Technical Report for the Yaramoko Gold Project, Burkina Faso

Report Prepared for

Roxgold Inc.

Report Prepared by

SRK Consulting (Canada) Inc.

3CR016.002
June 4, 2014

Technical Report for the Yaramoko Gold Project, Burkina Faso

Roxgold Inc.

360 Bay Street, Suite 500
Toronto, Ontario
M5H 2V6
E-mail: info@roxgold.com
Website: www.roxgold.com
Tel: +1 416 203 6401
Fax: +1 416 203 0341

SRK Consulting (Canada) Inc.

151 Yonge St., Suite 1300
Toronto, Ontario, Canada
M5C 2W7
E-mail: toronto@srk.com
Website: www.srk.com
Tel: +1 416 6011445
Fax: +1 416 601 9046

SRK Project Number 3CR016.002

Effective date: April 22, 2014
Signature date: June 4, 2014

Qualified Person List:

Jean-François Couture, PGeo
Corporate Consultant
(Geology)

Ken Reipas, PEng
Principal Consultant
(Mining Engineering)

Brian Connolly, PEng
Principal Consultant
(Mining Engineering)

Sébastien Bernier, PGeo
Principal Consultant
(Resource Geology)

Bruce Murphy, FSAIMM
Principal Consultant
(Mining Engineering)

Anthony Rex, CGeol
Corporate Consultant
(Hydrogeology)

Fiona Cessford, PrSciNat
Corporate Consultant
(Environment)

Rob Bowell, CChem
Corporate Consultant
(Geochemistry)

Leendert Lorenzen, CPEng
Mintrex Pty Ltd

Ian Kerr, MIE Aust
Mintrex Pty Ltd

David Morgan, CPEng
Knight Piésold Pty Ltd

Geoff Bailey, CPEng
Cardno BEC Pty Ltd.

Contributing Author List:

SRK Consulting (Canada) Inc.
Dominic Chartier, PGeo
Glen Cole, PGeo
Oy Leuangthong, PEng
Benny Zhang, PEng
Ross Greenwood
Iris Lenauer
Jason Adam
Sophia Karadov
Alison Harrington

SRK Consulting (UK) Limited
Mike Palmer, FGS
Mark Raynor, FGS
Rowena Smuts
Lalit Kumar
Ludovic Rollin
Andrew Barnes, CGeol, EurGeol, FGS
Julien Declercq, FGS

Mintrex Pty Ltd
Hien Ngo, FIE Aust
Naim Abou-Rjeily MIE Aust

Knight Piésold Pty Ltd
Steve McKean MIE Aust

Cardno BEC Pty Ltd
Rick Di Filippo

Cover: Typical landscape of the Yaramoko gold project. Photo courtesy of Roxgold Inc.

IMPORTANT NOTICE

This report was prepared as a National Instrument 43-101 *Standards of Disclosure for Mineral Projects* Technical Report for Roxgold Inc. (Roxgold) by SRK Consulting (Canada) Inc. (SRK). The quality of information, conclusions, and estimates contained herein are consistent with the quality of effort involved in SRK's services. The information, conclusions, and estimates contained herein are based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This report is intended for use by Roxgold subject to the terms and conditions of its contract with SRK and relevant securities legislation. The contract permits Roxgold to file this report as a Technical Report with Canadian securities regulatory authorities pursuant to National Instrument 43-101. Except for the purposes legislated under provincial securities law, any other uses of this report by any third party is at that party's sole risk. The responsibility for this disclosure remains with Roxgold. The user of this document should ensure that this is the most recent Technical Report for the property as it is not valid if a new Technical Report has been issued.

Executive Summary

Introduction

The Yaramoko gold project is a pre-development gold mining project located 200 kilometres (km) southwest of Ouagadougou, the capital city of Burkina Faso. This project is wholly owned by Roxgold Inc. (Roxgold) a Canadian public company domiciled in Toronto, Ontario with shares listed on the TSX Venture Exchange under the symbol ROG.

During the summer of 2013, Roxgold commissioned SRK Consulting (Canada) Inc. (SRK) to lead a team of consultants including Mintrex Pty Ltd (Mintrex) of Perth, Australia, Knight Piésold Pty Ltd (Knight Piésold) of Perth, Australia and Cardno BEC Pty Ltd (Cardno BEC) of Perth, Australia to prepare a feasibility study to bankable standards. The objective was to demonstrate the economic viability of a proposed underground mine and onsite concentrator targeting the Indicated mineral resources contained in the 55 Zone.

As part of this feasibility study, SRK and Knight Piésold conducted rock and soil geotechnical, hydrogeology, and geochemistry field investigations during the fourth quarter of 2013 to complete the characterization of the project attributes. Additional metallurgical testing was also completed in late 2013 and early 2014, under the supervision of Mintrex, to support the design of a processing flow sheet. Separately, Roxgold mandated the Bureau d'Études des Géosciences, des Énergies et de l'Environnement (BEGE) from Ouagadougou, Burkina Faso to undertake field baseline investigations and to compile an environmental and social impact assessment of the proposed Yaramoko mining project.

This technical report summarizes the technical information that is relevant to support the disclosure of a Mineral Reserve Statement for the Yaramoko project pursuant to Canadian Securities Administrators' National Instrument 43-101. It provides a summary of the work completed by the independent consultants. Also, it presents the assumptions and designs at a level of accuracy that is required to demonstrate the economic viability of the mineral resources defined for the 55 Zone, that were considered. The opinions contained herein and effective April 22, 2014, are based on information collected by the various consultants throughout the course of their investigations.

Property Description and Ownership

The Yaramoko project property is located near the town of Bagassi, approximately 200 km southwest of Ouagadougou in the Balé Province of western Burkina Faso. The centroid of 55 Zone is located at 3 degrees and 16 minutes longitude west and 11 degrees and 45 minutes latitude north.

The Yaramoko project consists of a single exploration permit totalling 167 km^2 granted by the *Ministère des Mines, des Carrières et de l'Énergie* of Burkina Faso to Roxgold Burkina Faso SARL, a wholly owned subsidiary of Roxgold. Roxgold is the sole owner of the property subject to a 10% carried interest held by the Government of Burkina Faso. The permit was renewed in May 2013 and is valid until September 8, 2016.

Accessibility, Climate, Local Resources, Infrastructure, and Physiography

The Yaramoko project can be reached via the highway system by two routes to the village of Bagassi (population of 3,000) located at the center of the property. A narrow-gauge railway connecting Ouagadougou with the port city of Abidjan in Cote d'Ivoire divides the property. Roxgold's exploration camp is located in the village of Koussaro, 2 km east of the exploration permit's eastern boundary. The camp comprises several cabins with indoor plumbing. Currently diesel generators produce electricity.

The closest major city is Boromo, located 50 km away. It is serviced by the national power grid and it hosts a hospital and additional suppliers. However, major purchases and procurements come from Ouagadougou.

Agriculture is the main industry in the region with many fields of millet, groundnut, and cotton. The surface area covered by the Yaramoko exploration permit is sufficient for the infrastructure necessary for an underground mine, including processing facilities and tailings storage areas.

The climate is semi-arid, with a rainy season from April to October and a dry season that is mild to warm from November to February and hot from March to June. Temperatures range from a low of about 15 degrees Celsius in December to highs of about 45 degrees Celsius in March and April. Annual total rainfall in the area averages 800 millimetres.

Geology and Mineralization

The north-northeast-trending Boni shear zone divides the Yaramoko project area between the predominantly Houndé volcanic and volcaniclastic rock to the west and the Diébougou granitoid domain composed predominantly of granitic rock with minor volcanic rock to the east. The main lithological units are mafic volcanic rocks, felsic dikes, and late dolerite dikes. This region is considered prospective for orogenic gold deposits, which typically exhibit a strong relationship with regional arrays of major shear zones.

Several zones of gold mineralization exist on the Yaramoko project. The target gold mineralization for the feasibility study occurs in the 55 Zone hosted in a narrow east-northeast-trending shear zone. From 0 to 400 metres (m) depth, the shear zone dips moderately (65º to 70º) to the south and hosts thick extensional quartz veins. Below that depth, the shear zone is steep (85º) with fewer segmented and deformed quartz veins. The bulk of the gold mineralization occurs in dilatational segments of the reverse dextral shear zone where quartz veins are thicker and exhibit better geological continuity. Gold typically occurs as coarse free grains in quartz and is associated with minor pyrite. The gold-bearing veins range from a few centimetres to more than 4 m in width.

Exploration Status

Riverstone Resources Inc. (Riverstone) started exploration work on the Yaramoko property in 2005 before Roxgold became involved in late 2010. The exploration programs have comprised soil and rock sampling, airborne and ground geophysics, rotary air blast, auger, reverse circulation, and core drilling.

The rotary air blast drilling was used to follow up soil anomalies in 2011 and 2012 (1,887 rotary air blast boreholes). The auger drilling was used for collecting soil samples under the transported cover in 2012 and 2013 (2,669 auger boreholes totalling 13,480 m). Rotary air blast and reverse circulation drilling was then used to trace gold in soil anomalies to bedrock (252 reverse circulation boreholes totalling 42,059 m). Positive results from reverse circulation drilling were followed with core drilling to confirm the geological setting of each target (405 core boreholes totalling 129,987 m). This method successfully identified the 55 Zone, and thereafter other gold mineralized zones on the property.

The mineral resource and mineral reserves discussed herein, for the 55 Zone, are solely informed by core drilling (261 NQ-sized core boreholes totalling 102,330 m as of June 20, 2013). Core drilling was also used for metallurgical and geotechnical engineering studies, but assay results from these boreholes were not considered for mineral resource evaluation.

Riverstone and Roxgold have used various laboratories to prepare and assay samples collected on the Yaramoko project. These include Activation Laboratories Ltd. (Actlabs), ALS Chemex (ALS), BIGS Global S.A.R.L. (BIGS), and SGS Laboratory (SGS) in Ouagadougou, Burkina Faso, in addition to SGS in Tarkwa, Ghana and TSL Laboratories (TSL) in Saskatoon, Saskatchewan. Review of analytical results and analytical quality control data generated by Roxgold for the 55 Zone indicates that the analytical results delivered by the primary laboratories for core samples informing the mineral resources are free of apparent bias and sufficiently reliable for the purpose of mineral resource estimation.

Mineral Resource and Mineral Reserve Estimates

The mineral resources were estimated in conformity with generally accepted CIM *Estimation of Mineral Resource and Mineral Reserves Best Practices* Guidelines and are reported in accordance with the Canadian

Securities Administrators' National Instrument 43-101. The mineral resources for the 55 Zone have been estimated using a geostatistical block modelling approach constrained by gold mineralization wireframes and informed from gold assay data collected from core boreholes. Resource domains were defined using a traditional wireframe approach from a sectional interpretation of the drilling data. The 55 Zone shear zone was modelled based on geology, avoiding grade bias, and was used as a broad domain to constrain mineral resources. The dilatational quartz vein zone containing the higher grade gold mineralization was defined as a sub-domain, inside the shear zone domain envelope and was used to constrain further the higher grade gold mineralization. It was modelled using implicit and explicit modelling. Its geometry is based on structural geology information defining the controls on the distribution of the dilatational structure.

The spatial distribution of the gold mineralization was evaluated using variograms and correlograms of capped composite data as well as their normal score transform. Continuity directions were assessed based on the interpreted shallow plunge of the dilatation zones inside the shear zone as determined from structural geology investigations, the composites, and their spatial distribution. To account for the change in dip of the shear zone below the 4,850 elevation, the orientation of the search ellipses was adjusted. Estimation parameters consisted of ordinary kriging on four passes, with successive passes populating areas with less dense drilling, using relaxed parameters with generally larger search radii and less data requirements.

The block model was classified on the basis of the confidence in the geological continuity of the mineralized structures, the quality and quantity of exploration data supporting the estimates, and the geostatistical confidence in the tonnage and grade estimates. SRK believes that most of the blocks inside the dilatational quartz vein zone and estimated during the first estimation pass can be classified in the Indicated category within the meaning of the CIM *Definition Standards for Mineral Resources and Mineral Reserves*. All other blocks were assigned an Inferred classification. The classification was manually adjusted to remove isolated blocks and delineate regular areas at the same classification. SRK considers it appropriate to report the 55 Zone mineral resources at a cut-off grade of 5.0 grams of gold per tonne (g/t gold).

The mineral resource block model was used to estimate mineral reserves using modifying factors. Mining shapes were designed targeting the Indicated mineral resources only, using an in situ mining cut-off grade of 4.9 g/t gold based on a gold price of US$1,300 per ounce, an estimated site operating cost of $147 per tonne processed, and a metallurgical gold recovery of 96%. The mining shapes follow the hangingwall and footwall of the mineralized structure without attempting to trim off any areas below the cut-off grade. Mining recovery and dilution parameters are based on the selected mining method and geotechnical considerations. External dilution averages 20.5% with a grade averaging 1.34 g/t gold. Mining recoveries vary from 97% to 93%.

The Mineral Resource and Mineral Reserve Statement for the 55 Zone is presented in **Table i**.

Table i: Mineral Resource and Mineral Reserve Statement*, 55 Zone Gold Deposit, Yaramoko Project, Burkina Faso, SRK Consulting (Canada) Inc., April 22, 2014

Category	Quantity (000 Tonnes)	Grade Au (g/t)	Contained Metal Au (000' ounces)
Mineral Reserves			
Proven	-	-	-
Probable	1,996	11.83	759
Proven and Probable	**1,996**	**11.83**	759
Mineral Resources			
Measured	-	-	-
Indicated	1,600	15.80	810
Measured + Indicated	**1,600**	**15.80**	**810**
Inferred	840	10.26	278

* Mineral resources are not mineral reserves and have not demonstrated economic viability. All figures have been rounded to reflect the relative accuracy of the estimates. Mineral resources include mineral reserves. Underground mineral resources and mineral reserves are reported at a cut-off grade of 5.0 and 4.9 g/t gold, respectively; assuming: metal price of US$1,300 per ounce of gold, mining cost of US$94 per tonne, G&A cost of US$26 per tonne, processing cost of US$27 tonne, process recovery of 96%, exchange rate of C$1.00 equal US$1.00.

Mining Methods

Mine Hydrogeology and Geotechnical

A mine hydrogeology study was completed to support the design of a mine dewatering system. The mine dewatering system has been planned using the worst case estimated groundwater inflows of 50 l/s. The base case groundwater inflow is estimated at 20 l/s.

SRK prepared a geotechnical assessment to support the mine plan based on core logging, geotechnical drilling, and rock strength testing and analysis. Comprehensive parameter evaluation, laboratory testing, and kinematic analyses have been conducted in support of underground mine design. Two geotechnical domains have been developed: the Weathered Rock and Fresh Rock domains.

The in situ stresses at Yaramoko are not expected to be adverse based on the stable regional tectonic regime and shallow depth of planned mining (maximum 430 m below surface). The impact of the pre-mining stress field should be estimated during the early underground development phase, and designs adjusted if required.

The rock mass conditions are conducive to open stoping mining methods. Based on a 17 m sublevel spacing, recommended maximum stope dimensions are 34 m high by 25 m long by the vein width. An upside potential exists for stopes up to 51 m high by 25 m long by vein width, with additional geotechnical and structural geology evaluation of on-ore excavations.

Crown pillar assessments suggest a 10 m pillar thickness in the Fresh Rock domain, and a 20 m pillar thickness in the Weathered Rock domain meet a Class C crown pillar (FoS = 1.2, 2 to 5 year lifespan) requirement.

Portal box cut excavation slope design parameters and ground support recommendations have been provided based on data collected by SRK and Knight Piésold in the vicinity of the proposed box-cut location. This will require additional site specific geotechnical data collection to finalize the design parameters.

Underground Mining

Longhole open stoping (including up hole retreat in certain areas) is the main mining method with a limited application of cut and fill for the crown pillar mining. All methods except up hole retreat will employ waste rock as backfill. The mine plan includes: 73% standard longhole stoping with down holes on 17 m sublevels and cemented rock fill (CRF), 21% longhole retreat using up holes, no backfill and recovery of sill areas between mining fronts, and 6% crown pillar mining, cut and fill followed by final up hole retreat. Six mining blocks are planned to provide sufficient independent mining fronts.

Access to the underground mine will be by a dual ramp system, with a single portal located in fresh rock at the bottom of a planned 23 m deep box cut. Ramps are designed at -14.3% gradient with dimensions ranging from 5.3 m width by 5.8 m height to 5.0 m by 5.5 m depending on the planned air flows. Connections between the two ramps are planned as footwall drifts at elevations 5236, 5154, and 5072.

The mine layout is based on 17 m sublevels. Standard longhole stopes will be two sublevels in height (34 m) and 25 m in strike length. The full vein width will be mined in one pass. Stope sequencing will generally be in a retreat along strike from vein extremities to access crosscuts. Ore and waste rock will be hauled to surface by 25-tonne capacity trucks loaded by load-haul-dump vehicles (LHDs). Ore will be stored in remuck bays along the ramps prior to truck haulage. LHDs will fill empty stopes with CRF prepared using development waste rock.

The crown pillar mining late in the mine life will first employ cut and fill mining in order to advance to a suitable elevation for a final pass of up hole retreat open stoping. Up holes will be drilled up to the bedrock contact with overlying weathered material. Mining will be on retreat with remote mucking by LHDs.

Ventilation requirements are estimated at 212 cubic metres per second (cms) or 450,000 cubic feet per minute (cfm) for a production rate of 750 tonnes per day (tpd). All of the intake will be through the main access ramp. Exhaust will be through the east and west return air raises, each sized at 3.0 m diameter.

A main sump located on the 5072 elevation will pump dirty water to the surface through cased boreholes. Based on field test and modelling, SRK estimates the worst case peak water inflow to the mine to be at 50 l/s.

Production Schedule

The underground mine will be contractor operated from start up to Q2 2019, and owner operated from Q3 2019 to the end of mine life. Quarterly life-of-mine (LoM) development and production schedules were prepared. The underground mine pre-production period is defined as a 14-month period from November 1, 2014 (start of box cut excavation) to December 31, 2015. In Q1 2016, the average production rate will be 600 tpd, which is 80% of the designed underground mine capacity. The mining production period extends from January 1, 2016 to mid-April 2023 for 7.3 years. At full production the planned mining rate is 750 tpd or 273,750 tonnes per annum (tpa).

Total lateral development advance rate reaches a peak of 20 metres per day in Q2 2016. The total material broken in each period reaches a peak rate of 1,727 tpd during Q2 2016. Definition drilling is required ahead of sill development to infill delineation of ore structure to an average of 25 by 25 m spacing.

A surface waste rock stockpile will reach a size of 351,000 tonnes before being completely consumed as backfill. A surface waste rock quarry will supplement the backfill supply beginning in 2020.

Recovery Methods

The process flow diagram has been developed from the process design criteria prepared by Mintrex. The process plant is designed to have a throughput of 270,000 tpa. The plant will be constructed next to the underground portal to minimize truck haulage costs.

The plant design proposed is simple but robust, and broadly comprises primary crushing, grinding with a single-stage SAG mill, gravity concentration, classification, leaching and adsorption, tailings thickening, electro-winning, and smelting. The single-stage SAG milling circuit was selected due to its capital cost and its flexibility in allowing for the possible future expansion of the circuit to a fine secondary or tertiary crushing circuit followed by ball milling.

The plant design is a combination of the following circuits:

- A crushing circuit with a throughput of 50 tonnes per hour (t/h) and availability of 70%, on a 24 hours per day operation;
- Crushed product will report to an open stockpile with a live capacity of 810 tonnes. An underlying apron feeder and emergency vibrating feeder will provide ore feed directly to the milling circuit;
- A milling circuit with a throughput of 33.75 t/h, operating at 91% availability, and aiming to achieve a design grind of 80% passing 90 micrometres (μm);
- A gravity circuit on cyclone underflow consisting of two centrifugal concentrators and an intensive leach reactor for treatment of the gravity concentrate, treating 70% of the cyclone underflow;
- A carbon-in-leach (CIL) circuit with one leach tank and five adsorption tanks, treating the cyclone overflow;
- A metal recovery and refining circuit consisting of an elution circuit, electrowinning cells, and smelting; and
- A tailings storage facility for tailings disposal.

Water will be sourced primarily from a water storage facility and supplemented from the underground mining dewatering activities. The water storage dam will be adjacent to the tailings storage facility.

The mineral processing and metallurgical testwork conducted on the 55 Zone gold deposit confirms the coarse free gold nature of the deposit. Gold extraction using gravity and leaching processes yields an excellent gold recovery. Mintrex believes that the designed process plant and recovery methods will achieve high gold recovery. The economic model is based an average gold recovery of 97% over the LoM at an average head grade of 12 g/t gold.

Project Infrastructure

Existing infrastructure and services in the Balé Province of Burkina Faso that are suitable to support the Yaramoko project are limited. Current infrastructure in the area supports solely the local subsistence, small-scale agricultural practices, and artisanal mining.

The proposed infrastructure to support the project consists of a process plant, a mine service area consisting of offices, workshops, and a warehouse, a tailings storage facility, a water storage facility, sediment control structures, mine access and haulage roads, and an accommodation camp.

The project will be connected to the electricity grid in Burkina Faso by teeing into the existing 90kV powerline from the Pa substation to the Mana mine site. Until connection is established, the site will operate on diesel generators. In the event of a power outage, an allowance has been made for a generator at the plant and one at the accommodation camp. The plant emergency generator is sized to operate drives that are deemed critical.

Market Studies and Contracts

Roxgold has not conducted a market study in relation to the gold doré which may be produced by the Yaramoko project. Gold is a freely traded commodity on the world market for which there is a steady demand from numerous buyers. There are no refining agreements or sales contracts currently in place.

Environmental Studies, Permitting, and Social or Community Impact

The primary environmental approval required to develop the Yaramoko project is an *Avis de Conformité et de Faisabilité Environmentale*. Roxgold contracted the BEGE to undertake baseline studies in 2012 and 2013 and compile the environmental and social impact assessment (ESIA) required to obtain the *Avis*. The ESIA was submitted on May 6, 2014 and it is currently undergoing the prescribed government review process.

The ESIA identifies the potential social and environmental impacts of the development of the project and proposed mitigation measures. The main environmental issues identified concern water quality due to seepage or runoff from mine infrastructure; reduced groundwater supply due to the impact of a drawdown cone; and dust from waste rock dumps and the tailings storage facility. The main social issues identified concern livelihood changes due to the loss of farmland and income from artisanal mining; and potential unrealistic expectations of the project’s positive impact on local communities.

Roxgold conducted meetings with the traditional landowners to present the project timeline with respect to the land acquisition and compensation mechanism. The project does not require physical displacement of people aside from the artisanal miners, for whom Roxgold has developed a standalone management plan. Roxgold anticipates the artisanal miners will leave the site because near surface gold mineralization available to artisanal miners is depleted making this activity progressively less profitable. Artisanal miners are expected to relocate to other artisanal mining sites in the region (as observed on site over the last year).

The conceptual closure plan assumes the preferred final post-closure land use will be a savannah landscape commensurate with the existing small-scale agriculture and livestock grazing land uses. The plan assumes no salvage value. The mine areas will be reclaimed to a safe and environmentally sound condition consistent with closure commitments developed during the life of the project.

Capital and Operating Costs

Capital and operating costs are presented in US dollars as at the first quarter of 2014 (1Q14).

The total capital cost estimate is $176.3 million, comprised of $106.5 million in pre-production capital and $69.8 million in sustaining capital. Capital cost estimates were prepared to an accuracy level of +/- 15 %. The capital cost estimates include an overall contingency rate of 8% ($8.7 million). Cost estimates for the underground mine are based on contractor operation from start up to Q2 2019, and owner operation from Q3 2019 to the end of mine life.

On site operating costs averaging $140 per tonne processed are estimated for the period from January 1, 2016 through to mid-April 2023. The operating cost estimates are based on diesel fuel at $1.58/L ($5.98/US gallon) and electrical power at $0.17/kWh.

Economic Analysis

The Yaramoko project has been evaluated on a discounted cash flow basis. The cash flow analysis was prepared on a constant 2014 US dollar basis. No inflation or escalation of revenue or costs has been incorporated. The proposed Yaramoko project is economically very robust. The pre-tax present value of the net cash flow with a 5% discount rate (PVNCF5%) is $300 million using a base gold price of $1,300/oz. Project post-tax PVNCF5% at a $1,300 gold price is $250 million on an all equity basis. The internal rates of return (IRR) are respectively 53.7% pre-tax and 48.4% post-tax.

The government of Burkina Faso is entitled to a 10% interest in the project. The economic analysis assumes that Roxgold will provide all development funding via loans to the mine operating entity, which will be paid back with interest from future gold sales. On this basis, Roxgold's 90% interest in the project is expected to provide a PVNCF5% of $232 million and an IRR of 48.3% at a gold price of $1,300 per ounce ($1,300/oz).

Payback period is expected to be less than two years at a gold price of $1,300/oz. Payback period is defined as the time after process plant start-up that is required to recover the initial expenditures incurred.

The key economic indicators of PVNCF5% and IRR are most sensitive to changes in gold price. A $100/oz change in the gold price would change Roxgold's PVNCF5% by $32 million, and change the IRR by 6%. The project is slightly more sensitive to changes in operating costs than to capital costs. This is attributed to the fact that total base case operating costs excluding royalties are about 1.6 times total capital costs. Of the parameters examined the project is least sensitive to changes in the diesel fuel price and electricity price. These two components each represent less than 10 % of base case operating costs. The IRR is more sensitive to changes in project capital costs, which are weighted heavily at the front-end of the project, than to operating costs.

Conclusion and Recommendations

A feasibility study to bankable standards was prepared by a group of independent consultants to demonstrate the economic viability of an underground mine and onsite concentrator targeting the Indicated mineral resources defined in the 55 Zone of the Yaramoko project. This technical report provides a summary of the results and findings from each major area of investigation to a level that is considered to be consistent with that normally expected with feasibility studies for resource development projects. The financial analysis performed from the results of this feasibility study clearly demonstrates the robust economic viability of the proposed Yaramoko project using the base case assumptions considered.

Analysis of the results of the investigations has identified a series of risks and opportunities associated with each of the technical aspects considered for the development of the proposed project.

The key risks include:

- Uncertainty about the accuracy of the tonnage and grade estimates and the geological continuity of the gold mineralization at the reported cut-off grade. Sensitivity studies on modelling assumptions and structural geology investigations suggest this is a low risk;
- Increased mining dilution arising from development gouging of wall rock and/or production blasthole deviation;
- Excessive underground temperature adversely impacting planned productivities;
- Groundwater contamination from seepage from tailings storage facility. This risk can be mitigated with the use of liner at a cost of $1.0 to 2.0M;
- Availability of grid power. Delay in grid power connection may force extending the use of diesel generators longer than anticipated with adverse impact on power costs;

- Hydrogeology model based on limited testing data. Fault permeability remains not well understood. There is a risk that water ingress into the underground mine will be higher than predicted and require additional pumping capacity;
- Delay in obtaining environmental approvals and access to land leading to construction delays;
- Unmet community expectations leading to potential for loss of social license to operate;
- Indirect reputational risks associated with artisanal mining activities active on the project;
- Long term impact of groundwater movement away from mine workings after closure;
- Cyanide concentration levels exceeding regulatory levels and requiring additional mitigation measures and higher sustaining capital and operating costs; and
- Impact on community water supply requiring provision of alternative water supply to communities.

The key opportunities include:

- Exploration potential to increase the mineral resources of the 55 Zone with additional drilling targeting the fringes of the Indicated mineral resources, to the west and at depth and in parallel zones of gold mineralization near surface;
- Exploration potential to define new mineral resources elsewhere on the Yaramoko project;
- Alternative lower cost backfill system utilizing tailings;
- Early delivery of the proposed power grid connection resulting in lower power costs; and
- Water ingress into underground mine could be lower than modelled, leading to lower pumping requirements.

Analysis of the results and findings from each major area of investigation suggests several recommendations for further investigations to mitigate risks and improve the base case designs to be considered during the operation of the project, including:

- Exploration drilling targeting lateral extensions of the 55 Zone and other gold occurrences on the property;
- Optimize design recommendations for the box-cut;
- Evaluation of backfill alternatives;
- Ventilation study to predict the underground working conditions and monitoring of underground environment to identify any opportunity to reduce air flow contingencies;
- Additional gravity test work to determine expected range of gravity gold recovery;
- Additional variability test work during operation ahead of changes in mine plan;
- Test work on oxygen demand during initial production to optimize oxygen demand;
- Additional SMC testing to confirm previous grinding testing results;
- Grouting open exploration holes to eliminate the potential for injury during blasting and reduce water ingress into mine during rainfall events;
- Additional packer testing on selected exploration boreholes to improve hydrogeology model;
- Relogging exploration boreholes from core photographs and additional field investigations to improve brittle fault model and geotechnical model;
- Drilling pilot holes from surface to plan the surface collar preparation work for the east and west air return raises;
- Backfill strength testing for the planned cemented rock backfill;
- Continue ongoing climate monitoring;
- Characterization of leaching potential from ore stockpiles;
- Hydrogeology modelling to study rebound of groundwater levels and movement post closure;
- Kinetic leaching testing to characterize long term leaching potential of tailings materials and geochemical modelling to predict water quality from seepage from tailings, other project infrastructure, and from underground workings during operation and after closure;
- Regular monitoring of drinking water quality and seepage from project infrastructure;
- Stochastic modelling of water balance; and
- Locate additional air and noise monitoring points and consider cover designs for the waste rock dumps and tailings facility to minimize windblown dust.

Table of Contents

List of Tables

List of Figures

1 Introduction and Terms of Reference

The Yaramoko gold project is a pre-development gold mining project located 200 kilometres southwest of Ouagadougou in Burkina Faso. This project is wholly owned by Roxgold Inc. (Roxgold) a Canadian public company domiciled in Toronto, Ontario with shares listed on the TSX Venture Exchange under the symbol ROG.

Roxgold acquired interest in the Yaramoko project in 2010 and completed intensive exploration work leading to the discovery and subsequent delineation by drilling of a significant gold deposit at the 55 Zone. From 2011 to 2013, Roxgold drilled 102,330 metres of core boreholes to define the extent of the gold mineralization from the surface to a depth of 900 metres and to support the evaluation of mineral resources in the 55 Zone.

An initial mineral resource evaluation was prepared in August 2012 by AGP Mining Consultants Inc. (AGP) of Barrie, Ontario and updated in August 2013 to consider additional drilling information. That latter mineral resource model was considered to prepare a preliminary economic assessment to evaluate the potential economic viability of an underground mine and concentrator. The results were disclosed by Roxgold in a news release dated September 16, 2013 and supported in a technical report prepared by AGP and dated October 29, 2013.

During the summer of 2013, Roxgold engaged SRK Consulting (Canada) Inc. (SRK) to lead a team of consultants including Mintrex Pty Ltd (Mintrex) of Perth, Australia, Knight Piésold Pty Ltd (Knight Piésold) of Perth, Australia and Cardno BEC Pty Ltd (Cardno BEC) of Perth, Australia to prepare a feasibility study to bankable standards to demonstrate the economic viability of an underground mine and onsite concentrator targeting the Indicated mineral resources contained in the 55 Zone.

As part of this feasibility study, SRK and Knight Piésold conducted rock and soil geotechnical, hydrogeology, geochemistry field investigations during the fourth quarter of 2013 to complete the characterization of the project attributes. Additional metallurgical testing was also completed in late 2013 and early 2014 under the supervision of Mintrex to support the design of a processing flow sheet. Separately, Roxgold mandated the Bureau d'Études des Géosciences, des Énergies et de l'Environnement (BEGE) from Ouagadougou, Burkina Faso to undertake field baseline investigations and to compile an environmental and social impact assessment of the proposed Yaramoko mining project.

To support feasibility level mine design, a new geology and mineral resource model was constructed by SRK from first principles considering geology and drilling information available to June 2013 and structural geology investigations completed by SRK in February 2013.

Geological modelling and engineering designs were completed during the first quarter of 2014 leading to the preparation of an economic analysis of the resulting designed project that was disclosed by Roxgold in a news release dated April 22, 2014, along with the third mineral resource and the first mineral reserve statement prepared for the 55 Zone of the Yaramoko project.

This technical report summarizes the technical information that is relevant to support the disclosure or an initial mineral reserve statement for the Yaramoko project. It provides a summary of the work completed by independent consultants, the assumptions considered and the designs at a level of accuracy that is required to demonstrate the economic viability of the mineral resources defined for the 55 Zone.

This technical report is based on detailed reports prepared by the respective consultants. Each discipline report is appended by reference to this technical report and can be made available by Roxgold upon request.

1.1 Terms of Reference

In June 2013, SRK was commissioned by Roxgold to prepare a feasibility study for the Yaramoko gold project by working jointly with Roxgold, and independent consultants Mintrex, Knight Piésold, Cardno BEC, and SRK Consulting (UK) Limited (SRK UK). Responsibilities for each report section are listed in Table 1.

Table 1: Responsibility of Feasibility Report Sections

Section	Title	Responsible
-	Executive Summary	SRK / Mintrex /Knight Piésold / Cardno BEC
1	Introduction	SRK
2	Reliance on Other Experts	SRK
3	Property Description and Location	SRK
4	Accessibility, Climate, Local Resources, Infrastructure and Physiography	SRK
5	History	SRK
6	Geological Setting and Mineralization	SRK
7	Deposit Types	SRK
8	Exploration	SRK
9	Drilling	SRK
10	Sample Preparation, Analysis and Security	SRK
11	Data Verification	SRK
12	Mineral Processing and Metallurgical Testing	Mintrex
13	Mineral Resource Estimates	SRK
14	Mineral Reserve Estimates	SRK
15	Mining Methods	SRK
16	Recovery Methods	Mintrex
17	Project Infrastructure	Mintrex / Knight Piésold / Cardno BEC
18	Market Studies and Contracts	SRK
19	Environmental Studies, Permitting and Social or Community Impact	SRK / Roxgold
20	Capital Cost and Operating Costs	SRK / Mintrex / Knight Piésold / Cardno BEC / Roxgold
21	Economic Analysis	SRK / Roxgold
22	Adjacent Properties	SRK
23	Other Relevant Data and Information	SRK
24	Interpretation and Conclusions	SRK / Mintrex / Knight Piésold / Cardno BEC / Roxgold
25	Recommendations	SRK / Mintrex / Knight Piésold / Cardno BEC / Roxgold
26	References	SRK / Mintrex / Knight Piésold / Cardno BEC / Roxgold

1.2 Qualification of SRK

The SRK Group comprises of more than 1,600 professionals, offering expertise in a wide range of resource engineering disciplines. The independence of the SRK Group is ensured by the fact that it holds no equity in any project it investigates and that its ownership rests solely with its staff. These facts permit SRK to provide its clients with conflict-free and objective recommendations. SRK has a proven track record in undertaking independent assessments of mineral resources and mineral reserves, project evaluations and audits, technical reports and independent feasibility evaluations to bankable standards on behalf of exploration and mining companies, and financial institutions worldwide. Through its work with a large number of major international mining companies, the SRK Group has established a reputation for providing valuable consultancy services to the global mining industry.

1.3 Qualifications of the Feasibility Study Team and Site Visits

The technical report was compiled by a group of professionals from SRK, Mintrex, Knight Piésold, Cardno BEC, and SRK UK. In accordance with National Instrument 43-101 guidelines, many of the Qualified Persons visited the Yaramoko property to assist in the development of the feasibility study. Table 2 lists the Qualified Persons and contributing authors including the timeframe of the site visits.

Table 2: Yaramoko Project Feasibility Study Qualified Persons

Principal QPs			
Company	**QP Name**	**Site Visit**	**Sections of QP Responsibility**
SRK	Jean-François Couture, PGeo (APGO#0197)	February 6-15, 2013	Geology and Overall Project Management (Sections 1 to 11, 13, 18, 22)
SRK	Ken Reipas, PEng (PEO # 100015286)	August 11-14, 2013	Mining and Mineral Reserves (Sections 14, 15, 20)
SRK	Brian Connolly, PEng (PEO#90545203)	No Visit	Financial Modelling (Section 21)
SRK	Sébastien Bernier, PGeo (APGO #1847)	No Visit	Geology and Mineral Resources (Section 13)
SRK	Bruce Murphy, FSAIMM (#56806)	July 22-25, 2013	Rock Geotechnical (Section 15.2)
SRK UK	Anthony Rex, CGeol (GSL #1001078)	No Visit	Hydrogeology (Section 15.1)
SRK UK	Fiona Cessford, PrSciNat (SACNSP #400053/03)	No Visit	Environmental and Social (Section 19)
SRK UK	Rob Bowell, Cchem (RSC #332782), CGeol, EurGeol (GSL #1007245),	No Visit	Geochemistry (Section 19.3)
Mintrex	Leendert (Leon) Lorenzen, CPEng (FAusIMM #304479, FIEAust #3671379)	No Visit	Metallurgy and Process Design (Sections 12 and 16)
Mintrex	Ian Kerr (MIE Aust #3878951)	August 11-14, 2013	Infrastructure Design (Sections 17 and 20)
Knight Piésold	David Morgan (AIMM #202216 CPEng #974219)	August 11-14, 2013	Tailings and Water Storage Facility, Plant Site Geotechnical, Borefield Investigation (Sections 17.3, 17.5, and 20)
Cardno BEC	Geoff Bailey CPEng (FIEAust, NPER #378695)	March 19-21, 2014	Power Supply (Sections 17.9, and 20)

Table 2 (continued): Yaramoko Project Feasibility Study Contributing Authors

Contributing Authors			
Company	**Name**	**Site Visit**	
SRK	Dominic Chartier, PGeo (OGQ #874)	No Visit	Geological Modelling and Report Compilation
SRK	Glen Cole, PGeo (APGO#1416)	No Visit	Geology and Mineral Resources
SRK	Oy Leuangthong, Peng (APEGA#82746, PEO#90563867)	No Visit	Geostatistics/Mineral Resources
SRK	Benny Zhang, PEng (PEO#100115459)	No Visit	Mining and Mineral Reserves
SRK	Ross Greenwood	July 21-29, 2013	Rock Geotechnical
SRK	Iris Lenauer, PhD, GIT (APGO#10051)	No Visit	Report Compilation
SRK	Jason Adam	No Visit	Drafting and GIS
SRK	Sophia Karadov	No Visit	Technical Editor
SRK	Alison Harrington	No Visit	Project Coordinator
SRK UK	Mike Palmer, FGS (#1016701)	Aug. 16-Sept. 4, 2013	Hydrogeology
SRK UK	Mark Raynor, FGS (#1007070)	No Visit	Hydrogeology
SRK UK	Rowena Smuts	December 5-9, 2013	Environmental and Social
SRK UK	Lalit Kumar	December 5-9, 2013	Environmental and Social
SRK UK	Ludovic Rollin	No Visit	Environmental and Social
SRK UK	Andrew Barnes, CGeol, EurGeol, FGS (#1015872)	July 21-26, 2013	Geochemistry
SRK UK	Julien Declercq, FGS (#1022784)	July 21-26, 2013	Geochemistry
Mintrex	Hien Ngo (FIEAustralia #202825, MAusIMM #109499)	No Visit	Plant Design and Costs
Mintrex	Naim Abou-Rjeily (MIE Aust #3100445)	August 11-14, 2013	Infrastructure and Costs
Knight Piésold	Steve McKean (MIEAust2455180)	No Visit	Tailings and Water Storage Facility
Cardno BEC	Rick Di Filippo	No Visit	Power Supply

Dr. Jean-François Couture, PGeo (APGO #0197) is a Corporate Consultant (Geology) who has been employed by SRK since 2001. Jean-François is an accomplished geologist with 30 years of experience His expertise is in geological and mineral deposit modelling. He has authored and co-authored numerous independent technical reports for precious and base metals, uranium and lithium exploration and mining projects worldwide. Jean-Francois was the SRK project manager and is the qualified person taking responsibility for the geology aspect and mineral resource statement. Jean-Francois visited the Yaramoko project from February 6 to 15, 2013 to conduct structural geology investigations and audit exploration work completed by Roxgold.

Mr. Ken Reipas, PEng (PEO #100015286) is a Principal Mine Engineer who has been employed by SRK since 2001 and has over 30 years of experience in mine engineering, mine production and consulting. Prior to joining SRK, he worked at several open pit and underground mining operations in Canada involved in the bulk mining of iron, coal, gold and base metals. Since 1997, his consulting projects have included technical studies, mine planning and reserves, mine operations assistance, and due diligence reviews. Ken was responsible for the mine planning aspect of the feasibility study and is the qualified person taking responsibility for the mining aspect and the mineral reserve statement. Ken visited the Yaramoko project from August 11 to 14, 2013 to ascertain the overall project site.

Mr. Brian Connolly, PEng (PEO #90545203) is a Principal Mining Engineer in SRK's Toronto office with more than 35 years of diversified experience in base and precious metal, coal, diamond, oil sand, and mineral sand projects. He has a broad background in open-pit engineering, including mine planning, equipment studies, blasting, and liaising with mine operations to ensure equipment effectiveness and production target achievement. Brian has successfully managed the mining aspects of feasibility and scoping studies, due diligence audits, permit applications, and economic evaluations. Brian is the qualified person taking responsibility for the economic analysis and financial modelling. Mr. Connolly has not visited the property.

Mr. Sébastien B. Bernier, MSc, PGeo (APGO #1847) is a Principal Consultant (Resource Geology) specialized in geological modeling, geostatistics and mineral resource estimation. Proficient in CAE Datamine Studio 3, he as co-authors several Technical Reports and worked on numerous base and precious metals, uranium and lithium in a variety of deposit types. Sébastien is the qualified person taking responsibility for the mineral resource statement. Sébastien has not visited the project.

Mr. Bruce Murphy, MSc. Eng, FSAIMM (#56806) is a Principal Consultant (Rock Mechanics) in the SRK Vancouver office and has been employed by SRK since 2002. He has nearly 25 years' experience in operational and consulting environment in both open pit and underground rock engineering. Operational experience in deep level gold, open pit and underground iron ore and copper in South Africa and Zambia. He specializes in establishing the geotechnical and mining context of open pit and underground deposits through the integration of structural geology, rock mass characterization and other influences. Bruce is the qualified person taking responsibility for the underground rock mechanics aspects. Bruce visited the Yaramoko project from July 22 to 25, 2013 to conduct rock geotechnical investigations.

Dr. Anthony Rex, CGeol (Geological Society of London #1001078) is a Corporate Consultant (Hydrogeology) who has been employed by SRK UK since 2009. Tony is a hydrogeologist with over 25 years of experience including mining experience across Europe, CIS countries, Africa and South America. Tony specialises in mine water management including mine dewatering, mine water supply and groundwater resource impact assessments. He has co-authored independent technical reports for precious and base metals including numerous assets in western Africa. Tony was responsible for hydrogeological characterisation and mine water inflow assessment. Tony has not visited the project.

Ms. Fiona Cessford, PrSciNat (South African Council for Natural Scientific Professions #400053/03) is a Corporate Consultant (Environment) who has been employed by SRK (UK and South Africa) since 1999 and has over 20 years' experience in the environmental and social field. Prior to SRK, she worked at the UK's Environment Agency in the field of water management and pollution control. Fiona's experience includes preparation, management and review of ESIAs, environmental and social management planning, closure planning, environmental and social risk management, audit and due diligence, environmental reporting and technical advice on water and waste issues. She is the qualified person accepting professional responsibility for the environmental and social aspect of the feasibility study. Fiona has not visited the project.

Dr. Rob Bowell, CChem (Royal Society of Chemistry #332782), CGeol, EurGeol (Geological Society of London #1007245), CSci (Institute of Materials, Minerals and Mining #452852) is a Corporate Consultant in Geochemistry with over 25 years of experience. Rob specialises in the application of geochemistry and mineralogy to a wide range of mining and engineering problems. Rob's main field of expertise is mineral processing and geochemical treatment of arsenic-rich waste, mine waste and water (including metal, radioactive, cyanide solutions, acid rock drainage and saline water). His background is in mining and academic research in process chemistry, environmental geochemistry, environmental engineering and mineralogy. Rob is the qualified person responsible for the geochemistry and waste water aspects of the study. Rob has not visited the project.

Dr. Leendert (Leon) Lorenzen FAusIMM (#304479), FIEAust #3671379), FSAIMM, FIChemE, CEng, CPEng, PrEng is a Senior Principal Process Engineer who has been employed by Mintrex since 2013. Leon has more than 31 years in-depth experience in mineral processing, chemical engineering, electrochemistry, reactive systems, hydrometallurgy, waste treatment and biofuels particularly with regard to application of these technologies in the process industries. He has been a consultant and research manager since 1991, to a range of clients within mainly Africa, Americas, Australia and internationally. Leon is the qualified person taking responsibility for the metallurgical testwork and mineral processing as well as recovery methods. Leon did not visit the Yaramoko project.

Mr. Ian Kerr MIE Aust (#3878951) is a Principal Civil Engineer who has been employed by Mintrex since 2008 and has over 25 years of experience in mine construction, mine development and consulting. Since joining Mintrex in 2008 he has managed bankable studies, project reviews and full EPCM projects. The projects include gold, copper, iron ore and rare earths projects and located in countries including Guyana, Ghana, Burkina Faso, Mali, Côte d'Ivoire and Australia. Ian is the qualified person taking responsibility for the process plant and associated infrastructure capital and operating costs. Ian visited the Yaramoko project from August 11 to 14, 2013 and reviewed the total project site.

Mr. David Morgan AIMM (#202216), CPEng (#974219) is the Managing Director of Knight Piésold Australia and has worked for the Knight Piésold Group in a variety of roles for over 30 years. He is a civil engineer specialising in tailings management and civil engineering infrastructure, focusing on design and construction of tailings dams and mining project infrastructure. David was project director for the Tailings Storage Facility and Water Storage Dam designs, as well as the Plant Site geotechnical investigation/assessment and borefield investigation. David visited the Yaramoko project from August 11 to 15, 2013 to ascertain the overall project site.

Mr. Geoff Bailey, CPEng FIEAust, NPER (#378695), is the Managing Director of Cardno BEC, an electrical design consultancy firm in Perth Western Australia. Geoff has over 30 years' experience in the mining, power generation and power distribution industries, having worked on many mining operations during that time. He has authored many power systems study reports for mine sites in Africa, inspecting and reviewing utility grids and their suitability. Geoff was responsible for the power supply aspect of the feasibility. Geoff visited the site from March 19 to 21, 2014 to inspect the electrical infrastructure and meet the Burkina Faso electrical Utility.

Contributing Authors

Mr. Dominic Chartier, PGeo (OGQ #874) is a Senior Consultant (Geology) with SRK. He has been practising his profession continuously since 2002. He has estimated mineral resources, created geological and mineral deposit 3D models, and authored or contributed to numerous independent National Instrument 43-101 technical reports. His recent work has focused on gold, base metal, and precious metal projects in Canada, West Africa, and South America. Dominic has not visited the project.

Mr. Glen Cole, PGeo (APGO #1416) is a Principal Consultant (Resource Geology) with SRK. He has been practicing his profession continuously since 1986 and has extensive experience in estimating mineral resources in South America, North America, and South and West Africa. Mr. Cole has not visited the property.

Dr. Oy Leuangthong, PEng (APEGA#82746, PEO#90563867) has over 10 years of experience in geostatistics for resource characterization and uncertainty assessment. Prior to joining SRK, she was an Assistant Professor in Mining Engineering at the University of Alberta in Edmonton, Alberta. She has taught geostatistics in various industry courses to engineers and geologists from national and multinational companies in North and South America. Further, she has authored and co-authored 2 books, 16 journal papers and over 30 conference articles. Her areas of expertise are resource estimation, conditional simulation and uncertainty assessment using geostatistics.

Mr. Benny Zhang, PEng (PEO#100115459) is a Principal Consultant (Mining) with SRK. Benny has more than 28 years of experience in mining studies, planning and design, mine operations, and teaching and research in North America, South America, Europe, and Asia. Benny has not visited the project.

Mr. Ross Greenwood is a Senior Consultant (Rock Mechanics) employed in SRK's Vancouver office since 2006, with 10 years' experience working in mining and civil consulting based out of Canada and Australasia. His focus is evaluation and design for underground mining, specializing in underground development in weak rock conditions. Significant experience in field-based data collection and review for open pit and underground deposits world-wide, providing rock mass characterization, geotechnical evaluation, and stability assessments for input to underground mining studies across a range of mining methods. Ross visited the Yaramoko project from July 22 to 29, 2013 to conduct rock geotechnical investigations.

Dr. Iris Lenauer, GIT (APGO #10051) is a Consultant (Structural Geology) with SRK and has over 8 years of experience in mapping and field work, fault analysis, thin section analysis, and contributed to numerous independent National Instrument 43-101 technical reports. Iris has not visited the project.

Mr. Michael Palmer, FGS (#1016701) is a Consultant (Hydrogeology) who has been employed with SRK UK since 2011. Michael is a hydrogeologist with 5 years of experience. Michael specialises in mine water management including mine water supply, mine dewatering and groundwater resource impact assessments. Michael has been involved with several projects located in West Africa, including Burkina Faso. Michael was involved in the hydrogeological characterisation and mine inflow assessment. Michael visited the Yaramoko project from August 16 to September 4, 2013, to conduct preliminary hydrogeological investigations.

Ms. Rowena Smuts, MSc (Conservation Biology) is a Senior Consultant (Environment) who has 15 years of combined experience in the biodiversity conservation, mining and environmental related fields. Rowena joined SRK UK's Cardiff office in April 2012. Rowena has managed large international mining ESIAs undertaken in accordance with IFC performance standards and has extensive environmental and mining experience across Africa. Rowena has contributed to the environmental sections of several independent technical reports . She has undertaken audits, due diligence assessments and reviewed the social and environmental components of Feasibility studies for various mining projects. Rowena visited the project site between December 5 and 9, 2013.

Mr. Lalit Kumar is a Senior Consultant (Social) at SRK UK with 16 years of experience. For the last eight years he has exclusively focussed on the mining sector working on the social dimensions within impact assessment studies, baseline studies, stakeholder engagement, management systems, resettlement planning, due diligence studies and closure planning. Most of his work has been in the context of the IFC Performance Standards though and he also follows the mining and environmental legislation particularly in emerging economies in Africa and Asia. Lalit visited the project site between December 5 and 9, 2013.

Dr. Andrew Barnes, CGeol, EurGeol, FGS (#1015872) is a Senior Consultant (Geochemistry) who has been employed with SRK UK since January 2008. Andrew is a geochemist with over 6 years of experience. Andrew specialises in mine site environmental geochemistry including prediction of

Acid Mine Drainage (AMD) and Neutral Mine Drainage (NMD), and numerical prediction of water quality impact. Andrew was the lead geochemical consultant for the geochemical characterisation of waste rock and pit wall materials for the Yaramoko feasibility study. Andrew visited the project site form July 21 to 26, 2013 to conduct a waste rock geochemical sampling program.

Mr. Mark Raynor, FGS(#1007070) is a Principal Consultant (Hydrogeology) with 15 years international experience in the mining and water resource sectors. In recent years Mark has been focussed on the mining industry with the majority of his work being in West Africa. Mark was project manager and technical reviewer for surface and groundwater inputs to the SEIA at an iron ore project in Guinea. Responsibilities included: planning and direction of hydrological and hydrogeological field programmes; design of erosion and sediment control systems; ecotoxicological assessments to define water quality discharge criteria; and presenting hydrological programmes to IFC review teams. Mark did not visit the project site.

Dr. Julien Declercq, FGS (#1022784) is a Consultant (Geochemistry) employed by SRK UK since 2013. Julien is a geochemist with 3 years of experience and specialises in environmental geochemistry including numerical predictions of Acid Mine Drainage (AMD), Neutral Mine Drainage (NMD), metal leaching (ML) and assessment of water quality impact from mining activities. Julien was involved in the geochemical sampling selection, characterisation of waste rock and pit wall materials for the Yaramoko feasibility study. Julien visited the project site form July 21 to 26, 2013 to conduct a waste rock geochemical sampling program.

Mr. Hien Ngo FIEAust (#202825), MAusIMM (#109499) is a Principal Mechanical Engineer who has been employed by Mintrex since 2006, and has more than 20 years' experience in the design of mineral processing plant, material handling system and mine infrastructure covering gold, nickel, copper, iron ore, rare earth and lithium carbonate concentrate within Australia, Africa and Europe. Hien has provided support for plant design and plant capital cost estimates. Hien did not visit the Yaramoko project.

