Grade estimates were validated against drill data. There is good correlation between the input composites and output model for the estimated Au grade. Generally, the model grade trends follow the pattern of the drill samples grades, with acceptable levels of smoothing of the higher and lower grades.
- The Netiana MRE satisfies the requirements for Indicated and Inferred Mineral Resource categories as embodied in the NI 43-101 Canadian National Instrument for the reporting of Mineral Resources and Reserve.
- The MRE indicates reasonable prospects for economic extraction, supported by a resource shell produced in NPVS using a US$1,500 Au prices and basic assumptions regarding costs.

25.4 Mineral Reserves

The Mineral Reserve for Netiana were converted from the Mineral Resource using the modifying factors discussed in Section 16. All Mineral Reserves are classified as Probable based on a Resource Classification of Indicated. Inferred and Unclassified Resources have been excluded from the conversion of Resources to Reserves.

The QPs are of the opinion that potential modifying factors have been adequately accounted for using the assumptions in this report, and therefore the Mineral Resources within the mine plan can be converted to Mineral Reserves. Factors that may affect the assumptions in this report are:

- Commodity price and exchange rate assumptions are important factors that affect revenue and costs. It has been shown that Price is a significant driver to the project economics and that a 10% change in price could result in at least a 10% change in the Reserve.
- The mine plan has been limited by an assumed annual Mill throughput of 1.1 Mtpa. However, Mill throughput may prove to be higher or lower than this depending on the ore type. This is particularly relevant to the new deposits such as Netiana, as bulk metallurgical tests have not, to date, been carried out.
- If certain rock types or delivered blends of rock types have lower throughputs than currently modelled, this would increase the processing cost, which would in turn increase the mill cut-off grade. If all other things held constant, this would tend to reduce the tonnage of the Mineral Reserve and the amount of contained metal. If throughput reductions are significant, this could reduce the size of the economic pit limits, further reducing the Mineral Reserve. Furthermore, a reduction in throughput would delay cash flow, resulting in a negative impact on Project economics.
- Effective surface and groundwater management is important to the safety and productivity of the mining operation. Although this is only really an issue during the rainy season, if the currently planned water management methods prove to be inadequate, additional sumps and pump systems may be required. This would add to the capital and operating costs, resulting in a negative impact on Project economics and a potential reduction in the Mineral Reserves.
- Transport of ore between Netiana and the process plant at Youga is a key part of the plan and relies on the efficient planning of the transport route, good road maintenance and proactive management of community relations. The 154 km route passes through many villages and there is a high risk of road traffic accidents. Major public unrest because of injury or fatality could easily disrupt the transport of ore to Youga.

25.5 Mining Methods

The proposed method of mining for Netiana is a conventional open pit method using drilling and blasting, loading with excavators, and hauling with articulated dump trucks (ADT). Consideration of underground mining has not been necessary at this stage of the Project. Mining of the starter pit commences in May 2017 at a rate of 400 t/hr and is mined out over a 6-month period. Mining of the second pushback commences in August 2017, also at a rate of 400 t/hr, and the mining rate is gradually increased to 800 t/hr. The Final Pit is mined out over the next 10 months.

- There is potential for additional Mineral Resources to be exploited by open pit mining methods, although this is dependent on improved project economics and/or reclassification of the Inferred Resources through additional drilling.
- The evaluation of Netiana assumes that the ore will be transported to the processing facility at Youga. The optimal production rate is therefore constrained by the capacity limit of the transport fleet and the capacity of the plant at Youga.