Mr. Naim Abou Rjeily MIE Aust (#3100445) is a Lead Mechanical Engineer who has been employed by Mintrex since 2006 and has over 8 years of experience in various fields including design and project management roles for mineral processing plant and mine infrastructure for gold and iron ore projects within Australia, Africa and Europe. Naim was project manager for the process plant and infrastructure and contributed to the capital and operating cost development, the process plant concept design and coordination of the various disciplines including electrical and tailing design. Naim visited the Yaramoko project from August 11 to 14, 2013 and reviewed the total project site.

Mr. Steve McKean MIE Aust (#2455180) is a Senior Engineer with Knight Piésold Australia and has worked for the Knight Piésold Group for over 10 years, working on a variety of projects related to the mining sector in Australia, South East Asia and Africa. He is practiced in a wide spectrum of project activities from desk top studies through to design, contract documentation, and site supervision. Steve was design manager for the Tailings Storage Facility and Water Storage Dam designs, as well as the Plant Site geotechnical investigation/assessment and borefield investigation. Steve has not visited the project.

Mr. Rick Di Filippo, is an Electrical Engineer with over 15 years' experience in the design of mine processing plants and power distribution. Rick has been with Cardno BEC for 17 years and his current position is Western Austaralia Manager. He has a wealth of experience in African gold mining projects having designed and commissioned similar processing plants in Tanzania and Ghana. Rick was responsible for the electrical and instrumentation aspect of the process plant and associated infrastructure for the feasibility. Rick has not visited the Yaramoko project.

1.4 Basis of Technical Report

This report is based on information collected by SRK, Mintrex, Knight Piésold, and Cardno BEC, during the course of their investigations, including site visits (Table 2), and on additional information provided by Roxgold throughout the course of the work. The authors have no reason to doubt the reliability of the information provided by Roxgold. Other information was obtained from the public domain. This report is based on the following sources of information:

- Discussions with Roxgold personnel;
- A previous technical report prepared by AGP Mining Consultants Inc., "NI 43-101 Preliminary Economic Assessment for the Yaramoko Project, Burkina Faso," dated October 29, 2013 (the PEA technical report);
- Site visits;
- Information obtained from contractor quotations for full contract mining of the Yaramoko deposit that were based on mining schedules associated with the PEA;
- Project information obtained from Roxgold including planned owners team mine manpower, planned labour rates, gold price, exchange rates, preliminary site layout, electrical power cost, and bulk cement cost;
- Additional information from the author's project databases, and from public domain sources.

A gold price of US$1300 per ounce has been used for mine planning.

1.5 Acknowledgement

SRK would like to acknowledge the support and collaboration provided by Roxgold personnel for this assignment. Their collaboration was greatly appreciated and instrumental to the success of this project. In particular, SRK would like to acknowledge the contribution of Paul Criddle, Ben Pullinger, Craig Richards, John Dorward, Pierre Matte, Abby Peterson, William Gerber, Natasha Garoute, Elizabeth Freele, Elisabeth Toe, Teresa Libera, Claude Aussant, Lynda Bloom, and Wayne Perna.

1.6 Declaration

SRK's opinion contained herein and effective April 22, 2014, is based on information collected by SRK throughout the course of SRK's investigations. The information in turn reflects various technical and economic conditions at the time of writing the report. Given the nature of the mining business, these conditions can change significantly over relatively short periods of time. Consequently, actual results may be significantly more or less favourable.

This report may include technical information that requires subsequent calculations to derive subtotals, totals, and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, SRK does not consider them to be material.

SRK is not an insider, associate or an affiliate of Roxgold, and neither SRK nor any affiliate has acted as advisor to Roxgold, its subsidiaries, or its affiliates in connection with this project. The results of the technical review by SRK are not dependent on any prior agreements concerning the conclusions to be reached, nor are there any undisclosed understandings concerning any future business dealings.

SRK was informed by Roxgold that there are no known litigations potentially affecting the Yaramoko project.

1.7 Terminology

Metric units of measure and US dollars are used in this report unless otherwise stated.

Elevations quoted are metres above sea level plus 5,000 metres. The terms levels, sublevels, and elevation are used interchangeably to describe underground mining levels.

The mine grid coordinates used are based on ADINDAN UTM ZONE 30N.

2 Reliance on Other Experts

SRK has not performed an independent verification of the land title and tenure information as summarized in Section 3 of this report. SRK did not verify the legality of any underlying agreement(s) that may exist concerning the permits or other agreement(s) between third parties, but has relied on the legal opinion of Roxgolds's solicitor in Burkina Faso, Maitre Bobson Coulibaly (dated August 1, 2013), regarding the land title and tenure information discussed in Section 3. This reliance solely applies to the land tenure and underlying agreements discussed in Sections 3.1 and 3.2.

SRK relied on the opinion of Natasha Garoute, Chief Financial Officer of Roxgold, regarding certain aspects of the taxation regime in Burkina Faso as it will apply to the Yaramoko project. The reliance only applies to the taxation information and assumptions considered for the preparation of a financial model for the Yaramoko project as discussed in Section 21.

3 Property Description and Location

The Yaramoko gold project property is located approximately 200 kilometres (km) southwest of Ouagadougou in the Balé Province in western Burkina Faso (Figure 1).

The centroid of the 55 Zone gold deposit in the Yaramoko gold project is located at 3 degrees and 16 minutes longitude west (3.28 degrees west) and 11 degrees and 45 minutes latitude north (11.75 degrees north).

The Yaramoko gold project consists of a single exploration permit totalling 167 square kilometres (km^2). Exploration permits are granted by order of the *Ministère des Mines, des Carrières et de l'Énergie* of Burkina Faso. By granting these permits, the Government of Burkina Faso retains a 10% carried interest on the award of an Industrial Operating permit, free of all charges. This participation right will in no case be diluted.

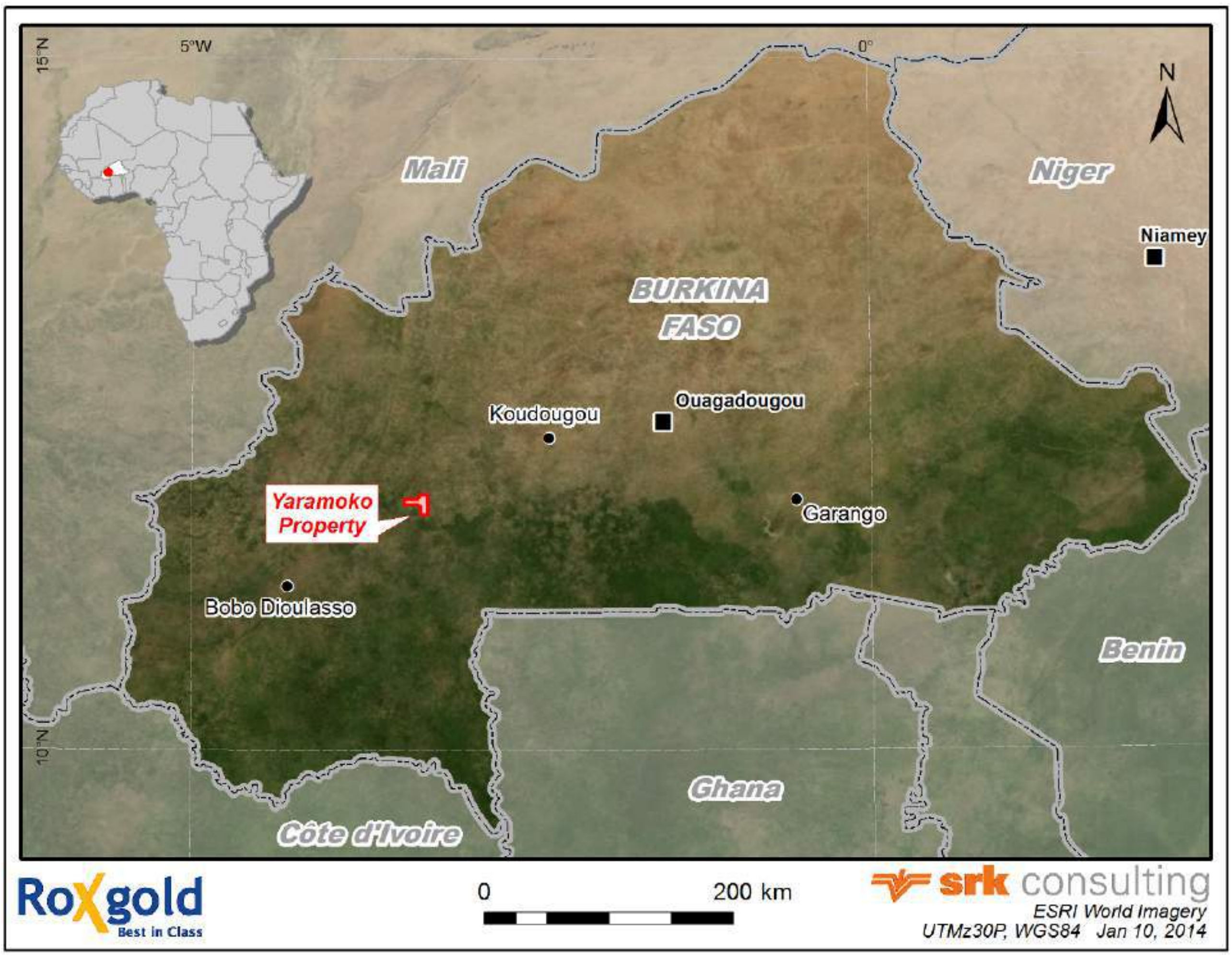


Figure 1: Location of the Yaramoko Gold Project

3.1 Mineral Tenure

The land tenure information presented herein is derived from copies of the order of the *Ministère des Mines, des Carrières et de l'Énergie* granting the exploration permit. The boundary of the permit is defined by corner posts positioned according to geographic coordinates (UTM Clarke 1880 ellipsoid, Adindan datum, Zone 30) as indicated on the land tenure map (Figure 2 and Table 3). The boundaries of the permit are not physically marked on the ground and have not been legally surveyed.

The Yaramoko exploration permit was issued for gold exploration and granted by *Arrêté ministériel* No. 2013-000102/MME/SG/DGMG. It is registered in the name of Roxgold Burkina Faso SARL (Roxgold BF), a wholly owned subsidiary of Roxgold. The permit is situated in the Province of Balé and covers an area of 167 km^2. It was last renewed in May 2013 and is valid until September 8, 2016, when it will expire. A copy of the *Arrêté ministériel* granting the Yaramoko permit is provided in Appendix A.

Table 3: Boundary of the Yaramoko Exploration Permit

Corner	Easting*	Northing*
A	452,800E	1,306,000N
B	462,900E	1,306,000N
C	465,600E	1,310,000N
D	471,700E	1,310,000N
E	471,700E	1,293,600N
F	465,800E	1,293,600N
G	465,800E	1,300,250N
H	464,000E	1,300,250N
I	464,000E	1,301,200N
J	452,800E	1,301,200N

* UTM Projection – Clarke 1880 Adindan datum, Zone 30N.

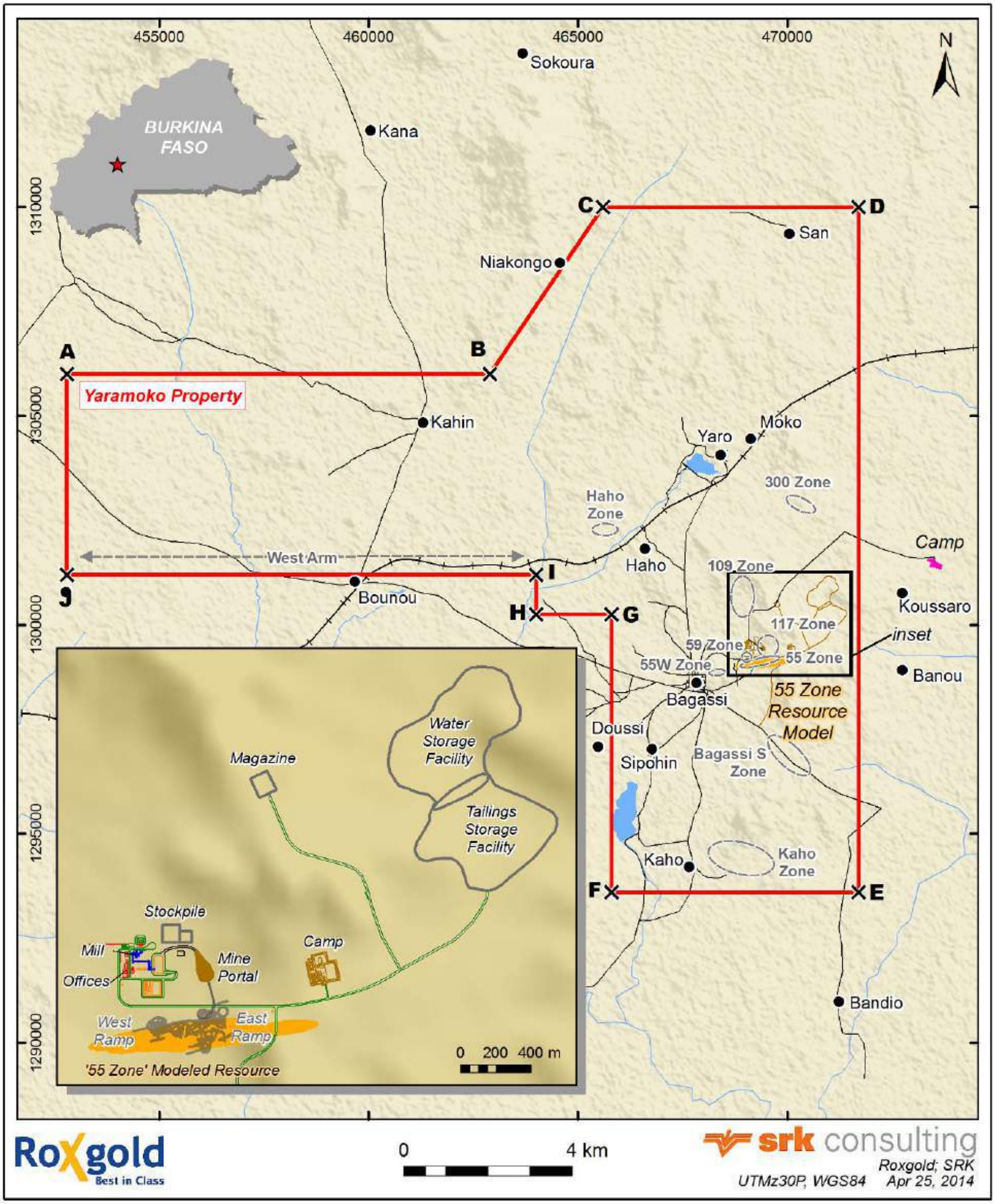


Figure 2: Yaramoko Gold Project Permit in Relation to Infrastructure

3.2 Underlying Agreements

On October 27, 2010, Roxgold announced the completion of the acquisition of all outstanding shares (5,625,000) of 0877148 B.C. Ltd. The transaction consisted of the exchange of one common share of Roxgold for each outstanding share of 0877148 B.C. Ltd. Pursuant to the acquisition of 0877148 B.C. Ltd., Roxgold complied with the terms of an option agreement between 0877148 B.C. Ltd. and Riverstone Resources Inc. (Riverstone, renamed True Gold Mining Inc.) to earn up to 60% in the various exploration permits in Burkina Faso, including the Yaramoko permit.

Roxgold announced on September 21, 2011, the acquisition of the remaining 40% interest in the Yaramoko exploration permit and certain other Riverstone permits in Burkina Faso. Under the terms of the agreement, Riverstone received a total consideration of approximately C$33.5 million, comprising C$17 million in cash and 16 million Roxgold common shares valued at C$1.03 per common share (based on the closing share price of Roxgold common shares on September 20, 2011).

In light of the ownership change, the Ministère des Mines, des Carrières et de l'Énergie issued the transfer of the exploration permit to Roxgold from Riverstone on September 18, 2012. The current permit is now 100% controlled by Roxgold (subject to the 10% Burkina Faso carried interest). A three-year extension was granted on May 22, 2013.

3.3 Permits and Authorization

The Yaramoko permit was renewed for the third and last time on May 22, 2013 and is valid until September 8, 2016 (*Arrêté ministériel* No. 2013-000312/MCE/SG/DGMGC) (Appendix A). Roxgold will decide in due course whether to apply for a *Permis d'exploitation industrielle* (Industrial Operating permit), the Burkina Faso equivalent of a mining permit.

The primary environmental approval required by Roxgold to develop the Yaramoko project is an *Avis de Conformité et de Faisabilité Environmentale*, which is issued by the Ministry of Environment and Sustainable Development through its branch *Bureau Nationale des Evaluations Environnementales* (BUNEE). Such an *Avis* indicates a positive decision of the Minister of Environment on the submitted ESIA, which was submitted to government on May 6, 2014. Roxgold anticipates receiving this *Avis* during the second quarter of 2014. Further information on the environmental permitting process that has been undertaken can be found in Section 19.

SRK is not aware of any significant factors and risks, other than the ones discussed herein, that may affect access, title, or the right or ability of Roxgold to perform work on the Yaramoko property.

3.4 Environmental Liabilities

The project is located in a rural part of the country with no industrial activities. Environmental liabilities on the site are limited to minor environmental damage caused by the artisanal miners associated with land disturbance and the use of mercury for gold extraction. The presence of these artisanal miners is also a social risk to the project. Roxgold is undertaking the necessary steps to manage this risk. These two aspects are discussed further in Section 19.

3.5 Mining Rights in Burkina Faso

In Burkina Faso, the state owns title to all mineral rights. The Government of Burkina Faso passed into law Order No. 031-2003/AN pertaining to the mining code of Burkina Faso that is administered by the *Ministère des Mines, des Carrières et de l'Énergie*. The mining code provides the legal framework for the mining industry in the country. Mineral rights are acquired through a map based system by direct application to the *Ministère des Mines, des Carrières et de l'Énergie*. The government retains a 10% free equity in all mining ventures.

There are six types of mineral rights:

- Exploration permit;
- Industrial Operating permit;
- Semi-Mechanized Small-Scale Operating permit;
- Prospecting authorization;
- Traditional Artisanal Mining authorization; and
- Quarrying authorization.

An Exploration permit (*Permis de recherche*), such as the Yaramoko Exploration permit granted to Roxgold, is granted by order of the Minister of Mines to any person or legal entity (not necessarily a Burkinabe company) by application to the administrative authorities. The surface area of an exploration permit cannot exceed 250 km^2. The application document must include payment of the application fee of 1,000,000 CFA francs. The conditions for granting a permit require the submission of an exploration program and a yearly budget in order to maintain the permit. Work must start within six months after granting of the permit. The permit holder is required to spend a minimum sum of money each year on exploration and submit annual reports and summary quarterly reports documenting the exploration undertaken. An Exploration permit may be assigned or transferred subject to the approval of the Minister of Mines.

The Exploration permit is valid for three years commencing on the date of the grant of the order. It may be renewed twice for subsequent periods of three years. At the second renewal, the size of the permit must be reduced by at least 25%. The Yaramoko property was reduced from 223 to 167 km^2. A renewal application must be filed within at least three months of the expiration date. The renewal fee varies between 1,500,000 CFA francs for the first renewal to 2,000,000 CFA francs for subsequent renewals. The renewal is granted provided that the holder has fulfilled their obligations pursuant to the mining code and that the application complies with mining regulations.

Exploration permits give their holders the exclusive right to research the mineral substances applied for and to use freely the products extracted during research. The Yaramoko permit is solely for the exploration of gold. An Exploration permit can be extended, via subsequent application, to other mineral substances within its perimeters. 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 of the Minister of Mines following the opinion of the Minister of the Environment and the National Commission on Mines 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 environmental impact with 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.

Once an Industrial Operating permit is granted, the Exploration permit for the perimeter is terminated, and the holder is given the exclusive right to conduct exploration and exploitation of the deposits in the area, where they may possess, hold, transport, and sell extracted mineral substances on domestic or foreign markets. They are also given the right to build ore treatment installations and transport extracted minerals. The permit is valid for 20 years to the date of the grant for large mines and 10 years to the date of the grant for small mines. In both cases the permit is renewable for a consecutive period of five years until the exhaustion of the deposit. An Industrial Operational permit is subject to variable application, renewal, or transfer fees based on size of the operation. The surface area of an exploitation permit is contingent on the size of the deposit and infrastructure requirements and must have its perimeter marked out by a chartered surveyor.

Industrial Operating permit holders must begin production activities within two years of the grant date; however, an exemption to this may be obtained from the Minister of Mines subject to payment of fees for two years and it is renewable for two more two-year periods. After a six-year exemption, the issuing authority may withdraw the permit. Licensing for small mine operations is subject to an allotment of 10% of the company or vendor’s shares of the venture to the state. Large mine operations are not subject to this allotment.

Semi-Mechanized Small Scale Operating permits (*Permis d’exploitation artisanale semi-mécanisée*) are granted by the Mining Administration after a public survey and following the opinion of the relevant administrative authorities and concerned local communities. Their holders have the exclusive right to research and mine deposits on surface and at depth within the permit perimeters. These permits have true real estate rights open to mortgage or pledge and further confer to their holders the right to own, hold, and transport extracted mineral substances and then to sell these products on domestic or foreign markets. The permits are valid for five years to the date of the grant and, following the submission of a mining regulation compliant application, are renewable thereafter for consecutive periods of three years each by the authority who issued them originally.

Semi-Mechanized Small Scale Operating permits are granted for a surface area of 100 hectares. A fee of 1,000,000 CFA francs is required with the application. Renewal and transfer fees are 2,000,000 CFA francs. Holders are required to have their perimeter marked out by a chartered surveyor and shall mine mineral substances within that perimeter rationally, observing public health, work safety, environmental, and product marketing standards. Permit holders cannot interfere with cultivation activities and must pay compensation for losses to farmers. Deposits are to be mined in compliance with the deposit summary evaluation and mine plan, where any changes must be approved by the Mining Administration. A mining title must be obtained by persons or entities other than the permit holder before mining masses consisting in barrows, waste heaps, and quarrying residues.

Prospecting authorizations (*Autorisation de prospection*) are issued by the Mining Administration to physical or legal entities irrespective of nationality and confer to their holders the non-exclusive right of prospecting all mineral substances on the surface of the granted perimeter, excluding prohibited or protection areas. The authorization is personal and nominal, not assignable or conveyable, and may be withdrawn from holders who do not fulfill their obligations in accordance with the mining code. As of the date of issue, prospecting authorizations are valid for one year and are renewable by request for further one-year terms by the decision of the issuing authority as many times as requested by the holder. An application fee of 200,000 CFA francs is requested and renewal fees are 200,000 CFA francs.

Traditional Artisanal Mining authorization (*Autorisation d'exploitation artisanale traditionelle*) are granted by the Mining Administration following the opinion of administrative authorities and concerned local communities to Burkinabe physical entities, exclusively Burkinabe sharing cooperatives, and companies governed by Burkinabe law with a majority of Burkinabe capital. They confer to their holders the exclusive right of traditional small-scale mining of mineral substances within the granted perimeter, determined conditions and to a depth set by mining regulations, with no special right for obtaining an Industrial Operating permit. Permit holders must mine mineral substances rationally while observing public health, work safety, environment, and marketing standards and may not undertake activities in cultivation fields or block normal irrigation. Permit holders must compensate for losses to farmers. Permits cannot prevent authorized research activities on their granted surface, which is to be square or rectangular, ranging from 1 to 10 hectares. When an Industrial Operating permit occupies the same surface, it will not be renewed; however, its holders are entitled to indemnity from the new owner.

These permits are real property and are not open to mortgage and are a lease of land following the authorization of the Mining Administration. They are not assignable and may be conveyed following death or personal incapacity subject to the approval of the Mining Administration. The application fee is 400,000 CFA francs and the renewal of transfer fee is 400,000 CFA francs. Demarcation must be carried out on the permit surface area, or the Mining Administration will do so at the permit holder's expense. Permits are valid for two years and are renewable for further two-year periods by the original issuing authority, provided the perimeter is not subject to a request for an Industrial Operating permit.

Quarrying authorizations (*Autorisation d'exploitation de carrières*) are made by the Mining Administration according to mining regulation and to the provisions applicable to mining titles with changes made where necessary. There are two types of quarrying authorizations: permanent and temporary, which confer to their recipients the exclusive right to quarry substances within their perimeters and entitle them to own, hold, or transport extracted mineral substances and to dispose of them on domestic markets and export them. Authorizations for both are granted by the Minister of Mines following the opinion of administrative authorities and concerned local communities to all physical or legal entities submitting a mining regulation compliant application. Both allow their holder to establish packaging and primary processing facilities for quarrying substances. Temporary operating authorizations for quarries can intervene only after the payment of operating tax. Landowners must obtain authorization if they wish to operate quarrying themselves on their lands. They do not, however, require authorization when quarrying for exclusively interior purposes.

Permanent quarrying authorizations are valid for five years to the date of the grant and are renewable for three years each, under the same conditions as other permits. The application fee is 2,000,000 CFA francs, while the renewal or transfer fee is 3,000,000 CFA francs. Temporary quarrying authorizations are not renewable and valid only for the period defined, not exceeding one year.

The surface area for which quarrying authorizations are granted is defined in the authorization and will be marked out in compliance with mining regulations with a chartered surveyor. Failing this, the Mining Administration will do so at the recipient's expense.

4 Accessibility, Climate, Local Resources, Infrastructure, and Physiography

4.1 Accessibility

Burkina Faso can be reached by plane with two international airports servicing the country: one in Ouagadougou and the other in Bobo-Dioulasso; there are numerous secondary airfields throughout the country. Burkina Faso has a reasonably developed asphalt-covered highway system that connects the country's main cities and the neighbouring countries.

A narrow-gauge railroad connects Kaya and Ouagadougou with the port city of Abidjan in Cote d'Ivoire. Burkina Faso is covered by a mobile telephone network allowing for clear and reliable international and national communications from almost anywhere in the country.

The Yaramoko project is approximately 200 km by road southwest of Ouagadougou. It can be reached via the highway system by two routes. One route is to travel west from Ouagadougou on paved highway for approximately 200 km to the village of Ouahabou, and then north-northwest by laterite road for approximately 20 km to the village of Bagassi, which is at the centre of the property area.

An alternative route is reaching the city of Boromo, approximately 180 km southwest of Ouagadougou, and then proceeding west on a laterite road for approximately 50 km. The narrow-gauge National Railway of Burkina Faso divides the property.

4.2 Local Resources and Infrastructure

Roxgold's exploration camp is located in the village of Koussaro, which is some 2 km east of the Exploration permit's eastern boundary. The camp comprises several cabins with indoor plumbing. Diesel generators produce electricity and there is an internet connection.

The camp offers a secure area for logging and processing drill core and for storing equipment. From the camp, the project property is accessed by a 6-kilometre laterite road constructed by Roxgold.

Another close settlement is the village of Bagassi, which is centred on the property and has a population of approximately 3,000. Bagassi has recently been connected to the country's national power grid.

The closest major city is Boromo, located some 50 km away. It is serviced by the national power grid and it hosts a hospital and additional suppliers. However, major purchases and procurements need to be done in Ouagadougou.

Agriculture is the main industry in the region with many fields of millet, groundnut, and cotton.

The surface area covered by the Yaramoko Exploration permit is sufficient for the infrastructure necessary for an underground mining operation. The area can accommodate the potential tailings storage areas, waste disposal, leach pads, and processing facilities.

The local water reservoirs would not be capable of supplying water for industrial purposes and consequently wells would need to be drilled. Bagassi or any of the larger surrounding villages can provide mining personnel.

Local artisanal miners, known as *orpailleurs*, are currently working in the Bagassi South and Bagassi Central areas of the property. Roxgold has established a capable community relations function that ensures interactions with this group are cordial and to date no major issues have been encountered between the company, company representatives, and the *orpailleurs*. Security measures are in place to monitor the situation.

4.3 Climate

The climate is semi-arid, with a rainy season from April to October and a dry season that is mild to warm from November to February and hot from March to June during the onset of the rainy season. Temperatures range from a low of about 15 degrees Celsius in December to highs of about 45 degrees Celsius in March and April.

Annual total rainfall in the area averages 800 millimetres. Burkina Faso's climate allows for exploration to be carried out throughout the year. Geological fieldwork and rotary drilling are usually conducted during the dry season between January and May, while diamond drilling can be conducted throughout the year.

4.4 Physiography

The property is covered by hills of volcanic rocks rising to a maximum of 450 metres above sea level and of vast lateritic plains extending below the hills. A network of backwaters and rivers, which flow generally in a northeast-southwest and north-south directions towards the large Basle River, drain the property.

Vegetation in uncultivated areas comprises mostly savannah woodlands, with dense bush growing only near streams and rivers. Typical landscape images from the Yaramoko project area during the dry and the wet season are shown in Figure 3.

Farmers cultivate staple crops such as millet, rice, sorghum, maize corn, and cash crops like cotton and groundnuts. Deforestation is widespread over the permit area. Wildlife is mostly restricted to small game and birds, but snakes are common, and a few monkeys have been reported.

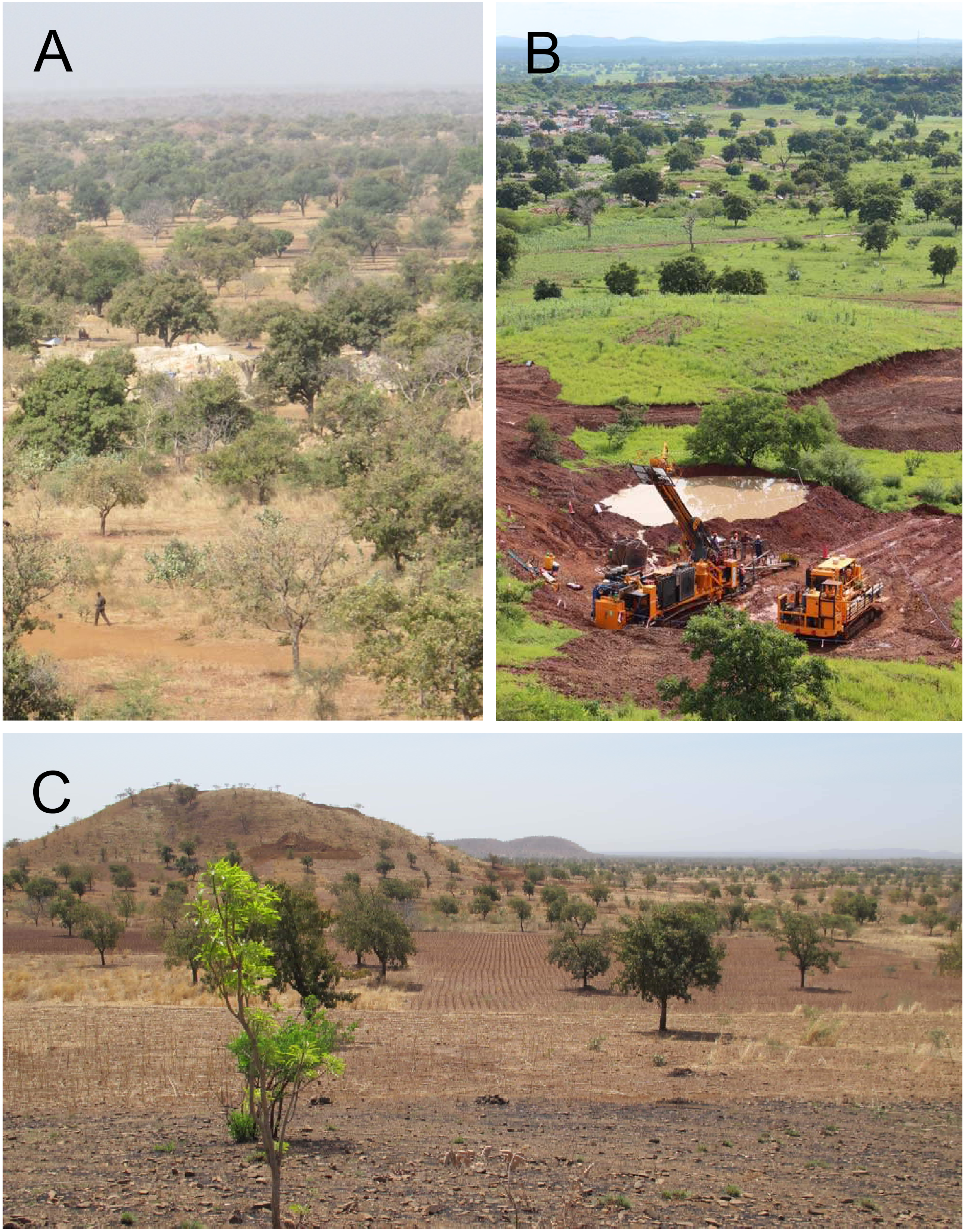


Figure 3: Typical Landscape in the Yaramoko Project Area During the Dry Season (A and C) and the Wet Season (B)

5 History

The project area has been explored since 1974. SRK understands that the Yaramoko permit was initially granted to Riverstone in 2006 and has changed ownership only once, when the registration was transferred to Roxgold in September 2012.

Between 1974 and 1995, *le Programme des Nations Unies pour le Développement* (PNUD) and the *Bureau des Mines et de la Géologie du Burkina* (BUMIGEB) conducted intermittent exploration work in and around the current permits area including regional and detailed soil geochemistry surveys, an airborne geophysical survey, ground geophysics, trenching, and drilling.

The significant results obtained at that time were reported by Willemyns of PNUD in 1982 (as cited in Riverstone, 2008) from two quartz vein core samples collected in the area of Bagassi East that returned 2.9 grams of gold per tonne (g/t gold) over a core length interval of 1.45 metres (m), and 6.36 g/t gold over a core length interval of 0.30 m.

In 1995, Placer Outokumpu Exploration Limited conducted soil sampling in the area of Bagassi-Yaramoko on behalf of Supply Services and Burkina. That sampling returned a small number of isolated values greater than 100 parts per billion (ppb) gold. A single sample returned a value of 760 ppb gold and it was reported to have been collected in an area underlain by Tarkwaian sedimentary rocks (Riverstone, 2008).

In 1996, S.à.r.l. Shield Resources of Burkina Faso conducted exploration work in the area of Bagassi. A ground survey parallel to the railroad was undertaken. It returned a few anomalous points but there was no follow-up work (Riverstone, 2008).

Other than small scale *orpaillage* conducted on a few areas of the property, there has not been any known production from the Yaramoko property.

6 Geological Setting and Mineralization

6.1 Regional Geology

Burkina Faso lies within the West African Precambrian craton, which is composed of two Archean nuclei surrounded by extensive lower and middle Proterozoic volcanic and sedimentary rocks and an outer fringe of upper Proterozoic and Phanerozoic rocks (Figure 4). The northern Archean core is located in Morocco and Mauritania and the southern Archean nucleus is situated in Liberia, Guinea and Sierra Leone. The Liberian Archean Nucleus and the surrounding Proterozoic rocks form the Man Shield. It is bounded to the east by Pan African orogenic belts and is overlain to the west and north by flat-lying sedimentary rocks of the Voltaic basin intruded by various generations of granitoids.

The geology of Burkina Faso can be subdivided into three major litho-tectonic domains: a Paleoproterozoic basement underlying most of the country; a Neoproterozoic sedimentary cover developed along the western, northern and south-eastern portions of the country; and a Cenozoic mobile belt forming small inliers in the north-western and extreme eastern regions of the country.

The Paleoproterozoic basement comprises Birimian volcano-sedimentary and plutonic rock intruded by large batholiths of Eburnean granitoid. Two major north-northeast-trending sinistral shear zones define the overall structure of this basement: the Houndé-Ouahigouya Shear Zone in the west and the Tiébélé-Dori-Markoye Shear Zone in the east. Two major Birimian greenstone belts, the Houndé and the Boromo belts, traverse the country over more than 400 km and host multiple gold and base metal deposits (Huot et al., 1987). The Yaramoko property is situated at the northern end and on the eastern edge of the Houndé Greenstone Belt (Figure 4).

The Houndé Greenstone Belt is composed of an up to 6-kilometre-thick basal sequence of tholeiitic basalts, gabbros, and related volcaniclastic rocks. The sedimentary rocks in the belt were deposited in a near-shore, shallow detrital environment; they consist of poorly sorted conglomerates, sandstones, and gritstones, to arkoses and pelites (Villeneuve and Cornée, 1994). The Houndé belt is bound by the Boni shear zone to the west, which places the volcano-sedimentary sequence in contact with a belt of younger Tarkwaian type sedimentary rocks with a maximum age of 2.12 billion years (Metelka et al., 2011).

The Houndé and Boromo greenstone belts are affected by three episodes of penetrative strain (D1 to D3; Metelka, 2012). D1 deformation is characterized by north- to north-northeast-trending foliation and anastomosing shear zones. Intensive folding of the volcano-sedimentary sequences is documented by outcrop-scale isoclinal to open folds with north-northeast to northeast-trending, steep-dipping axial planes. The D1 deformation is constrained by syn-tectonic intrusions (2.16 billion years) and the maximum depositional age of the Tarkwaian-type sedimentary rocks (2.12 billion years).

The D2 deformation is marked by steep- dipping brittle-ductile to brittle shear zones and locally anastomosing faults. D1 fabrics, such as penetrative foliation and high strain zones, are crosscut at low angles by D2 structures. East-northeast-trending dextral and northwest- to north-northeast-trending sinistral D2 shear zones in granitoid domains crosscut the foliation associated with D1. The age of the D2 deformation is based on the ages of syn- to late tectonic granites and is circa 2.11 to 2.10 billion years.

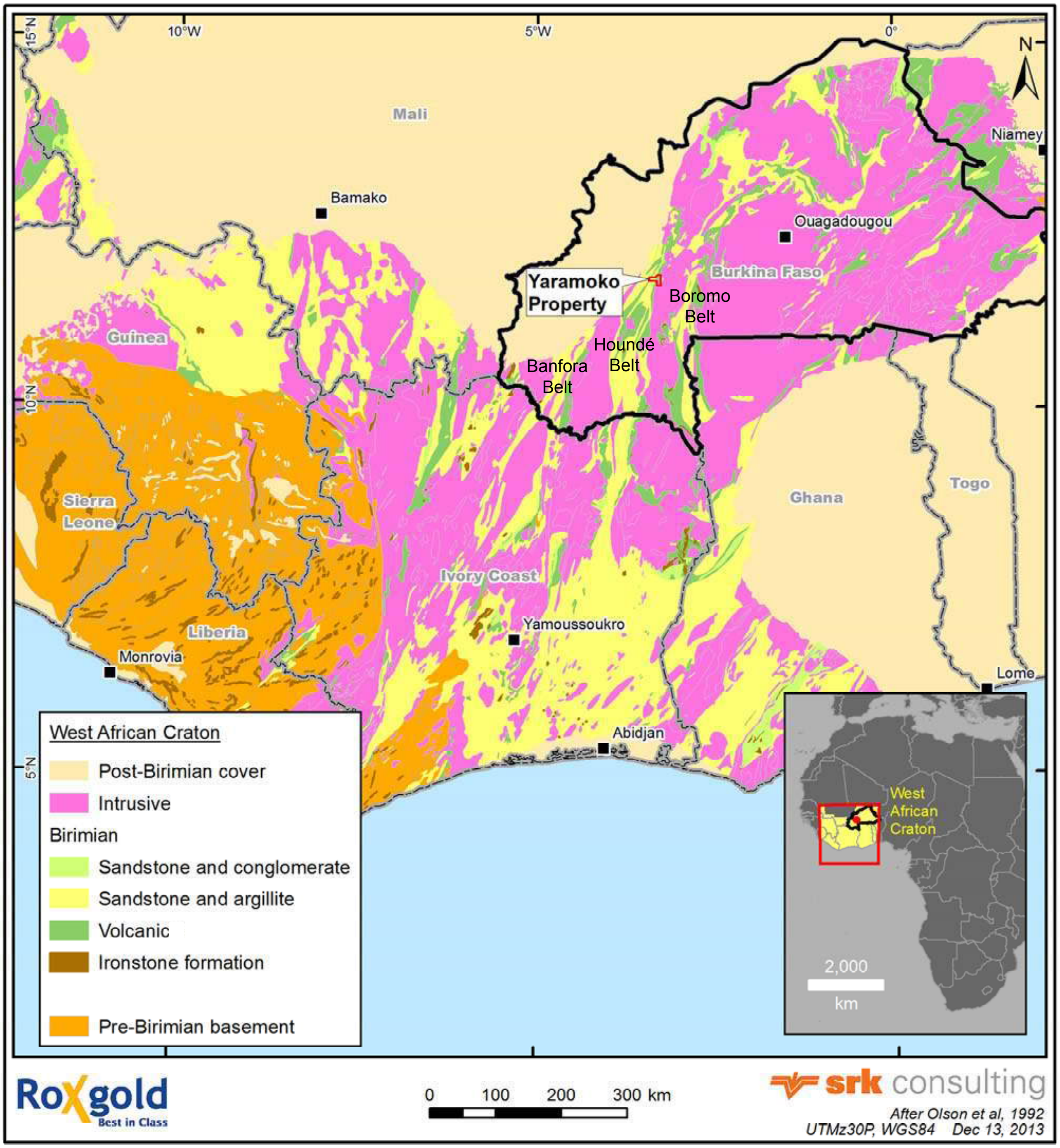


Figure 4: Regional Geological Setting (modified from Olson et al., 1992)

The D3 deformation is recognized by the development of crenulation cleavage, as well as chevron and kink folds in volcano-sedimentary and sedimentary rocks. The D3 brittle faults and fractures strike northwest and thrusts dip to the north and south. The D3 deformation is assigned to Late Eburnean (2.2 to 2.0 billion years) to Pan-African age.

6.2 Property Geology

The north-northeast-trending Boni shear zone divides the Yaramoko project area between the predominantly Houndé volcanic and volcaniclastic rocks to the west and the minor volcanic rocks of to the east, in the Diébougou granitoid Domain (Figure 5, SRK 2013a).

The eastern assemblage contains several intrusive bodies, including a diorite body east of the Yaramoko village, a large quartz-bearing granitoid, which stretches south from Bagassi town, and the smaller granitoid body to the east of Bagassi. The granitoid body east of Bagassi hosts the 55 Zone gold deposit. A diabase (dolerite) dike trends north-northeast across the southern portion of the property.

Outcrop and core observations document the main lithological units present at Yaramoko as mafic volcanic rocks, felsic dikes, and late dolerite dikes (Figure 6). The mafic volcanic rocks constitute the main country rock, are locally very strongly magnetic and are in places affected by calc-silicated skarn alteration (garnet, calcite, epidote, and magnetite; Figure 7). The mafic rocks are crosscut by multiple generations of felsic dikes, (aplitic, pegmatitic, or porphyritic textures). Late dolerite dikes crosscut mafic volcanic rocks, felsic dikes and the gold mineralization (SRK, 2013b).

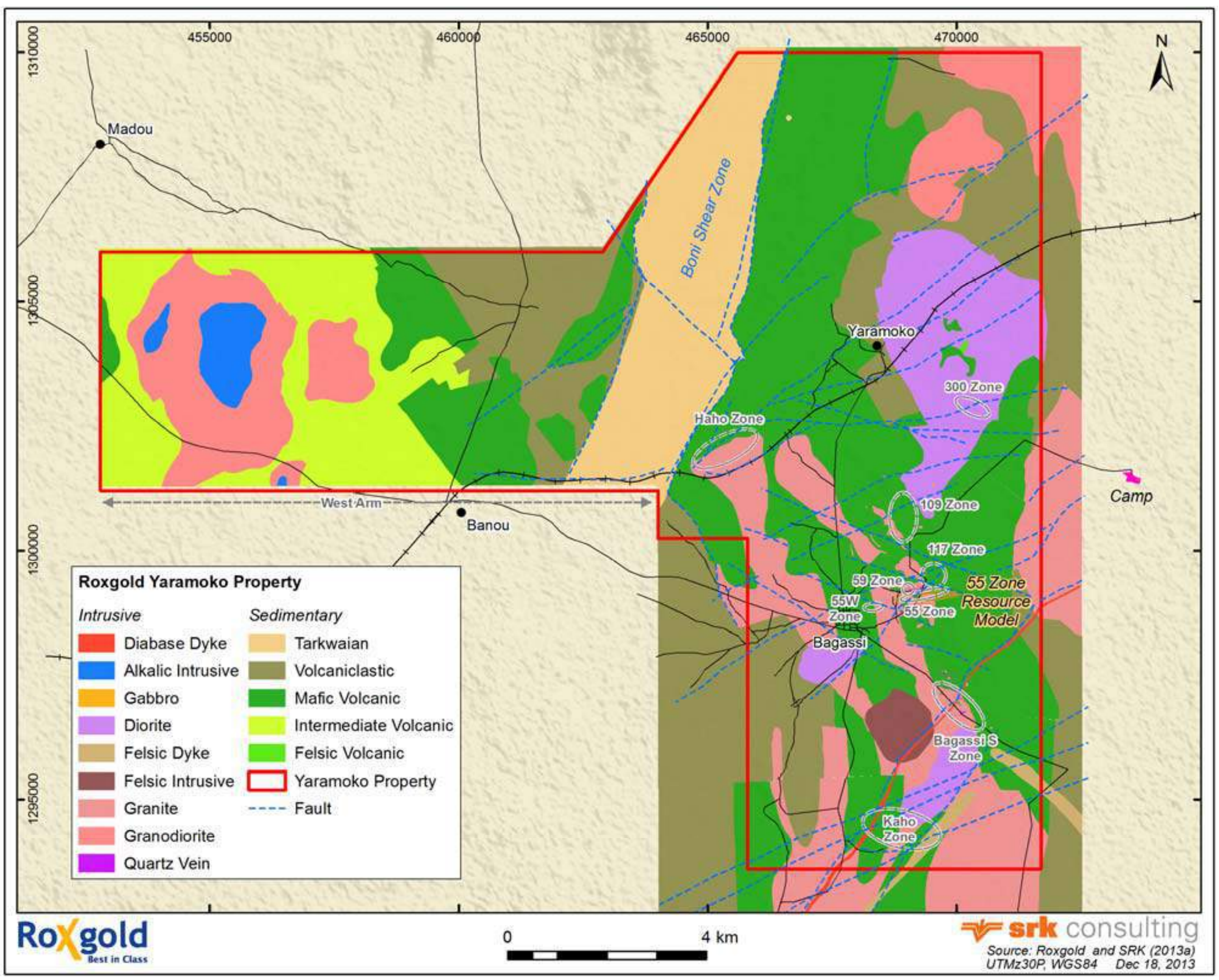


Figure 5: Geology on the Yaramoko Property

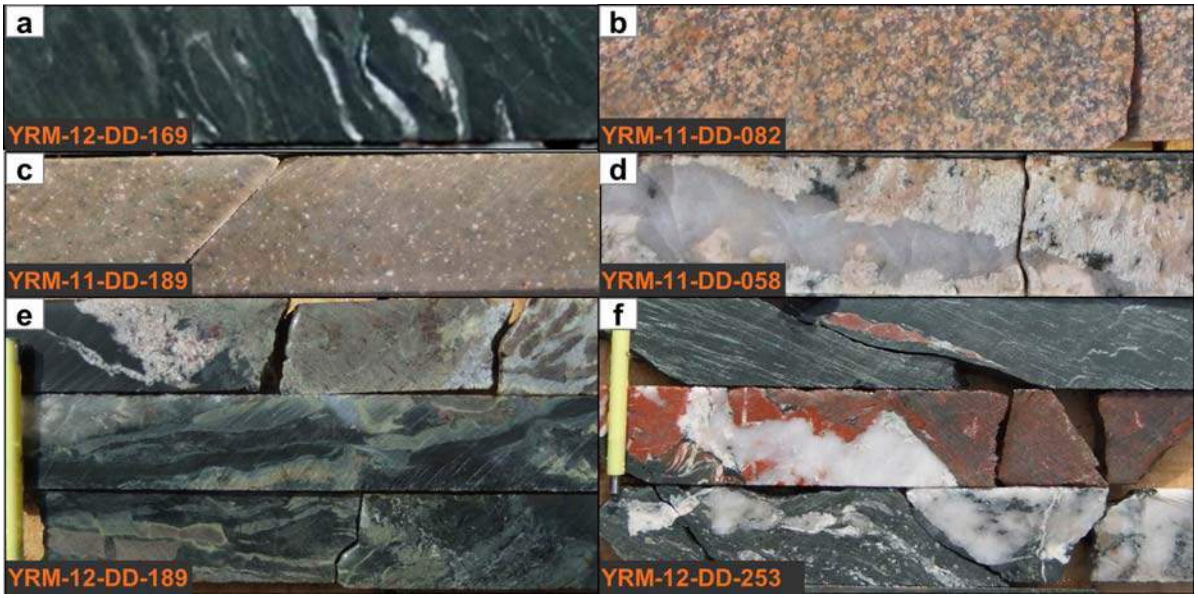


Figure 6: Overview of the Main Lithologies and Alteration on the Yaramoko Property

(A) Mafic volcanic rock. (B) Granite. (C) Feldspar porphyry dike. (D) Pegmatite dike. (E) Epidote-garnet skarn alteration. (F) Hematite alteration.

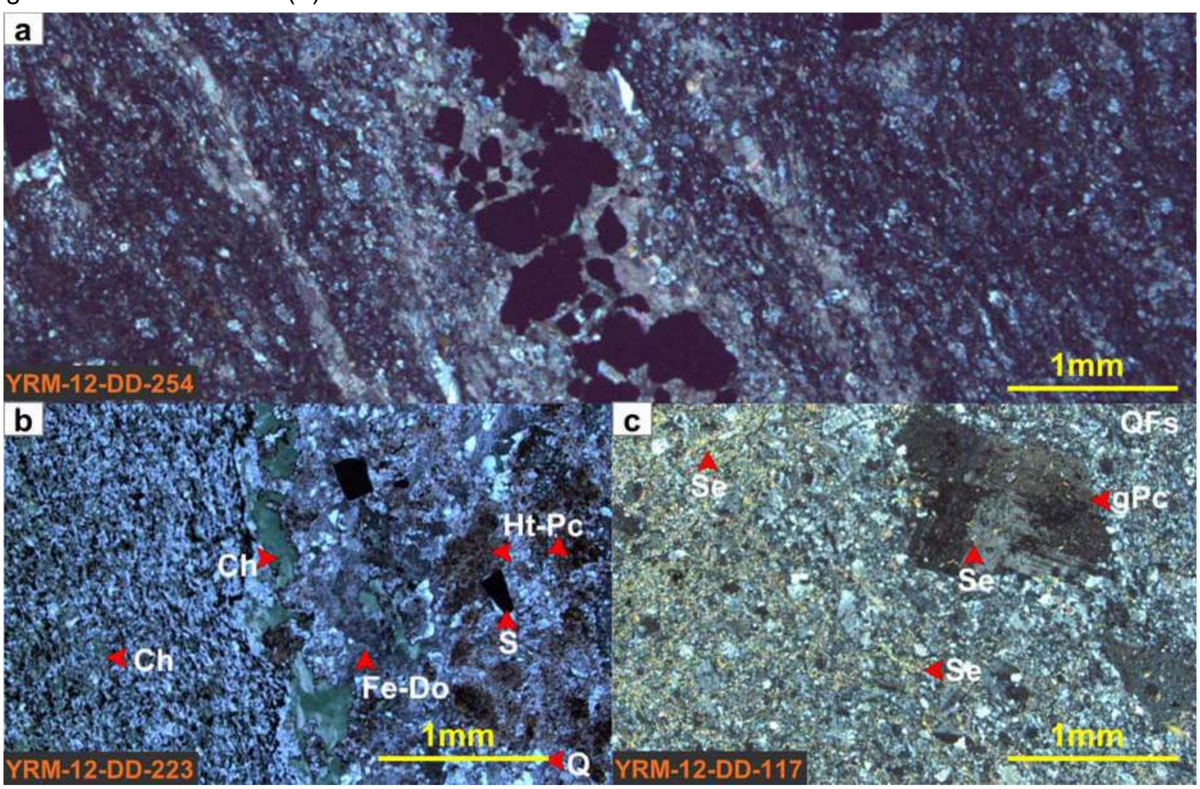


Figure 7: Main Lithologies on the Yaramoko Property in Thin Section

(A) Mafic volcanic rock bleaching of schist by carbonate-rich halo in immediate vicinity to the vein. (B) Contact between foliated chlorite (Ch), quartzofeldspathic schist and feldspar-rich (Pc) and quartz (Q) metagranitoid. Hematite alteration after Plagioclase (Ht-Pc) and disseminated Fe-dolomite (Fe-Do). (C) Aplite dike. Glomeroporphyritc texture of plagioclase (Pc) in fine-grained quartzofeldspathic (QFs) groundmass. Sericite (Se) replacement after plagioclase in the groundmass. Images from GeoMinEx (2013).

6.2.1 Structural Geology

Three generations of faults are recognized on the Yaramoko project area. Anastomosing north-striking belt-parallel shear zones are crosscut by faults associated with the Boni shear zone. The youngest deformation event is documented by east-northeast-striking sinistral faults and shear zones (e.g., the 55 Zone shear zone) and east-southeast striking dextral faults (Figure 5, SRK, 2013a).

The 55 Zone shear zone is characterized by strongly-developed east-northeast-trending foliation. From 0 to 400 m depth, the shear zone is moderate-dipping (65º to 70º) with thick quartz veins. Below that depth, the 55 Zone is steep (85º). Striations and stretching lineations plunge moderately to the east indicating oblique movement. South over north reverse-dextral kinematics are inferred from asymmetric folds and boudins (Figure 8).

A second shear zone is observed east of the 55 Zone (SRK, 2013b). It is marked by thick, strongly foliated high strain zone and it dips moderately to the east. Based on outcrop fold asymmetry, the shear zone has dextral kinematics. The rest of the rock mass is relatively less deformed.

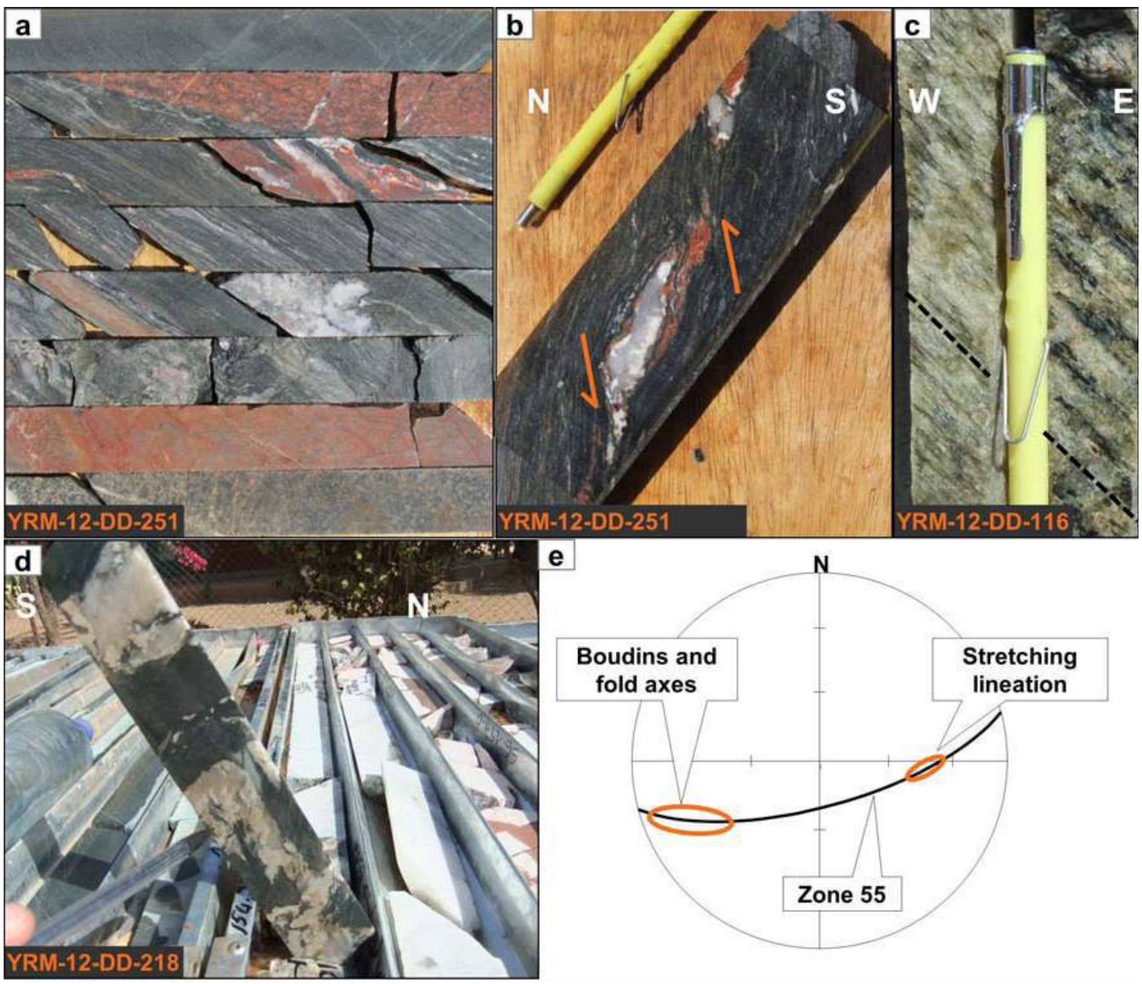


Figure 8: Structural Characteristics of the 55 Zone Shear Zone

(A) High-strain shear zone. (B) Asymmetric boudins indicating south-block-up kinematics. (C) Stretching lineation in foliation plane. (D) West-plunging fold in quartz-ankerite vein. (E) Equal-area stereoplot of planar and linear features of the 55 Zone.

6.2.2 Mineralization

Gold is the main mineralization of economic interest found to date on the Yaramoko property. The main areas of gold mineralization are the 55 Zone, Bagassi South, 109, and 117 zones. The 55 Zone and the Bagassi South zones are the two main zones, both of which are hosted in the Diebougou granitoid domain.

The 55 Zone occurs in a reverse dextral shear zone and gold is primarily associated with quartz veining. The bulk of the gold mineralization occurs in dilatational segments of the shear zone where quartz veins are thicker and exhibit greater continuity. Gold typically occurs as coarse free grain in quartz and is associated with pyrite (Figure 9). The gold-bearing veins range from a few centimetres to more than 4 m in width, and have only minor contents of disseminated pyrite (frequently less than 1%). Adjacent sheared vein wall rock locally contains a small percentage of pyrite.

The Bagassi zone is an area of artisanal prospecting located south of 55 Zone that yielded positive geochemical results. At Bagassi South the mineralization consists of pyrite hosted in quartz veining. The surface definition of the vein can be traced by the artisanal mining. The vein is discontinuous over a strike length of some 800 m and is believed to dip to the southwest. Gold mineralization at Bagassi South is associated with quartz, white mica and pyrite alteration.

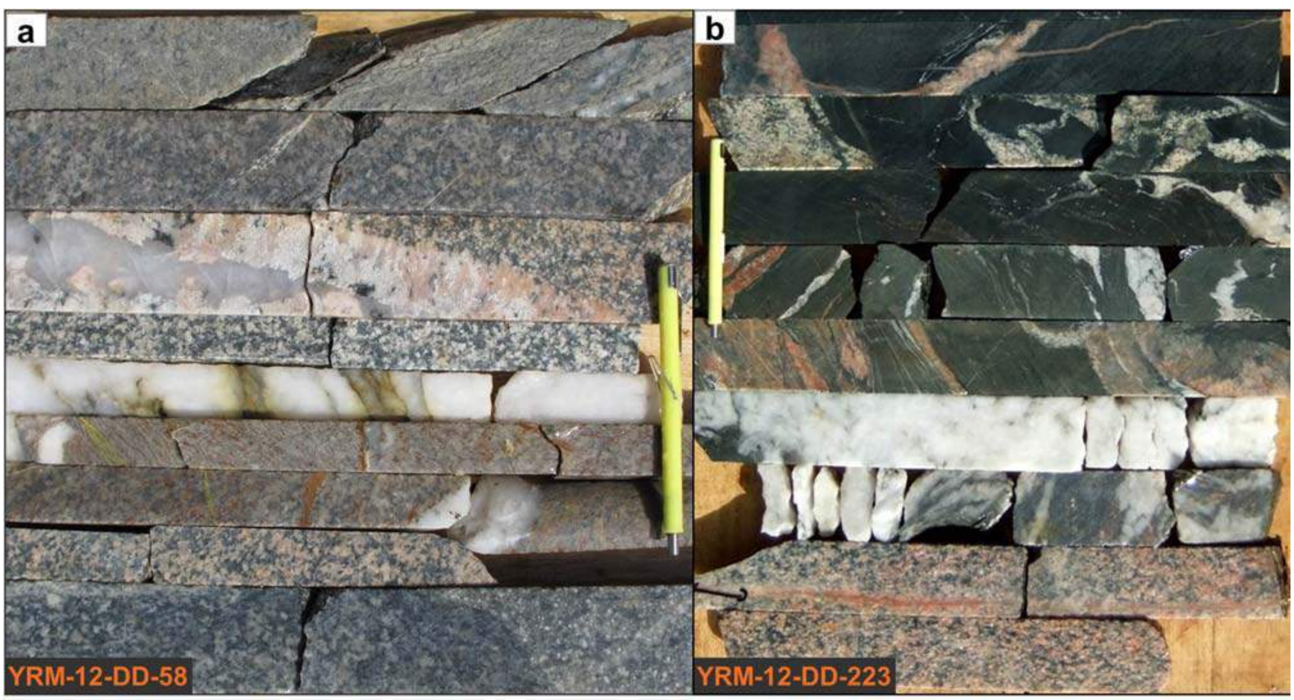


Figure 9: Mineralization on the Yaramoko Project

Composite Section through Boreholes (A) YRM-12-DD-58 and (B) YRM-12-DD-223. (A) The auriferous zone is located completely within foliated granitic rock. (B) The quartz vein is at the contact between mafic volcanic rock and granite.

Four mineralogically distinct hydrothermal veins were defined: 1) quartz-rich veins, 2) iron-dolomite rich veins with quartz and muscovite, 3) iron-dolomite and quartz veins with albite, and 4) albite-rich veins with quartz and iron-dolomite (GeoMinEx, 2013). Native gold is present in each vein type, with accompanying sulphides mainly as pyrite and traces of tellurides. The most abundant sulphide mineral, pyrite, occurs in veins, altered wall rock. Textural and chemical complexity of pyrite document protracted period of crystallization from a compositionally evolving hydrothermal fluid. Native gold occurs in numerous textural associations and at a wide range in grain size ranging from less than 1 and up to 300 micrometres (Figure 10, GeoMinEx, 2013).

The second type of gold mineralization encountered is also associated with pyrite, occurring in zones of conspicuous shearing primarily in the volcanic rocks, with minimal to no significant quartz veining. These two styles of mineralization represent two end-members of brittle-ductile deformation within the 55 Zone where coarse gold in veining, usually seen in a granitic host, defines a more brittle environment while pyrite and shearing in the volcanic rocks is typical of a ductile domain.

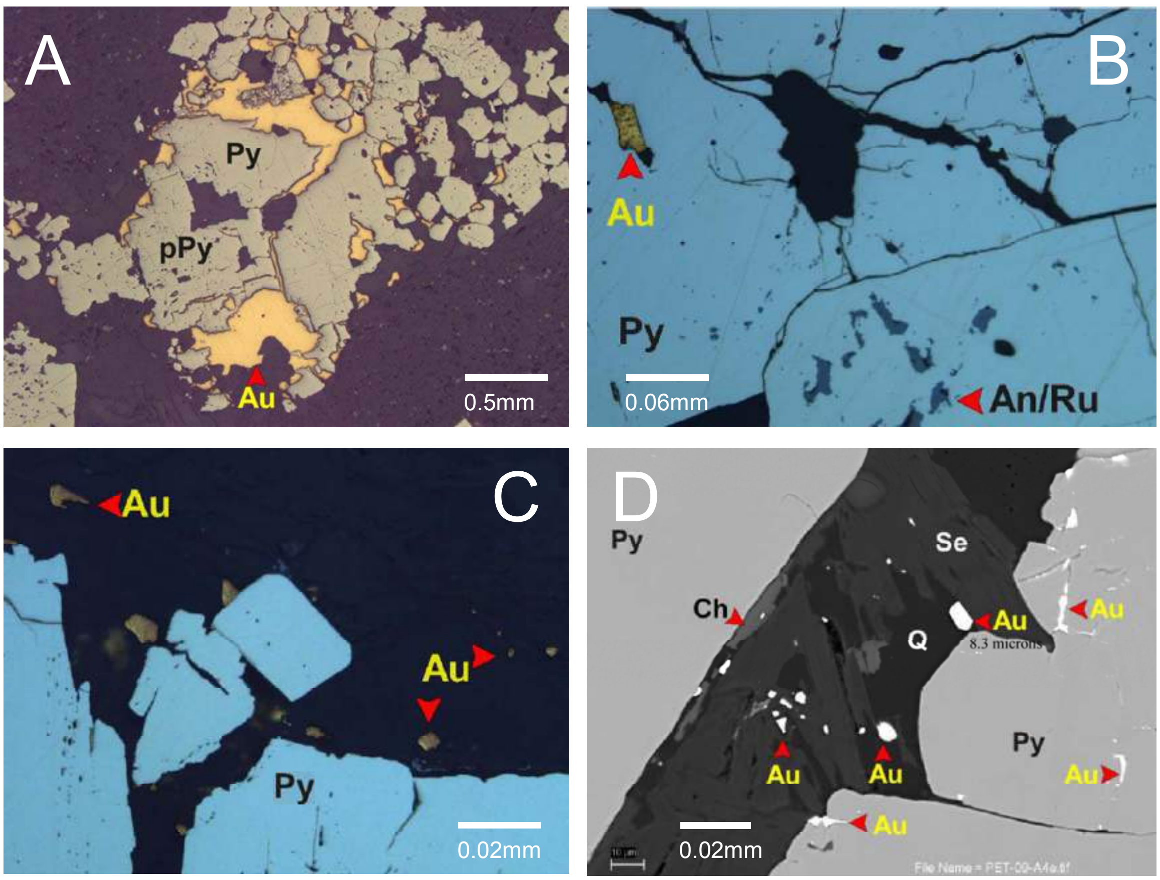


Figure 10: Photomicrograph of Gold Mineralization From the 55 Zone of the Yaramoko Project. Images from GeoMinEx (2013)

A: Coarse-grained native gold interstitial to poikoloblastic (pPy) and pyrite (Py). Reflected light microscope. YRM-12-DD-254: 788. 1-788.2 m.

B: Textural zoning in pyrite. Heterogenous pyrite (Py), native gold (Au), and inclusions of anastase/rutile (An/Ru) in pyrite. Reflected light microscope. YRM-11-DD-042: 55.8-55.9 m.

C: Gold (Au) in quartz adjacent to pyrite (Py). Reflected light microscope.YRM-12-DD-223: 240.35-240.45 m.

D: Native gold (Au) in relation to pyrite (Py), sericite (Se) and chlorite (Ch). Backscattered electron microscope. YRM-12-DD-223: 240.35 to 240.45 m.

7 Deposit Types

The Yaramoko gold project was acquired for its potential to host gold mineralization. This area is underlain by geology considered to be similar to that of other Birimian-age volcano-sedimentary sequences. Hence, this region is considered prospective for orogenic gold deposits, which typically exhibit a strong relationship with regional arrays of major shear zones

Primary gold deposits in Burkina Faso occur within the Paleoproterozoic Birimian belt. Mineralization was synchronous with regional metamorphism and deformation. Gold deposits in the Birimian greenstone belts of the West African shield are typically late orogenic hydrothermal deposits that exhibit a strong relationship with regional arrays of major shear zones. The gold mineralization is typically associated with an organized network of quartz veins containing subordinate amounts of carbonate, tourmaline, sulphides, and native gold. In these deposits, the gold is typically free milling. Alternatively, the gold mineralization can be also associated with disseminated sulphides in strongly deformed alteration zones. In the alteration zones, gold may be free milling but also refractory.

The gold mineralization is related to regional arrays of alteration and deformation zones, commonly located at major lithological discontinuities. The local controls on the distribution of the gold mineralization are structural and lithological.

In Burkina Faso, the weathering profile is deep and typically results in extensive surface oxidation of bedrock to a depth reaching more than 100 m locally. In such areas, gold deposits typically comprise a surface oxide zone, an intermediate transition zone and a deeper fresh rock zone. Gold is typically free milling in the oxide zone.

The gold mineralization found in the 55 Zone is associated with low sulphide quartz vein and is free milling. The weathering profile over the deposit is shallow (10 to 30 m).

8 Exploration

Riverstone started exploration work on the Yaramoko property in 2005 before Roxgold became involved in late 2010. The exploration programs have comprised soil and rock sampling, airborne and ground geophysics, rotary air blast, auger, reverse circulation, and core drilling. The exploration activities are summarized in Table 4, and Figure 11.

Drilling activities are further detailed in Section 9.

Table 4: Summary of Exploration Work by Riverstone and Roxgold

Period	Company	Exploration Activity*
2005	Riverstone	- Reconnaissance soil geochemistry in the Bagassi Central, Bagassi South, Kaho and Boni Shear areas (3,027 samples at 200-metre line spacing) - 199 rock samples collected during prospecting - Ground very low frequency electromagnetic survey (VLF) in Bagassi
2007	Riverstone	- 22 RC boreholes (1,974 m) in areas proximal to orpaillage sites including Bagassi - 196 rock samples collected from outcrops and pits
2010	Riverstone/ Roxgold	- 368 soil samples in Bagassi Central and Bagassi South (200-metre line spacing and 50-metre sample spacing) - Airborne magnetic and radiometric survey flown over the entire permit area at 50-metre line spacing and 40-metre terrain clearance - 33 RC boreholes totalling 2,724 m testing Bagassi Central and Bagassi South
2011	Riverstone/ Roxgold	- 570 soil samples at Bagassi Central (100-metre line spacing and 50-metre sample spacing - 1,225 reconnaissance soil samples at West Arm (400-metre line spacing and 100-metre sample spacing) - 352 RAB boreholes totalling 5,558 m to follow up soil sampling anomalies in Bagassi Central, Bagassi South, and Haho - 44 core boreholes totalling 6,182 m primarily in 55 Zone
	Roxgold	- 1,136 soil samples collected including infill in Bagassi Central and infill in Bagassi South (25-metre line spacing and 25-metre sample spacing) - 23 core boreholes totalling 5,297 m in 55 Zone - 19 RC boreholes totalling 1,497 m in Bagassi Central and Bagassi South
2012	Roxgold	- 743 soil samples collected including infill in Bagassi South (25-metre line spacing and 25-metre sample spacing), and reconnaissance in Kaho area in the southern portion of the property (200-metre line spacing and 25-metre sample spacing) - 131 auger boreholes in 55 Zone and Bagassi South to test sampling methodology over known areas (1,143 m) - 1,535 RAB boreholes totalling 34,122 m at Bagassi Central, Bagassi South, and West Arm area - 136 RC boreholes totalling 22,883 m in Bagassi Central, Bagassi South, and southern extremity of permit - 199 core boreholes totalling 82,111 m (152 core boreholes in 55 Zone and 47 boreholes on regional targets)
2013	Roxgold	- Ground induced polarization (IP) and magnetic survey of 55 Zone - 2,538 auger boreholes drilled from January to April in Bagassi Central, Bagassi South, 300 Zone, Haho Zone and Boni Shear Zone (12,337 m) - 42 RC boreholes totalling 12,981 m in Bagassi Central - 138 core boreholes totalling 36,194 m including 54 boreholes in 55 Zone, 14 geotechnical boreholes, 5 metallurgical boreholes, and 65 boreholes on regional targets

* RAB = Rotary air blast, RC = Reverse circulation

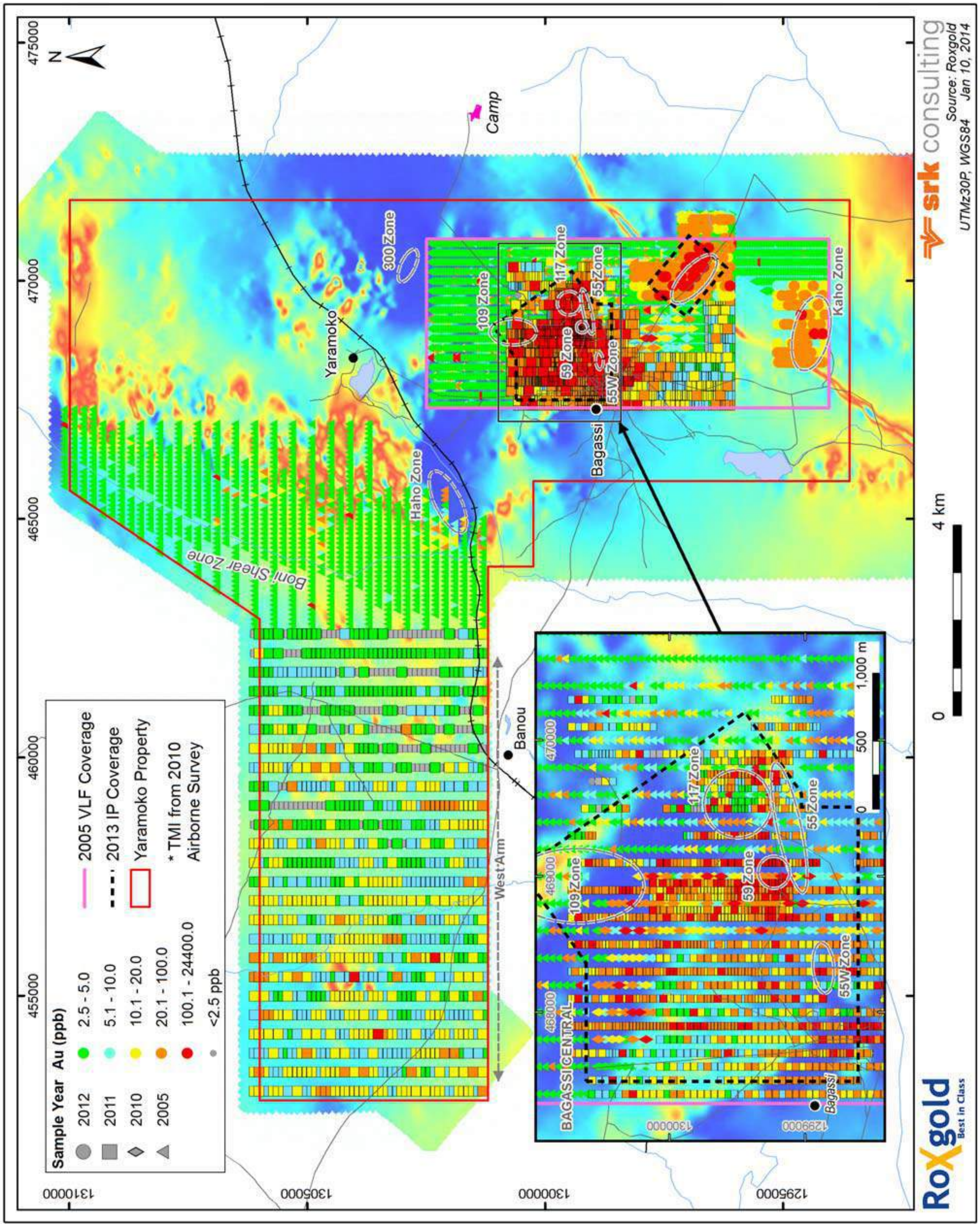


Figure 11: Summary of Soil Sampling and Geophysics Completed by Riverstone and Roxgold

8.1 Exploration by Riverstone 2005-2011

8.1.1 Soil Geochemistry and Prospecting

In 2005, Riverstone conducted a geochemical soil sampling survey over two grids, collecting 3,027 samples. Concurrent with the soil sampling survey, geological mapping and prospecting in the area of the villages of Bagassi and Haho were conducted and 199 rock samples were collected. Samples were collected from outcrop and orpaillage workings.

In 2007, a further 196 rock samples were collected from outcrop and orpaillage workings. Samples were collected in the Bagassi South, Bagassi Central, Haho, and Niakongo areas of the property. The best gold grades were collected in the Bagassi Central and Bagassi South areas. One sample near the 55 Zone returned a grade of 18.57 g/t gold.

In October and November 2010, under the new option agreement with Roxgold, Riverstone collected 368 soil samples. The survey aimed to test the soil geochemistry of the area above a granitoid intrusion at Bagassi Central and a small eastern extension to Bagassi South. Samples were collected at 50-metre station location and 200-metre line spacing. Station locations were established using handheld GPS devices.

Between January and March of 2011, an additional 1,795 soil samples were collected to infill the main grid at Bagassi Central and for the purpose of reconnaissance testing in the West Arm area of the permit. Sampling at Bagassi Central consisted of 100-metre infill lines with stations every 50 m.

The survey in the West Arm was conducted at 400-metre line spacing and samples were collected every 100 m. The goal of the survey was to identify if gold bearing structures similar to those occurring on the Semafo property to the north of the Yaramoko property extended down across the west arm of the Yaramoko property. Samples in the West Arm returned generally low gold values with only four samples returning gold values above 100 ppb gold.

8.1.2 Ground VLF Survey

Riverstone also completed a ground very low frequency electromagnetic (VLF) survey over the Bagassi area, with the objective of defining potential conducting zones. The results of the VLF survey showed an overall east-west trend. This trend differed from the greenstone belt and gold-in-soil anomalies but may be an indication of the 55 Zone trend.

8.1.3 Airborne Magnetic and Radiometric Survey

In October 2010, a high resolution airborne magnetic and radiometric survey of the entire permit was commissioned by Riverstone. The survey was completed in October 2010 by Xcalibur Airborne Geophysics (Pty) Ltd. (Xcalibur) of South Africa. The survey lines were oriented striking 130 degrees (°) and were spaced 50 m apart. The survey was flown using an Islander BN-2T at a ground clearance of 40 m.

The data was processed and imaged by Xcalibur, which produced data sets for the analytic signal, total magnetic intensity, vertical gradient, line direction gradient, and the topography of the survey area. Data obtained in the radiometric survey was imaged for percent potassium, parts per million uranium, parts per million thorium, gamma ternary, and total channel. Figure 11 shows the magnetic data as total magnetic intensity.

The airborne survey data were used to develop an integrated lithological and structural geology interpretation of the Yaramoko project to outline the distribution, relative age, and interpreted kinematics of fault zones and major rock types (see Section 6.2). The survey has helped identify potential exploration targets based on known gold mineralization on the property.

8.2 Exploration by Roxgold 2011-2013

8.2.1 Soil Geochemistry and Prospecting

Between November 2011 and January 2012, 1,879 soil samples were collected to infill the Bagassi Central, Bagassi South, and Kaho areas. Around the 55 Zone, sample spacing was reduced to 25 m by 25 m and taken at a depth of 50 centimetres (cm). In the Bagassi South and Kaho grid areas, the sampling grid was sampled with 100-metre lines and stations every 50 m.

The results from the soil sampling programs vary depending on the underlying geology. Results from the Kaho survey report most values at less than 90 ppb gold. Three anomalous areas with sample values of over 400 ppb gold occur in the Kaho grid area. Gold values from the Bagassi South and Central grids show continuity along a north-western trend.

8.2.2 Ground Induced Polarization Survey

In January 2013, Roxgold commissioned Sagax Afrique SA (Sagax) of Burkina Faso to conduct a ground induced polarization (IP) and resistivity survey over the 55 Zone. An orientation survey was performed around the 55 Zone area on north-south oriented lines spaced at 100 m. The initial orientation survey included induced polarization survey for conductivity, chargeability, and resistivity gradients; two pole-dipole survey lines; and a ground magnetic survey. The induced polarization survey was subsequently extended to two additional grids adjacent to the orientation grid near the 55 Zone, and a grid over the Bagassi South zone. The total work completed comprises 64.7 line kilometres of gradient array induced polarization surveys, 2.0 line kilometres of pole dipole array surveys, and 11.0 line kilometres of ground magnetics. The surveys were conducted in the time period from April 16 to April 30, 2013.

A series of resistivity, conductivity, and chargeability maps and sections was prepared by Sagax. Results from the orientation grid surveys show that the 55 Zone is associated with a chargeability and resistivity anomaly. Generally, the felsic intrusions are more resistive than mafic volcanic and sedimentary rocks. The lateritic cover generates high potential electrodes contact resistance. The magnetic survey did not reveal any significant magnetic anomalies (Sagax, 2013).

The IP/resistivity method is well adapted to the Yaramoko type of mineralization. The interpretation of the gradient IP array combines anomalous chargeability and resistivity zones to assist in the definition of the structural context of the gold mineralized zones which in turn can help define targets for new gold mineralization zones.

9 Drilling

Auger, rotary air blast drilling, reverse circulation, and core drilling were completed on the Yaramoko project (Table 4 and Figure 12 through Figure 14). The rotary air blast drilling was used to follow up soil anomalies. The auger drilling was used for collecting soil samples under the transported cover. The reverse circulation drilling was then used as an exploratory probe to trace gold in soil anomalies to bedrock. Positive results from reverse circulation drilling were followed with core drilling to confirm the geological setting of each target. This method successfully identified the 55 Zone, and thereafter other gold mineralized zones on the property.

The mineral resource and mineral reserve estimates discussed herein are solely informed from the core drilling information. Core drilling was also used for metallurgical and geotechnical engineering studies, but assay results from these boreholes were not considered for mineral resource evaluation.

9.1 Drilling by Riverstone 2007 – 2011

9.1.1 Reverse Circulation Drilling

In 2007, Riverstone drilled 22 reverse circulation boreholes (1,974 m). Nine of the 22 boreholes (YMR-07-RC-01 to YMR-07-RC-09) targeted the Haho zone (885 m). Two additional boreholes, YMR-07-RC-10 and YMR-07-RC-11, were drilled at Bagassi East (140 m). Nine boreholes (YMR-07-RC-12 and to RC-YMR-07-20) targeted the *orpaillage* workings at Bagassi (790 m). The last two boreholes (YMR-07-RC-21 and YMR-07-RC-22) tested geochemical soil anomalies approximately 300 m southeast of the *orpaillage* site at Bagassi (150 m). Riverstone reported the last borehole was abandoned because of bad ground conditions.

9.1.2 Rotary Air Blast Drilling

The initial rotary air blast drilling program was conducted by Riverstone between April and May 2011 under the new option agreement with Roxgold. During this program, 352 boreholes (5,558 m) were drilled primarily to test results obtained from the soil sampling programs. Borehole depths ranged from 1 to 35 m and were drilled to acquire samples of the overburden, laterite, and saprolite material. The boreholes were terminated at the un-weathered bedrock contact.

The rotary air blast program was planned to intercept gold bearing structures which, at the time, were interpreted as trending northwest-southeast. The program was originally designed with approximately 14 lines oriented northeast-southwest in Bagassi South and Bagassi Central (Figure 12).

Three additional lines were established northwest of the Bagassi zones, testing a structure interpreted to trend northeast, thus the lines were oriented on a northwest-southeast direction. The lines were 200 m apart for the Bagassi Central and Bagassi South programs and 400 m apart for the northern grid. All rotary air blast boreholes were drilled at 50-metre spacing along the lines. The rotary air blast boreholes were stationed using a handheld GPS and by chain and compass methods.

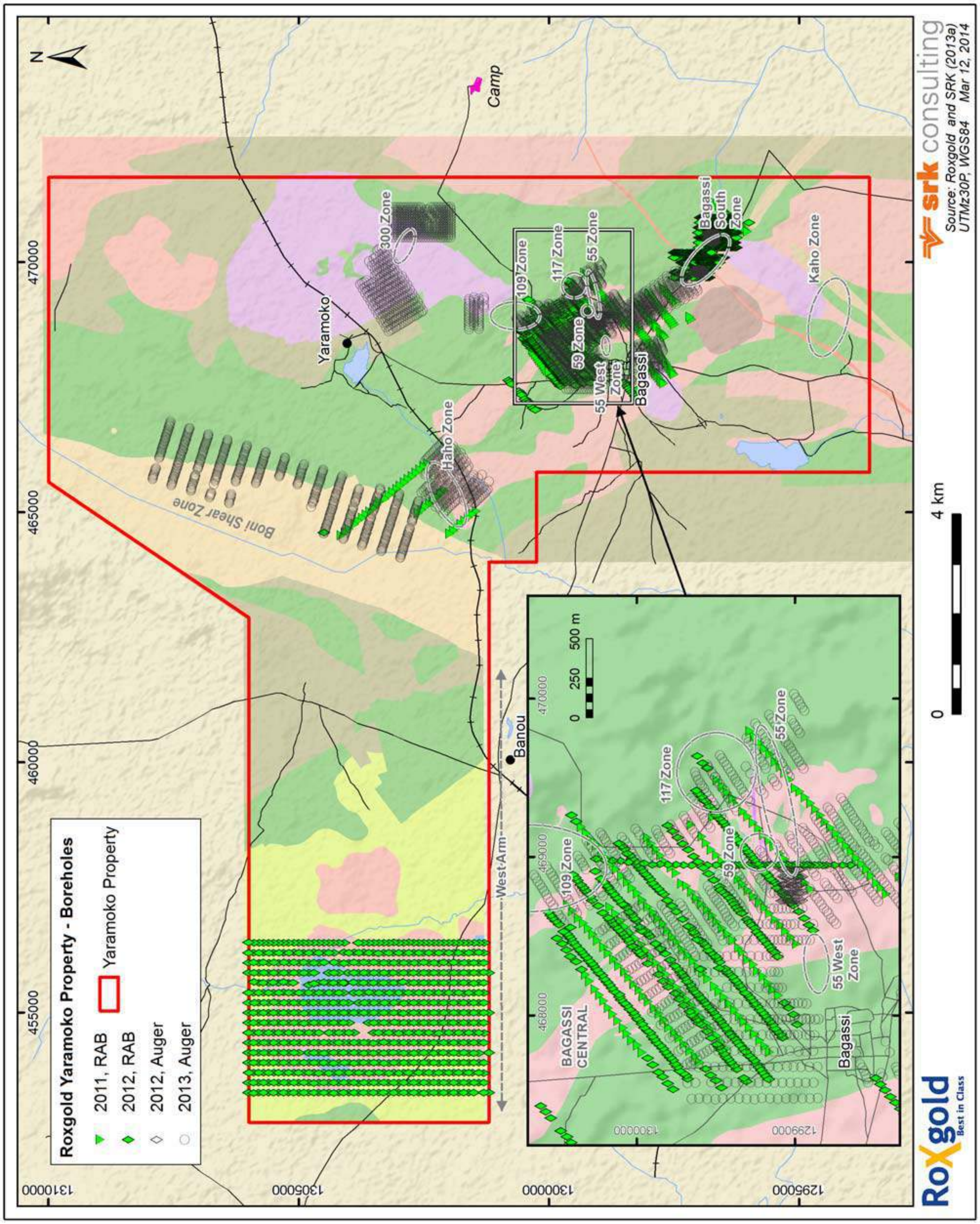


Figure 12: Distribution of Rotary Air Blast and Auger Drilling on the Yaramoko Property

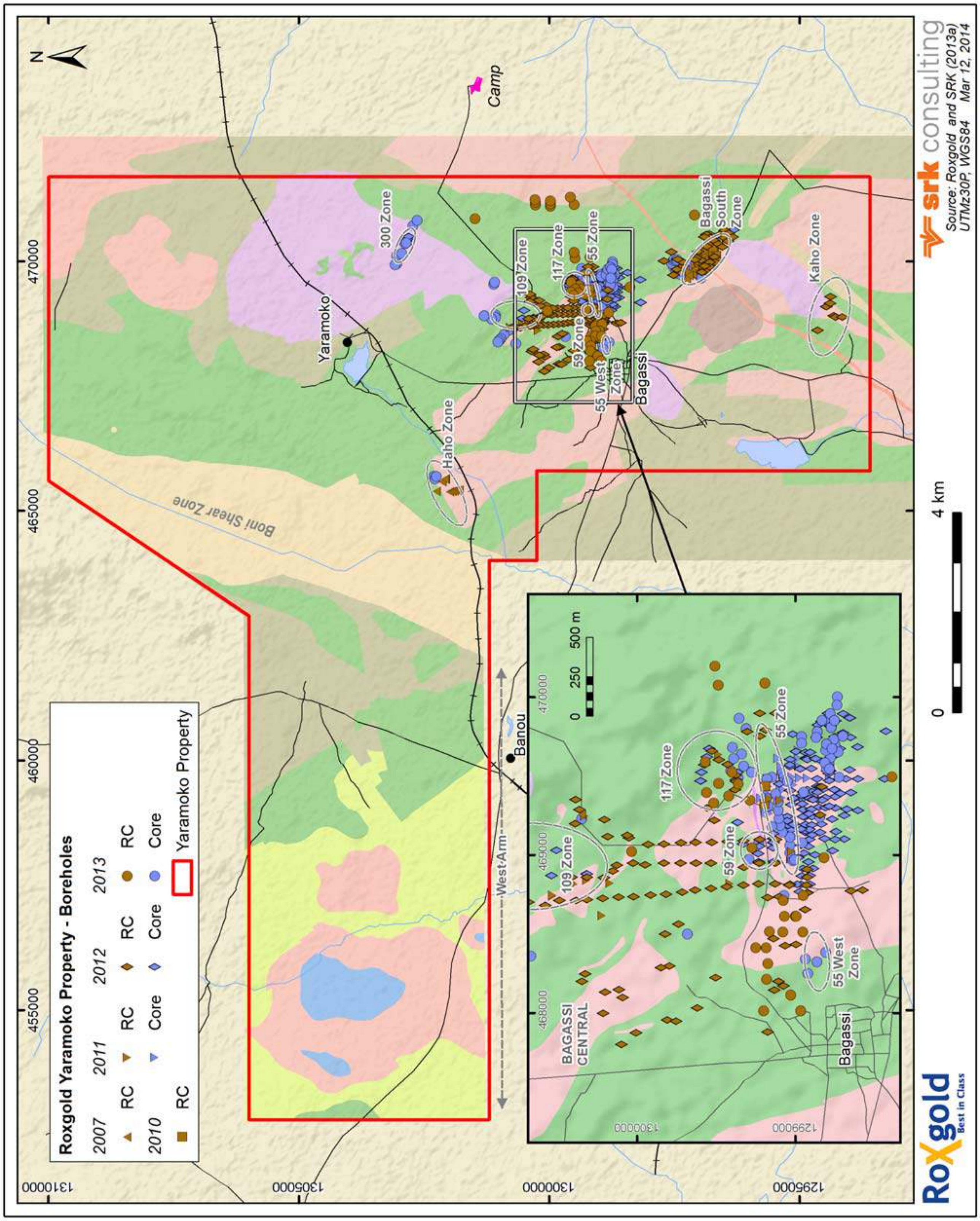


Figure 13: Distribution of Reverse Circulation and Core Drilling on the Yaramoko Property

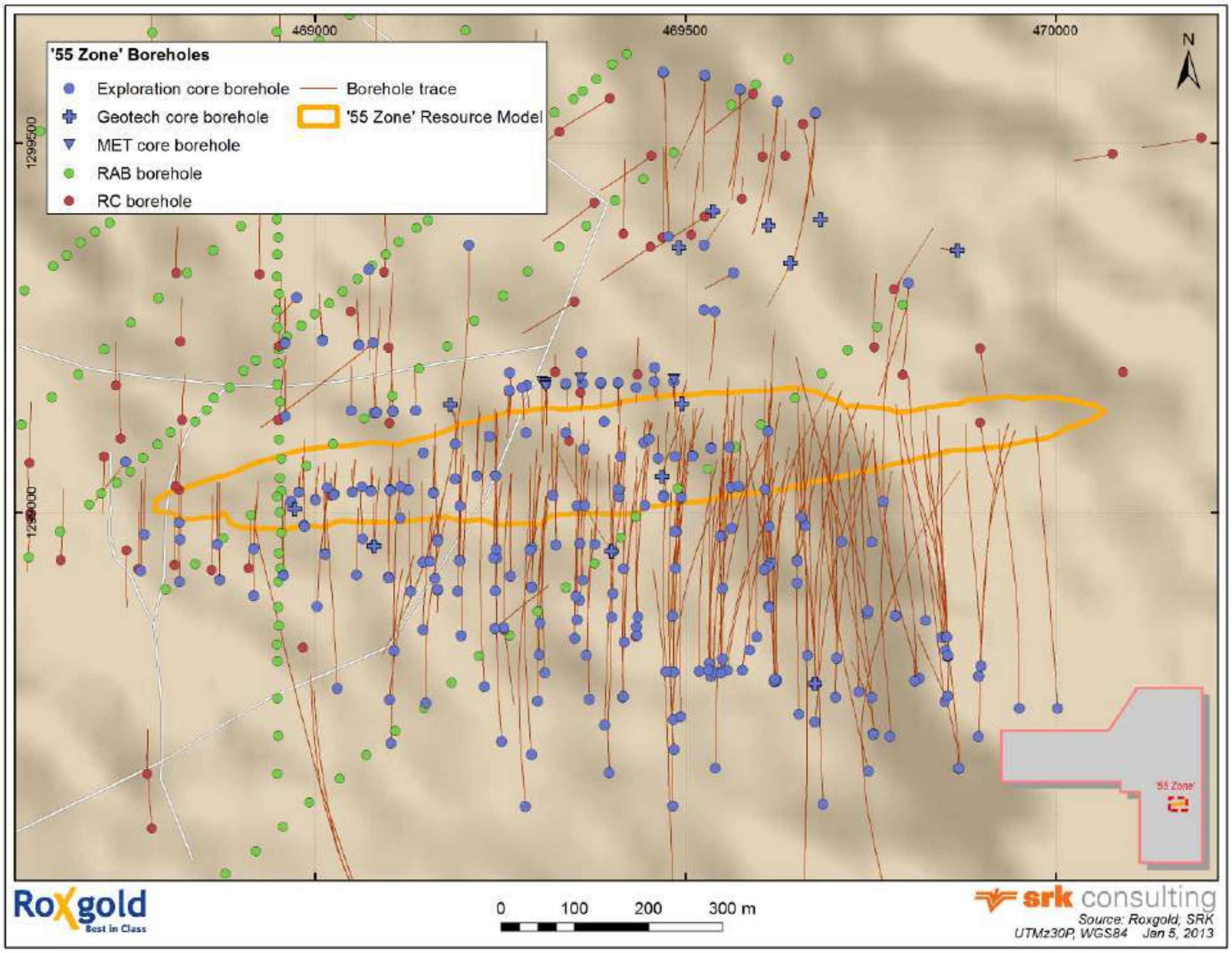


Figure 14: Plan Map of Drilling on the 55 Zone

9.1.3 Core Drilling

The initial core drilling program was conducted from August to November 2011 by Riverstone, under the option agreement with Roxgold, and consisted of 44 boreholes (6,186 m). All but four of the boreholes tested the 55 Zone shear zone. The first 20 or so boreholes on the 55 Zone were drilled to the south at an angle of 45° to 60° from the horizontal. With a better handle on the orientation of the south dipping shear zone, the collar locations were moved to the south with the remaining 20 boreholes drilled to the north so as to intersect the shear zone more perpendicularly. Representative vertical cross-sections through the 55 Zone are presented in Appendix B.

9.2 Drilling by Roxgold 2011 – 2013

9.2.1 Rotary Air Blast Drilling

Between January and May 2012, Roxgold completed a second phase of rotary air blast drilling. The program consisted of 1,456 boreholes (31,759 m). The Bagassi Central, Bagassi South, and the West Arm zones were drilled (Figure 12).

The Bagassi Central grid consisted of infill drilling of the rotary air blast lines drilled in the first phase by Riverstone in 2011. Boreholes were stationed at 50-metre intervals on northwest-southeast lines separated by 50 to 200 m depending on the infill pattern. One line was oriented north-south once it was determined that the strike of the 55 Zone was oriented east-west.

The Bagassi South grid was constructed to follow up the trends of the soil sampling conducted in the area. The rotary air blast drilling lines were oriented north-south and spaced 100 m apart. The boreholes were stationed normally at 50 m but were tightened to 25 m in areas of artisanal mining.

The West Arm grid was designed to test for gold mineralization comparable to Semafo's Mana property adjacent to the north. The drilling lines were oriented north-south and spaced at 200 m with drill stations every 50 m. In total, 7,690 m of rotary air blast drilling was completed in the West Arm zone in 2012. Anomalous geochemical results first encountered in the soil sampling relate to an alkaline intrusive body within the western part of West Arm. No follow-up work has been conducted in this area to date.

9.2.2 Auger Drilling

In November to December 2012, Roxgold collected soil samples with an auger drill rig in order to investigate the distribution of gold in the soil profile. The study was undertaken in response to field observations of a layer of cover overlying the plateau region of the 55 Zone. The cover layer was documented to range from 0 to 4 m thick and thicker in places of laterite occurrence. In total, 131 short boreholes (1,143 m) were drilled (Figure 12) from which 1,143 samples were sent for assaying.

This orientation survey over 55 Zone and Bagassi South demonstrated that anomalous gold exists in the soil profile below transported or covered material. This transported material close to the surface did not necessarily reflect the distribution of gold below.

In order to gain better quality samples from the auger drill, transported material and laterite was not sampled during the subsequent 2013 auger program. Between January and April 2013, 2,538 auger boreholes were drilled (12,337 m) along a grid pattern (Figure 12). Some 6,105 samples were collected and sent for assaying.

9.2.3 Reverse Circulation Drilling

Roxgold completed a reverse circulation drilling program between November 2010 and January 2011 that consisted of 33 boreholes (2,724 m). The program tested targets at Bagassi South and Bagassi Central (Figure 12).

At Bagassi South, the 2011 targets were designed to test the depth and strike extension of the large *orpaillage* site and to follow up on encouraging intersections obtained by reverse circulation drilling conducted by Riverstone in 2007. A total of 17 reverse circulation boreholes (1,565 m) was drilled. Most boreholes were drilled in a northeast or southwest direction with dips of 55° from the horizontal. Some of the significant results include 2.29 g/t gold over 6.0 m (from 54 to 60 m) in borehole YRM-10-RC029 and 2.28 g/t gold over 4.0 m (from 8 to 12 m) in borehole YRM-10-RC025. While the boreholes were drilled close to perpendicular to the interpreted strike of the gold mineralization the true width of the reported intervals remain unknown.

The reverse circulation drilling program at Bagassi Central in 2010 and 2011 tested soil and rotary air blast drilling anomalies established from the earlier exploration programs. A total of 16 boreholes (1,159 m) was drilled. Some of the significant results relate to the 55 Zone, including 24.62 g/t gold; over 6.0 m (from 80 to 86 m) in borehole YRM-10-RC036, 4.88 g/t gold over 11.0 m (from 38 to 49

m) in borehole YRM-11-RC055, and 85.53 g/t gold over 6.0 m (from 16 to 22 m) in YRM-11-RC055 drilled in the footwall of 55 Zone.

In 2012, Roxgold completed 136 reverse circulation boreholes (22,883 m) at Bagassi Central, Bagassi South, and the Kaho Zone (Figure 12).

At Bagassi Central, the reverse circulation boreholes tested soil and rotary air blast drilling anomalies established from the earlier exploration programs, primarily outside of the 55 Zone. A total of 97 boreholes (16,373 m) was drilled in 2012 at Bagassi Central . Most boreholes were drilled to the north with a dip of 45° from the horizontal. The most significant intercept occurred in 109 Zone where reverse circulation borehole YRM-12-RC-109 intersected a 8-metre interval (from 118 to 126 m) with a composite grade of 9.96 g/t gold. Another interval of interest was in 117 Zone where a 2.0-metre sample in borehole YRM-12-RC-117 returned 14.97 g/t gold.

At Bagassi South, the targets were designed to further test the depth and strike extension of the large *orpaillage* site and to follow up on encouraging intersections obtained from previous drilling results. The boreholes were drilled either to the southwest, the north, or to the south with a dip of 45° or 50° from the horizontal. A total of 32 reverse circulation boreholes (5,364 m) was drilled. The most significant intercept is a 2-metre sample in borehole YRM-12-RC-154 with 141.2 g/t gold. All samples grading over 2.0 g/t gold are single intercept samples of 2-metre length.

In the Kaho Zone, seven reverse circulation boreholes (1,146 m) were drilled in 2012. The boreholes tested positive soil sampling results conducted by Roxgold in 2012. The boreholes were drilled either to the north or to the south with a dip of -45° or -50° from the horizontal. No significant results were intercepted.

In 2013, Roxgold completed 42 reverse circulation boreholes (6,763 m) at Bagassi Central mostly, and a few condemnation boreholes in areas of potential infrastructure. In the 117 Zone, eight reverse circulation boreholes (1,601 m) were drilled. Boreholes were drilled to the southwest at dip of around 50° from the horizontal. Only four 2-metre samples returned values above 2.0 g/t gold. A total of 17 reverse circulation boreholes (3,351 m) was also drilled west of the 55 Zone. No significant gold mineralization was intercepted.

9.2.4 Core Drilling

Core drilling by Roxgold on the Yaramoko project has targeted the 55 Zone, Bagassi Central, Bagassi South, 300 Zone and Haho areas. However, most of the drilling was completed at the 55 Zone and in the Bagassi Central area. Starting in November 2011, and up to September 2013, Roxgold completed 361 core boreholes (123,804 m) (Figure 13). Of these, 249 core boreholes (100,880 m) targeted the 55 Zone for resource delineation, metallurgical testing, and geotechnical studies (Figure 14). Outside of the 55 Zone, regional targets investigated by core drilling include:

- 34 core boreholes at Bagassi South for 8,184 m;
- 24 core boreholes at 109 Zone for 4,100 m;
- 16 core boreholes at 300 Zone for 2,472 m;
- 14 core boreholes at 59 Zone, on the footwall of Zone 55, for 2,561 m;
- 14 core boreholes at 117 Zone for 3,809 m;
- 4 core boreholes at 55 Zone Western Extension for 736 m;
- 3 core boreholes at 55 Zone Northwest Exploration for 520 m; and
- 3 core boreholes in Haho zone for 543 m.

Resource delineation drilling at the 55 Zone had two main objectives: delineation and infill drilling in the upper 600 m of the shear zone; and testing the depth extensions of the gold to a depth of approximately 1,000 m. Drilling on the 55 Zone consisted of angled boreholes plunging from 45° to 70° from the horizontal and drilled primarily at an azimuth close to 360°. Representative cross-sections through the 55 Zone are presented in Appendix B.

Core drilling recovered HQ sized core (63.5 millimetre diameter) from the top of the borehole to the point where the rock showed no signs of oxidation, typically 20 to 30 m in depth. At that point, the core size was reduced to NQ (47.6 millimetre diameter). Down-hole deviation was monitored using a Reflex Instruments device at 15, 25, 50 m and then approximately every 50 m thereafter.

Core recovered from the first 110 boreholes was oriented using a Reflex ACT II instrument. Core from subsequent boreholes was sporadically oriented. After borehole YRM-DD-13-260, core from all infill boreholes was oriented starting at 100 m above the projected shear zone intercept.

Recovery and rock quality designation (RQD) measurements were collected prior to transporting the core back to base camp. At the camp, core was also logged to collect information about lithology, mineralization, alteration, geotechnical properties, and marked for sampling by a geologist. Core samples were collected from half core cut lengthwise with a diamond saw.

In 2012, Roxgold contracted the Bureau d'Etudes des Géosciences, des Energies et de l'Environnement (BEGE), a consultant group from Burkina Faso, to resurvey all core boreholes using a differential GPS. The collar locations of core boreholes drilled afterwards were surveyed with a differential GPS by CBM Surveys Limited based in Ghana.

Drilling on the 55 Zone successfully intersected the main shear zone and associated quartz vein from many setups; most boreholes were drilled at an azimuth of 360° with plunge ranging from 45° to 65°. Seven boreholes tested a hanging wall structure. Five metallurgical boreholes were designed to maximize the quantity of material collected for metallurgical testing, and 14 geotechnical boreholes were designed to test the mechanical behaviour of the surrounding rock. Core recovery was measured and generally exceeded 95%, except across narrow intervals in saprolite and fractured rock where recovery is locally poor.

9.3 Drilling Pattern and Density

Core boreholes considered for mineral resource modelling in the 55 Zone were drilled on sections spaced at between 25 and 50 m. Drilling density is the highest in the core of the shear zone in the top 500 m below surface, achieving roughly a 25 m spacing. Laterally and at depth, the 55 Zone was investigated by drilling at a spacing of approximately 50 m.

9.4 SRK Comments

In the opinion of SRK, the drilling strategy and procedures used by Roxgold and Riverstone conform to generally accepted industry best practices. The drilling information is sufficiently reliable and the drilling pattern is sufficiently dense to interpret with confidence the geometry and the boundaries of the gold mineralization of the 55 Zone. All drilling sampling was conducted by appropriately qualified personnel under the direct supervision of appropriately qualified geologists.

SRK is not aware of any drilling, sampling or recovery factors that could materially impact the accuracy and reliability of the drilling results from the 55 Zone.

10 Sample Preparation, Analyses, and Security

Riverstone and Roxgold have used various laboratories to prepare and assay samples collected on the Yaramoko project. These include Activation Laboratories Ltd. (Actlabs), ALS Chemex (ALS), BIGS Global S.A.R.L. (BIGS), and SGS Laboratory (SGS) in Ouagadougou, Burkina Faso, in addition to SGS in Tarkwa, Ghana and TSL Laboratories (TSL) in Saskatoon, Saskatchewan.