- Consideration also has to be given to the maximum vertical advance rate as the pit limit at surface is relatively small in area (250 m x 300 m) and the pit extends to a depth of 100 m below topographic surface.
- A reduction in the pit limit would have also limited the opportunity to create a starter pit, which would have meant that it would not have been possible to high grade in the early months. This was regarded as a key strategy in the development of Netiana.
- A significant factor in determining the cut-off grade is the inclusion of the transportation cost between Balogo and Youga. This has been estimated at 14 US$/t hauled, for a haul distance of approximately 154 km. This means that the cut-off grade for Netiana (1.2 g/t) is significantly higher than that seen at Youga, where the cut-off grade averages 0.7 g/t Au.
- As a consequence of the raised cut-off grade for Netiana, the material that is normally classified as Low Low Grade (grade range of between 0.7 and 1.2 g/t Au) is stockpiled at Netiana as a potential ore source in the future. The Low Low Grage (LLG) material is not included in the Ore Reserve as it is uneconomic at this time. Similarly, Marginal material (grade range between 0.5 and 0.7 g/t Au) is also stockpiled separately at Netiana.
- By segregating the ROM material into several stockpiles, it is possible to prioritise higher grade material in the early periods. It also provides the opportunity to blend the feed to the Youga plant to control the mix of ore from Netiana and other deposits.

The geotechnical parameters used to describe the competency of the rocks are of international standard and are believed to be sufficiently comprehensive for the purposes of reporting the Ore Reserves.

25.6 Recovery Methods

The current mine plan projects the material from Netiana to be processed in 2017 and 2018 at the proportion of 10 and 16 percent respectively of the proposed mill annual throughput. The 2012 test program, which measured the Bond Ball Mill index for the Netiana samples tested, are significantly lower than those currently being treated from the existing Youga ores. The new ore types should proceed through the existing Youga comminution circuit at a generally finer grind than currently being achieved, and at higher throughput rates. The extractions projected for the higher-grade material are expected to be ~94%.

25.7 Project Infrastructure

Since the Netiana Project is well advanced and comes into production on 1st May 2017 the estimate of mine infrastructure is essentially unchanged from that of the Feasibility Study published in March 2016.

- The ore from Netiana will be transported back to the processing plant at Youga. It is assumed that this fleet of trucks will be based at Youga and will utilise the facilities, including the workshops, at Youga. There should be no need to include additional facilities at Netiana.
- As all the processing and refining of the ore is done at Youga there will be no requirement for these facilities at Netiana.
- Other administrative functions, including HSE, will be sourced from Youga and there will be minimal need to accommodate additional staff at Netiana except for routine visits of inspection.

25.8 Environmental Studies, permitting and Social or Community Impact

In general, there has been a considerable amount of environmental and social work undertaken on the Project and EIA reports are of reasonable content and quality. Baseline data collection has been detailed and comprehensive and impact assessment and mitigations appropriate. While not to Standard Operating

Procedure detail, the ESMPs are at an adequate level for implementation. Also, both the ESIA and RAP have apparently been approved and an environmental permit has been granted for the Balogo Project.

However, CSA Global raises the following concerns:

- CSA Global believe that there is some additional work required to properly assess and address the geochemical-, artisanal mining- and in-migration risks.
- CSA Global believe that the indicated monitoring frequency is believed to be insufficient, especially for surface and groundwater quality and quantity; ecology and biodiversity; and social monitoring. The overall budget for the implementation of the ESMP for the Project is also believed to be underestimated, given the experience from Youga.
- CSA Global believe that additional social considerations should take the total closure costs closer to US$2 million. A financial guarantee for the RCP is to be paid by instalment over the Project lifetime (four years), but the total amount must be paid at least one year before the end of the project.

25.9 Economic Analysis

The following pre-tax economic indicators were calculated, at a gold price of US$1,250:

- Undiscounted cash flow of US$60.1 million.
- NPV at 6% discount rate of US$54.9 million.
- NPV at 8% discount rate of US$53.3 million.

The base case (US$1,250 gold price) results were tested for sensitivities to:

- Gold price fluctuations in the range from US$1000/oz to US$1,350/oz and mining cost variation from minus 10% to an increase of 10% from the base case.
- Gold price fluctuations in the range from US$1000/oz to US$1,350/oz and processing recoveries change from -4% to +2% from the current base case.

The project shows its viability in both stress scenarios:

- NPV at 8% discount rate with project mining costs 10% higher than the base case and gold price at US$1000/ounce is at US$37 million.
- NPV at 8% discount rate with processing recoveries for Netiana ores at 4% lower than the base case and gold price at US$1000/ounce is at US$34 million.