Actlabs, ALS, BIGS, SGS, and TSL are commercial laboratories independent of Roxgold and Riverstone. Actlabs is not accredited to ISO/IEC 17025 but it received ISO 9001:2008 certification for its quality management system in April 2013. The ALS Ouagadougou laboratory is also not accredited under recognized accreditation; it is part of the ALS Group of laboratories that operates under a global quality management system accredited to ISO 9001:2008 and also participates in international proficiency testing programs such as those managed by Geostats Pty Ltd. BIGS is currently seeking ISO-17025 certification. The SGS Ouagadougou and Tarkwa laboratories are not accredited under recognized accreditation; they are part of the SGS Group of laboratories that operates under a global quality management system accredited to ISO 9001:2008 and participates in international proficiency testing programs such as those managed by Geostats Pty Ltd.. TSL has received ISO/IEC 17025:2005 certification by the Standards Council of Canada for a number of specific test procedures, including the method used to assay samples submitted by Roxgold.

10.1 Soil Samples

Soil samples weighing approximately 3.5 kilograms were collected by Riverstone and Roxgold using picks and shovels. Collected to a depth of up to 50 cm, each sample was placed in a plastic bag with the sample tag inserted in the bag. The samples were described in the field and transferred to a main electronic spreadsheet. Sample locations were recorded using a handheld GPS unit.

Riverstone and Roxgold personnel transported the samples to the field office prior to shipping them to the laboratory for preparation and assaying. Samples were sent to various laboratories in Ouagadougou: ALS, Actlabs, BIGS, and SGS. Samples were assayed using standard fire assay procedures on pulverized subsamples with atomic absorption finish; samples grading in excess of 1.00 g/t gold were re-assayed with a gravimetric finish.

10.2 Rotary Air Blast Samples

The drilling contractor, Forages Technic-Eau Burkina S.A.R.L., carried out rotary air blast drilling for both Riverstone and Roxgold. Rotary air blast chips were processed through a cyclone and split using a riffle splitter. Samples were collected at 3-metre intervals. A 4- kilogram sub sample was collected into a 3-millimetre plastic sample bag and a paper tag with a corresponding sample number was inserted in the bag. The bag was weighed on a spring scale. The discarded portion of the riffle splitter was discarded on the ground. This discarded material was used by the geologist for the initial lithological log.

Riverstone and Roxgold personnel transported the samples to the field office prior to shipping them to the laboratory in Ouagadougou for analysis. Samples were sent to ALS, Actlabs, BIGS, and SGS in Ouagadougou. Samples were assayed using standard fire assay procedures on pulverized subsamples with atomic absorption finish; samples grading in excess of 1.00 g/t gold were re-assayed with a gravimetric finish.

10.3 Auger Drilling Samples

Sahara Geoservices of Ouagadougou was contracted for auger drilling. Sample intervals were logged and categorized by a geologist present at the rig at all times. Following the initial orientation program over the 55 Zone in 2012, where the boreholes were sampled from top to bottom, the exploration auger drilling discarded the cover/lateritic material at the top of the borehole. Sampling only occurred when the geologist identified the saprolite zone. Two 2-metre-long samples were collected. The average depth of successful auger boreholes was 5.5 m. The samples were bagged and categorized with a blank or standard inserted every eleventh sample along with a field duplicate sample. Roxgold project geologists supervised the work conducted by the drilling contractor staff.

Samples were prepared and analyzed by Actlabs in Ouagadougou. Samples were assayed for gold using standard fire assay procedures on pulverized subsamples with atomic absorption finish; samples grading in excess of 1.00 g/t gold were re-assayed with a gravimetric finish. A total of 2,820 samples in 2013 was also analyzed for a suite of 60 elements using an inductively coupled plasma mass spectrometry (ICP) procedure.

10.4 Reverse Circulation Drilling Samples

Boart Longyear from Ouagadougou from 2007 to 2012 and Geodrill from Ghana in 2013were the drilling contractors that carried out reverse circulation drilling on the property. Boreholes were surveyed using a handheld GPS unit and the down-hole deviation was measured using a Reflex tool.

Reverse circulation samples were obtained by collecting the chip material from a 2-metre drill run retrieved underneath the cyclone in a plastic woven bag. This material was then run through a riffle splitter to half the sample size and a 3- to 4-kilogram subsample was placed in a numbered plastic sample bag with a paper sample tag. The bag was weighed on a spring scale. Each sample was quickly logged by the geologist at site for lithology, recovery, and colour of the chips.

Samples were transported by Roxgold personnel to the field office and then shipped to the laboratory for analysis. At the field office, the chips were logged in more detail. The logs record lithologies, colour, texture, alteration, veining, and estimated percentage of sulphide and iron oxide.

Samples were sent to ALS, Actlabs, BIGS, and SGS in Ouagadougou and assayed using standard fire assay procedures on pulverized subsamples with atomic absorption finish; samples grading in excess of 1.00 g/t gold were re-assayed with a gravimetric finish..

10.5 Core Drilling Samples

Standardized sampling protocols were used for core sampling by Riverstone in 2011 and by Roxgold between 2011 and 2013. Sample preparation and analyses were conducted by Actlabs, ALS, BIGS, and SGS in Ouagadougou, as well as by SGS in Tarkwa and TSL in Saskatoon (Table 5). Seventy-one percent of the core samples informing the mineral resources (34,626 out of 49,123 samples) were prepared and assayed by Actlabs in Ouagadougou. The use of BIGS, SGS Tarkwa, and TSL was discontinued in 2012.

Table 5: Laboratories Used to Assay Core Samples from the 55 Zone (2011-2013)

Assay Laboratory	Samples from Date	Samples to Date	Samples	Percentage
Actlabs Ouagadougou	January 2012	August 2013	34,626	71%
ALS Ouagadougou	December 2011	April 2013	3,602	7%
BIGS Ouagadougou	December 2011	July 2012	3,144	6%
SGS Ouagadougou	February 2012	June 2013	2,794	6%
SGS Tarkwa	August 2012	November 2012	1,768	4%
TSL Saskatoon	October 2011	October 2012	3,018	6%
Total			**48,952**	**100%**

10.5.1 Core Sampling by Roxgold

Sampling of core was performed by Roxgold personnel. From the drill site, the core was transported by truck to a secure logging facility at the Roxgold field office where it was photographed and logged by a geologist. Selective sampling was employed where, at the discretion of the geologist, samples were collected from visible alteration or vein zones outside of the expected intercepts. All core was sampled 100 m above and below the 55 Zone. Exploration core boreholes outside 55 Zone are typically sampled throughout the borehole. Waste intervals were sampled at 2-metre intervals except where a significant geological change occurred and/or in mineralized zones where the sampling intervals averaged between 1.0 to 1.5 m. The core was then cut in half lengthwise using an electrical rock saw. Half the sample was placed in a labelled plastic sample bag. The remaining half was returned to the core box for archiving. Samples were then inserted into woven polypropylene bags prior to transport by truck to the preparation and assay laboratory.

10.5.2 Sample Preparation at Actlabs Ouagadougou

Samples received at Actlabs in Ouagadougou were first crushed up to 90% under 2 millimetre grain size. A 300-gram split was then pulverized to 95%, passing 150 mesh (preparation code RX1). For samples marked as mineralized, a 1,000-gram split was pulverized (preparation code RX1+1.3). All samples were assayed using a 30-gram fire assay procedure with atomic absorption spectroscopy (AAS) finish with a detection limit of 5 parts per billion (ppb) gold (procedure code 1A2). All samples within the mineralized zones or samples grading in excess of 5 g/t gold were re-analyzed using a 1,000-gram screen metallic fire assay procedure with gravimetric finish (procedure code 1A4-1000). With this procedure a representative 500-gram or 1,000-gram sample split is sieved at 100 mesh (150 micrometres [μm]), with fire assays performed on the entire +100 mesh fraction and two splits of the -100 mesh fraction. The final assay result is calculated based on the results and the weight of each fraction.

10.5.3 Sample Preparation at ALS Ouagadougou

Samples processed by ALS Chemex in Ouagadougou were first crushed to 70% passing 2 millimetres or better (Preparation code CRU-31). A 1.5-kilogram riffle split was pulverized to 85% passing 75 μm (Preparation code PUL-36). All samples were then analyzed using a standard 30-gram fire assay procedure with AAS finish with a detection limit of 5 ppb gold (procedure code Au-AA23). Samples grading above 3.0 g/t gold were re-assayed using a 50-gram fire assay procedure with gravimetric finish (procedure code Au-GRA22).

10.5.4 Sample Preparation at BIGS Ouagadougou

Samples at BIGS Ouagadougou were crushed and pulverised at undisclosed specifications. Samples assayed at the BIGS Global laboratory in Ouagadougou using a 30- or 50-gram lead fusion fire assay procedure (Codes: FPF300 and FPF500, Fusion Plombeuse), with AAS finish with a detection limit of 5 ppb gold.

10.5.5 Sample Preparation at SGS Ouagadougou

Samples at SGS Ouagadougou were crushed and pulverised at undisclosed specifications. Samples were then assayed for gold using a combination of fire assay and atomic absorption spectroscopy (procedure code FAA505). The lower detection limit of this method is 0.01 g/t gold. A second analytical method (procedure code FAE505) involving a concentration step from aqueous liquid into di-iso-butyl-ketone (an organic solvent) was used to determine gold concentrations between 0.001 and 1 g/t gold using atomic emission spectroscopy (AES).

10.5.6 Sample Preparation at SGS Tarkwa

Samples at SGS Tarkwa were crushed and pulverised at undisclosed specifications. Sample assays were performed using fire assay, concentration with an organic solvent, and measurement using AES (procedure code FAE505). This method can determine gold concentrations between 0.002 and 1 g/t gold.

10.5.7 Sample Preparation at TSL Saskatoon

At TSL Saskatoon, samples were prepared using a standard rock preparation procedure (drying, weighing, crushing, splitting, and pulverization). Samples were received, sorted, and verified according to a sample submittal form. Samples were crushed in oscillating jaw crushers to 70%, passing 10 mesh (1.70 millimetres). Samples were riffle split; typically, a 250-gram subsample was pulverized, and the remaining sample was stored as reject. Ring-mill pulverisers grinded samples to 95%, passing 150 mesh (106 µm). Crushers, rifflers, and pans were cleaned with compressed air between samples. Pulverizing pots and rings were brushed, hand cleaned, and air blown.

Samples collected after October 2011 were assayed using standard fire assay procedures on 50-gram pulverized subsamples with AAS finish with a detection limit of 5 ppb gold. Samples grading in excess of 3.0 g/t gold were re-assayed with a gravimetric finish. Earlier samples (August 2011 to October 2011) from TSL were analyzed using a screen metallic assay procedure where the entire sample was first crushed, and using a splitter, a 1-kilogram subsample was collected. The lower detection limit of the screen metallic assay procedure is 0.03 g/t gold. The entire subsample was pulverized and subsequently sieved at 150 mesh. Each fraction was then assayed for gold. Results were reported as a calculated weighted average of gold in the entire sample. A total of 482 out of the 3,018 samples assayed by TSL was analyzed using a screen metallic procedure similar to that used at Actlabs. Roxgold no longer uses this laboratory mainly due to sample shipping costs to Canada.

10.5.8 Sample Security

Samples collected by Riverstone and later by Roxgold were accessible only to authorized Riverstone or Roxgold personnel until the samples were received at the laboratories. The samples shipped to Canada were sent via a bonded freight carrier and were under their care until delivered in Canada.

10.6 Metallurgical Sampling

Three metallurgical testing programs have been carried out on representative samples from 55 Zone. The metallurgical samples consisted of composite samples collected from quarter or half core intervals. The samples were collected at site and shipped to the respective laboratories in large sealed barrels. The samples were crushed, blended, and split to provide sample composites for metallurgical testwork.

The details of the metallurgical testwork program performed in 2012 at Blue Coast Research in Nanaimo, British Columbia, Canada, the 2013 testing program at Mat-Solve Laboratories Inc. (Met-Solve) in Langley, British Columbia, Canada, and the follow-up 2014 metallurgical testwork program completed at Ammtec of ALS Global (ALS Metallurgy) in Perth, Western Australia, Australia are described in Section 12 below.

10.7 Quality Assurance and Quality Control Programs

Quality control measures are typically set in place to ensure the reliability and trustworthiness of exploration data. These measures include written field procedures and independent verifications of aspects such as drilling, surveying, sampling and assaying, data management, and database integrity. Appropriate documentation of quality control measures and regular analysis of quality control data are important as a safeguard for project data and form the basis for the quality assurance program implemented during exploration.

Analytical control measures typically involve internal and external laboratory control measures implemented to monitor the precision and accuracy of the sampling, preparation, and assaying. They are also important to prevent sample mix-up and to monitor the voluntary or inadvertent contamination of samples.

Assaying protocols typically involve regularly duplicating and replicating assays and inserting quality control samples to monitor the reliability of assaying results delivered by the assaying laboratories. Check assaying is normally performed as an additional test of the reliability of assaying results. This generally involves re-assaying a set number of sample rejects and pulps at a secondary umpire laboratory.

This technical report reviews the analytical quality control measures implemented by Riverstone between August and November 2011 and Roxgold between November 2011 and August 2013. The review focuses only on the analytical results for the core samples from the 55 Zone informing the mineral resources. Analytical quality control data collected by Riverstone and Roxgold as part of the sampling programs on other areas of the Yaramoko project are described in the PEA technical report by AGP (2103b).

For the 55 Zone core sampling, Roxgold and Riverstone relied partly on the internal analytical quality control measures implemented by Actlabs, ALS, BIGS, SGS, and TSL. In addition, Roxgold implemented external analytical control measures consisting of the use of control samples (blank, certified reference materials and duplicate samples) inserted in all sample batches submitted for assaying. Umpire check assaying has not been performed.

Fifteen certified reference materials sourced from commercial suppliers were used (Table 6). Mostly wash gravel was used as a field blank. Between October and November 2012, a pulverized blank from CDN Resource Laboratories Ltd. was also used as a blank for samples submitted to Actlabs. Field duplicates were used on core samples analyzed by Actlabs, ALS, BIGS, SGS Ouagadougou, and TSL. Prior to September 2012, duplicates consisted of crush rejects inserted by the preparation laboratory. The field duplicate procedure was changed and samples are now taken from quarter core.

Table 6: Specifications of Control Samples Used By Riverstone and Roxgold (2011-2013)

Reference Material	Source	Au (g/t)	Standard Deviation	Sample Count
CDN-GS-P1	CDN	0.121	0.022	67
CDN-GS-P3C	CDN	0.263	0.020	303
CDN-GS-P3B	CDN	0.409	0.042	403
CDN-GS-P4A	CDN	0.438	0.032	37
CDN-GS-1P5B	CDN	1.460	0.120	66
CDN-GS-1P5C	CDN	1.560	0.130	40
CDN-GS-3K	CDN	3.190	0.260	17
CDN-GS-4B	CDN	3.770	0.350	37
CDN-GS-4D	CDN	3.810	0.250	767
CDN-GS-5F	CDN	5.270	0.340	14
CDN-GS-8A	CDN	8.250	0.600	74
CDN-GS-10D	CDN	9.500	0.560	745
OXC88	Rocklabs	0.203	0.003	90
SH55	Rocklabs	1.375	0.014	7
OXN92	Rocklabs	7.643	0.484	88

10.8 SRK Comments

In the opinion of SRK, the sampling preparation, security, and analytical procedures used by Roxgold and Riverstone on core samples collected from the 55 Zone are consistent with generally accepted industry best practices and are, therefore, adequate.

The analysis of the analytical quality control data is presented in the following section.

11 Data Verification

11.1 Verifications by Roxgold

The exploration work carried out on the 55 Zone was conducted by Roxgold personnel and qualified subcontractors. Roxgold implemented a series of routine verifications to ensure the collection of reliable exploration data. All work was conducted by appropriately qualified personnel under the supervision of qualified geologists. In the opinion of SRK, the field exploration procedures used by Roxgold are consistent with generally accepted industry best practices.

The quality assurance and quality control program implemented by Roxgold is comprehensive and was supervised by adequately qualified personnel. The 55 Zone project database is maintained by subcontractor Rob Maynard of Taiga Consultants Ltd. (Taiga) of Calgary, Alberta. Exploration data were recorded digitally to minimize data entry errors. Core logging, surveying, and sampling were monitored by qualified geologists and verified routinely for consistency. Electronic data were captured and managed using an electronic database.

Assay results were delivered by the primary laboratories electronically to Roxgold and Taiga. Analytical data were examined for consistency and completeness prior to being entered into the database. Sampling intervals that did not meet analytical quality control standards were re-assayed where necessary. Due to poor analytical quality control results, select intervals from 21 core boreholes originally assayed by BIGS and TSL in 2011 were re-assayed at Actlabs in Ouagadougou. A total of 246 samples from BIGS and 44 samples from TSL was re-analyzed by Actlabs. A suite of 175 pulps assayed at TSL were also submitted to ActLabs in Ancaster, Ontario for check assaying. The Actlabs results are in good agreement with the original results delivered by TSL (Analytical Solutions Inc., 2014).

The database considered by SRK for the preparation of the geology and mineral resource model for the 55 Zone was also verified by Pierre Desautels of AGP for the preparation of the October 2013 technical report (AGP, 2013b). AGP verified all data entry for all samples assaying greater than 4.0 g/t gold. Two minor discrepancies were corrected, none within the mineralized envelopes.

Roxgold also contracted Analytical Solutions Ltd. (Analytical Solutions) of Toronto, Ontario to review the analytical quality control data produced for the 55 Zone between February and November 2013 (Analytical Solutions Inc,, 2013). The primary laboratory during this time period was Actlabs in Ouagadougou. After review, Analytical Solutions determined that there is no evidence of cross sample contamination. During that period, a total of 536 control samples was also analyzed. Only six failures were noted for which re-assays were requested. Analytical Solutions evaluated 124 quarter-core duplicate sample pairs during that time period and noted that there was no evidence of bias that could have been introduced by preferentially submitting a more mineralized half core for assaying.

11.2 Verifications by SRK

11.2.1 Site Visit

In accordance with National Instrument 43-101 guidelines, several members of the SRK team visited the Yaramoko project to inspect the property, conduct field investigations and discuss with Roxgold site personnel.

Dr. Jean- François Couture, PGeo conducted a site visit from February 6 to 15, 2013. The purpose of this visit was to study the controls on the distribution of the gold mineralization in the 55 Zone and to provide structural geology training to Roxgold staff. Dr. Couture was accompanied by Dr. Jean-François Ravenelle, PGeo of SRK and Mr. Ben Pullinger of Roxgold.

Mr. Bruce Murphy, FSAIMM visited the Yaramoko project from July 22 to 25, 2013 accompanied with Mr. Ross Greenwood of SRK. This site visit was conducted as part of the field rock geotechnical investigation program. Geotechnical logging training was also provided to Roxgold staff.

Dr. Andrew Barnes, CGeol, EurGeol, FGS conducted a site visit from July 21 to 26, 2013 accompanied with Mr. Julien Declercq, FGS. The purpose of this visit was to collect ore and waste rock samples as part of the geochemical characterization program.

Mr. Ken Reipas, PEng conducted a site visit from August 11 to 14, 2013 accompanied by Mr. Craig Richards, Principal Mining Engineer of Roxgold. The purpose of this visit was to ascertain the project site and discuss underground mine design.

Mr. Mike Palmer, FGS conducted a site visit from August 16 to September 4, 2013 as part of the hydrogeology field program.

Ms Rowena Smuts and Mr. Lalit Kumar visited the Yaramoko project from December 4 to 9, 2013 as part of the review of the environmental aspect of the project.

11.2.2 Verifications of Analytical Quality Control Data

Roxgold provided SRK with external analytical control data containing the assay results for the quality control data produced by Roxgold during the core sampling program investigating the 55 Zone from August 2011 to August 2013. All data was provided in Microsoft Excel spreadsheets. SRK aggregated the assay results of the external analytical control samples for further analysis. Control samples (blanks and standards) were summarized on time series plots to highlight the performance of the control samples. Paired data (field and pulp duplicates and check assays) were analyzed using bias charts, quantile-quantile, and relative precision plots.

The external analytical quality control data produced for the 55 Zone are summarized in Table 7 and presented in graphical format in Appendix C. The external quality control data produced on this project represents 9.0% of the total number of core samples collected on the 55 Zone and submitted for assaying.

Table 7: Summary of External Analytical Quality Control Data Produced for the 55 Zone (2011 - 2013)

	Source	Expected Value (g/t Au)	Actlabs	ALS	BIGS	SGS Ouaga	SGS Tarkwa	TSL	Total	(%)
Sample Count			34,626	3,602	3,144	2,794	1,768	3,018	**49,123**	
Blanks		Total	693	70	20	85	44	61	**973**	**2.0%**
Field Blank			678	70	20	85	44	61	**958**	
CDN-GS-BL-10	CDN		15	0	0	0	0	0	**15**	
Reference Material		Total	1,889	169	197	217	131	157	**2,760**	**5.6%**
CDN-GS-P1	CDN	0.121	0	0	67	0	0	0	**67**	
CDN-GS-P3C	CDN	0.263	299	1	0	3	0	0	**303**	
CDN-GS-P3B	CDN	0.409	327	0	0	18	22	36	**403**	
CDN-GS-P4A	CDN	0.438	0	37	0	0	0	0	**37**	
CDN-GS-1P5B	CDN	1.460	0	0	66	0	0	0	**66**	
CDN-GS-1P5C	CDN	1.560	0	36	4	0	0	0	**40**	
CDN-GS-3K	CDN	3.190	11	0	0	6	0	0	**17**	
CDN-GS-4B	CDN	3.770	0	37	0	0	0	0	**37**	
CDN-GS-4D	CDN	3.810	620	20	0	45	43	39	**767**	
CDN-GS-5F	CDN	5.270	0	0	3	0	0	11	**14**	
CDN-GS-8A	CDN	8.250	0	36	27	0	0	11	**74**	
CDN-GS-10D	CDN	9.500	627	2	0	49	32	35	**745**	
OXC88	Rocklabs	0.203	0	0	0	55	20	15	**90**	
SH55	Rocklabs	1.375	0	0	0	5	0	2	**7**	
OXN92	Rocklabs	7.643	0	0	30	36	14	8	**88**	
STD (unknown)	?	?	5	0	0	0	0	0	**5**	
Field Duplicates			645	12	0	6	0	29	**692**	**1.4%**
Total QC Samples			**3,227**	**251**	**217**	**308**	**175**	**247**	**4,425**	**9.0%**

The performance of control samples analyzed by Actlabs, where the majority of core samples informing mineral resources were analyzed, is acceptable. Approximately 97% of the certified standards analyzed by Actlabs returned values within two standard deviations of the expected value. No analytical bias was detected and samples deviating from the expected value were mostly mislabelled standards and blanks. Field blanks submitted to Actlabs were generally under the arbitrary acceptable limit of ten times the detection limit.

Assay results for certified reference materials demonstrate that samples prepared and analyzed at ALS Ouagadougou show no analytical bias. All blank samples processed at ALS were within the arbitrary range of up to ten times the detection limit. No analytical bias was detected.

Reference materials sent to BIGS showed little deviation from the expected values. Samples outside the range of two standard deviations appeared to be due to mislabelling. All blank samples prepared and assayed at BIGS were within the arbitrary range of up to ten times the detection limit.

Analytical quality control data produced for samples prepared and analyzed at SGS Ouagadougou are of limited use, as this laboratory concentrated samples with an organic solvent and analyzed the samples with an AES method, thereby lowering the upper detection limit to 1 g/t gold. Also, many of the certified reference materials used had an expected value of more than 1 g/t gold. All samples with values above the detection limit were listed to contain 1 g/t gold, lowering the overall gold value. SRK recommends that samples with gold values above the detection limit of this method should be re-analyzed. The mineral resources for 55 Zone are informed by only one such sample above the detection limit assayed with the AES technique. Blank samples analyzed at SGS Ouagadougou were within the arbitrary range of up to ten times the detection limit except for a few possible mislabelled samples.

Assay results for the certified reference material samples analyzed at SGS Tarkwa by AES generally performed poorly. For some reference materials, more than half the samples returned values outside two standard deviations and generally with a bias towards lower values. SGS Tarkwa analyzed approximately 6% of the samples in the 55 Zone database. However, blanks analyzed at SGS Tarkwa were generally within the arbitrary range of up to ten times the detection limit. This indicates no signs of cross sample contamination at the laboratory but the certified reference material results indicate poor analytical accuracy and precision. The low bias suggests that SGS Tarkwa delivered conservative estimates of the gold content of the samples assayed.

The performance of control samples analyzed by fire assay at TSL, with screen metallic/gravimetric finish or atomic absorption spectroscopy finish, is acceptable. Most of the certified standards used at TSL were assayed for values within two standard deviations. No analytical bias was detected. Results from the field blanks submitted to TSL were under the arbitrary acceptable limit of ten times the detection limit.

Paired field duplicate data suggest that gold grades display a nugget effect. Rank half absolute difference (HARD) plots suggest that 59.8% of quarter core field duplicate samples analyzed at Actlabs have HARD below 10% (Appendix C). This indicates that Actlabs had difficulty in reproducing the field duplicate results. The poor reproducibility is not limited to samples nearing the detection limit. There is, however, no evidence of bias that could have been introduced by preferentially submitting the more mineralized half of the core for assay. Poor reproducibility of quarter core field duplicates is not unexpected for sampling mineralization characterized by coarse gold. Not enough field duplicates were submitted to the other laboratories for analysis.

Paired lab-aware pulp replicates data suggest that gold grades are also difficult to reproduce at this level of sampling. HARD plots suggest that 51.8% of pulp replicates analyzed at ALS, BIGS or TSL have HARD below 10%. Only 112 pulp replicate pairs are in the database provided to SRK thus limiting the reach of the interpretation.

In the opinion of SRK, the review of the analytical quality control data produced by Riverstone and Roxgold for samples submitted to Actlabs, ALS, SGS, BIGS, and TSL from August 2011 to August 2013 suggest that the analytical results delivered by the laboratories are sufficiently reliable for the purpose of mineral resource estimation. Overall, the results show no apparent analytical bias.

12 Mineral Processing and Metallurgical Testing

This section summarizes the metallurgical testing work completed on representative samples from the 55 Zone gold deposit. The Qualified Person accepting professional responsibility for the Mineral Processing and Metallurgical Testing section is Dr. Leendert (Leon) Lorenzen FAusIMM (#304479), FIEAust #3671379), FSAIMM, FIChemE, CEng, CPEng, PrEng, an employee of Mintrex.

Three metallurgical testing campaigns have been carried out. An initial metallurgical testwork program was performed in 2012 at the Blue Coast Research laboratory in Nanaimo, British Columbia, Canada under the supervision of AGP. A follow-up metallurgical testing program was conducted at Met-Solve in Langley, British Columbia, Canada in June to July 2013. In late 2013 and early 2014, a third metallurgical testwork program was conducted on new composite samples at Ammtec of ALS Metallurgy in Perth, Western Australia, Australia under the supervision of Mintrex.

12.1 Blue Coast Research 2012

For the testing program undertaken at Blue Coast Research, representative composite core samples were collected in August 2012 from archived core. The samples were shipped to Blue Coast Research for preliminary evaluation testwork consisting of head grade characterization, grindability, gravity concentration, and cyanide leaching.

The testing material comprised auriferous quartz vein material from two areas of the 55 Zone shear zone in granitic and mafic volcanic rock host. Sections of core samples representing the two lithologies were identified and sampled to yield a 25-kilogram composite sample for testing (Table 8). For the granitic sample, the remaining archived half core intervals from 5 boreholes were sampled over intervals varying between 3.8 and 7.3 m. For the volcanic rock sample core from four boreholes was sampled over intervals varying from 3.6 to 11 m.

Table 8: Composite Sample Locations for 2012 Blue Research Testing

Granite/Quartz Composite (GR+QZ)				Basalt/Quartz Composite (Volc +QZ)			
Hole	From	To	Length	Hole	From	To	Length
DD-53	165.2	170.1	4.9	DD-106	357.9	361.5	3.6
DD-58	169.2	176.5	7.3	DD-118	373.0	377.0	4.0
DD-72	78.0	81.8	3.8	DD-141	439.2	446.1	7.0
DD-104	197.0	204.0	7.0	DD-14	159.0	170.0	11.0
DD-65	442.0	446.7	4.7				
		Weight (kg)	28.20			**Weight (kg)**	27.85

12.1.1 Head Analysis and Hardness Testing

At Blue Coast Research, the samples were crushed, blended, and split to provide composites for metallurgical testwork. Head analysis for gold on the two composites was conducted by pulp metallic assay consisting of stage screening and pulverising of a 500-gram head sample through a 150 mesh screen (106 μm) until approximately 30 grams of screen oversize remained. Two samples were riffled from the undersize, while the oversize was assayed to extinction. An overall head assay was calculated from the weights and fraction assays. Due to the coarse nature of gold in the samples, particularly for the granite/quartz composite, the pulp metallic assay was conducted three times. The average grade was 15.3 and 14.4 g/t gold for the granite/quartz and volcanic/quartz composites, respectively.

Preliminary sample hardness testing consisting of the standard Bond Ball Work Index (BBWI) procedure was conducted on each composite with an average value of 14.5 kilowatt-hour per tonne (kWh/t). This is considered as moderate hardness compared to other materials of this type.

12.1.2 Gravity Concentration

Initial metallurgical testwork on the composite samples consisted of grinding a 10-kilogram charge to 75 µm and passing the re-pulped sample through a Knelson 3 inch lab-scale gravity concentrator. The gravity concentrate was assayed to extinction, while the tailings were dried and assayed, and two 500-gram charges were split out for cyanidation testwork at varying cyanide concentrations.

For the granite/quartz composite sample gold recovery by gravity exceeded 90%, a result that is consistent with the presence of coarse gold observed with the variability of the screen metallic assays. Stage gold extraction for the composite increased to 87% at the higher cyanide addition, for a combined gravity and cyanidation gold recovery of close to 99% (Table 9).

Gold recovery for the volcanic rock composite sample was slightly lower, at 61% for the gravity concentrate and 85% for the stage extraction during cyanidation. Combined gold extraction reached 94% overall (Table 9).

Table 9: Gravity and Cyanidation Leach Results on Metallurgical Composites prepared by Blue Coast Research in 2013

Comp	Gravity Concentration				48-hour Cyanidation (gravity tails)					
	Au Rec. (%)	Conc. Au Grade (g/t)	Tails Au Grade (g/t)	Calc.Au Head (g/t)	NaCN Conc. (g/L)	NaCN Cons. (kg/t)	Au Extraction (%)	Tails Grade (g/t)	Calc. Au Head (g/t)	Overall Au Rec. %
GR+QZ	90.3	2073	1.5	15.5	1.19	0.14	71.9	0.53	1.89	97.3
	-	-	-	-	2.68	0.50	87.3	0.20	1.57	98.8
VOL+QZ	60.8	690	4.5	11.4	1.19	0.14	86.0	0.63	4.49	94.5
	-	-	-	-	2.29	0.60	85.2	0.62	4.20	94.2

12.1.3 Whole Rock Leaching

Direct cyanidation leach tests were also conducted on both composite samples in order to evaluate the extent of cyanide recoverable gold in each sample and to confirm the gold head assays. Results shown in Table 10 indicate that for both composites gold extractions exceeding 95% are achievable by this method. Furthermore, calculated heads for these tests were comparable to the results observed with the pulp metallic assays and the calculated heads for the gravity and leach tests.

Intermediate solution sampling during the whole rock leach tests indicates that extraction kinetics were rapid, with all cyanide available gold being leached by the midpoint of the test after 24 hours.

Table 10: Direct Cyanidation Results on Metallurgical Composites prepared by Blue Coast Research in 2013

Composite	48-hour Cyanidation					Overall
	NaCN Conc. (g/L)	NaCN Conc. (kg/t)	Au Extraction (%)	Tails Au Grade (g/t)	Calculated Au Head (g/t)	Au Recovery (%)
GR+QZ	5.0	0.58	99.3	0.07	18.6	99.3
VOL+QZ	5.0	2.56	95.7	0.51	13.0	95.7

12.2 Met-Solve Laboratories 2013

A follow-up metallurgical testing program was conducted at Met-Solve Laboratories (Met-Solve) in Langley, British Columbia in June and July 2013. The purpose of this testwork was to characterize further the metallurgical response as well as to develop the process flowsheet and design criteria.

The samples used in this program consisted of four representative composite samples prepared from the mineralized sections of three boreholes (YRM-13-MET-01, YRM-13-MET-04, and YRM-13-MET-05). The intersections were organized into four groups, based on lithology and estimated grade, as follows:

- Granite + Quartz Resource Grade (Gr+Qtz Met);
- Volcanic + Quartz Resource Grade (Volc+Qtz Met);
- Granite + Quartz Cut-off Grade (Gr+Qtz Cut-off); and
- Volcanic + Quartz Cut-off Grade (Volc+Qtz Cut-off).

The objective of the program was to use the first two composite samples for the flowsheet development testwork, and to use the last two for hardness testing and flowsheet confirmation.

12.2.1 Head Characterization

The four composite samples were crushed to 100% passing half an inch and blended. The Met composite samples were further crushed to 10 mesh (1.7 mm), and rotary split into 2 kg test charges. Head samples were cut from the reject fraction.

The cut-off grade composites were sent to G&T Metallurgical in Kamloops for grindability testwork. The test rejects were returned crushed to 10 mesh, blended, and rotary split into metallurgical charges. Head samples were cut from the reject fraction.

Table 11 provides a summary of the head analyses, including results of duplicate screen metallics assays for gold and selected results from an inductively coupled plasma (ICP) multi-element scan.

Screen metallics assaying of the Gr+Qtz Met composite indicated good repeatability and a grade close to the target resource grade of 10 g/t gold. Similarly, the Gr+Qtz Cut-off composite was close to the target cut-off grade of 3 g/t gold. In contrast, the Volc+Qtz Met and the Volc+Qtz Cut-off composites were well above target, in the 35 g/t to 40 g/t gold range. This variability is consistent with the coarse gold mineralization observed in the earlier test program.

12.2.2 Grindability

Comminution testwork, consisting of bond ball mill work index (BWi) and bond rod mill work index (RWi) testing, was carried out on the cut-off composites from each of the two domains. Results of the testwork are shown in Table 12.

The results of the BWi testing are slightly lower than those from the earlier Blue Coast Research testing in 2012. However, the results can still be considered as moderate hardness for ores of this type.

Table 11: Head Assays for the 2013 Composite Samples Tested at Met-Solve

Element	Unit	Gr+Qtz Met	Volc+Qtz Met	Gr+Qtz Cut-off	Volc+Qtz Cut-off
Screen Metallics Analysis					
Au	g/t	12.2	43.9	3.3	44.8
Au (duplicate)	g/t	12.3	36.6	5.2	18.7
ICP Multi-element analysis					
Ag	g/t	0.7	2.4	0.6	1.0
Al	%	0.53	0.99	0.97	1.56
As	ppm	16	47	27	33
Bi	ppm	7	6	14	6
Ca	%	1.06	2.36	1.11	2.03
Cd	ppm	<0.5	<0.5	<0.5	<0.5
Co	ppm	5.5	19.3	7.7	16.9
Cr	ppm	47	30	8	16
Cu	ppm	41.0	24.8	32.0	49.7
Fe	%	1.44	4.04	1.91	3.53
Hg	ppm	2	2	4	<1
K	%	0.20	0.28	0.22	0.26
Li	ppm	8	15	13	20
Mg	%	0.38	1.29	0.60	1.57
Mn	ppm	335	771	363	572
Mo	ppm	5.9	5.7	10.0	9.1
Na	%	0.02	0.02	0.04	0.04
Ni	ppm	3.1	13.5	4.8	14.9
P	ppm	255	402	422	545
Pb	ppm	5.8	13.1	7.5	14.0
S	%	0.54	2.30	0.44	0.75
Sb	ppm	1	<1	4	<1
Se	ppm	<10	<10	11	26
Sn	ppm	<5	9	<5	<5
Sr	ppm	17	28	11	20
Th	ppm	<5	<5	8	9
U	ppm	<5	<5	<5	<5
V	ppm	17.5	32.5	29.0	47.1
Zn	ppm	23	38	29	64

Table 12: Grindability Analysis by Met-Solve in 2013

Cut-off Composite	BWi (kWh/t)	Rwi (kWh/t)
GR+QZ	13.2	15.6
VOL+QZ	13.2	15.2

12.2.3 Grind Size Optimization

A preliminary series of whole ore leach tests were conducted on 2 kg charges of the Met composite samples. The purpose of this series of tests was to establish the relationship between grind size and leach recovery by testing three nominal grind P80s: 150 µm, 106 µm, and 75 µm. Conditions for the tests were based on the results of the 2012 program, and consisted of a 48-hour direct cyanide leach at 2 g/L cyanide concentration.

Kinetic solution sampling taken at 6, 12, and 24 hours indicated that leaching was essentially complete after 12 to 18 hours. Cyanide consumptions were moderate, averaging 0.39 kg/t for the Gr+Qtz Met composite, and 0.98 kg/t for the Volc+Qtz Met composite sample, with slightly higher consumptions observed at the finer grind sizes. It should be noted that, for the purposes of whole-ore leaching, a higher NaCN concentration of 2 g/L was used in order to ensure complete dissolution of coarse gold, and this has probably resulted in increased cyanide consumption.

The effect of grind size on overall gold extraction for both composites is shown in Figure 15. Both composites indicated higher leach recoveries at finer grind sizes, with optimum results achieved at the finest grind P80 of approximately 75 µm.

While all the tests resulted in high extractions of 93.9% or better, it is reasoned that the incremental recovery at the finer grind, combined with the head grade of the samples tested, provides ample justification for the additional capital and operating cost incurred. For this reason, a target grind size P80 of 75 µm was selected for all subsequent testwork. A potential opportunity may exist for a small amount of additional gold extraction through still finer grinding.

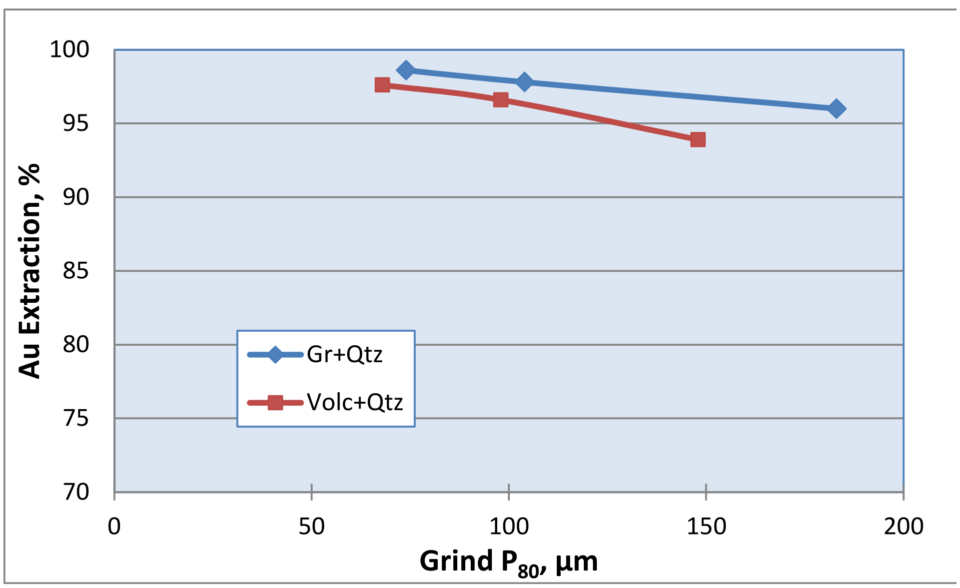


Figure 15: Effect of Grind Size on Final Leach Extraction for the Whole Ore Leach Tests at Met-Solve in 2013

12.2.4 Gravity/Cyanidation

Detailed gravity recoverable gold (GRG) testing was conducted on both Met and both Cut-off composite samples. The test procedure consisted of crushing a 20 kg test charge to -1 mm and centrifugal concentration of the -850 µm fraction, regrinding of the gravity tails to a P80 of approximately 300 µm and a second stage of gravity concentration, regrinding of the 2 gravity tails to the terminal P80 of 75 µm, and a final pass at gravity recovery. A cyanide leach test was conducted on the gravity tailings under the optimized conditions from the whole ore leach testwork.

A metallurgical balance was generated from each test, including a GRG number (the combined recovery of gold from each of the three gravity stages), as well as the stage recovery of gold from the cyanide leach. A summary of the results from the gravity/cyanidation testwork is provided in Table 13.

Table 13: Results of the Gravity/Cyanidation Testwork by Met-Solve in 2013

Composite	Gravity Concentration				Gravity Tailings Cyanidation				
	GRG Au Rec. (%)	Conc. Au Grade (g/t)	Tails Au Grade (g/t)	Calc. Au Head (g/t)	NaCN Conc. (kg/t)	Stage Au Extr. (%)	Tails Grade (g/t)	Calc. Au Head (g/t)	Overall Au Rec. (%)
Gr+Qtz Met	75.3	535.8	2.71	10.78	0.70	94.7	0.13	2.38	98.7
Gr+Qtz Cut-off	86.9	274.0	1.24	9.19	0.84	93.9	0.07	1.12	99.2
Volc+Qtz Met	62.8	1,295.0	14.60	38.60	0.73	92.2	1.10	14.08	97.1
Volc+Qtz Cut-off	87.8	1,050.0	4.35	34.50	0.66	93.6	0.27	4.11	99.2

Consistent with the observations from the earlier test program, all of the 2013 composite samples yielded high gold recoveries to the gravity concentrate, with GRG numbers ranging from 62.8% to 87.8%. Furthermore, leaching of the gravity tails resulted in stage extractions of greater than 92%, and high overall extractions for all four composites.

In addition, Met-Solve provided preliminary mathematical modelling of the expected plant gravity circuit performance using their database of results for Falcon-type gravity concentrators. For the purposes of the modelling, the gravity concentration circuit was assumed to treat a 35% split from the grinding circuit cyclone overflow, with a mill circulating load of 230%. Under these conditions, the Gr+Qtz Met sample was predicted to have a gravity circuit gold recovery of 61.7%, whereas the Volc+Qtz Met sample was estimated to result in a 51.7% gold recovery. The results of the testwork and the subsequent modelling indicate that a gravity gold circuit can be expected to be a significant contributor to gold recovery in the Yaramoko process plant.

12.2.5 Settling Tests

Preliminary settling testwork on gravity tailings from the Met composites was conducted, beginning with scoping-level beaker tests for flocculant screening. Based on this work, the anionic polyacrylamide Kemira Superfloc A130-HMW flocculant was selected. Supernatant clarity was found to be optimal at pH 11.

Subsequent static settling tests in a one-litre graduated cylinder were used to determine the correct flocculant dosage. Rapid settling rates, in the order of three minutes to reach the compression point, were observed for both composites with flocculant dosages in the range of 1 g/t to 5 g/t.

12.2.6 Tailings Characterization

Acid base accounting (ABA) tests were carried out on the leach residues for the Met composites. Results indicated that the Gr+Qtz Met composite tailings had a net neutralization potential (NNP) of 16.2 kg $CaCO_3$/t and a neutralization potential ratio (NPR) of 1.94, indicating that the results are inconclusive and further kinetic testing is required.

Similarly, the Volc+Qtz sample indicated an NNP of 21.9 kg $CaCO_3$/t, which meets the criteria for non-acid generating material; however, the NPR, at 1.32, is too low to be conclusive, and more study is needed.

An ICP scan was completed on the pregnant leach solution (PLS) from each of the gravity tailings leach tests. Table 14 provides a summary of the solution analysis.

The results of the solution scans indicate no metals of concern. Low concentrations of copper and iron are observed, which are likely two of the main contributors to cyanide consumption for the material.

Table 14: Leach Solution Characterization by ICP analysis by Met-Solve in 2013

Element	Unit	Gr+Qtz Met	Volc+Qtz Met	Gr+Qtz Cut-off	Volc+Qtz Cut-off
Al	ppm	0.2	0.99	0.97	1.56
As	ppm	<0.2	<0.2	<0.2	<0.2
Ba	ppm	<0.01	<0.01	<0.01	<0.01
Bi	ppm	<0.1	<0.1	<0.1	<0.1
Cd	ppm	0.01	<0.5	<0.5	<0.5
Co	ppm	0.01	0.02	0.01	0.02
Cr	ppm	<0.01	<0.01	<0.01	<0.01
Cu	ppm	1.9	1.29	2.61	3.59
Fe	ppm	7.57	10.42	6.03	10.81
Hg	ppm	<0.05	<0.05	<0.05	<0.05
K	ppm	5	18	8	6
La	ppm	<0.05	<0.05	<0.05	<0.05
Mg	ppm	1.5	0.9	0.5	0.5
Mn	ppm	0.5	1.28	0.45	0.41
Mo	ppm	0.02	0.02	<0.02	0.02
Na	ppm	503	524	417	423
Ni	ppm	0.08	0.03	0.09	0.07
P	ppm	<0.1	<0.1	<0.1	<0.1
Pb	ppm	<0.05	<0.05	<0.05	<0.05
Sb	ppm	<0.1	<0.1	<0.1	<0.1
Sc	ppm	<0.01	<0.01	<0.01	<0.01
Sr	ppm	0.01	0.02	0.01	0.01
Ti	ppm	<0.1	<0.1	<0.1	<0.1
Tl	ppm	<0.2	<0.2	<0.2	<0.2
V	ppm	0.03	0.04	0.02	0.04
W	ppm	0.1	0.2	2.9	1.1
Zn	ppm	<0.01	<0.01	<0.01	<0.01

12.3 ALS Metallurgy 2013-2014

Between July 2013 and January 2014, a follow-up metallurgical testwork program was completed at Ammtec of ALS Metallurgy under the supervision of Mintrex. The full report prepared by ALS Metalurgy for Mintrex is presented in Appendix D. An initial batch of composite samples arrived at ALS Metallurgy in October 2013. The initial testing program included limited comminution testwork, as well as extractive testwork. Additional samples were sent to ALS Metallurgy and received in January 2014 for more comprehensive comminution testwork.

The initial tests were conducted on four composites samples – two gold mineralized samples (granite/quartz [GR] and mafic volcanic/quartz [MVOL]), with original sample locations listed in Table 15, and two waste samples. Composite samples were created from quarter core or half core samples.

Table 15: Master Composite Sample Locations for 2013-2014 ALS Metallurgy Testing

GR Composite				MVOL Composite			
Hole	From	To	Length	Hole	From	To	Length
YRM-11-DD-009	64.0	65.0	1.0	YRM-11-DD-016	107.0	110.0	3.0
YRM-11-DD-009	80.0	81.0	1.0	YRM-11-DD-016	113.0	115.0	2.0
YRM-11-DD-012	95.0	99.0	4.0	YRM-11-DD-024	55.0	57.0	2.0
YRM-11-DD-023	117.0	118.0	1.0	YRM-11-DD-034	177.1	180.1	3.0
YRM-11-DD-027	107.2	109.2	2.0	YRM-11-DD-034	181.1	182.1	1.0
YRM-11-DD-028	109.1	110.3	1.2	YRM-12-DD-075	110.1	111.7	1.6
YRM-11-DD-028	111.3	112.3	1.0	YRM-12-DD-075	115.0	117.3	2.3
YRM-11-DD-037	40.6	41.5	0.9	YRM-12-DD-115	159.0	163.1	4.1
YRM-11-DD-037	48.0	50.0	2.0	YRM-12-DD-115	164.8	166.0	1.2
YRM-11-DD-042	54.0	55.0	1.0	YRM-12-DD-141	437.0	438.0	1.0
YRM-11-DD-047	59.3	61.7	2.4	YRM-12-DD-153	390.5	391.5	1.0
YRM-12-DD-074	90.5	92.4	1.8	YRM-12-DD-153	394.5	396.0	1.5
YRM-12-DD-086	107.8	108.8	1.0	YRM-12-DD-153	396.0	397.1	1.1
YRM-12-DD-086	115.9	117.7	1.8	YRM-12-DD-218	155.0	156.5	1.5
YRM-12-DD-097	304.7	306.2	1.4	YRM-12-DD-226	97.2	99.8	2.6
YRM-12-DD-104	197.0	198.5	1.5	YRM-12-DD-226	103.5	105.8	2.3
YRM-12-DD-108	102.0	104.0	2.0	YRM-12-DD-245	630.0	631.0	1.0
YRM-12-DD-108	119.0	120.0	1.0	YRM-12-DD-254	785.1	785.9	0.9
YRM-12-DD-118	368.0	369.5	1.5	YRM-13-DD-264	768.5	770.6	2.1
YRM-12-DD-223	239.6	240.9	1.3	YRM-13-DD-264	773.5	774.5	1.0
YRM-12-DD-223	244.0	246.0	2.0	YRM-13-DD-290	720.8	722.4	1.6
YRM-12-DD-224	100.0	102.0	2.0				
YRM-12-DD-224	104.0	110.0	6.0				
YRM-12-DD-242	904.8	905.4	0.6				
YRM-12-DD-242	907.6	908.6	1.1				
YRM-12-DD-242	914.0	915.0	1.0				
YRM-12-DD-255	763.0	764.0	1.0				
YRM-13-DD-263	584.0	585.0	1.0				
YRM-13-DD-265	713.9	714.9	1.0				
YRM-13-DD-265	720.2	721.2	1.0				
		Weight (kg)	45.71			**Weight (kg)**	36.32

Further comminution tests were conducted on an additional three composites samples – two gold mineralized samples (granite/quartz and mafic volcanic/quartz) and one waste sample.

Samples sent in the second consignment were individual borehole intercepts blended to generate 19 variability composite samples (Table 16). The samples were control-crushed to 100% passing 3.35 mm, homogenised and split with a 12-segment rotary sample divider into representative 1.0 kg charges for use in the testwork program.

Table 16: Variability Composite Sample Locations for 2013-2014 ALS Metallurgy Testing

Variability Sample ID	Hole ID	From	To	Length	Weight (kg)
VC#1	YRM-11-DD-032	114.50	117.50	3.00	3.06
VC#2	YRM-12-DD-096	270.00	273.15	3.15	3.04
VC#3	YRM-11-DD-009	56.00	58.00	2.00	5.00
	YRM-11-DD-009	74.00	77.00	3.00	
VC#4	YRM-12-DD-085	340.00	341.50	1.50	3.58
	YRM-12-DD-085	343.50	345.50	2.00	
VC#5	YRM-12-DD-073	92.35	95.35	3.00	3.40
VC#6	YRM-12-DD-236	529.50	531.55	2.05	3.28
	YRM-12-DD-236	534.10	534.85	0.75	
VC#7	YRM-11-DD-027	96.00	97.00	1.00	3.72
	YRM-11-DD-027	99.80	102.28	2.48	
VC#8	YRM-12-DD-219	247.00	248.30	1.30	4.60
	YRM-12-DD-219	253.00	256.00	3.00	
VC#9	YRM-11-DD-018	66.00	68.00	2.00	6.52
	YRM-11-DD-018	73.00	76.00	3.00	
	YRM-11-DD-018	78.00	79.00	1.00	
VC#10	YRM-11-DD-039	74.00	77.25	3.25	4.56
	YRM-11-DD-039	81.00	83.00	2.00	
VC#11	YRM-11-DD-021	28.00	30.00	2.00	10.74
	YRM-11-DD-021	31.00	32.00	1.00	
	YRM-11-DD-021	35.00	36.00	1.00	
	YRM-11-DD-021	37.00	39.00	2.00	
VC#15	YRM-12-DD-221	145.50	148.50	3.00	4.36
	YRM-12-DD-221	154.50	156.00	1.50	
VC#17	YRM-12-DD-230	538.05	540.30	2.25	3.10
	YRM-12-DD-230	544.60	545.60	1.00	
VC#18	YRM-13-DD-278	510.18	512.55	2.37	3.46
	YRM-13-DD-278	514.05	515.05	1.00	
VC#16	YRM-11-DD-046	43.50	44.70	1.20	3.52
	YRM-11-DD-046	45.90	46.50	0.60	
	YRM-11-DD-046	48.60	50.00	1.40	
VC#21	YRM-13-DD-279	709.74	712.00	2.26	4.10
	YRM-13-DD-279	716.50	717.74	1.24	
VC#22	YRM-13-DD-263	579.00	580.00	1.00	3.48
	YRM-13-DD-263	582.00	583.00	1.00	
	YRM-13-DD-263	598.00	599.00	1.00	
VC#23	YRM-13-DD-289	878.30	880.84	2.54	4.16
	YRM-13-DD-289	884.60	884.97	0.37	
	YRM-13-DD-289	864.53	865.95	1.42	
VC#24	YRM-13-DD-284	853.20	856.00	2.80	4.58
	YRM-13-DD-284	864.15	865.15	1.00	

Testwork conducted between October 2013 and January 2014 included:

- Sample preparation including crushing, homogenisation, and split;
- Comminution testwork, including:
  - Unconfined compressive strength (UCS) determination;
  - Bond impact crushing work index (CWi) determination;
  - SAG mill comminution (SMC) testwork to determine the drop-weight index (DWi);
  - Bond abrasion index (Ai) determination;
  - Bond rod mill work index (RWi) determination; and
  - Bond ball mill work index (BWi) determination.
- Head assays;
- Grind establishment;
- Gravity gold recovery and cyanide leach testwork;
- Particle size distribution (PSD) determination;
- Oxygen uptake rate testwork;
- Sequential triple-contact carbon-in-pulp (CIP) testwork;
- Carbon equilibrium loading testwork; and
- Rheology testwork.

12.3.1 Comminution Testwork

Unconfined compressive strength and Bond CWi testing was completed on each composite sample. The rejects from the UCS and CWi tests were recycled. The composites were control-crushed to 100% passing 3.35 mm and thoroughly homogenised by passing it three times through a 12-segment rotary sample divider. The composite samples were then split into representative 1.0 kg charges for use in the testwork program.

Bond CWi determination was carried out on seven sets of comminution composite samples received. The crushing work index of a given sample can be determined using an impact crushability test unit. The standard test is conducted on samples in the size range -76+51 mm. Generally, whole core samples or run of mine (ROM) ore samples are used for the CWi determination, however, half and quarter core can also be used. In this case half core and quarter core samples were available and thus used.

Representative portions of the seven comminution composite samples were also tested to determine the Bond Ai and to determine the Bond RWi index (at a closing screen size of 1180 µm) using the standard procedure developed by F.C. Bond (1961 and 1963) .

Sub-samples from the three follow-up composite samples were submitted for SMC testwork at JKTech Pty Ltd (JKTech) in Perth, Western Australia, Australia. The drop-weight testwork provides rock-specific parameters for use in the JK Sim Met Mineral Processing Simulator Software and JK Sim Met Crusher model. The SMC test was developed to provide a cost effective means of obtaining these parameters from drill core or broken rock samples in situations where limited quantities of material are available. The SMC test generates a relationship between specific input energy (kWh/t) and the proportion of fragmented/broken product passing a specified sieve size. The results are used to determine the drop-weight index (DWi) which is a measure of the strength of the rock sample when broken under impact conditions.

Results from the comminution testwork completed by ALS Metallurgy are shown in Table 17.

Table 17: Comminution Testwork Results Prepared by ALS Metallurgy in 2014

Sample ID	UCS Testwork		Bond CWi				Bond	Bond
	Sample Count	UCS (MPa)	Sample Count	CWi (kWh/t)	SMC DWi (kWh/m^3)	Bond Ai	RWi (kWh/t)	BWi* (kWh/t)
Initial Samples								
GR	-	-	10	7.0	-	0.2461	17.8	16.6
MVOL	-	-	10	11.3	-	0.1287	20.9	16.8
HW Waste	3	109.5–237.6	10	10.5	-	0.3681	20.8	17.9
FW Waste	-	-	10	10.9	-	0.3471	22.7	19.0
Follow-up samples								
Mineralized Granite	5	13.4–134.1	10	7.2	6.06	0.2134	19.3	18.0
Mineralized Mafic Volcanic	5	31.3–71.4	10	5.5	5.89	0.0530	18.3	17.7
Granite/Mafic Volcanic Waste	5	58.8–117.5	10	8.3	8.59	0.2653	23.5	18.4

* Closing screen size of 150 µm

12.3.2 Gold Extraction Testwork

Gold extraction testwork was conducted on the two master composite samples from the initial samples: GR and MVOL. Initially, sub-samples of each composite were tested for gravity gold recovery, followed by cyanide leach testwork on the gravity tail at various grind sizes. The objective of the testwork was to determine an optimum grind size and define extraction characteristics.

Based on the grind optimisation tests, all further metallurgical testwork on the GR and MVOL master composite samples were conducted with a target grind size (P_{80}) of 90 µm. Testwork was also conducted on the 19 variability composite samples submitted in the second shipment.

Representative sub-samples of the GR, MVOL and variability composite samples were submitted for comprehensive head assay consisting of pulp metallic assay. Due to the coarse nature of gold in the samples the pulp metallic assay was conducted three times on each composite to obtain an average grade. Additional sub-samples from the GR and MVOL composites were submitted for duplicate gold head assays after completing initial gravity/cyanide leach tests, due to discrepancies between head assays and calculated (mass balanced) head grades.

Sub-samples from the GR and MVOL composite samples were submitted for gravity gold recovery and subsequent cyanide leaching of the gravity tail. Initially, grind optimisation testwork was conducted. Once the optimum grind size was determined, further testwork was conducted to determine the impact of activated carbon on gold extraction (carbon-in-leach [CIL] vs direct leach), and the impact of cyanide concentration on gold extraction.

Bulk leach testwork was also conducted in order to define leach characteristics without gravity concentration prior and to also generate products for sequential triple-contact CIP testwork and equilibrium carbon loading testwork. At a later stage of the testwork program, additional bottle-roll CIL tests were conducted on each composite, in order to generate leach solution for analysis of cyanide species.

A summary of gold extraction results for the master composites, as well as the 19 variability composites is presented in Table 18.

Table 18: Gold Extraction Results at ALS Metallurgy in 2014

Sample ID	Test Number	Measured Grind Size (µm)	Calc. Au Head (g/t)	Au Extraction (%)			Leach Residue Au (g/t)	Consumption (kg/t)	
				Gravity	8 Hours	48 Hours		NaCN	Lime
Master Composite Samples									
GR	2498	87	8.48	82.3	98.3	98.0	0.17	0.71	0.23
MVOL	2499	79	8.78	70.2	94.5	97.3	0.24	1.65	0.27
Variability Composite Samples									
VC#1	2477	74	1.30	59.6	88.7	90.8	0.12	0.49	0.23
VC#2	2478	78	6.31	60.9	89.8	90.5	0.60	0.71	0.26
VC#3	2479	80	2.19	83.7	96.5	97.3	0.06	0.79	0.20
VC#4	2480	71	4.10	61.0	92.6	96.3	0.15	1.25	0.24
VC#5	2481	85	11.81	74.3	95.9	96.8	0.38	0.39	0.24
VC#6	2482	89	7.37	72.1	92.6	94.3	0.42	0.54	0.23
VC#7	2483	87	6.01	88.0	98.0	99.5	0.03	1.52	0.24
VC#8	2484	62	9.68	71.4	94.5	97.1	0.29	1.23	0.27
VC#9	2485	85	29.88	91.4	99.7	99.8	0.07	0.40	0.20
VC#10	2486	68	1.59	80.6	96.7	98.1	0.03	0.43	0.21
VC#11	2487	69	33.79	91.6	99.5	99.9	0.05	1.45	0.36
VC#15	2488	72	9.82	76.6	97.3	98.0	0.20	0.57	0.22
VC#16	2489	67	12.84	79.2	96.9	98.1	0.25	1.02	0.24
VC#17	2490	68	3.41	82.4	95.9	99.1	0.03	1.20	0.23
VC#18	2491	76	13.41	69.8	93.4	96.9	0.41	1.26	0.24
VC#21	2492	70	9.49	54.5	93.6	95.3	0.45	0.69	0.30
VC#22	2493	73	10.31	74.9	95.1	97.2	0.29	1.88	0.26
VC#23	2494	74	10.30	80.1	96.4	97.5	0.26	0.60	0.24
VC#24	2495	89	4.05	69.4	92.4	99.0	0.04	1.04	0.23

All samples tested contain appreciable gravity-recoverable gold, with gravity gold recovery ranging from 54.5–91.6%. Overall gold extraction is high for all samples tested yielding over 90% gold extraction.

Gold extraction testwork was also undertaken on the GR and MVOL master composite samples to determine the effect of cyanide concentration on overall gold extraction, and the effect of adding activated carbon to the leach on overall gold extraction. The results suggest that increasing cyanide concentration does not necessarily improve gold extraction. Further optimization testwork would be required in order to understand how far cyanide addition could be reduced without impact on gold extraction.

The addition of activated carbon to the leach also does not appear to have any impact on gold extraction.

Gold extraction does appear to be grind-sensitive. The chart below shows leach tail grade as a function of grind size (P_{80}) for the GR and MVOL composites.

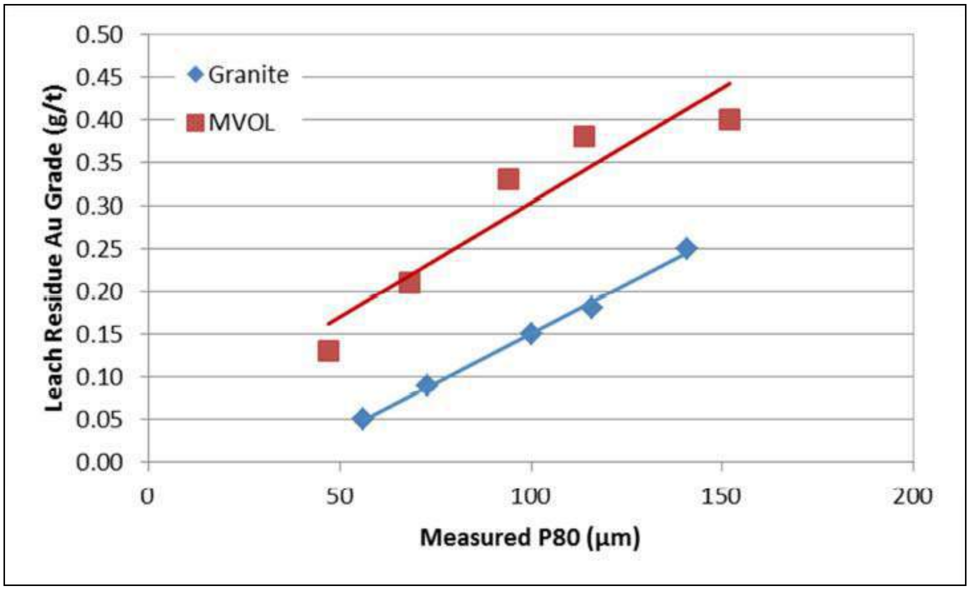


Figure 16: Leach Tail Grade as a Function of Grind Size for the GR and MVOL Master Composite Samples (ALS Metallurgy, 2014)

12.4 Mintrex Comments

In the opinion of Mintrex, the mineral processing and metallurgical testwork conducted on the 55 Zone gold deposit confirms the coarse free gold nature of the deposit. Gold extraction using gravity and leaching processes yields an excellent gold recovery. As such, Mintrex believes that with the process plant and recovery methods described in Section 16, the economic model of the project can be based an average gold recovery of 97% at the life-of-mine (LOM) average grade of 12g/t.

Other than discussed herein, Mintrex is not aware of any processing factors or deleterious elements that could have a significant effect on potential economic extraction.

13 Mineral Resource Estimates

13.1 Introduction

This section describes the methodology and summarizes the key assumptions considered by SRK to prepare the fourth Mineral Resource Statement for the 55 Zone. In the opinion of SRK, the resource evaluation reported herein is a reasonable representation of the mineral resources at the current level of sampling. The mineral resources were estimated in conformity with generally accepted CIM *Estimation of Mineral Resource and Mineral Reserves Best Practices Guidelines* and are reported in accordance with the Canadian Securities Administrators' National Instrument 43-101.

The construction of the geology and mineral resource model was a collaborative effort between Roxgold and SRK personnel. Geological modelling was primarily carried out by Dominic Chartier, PGeo (OGQ #0874), whereas geostatistical analysis, variography, and mineral resource modelling were undertaken by Sébastien Bernier, PGeo (APGO #1847), with the assistance of Dr. Oy Leuangthong, PEng (PEO # 90563867) for the variogram modelling. Mr. Ken Reipas, PEng (PEO # 100015286) assisted with the selection of reporting assumptions. All technical work was supervised by Mr. Glen Cole, PGeo (APGO #1416) and Dr. Jean-Francois Couture, PGeo (APGO #0197). The Qualified Persons accepting professional responsibility for the Mineral Resource Estimates section are Mr Bernier and Dr. Couture.

13.2 Previous Mineral Resource Estimates

AGP Mining Consultants Inc. (AGP) prepared for Roxgold the first three Mineral Resource Statements for 55 Zone, the sole gold deposit found to date on the Yaramoko gold project, in August 2012, April 2013, and October 2013 (Table 19). The previous mineral resource statements presented in Table 19 have been superseded by the Mineral Resource Statement presented in Section 13.

Table 19: Previous Mineral Resource Estimates for 55 Zone of the Yaramoko Gold Project

Year	Author	Classification	Cut-off (g/t Au)	Quantity (tonnes)	Grade (g/t Au)	Contained Gold (troy oz)
2012	AGP*	Indicated	2.0	617,000	17.8	354,000
		Inferred		1,244,000	7.7	306,000
2013a	AGP**	Indicated	3.0	1,343,000	15.7	679,000
		Inferred		751,000	8.9	216,000
2013b	AGP**	Indicated	3.0	1,904,000	13.9	850,000
		Inferred		860,000	9.9	273,000

* Underground mineral resources reported at a cut-off grade of 2.0 g/t gold based on a gold price of US$1,100 per troy ounce.

** Underground mineral resources reported at a cut-off grade of 3.0 g/t gold based on a gold price of US$1,400 per troy ounce.

The initial Mineral Resource Statement was based on exploration data available to July 16, 2012 (AGP, 2012), and considered sampling information from 125 core boreholes (31,775 m).

In consideration of a narrow vein underground mining scenario, mineral resources were reported at a 2.0 g/t gold cut-off grade based on a gold price of US$1,100 per troy ounce. The geological three-dimensional wireframe was based on a combination of lithological contacts and gold grades. The resource domains were defined using the geological information and a threshold of 2.0 g/t gold vertical sections.

The second Mineral Resource Statement was based on exploration data available to January 21, 2013 (AGP, 2013a) and considered sampling information from 213 core boreholes (81,105 m).

Underground mineral resources were reported at a 3.0 g/t gold cut-off grade based on a gold price of US$1,400 per troy ounce. The resource domains were defined using a combination of geology and a grade threshold of 2.0 g/t gold.

The third Mineral Resource Statement prepared by AGP was based on exploration data available to June 20, 2013 and was considered for the preparation of the PEA technical report dated October 29, 2013 (AGP, 2013b). The statement considered 243 core boreholes (99,077 m) and used the same modelling approach used by AGP for the first two mineral resource models. Underground mineral resources were reported at a 3.0 g/t gold cut-off grade based on a gold price of US$1,400 per troy ounce.

The fourth mineral resource model discussed herein considers the same data set used by AGP for the third model.

13.3 Mineral Resource Estimation Methodology

The mineral resources reported herein have been estimated using a geostatistical block modelling approach informed from gold assay data collected from core boreholes. Resource domains were defined using a traditional wireframe approach constructed from a sectional interpretation of the drilling data. The interpretation of the boundaries of the gold mineralization considers structural geology and lithological modelling undertaken by SRK.

The evaluation of the mineral resources involved the following procedures:

- Database compilation and verification;
- Generation of three-dimensional resource domains and verification;
- Data conditioning (compositing and capping), statistical analysis, and variography;
- Selection of estimation strategy and estimation parameters;
- Block modelling and grade estimation;
- Validation, classification, and tabulation;
- Assessment of “reasonable prospects for economic extraction” and selection of reporting assumptions; and
- Preparation of the Mineral Resource Statement.

13.3.1 Resource Database

The 55 Zone gold deposit database as of June 20, 2013 comprises 261core boreholes (102,330 m), all from NQ-sized drill rods. Information from five metallurgical boreholes (YRM-13-MET-01 to YRM-13-MET-05) that were sampled over a composite internal was not considered for mineral resource estimation.

Exploration drilling data was received as a set of the following CSV format tables: header, survey (directional survey data), lithology, assay, and specific gravity. The data were imported into CAE Studio 3 (Studio) and Leapfrog database for plotting, modelling, and validation. Validation tools were used to check for gaps in information, overlapping records, and data beyond the end of a borehole. No errors were found. The database includes 2,568 survey records; 4,249 lithology records; 44,765 assay records; and 267 specific gravity records.

Based on observations during the site visit and the review of the exploration database, SRK is satisfied that the exploration work carried out by Roxgold has been conducted in a manner consistent with generally recognized industry best practices and that the exploration drilling data are sufficiently reliable for the purpose of supporting a mineral resource evaluation.

13.3.2 Mineralized Domain and Geological Modelling

Gold mineralization is associated with low-sulphide quartz veins and attendant altered schists forming one tabular zone inside a narrow reverse-oblique shear zone. The average thickness of the gold mineralization varies from less than one to more than 17 m. The mineral resources extend from the surface to a depth of about 900 m below the surface, and the gold mineralization remains open below 1,000 m.

The bulk of the gold mineralization is entirely contained in a narrow shear zone. An interpretation for the shear zone boundary, which defines a low grade gold mineralization envelope, was modelled using the previous gold mineralization domain prepared by AGP. The original AGP domain was modified with lithological coding from the drilling database to encompass the entire width of the shear zone (Figure 17). Core photographs of strategic intersections were also reviewed by SRK to assist with modelling the low grade gold mineralization envelope. The shear zone dips moderately to steeply toward south-southeast. From the surface to a depth of approximately 400 m the shear zone dips at approximately 70° to 75°. Below that depth, the shear zone is steeper, dipping at approximately 80° to 85° (Figure 17).

In the 55 Zone, the bulk of the gold mineralization is characterized by high gold grades, chiefly associated with low-sulphide quartz veins in the upper parts of the deposit. Structural geology investigations conducted by SRK demonstrate that the quartz veins developed in the dilatational parts of the reverse shear zone, predominantly from the surface to a depth of approximately 400 m. The dilatational zones are interpreted to plunge shallowly towards the west at approximately 28°. Higher grade gold mineralization subdomains were defined inside the shear zone low grade envelope, based on Leapfrog grade shells at a threshold of 3.0 g/t gold and further modified in GoCad to account for the interpreted plunge of the dilatational zones and for continuity (Figure 17).

The high grade subdomains were modelled with a shallow west plunge, consistent with the structural geology interpretation. High grade subdomains were only modelled in the uppermost part of the deposit where the shear zone dips moderately. Below that part, where the shear zone is sub-vertical, the drilling information is not sufficiently dense to allow modelling high grade subdomains with confidence. Below approximately 400 m below the surface, no high grade subdomains were modelled.

One low grade domain and five high grade subdomains were modelled and used as resource domains to constrain grade estimation (Figure 18).

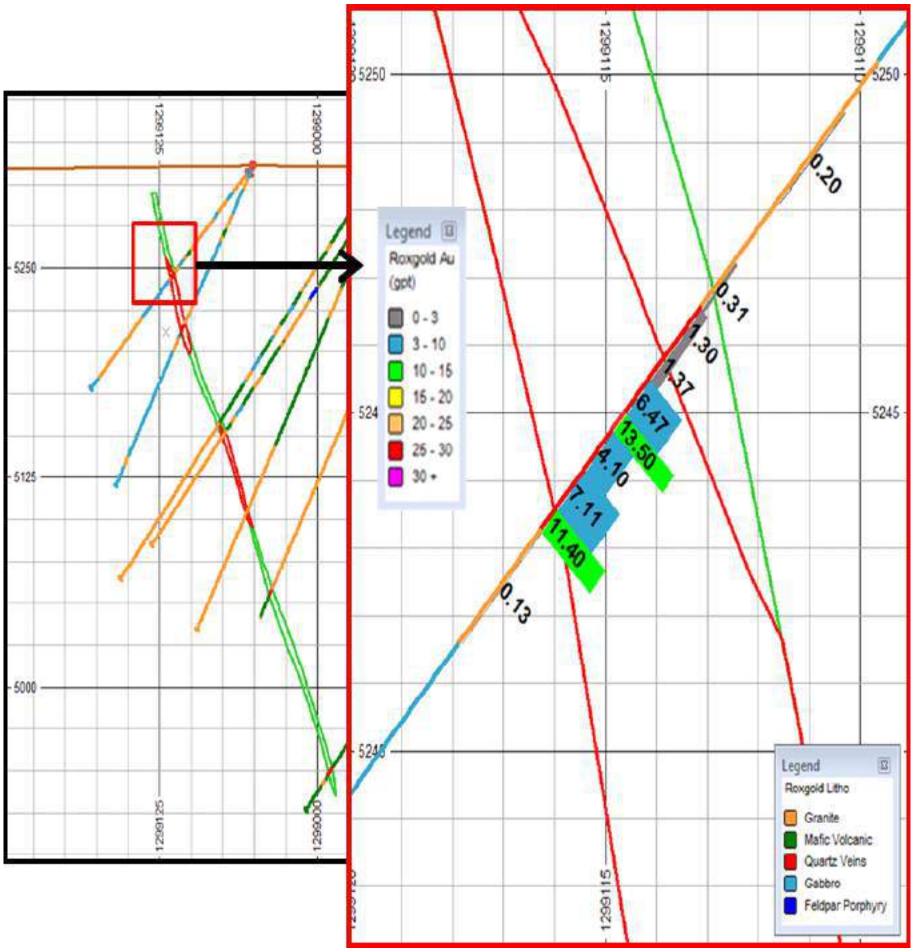


Figure 17: Section Outlining the Definition of High Grade Subdomains
(Red) Within the Low Grade Shear Zone (Green)

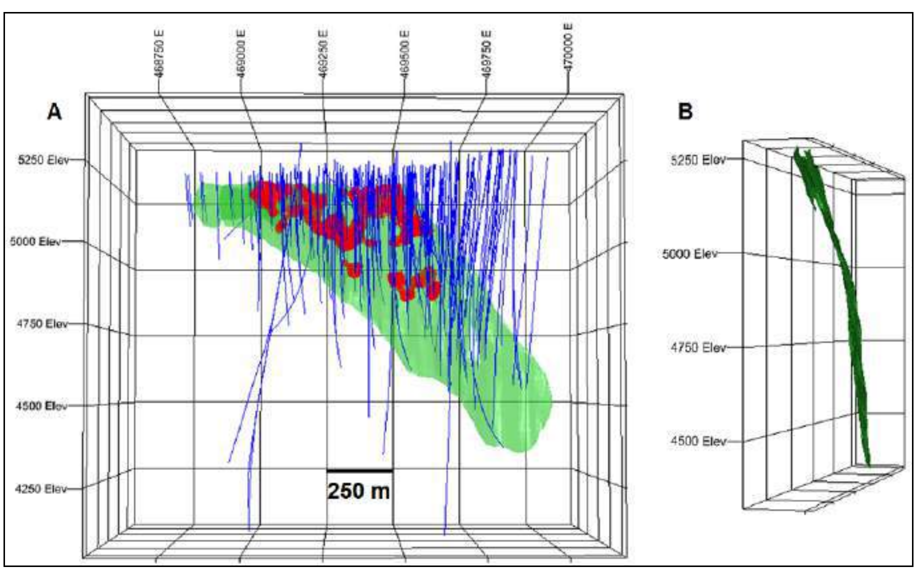


Figure 18: A: Longitudinal View Looking North Showing High Grade Subdomains
A: (Red) Within the low grade shear zone (green) in relation to the boreholes (blue).
B: Oblique view showing the change in dip at 4,850 m elevation.

13.3.3 Specific Gravity Database

Roxgold measured specific gravity on a small number of representative core samples from selected assay intervals using a water displacement technique. A total of 267 specific gravity measurements was taken (Figure 19). The main host rock is a felsic intrusive rock and the main host for the gold mineralization is low-sulphide quartz veins. A uniform specific gravity of 2.75 was used to covert volumes into tonnages. This represents the mean of the 267 specific gravity measurements.

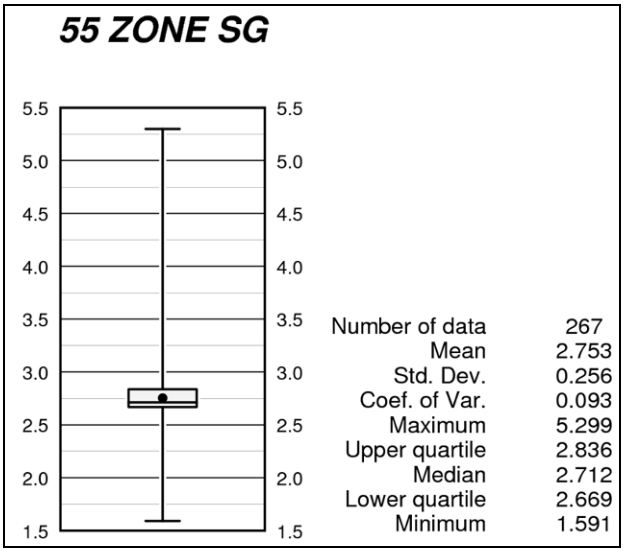


Figure 19: Summary of the Specific Gravity Database

13.3.4 Compositing and Capping

Borehole gold assay data inside the resource domains were extracted and examined for determining an appropriate composite length (Figure 20).

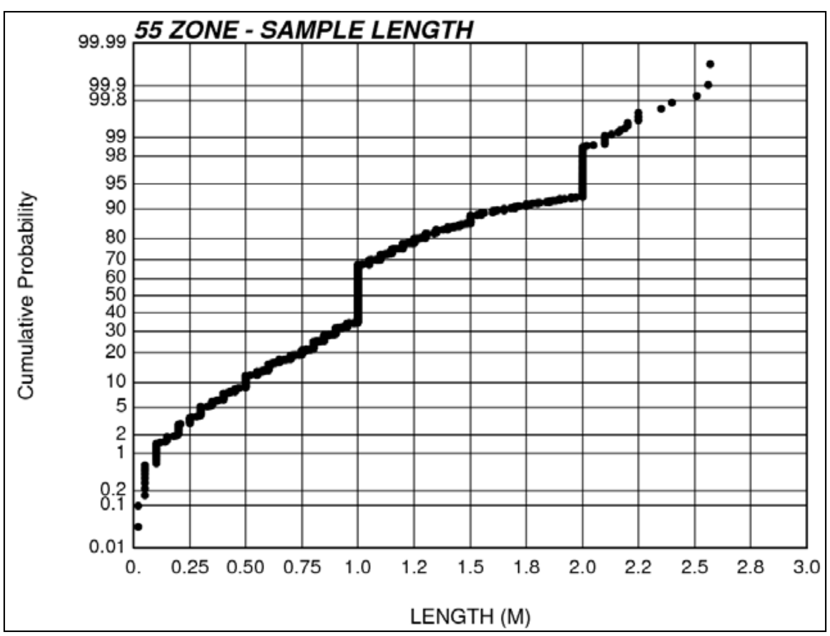


Figure 20: Distribution of the Sample Length Intervals

A modal composite length of 1.5 m was applied to all data, honouring the boundary of the lower grade shear zone and the higher grade subdomains. The impact of gold outliers was examined on composite data using log probability plots and cumulative statistics. Basic statistics for gold assays, composites, and capped composites are summarized in Table 20. Only 8 composites were capped. Their locations are shown in Figure 21.

Basic statistics, histograms, and cumulative probability plots for the lower grade shear zone material and for the higher grade domain are provided in Figure 22 and Figure 23. Capping values were determined from analysis of these statistics. Composites from the low and high grade domains were capped at 20 g/t and 250 g/t gold, domains respectively.

Table 20: Basic Statistics

Domain	Element (g/t)	Sample Count	Minimum	Maximum	Mean	Standard Deviation	Coefficient of Variation	Capped Count
Original Assays								
Low Grade	Au	1,030	0.00	80.80	1.62	4.36	2.69	
High Grade	Au	485	0.00	503.70	27.90	59.25	2.12	
Composites								
Low Grade	Au	740	0.00	49.43	1.61	3.47	2.16	
High Grade	Au	296	0.02	461.60	27.73	48.10	1.73	
Capped Composites								
Low Grade	Au	740	0.00	20.00	1.52	2.64	1.96	5
High Grade	Au	296	0.02	250.00	26.61	40.50	1.52	3

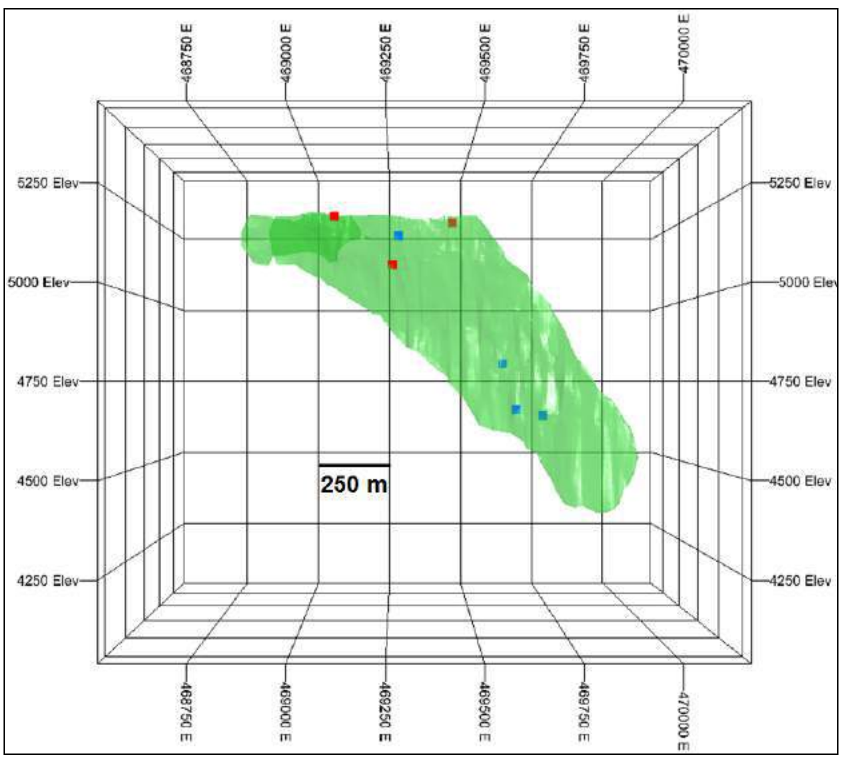


Figure 21: Longitudinal View Looking North Showing the Location of the Capped Composites in the High Grade Domain (red) and in the Low Grade Domain (blue)

Note: the lowest point represents two superimposed composites.

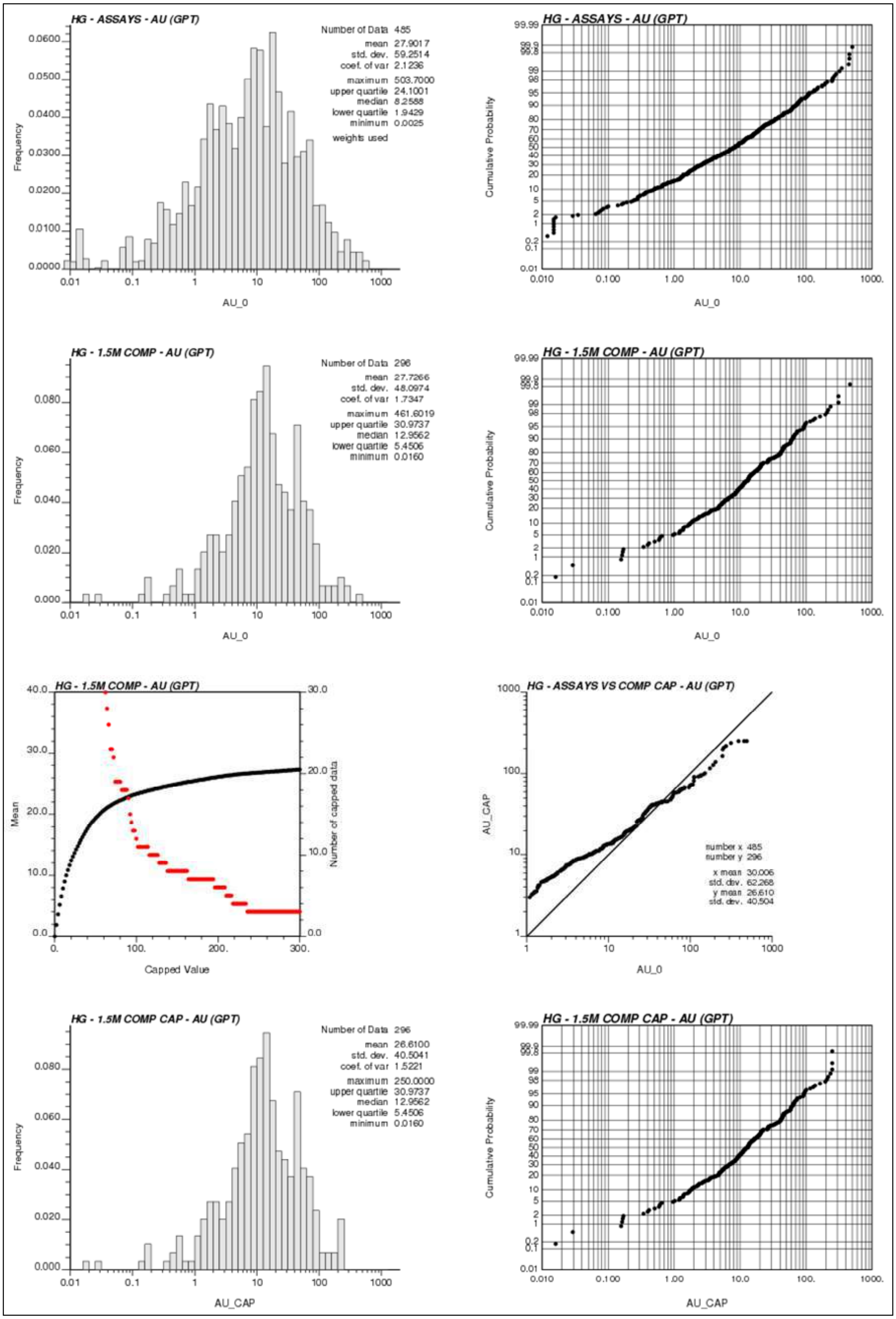


Figure 22: Basic Statistics of the Gold Data for the Higher Grade Domain

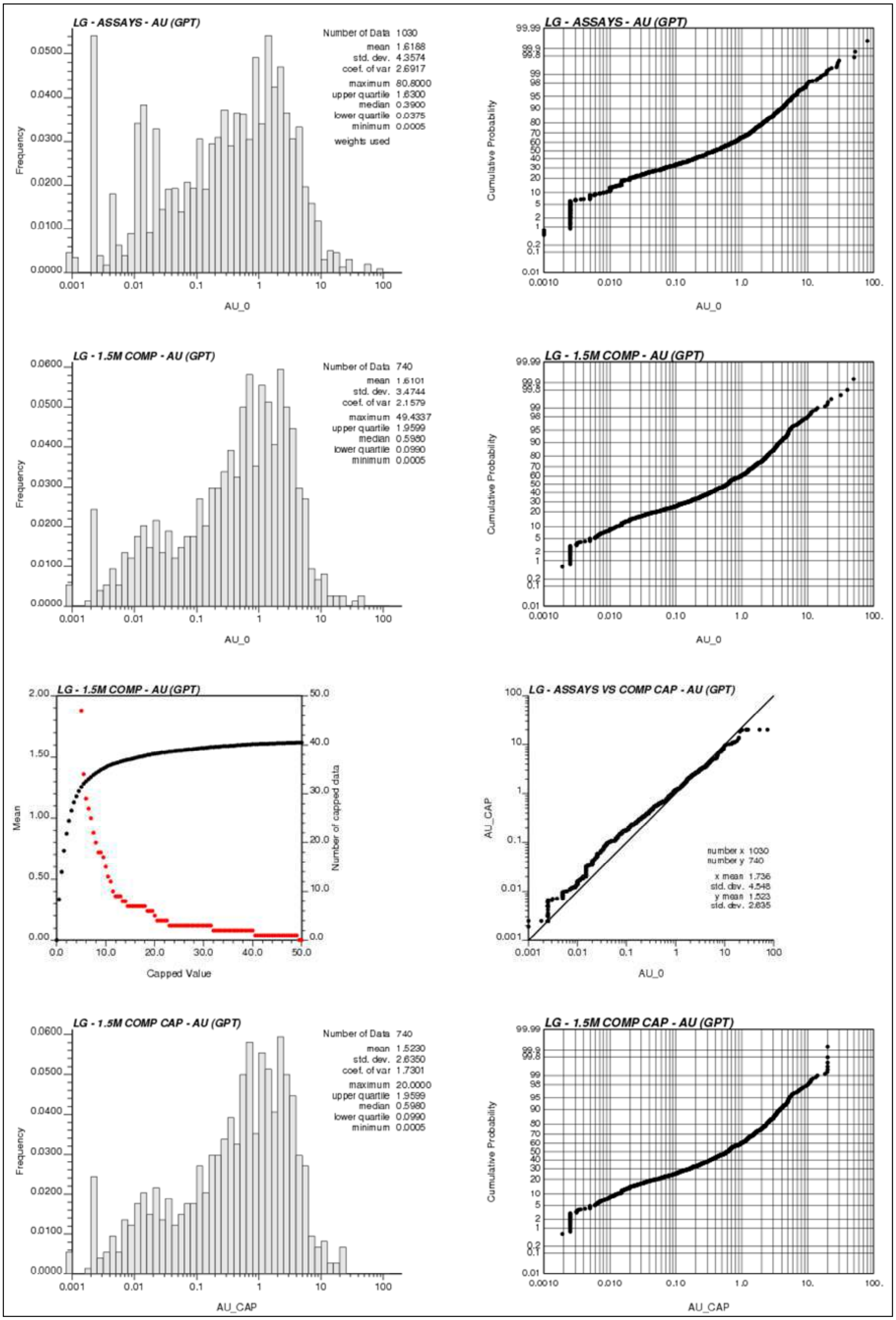


Figure 23: Basic Statistics of the Gold Data for the Lower Grade Domain

13.3.5 Variography

SRK evaluated the spatial distribution of the gold mineralization using variograms and correlograms of capped composite data as well as their normal score transform. A total of four spatial metrics was considered to infer the correlation structure to be used in the grade estimation.

Continuity directions were assessed based on the interpreted shallow plunge of the dilatation zones inside the shear zone as determined from structural geology investigations as well as the orientation of the high grade domain, the composites, and their spatial distribution. Further, variogram calculation considered sensitivities on orientation angles prior to finalizing the correlation orientation.

All variogram analysis and modelling was performed using CAE Studio 3 and the Geostatistical Software Library. The variogram modelling was based on the combination of the four metrics of the capped composites and the correlogram. The use of original data yielded reasonably clear continuity long range structures allowing fitting variogram models. The variogram developed for the higher grade domain was applied to the lower grade domain.

The shear zone clearly steepens below the 4,850 elevation from 70° to 85° dip. The same variogram model was applied to the material below this elevation but the rotation angles were adjusted to account for the change in dip. The modelled variograms considered for gold grade estimation are presented in Figure 24 and variogram parameters are summarized in Table 21.

These models are oriented in the plane of the gold mineralization, representing the direction of maximum continuity. Consequently in Figure 24, the horizontal blue model corresponds to the long axis of the variogram plunging shallowly towards the west at approximately 28°, while the red horizontal model is the perpendicular to this direction. The vertical model represents the short axis and is orientated perpendicular to the horizontal plane. Considering that the borehole orientation is generally at a high angle to the zone, the vertical model can be considered as a proxy to a downhole variogram.

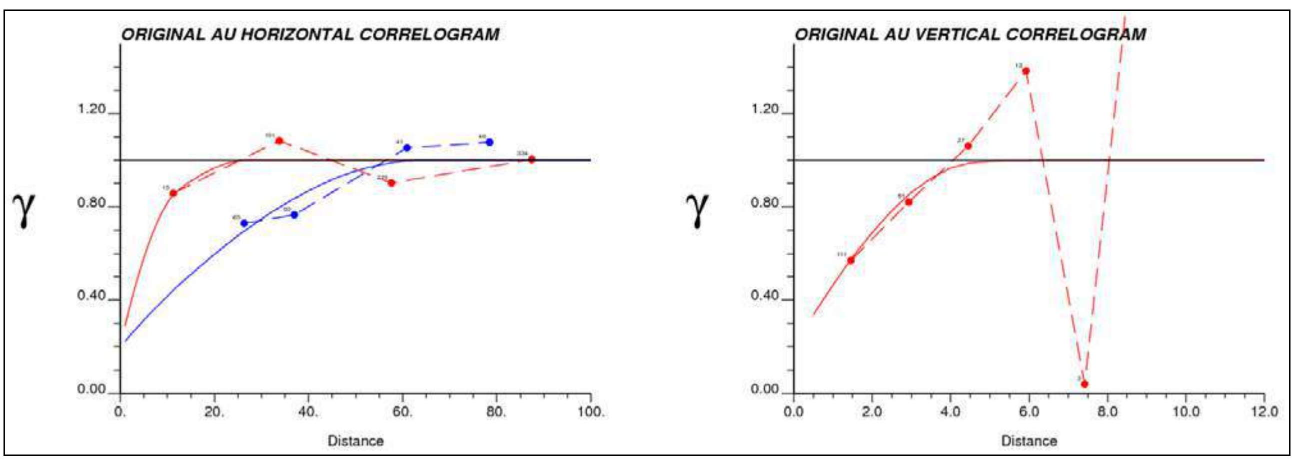


Figure 24: Gold Correlogram for the High Grade Subdomain

Note: The correlogram is inverted for the purposes of variogram modelling. The solid lines correspond to the fitted model, while the dashed lines correspond to the experimental variogram in those same directions.

Table 21: Gold Variogram Parameters for the 55 Zone Project

Domain	Structure	Contribution	Model	R1x (m)	R1y (m)	R1z (m)	Angle1 1	Angle1 2	Angle1 3	Axis 1	Axis 2	Axis 3
HG (>4850)	C_0	0.20	Nugget	-	-	-	-11	-70	-28	3	1	3
	C_1	0.10	Exp	40	10	4.5	-11	-70	-28	3	1	3
	C_2	0.35	Exp	62	12	4.5	-11	-70	-28	3	1	3
	C_3	0.35	Sph	65	27	5	-11	-70	-28	3	1	3
<4850	C_0	0.20	Nugget	-	-	-	-11	-85	-28	3	1	3
	C_1	0.10	Exp	40	10	4.5	-11	-85	-28	3	1	3
	C_2	0.35	Exp	62	12	4.5	-11	-85	-28	3	1	3
	C_3	0.35	Sph	65	27	5	-11	-85	-28	3	1	3

1 The rotation angles are shown in CAE Studio 3 convention

13.3.6 Block Model Definition

The criteria used in the selection of the block size included the borehole spacing, geological understanding of the deposit, geometry of the modelled zones, and anticipated mining techniques. In collaboration with Roxgold, SRK chose a block size of 5 by 3 by 5 m for both the low grade and high grade domains.

Subcells were used with 10, 12, and 10 splits in X, Y, and Z, respectively, allowing a resolution of 0.5 by 0.25 by 0.5 m to honour the geometry of the modelled mineralization. Subcells were assigned the same grade as the parent cell. The model is not rotated. The characteristics of the final block model are summarized in Table 22.

At the request of Roxgold and in order to avoid having negative elevation values, a constant value of 5,000 m was added to the elevation data and consequently to the associated wireframes and block model.

Table 22: 55 Zone Project Block Model Specifications

Domain	Axis	Block Size (m) Parent	Block Size (m) Subcell	Origin*	Number of Cells	Rotation Angles	Rotation Axis
All	X	5	0.50	468,700	280	-	-
	Y	3	0.25	1,298,900	100	-	-
	Z	5	0.50	4,300	220	-	-

* Mine grid coordinates

13.3.7 Estimation Strategy

Table 23 summarizes the general estimation parameters used for the gold estimation. In all cases, grade estimation used ordinary kriging and four passes informed by capped composites. The first pass was the most restrictive in terms of search radii and number of boreholes required. Successive passes usually populated areas with less dense drilling, using relaxed parameters with generally larger search radii and less data requirements. SRK assessed the sensitivity of the gold block estimates to changes in minimum and maximum number of data, use of octant search and the number of informing boreholes. Results from these studies show that the model is relatively insensitive to the selection of the estimation parameters and data restrictions.

Table 23: Estimation Strategy Applied to All Four Resource Domains

Axis	1st Pass	2nd Pass	3rd Pass	4th Pass
Search increment	100% Sill	150% Sill	200% Sill	300% Sill
Interpolation method	OK	OK	OK	OK
Octant search	Yes	No	No	No
Search Volume				
X (m)	65	98	130	195
Y (m)	27	41	54	81
Z (m)	10	15	20	30
Minimum number of octants	3	-	-	-
Minimum number of composites per octant	1	-	-	-
Maximum number of composites per octant	16	-	-	-
Minimum number of composites	11	11	6	3
Maximum number of composites	20	20	24	24
Maximum number of composites per borehole	5	5	5	2

For the first estimation pass, composites from at least three boreholes were necessary to estimate a block. This pass also used the octant search option. For subsequent passes, the criteria were relaxed. In all cases, the search radii were chosen to reflect variogram continuity structure, ranges, and orientation, except for the short axis of the ellipse that was slightly increased to account for the occasional and localized variation of the shear zone wireframe.

To account for the change in dip of the shear zone below the 4,850 elevation, the orientation of the search ellipses were adjusted; similar to what was done to the variogram models. All the other parameters stayed the same.

SRK tested the sensitivity of the block estimates to the use of soft or hard boundaries between the high grade subdomains and the low grade domain. To avoid domain boundary effects arising from use of hard domain boundaries or excessive grade smoothing using a soft boundary, a hybrid approach was used. Blocks located within a high grade subdomains were estimated during the first and second estimation passes using a hard boundary. The remaining blocks were estimated using a soft boundary between high grade and low grade domains. Table 24 provides a summary of the portions of final block model coded during each estimation pass.

Table 24: Volume Estimated per Passes

Domain	Estimation Pass	Volume Estimation	Percent Estimated
All	1	575,550	25%
	2	912,466	39%
	3	598,015	26%
	4	248,637	11%

13.3.8 Resource Model Validation

To validate the block estimates, SRK constructed parallel block models using an inverse distance algorithm (power of two and power of three) and a nearest neighbour function. SRK visually compared ordinary kriging model results on plans and sections and found similar trends in both lower grade and higher grade domains. SRK also checked that the global quantities and average gold grade from each method were reasonably comparable. Block estimates were also checked against the declustered mean informing data (Figure 25) and validated using SWATH plots in all three directions.

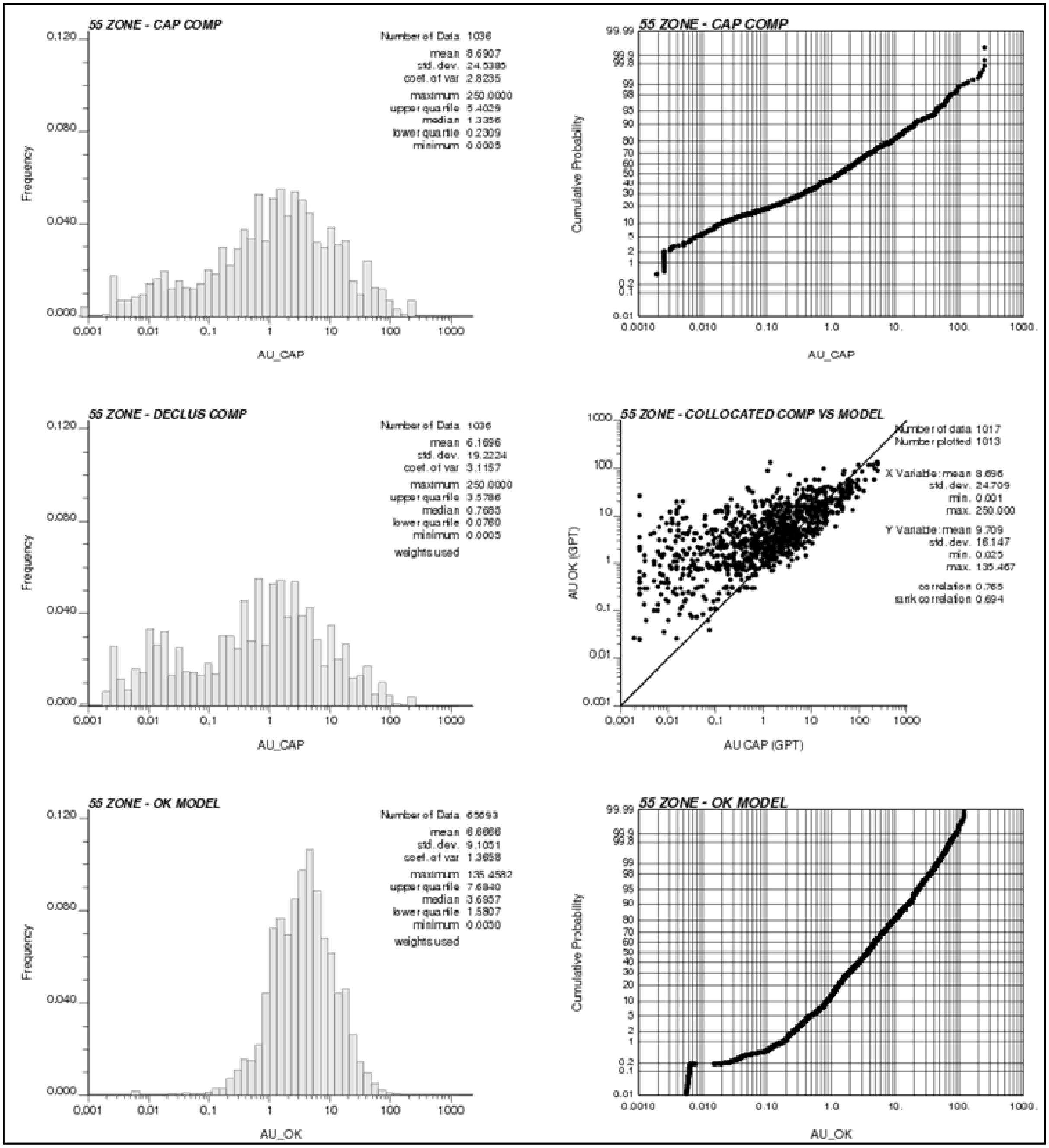


Figure 25: Summary of Block Model Validation Tests

13.4 Mineral Resource Classification

Block model quantities and grade estimates for the 55 Zone gold deposit were classified according to the CIM *Definition Standards for Mineral Resources and Mineral Reserves* (November 2010).

Mineral resource classification is typically a subjective concept and industry best practices suggest that resource classification should consider the confidence in the geological continuity of the mineralized structures, the quality and quantity of exploration data supporting the estimates, and the geostatistical confidence in the tonnage and grade estimates. Appropriate classification criteria should aim at integrating these concepts to delineate regular areas at similar resource classification as well as the continuity of the targeted mineralization at the reporting cut-off grade.

SRK is satisfied that the geological and gold mineralization model for 55 Zone honours the current geological information and knowledge. The location of the samples and the assay data are sufficiently reliable to support resource evaluation and do not present a risk that should be taken into consideration for resource classification. The mineral resource model is informed by data from core boreholes drilled with pierce points generally spaced approximately 25 to 50 m apart in the upper portion of the deposit. In the upper part of the deposit, the geological information is sufficiently dense to demonstrate the continuity of the gold mineralization with a high level of confidence. Conversely, the confidence in the continuity of the gold mineralization in the deeper part of the deposit is less reliable because of the wider spacing of the drilling data.

On this basis, SRK considers most of the blocks in the high grade subdomains in the upper portion of the deposit can be classified in the Indicated category within the meaning of the CIM *Definition Standards for Mineral Resources and Mineral Reserves*. SRK considers that for those blocks the level of confidence in the geological continuity and grade estimates is sufficient to allow the appropriate application of technical and economic parameters to support mine planning and to allow the evaluation of the economic viability of the deposit. Criteria used to classify Indicated blocks include:

- Location within the high grade subdomain;
- Blocks estimated during the first or second pass;
- Blocks informed by three or more boreholes; and
- Blocks exhibiting good geological and grade continuity at a cut-off grade of 5.0 g/t gold.

To assist with the classification, a wireframe was constructed manually within CAE Studio 3 to delineate regular areas encompassing the above parameters. This wireframe also covers the entire width of the shear zone.