25.10 Hydrology

Whilst hydrological and hydrogeological assessments have been completed for the Feasibility Study, significant uncertainty remains with respect to water management for the Balogo Project. Additional site-specific assessments are recommended to ensure that the water management aspects of the project are fully understood and appropriate surface water and groundwater management strategies are developed and costed.

Additional observations include:

- The assessment of the hydrology and hydrogeology for the Balogo project area, completed as part of the FS, appears to be based solely on literature values. A site specific hydrological and hydrogeological field investigation does not appear to have been completed for the Balogo Project. Significant uncertainty remains regarding the hydrological and hydrogeological understanding of the Balogo Project area due to the lack of site specific data.
- An assessment of design rainfall events, design flood events, derivation of peak flow rates and peak flood heights is not included in the MNG (2016) Feasibility Study and a surface water management plan for the Balogo project is not included in the FS.

- An assessment of potential pit inflows (derived from both rainfall runoff/surface water and groundwater) is not included in MNG (2016) and a dewatering strategy for the proposed open pit is not included in the FS.
- The water demands for the Balogo project are not detailed in the FS, although it is identified that water for dust suppression will be required. In addition, it is likely that there will be a water demand associated with the administration and mine camp. The camp is proposed to accommodate a total of 40 mine staff and 10 engineers. Water supply options for the project are not detailed in MNG (2016). A water balance for the Netiana Mine has not been provided for review.
- The potential impact of mine water management on the water environment is not included in the FS. Potential impacts may include:
  - Local groundwater table drawdown because of pit dewatering and depressurisation.
  - Impact on surface water bodies from site discharges (water quality and flow regime).
  - Reduction of surface water flows due to surface water interception/harvesting.
  - Pit void remaining at mine closure.
- Capital and operating costs for the Netiana Mine have been developed. However, the costs are not presented in sufficient detail to determine whether they include an adequate provision for water management for the project.
- A water monitoring programme for the Balogo Project has been proposed, although uncertainty remains as to whether water monitoring is being completed in accordance with the proposed programme. The proposed monitoring programme does not include on-site boreholes or targeted surface water monitoring (i.e. upstream and downstream of on-site activities).

25.11 Project Risks

Project risks have been summarised in Table 70 and are categorised from insignificant to fatal flaw (Table 69 lists the risk categories used). No fatal flaws were observed in the Balogo Project, with the majority of risks noted being either low or moderate with potential upside or opportunity also noted in many categories.

Table 69: Risk categories used

Risk Category	Definition
(red)	Fatal Flaw (significant material risk to metal)
(orange)	Moderate (metal may be at risk)
(yellow)	Low (unlikely to have material affect on metal)
(green)	Insignificant (errors detected, but immaterial)
(blue)	Potential upside or opportunity

Table 70: Project Risk Table (Coloured by risk category)

Project	Balogo
Data Management System	Opportunity to improve on excel and passport-based data capture and storage, with a move towards more secure relational database structure to improve integrity and more efficiencies in data management, storage and security.
Geology	No digital geology data provided.