All other modelled blocks were classified in the Inferred category as the confidence in the block estimates is insufficient to allow for the meaningful application of technical and economic parameters or to enable an evaluation of economic viability.

13.5 Preparation of Mineral Resource Statement

CIM Definition Standards for Mineral Resources and Mineral Reserves defines a mineral resource as:

"[A] concentration or occurrence of diamonds, natural solid inorganic material, or natural solid fossilized organic material including base and precious metals, coal, and industrial minerals in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge."

The "reasonable prospects for economic extraction" requirement generally implies that the quantity and grade estimates meet certain economic thresholds and that the mineral resources are reported at an appropriate cut-off grade that takes into account extraction scenarios and processing recoveries.

SRK considers that the gold mineralization in the 55 Zone deposit is amenable to underground extraction. SRK considered the assumptions listed in Table 25 to select appropriate reporting assumptions. Upon review, SRK considers that it is appropriate to report the 55 Zone mineral resources at a cut-off grade of 5.0 g/t gold.

Table 25: Assumptions Considered for Selection of Reporting Cut-Off Grade

Parameter	Value
Mining cost (US$/tonne)	$94.00
General and administration (US$/tonne)	$26.00
Process cost (US$/tonne of ore)	$27.00
Gold recovery (%)	96%
Mining recovery / Mining dilution (%)	95 / 20.5
Gold price (US$/ounce)	$1,300

Mineral resources were estimated in conformity with the generally accepted CIM *Estimation of Mineral Resource and Mineral Reserve Best Practices Guidelines*. The mineral resources may be affected by further infill and exploration drilling, which may impact positively or negatively future mineral resource evaluations. The Mineral Resource Statement for the 55 Zone is presented in Table 26 while Figure 26 shows the distribution of the estimated gold grade and the distribution of the classified material, respectively.

Table 26: Mineral Resource Statement*, 55 Zone Gold Deposit, Yaramoko Project, Burkina Faso, SRK Consulting (Canada) Inc., April 22, 2014

Category	Quantity (000 Tonnes)	Grade Au (g/t)	Contained Metal Au (000' ounces)
Measured	-	-	-
Indicated	1,600	15.80	810
Measured + Indicated	**1,600**	**15.80**	**810**
Inferred	840	10.26	278

* Mineral resources are not mineral reserves and have not demonstrated economic viability. All figures have been rounded to reflect the relative accuracy of the estimates. Mineral resources include mineral reserves. Underground mineral resources are reported at a cut-off grade of 5.0 g/t gold assuming: metal price of US$1,300 per ounce of gold, mining cost of US$94 per tonne, G&A cost of US$26 per tonne, processing cost of US$27 tonne, and process recovery of 96%, exchange rate of C$1.00 equal US$1.00.

Other than discussed herein, SRK is not aware of any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the mineral resource estimates.

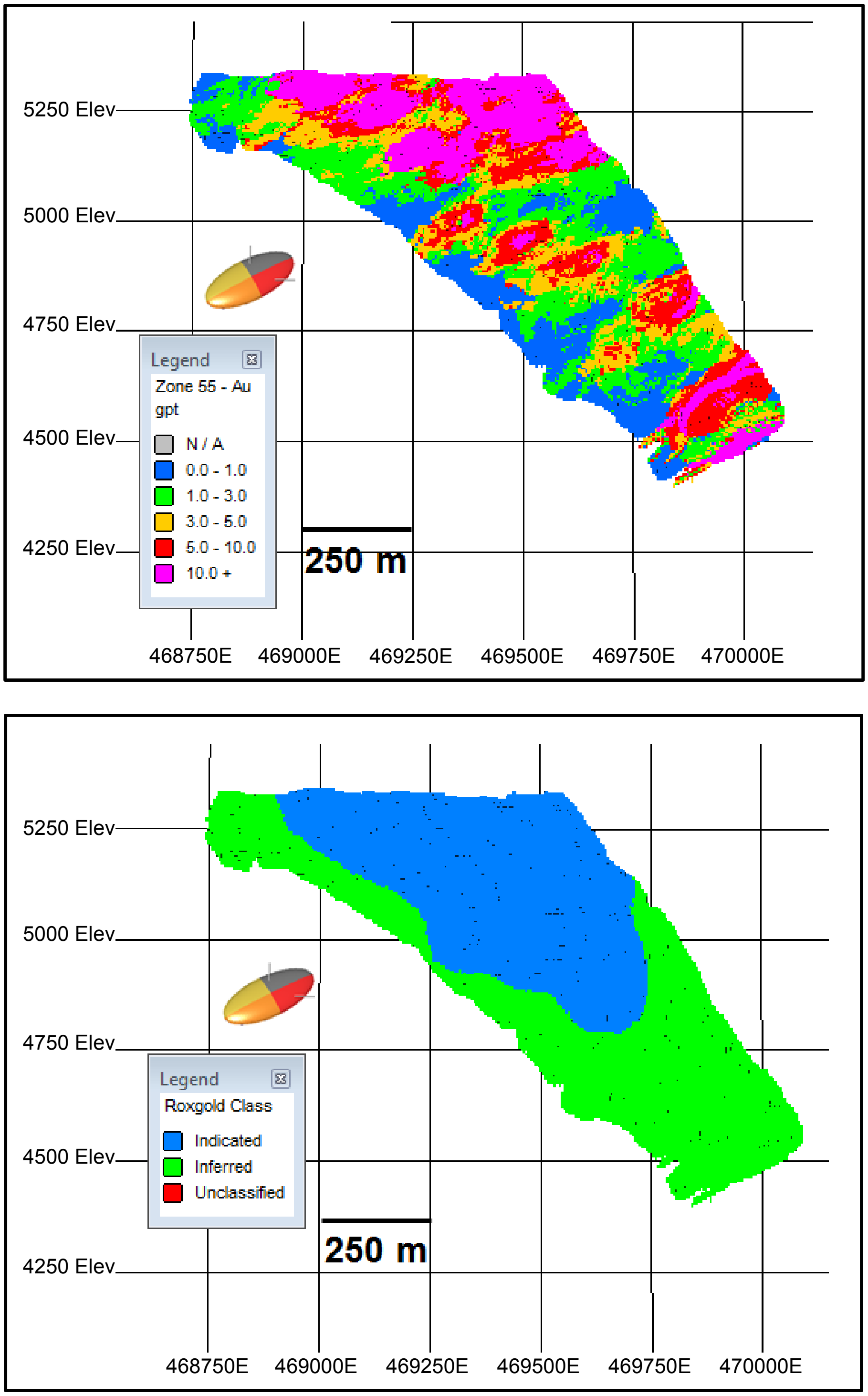


Figure 26: Longitudinal View Looking North Showing the Distribution of the Estimated Gold Grades (top) and the Block Classification (bottom)

Also shown is the Second Pass Search Ellipse (Table 23)

13.5.1 Sensitivity Analyses

The mineral resource model is sensitive to the selection of the reporting gold cut-off grade. To illustrate this sensitivity, the quantities and grade estimates are presented in Table 27 at various cut-off grades and grade tonnages curves are presented in Figure 27. The reader is cautioned that the figures presented in this table should not be misconstrued with a Mineral Resource Statement. The figures are only presented to show the sensitivity of the block model estimates to the selection of gold cut-off grade.

Table 27: Global Block Model Quantities and Grade Estimates* at Various Gold Cut-Off Grades

Cut-Off	Indicated Blocks				Inferred Blocks			
Grade	Volume / Quantity		Grade	Contained	Volume / Quantity		Grade	Contained
Gold	Volume	Tonnage	Gold	Gold	Volume	Tonnage	Gold	Gold
(g/t)	(m^3)	(tonnes)	(g/t)	(000 oz)	(m^3)	(tonnes)	(g/t)	(000 oz)
1	1,068,125	2,937,343	9.94	939	973,087	2,675,988	4.91	422
2	939,401	2,583,352	11.09	921	674,324	1,854,390	6.46	385
3	824,081	2,266,222	12.30	896	512,999	1,410,748	7.71	350
4	699,778	1,924,390	13.86	858	400,426	1,101,171	8.90	315
5	579,680	1,594,119	15.80	810	306,296	842,315	10.26	278
6	495,484	1,362,582	17.55	769	248,564	683,551	11.36	250
8	381,373	1,048,775	20.75	700	175,853	483,595	13.21	205
10	314,731	865,509	23.25	647	120,955	332,626	15.10	161
12	268,012	737,034	25.39	602	77,794	213,934	17.28	119
13	249,288	685,541	26.35	581	70,926	195,045	17.75	111
14	232,966	640,658	27.26	561	65,712	180,709	18.09	105
15	217,343	597,693	28.17	541	45,320	124,631	19.77	79
16	202,857	557,856	29.08	522	41,382	113,801	20.19	74
17	186,170	511,966	30.21	497	40,582	111,599	20.26	73
18	170,662	469,319	31.36	473	40,087	110,240	20.30	72
19	155,151	426,666	32.65	448	16,269	44,740	22.30	32

* The reader is cautioned that the figures in this table should not be misconstrued with a Mineral Resource Statement. The figures are only presented to show the sensitivity of the block model estimates to the selection of a cut-off grade. Figures are rounded to reflect the accuracy of the estimate.

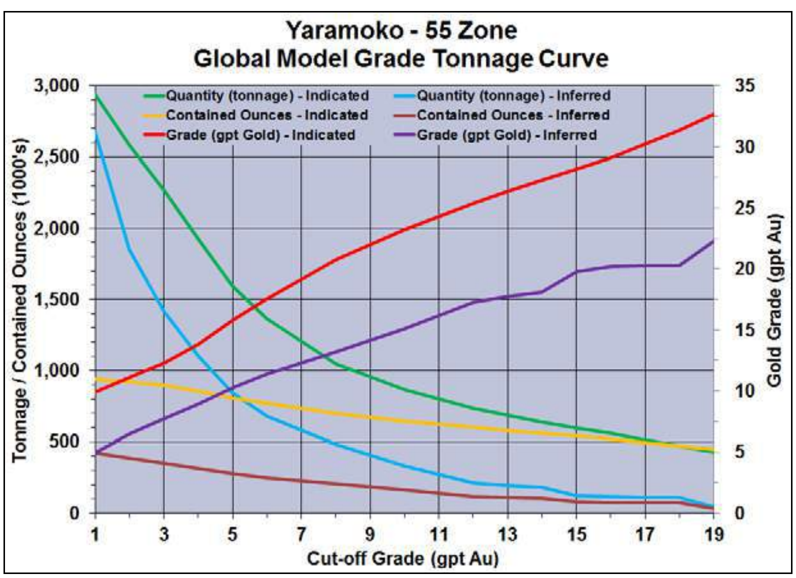


Figure 27: Global Grade Tonnage Curves for the 55 Zone Project

14 Mineral Reserve Estimates

The underground mine planning work supporting the preparation of the mineral reserve statement discussed herein was prepared by Mr. Benny Zhang, PEng (PEO#100115459) under the supervision of Mr. Ken Reipas, PEng (PEO # 100015286), both of SRK. The Qualified Person accepting the professional responsibility for the Mineral Reserve Estimates section is Mr. Reipas. This section presents a summary of the methodology used to prepare a mineral reserve statement for the Yaramoko project. The full mine design study report is presented in Appendix E.

The following methodology was used to estimate mineral reserves:

SRK estimated an in situ cut-off grade of 4.9 g/t gold to design mining shapes in the resource block model. This was based on a gold price of $1,300 per ounce and information from the PEA including:

- Estimates of site operating costs of $147 per tonne;
- Estimated process recovery of 96%;
- The stope designs targeted only Indicated mineral resources, but where Inferred mineral resources were unavoidably included within mining shapes they were treated as waste with zero gold grade;
- Geotechnical assessment was undertaken to establish stable dimensions;
- Sublevel spacing and elevations were selected;
- SRK determined an economic mining depth limit at an elevation of 4884 m, which is equivalent to a vertical depth of 430 metres below surface;
- Practical mining shapes were designed (stope wireframes) using the cut-off grade as a guide;
- A minimum in situ true width criteria of 1.6 m was considered in some narrow areas;
- In situ quantities inside the mining shapes were reported using block modelling software;
- Mining shape internal dilution was checked, and some shapes were flagged for optimization; and
- Estimates for external dilution, dilution grade, and mining losses were applied.

Details of the conversion process are provided in report section 15.4.

External dilution on the total mineral reserves averages 20.5% with a grade averaging 1.34 g/t gold. Dilution is defined as waste/ore tonnes (W/O). For both longhole stopes and the related ore sill development, external dilution was estimated by assuming that an additional 0.7 m layer (sum of hangingwall and footwall) of wall rock would be mined with each mining shape. An additional 3% was added to stopes only for backfill dilution.

For stopes located close to the modelled brittle faults, an extra 5% wall dilution was added.
For the crown pillar uphole stopes external dilution included the above plus an extra 10% where mining was approaching the weaker weathered zone. For crown pillar cut and fill mining, the backfill component of external dilution was increased to 6%.

Mining recovery for standard longhole stopes was set at 95%, while 100% recovery was used for the associated sill ore development. For crown pillar mining, 97% recovery was used for cut and fill, and 93% was used for the final uphole retreat.

The Mineral Reserve Statement is presented in Table 28.

Table 28: Mineral Reserve Statement*, 55 Zone Gold Deposit, Yaramoko Project, Burkina Faso, SRK Consulting (Canada) Inc., April 22, 2014

Category	Quantity (000 Tonnes)	Grade Au (g/t)	Contained Metal Au (000' ounces)
Proven	-	-	-
Probable	1,996	11.83	759
Proven + Probable	**1,996**	**11.83**	759

* Mineral reserves included in mineral resources. All figures have been rounded to reflect the relative accuracy of the estimates. Underground mineral reserves are reported at a cut-off grade of 4.9 g/t gold assuming: metal price of US$1,300 per ounce of gold, mining cost of US$94 per tonne, G&A cost of US$26 per tonne, processing cost of US$27 tonne, and process recovery of 96%.

Other than discussed herein, SRK is not aware of any mining, metallurgical, infrastructure, permitting, and other relevant factors that could materially affect the mineral reserve estimate.

SRK is not aware of any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the mineral reserve estimates, other than discussed herein,

15 Mining Methods

This section summarizes the mine design and planning work completed to support the preparation of the Mineral Reserve Statement. The underground mine planning work was prepared by Mr. Ken Reipas, PEng (PEO # 100015286), the Qualified Person taking professional responsibility, and Mr. Benny Zhang, PEng (PEO#100115459) of SRK. The hydrogeological study for the planned underground mine was prepared by Dr Anthony Rex, CGeol (#1001078)), the Qualified Person taking professional responsibility, and Mike Palmer, of SRK Consulting (UK) Limited (SRK UK). The rock geotechnical assessment for the proposed underground mine was undertaken by Bruce Murphy, FSAIMM (#56806), the Qualified Person taking professional responsibility, and Ross Greenwood of SRK. The full reports for the underground mine plan, hydrogeology study, and geotechnical assessment are presented by reference in Appendix E, F, and G, respectively. The appendices are available from Roxgold upon request.

15.1 Hydrogeology

A hydrogeological study was completed in order to define the hydrogeological setting of the Yaramoko project and support mine planning, the full report is available in Appendix F. The specific objectives were:

- Develop a hydrogeological characterization of the proposed underground mine;
- Quantify groundwater ingress to the underground workings; and
- Assess the risks associated with groundwater in the context of the mine design.

The groundwater flow system in the vicinity of 55 Zone is characterized by two inter-connected flow systems; one hosted by the fissured weathered zone and one by permeable faults in the fresh bedrock.

SRK UK undertook hydrogeological field work and hydrogeological analysis, and developed a numerical groundwater flow. SRK conducted numerical groundwater flow modelling using a finite-difference software package, USGS Modflow96 under the Groundwater Vistas pre- and post-processing interface. The model provides a tool for developing the conceptual understanding of the groundwater system and to quantify a range of possible dewatering rates to consider for mine design. The modelling relied heavily on a structural geology interpretation prepared by SRK, as such any future amendments may impact on the hydrogeological model.

Based on the transient hydrogeological modelling, the estimated groundwater inflows to the proposed underground mine reach a nominal 50 litres per second (l/s) for the worst case and a nominal 20 l/s for the base case.

SRK selected an inflow rate of 50 l/s for the groundwater input to the design of the mine dewatering system. The base case estimated water inflow was used to support the estimate operating power for the main pumps that will deliver dirty water to surface.

SRK assumed that the vertical distribution of mine water inflow for the worst case could be represented as follows:

- Inflow of 15 l/s collected in a sump located 20 m down ramp from the portal;
- Inflow of 28 l/s collected at the main sump located at the 5072 elevation; and

- Inflow of 7 l/s collected in a sump near the bottom of the planned mine.

Modelling has indicated that groundwater inflows are particularly sensitive to hydraulic properties of the faults and surrounding bedrock. Due to significant uncertainties surrounding the permeability of the faults, additional hydrogeological investigations are recommended.

15.2 Mine Geotechnical

SRK conducted field geotechnical investigations designed to characterize the rock geotechnical conditions and support underground mine and infrastructure design. The work program and conclusions and recommendations from the geotechnical assessment are summarized below. The full geotechnical assessment report is available in Appendix G.

15.2.1 Structural Geology

SRK relogged core photos to interpret the fault network in the vicinity of the 55 Zone. Fifteen brittle fault structures were identified and subsequently modelled. These included five high, four medium, four low, and two very-low confidence faults. Based on their orientation and crosscutting relationships, these faults can be divided into four categories, listed from oldest to youngest:

- Northwest-striking faults, which are typically high to moderate confidence, and correlate with northwest-trending faults on the Yaramoko geological map;
- Old southwest-striking faults, which are low to very low confidence and do not exhibit the same orientation as any known geological features;
- Young southwest-striking faults, which are high to low confidence and do not exhibit the same orientation as any known geological features; and
- Anomalously oriented faults.

The model includes two styles of damage zones:

- Thick (> 2 m) damage zones characterized by fragments of broken core ranging from < 1 to 10 centimetres (cm) in size; and
- Narrow (typically < 2 m) damage zones characterized by fragments of broken core ranging from 2 to 30 cm in size.

The spatial distribution and orientation of the modelled brittle faults does not coincide with the orientation of any geological features known to date. The orientation and spatial distribution of these brittle faults needs to be confirmed.

15.2.2 Geotechnical

Comprehensive parameter evaluation, laboratory testing, and kinematic analyses have been conducted in support of underground mine design. Two geotechnical domains have been developed, separated into the Weathered Rock and Fresh Rock domains based on the near surface weathering profile. Numerical analyses for excavation interaction and extraction sequence review was undertaken using the Map3D boundary element code.

The in situ stresses at Yaramoko are not expected to be adverse based on the stable regional tectonic regime and shallow depth of planned mining (maximum 430 m below surface), while the impact of the pre-mining stress field should be estimated during the early underground development phase, and designs adjusted if required.

Excavation stability assessments have been completed using industry accepted empirical relationships. The rock mass conditions (below near surface weathering) are conducive to open stoping mining methods:

- Based on the 17 m sublevel spacing, the recommended maximum stope dimensions are 34 m high by 25 m long by vein width. The stope height has been limited based on potential for adverse wedges in the stope hangingwall and footwall; and
- With additional geotechnical and structural geology evaluation of on-ore excavations to determine the presence and persistence of wedge forming joint sets, an upside potential exists for stopes up to 51 m high by 25 m long by vein width.

Crown pillar assessments have been completed using the Scaled Span method to result in a Class C crown pillar (FoS = 1.2, 2 to 5 year lifespan). A 10 m pillar thickness in the Fresh Rock domain, and a 20 m pillar thickness in the Weathered Rock domain meet this requirement.

Ground support requirements have been determined for the anticipated range of conditions in the Fresh Rock, Weathered Rock, and Fault domains for a range of development spans and orientations. Wider mining spans than those considered will require ground support designed on a case by case basis.

Portal box cut excavation slope design parameters and ground support recommendations have been provided based on data collected by SRK and Knight Piésold in the vicinity of the proposed box-cut location:

- Additional site specific geotechnical data collection is required to finalize the design parameters and improve confidence in the expected thicknesses of residual soils and weathered rock; and
- This could be achieved through geotechnical specific drilling, or data collection from soil and rock exposures as the excavation is developed.

As underground mining commences, geotechnical mapping of box-cut and all mining faces is recommended to supplement and calibrate the data collected from boreholes. This information should be used to progressively update the geotechnical and mine design.

15.3 Planned Mining Methods

15.3.1 Mining Context

The relevant characteristics of 55 Zone from a mining method selection perspective are provided below.

- It is a steeply dipping shear-hosted quartz vein. At depth the vein structure is comprised of a broader shear zone involving quartz veining that is more broken up;
- The vein has an average true in situ thickness of 4 m, ranging from 2 to 12 m;
- It is a relatively high grade deposit with good continuity at a 5 grams of gold per tonne (g/t gold) cut-off grade;
- 95% of the economic mining value of the deposit occurs above a depth of 281 m; and
- The weathered layer above the bedrock surface varies in thickness from 10 to 30 m, and extensive artisanal workings have been excavated in the layer.

15.3.2 Mining Methods

Longhole open stoping (including up hole retreat) is the main mining method with cut and fill being the only exception. All of the methods except up hole retreat will employ waste rock as backfill.

The main vein and splay vein exhibit regular geometry at stope scale, and along with the steep dip and competent rock strengths, permit a longhole open stoping method with delayed backfill. The narrow nature of the vein dictated a small hole size for production blasting with a 64 mm diameter hole size selected. The small hole size selected and relatively narrow vein thickness limited the sublevel spacing to 17 m sill to sill, to limit the impact of hole deviation on external dilution. An assessment of rock mass strength and weakening structures provided guidance on the stope size selected; 25 m strike length and two sublevels in height (total 34 m open stope height).

A longitudinal stope mining sequence, along strike from vein extremities to ramp access points is planned. The mine layout includes two separate ramp systems through the main body of the mine to break up the 600 m plus strike length (minimize mucking distances) and to provide additional independent mining fronts.

Figure 28 shows a typical cross-section through one sublevel of a longhole stope. Two such sublevels mined together comprise one standard stope. Figure 29 shows a long section (vertical projection) of a typical longhole stope.

Ore development on vein will be limited to a maximum width of 5.0 m. Blast holes will consist of parallel down holes 14 to 16 m in length. Some drill holes will be fanned out where vein widths exceed 5.0 m. Drill factors range from 2.7 tonnes/metre (t/m) at the minimum stoping width of 2.2 m to 4.9 t/m, averaging 4.1 t/m.

Blast holes will be loaded with either ANFO or emulsion to an average powder factor of 0.50 kilograms per tonne depending on local water conditions. Slots will be opened by drop raising.

Standard stope dimensions are 25 m on strike, 34 m height, and vein width. At an average in situ true vein width of 4.0 m, a standard stope will yield 11,200 tonnes including the development tonnes.

Production mucking will be undertaken by 10-tonne capacity LHDs for 60% of the planned stope tonnage. Smaller LHDs will be used for stopes in the narrow sections of the vein. Ore mucked from draw points will be trammed to remuck bays located on each level close to the main ramp.

Generally all stopes will be backfilled with 4.0% cemented development waste rock, supplemented by a dedicated backfill rock quarry on surface late in the mine life. Waste rock will be mixed with cement slurry at a backfill mixing station planned on 5236 level. CRF will be hauled by truck to the vein then trammed by LHDs along vein to the stope dumping point on the upper drilling level (Figure 29).

SRK planned starting sill levels for stoping at the 5236, 5154, 5072, and 4932 elevations that defined stope blocks. Within each stope block, mining progressed along strike and up dip from these elevations. SRK avoided non-recoverable sill pillars by designing up hole stopes that will mine up underneath previously placed CRF in the stope blocks sills. A 6% cement content is planned for CRF that is placed on the stope block starting sill elevations. This will produce self-supporting backfill that will remain stable when mining takes place below.

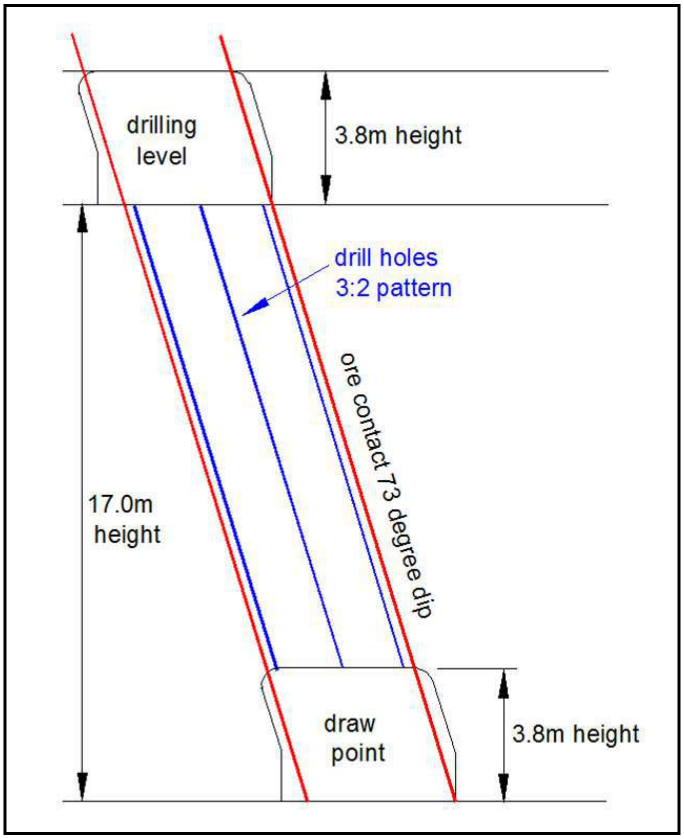


Figure 28: Cross-Section - Longhole Open Stope – Typical Sublevel, 4.0 m Width

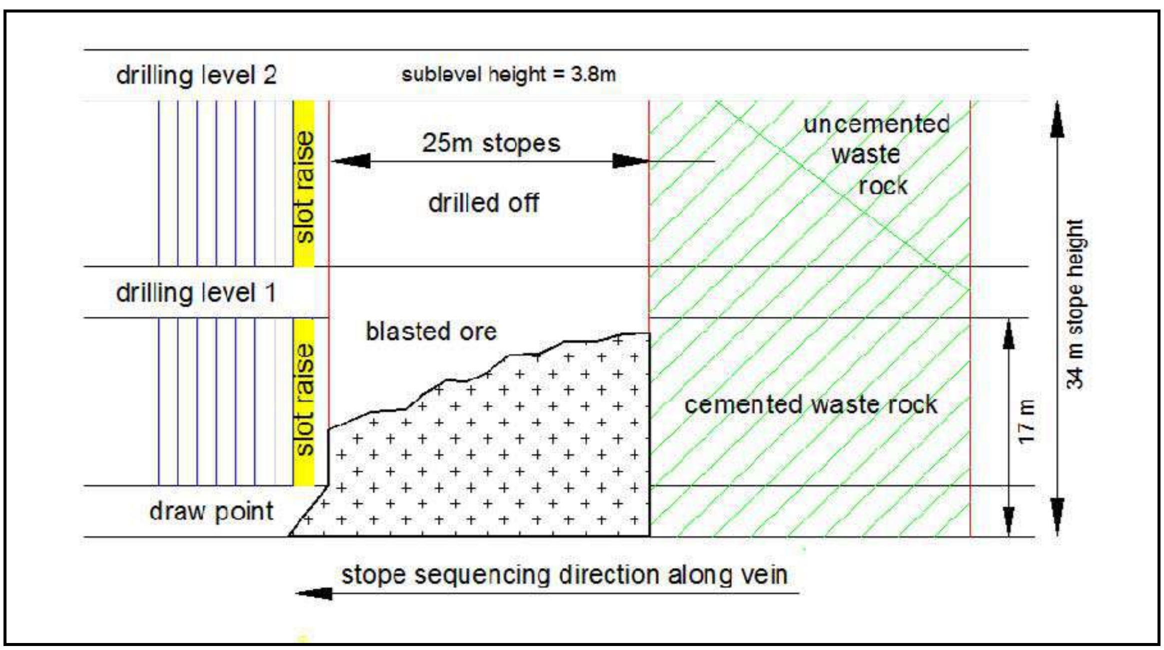


Figure 29: Typical Long Section - Longhole Open Stope

Up hole stoping will progress in a retreating sequence along strike, matching the timing of the stope block below. The up hole stopes will not be backfilled. SRK's geotechnical assessment indicates that the 14 m span of hangingwall will remain stable over the strike length of the planned mining. The 14 m stope height was selected to achieve highly reliable up hole ore recovery (short blast holes), and to meet the geotechnical requirement for hangingwall stability. Slot raising to initiate ring blasting will consist of inverse raises.

Two mining methods were selected for crown pillar mining above the 5270 elevation; mechanized cut and fill (MCF), and up hole retreat stoping (similar to the preceding description).

The goal of the mine plan is to recover all of the very high grade gold mineralization located in the crown pillar. The final mining will be an up hole retreat using 10 to 15 m blast holes of 64 mm diameter. Mechanized cut and fill with waste rock backfill is planned as a first step to advance to an appropriate elevation for drilling the up holes.

15.4 Mineral Reserve Estimate

15.4.1 Economic Cut-Off Grade

The initial stope design was based on a cut-off grade defined at a gold price of $1,300 per ounce, a process recovery of 96%, and a site operating cost of $147 per tonne. These values were obtained from the PEA. SRK used an in situ cut-off grade of 4.9 g/t gold to design mining shapes in the resource block model. Mining shapes were interrogated with the mine planning software and checked against a cut-off grade of 4.6 g/t gold that includes an allowance for internal dilution.

Dilution is defined as waste/ore tonnes (W/O).

15.4.2 Mineral Resources for Mine Plan

There are no Measured mineral resources in the 55 Zone. The underground mine plan targets only Indicated mineral resources. Where Inferred mineral resources have been unavoidably included within mining shapes they have been treated as waste with zero gold grade.

At the selected mine planning cut-off grade of 4.9 g/t gold there are 1,624 kt of Indicated mineral resources at an average grade of 15.6 g/t gold. SRK defines target mineralization as all Indicated mineral resources above the mine planning cut-off grade.

There are some areas of mineral resources that are not included in the underground mine plan and have not been considered for conversion to underground mineral reserves. These areas are:

- Indicated mineral resources above the in situ mine planning cut-off grade, located below the economic mining elevation of 4884 m. This is the bottom of SRK's mine design at a depth of 430 m below surface. This Indicated mineralization amounts to 86,578 tonnes at 6.38 g/t gold; and
- Inferred mineralization that is above the in situ resource cut-off grade of 5.0 g/t gold. This Inferred in situ mineralization (total 842 kt at 10.26 g/t, containing 278,000 oz of gold) occurs as fringes around SRK's mining shapes and also below the economic mining elevation of 4884 m (834.6 kt at 10.29 g/t gold, containing 276,000 oz of gold).

15.4.3 Stope Design

Yaramoko stope design generally followed these steps:

- Geotechnical assessment to determine stable stope dimensions (refer to section 15.2);
- Selection of mining level spacing and elevations (refer to section 15.3.2);
- Designing the practical mining shapes (stope wireframes) using selected cut-off grades as a guide;
- Applying a minimum in situ true width criteria of 1.6 m in some narrow areas;
- Reporting of in situ quantities inside the mining shapes using block modelling software;
- Checking internal dilution and optimizing mining shapes;
- Application of estimates for external dilution, dilution grade, and mining losses; and
- Categorizing development ore tonnes and stope ore tonnes for scheduling.

Longhole stopes are generally planned at a 25 m strike length and a height of 34 m over the full vein width. There are some areas where this standard size has been varied including around the perimeter of the deposit, for up hole stopes below backfill and for crown pillar mining. Mining shape true widths before dilution varied from 1.6 to 11.8 m with an average of 4.0 m.

The mining shapes followed the hangingwall and footwall of the mineralized vein structure without attempting to trim off any areas below the cut-off grade. SRK determined that attempts to high grade by targeting only portions of the vein structure carried an unacceptable risk. There was no reliable trend or geological reason to support a high grading approach.

Mining shapes exhibiting high internal dilution were checked to determine if optimization of the shape was possible. For the total mineral reserve, internal dilution averaged 18% at 2.40 g/t gold.

External dilution on the total mineral reserves averages 20.5% with a grade averaging 1.34 g/t gold. Dilution is defined as waste/ore tonnes (W/O).

For both longhole stopes and the related ore sill development, external dilution was estimated by assuming that an additional 0.7 m layer (sum of hangingwall and footwall) of wall rock would be mined with each mining shape. An additional 3% was added to the stopes only for backfill dilution. For stopes located close to the brittle faults, an extra 5 % wall dilution was added. External dilution values for mining shapes of all types ranged from 9% to 47%.

External dilution gold grade was estimated manually and by using mine planning software. The manual checks involved checking borehole assays in the rock immediately surrounding (within the first metre) the mining shapes. Mining software was used to incrementally expand mining shapes while reconciling grade changes. Results from the two methods were compared where possible, and a conservative approach was taken by arbitrarily reducing the grade estimates.

Mining recovery for standard longhole stopes was set at 95%, while 100% recovery was used for the associated sill ore development. For crown pillar mining, 97% recovery was used for cut and fill and 93% was used for the final up hole retreat.

Table 29 shows the conversion of in situ mineral resources contained inside mining shapes to Probable ore reserves. A gold price of US$1300 per ounce was used.

Table 29: Estimation of Underground Probable Mineral Reserves

Type	In Situ, In Shapes Tonnes 000's	In Situ, In Shapes Au (g/t)	External Dil (%)	Dilution Tonnes 000's	Dilution Au (g/t)	Diluted Tonnes 000's	Mining Recovery	Probable Ore Reserves Tonnes 000's	Probable Ore Reserves Au (g/t)	Probable Ore Reserves Au Ounce 000's
Crown Pillar	81	29.37	27.8%	23	3.46	103	94.4%	98	23.46	74
Dev't Ore	368	13.77	19.4%	71	1.36	440	100.0%	440	11.75	166
Stope Ore	1,276	13.09	20.4%	260	1.16	1,536	95.0%	1,459	11.07	519
Total/Average	**1,725**	**14.00**	20.5%	354	1.34	2,079	96.0%	**1,996**	**11.83**	**759**

The mineral reserves are distributed in the mining blocks as shown in Figure 30.

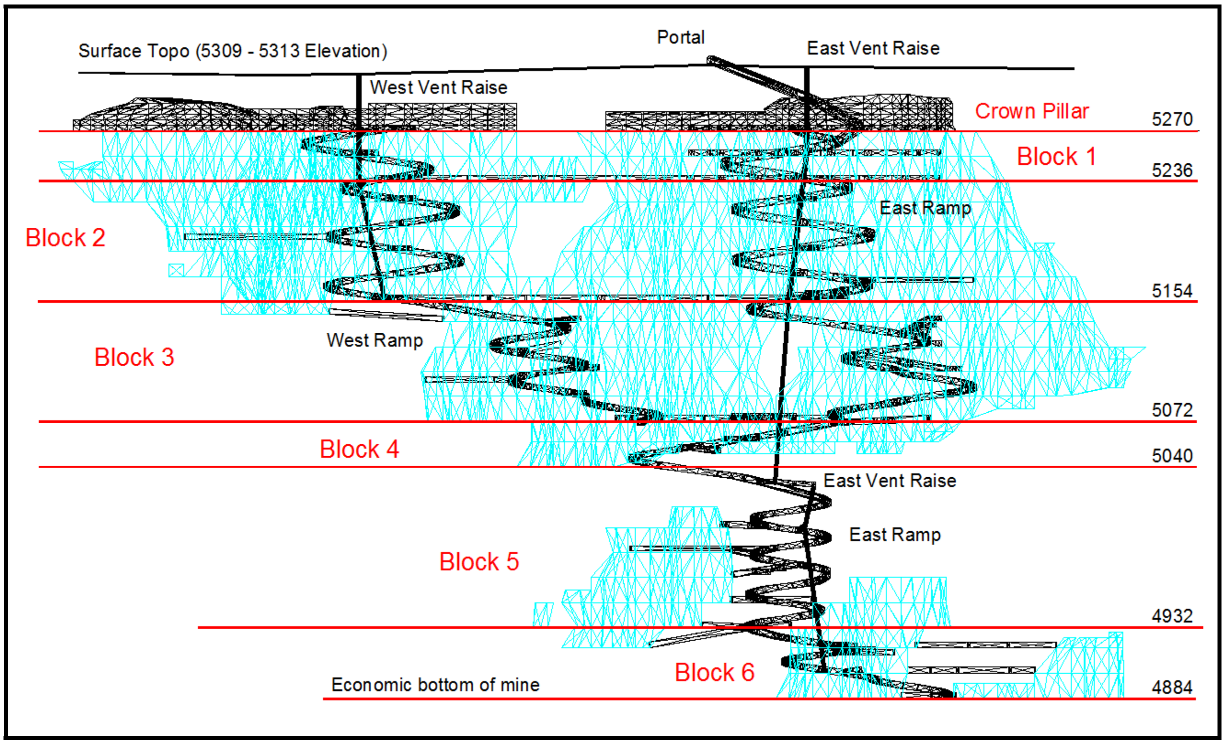


Figure 30: Long Section Vertical Projection looks North – Mining Blocks

Table 30 shows the distribution of mineral reserve tonnes and grades by mining block. Initial production is scheduled from Block 1 at the East ramp. The lower portion of the mine below the 5040 elevation (depth 273 m) is comprised of stope Blocks 5 and 6 containing only 14% of the mineral reserve tonnes and 7% of the contained gold ounces.

Table 30: Distribution of Mineral Reserve in Mining Blocks

Name	Units	Crown Pillar	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Total
Total Tonnes	**t**	**125,000**	**248,800**	**646,700**	**583,700**	**120,100**	**170,100**	**101,800**	**1,996,000**
Grade (g/t Au)	**g/t**	**22.2**	**15.3**	**12.0**	**11.9**	**6.18**	**6.02**	**5.27**	**11.83**
Contained (Au oz)	oz	89,300	122,200	249,900	223,400	23,900	32,900	17,300	759,000
Ore Silling Tonnes	t	27,400	56,200	144,400	119,400	30,200	35,800	26,100	439,000
Grade (g/t Au)	g/t	17.8	15.5	12.3	12.6	5.52	6.11	5.31	11.8
Stope Tonnes	t	97,600	192,600	502,300	464,300	89,900	134,300	75,700	1,557,000
Grade (g/t Au)	g/t	23.5	15.2	12.0	11.7	6.41	5.99	5.26	11.8

15.5 Underground Mine Model

15.5.1 Underground Mine Layout

Figure 30 shows the 3D mine model in a vertical projection looking north. Figure 31 shows the mine model in plan view. In plan, the extremities of the planned stoping (cyan colour) cover a strike length of 750 m.

Figure 32 is an isometric view looking southeast from the footwall side of the deposit. Most of the development infrastructure is on the footwall side. Colours in the view represent the following:

- Green – main ramps;
- Blue – waste crosscuts and small underground shop;
- Red – exhaust ventilation raises;
- Grey – drill drifts for definition drilling;
- Stope shapes are shown in various colours.

The starting area for stope production can be seen in Figure 32 next to the top of the East ramp spiral section. There are three levels setting up a 34 m high stope block, with crosscuts into each stope on each level. This is the only area in the mine where primary/secondary stope sequencing is planned. This area exhibits the highest gold grades in stope Block 1 (5270 – 5236 elevations).

Access to the underground mine is planned by ramp, with a portal located in fresh rock at the bottom of a planned box cut seen in Figure 32. The box cut is 23 m deep at the portal location. The excavation includes 41,400 cubic metres (m^3) of weather material and 3,300 m^3 of rock. The planned length on the long axis, crest to crest, is 180 m. A steel arched structure (Armtec) will be installed in the length of the box cut and the excavation will be backfilled to secure the portal.

The ramp from the portal is designed at -14.3% gradient and has dimensions of 5.3 m width by 5.8 m height, these being selected based on the required air flow in the ramp. Deeper in the mine, ramp dimensions are reduced to 5.0 m width by 5.5 m height.

A dual ramp layout was selected for the main body of the mine due to the nominal 600 m strike length. The extra waste development for the second ramp was more than offset by eliminating footwall waste development throughout most of the mine. The second ramp provides additional vein access, breaking the strike length into practical length sections, and provides two more independent retreat mining fronts. Connections between the two ramps are planned as footwall drifts at elevations 5236, 5154, and 5072. A single ramp is planned below the 5072 elevation to access stope Blocks 4, 5, and 6.

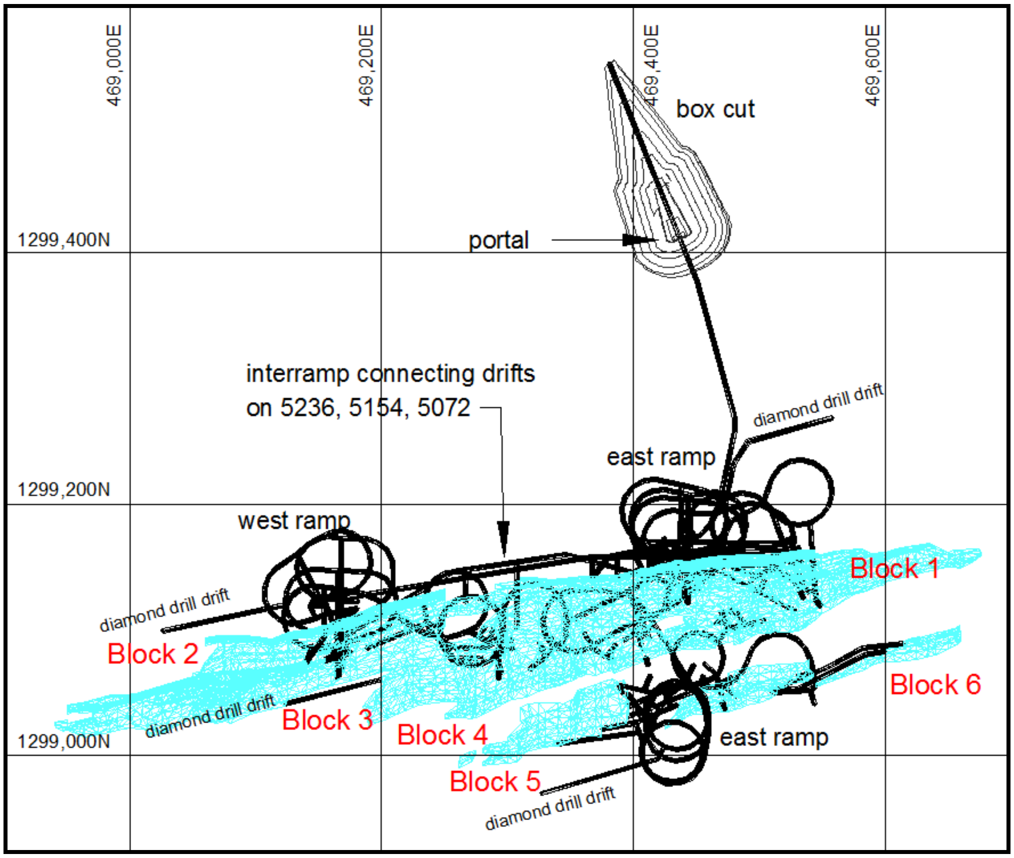


Figure 31: Plan View – 3D Mine Model

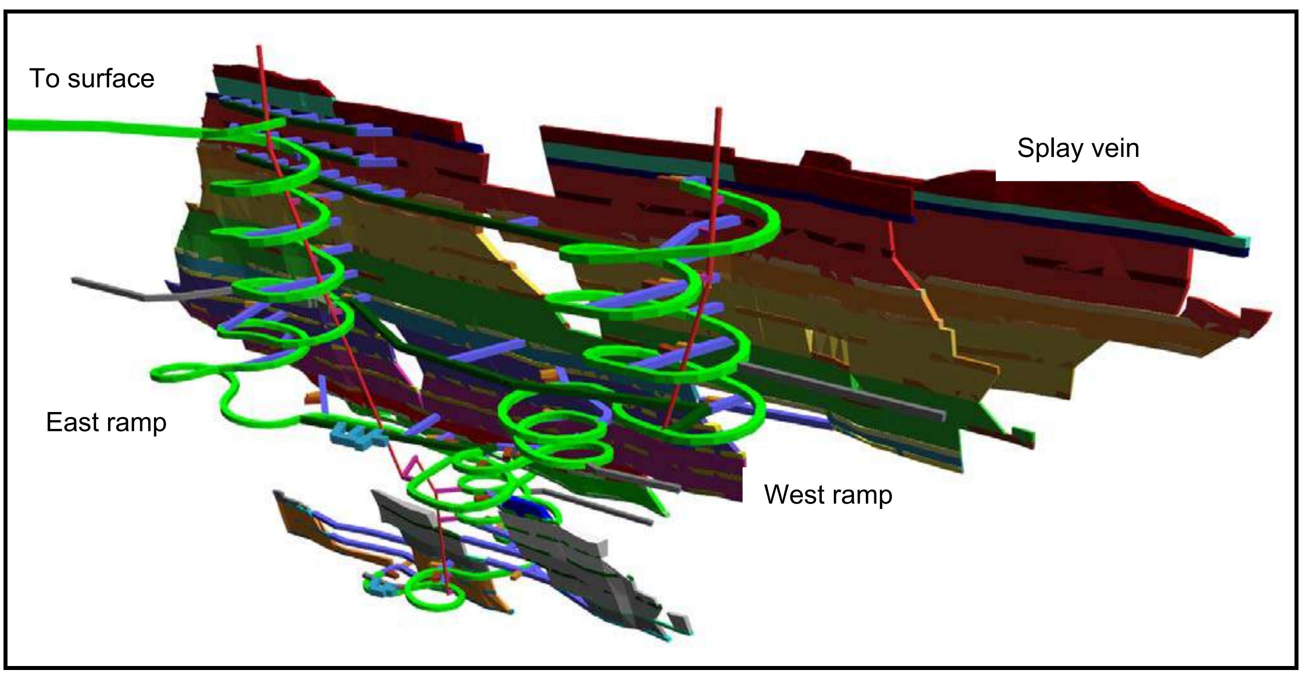


Figure 32: Isometric View Looking Southeast from the Footwall Side

Ore development to support longhole stoping, not visible in the figures, is planned on 17 m spaced levels. Each ramp spiral covers 34 m vertical such that short and longer waste crosscuts from ramp to vein alternate from level to level.

The east exhaust ventilation raise extends from surface to the bottom of the mine. It is comprised of raised bored sections 3.0 and 2.4 metres in diameter, and some drop raised sections where levels can be accessed. It includes a ventilation drift at the 5030 elevation where there is an offset from the footwall side to the hangingwall side of the deposit. It will be equipped with a manway in two sections, from elevation 5236 to surface and from elevation 5072 to mine bottom, to provide a second exit from underground to surface.

The west exhaust raise is much shorter than the east raise, extending from surface to the 5154 elevation in sections of 3.0 and 2.4 metre bored raise.

Both raises must pass through the weathered layer at surface and will require special excavation methods and concrete lining. The weathered layer thickness is 18 m for the east raise and 13 m for the west raise.

The mine layout includes five dedicated diamond drill drifts totalling 457 m of waste development. The development and definition drilling are included in the production schedule.

15.5.2 Lateral Development

Table 31 is a summary of LoM lateral development requirements. Most of the waste development was modelled as centerline advance and can be seen in the figures presented in the preceding report section. Waste development line advance was marked up by an average of 15%, with individual mark-ups ranging from 5% to 25%. This was done to account for development not modelled such as level sumps, electrical cut outs, gear storage areas, explosives magazines, etc.

With lateral development totalling 19,918 m, the project achieves a development ratio of 100 tonnes per metre. Waste development tonnage (including raising) is estimated at 927,000 tonnes yielding a waste/ore ratio of 0.46.

Table 31: Summary of Lateral Development Requirements

Heading	Type	Length (m)
Capitalized		
East Ramp to 5072, 5.3 x 5.8 m	Waste	1,771
East Ramp Below 5072, 5.3 x 5.8 m	Waste	1,599
West Ramp, 5.3 x 5.8 m	Waste	1,623
Interramp Connections	Waste	834
FW Waste for P/S Stopes	Waste	1,067
Vein Access Crosscuts	Waste	1,828
Diamond Drill Drifts & Bays	Waste	576
Vent Drift, Vent Raise Crosscuts	Waste	271
Infrastructure	Waste	738
Subtotal Capitalized (m)		**10,305**
Expensed		
Crosscuts for P/S Stopes	Waste	327
Ore Development, 2.5 x 3.8 m	Ore	1,563
Ore Development, 3.0 x 3.8 m	Ore	3,844
Ore Development, 4.5 x 3.8 m	Ore	3,878
Subtotal Expensed (m)		**9,613**
Total Lateral Development (m)		**19,918**

15.5.3 Raising Requirements

Table 32 is a summary of LoM raising requirements. These are all ventilation raises – the project does not require any ore/waste passes. Slot raising for stoping is excluded from the table.

Table 32: Summary of Vertical Development Requirements

Leg no.	Elevation From	Elevation To	Type	Length (m)	Dip	Size (m)	Manway
West Return Air Raise							
1	5309	5233	Bored	75	90	3.05 dia.	N
2	5233	5154	Bored	81	76	2.44 dia.	N
			Subtotal	**156**			
East Return Air Raise							
1	5313	5255	Bored	57	90	3.05 dia.	Y
2	5255	5153	Drop Raises	106	75	3.5 x 3.5	partial
3	5153	5030	Bored	129	72	3.05 dia.	partial
5	5028	4999	Drop Raise	31	66	3.5 x 3.5	Y
6	4999	4973	Drop Raise	26	78	3.0 x 3.0	Y
7	4973	4901	Bored	73	78	2.44 dia.	Y
			Subtotal	**422**			
			Total Length	**578**			

15.6 Development and Production Schedule

15.6.1 Introduction

The Yaramoko gold project pre-production period is defined as a 14-month period from Q4 2014 (start of box cut excavation) to Q4 2015, which is dependent on Roxgold securing the necessary financing and approvals to develop the project. In Q1 2016, an average production rate of 600 tpd is planned, which is 80% of the designed underground mine capacity. The mining production period extends from Q1 2016 to Q2 2023 for 7.3 years. At full production the planned mining rate is 750 tpd (273,750 tpy). Planned LoM ore production is 1,996 kt at a gold grade of 11.8 g/t. Refer to Table 33.

Development advance rates have been planned with consideration given to typical potential bottlenecks such as available ventilation, capacity to move muck, congestion in the main ramp, and the availability of trained operating and maintenance crews. Based on the mine layout, planned rates for generating development waste, and contractor involvement, SRK does not expect any of these aspects to be problematic.