QAQC	Past QAQC failures has led to the exclusion of eight drill holes from the MRE database.
Artisanal Workings	No survey data for artisanal workings. Surface metal may be at risk.
Nature of Gold Mineralisation	Visible Au and extremely high grade Au mineralisation may be discontinuous. Close spaced grade control required.
Dry in-situ bulk density	Oxide and transitional density is not based on actual measured values, due to likely oversampling of competent material in core. This leads to uncertainty in the density values used for approx. 30% of the mineralisation, but based on CSA Global's experience, these values are unlikely to be too high.
Topography	Topography based on drill hole collars. Has had to be expanded for mine planning work. May place some oxide mineralisation at risk.
Geochemistry	Geochemical testing of representative waste rock material required to avoid unforeseen metal leaching from WRD.
Water supply source	Balogo mine water requirements not calculated. Water supply source and potential impacts to other users not identified.
Artisanal Mining	Potential conflicts and environmental damage from artisanal mining. Requires assessment of impacts on- and from- artisanal mining and dialogue.
Compensation	Potential for conflict over compensation grievances. Need to develop and disclose formal and transparent compensation procedure and Grievance Mechanism.
Closure	Opportunity for providing infrastructure, improved land-use conditions, regenerated forest resources and water supplies to communities post closure. Positive legacy.
Mining Recovery & Dilution	The modifying factors for mining recovery and dilution need to be checked once mining starts. The current estimates are based on experience at Youga.
Slope Stability	The geotechnical assessment in the Golden Rim FS and the subsequent 2016 Stability Analysis by the Dokuz University provide recommendations on slope angles. These did not to take into account the hydrogeological conditions and need to be extended to allow for the possibility of depressurisation of the walls.
Metallurgical Recovery	The characteristics of the ore at Netiana are different to Youga, principally in the lack of free gold and the presence of tellurides. Testwork on core samples indicates there should not be a problem provide the blend is controlled. Without bulk tests, there is a risk that the recovery rate or cyanide consumption rate will be higher than expected for Netiana.
Ore Transport	The 154 km route between Balogo and Youga passes through many villages. There is a high risk of injury or fatality to the public from fast moving traffic. There is also the potential issue of disturbance if hauling is a 24 hour operation.

26 Recommendations

26.1 General

CSA Global recommends the following:

- An industry standard database package is recommended to host the data. Currently, Microsoft Excel sheets are used which are inadequate to securely host the project data. CSA Global can advise if required.
- QAQC Recommendations:
  - Preparation blanks should be included to monitor potential contamination.
  - A high-grade gold CRM should be included with the samples to monitor samples >1.5 ppm Au.
  - Ongoing vigilance is required to reduce CRM and blank misidentification.
  - The proportion of field duplicates should be increased to 5% and biased towards mineralised samples.
  - Laboratory QC results should be routinely reviewed and captured in the database.
  - External check samples (umpires) should be sent to an accredited laboratory. CRMs must be included with these samples.

26.2 Mineral Resources

CSA Global recommends the following actions are completed prior to completing MRE updates in the future and to assist with current operations:

- QAQC data should be continually collected and assessed during drilling, so that issues can be addressed, as they arise.
- An SQL relational database is recommended for the secure storage of data to replace excel spreadsheets, which carry risks in terms of data security, verification and document control.
- Create a geological model to support and constrain the mineralisation model, to ensure that continuity and grade variability are well understood by correctly interpreting the structural and geological controls on high grades.
- Conduct a grade control program and estimate a grade control model to assist with short term planning.
- Create a set of procedures that allow for accurate end of month reconciliation and compare this with the long-term model.
- Additional BD data should be collected in oxide and transitional material during open pit production and reviewed regularly to build up a useful BD database of values that can be used to determine the tonnage factors for the Netiana deposit. Methodology and measurements should be verified and standardised in the resource model.
- The current level of understanding of the Au distribution and geological controls are sufficient for mine planning purposes. CSA Global recommends that instead of additional infill drilling to upgrade Indicated Mineral Resources to Measured Mineral Resources, grade control drilling should be sufficient to delineated blast and dig lines during open cast mining.

26.3 Environmental Studies, permitting and Social or Community Impact

CSA Global recommends the following works be completed to address gaps in the Project environmental and social work:

- Establish site meteorological stations at Balogo.

- Install permanent flow gauges at Project streams and depth rods at ponds/dams.
- Implement and publicise a formal grievance mechanism for all components of the Project.
- Undertake geochemical testing, including metal leaching tests on waste rock, ore material and tailings from Netiana ore.
- Define and implement ecological and social monitoring.
- Calculate Netiana Mine water requirements and identify supply source.
- Evaluate potential social impacts from influx of people to the Balogo area and develop measures to alleviate these.
- Assess impacts on and from artisanal mining in the Balogo area and establish dialogue to reduce environmental impacts and conflicts.
- Increase frequency of surface and groundwater quality and quantity; ecology and biodiversity; and social monitoring at Balogo.
- Develop measures for social interventions and community preparation for closure in the Balogo RCP.