Table 33: Development and Production Schedule

		2015				2016				2017										
	Units	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**Total**
Production						→		**production**												
Tonnes per day			0	133	490	603	688	777	791	736	755	765	754	756	766	756	759	708	345	
Total Production	**kt**			**12**	**45**	**55**	**63**	**71**	**72**	**67**	**69**	**70**	**69**	**276**	**280**	**277**	**277**	**258**	**36**	**1,996**
Gold Grade	**Au g/t**			**19.3**	**18.2**	**15.5**	**17.4**	**12.1**	**11.0**	**11.1**	**11.7**	**11.4**	**10.3**	**11.4**	**10.0**	**12.8**	**12.0**	**11.0**	**6.7**	**11.8**
Development Ore	kt			12	27	32	32	31	44	36	15	6	10	99	57	10	28	2		440
Gold Grade	Au g/t			19.3	16.7	16.4	17.9	11.8	10.9	11.0	8.4	7.1	11.1	12.9	6.7	5.2	5.5	6.0		11.8
Stope Ore	kt				18	23	31	40	28	31	54	64	59	177	223	267	249	256	36	1,557
Gold Grade	Au g/t				20.4	14.2	16.9	12.3	11.2	11.3	12.6	11.8	10.2	10.5	10.8	13.1	12.8	11.1	6.7	11.8
Lateral Development																				
Capitalized Development																				
Ramps	m	5	516	48	311	496	656	126			409	710	367	1,213	135					4,993
Interramp Connections	m		9	200	26		185	210				34	170							834
Definition Drill Drifts	m					66	171					65		155						457
Vent drift, Vent cross cuts	m		39	39	39	39	39	39						40						271
Other Waste Development	m		0.4	637	265	98	85	558	48	3	139	356	267	774	320	194	8			3,751
Total Capitalized (m)	**m**	**5**	**564**	**923**	**641**	**699**	**1,135**	**932**	**48**	**3**	**548**	**1,165**	**804**	**2,183**	**454**	**194**	**8**			**10,305**
Expensed Development																				
Cross cuts for P/S stopes	m			286	41															327
Ore development, 2.5 x 3.8m	m			25	56	69	91	122	219	207	80	24	41	403	166	19	36	3.9		1,563
Ore development, 3.0 x 3.8m	m			88	202	247	269	272	429	378	158	52	88	904	482	76	183	16.2		3,844
Ore development, 4.5 x 3.8m	m			125	289	352	331	233	275	196	105	42	70	778	560	123	369	29.8		3,878
Total Expensed (m)	**m**			**524**	**589**	**668**	**690**	**628**	**923**	**781**	**342**	**119**	**199**	**2,085**	**1,208**	**219**	**588**	**50**		**9,613**
Total Lateral Development	m	**5**	**564**	**1,447**	**1,230**	**1367**	**1,825**	**1,560**	**970**	**783**	**890**	**1284**	**1,003**	**4,268**	**1,663**	**412**	**596**	**50**		**19,918**
Metres/day	m/d		6.2	15.9	13.5	15.0	20.0	17.1	10.6	8.6	9.8	14.1	11.0	11.7	4.6	1.1	1.6	0.1		
Waste Rock Handling																				
Broken Underground	**kt**	**0.6**	**71**	**111**	**63**	**79**	**115**	**75**	**4**	**0**	**39**	**68**	**55**	**195**	**34**	**18**	**0.7**			**927**
Waste Direct to Backfill	kt			0	15	19	21	22	2	0	19	22	21	84	17	9	0.3			253
Waste Trucked to Surface	kt	0.6	71	111	47	60	94	53	2	0	19	46	34	110	17	9	0.3			674
Surface Stockpile Size	kt		72	175	207	248	321	351	307	269	261	285	297	308	232					
From Stockpile to Backfill	kt		0	8	15	19	21	22	46	38	28	22	21	91	156	154	32.9			674
Quarry Rock into Backfill	**kt**														**0**	**0**	**118**	**98**	**7**	**223**
Total Backfill Placed	**kt**			**8**	**31**	**38**	**42**	**45**	**47**	**38**	**47**	**44**	**42**	**175**	**173**	**162**	**151**	**98**	**7**	**1,150**
Ore & Waste Trucking																				
Ore Trucked to Surface	kt			11	42	55	64	69	72	68	69	70	68	275	280	276	277	260	39	1,996
Total Material to Surface	**kt**	**0.6**	**71**	**123**	**90**	**115**	**158**	**122**	**74**	**68**	**89**	**116**	**101**	**385**	**297**	**285**	**278**	**260**	**39**	**2,671**
Total Trucking Rate to Surface	tpd		778	1,344	983	1,260	1,727	1,338	813	749	970	1,266	1,110	1,056	814	781	760	713	367	

SRK prepared a detailed Gantt chart schedule using EPS (Enhanced Production Scheduler, mining Gantt chart software). The early scheduling priorities during the start-up period include:

- Advancing the east ramp from the portal to the vein on the 5253, 5236, and 5270 elevations, the levels needed for stope Block 1;
- Accessing the bottom of east return air raise leg 1 on the 5253 elevation and commencing work on the bored raise from surface. Raise collar preparation and raising machine can be set up on surface ahead of time – off critical path;
- Raise boring leg 1 of the east raise (39 m of rock) and setting up a temporary fan for flow through ventilation – the first of many such circuits to be established connecting the east ramp with the east raise;
- Completing footwall waste development to prepare for primary/secondary stoping in Block 1;
- Advancing waste development west across the 5236 elevation to the west ramp and starting ramp development;
- Surface installation/construction of the east return air raise dual fans;
- Commencing production activities in the primary/secondary section of stope Block 1.

Table 33 schedule shows the total lateral development advance rate reaches a peak of 20 mpd in Q2 2016. This will be achieved by three contractor crews, with each crew breaking slightly less than one round per shift.

The schedule also shows the total material broken each period, being the sum of ore and waste development tonnes and stope production tonnes. Truck haulage to surface reaches a peak rate of 1,727 tpd during Q2 2016.

The overall waste rock balance for the project includes a surface waste rock stockpile that reaches a size of 351,000 tonnes before being completely consumed as backfill, and the requirement for a surface waste rock quarry to supplement the backfill supply beginning in 2021.

15.7 Equipment, Manpower, Services, and Infrastructure

15.7.1 Contractor Involvement

The underground mine will initially be operated by a mining contractor to be selected by Roxgold, based on a competitive bidding process. Approximately mid-life of the mine in Q3 2019, Roxgold will take over operation of the underground mine and operate it as an owner operated mine. Periods of involvement for the mining contractor and the owner will be as follows:

- The mining contractor will be employed from the start of box cut excavation for the 4.5 year time period Q1 2015 to the end of Q2 2019;
- The owner will operate the mine for a nominal 4 year period from Q3 2019 to early in Q2 2023 when mining will be completed.

The mining contractor will operate the mine through the pre-production period, and by Q2 2019 will have completed 92% of the total LoM lateral development (ore plus waste). The peak development rate for the owner’s crews will be 3.3 metres/day (one round per day) occurring in Q4 2019.

The scope of work for the mining contractor will generally include initial mine decline and raise development, stope preparation development, stoping, backfilling, and all related services required for the operation of a 750 tpd narrow vein gold mine.

15.7.2 Mining Equipment

Table 34 shows SRK's estimate of the mining fleet required to execute the mine plan, including the surface units required to support the mine plan. The maximum number of units is shown for each equipment type, and these numbers vary throughout the mine life.

Replacement equipment required during the mine life is not included in the list shown.

Table 34: Planned Mining Equipment

Underground Equipment	Number of Units	Surface Equipment	Number of Units
2-Boom Face Jumbo	3	Pick-up Truck	4
1-Boom Face Jumbo	1	Backfill Cement Slurry Plant	1
Scissor Lift	4	Wheel Loader 4 m^3	1
LHD 10-tonne	4	Track Dozer D8	1
LHD 6.7-tonne	2	Surface Forklift	1
LHD 3.5-tonne	1		
Mechanized Bolter	2		
Remote Blockholer	1		
Truck 25-tonne	5		
Production Drill 64 mm	2		
Portable Shotcrete Unit	1		
Boom Truck	2		
Underground Forklift	1		
Tractor	5		
Personnel Carrier	1		
Grader	1		
Service Truck	1		
Fuel/Lube Truck	1		
Total Underground	**38**	**Total Surface**	**8**

15.7.3 Mine Manpower

Table 35 shows SRK's estimate of the composition of the underground workforce at two different times during the production period, first during the contractor operating period and second during the owner operating period. Numbers shown are for total underground mine related employees, including the owner's team and the mining contractor's employees. Employees working on capitalized lateral waste development are included, but manpower assigned to other capital projects such as initial underground construction are excluded. Major differences between the two quarterly periods shown in the table relate to:

- In Q1 2016 the mine will be operated by a mining contractor, and in Q1 2020 the mine will be owner operated by Roxgold;
- Changes in the quantity of lateral development. Lateral development rates are 15 mpd for Q1 2016 and 2.5 mpd for Q1 2020.

Table 35: Underground Mine Manpower – 2016/2020

Mine Manpower	Q1 2016					Q1 2020				
		Contractor				Owner				
Function	Owners Team	Expat	African Expat	National	Total	Expat	African Expat	National	Trainee	Total
Mine Supervision	3	4	2	5	**14**	2	5	3		**10**
Safety & Training		1	2	2	**5**	1	3	1	4	**9**
Development		8	1	14	**23**		4	1		**5**
Waste Handling				4	**4**			2		**2**
Longhole Stoping			3	16	**19**		3	9	3	**15**
Ore Handling				6	**6**			6		**6**
Backfilling			1	6	**7**			8		**8**
Mine Rehabilitation				1	**1**			3		**3**
Mine Services				10	**10**			8		**8**
Construction & Utility				5	**5**		2	4		**6**
Maintenance Supervision		2		4	**6**	1	4	3		**8**
Maintenance			5	28	**33**	3	9	17		**29**
Technical Services	16	3		2	**21**	1	4	12		**17**
Translators				3	**3**			3		**3**
Total Mine Employees	**19**	**18**	**14**	**106**	**157**	**8**	**34**	**80**	**7**	**129**

Staff positions include mine supervision, safety, training, maintenance supervision, and technical services. Operations and maintenance hourly employees will form three crews working on a rotation on and off site. The planned operating schedule is two 11-hour shifts per day on a continuous basis.

Roxgold intends to select an underground mining contractor with experience in West Africa including an established workforce at other African operations. The mining contractor will hire and train as many national employees as possible. It is expected that the mining contractor will have established expatriate trainers, training programs, and standards.

During Q3 2019 it is planned that the underground mine operations will transition from contractor operated to owner operated. At that time, Roxgold will assume responsibility for managing the mine workforce. Roxgold will benefit from the operating experience of their owners team that will have been in place from start up through to Q2 2019. That team includes:

- Four key expatriate staff - mining manager, mine superintendent, chief engineer and chief geologist;
- An expatriate mining engineer, senior geologist, and senior surveyor; and
- Additional national technical staff – 2 mining engineers, 1 mine technician, 2 surveyors, 2 geologists, and 5 geological technicians.

The following cost provisions are included in operating costs for the transition to an owner operation:

- \$310,000 recruiting costs in Q2 2019 for expatriate employees;
- \$423,300 salary costs to hire key expatriate staff early in Q2 2019 for training and orientation during the end of the contractor operating period; and
- \$120,000 for training contractors to work with mine operations employees.

15.7.4 Mine Services and Infrastructure

Underground Definition Drilling

The average spacing of surface core boreholes (pierce points) is 37 m. This varies from 32 m at shallow depth to 40 m at the bottom of the planned mine. An underground definition drilling program has been included to infill around existing boreholes to achieve an average spacing of a 25 m.

Five dedicated drilling drifts are planned totalling 457 m of waste development (3.6 x 3.6 m size) to supplement the drill positions available within the planned 3D mine model.

Planned NQ size drilling totals 12,500 m (148 holes at an average 84 m length) scheduled over a period of 4.5 years.

Ore and Waste Handling

East and west ramps are designed at a 14.3% gradient with dimensions of 5.3 m width and 5.8 m height to accommodate underground mine trucks and planned ventilation volumes. Vehicle passing will be done at level access crosscuts that are spaced every 120 m along the ramp (17 m vertical intervals).

The mine design includes dedicated truck loading and turn around areas on every level, located just off the main ramps. Remuck bays (with 275 t capacity) are included in the design on each level near the ramp. Ore and waste rock both have in situ densities of 2.75 tonnes/cubic metre. All truck loading will be by 10-tonne LHD.

All ore and 73% of development waste rock (2,671 kt total material) will be trucked to surface up the ramp system to ore and waste stockpiles. The waste rock stockpile will be temporary, reaching a size of 351,000 tonnes before being consumed as mine backfill.

The peak trucking requirement occurs in Q2 2016 at 1,727 tpd. Trucking depths will range from 30 to 430 m below surface. It is important to recognize that approximately 85% of the ore and waste to be trucked to surface will originate above a maximum depth of 240 m below surface.

Mine Ventilation

SRK prepared the estimated air flow required for the Yaramoko underground mine based on the utilization of the planned mining equipment plus contingency. A typical industry ratio of 0.063 cubic metres per second (cms) per kW of engine power was used. This is equivalent to 100 cubic feet per minute (cfm) per engine horsepower (Hp). A large contingency on the calculated minimum air flow was desired due to the hot climate. Based on ventilation modelling, SRK estimated ventilation requirements at 212 cms or 450,000 cfm for a production rate of 750 tpd.

The planned air flows in and out of the mine from surface are shown in Table 36. Air intake will be through the main access ramp. Exhaust will be through two raises, each sized at a 3.0 m diameter. The east exhaust raise will be equipped with a ladder way for mine escape. Each of the exhaust raises will be equipped with dual axial vane exhaust fans. Total fan pressures are estimated at 1,370 Pa and 1,630 Pa for the east and west raises respectively. Total surface exhaust fan power draw is estimated at 400 kW.

Table 36: Underground Mine Ventilation Balance

Planned Airway	Airway Area (m^2)	Velocity (m/sec)	Air Flow (cms)	Distribution
Ramp 5.3 x 5.8 m	33.8	6.3	212	100%
Total Intake			**212**	100%
East Raise 3.0 m	7.1	10.0	71	50%
West Raise 3.0 m	7.1	20.0	142	50%
Total Exhaust			**212**	100%

The Yaramoko mine is a shallow mine and this helps mitigate concerns about heat. The peak ventilation requirement occurs in Q1 2016, when stope production activities are in Block 1. The top of this block is 43 m below surface while the bottom mucking level is 77 m below surface. At this time, the deepest point in the mine is a development heading at a depth of 159 m.

Figure 33 is a long section view showing some of the planned air flows for the fully developed mine. Green arrows represent fresh air while blue arrows represent exhaust air.

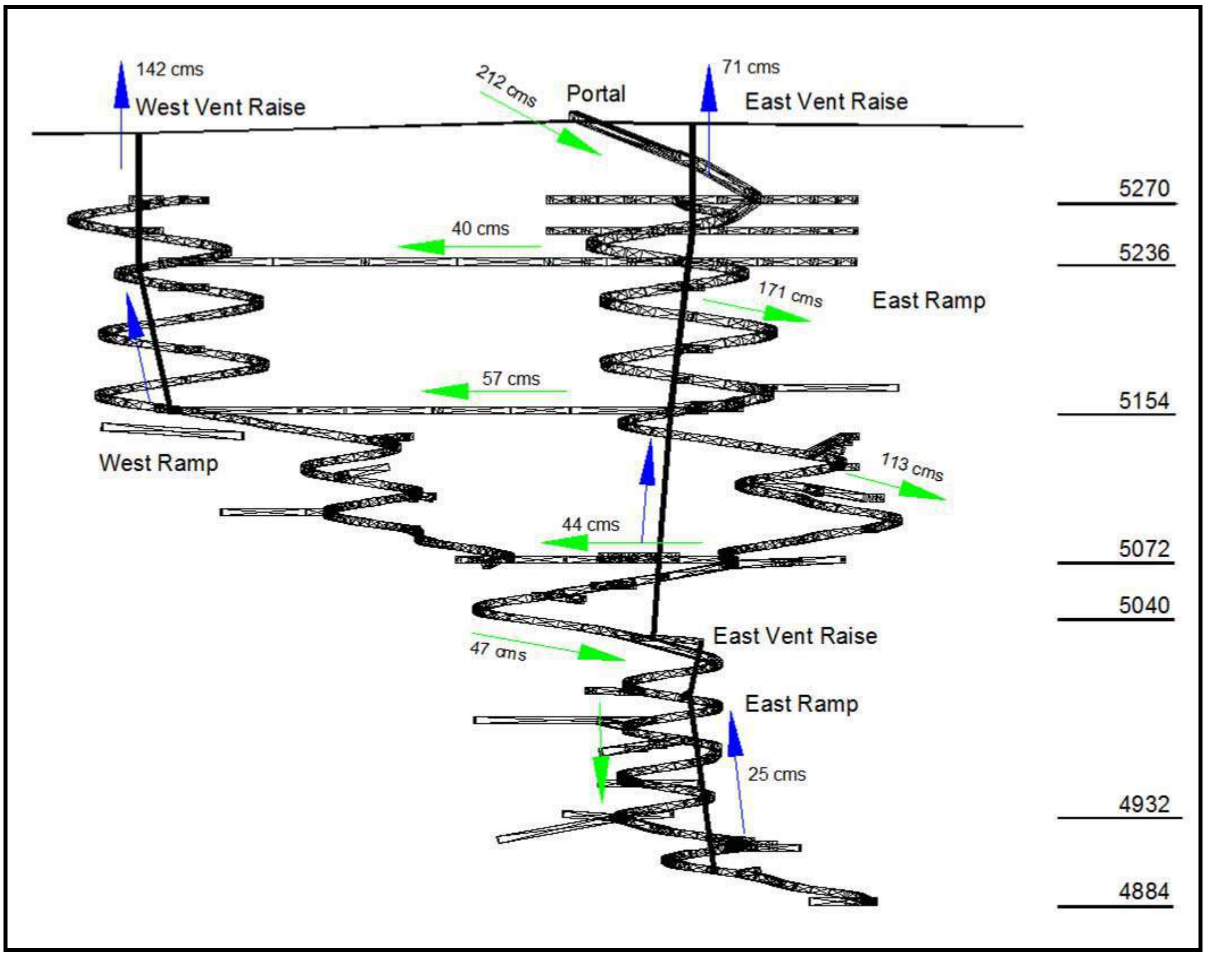


Figure 33: Longitudinal Section View – Planned Air Flows

Mining levels planned every 17 m will be ventilated with auxiliary ventilation fans and ducting. Ventilation regulators will be installed at the return air raises on each level. Auxiliary fans will obtain fresh air from the ramps, with ducting along the level access crosscut and along vein to active work areas. In general, 1,070 mm (42 inch) diameter ducting will be used, powered by 37 kW and 56 kW (50 Hp and 75 Hp) auxiliary fans, based on duct lengths and planned equipment on the mining levels.

Backfill Methods

Cemented rock backfill (CRF) will be used to fill the majority of mining voids. The voids created by mining over the mine life will be treated as follows:

- 21% of voids not backfilled;
- 7% filled with unconsolidated waste rock;
- 34% filled with normal CRF with up to 4.0% cement binder;
- 38% filled with high strength CRF with up to 6.0% cement binder.

The voids not filled are in areas where up hole retreat stoping is planned. These areas include mining up under previously placed high strength CRF, and crown pillar up hole stoping.

A total of 1,150 kt of rock for backfill will be sourced both from underground development waste (927 kt), and later in the mine life when this supply is depleted, from a surface backfill quarry (223 kt).

The transportation of CRF underground will be accomplished with 25-tonne capacity mine trucks. Cement slurry for CRF will be prepared on surface in a slurry mixing plant and delivered 80 m underground via cased borehole (75 mm diameter) to backfill truck bay on the 5236 elevation where it will be sprayed onto a truck load of waste rock.

The self-contained slurry plant will be constructed inside a 12 m high cube shipping container complete with motor starters, PLC system, colloidal mixer, and discharge pump to the delivery borehole collar. It will be capable of producing up to 13 m^3/hr of slurry at a nominal 0.65 water:cement ratio.

A 100-tonne capacity cement silo (five day supply) is planned complete with bin vent dust collector and level monitoring. The cement silo will be fed pneumatically with bulk bags by employing a bulk bag unloader equipped with rotary feeder and blower.

Trucks with CRF will deliver the material from the backfill bay on the 5236 elevation by ramp to the level where a stope is being backfilled. At the level, the truck will back up along the crosscut and dump the load of CRF into a cut out next to the vein. From the CRF cut out, an LHD will tram the CRF along vein and dump it into the stope being backfilled. Refer to Figure 34. The size of LHD used will vary according to the ore development width. Average one way tram distances along vein average approximately 55 m for the main vein and 75 m for the splay vein.

Where high strength CRF is needed at sill elevations, it will be placed in a layer on the stope floor by an LHD working through the draw point (Figure 34). Once the high strength layer has been placed, backfilling will be continued by dumping from the upper stope sublevel.

Prior to starting to backfill from the upper sublevel, waste rock will be pushed up by LHD into the draw point to block any possible flow of CRF out of the stope.

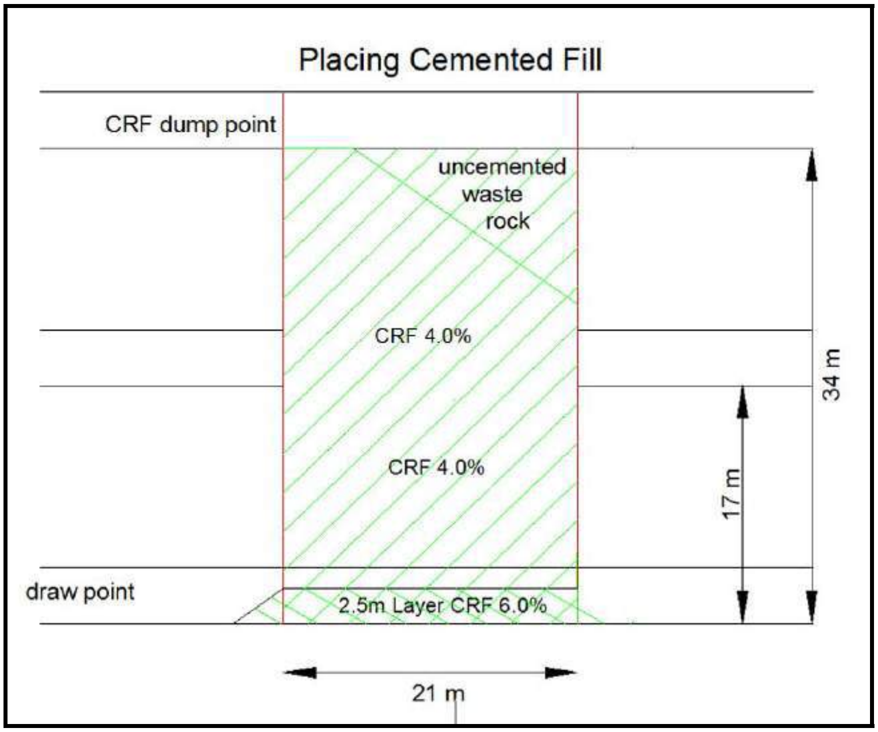


Figure 34: Schematic Long Section – Placement of High Strength CRF

Mine Dewatering System

The underground mine dewatering system has been designed to handle an estimated peak rate of 54 l/s (856 USgpm). The estimate is comprised of 50 l/s ground water and 4 l/s underground process water. Operating costs have been estimated on the basis of a nominal 24 l/s (380 USgpm) pumping rate.

Three pumping stations are planned:

- Station 1 at the 5285 elevation a short distance down the ramp from the portal. A small sump equipped with submersible pump will handle 6 l/s, pumping to surface through a 150 mm diameter HDPE pipe in the ramp;
- Station 2 at the 5072 elevation is the main pumping station at a depth of 241 m, handling 18 l/s. Three progressive cavity dirty water pumps in parallel will pump to surface through HDPE cased boreholes (125 mm inside diameter) and 200 mm HDPE pipe along ramp; and
- Station 3 at the 4913 elevation will be equipped with a progressive cavity dirty water pump, delivering water to pump station two at 4 l/s. Water will be pumped through HDPE cased boreholes (100 mm inside diameter).

Each pump station will be equipped with a spare pump that will remain on standby even when the system is handling the peak rate. During normal operation pumps will cycle on and off according to planned service duties, drawing an average of 68 kW.

On a short term emergency basis with all pumps operating the system will be capable of 100 l/s.

Maintenance Facilities

Maintenance facilities for the underground mobile fleet will consist of a surface maintenance shop provided by the mining contractor. The depth of the mine does not justify an underground work shop. Roxgold will purchase the maintenance shop for its depreciated value at the time of transition to owner mining.

Electrical Power Distribution

Power to support the mine infrastructure will be provided from the main site electrical substation via an overhead 11 kV pole line. A small outdoor switchyard will be established between the west and east ventilation raises, south of the utility road. From this location 11 kV feeders will provide power for mine related needs.

One feeder will supply a 150 Kva 11 kV/1kV portable substation providing power to the planned backfill slurry plant on surface. A second feeder will supply both the west and east ventilation fans. Each ventilation raise collar will have its own 300 Kva 11 kV/1kV substation as well as a packaged 1 kV variable speed drive for the surface fans. This will provide the ability to efficiently throttle fans as required. A third feeder will be dedicated to underground development and production.

To facilitate development activities, independence from the production power infrastructure is planned. Each ramp, lateral, and raise development crew will be provided with electrical distribution equipment. This will allow each crew to advance at their own pace.

Crews will tie into permanent 11 kV infrastructure and advance as per schedule. Utilizing 11 kV provides the capability to develop much further before needing to establish a shorter tie. This allows permanent infrastructure to be constructed, tested and commissioned well in advance of the next leg of development.

Electrical equipment has been selected to minimize the number of different units. This will provide a standard equipment fleet that can be easily managed, maintained, and re-deployed on demand. Sufficient quantities of equipment will be available to minimize the need to purchase additional capital equipment as the mine develops. During latter stages of mine life there will be a surplus of electrical equipment. These can be salvaged from the upper levels, refurbished and redeployed to lower levels.

Other Services and Infrastructure

Box Cut and Ramp Portal

A box cut is planned for excavation through the weathered layer, establishing a 10 m face of fresh rock for collaring the main decline. The box cut total excavation volumes are estimated at 41,400 m^3 weathered material and 3,300 m^3 fresh rock.

The excavation will be approximately 180 m in length. The decline roadway in the box cut will be approximately 150 m in length, from a starting sill elevation of 5316 down to the 5294 elevation at the rock face.

The first 20 m of ramp from the portal will be driven with extra ground support including 100 mm of shotcrete. Steel set arches have been included in the capital cost estimate, however, they may not be required if the rock mass quality is good.

The decline roadway in the box cut will be enclosed with a steel arched structure to permit backfilling of the excavation. The finished elevation of the backfill will be just above the surrounding area to drain surface water away.

Compressed Air Supply

Average compressed air consumption during the mine production period is estimated to be relatively low at approximately 0.42 m^3/s, equivalent to 900 cfm. This includes an allowance of 25% for air leakage. Peak air consumption could reach 1.0 m^3/s (2,200 cfm) for short periods during mine operations.

Three self-contained 131 kW compressors will be installed on surface in the portal area, each being capable of 0.37 m^3/s (780 cfm). These will provide compressed air for the development contractor driving the main ramp and for all production mining.

Covered Storage for Underground

A laydown area for small equipment and supplies will be prepared on surface in the area of ramp portal. In the same area covered storage area will be constructed for items needing protection from the weather. This will consist of a 12 x 12 m sprung structure tent type building with a concrete floor.

Underground Explosives Storage

One underground explosives storage magazine is planned on the 5154 elevation. It will consist of a cut out measuring 12 x 6 m constructed with concrete floor and equipped with a locked gate and lighting. Bulk explosives on pallets (1.0-tonne) and other explosive products such as cartridge type emulsion will be stored in the magazine and handled using an articulated forklift.

Average explosive consumption is nominally 1 tonne per day. The magazine will have capacity for more than one week. Detonators will be stored in two locations underground in separate cut outs, each measuring 5 x 5 m equipped with shelving and a locked steel door. Long and short period detonators will be stored separately.

Refuge Stations

Portable refuge stations provided by the mining contractor will be used underground, being relocated periodically to provide the best coverage for underground workers.

Mine Rescue Facilities

A complete set of mine rescue equipment has been included in the capital estimate including Drager BG4 self-contained breathing units (18 units) and all supporting testing and maintenance equipment. Mine rescue team members will be selected from the workforce and trained as part of the overall underground training program.

Other Support Systems and Facilities

Other facilities included in the mine plan and the capital costs are:

- A stench gas warning system based on having ethyl mercaptan released into mine intake air;
- A central blasting system controlled from surface for initiating longhole stope blasts at the end of shift;
- An automated bit sharpener is included for the bitman to manage drill bit inventories for longhole drillers; and
- A cavity monitoring survey system will be used by the surveyors to survey longhole stopes. Stope reconciliations will be completed by mining engineers.

16 Recovery Methods

The proposed gold recovery system was designed by Hien Ngo (FIEAustralia #202825, MAusIMM #109499) and Leendert (Leon) Lorenzen (FAusIMM #304479, FIEAust #3671379) of Mintrex. The Qualified Person accepting the professional responsibility for this section is Dr. Lorenzen. The following paragraphs presents as summary of the designs. The full report is presented by reference in Appendix H and available from Roxgold upon request.

The process flow diagram has been developed from the process design criteria prepared by Mintrex. The plant design proposed is simple and robust. The gold recovery system comprises the following:

- Primary crushing;
- Grinding – Single-stage SAG mill;
- Classification;
- Gravity concentration and intensive leach reactor ;
- Leaching and adsorption (CIL);
- Tailing thickening;
- Electro-winning; and
- Smelting.

The process plant is designed for a throughput of 270,000 tonnes per annum. The proposed plant site is located at 315 m above sea level. It will be positioned next to the underground portal to minimize ore haulage costs.

The design of the comminution circuit was undertaken by Orway Minerals Consultants (WA) Pty Ltd (OMC) in Perth, Australia. OMC was commissioned by Mintrex to model various options, namely the single-stage SAG milling circuit (1C SS SAG) and the fine secondary crushing followed by single-stage Ball milling (2C SS Ball).

The single-stage SAG milling circuit (1C SS SAG) was selected due to its capital cost and its flexibility in allowing for the possible future expansion of the circuit to a fine secondary or tertiary crushing circuit followed by ball milling (Orway Mineral Consultants, 2014).

The comminution process design considered the ore criteria defined by OMC as a blend of 66% granite/quartz vein, 16.5% volcanic/quartz vein, and 17.5% waste material (see Section 12).

16.1 Process Design Philosophy

The proposed plant is designed to achieve the required throughput to meet the requirements as defined in the material flow property testwork completed by Jenike and Johnson Pty Ltd. (2014). The plant design is a combination of the following circuits:

- A crushing circuit with a throughput of 50 t/h and availability of 70%, on a 24 hours per day operation;
- Crushed product will report to an open stockpile, which has live capacity of 810 tonnes. An underlying apron feeder and emergency vibrating feeder will provide ore feed directly to the milling circuit;
- A milling circuit with a throughput of 33.75 t/h, operating at 91% availability, and aiming to achieve a design grind of 80% passing 90 µm;

- A gravity circuit on cyclone underflow consisting of two centrifugal concentrators and an intensive leach reactor for treatment of the gravity concentrate, treating 70% of the cyclone underflow;
- A carbon-in-leach (CIL) circuit consisting of one leach tank and five adsorption tanks, treating the cyclone overflow;
- A metal recovery and refining circuit consisting of an elution circuit, electrowinning cells, and smelting; and
- A tailings storage facility for tailings disposal.

Water, which will be used in a wide range of services, will be sourced primarily from a water storage facility and supplemented from the underground mining dewatering activities. A water storage dam will be located approximately 2 km from the plant, adjacent to the tailings storage facility.

16.2 Process Plant Description

The plant layouts were developed using the Bentley Microstation 3D software package. General arrangement drawings were produced, illustrating the layout and positioning of the stockpile, feed conveyers, SAG mill, leach tanks, gold room, reagents storage and preparation areas, and tailings storage facility.

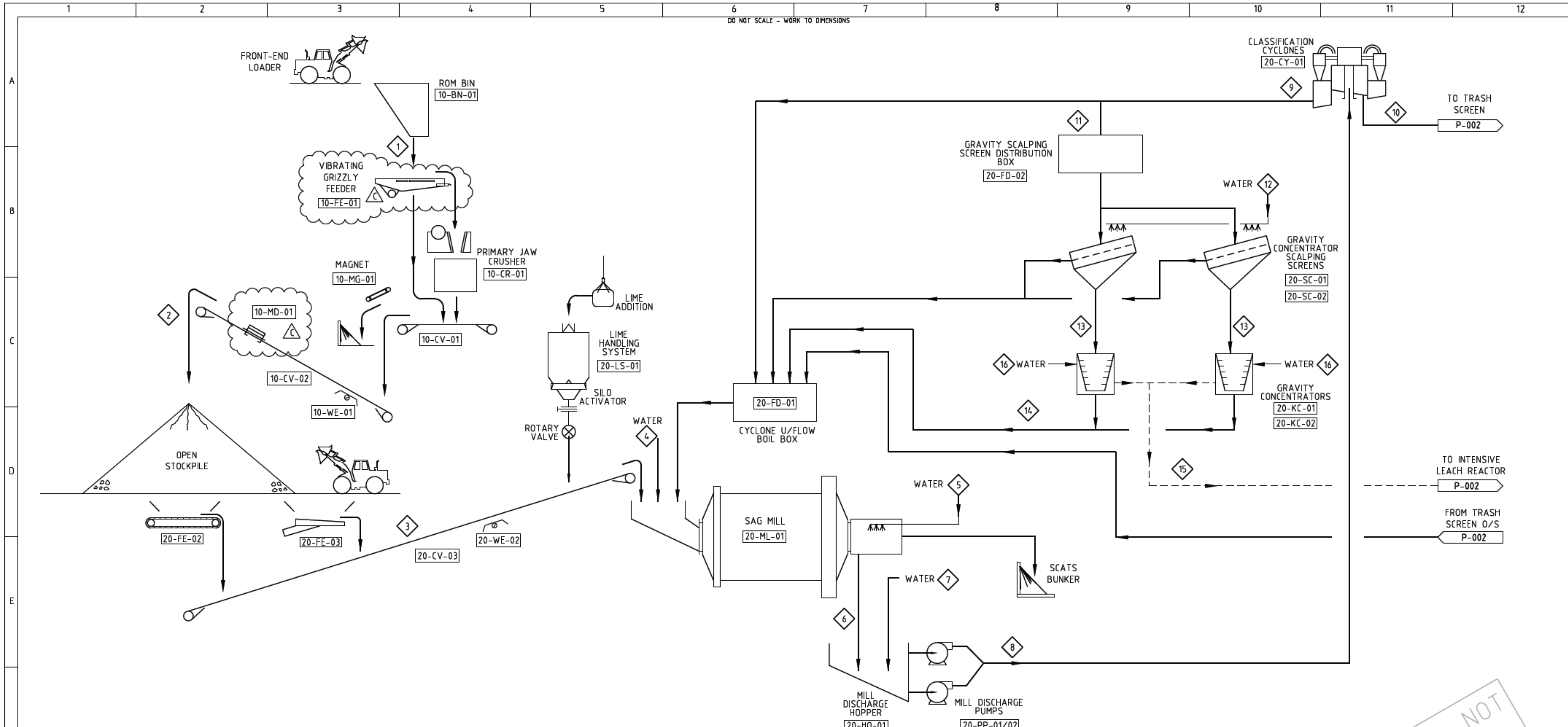
The flowsheets for the proposed process plant are presented in Figure 35 with the following sections describing the intended plant operation.

16.2.1 Primary Crushing

Haul trucks operating directly from the underground mine will deliver run-of-mine (ROM) ore to the ROM pad. Ore from the underground mine will be stored on the ROM pad in separate stockpiles of varying ore types and grades to facilitate blending of the feed into the crushing plant. The target maximum particle size of ore on the ROM pad will be 300 mm in any dimension. Any oversized rock will be placed to one side in the mining sequence and reduced to minus 300 mm on the ROM pad before being fed into the ROM bin.

The ROM bin, labeled 10-BN-01 in the following flowsheets, will be fed ore from the ROM stockpiles using a front-end loader. The ROM bin has a design capacity of 25 tonnes and its wear areas will be lined with wear resistant liners. A static grizzly, with a screen aperture of 350 mm, will be installed on top of the ROM bin to prevent oversized ore from entering the circuit. Any oversized rock will be removed by the front-end loader and placed to one side on the ROM pad. A “dump – no dump” traffic signal, mounted adjacent to the ROM bin, will be controlled by a radar level sensor mounted above the ROM bin.

A 1,000 mm wide vibrating primary grizzly feeder 10-FE-01 will deliver the ore from the ROM bin to the primary jaw crusher 10-CR-01. The primary crusher will be a single toggle jaw crusher that accepts nominal minus 300 mm rocks. The crusher jaw plates will be set to 90 mm on the closed side and will reduce the rock to a nominal minus 80 mm, although it is likely that a small number of rocks larger than this will pass through the circuit. The primary crusher will be housed in a steel structure with a steel ROM hopper and concrete retaining wall. The crusher will be mounted on steel beams and located adjacent to an 11-metre high concrete retaining wall against the ROM stockpile pad. Walkways and stairs will provide full operational and maintenance access throughout the primary crusher building.



Stream No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	ROM Bin Feed	Crushing Circuit Product	SAG Mill Feed - New	SAG Mill Feed Water Addition	SAG Mill Trommel Spray Water	SAG Mill Discharge (Trommel)	Cyclone Feed Water Addition	Cyclone Feed	Total Cyclone Underflow	Cyclone Overflow	Combined Cyclone U/F To Gravity Screen	Gravity Scalping Screen Dilution Water	Gravity Concentrator Feed	Gravity Concentrator Tailings - average	Gravity Concentrator Concentrate	Gravity Concentrator Fluidisation Water
Max Particle size (mm)	300	130	130													
P80 (mm)	150	62	62			12										
Solid (tph)	50.0	50.0	33.8			151.9		151.9	118.1	33.8	82.7		82.7	82.6	0.04	
% Moisture	5%	5%	5%													
Water (tph)	2.6	2.6	1.8	1.9	6.0	81.8	5.3	93.1	51.8	41.3	36.3	8	44.5	62.5	0.015	9.0
Pulp (tph)	52.6	52.6	35.5			233.7		245.0	170.0	75.0	119.0		127.2	145.2	0.06	
Pulp density (% solid w/w)	95%	95%	95%			65%		62%	70%	45%	70%		65%	57%	75%	
SG	2.58	2.58	2.58			1.72		1.66	1.81	1.41	1.81		1.72	1.58	1.93	
Pulp Flowrate (m^3/hr)	20.4	20.4	13.8			135.8		147.1	93.9	53.3	65.7		74.0	91.9	0.0	

FULL SIZE ON A1 ORIGINAL - IF PRODUCED AT A3 DOUBLE SCALE

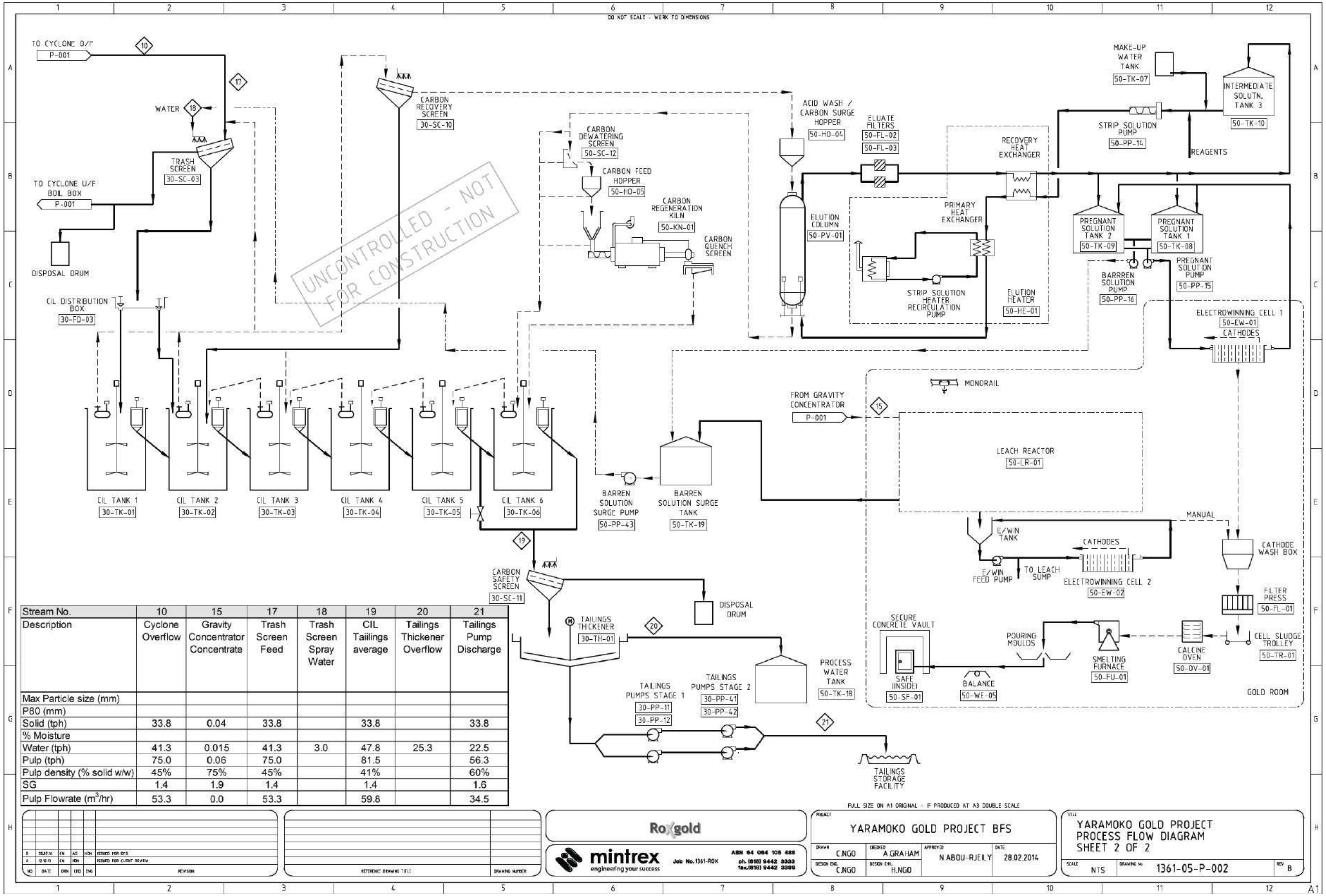
C 13.03.14 CN AG HDN CRUSHING CIRCUIT MODIFIED
B 28.02.14 CN AG HDN ISSUED FOR BFS
A 12.12.13 CN HDN ISSUED FOR CLIENT REVIEW

Roxgold
mintrex engineering your success Job No.1361-RDX ABN 64 064 105 488 ph.(618) 9442 3333 fax.(618) 9442 3399

PROJECT: YARAMOKO GOLD PROJECT BFS
DRAWN C.NGO CHECKED A.GRAHAM APPROVED N.ABOU-RJEILY DATE 28.02.2014
DESIGN ENG. C.NGO DESIGN CHK. H.NGO

TITLE: YARAMOKO GOLD PROJECT PROCESS FLOW DIAGRAM SHEET 1 OF 2
SCALE NTS DRAWING No 1361-05-P-001 REV C

Figure 35: Yaramoko Gold Project Process Plant Flowsheet (Part 1 of 2)



Stream No.	10	15	17	18	19	20	21
Description	Cyclone Overflow	Gravity Concentrator Concentrate	Trash Screen Feed	Trash Screen Spray Water	CIL Taiilings average	Tailings Thickener Overflow	Tailings Pump Discharge
Max Particle size (mm)							
P80 (mm)							
Solid (tph)	33.8	0.04	33.8		33.8		33.8
% Moisture							
Water (tph)	41.3	0.015	41.3	3.0	47.8	25.3	22.5
Pulp (tph)	75.0	0.06	75.0		81.5		56.3
Pulp density (% solid w/w)	45%	75%	45%		41%		60%
SG	1.4	1.9	1.4		1.4		1.6
Pulp Flowrate (m^3/hr)	53.3	0.0	53.3		59.8		34.5

Figure 35: Yaramoko Gold Project Process Plant Flowsheet (Part 2 of 2)

The crushed product from the primary crusher will flow onto the 750 mm wide primary crusher discharge conveyor 10-CV-01, which in turn will discharge the product onto the 750 mm wide stockpile feed conveyor 10-CV-02. A self-cleaning magnet 10-MG-01 over the head pulley of the primary crushing discharge conveyor will remove any tramp metal magnet, and a metal detector 10-MD-01 will be installed on the stockpile feed conveyor to detect any tramp metal not picked up by the magnet. If tramp metal is detected the conveyor will stop and the tramp metal will be removed by the operator. A weightometer 10-WE-01 placed on conveyor 10-CV-02 will provide information on the tonnage of crushed ore passing through the circuit and onto the stockpile.

A transfer station will be installed to allow for the products to transfer from conveyors 10-CV-01 to 10-CV-02, and to provide full operational and maintenance access around the head end of 10-CV-01 and the tail end of 10-CV-02. In addition, walkways will be provided alongside the lengths of conveyors 10-CV-01 and 10-CV-02 for operational and maintenance purposes. An access platform around the head end of 10-CV-02 will be also installed for the same purposes.

The crushed product on the stockpile feed conveyor will discharge onto an open stockpile, which has a live capacity of 810 tonnes and a maximum height of 11 m.

16.2.2 Reclaim, Grinding and Classification Circuit

A 900 mm wide by 8.3 m long reclaim apron feeder 20-FE-02 inside the reclaim tunnel will reclaim crushed ore from under the stockpile and onto the 67 m long by 750 mm wide SAG mill feed conveyor 20-CV-03. The SAG mill feed conveyor will provide a nominal 34 t/h instantaneous feed rate to the SAG mill feed chute. A weightometer 20-WE-02 installed on conveyor 20-CV-03 will control the reclaim apron feeder variable speed drive, which in turn will control the feed rate. Proportional controllers will give the operator density control in the circuit by controlling water addition to either the mill feed chute or the discharge hopper in fixed proportion to the SAG mill feed rate. Lime will be added via the lime handling system 20-LS-01 onto 20-CV-03.

An emergency reclaim vibrating feeder 20-FE-03 will be positioned at the exit of the reclaim tunnel, adjacent to the apron feeder 20-FE-02, but not directly beneath the stockpile. This is to ensure that a front-end loader can be used to feed the emergency reclaim feeder with ore from the stockpile in situations where the main reclaim apron feeder 20-FE-02 is under maintenance. This feeder 20-FE-03 will also be used for the addition of grinding media to the SAG mill.

A 4.2 metre diameter, 4.8 metre long effective grinding length (EGL) SAG mill is proposed for the primary grinding duty, with consideration for a possible future expansion of the circuit. The SAG mill will operate with a ball charge up to 15% (100 mm top ball size) and a 35% total charge with an expected pinion power draw of 885 kW. The SAG mill motor is rated for 1.5 MW, with a maximum ball charge of 40% to allow for future conversion to a ball mill for expansion purposes. The mill will have a trommel screen attached to the discharge. A variable speed drive (VSD) will be installed on the mill to vary the mill speed, so that it caters for changes in the ore characteristics.

A 12 mm aperture in the trommel discharge screen will control the top size of the slurry presenting to the mill discharge pumps. Undersized product from the trommel screen will be collected by the mill discharge hopper 20-HO-01. The oversized material will be discharged into a scats bunker.

The slurry in the mill discharge hopper will be pumped by the duty and standby mill discharge pumps 20-PP-01/02 to a six-way cyclone cluster 20-CY-01 (three will be fitted — two duty and one standby) mounted on a tower above the mill feed spout 20-CH-11. Each pump will have separate suction lines from the mill discharge hopper. Pneumatically controlled suction line inlet knife gate valves, pneumatically controlled knife gate dump valves on the pump inlet pipework, and pneumatically controlled knife gate valves on the discharge pipework will facilitate pump maintenance while the system is operating.

The cyclones will classify the slurry feed into two products: underflow and overflow. It is anticipated that the cyclones will classify the feed in a way that the overflow product will have a P80 of 90 µm, which is directed to the leaching circuit. The coarse material remaining will constitute the cyclone underflow product, of which 70% will be gravity fed to the gravity circuit (see Section 16.2.3), while the remaining 30% will be directed to the cyclone underflow boil box 20-FD-01. The boil box will then direct the product back to the SAG mill feed spout 20-CH-11.

16.2.3 Gravity Recovery Circuit

The cyclone underflow will be fed into a gravity scalping screen distribution box 20-FD-02, which will distribute the feed between two scalping screens 20-SC-01/02 located below the cyclones. Oversized product from the two scalping screens will be sent to the cyclone underflow boil box 20-FD-01, while the undersized product will be directed to the two centrifugal gravity concentrators 20-KC-01/02 that will act as gravity roughers. It is expected that the concentrators will remove 45 kg/h of concentrate into a rougher concentrate storage tank, which will be part of the intensive leach reactor 50-LR-01 in the gold room.

Each day the collected gravity concentrates will be drained into the intensive leach reactor 50-LR-01 (batch leach process), where the process extracts the gold from the rougher concentrate into a pregnant liquor. The pregnant liquor will be pumped to a storage tank for electrowinning in the dedicated electrowinning cell 50-EW-02. Barren solution from the electrowinning cell will be sent back to the leach reactor for further leaching. From the leach reactor, barren solution will be discharged via the barren solution surge tank 50-TK-19 to the trash screen 30-SC-03 using surge pump 50-PP-43. The gold sludge collected from the electrowinning cell will be refined to produce the final gold product (see Section 16.2.5).

16.2.4 Leaching and Adsorption Circuit

The classified slurry from the cyclone overflow will be directed to trash screen 30-SC-03, which has two outlets for the oversized material. One of the outlets will allow the material to be returned to the cyclone underflow boil box 20-FD-01, while the other outlet will allow periodic dumping of trash to a bin at ground level. Water will be sprayed onto the screen.

Trash screen underflow will be collected into distribution box 30-FD-03 that will allow the slurry to be directed to either the first or the second CIL tank 30-TK-01/02 (in case one of the tanks requires maintenance).

The leaching circuit has been designed for one leaching and five adsorption tanks, with the possibility of converting the first tank into an adsorption tank. The CIL train will be comprised of six tanks, 30-TK-01 to 06, each with a nominal capacity of 269 m^3, providing a slurry residence time in the leach circuit of 28 hours with a slurry density of 43% solids by weight.

Each CIL tank will be fitted with mechanically wiped, inter-tank, carbon retention screens (30-SC-04 to 09). Carbon will be held in all tanks except the first tank where the carbon retention screen will act as a safety screen to prevent oversize material entering the carbon tanks in the event of cyclone roping or a trash screen overflow or failure.

All tanks will be equipped with hollow shaft agitators, 30-AG-01 to 06, to maintain the slurry in suspension, and to facilitate oxygen injection through the shafts should the oxygen demand from the ore dictate the need for oxygen addition.

Carbon will be transferred between tanks 3, 4, 5, and 6, using recessed impeller carbon transfer pumps 30-PP-06 to 09. These will be used to advance the carbon, except in the case of tanks 1 and 2. The recessed impeller pump 30-PP-05 in tank 2 will be used to pump slurry over the carbon recovery screen, 30-SC-10, to enable the recovery of the gold from the carbon through the elution circuit. An option to bypass the carbon recovery screen and back into the trash screen is included in the design. In the event where tank 1 is converted into an adsorption tank, the carbon transfer pump in tank 2 will be able to deliver the carbon into tank 1, and in turn, the recessed impeller pump 30-PP-04 in tank 1 will pump slurry over the carbon recovery screen.

The vibrating carbon recovery screen 30-SC-10 above tank 3 will remove carbon from the circuit (from tanks 1 and 2) and drop it into a rubber lined acid wash / carbon surge hopper 50-HO-04. This vessel will be used to acid wash the carbon on those occasions where acid washing will be required.

A vibrating carbon safety screen 30-SC-11 will be located adjacent to tank 6. This screen will collect any carbon that escapes from tank 6 (or tank 5 in the event that tank 6 is off-line) in a disposal drum for reintroduction to the circuit manually. The undersized product from the carbon safety screen, 30-SC-11, will be gravity fed to a tailings thickener, 30-TH-01. The thickener will separate the slurry into two products:

- Tailings (see Section 16.2.6); and
- Water, which will be gravity fed directly into the process water tank.

A 4-tonne tower crane, 30-CN-01, with 25 m radius, will be erected at the northern end of the CIL tanks and will facilitate the removal of the screens, 30-SC-04 to 09, for maintenance and cleaning. The crane will also be used to service other parts of the leaching area and the milling area.

The tanks will be constructed on concrete ring beams within a concrete bunded containment structure with two sump pumps, 30-PP-10/13. The sump pump adjacent to the stripping plant, 30-PP-10, will collect any stripping plant spillage and direct it to tank 2, while the one next to tank 6, 30-PP-13, will collect any overflow from the carbon safety screen and direct it to the carbon safety screen feed box, 30-FD-03.

The normal (diluted) processing contents of the tanks are not considered classifiable as dangerous goods; as such the bunded structure around the tanks is not designed to comply with the containment aspects of dangerous goods regulations. The bunding has been designed to contain the fallout from a single leaking or punctured tank. Very large spills, in the highly unlikely event that they should occur will be contained within the confined drainage system of the plant and contaminated water will be collected in a containment dam adjacent to the plant. Solids will be recovered by mechanical means such as a front-end loader.

16.2.5 Elution Circuit and Gold Room Operations

The acid wash and rinse cycles will be performed as required in the 4.4 m^3 capacity rubber lined acid wash / carbon surge hopper, 50-HO-04, located beneath the loaded carbon removal screen. Following the rinse cycle, the carbon in the storage hopper will be dumped into the elution column, 50-PV-01, through an actuated ball valve. The elution column is designed with a volumetric capacity of 3.85 m^3 and will be capable of holding 1.5 tonnes of carbon.

The strip solution will be injected with sodium hydroxide and sodium cyanide and then preheated by the elution heater, 50-HE-01, to reach a solution temperature of 130°C. The hot strip solution will be introduced to the bottom of the elution column.