26.4 Hydrology

Additional studies are recommended to improve the level of understanding relating to the hydrology and hydrogeology at Balogo. This additional information would also increase the confidence with regards to predictions for mine water management at Balogo. More specifically; CSA Global recommends the following:

- Additional site investigations to improve the hydrological and hydrogeological understanding for the site, including:
  - Installation of an on-site rain gauge to record site specific rainfall data relating to both individual storm events and daily rainfall totals.
  - Monitoring of flows and water quality associated with surface water features in the immediate project area.
  - Mapping of the depth to bedrock across the project area in order to identify the depth of the weathered zone and the position of the weathered rock/fresh rock contact (transition zone) which often represents a zone of enhanced permeability and preferential groundwater flow and is important in terms of managing pit inflows and as a target depth for potential water supply bores.
  - A site specific hydrogeological field investigation programme, including:
    - installation of site specific monitoring boreholes upstream and downstream of mine activity.
    - site specific aquifer parameters for the various lithologies across the project site.
    - investigate the hydraulic connection between different units.
    - groundwater levels and groundwater flow direction.
    - groundwater quality.
- The current water monitoring programme should be reviewed in order to ensure that the programme enables the water management issues for the entire site to be fully evaluated.
- An assessment of pit inflows and dewatering requirements should be completed and an appropriate dewatering and depressurisation strategy developed.
- A surface water management plan should be developed for the proposed Netiana Mine site in order to minimise pit dewatering pumping requirements, enhance pit wall stability, maintain safe working conditions and minimise potential surface water related impacts on the environment.

- An assessment of potential water supply options and their long term water supply security should be completed to ensure a sustainable water supply is available to meet local requirements for the life of the mine.
- An assessment of the potential impacts of mine water management on the environment should be completed.

27 References

AMC, 2016; AMC Consultants, Balogo Mine Planning Report to MNG Gold Liberia Inc, 11 November 2016

Client Communication, 2016; Excel Document Describing – Flowsheet; Operating Data – including schematic flowsheet, historical operating data, annual performance summary, and process unit operating costs for 2016 ($/t).

Coffey, 2013; Scoping Study, on behalf of Golden Rim Resources, Report # MINEWPER01047AB, 1 March 2013

Grieve P, 2016; Comments on mineralisation and exploration, Balogo Project, Burkina Faso for MNG Gold Burkina SARL, from Peter Grieve GeoVentures Ltd, 21 August 2016

GMR, 2015; Golden Rim Resources, June 2015, Balogo Project, Summary of Exploration, June 2015

HCG Cement and Mineral Processing Technologies, 2016; Feasibility Study for the Balogo Project in Burkina Faso, Prepared for MNG Gold, 20 March 2016

MNG, 2017; BF_Exploration_Summary_20170519, 19 May 2017.

SGS Testwork Report, 2012; Gravity and Cyanidation Results on Gold Ore samples from Golden Rim Resources; Report Number 0104MP; 10 December 2012.

Socrege, 2016; Gold Project of Netiana, Resettlement Action Plan, Produced for MNG Gold, August 2016

Socrege, 2016; Environmental and Social Impact Study of the Netiana Gold Project, Produced for MNG Gold, August 2016

Socrege, 2016; ETUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL DU PROJET DE REHABILITATION DE LA ROUTE DE TRANSPORT DU MINERAI DE NETIANA A YOUGA, April 2016

Townend, 2012; Roger Townend and Associates Consulting Mineralogists, Preparation of 11 polished thin sections of 11 drill cores and petrography/mineralographic/SEM examination with reference to gold, 26 November 2012 (as an Appendix in Coffey, 2012)

Townend, 2012: Roger Townend Mineralogy Consultant; Letter Report for SGS and Coffey Mining, 26 November 2012

Wardell Armstrong, 2016; Review of Mine Closure, Youga Mine Burkina Faso, Prepared for Burkina mining Company SA, January 2017

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