After approximately one bed volume of caustic cyanide solution has been passed through the elution column to pre-soak the carbon, a further three bed volumes of hot rinse water will be passed through the column. A further one bed volume of cold rinse water will be passed through the column after the hot rinse water to cool down the carbon. The pre-soak and rinse water will be delivered via two eluate filters, 50-FL-01/02, to either one of the two pregnant solution tanks, 50-TK-08/09, via a recovery heat exchanger to return heat to the strip solution from the eluate.

Elution of the gold from the carbon is expected to take about 6 hours and pregnant liquor will be collected into either one of the two pregnant solution tanks, 50-TK-08/09. The pregnant liquor will be delivered to a dedicated electrowinning cell, 50-EW-01, in the circuit by a pregnant solution pump, 50-PP-15. At the completion of the electrowinning cycle, the barren solution from the electrowinning cells can be returned to the leaching circuit by pumping it back to the barren solution surge tank, 50-TK-19, which in turn will pump it back to the trash screen spray bars, 30-SC-03, to prevent dilution of the leaching circuit.

At the completion of the elution cycle, barren carbon will be pumped from the elution column to the regeneration kiln carbon feed hopper, 50-HO-05. The hopper will be located on top of the regeneration kiln, 50-KN-01, which in turn will sit above tank 6. From this hopper the carbon will either be regenerated in kiln 50-KN-01 or dropped directly into tank 6 by gravity, depending on the carbon activity level. Prior to regeneration, the barren carbon will be de-watered over a small carbon dewatering sieve bend screen 50-SC-12 above the storage hopper. The rotary kiln feed chute will drain any residual and interstitial water from the carbon prior to it entering the kiln. Kiln off-gases will also be used to dry the carbon before it enters the kiln. At the end of the regeneration process, the regenerated carbon will drop back into tank 6.

The gold sludge from the gravity circuit and the elution circuit electrowinning cells will be filtered with a filter press, 50-FL-01, to remove the water content. It then will enter the calcine oven, 50-OV-01, to remove steel wool cathodes by oxidation. The product from the calcine oven will be direct smelted using fluxes in a diesel powered smelting furnace, 50-FU-01, to produce the final gold product: doré bars. These will be weighed using a Sartorius Balance, 50-WE-05, and stored in the gold safe, 50-SF-01, located inside a concrete vault. The gold sludge from the gravity circuit will be refined separately from that of the elution circuit to allow for separate accurate metallurgical accounting of the gravity circuit.

16.2.6 Tailings Disposal

The tailings will be pumped using two pumps in series (30-PP-11 and 41 duty, 30-PP-12 and 42 stand-by) that will deliver the slurry to the tailings storage facility. Each pump will be equipped with dump valves on the pump inlets and pneumatically controlled inlet and discharge knife gate valves. Leaks in the tailings line will be identified by two flow meters, one located at the plant, and the other located at the tailings storage facility. This will allow for the monitoring of any variation in flows.

16.3 Reagents

16.3.1 Lime

Quicklime will be delivered to site in shipping containers containing 24 tonnes of quicklime in 1,200-kilogram bags. The lime handling system, 20-LS-01, will consist of the following items:

- A hopper with a nominal 5-tonne capacity, which will store and deliver the lime onto the SAG mill feed conveyor;
- A pneumatic bin activator, which will mobilise the quicklime to discharge from the silo;
- A rotary valve, which will control the discharge rate of the lime. A proportional controller with a set point related to the SAG mill feed conveyor rate, will control the rotary valve; and
- A lime bag hoist, 20-HT-03.

16.3.2 Cyanide

Cyanide will be delivered to site in shipping containers with loadings of 20 tonnes in 1-tonne bags. Cyanide will be mixed with raw water to create a 30.5% w/w solution in the cyanide mixing system, which consists of the following items:

- A hoist, 60-HT-05, which will lift the bags directly onto the bag splitter;
- A bag splitter, 60-BS-01;
- A 12.5 m^3 mixing tank, 60-TK-12, which will facilitate the mixing of the solution; and
- An agitator, 60-AG-07, which will mix the cyanide and the water to create a homogeneous solution.

The mixed solution will be transferred by a cyanide mixing pump, 60-PP-22, to a separate 25 m^3 cyanide storage tank, 60-TK-13, where two cyanide recirculating pumps, 60-PP-18/19, one operating and one standby, will circulate the cyanide solution through the plant ring main with a constant pressure bypass return to the tank. In addition, a cyanide dosing pump, 60-PP-20, will deliver cyanide from the ring main to the elution circuit in a controlled manner.

The cyanide mixing and storage tanks will be contained within a concrete bund with a collection sump to recover spillage. The sump pump, 60-PP-21, will recover any minor spillage and deliver it to the leach tank distribution box, 30-FD-03.

Emergency supplies of cyanide will be held on site in 1-tonne bulk bags in the event of transport interruption to the site.

16.3.3 Caustic Soda

Caustic soda will be delivered in 25- kilogram bags to site in shipping containers with loadings of 24 tonnes. It will be mixed with raw water to create a solution with 50% w/w concentration, in the caustic mixing system, which consists of the following items:

- A hoist, 60-HT-07, which will lift the bags directly onto the bag splitter;
- A bag splitter, 60-BS-02;
- A 12.5 m^3 mixing tank, 60-TK-14, will which facilitate the mixing of the solution; and
- An agitator, 60-AG-08, which will mix the caustic soda and the water to create a homogeneous solution.

The mixing system will be located in the same bunded containment as the cyanide mixing and storage tanks. Two caustic dosing pumps, 60-PP-23/24, will draw the solution from the mixing tank and deliver it to the elution circuit.

16.3.4 Hydrochloric Acid

Concentrated hydrochloric acid will be delivered to site in liquid form, in shipping containers with loadings of 23.7 tonnes in 1,185-kilogram intermediate bulk containers (IBC). The acid will be transferred from the IBCs by an acid dosing pump, 60-PP-26, to the acid wash hopper for a carbon acid wash cycle, after combining with the water pumped from the water tank, 60-TK-11, to create a 3% w/w hydrochloric acid solution.

The concrete containment bund that will surround both tanks complies with the dangerous goods statutory requirements.

16.3.5 Activated Carbon

Activated carbon in 500-kilogram bulk bags will be transported to the site by road in a sea container with loadings of 22 tonnes. It will be stored in containers or under tarpaulins to protect it from the weather. When required, it will be hoisted up to the top of tank 6 and broken directly into the tank.

16.3.6 Oxygen

Oxygen gas will be manufactured on site using a pressure swing adsorption (PSA) plant, 70-XE-01. Instrument air will be bled from the instrument air supply to produce the oxygen gas.

16.3.7 Flocculant

Liquid flocculant will be delivered to site in bulk 1m^3 containers. It will be delivered by a flocculant dosing pump, 60-PP-53, to the tailings thickener, 30-TH-01.

16.4 Control Systems

The plant control system (PCS) will be a network of programmable logic controllers (PLCs) sitting beneath a supervisory control and data acquisition (SCADA) network layer. The PLCs will perform the necessary controls and interlocking while the SCADA terminals will monitor the PLCs and provide an interface for operator interaction.

Communication of the PLCs and SCADA terminals will be achieved via a plant wide Ethernet network, the backbone of which will consist of dedicated, single mode, fibre optic cables. For short distances, Cat 6 Ethernet cable will be installed.

The PLCs allowed for in the capital estimate are GE Fanuc RX3i PLCs and the SCADA system—Citect. This combination has worked very well on past projects and has proven to be very reliable. Deviations from this to a client preferred PLC and SCADA system would need to be investigated during the design stage and a cost comparison performed.

Field instrumentation and drive status signals will be interfaced to the plant control system by hard-wired signals. Vendor packages may be connected to the SCADA network via a communications link, where appropriate.

The PCS equipment installed within each area will function autonomously, such that a failure of the PCS in one plant area will not affect the other areas.

The control philosophy of the plant will provide a level of automatic start up and shut down of various plant areas, which will aid the plant operator in performing his/her tasks. Automatic interlocking, sequence control, and analogue control will be implemented by the PCS equipment. Safety interlocks will be hard-wired.

Proportional-integral-derivative (PID) loop controllers will be programmed into the PCS and will be accessible via the SCADA terminals in the control rooms.

The PCS will provide detailed information including:

- Plant status monitoring;
- Fault annunciation and logging;
- Drive and systems diagnostics; and
- Trending for all analogue process parameters.

The PCS will be powered by uninterruptable power supply (UPS) equipment, providing bumpless, fully synchronised power for thirty minutes after total power failure.

PLCs will be installed in the main plant motor control centres (MCCs), the remote decant MCC and the power station. Communications to the decant MCC will be achieved via fibres in the overhead power line earth wire (OPGW). The power station PLC will only gather main station parameters and status for remote monitoring and trending in the main control room. No control will be performed in the power station PLC.

Vendor panels may contain PLCs depending on the complexity of the control provided. Where possible, vendors will be asked to comply with the site standard PLCs to minimize spare parts holdings. SCADA terminals are installed in the following locations:

- Main control room x 2 (above CIL deck);
- Crusher control room;
- Desorption control panel; and
- Electrical supervisor's office.

The SCADA system will be configured so that only wet plant drives can be controlled from the main control room, only crusher drives from the crusher control room, and only the desorption sequence from the desorption control panel. In situations when SCADA terminals have failed, it will be possible to bypass this by the user access level.

Password protected user accounts will be set up in the SCADA to limit access to certain control functions. All functions required for day-to-day running of the plant will be made available at the operator level. Changing of set points and PID parameters will be allowed at the supervisor level (e.g., plant metallurgist/process engineer), while complete control and development access will be allowed at the administrator level (e.g., electrical supervisor).

Two SCADA terminals will be placed in the main control room and will provide redundancy so that should one terminal fail, then the wet plant can still be operated from the other terminal.

The desorption terminal will be installed in a stand-alone, metal cabinet with an acrylic glass window for viewing of the monitor. The panel will also include a pull-out draw for the keyboard so that it can be drawn out when required. The panel will be located within the desorption area, most likely beside the electrowinning rectifiers. Operators will be able to monitor and control the desorption sequence locally, from this control panel, avoiding constant trips to the main control room.

The SCADA terminal in the electrical supervisor's office will contain the necessary licencing for future on-site development of the SCADA application. Application updates of all other SCADA terminals will be possible from the supervisor's terminal.

16.5 Electrical Reticulation

Power distribution within the plant area and vicinity will be three-phase, 50 Hz at 11 kV and 415 V. Power consumption for each general plant area will be metered. Power metering will generally take place at the 11 kV switchboard and at MCC incomers.

The 11 kV power distribution cables will generally be underground within the plant area, while all other plant cabling shall be in above-ground cable ladders attached to buildings and structural steelwork. Overhead power lines will not be installed in the immediate plant area. Overhead power lines will only be installed where no interference may be caused to mobile equipment, e.g., cranes. Overhead power lines will be installed to the following remote locations outside the plant area:

- Tailings storage facility;
- Water storage facility;
- Accommodation camp; and
- Underground mine.

Overhead power lines will not be installed to any of the bore pumps or test bores. Power supply to the bores will be by diesel generators.

All transformers on the plant site will be pad mounted and installed complete with compound fencing and underground earthing. They will include cables boxes on the high voltage and low voltage terminations.

Transformers supplying the tailings storage facility loads will be pole mounted with open air bushings.

Transformers supplying the plant buildings and mining contractors areas will be kiosk, fully enclosed and include a direct box on the low voltage side.

Due to the relatively small sizes, transformers with conservators will not be required. The following transformers will be required:

- Crushing area transformer (pad mount);
- Wet plant area transformer x 2 (pad mount);
- Decant transformer (pole mount);
- Seepage transformer (pole mount);
- Toe drain transformer (pole mount);
- Water storage dam transformer (pole mount);
- Plant buildings transformer (kiosk);
- Camp transformer (kiosk); and

- Portal air compressor (pad).

High voltage switchboard will be supplied for the SAG mill so that isolations of the drive can be performed under the control of the site maintenance personnel without relying on the power station operator or requiring access to the power station switchboard.

The switchgear will be indoor, metal clad switchgear with a vacuum or SF6 circuit breaker on a withdrawable truck, enclosed to IP41.

Indoor, low voltage switchboards and MCCs will be constructed to Form 3b standard in accordance with IEC 60439, and enclosed to IP42. All outdoor MCCs will be constructed to Form 2, enclosed to IP65 and will be fitted with a sun shield. Spare motor starters will be provided in each MCC as well as 20% spare space.

The MCC design will be traditional, incorporating hard-wired signals to PLCs mounted within cubicles installed at the end of each main MCC. The PLCs will monitor the status of each drive and provide full diagnostics at the control room as well as allow remote and local control. “Smart” MCCs, utilizing expensive electronic motor protection relays, daisy chained in a communications network, have not been allowed.

Demountable motor starters will be specified for all Form 3b MCCs.

Thermistor protection will only be incorporated in motor starters for drives above 110 kW or for variable speed drives.

Electronic motor protection will be incorporated in motor starters for drives 110 kW and above.

Motor starters for motors rated 220 kW and above will make provision for a 230 V anti-condensation heater on the associated motor.

Motor current indication will be provided where specified, either as a panel mounted ammeter on the motor starter door, or as a current input to the PCS. Motors requiring control system current indication will require a current transducer to be incorporated into the motor starter, the current transducer having a 4-20mA dc output.

The following MCCs will be supplied within the plant site:

- Crushing area MCC (indoor, c/w PLC);
- Wet plant MCC x 2 (indoor, c/w PLC);
- Decant MCC (outdoor, c/w PLC);
- Toe drain MCC (outdoor, no PLC, local control only);
- Seepage pumps MCC (outdoor, no PLC, local control only); and
- Water storage facility MCC (outdoor, no PLC, local control only).

Electronic variable speed drives panels will be either floor mounted or wall mounted panels, depending on size. Motors driven by variable speed drives will be provided with thermistor protection.

All variable speed drives will be capable of having their speed regulated by the PCS. However, when the associated drive control is selected to “local” mode, it will be possible for local speed setting to take place at the variable speed drives. Variable speed drives have been allowed as indicated in the maximum demand calculation provide by Cardno BEC Pty Ltd in Perth, Western Australia, Australia (Appendix H).

16.6 Services

16.6.1 Compressed Air

Plant air and instrument air will be supplied from the 450 m^3/h (compressed air demand) duty and stand-by compressors, 70-CU-01/02, located in the leaching area. The instrument air will be dried and filtered, but the plant air will only be filtered. Air receivers on both lines, fitted with drain valves, will collect the water from the air and provide surge capacity in the system.

16.6.2 Process Water

Water will be delivered to the 100 m^3 process water tank, 70-TK-18, from a number of sources:

- Tailings thickener overflow;
- Raw water tank; and
- Tailings storage facility decant return water tower.

In the case where the raw water tank is filled beyond its capacity, the excess water will be fed into the process water tank, but not vice versa. Process water will be delivered by duty and stand-by pumps, 70-PP-33/34, to the plant.

16.6.3 Raw Water

Raw water from the water storage facility will be delivered to a 600 m^3 raw water tank, 70-TK-16, and supplemented by the underground mine dewatering activity. Where there is excess capacity, overflow from the raw water tank will be gravity fed to the process water tank. Raw water will be delivered by duty and standby pumps, 70-PP-30/31, to the process plant, reagents mixing systems, stripping circuit, and fire hydrants. A diesel powered fire pump, 70-PP-32, will act as a backup in the case of a fire outbreak in the plant.

16.6.4 Potable Water

Raw water will be treated to provide potable water. The water will be bled from the water storage facility pipeline into the filter and chlorination plant, 70-RO-01, located at the camp site. The treated water will be stored in the camp potable water tank, 70-TK-20, nearby, and will be delivered by the duty and standby pumps, 70-PP-47/48, to the camp buildings and the potable water tank, 70-TK-17, at the process plant site. A pump, 70-PP-40, will service the site infrastructure buildings and the process plant. To prevent back contamination of the drinking water supply, there will be no potable service points or direct connection of this water to process equipment. The only other potable water used in the plant will be for drinking and safety showers.

16.6.5 Sewage

Sewage from the process plant will be delivered by the sewage pumping system, 70-PP-52, to the camp sewage treatment plant, 70-RO-02, where it will treat sewage from both the plant and the camp sites. The treated water will then be sent to the tailings storage facility.

17 Project Infrastructure

The proposed project infrastructure was developed by Ian Kerr (MIE Aust #3878951) and Naim Abou-Rjeily (MIE Aust #3100445) of Mintrex. The electrical and power systems were designed by Geoff Bailey CPEng (FIEAust, NPER #378695) and Rick Di Filippo of Cardno BEC. The tailings storage and water storage facilities were developed by David Morgan (AIMM #202216, CPEng #974219) and Steve McKean (MIEAust2455180) of Knight Piésold. The Qualified Persons accepting the professional responsibility for their respective sections are Mr. Kerr, Mr. Bailey and Mr. Morgan. The following section presents a summary of the proposed project infrastructure. The full report and drawings prepared by Mintrex, including the report by Cardno BEC, is presented by reference in Appendix I. The full report prepared by Knight Piésold for the tailings storage and water storage facilities is presented by reference in Appendix J. The appendices are available from Roxgold upon request.

There is limited existing infrastructure or services that are suitable to support the Yaramoko gold project. All existing infrastructure supports the local subsistence and small-scale agricultural practices as well as artisanal mining.

17.1 Process Plant

The proposed process plant will be constructed approximately 1 km northeast from the town of Bagassi (Figure 2).

Ore will be transported from the underground orebody via the decline and placed in stockpiles on the run-of-mine (ROM) pad located east of the process plant. Ore will be fed by front-end loader from the ROM stockpiles to the primary crusher. The crushed ore will be conveyed to the crushed ore stockpile of approximately 4,000 tonnes capacity. Crushed ore will be reclaimed from the stockpile and conveyed to a single stage SAG mill for grinding.

The process plant and specific infrastructure will be located within a high security area. General site infrastructure buildings will be situated outside the high security area bounded by a single perimeter security fence. The camp, tailings storage facility, and water storage facility will be located outside the process plant security fence but will be contained within their own fences. Entry to the main administration area will be via the main access security building with access to the process plant high security area via an additional security building that will incorporate turnstiles, change room, and laundry. Refer to Section 17.12 for further plant fencing detail.

17.2 Mine Services Area

The mine services area will be located to the north of the ROM pad within the general security perimeter fence. In this area, the following contractor functions/items are included:

- Change room;
- Workshops;
- Warehouse; and
- Offices.

17.3 Tailings Storage Facility

The tailings storage facility will be located approximately 2.4 km east-northeast along the access road from the process plant (Figure 2). The tailings storage facility will be constructed over the life of the mine in stages. It will comprise a valley storage formed by two multi-zoned earthfill embankments, with a total footprint area (including the basin area) of approximately 17 ha for the Stage 1 and increasing to 29 ha for the final facility. The tailings storage facility is designed to accommodate a total of 3.0 Mt of tailings.

Embankments will be constructed in annual raises to suit storage requirements, assuming an upstream raise construction method after the second stage of embankment construction. A downstream seepage collection system will be installed within and downstream of the embankment.

The tailings storage facility basin area will be cleared, grubbed, and topsoil stripped. A 300 mm depth low permeability soil liner, of permeability less than 1 x 10-8 m/s, will be constructed over the entire basin area, using imported low permeability material.

The design incorporates an underdrainage system to reduce pressure head acting on the soil liner, reduce seepage, increase tailings densities, and improve the geotechnical stability of the embankments. The underdrainage system drains by gravity to a collection tower located at the lowest point in the basin. In addition, a groundwater collection system will be installed beneath the low permeability soil liner.

Supernatant water will be removed via submersible pumps located within decant towers, constructed at start up and raised during operation. Solution recovered from the decant system will be pumped back to the plant for re-use in the process circuit.

An operational emergency spillway will be available at all times during the operation. It will be constructed in the embankment abutment in order to protect the integrity of the constructed embankments in the event of emergency overflow in extreme rainfall events.

The closure spillway will be located at the final supernatant pond location, and will be constructed to ensure all rainfall runoff from the tailings storage facility will safely discharge after operation ceases.

Tailings will be discharged by sub-aerial deposition, using a combination of spigots at regularly spaced intervals from the embankments and the eastern perimeter of the tailings storage facility. A soil lined pipeline containment trench will be constructed during Stage 1 to contain both the tailings delivery pipeline and decant return pipeline to the plant site.

One groundwater monitoring station will be installed downstream of the tailings storage facility southern embankment to facilitate early detection of changes in groundwater level and/or quality, both during operation and following decommissioning. The monitoring bore station will consist of one shallow bore, extending to a depth of 10 m in the deep surface horizon, and one deep bore terminating at approximately 60 m depth in fresh rock.

Pore water pressures will be monitored at several locations within the embankments to ensure that stability is not compromised. To this end, standpipe piezometers will be installed on both of the embankments.

Settlement pins will be installed at regular intervals along the tailings storage facility embankment crests in order to monitor embankment stability.

At the end of the operation, the downstream faces of the embankments will have an overall slope profile ratio of 3.5:1 (horizontal:vertical). The downstream profile will be inherently stable under both normal and seismic loading conditions. The embankment downstream faces will be re-vegetated once the final downstream profile is achieved. The closure spillway will be excavated along the western perimeter of the facility, running north and discharging into the water storage facility reservoir upstream of the facility. Rehabilitation of the tailings surface will commence upon the termination of deposition into the facility. The closure spillway will be constructed in such a manner as to allow rainfall runoff from the surface of the rehabilitated facility to flow into the surrounding natural drainage system.

The final soil cover for the tailings surface subsequent to decommissioning will be confirmed during operation based on ongoing operational tailings geochemistry test results. The following covering for the tailings beach has been assumed:

- Low permeability fill layer (300 mm); and
- Topsoil growth medium layer (200 mm).

The finished surface will be shallow ripped and seeded with shrubs and grasses.

Upon decommissioning, the water storage facility will remain in place. Water balance modelling indicates that the water storage facility stored volume will be cyclical, potentially returning to empty during each dry season.

17.4 Sediment Management

Sediment control dams will be constructed in the downstream reaches of catchments impacted by site infrastructure. The sediment control structures are labelled SCS1 (downstream of the tailings storage facility) and SCS2 (downstream of the plant site) in Appendix I drawings by Knight Piésold. The requirement for SCS2 should be reviewed during the next design phase as it may not be essential to the operation. The sediment control structures locations were selected based on the natural topography, to reduce embankment fill volumes, and increase the storage capacity of each structure. The sediment control structures were designed to capture particles of medium silt and coarser and to limit maximum water depth to 1.8 m for safety reasons, based on recent local project experience.

17.5 Water Storage Facility

The water storage facility will be the main collection and storage pond for clean raw water on site, and will be able to store up to 200,000 m^3 of water at the maximum operating level at Stage 1. This capacity will not be exceeded during operation.

The water storage facility is intended to be recharged through rainfall runoff from the catchment and ground water supply on site. The water collected in the water storage facility will be pumped back to the process plant to supply plant raw water and process make-up water requirements.

17.6 Mine Access and Haulage Roads

A new access road will be constructed that will connect to the existing link road between the townships of Bagassi and Bagassi South. The access road will connect the process plant, accommodation camp, magazine, and the tailings storage facility (Figure 2). The following design criteria were implemented in the design of the access roads:

- Design speed: – 60 km/h on the process plant and camp access road and on the approach curves to the junction; 80 km/h on the road back to Bagassi;
- 3% crowned road on straights;
- Superelevation on curves – 4% maximum;
- Formation width 8 m with table drains (0.7 m deep by 2.1 m wide);
- Cut and fill batter slopes 1 in 3; and
- Intersections designed to accommodate semi-trailer type vehicles.

The underground mine will be accessed via a portal located to the east of the process plant. A haul road will connect the underground to the ROM pad where ore will be stockpiled ready to be dumped by front-end loader into the ROM bin. Adjacent to the ROM pad will be a storage area for mine waste that may be hauled underground as fill.

17.7 Administration and Plant Buildings

17.7.1 Administration Building

The main administration office will be located within the low security area. The building layout is described in drawing 1361-70-A-002 in Appendix I. The building will cover 443 m^2 plus 27 m^2 of veranda.

The administration building will provide a meeting room, male and female ablutions, kitchen, and offices for management, mine and process plant technical services and administrative personnel.

The administration office will be fitted throughout with split-system air-conditioners and reticulated power from a UPS to service computers and peripherals. A parking lot will be located at the front of the administration building

17.7.2 Security, First Aid and High Security, Laundry, Change Room Buildings

The security and first aid building will be located at the mine entrance. The security office will house a security reception area and the security manager’s office. The first aid area will house the nurse and the doctor within the low security area. The building layout is described in drawing 1361-70-A-012 in Appendix I. The security/first aid building will encompass 168 m^2 of internal area. One end of the building will act as a garage for the ambulance. A parking lot will also be located at this building for site visitors.

The security, laundry and change room building will be located at the entrance to the high security area. This building will have a guard house, in/out one way turnstiles, a laundry room, and male and female change rooms. This building also includes an ablution section that will only be accessible from the high security area. The building layout is described in drawing 1361-70-A-013 in Appendix I. This building will cover 180 m^2 with a veranda of 66 m^2.

17.7.3 Plant Workshop

The plant workshop and storage facilities will be located within the process plant high security area. The workshop will be constructed with three bays with a total floor area of approximately 365 m^2 with 60 m^2 of floor area adjacent to the workshop entrance. The building layout is described in drawing 1361-70-A-005 in Appendix I.

The plant workshop will be a single building arranged in three separate areas for mechanical, electrical, and welding workshops.

17.7.4 Warehouse and Reagents Storage

Both the warehouse and reagent stores will be located within the high security area. Delivery vehicles will report to the security office in the high security area for inspection before and after deliveries have been made.

These buildings will have an internal floor area of approximately 360 m^2 for the warehouse and 180 m^2 for the reagent store. Eaves height will be 6 m to allow for good crane and forklift access. The building layout is described in drawing 1361-70-A-006 and 1361-70-A-011 in Appendix I. The warehouse building will have a 30 m^2 office annexed to it. The warehouse will have an outdoor fenced enclosure for laydown storage.

17.7.5 Laboratory

The laboratory is approximately 110 m^2 of internal area within the low security area. The laboratory and sample preparation buildings will comprise:

- Unloading and drying area;
- Wet chemical room;
- Balance room;
- Atomic absorption equipment room;
- Fire assay area;
- Metallurgical laboratory;
- Environmental laboratory;
- Grade control preparation area;
- Exploration and sample preparation area;
- Offices and stores; and
- Male and female ablutions.

The offices will be equipped with split-system air-conditioners while all other areas will be fitted with ventilation/extraction fans only, because the air flow from the extraction systems will render any cooling system ineffective. Sea containers will be erected next to the laboratory for storage and will be connected to the building by corrugated colorbond roof. The building layout is described in drawing 1361-70-A-003 in Appendix I.

17.7.6 MCC Building (Switchroom Buildings)

Electrical switchrooms will be located near the crushing building and the SAG mill and cyclone tower. The layout of these switchrooms will be finalized during detailed engineering. There will be one 5 m by 5 m switchroom for the crusher plant and two 14 m by 5 m switchrooms for the wet plant.

17.7.7 Process Control Rooms

The process control room will be a prefabricated building, lined, and air-conditioned and fitted with windows along both long sides, through which the operators will be able to view the mill on one side and the CIL circuits on the other. The control room will include a titration room. The control room will be accessed via the mill feed tower and a second means of egress via the CIL tank stair tower. The size of the building is 8.66 m by 3.33 m.

The crusher control room will be located next to the primary crusher. The crushing plant will be controlled from this control room. The control room will be lined, air-conditioned, and fitted with lighting, power, data, and windows.

17.7.8 Plant Office

The plant office is approximately 180 m^2 of internal area within the process plant high security area. The building will include a kitchenette, male and female toilets, a meeting room, and office areas for the maintenance superintendent, plant foreman (electrical, mechanical, and mill), maintenance planner, and plant metallurgists. This building will be located adjacent to the workshop. The building layout is described in drawing 1361-70-A-004 in Appendix I.

17.7.9 Mess Halls

Two mess halls will be incorporated in the plant and administration building areas: 32-seat servery and mess hall in the plant area and a 48-seat mess hall with servery and store room in the administration building area. The 32-seat food servery and mess is approximately 63 m^2 of internal area and the 48-seater is approximately 160 m^2.

The 32-seat mess will be located inside the high security area next to the security building. The 48-seat mess will be located in the low security area adjacent to the main administration building. Both buildings will have verandas attached to them.

Ventilation will be provided by large flyscreen windows and ceiling fans to circulate the air. Separate washing facilities will be provided outside the mess building. All meals are expected to be prepared at the village outside the high security area and transported into the high security mess at meal times. The building layout for both the 32-seat and 48-seat mess halls are described in drawings 1361-70-A-008 and 1361-70-A-009 in Appendix I.

17.7.10 Gold Room Building

The gold room will be a steel clad building with approximately 170 m^2 of floor area. The building will house the leach reactor, calcine oven, electrowinning cells, smelting furnace, safe (enclosed within a concrete vault), and associated equipment. A supervisor workstation will be installed in the gold room; this workstation will be equipped with a telephone and data connection.

The electrowinning cells will be located on a mezzanine floor so that the liquor can gravitate from the cells back to the barren or intermediate liquor tanks. The building will not be air-conditioned, but will have wall mounted and portable fans. The walls will include louvered sections to allow through flow ventilation from exhaust fans to keep fumes, temperature, and humidity down. The roof will have a ridge vent.

A secure area with inner and outer doors will ensure that the gold room remains sealed during bullion transfer to the transport vehicle.

All operations within the gold room will be subject to full time closed circuit television (CCTV) surveillance with security alarms provided to the security coordinator.

17.8 Water Supply and Sewage

17.8.1 Process Water

Process water will be delivered to the 100 m^3 process water tank adjacent to the process plant via the following sources:

- Overflow from the raw water tank;
- Tailings storage facility decant return water;
- Clarified thickener overflow; and
- Water from underground following removal of sediment and any hydrocarbon contamination.

17.8.2 Raw Water

The plant's raw water will be supplied from the water storage facility located northeast of the process plant. A 600 m^3 capacity tank situated west of the leaching circuit will supply the process plant with raw and fire water. The 600 m^3 tank will provide for 13 hours of raw water supply with the bottom half of this tank dedicated for the fire water and connected to the emergency diesel fire pump.

17.8.3 Potable Water

Water supplied from the water storage facility will be delivered to a 150 m^3 per day water treatment plant located at the camp for purification. Potable water will be stored in a potable water tank and then pumped to the process plant potable water tank adjacent to the plant offices, the camp storage tank, and the contractor's area.

17.8.4 Raw water Supply Pipeline

The main water supply pipeline will be from the water storage facility to the process plant and camp water treatment plant. The pipe route from the water storage facility will be adjacent to the access road constructed to the processing plant. The 125 mm HDPE pipeline will have an approximate length of 3,700 m and will be connected to the raw water tank within the process plant and the accommodation camp.

A bore field is located to the northwest of the processing plant and will be connected to the raw water tank by approximately 775 m of 90 mm HDPE pipeline. This pipeline will likely connect 3 bores drawing water from a shallow bore field in order to supplement the mine dewatering and water storage facility flows.

17.8.5 Water Supply Development

It is intended to construct the water storage facility prior to the 2015 wet season to ensure that sufficient water is stored when the plant goes into production. The bore field will be developed as part of early works in order to provide construction water during the construction of the plant as well as supplementing the mine dewatering and water storage facility flows during operations.

17.8.6 Pump Stations

Pumping stations will be located in the following areas:

- Floating pump from the water storage facility to supply raw water to the process plant and camp water treatment plant;
- Decant pump station from the tailings storage facility to pump water back to the processing plant;
- Underground dewatering pumping station to dewater the mine and supply water to the processing plant via settling pond;
- Treated sewage to the tailings storage facility; and
- Potable water pump from camp to plant.

17.8.7 Water Management

The process plant operators at the wet plant control room will control the water delivery from the water storage facility to the plant raw water tank. A telemetry system will be installed to provide reliable control from the plant control room.

17.8.8 Sewage

One sewage treatment system, located at the camp site, will be installed to service the plant buildings and the 150-man accommodation camp. Sewage from the plant will be pumped to the treatment facility at the camp via a pump station fitted with macerating sewage pumps.

All sewage water will be treated before the treated effluent is pumped to the tailings storage facility.

17.9 Power Supply

Cardno BEC Pty Ltd (BEC) in Perth, Western Australia, Australia carried out preliminary design of the power supply to the site. The recommended power supply option is to connect to the Burkina Faso electricity grid by teeing into the 90kV powerline from the Pa substation to the Mana mine site which is presently under construction. In the event of a power outage, an allowance has been made for a generator at the plant and one at the village. The plant emergency generator is sized to operate drives that are deemed critical, such as agitators and underground pumping stations.

The loading figure estimates are shown in Table 37. The maximum demand is defined as the maximum average load over any 30 minute period. The load factor is relatively constant except that the crushing circuit will only operate approximately 12 hours per day and this represents only 5% of the maximum demand value. The plant will operate for 95% of the time.

Power factor correction equipment will be provided to ensure a load power factor of 0.95 lagging. The average load is defined as the average load if averaged across any one year. The average load will be 2,660 kW. The SAG mill motor is the largest motor on the project. It is a wound rotor type with secondary resistance starter rated at 1,500 kW.

Table 37: Loading Figures for the Yaramoko Gold Project

Yaramoko Gold Project	Maximum Demand	Energy Consumption / Year
Plant	1,635 kW	11.23 GWhr / year
Camp	326 kW	2.02 GWhr / year
Underground	1,419 kW	10.06 GWhr / year
Total	**3,380 kW**	**23.31 GWhr / year**

17.10 Mining Contractor's Infrastructure

An area northeast of the processing plant has been demarcated as the mining contractor area. The mining contractor will provide its own workshop, store facilities, and offices. A gatehouse will control access to the area and the mine by means of a boom gate on the road outside the area. Two access gates will be provided: heavy vehicles will enter through a 20 m wide gate, which will be normally closed and opened as required by the gatekeeper at the beginning and end of shift; light vehicles and visitors will be given access by the gatekeeper through a second smaller gate.

The mining contractor will provide its own washdown area and waste oil management facility, which will be located within the mining contractor's area. The washdown slab will incorporate a silt and oil trap, and an oil separator will remove any contaminant oil from the waste water before it is recycled into the washbay facility, with excess water used for dust suppression. The mining contractor will manage the safe removal of waste oil by using approved suppliers of waste oils as required by law.

The treatment and disposal of sewage from the contractor's area will be through the sewage treatment facility located at the camp.

The explosive materials will be stored in a magazine located in a remote area northeast of the plant and well away from people. The magazine will be secured within a fenced compound and surrounded by embankments. The magazine will be manned with security at all times.

17.11 Communications

There is no significant or reliable telecommunication infrastructure in the immediate mine site area at the present time. Mobile phone coverage does exist and is intermittent. It is expected that telecommunications will be established by satellite link, which will include voice, email, and internet traffic for the process plant, camp, and main office.

A conventional VHF radio system with hand held radios and chargers will be provided for site coverage. Radio communications will be via separate channels for mining and process plant. There will be a separate, dedicated emergency channel.

17.12 Plant Security

From a security perspective the project footprint is configured as small as possible so that security personnel and systems have to cover as minimal an area as possible. The security provision will consist of:

- Access control to the mine lease at several locations (including mine, plant and camp);

- Read in/read out access control;
- Two-stage gates for vehicle access;
- Electronic surveillance including CCTV within the plant area and at several key locations around the property;
- Physical and visual barriers;
- Fencing (double, single and cattle);
- Lighting; and
- Patrols.

Double security fencing 4 m apart will enclose the process plant. This is demarcated as the high security area. A single security fence will enclose the mining contractor's area, main administration building area, laboratory, camp, magazine, and tailings storage facility. The security fence will consist of a 1.8 m high fence with razor wire at the top of the support posts. A cattle fence will be installed around the water storage facility.

Electronic security will be provided by a reputable security system provider and audited by an independent security consultant experienced in security installations in Africa. It will be monitored by the security contractor. The security system is expected to be configured as follows:

- Installation of and integrated security solution consisting of a combination of various access control points, coupled with intruder detection devices, supported by CCTV consisting of approximately 15 cameras located across the site; and
- Some of the remote cameras and access control locations will be interlinked via the installation of a line-of-sight wireless network connection with a common receiver located appropriately to operate within "line of site" protocols.

17.13 Accommodation Camp

The accommodation camp will house the majority of the construction workforce prior to mobilization of the operations personnel late in the construction period. This will minimize the cost of the camp facilities while providing sufficient accommodation required during the overlapping period between construction and operation.

The accommodation camp and facilities is designed for 150 staff not residing in the project area. It will be located east of the process plant (Figure 2) and will consist of the following major components:

- 2 x 4 man manager style self-contained units complete with bedroom, ensuite bathroom, and toilet;
- 4 x 12 man single room units complete with bedroom, ensuite bathroom and toilet;
- 3 x 36 man double room units with central ablutions;
- Kitchen, dining, and wet mess facility;
- Water treatment plant;
- Sewage treatment plant;
- Recreation facilities; and
- Security fencing and security gate.

17.14 Project Implementation

This section describes the proposed organisation plan for the design, engineering, construction, and commissioning of the project, together with the schedules for each phase of the project development up to plant operation at rated capacity. This section presents an abridge version of the implementation plan prepared by Mintrex. The full implementation report is presented in Appendix K.

The design, construction, and operation of the Yaramoko project will conform to the requirements of the various regulations in Burkina Faso, requirements within Australian standards, ISO standards, European standards, and Roxgold's internal standards.

17.14.1 Project Organization

The project delivery will be managed by Roxgold's Chief Operating Officer (COO) in the role of project sponsor. The project delivery will be managed in two distinct areas, with the first being mining and the second being process plant and infrastructure. Roxgold will appoint client representatives for each part. A project manager for the process plant and infrastructure will be appointed by the EPCM consultant, following its appointment as the EPCM consultant for the project.

The overall organisation chart is shown in Figure 36.

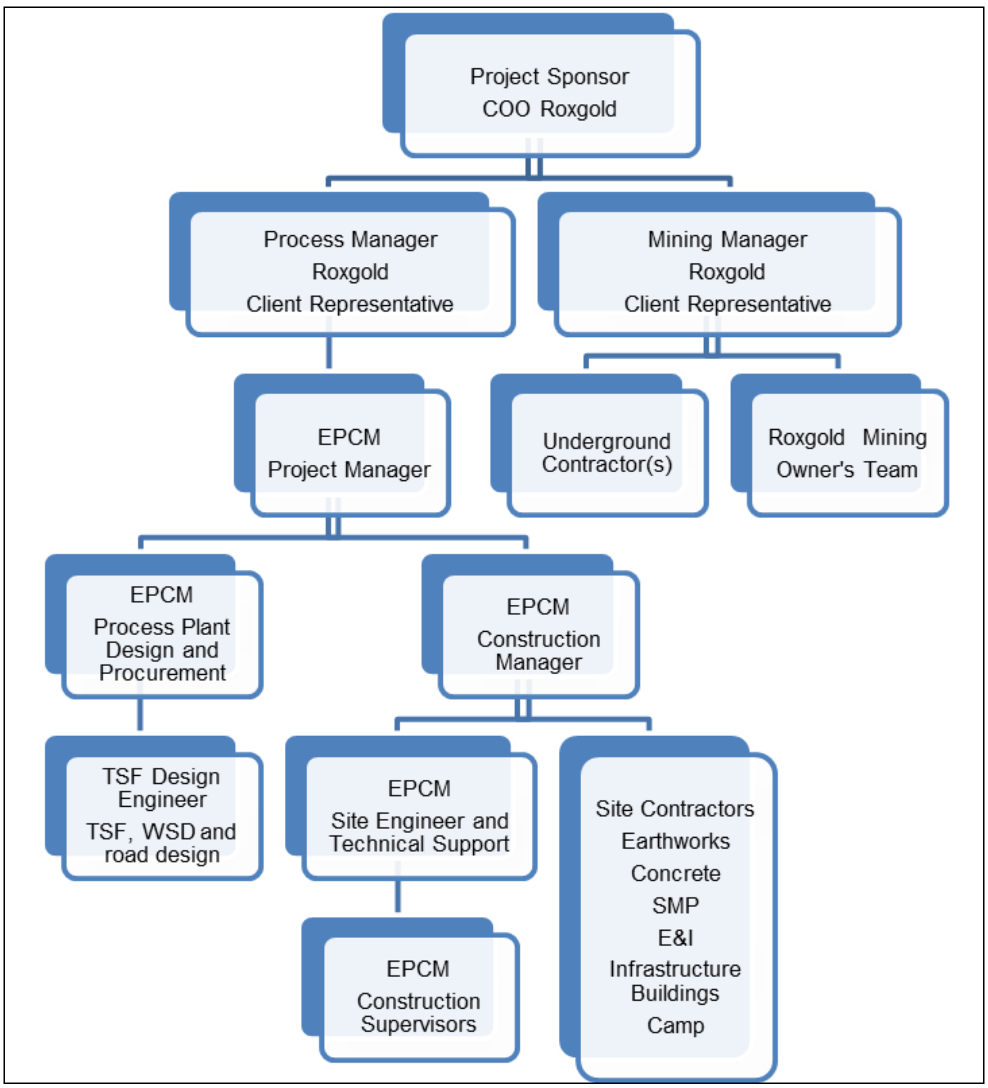


Figure 36: Yaramoko Gold Project – Project Organization Chart

Roxgold will implement overall project administrative controls internally within its corporate office in Toronto. The COO will work very closely with the managing director of the company to avoid duplication of resources where possible. This project administration function will utilise the company's accounting, personnel, and finance functions as required.

The COO will establish work authorisation reporting structures within the project to keep him informed of project progress and enable him to undertake corrective and preventative actions to achieve the project charter should situations arise where such action is necessary.

The EPCM consultant will undertake the design and documentation tasks for the process plant and directly associated infrastructure. They will manage the major equipment procurement from their home office. An important objective will be to maximize the extent of procurement from Burkina Faso and the EPCM consultant will manage that in conjunction with Roxgold staff in Burkina Faso.

The EPCM consultant will undertake the basic project administrative and implementation tasks for the plant and infrastructure development. However, the overall project administration and control will be managed by Roxgold's corporate administration in Toronto. Roxgold's Chief Executive Officer (CEO) and COO will establish administration, safety, occupational health and personnel policies for the project implementation and the same policies and procedures will be further modified and used for the operational phase of the project.

Procurement of major capital expenditure items will be based upon recommendations received from the EPCM consultant. They will prepare the documentation, call for prices and tenders, prepare tender evaluations, negotiate prices with contractors, and make recommendations to Roxgold in the form of drafted contracts and purchase requisitions.

It is proposed that mobile equipment planned for the operational phase of the mine be mobilized early in the construction phase and made available to the project. In particular, the mobile crane, forklift, integrated tool carrier, and some vehicles are expected to be available for use by the construction management team.

17.14.2 Project Development Schedule

A detailed project schedule is included in Appendix K.

Contingent on securing financing and approvals to develop the Yaramoko project, the development milestone dates include:

- Q2 2014 – Feasibility study results announced;
- Q3 2014 – Award contract for camp construction and underground mining;
- Q3 2014 – Award SAG mill delivery contract;
- Q3 2014 – SONABEL approval 90 KV power supply;
- Q4 2014 – Complete access road earthworks and start process plant construction work;
- Q1 2015 – Camp ready for occupation;
- Q2 2015 – Complete water supply borefield installation and
- Q2 2015 – Complete tailings storage facility construction;
- Q3 2015 – Complete power line/substation installation;
- Q3 2015 – Start process plant pre-commissioning; and
- Q4 2015 – Complete commissioning on ore feed; and initial gold pour.

18 Market Studies and Contracts

18.1 Market Studies

Roxgold has not conducted a market study in relation to the gold doré which may be produced by the Yaramoko gold project. Gold is freely a traded commodity on the world market for which there is a steady demand from numerous buyers.

18.2 Contracts

There are no refining agreements or sales contracts currently in place that are relevant to this technical report.

19 Environmental Studies, Permitting, and Social or Community Impact

This section summarizes the environmental studies, permitting, and social or community impact which support the bankable feasibility of the Yaramoko project. The Qualified Persons accepting professional responsibility for this section are Fiona Cessford, PrSciNat (#400053/03) of SRK UK for the environmental and social aspects, and Rob Bowell, CChem (#332782), CGeol, EurGeol (#1007245), CSci (#452852), also from SRK UK, for the geochemistry of ore and waste rock aspects.

Roxgold contracted *Bureau d'Etudes des Geosciences et de l'Environement* (BEGE), a Burkina private consultancy created in 2001, to undertake baseline studies in 2012 and 2013 and compile an environmental and social impact assessment (ESIA) for the Yaramoko gold project. BEGE is considered to have prior experience in the requirements of nationally compliant mining project ESIAs. Roxgold required the studies be undertaken in accordance with Burkina Faso regulatory requirements, as well as take cognisance of good international industry practice (GIIP), and in a way which would facilitate the project's acceptance by local residents.

In writing this section, SRK makes reference to a draft ESIA prepared by BEGE, which was submitted to the Burkina Faso government in March 2014. Following comments received from the regulator, Roxgold has updated the ESIA and resubmitted it in May 2014. The ESIA is included by reference (Appendix L). SRK also makes reference to several additional specialist studies (such as the conceptual closure plan [Appendix N], geochemistry [Appendix O] and hydrogeology [Appendix F] reports produced by SRK) and the tailings facility report produced by Knight Piésold (Appendix J), which are also appended by reference to this technical report. The appendices are available from Roxgold upon request.

Based on the review undertaken by SRK, the ESIA prepared by BEGE is considered adequate to obtain the environmental permit, however SRK recognizes that different regulatory authorities may have varying standards, influencing the acceptability of documents and these may be unrelated to the quality of the document (this risk is discussed elsewhere in this report). The likelihood of acceptability of the ESIA has been enhanced as Roxgold's environmental coordinator has been involved in three prior ESIA submissions to government and is therefore aware of potential pitfalls. In terms of good international industry practice (GIIP), SRK considers the overall ESIA process undertaken is generally aligned with IFC Performance Standard 1, however the documentation (as captured in the ESIA and supporting management plans) would require further enhancement to be considered fully compliant with GIIP. Roxgold has the opportunity to do this as the company moves through the development phase and into operations. SRK has also identified some additional studies that may be required to better characterize potential operational and post closure risks (these are discussed below).

19.1 Environmental and Social Studies

This section provides a summary of the results from the baseline environmental and social studies undertaken for the Yaramoko project. Aside from the artisanal mining activities taking place, the project area is a greenfields site where no previous large scale mining has occurred.

Drainage: The Yaramoko concession area is located in the watershed of the Grand Balé River, which is a tributary of the Black Volta River. The Volta River flows to Lake Volta in Ghana, prior to discharge into the Atlantic Ocean. Within the wider concession area, surface drainage flows from north to south towards the large Basle River, though many of the drainages are seasonal, flowing during and shortly following rainfall events.

Within the project area, a ridge of hills running north-south forms a watershed between subcatchments. Drainage from the proposed plant and associated infrastructure has the potential to migrate in the direction of Bagassi southwest around the ridge. Drainage from the proposed tailings storage and water storage facilities could potentially migrate southeast along ephemeral drainage lines in a different catchment to the Bagassi settlement and in the direction of the Banou settlement.

Climate: Long term climate conditions were taken from the Boromo weather station (1971-2011, located 36.7 km east of the Yaramoko project at an approximate elevation of 259 mamsl). The climate of the project area is typically Sudano-sahelian semi-arid with temperatures ranging from 15°C in December to 45°C in March and April. The rainy season extends from April to October followed by a dry season from November to February and a hot season from March to June. Annual rainfall averages 800 millimetres, with the heaviest rainfall occurring in August. Relative humidity is recorded as 80% - 95% in the rainy season and 10% - 35% in the dry period. Annual evaporation is high at approximately 2,000 mm.

The dry season in Burkina Faso is characterized by hot dry winds of the Harmattan blowing from east to west particularly during the day. During the rainy season and usually at night, the wet monsoon blows from southwest to northeast. The project area is relatively calm with low (wet season) to moderate (dry season) winds (from 1 to 2 m/s).

Roxgold installed a meteorological station at the camp site and data on wind speed, wind direction, temperature, humidity, and rainfall have been collected since April 2013. This information has not been incorporated into the specialist studies or climate description for the project. Once a year's worth of data will have been collected at the site, site date will be compared with seasonal variations in the region.

Air Quality: Existing sources of emissions in the vicinity of the project area include dust from the roads, dust from the Harmattan winds, limited levels of gases and dust caused by the burning of wood or coal for domestic use, and seasonal biomass burning. Dust fallout, particulate matter (PM10), sulphur dioxide (SO_2) and nitrogen dioxide (NO_2) in ambient air are low in the project area. Low wind speed in the area contributes to relatively low dust concentration levels in the project area.

Noise: The project area is situated in a rural environment with a few small villages. Existing sources of noise include local traffic (motorcycles, scooters and other light vehicles), use of small gasoline generators by the communities, and natural sounds of birds, insects, and frogs. There is a hill lying between Bagassi and the project site, which may serve the purpose of a noise buffer from future construction and operational activities.

Soils and Land Use: Most soils within the project area are shallow, skeletal and not considered conducive to agricultural activities. However, due to the absence of arable land in the project area the soils are increasingly being exploited. In some instances the soils are used for brickmaking and construction of houses. The land is also sought after for livestock production. Other commercial use of the land involves artisanal mining.

Analysis of heavy metal content indicates most soils are within the national pollution standards for arsenic, cadmium, mercury, lead, and zinc. However, a number of soils show above normal concentrations of copper and nickel. Further details of the chemical analysis and soil profiles are presented in Appendix 5 of the ESIA (Appendix L).

Hydrology: A hydrological study and water balance were undertaken for the Grand Balé watershed as part of the ESIA by BEGE with further detail found in Appendix 8 of the ESIA (Appendix L).

Hydrogeology: A hydrogeological study was conducted by SRK to characterize mine hydrogeology and quantify groundwater ingress into the underground workings (Section 15.1). The groundwater system at Yaramoko appears to consist of two inter-connected flow systems: one hosted by the fissured weathered zone and one by permeable faults in the fresh bedrock. Overlying the fissured weathered zone is a weathering profile of generally unsaturated laterites and saprolites.

Groundwater elevation in the vicinity of the project is approximately 20 to 30 m below ground level. Ground water flow is generally in a south westerly direction (although regionally it flows south towards the Grand Balé). A ground water divide has been established that runs east to west south of the project area. Groundwater flow to the west of the hills is to the west and southwest, and groundwater flow to the east of the hills is to the east and southeast.

Water Quality: Surface water and groundwater quality samples were collected and analyzed for inorganic constituents, heavy metals, and metalloids by BEGE (using an in-country laboratory) and Actlabs (an international accredited laboratory used as an umpire laboratory). Details of the analyses are included in Appendix 7 of ESIA and the hydrogeological report prepared by SRK (Appendix L and Appendix F, respectively).

According to the analyses the pH of surface water samples was found to be approximately 6.0 with conductivity values suggesting low mineralization. Ion concentrations in surface water samples were generally below World Health Organisation (WHO) drinking water quality guidelines. Turbidity was found to be high in surface water samples indicating naturally elevated sediment levels.

Groundwater across the project area was found to be generally circum-neutral to mildly alkaline (pH 6.3 to pH 8.1), with generally little variation between wells. It can be classed as fresh (i.e., non-saline) based on EC values less than 1,900 µS/cm. The solutes concentrations were found to be generally below WHO drinking water guidelines except for arsenic and chromium, which were found to slightly exceed the guidelines in all locations. Boron, manganese, and molybdenum were found to exceed the WHO guidelines in specific locations (WH02 for boron and molybdenum, and WH05 for manganese). Chromium is above the guideline for most sampling sites, while the other elements occasionally show up above the guidelines. The monitoring data to date has demonstrated the groundwater quality at the Yaramoko project area is generally good with respect to chemical composition, with occasional occurrences of parameters elevated with respect to WHO guideline values, potentially associated with particulate matter.

Biodiversity: The vegetation of the project concession is typically savannah, comprising grassland, trees, and bushes. The hill slopes, which have historically not been used for agricultural activities, are more wooded than the denuded plains and function as reserves of plant biodiversity and refuges for any rare wild animals still occurring in the area. The ESIA describes five vegetation types on the exploration permit area. Of the 52 vegetation species identified in the project area seven are classified as protected and three are endangered (*Anogeissus leiocarpus*, *Parkia biglobosa*, *Vitellaria paradoxa*).

The project is surrounded by three classified forests: (i) Bonou, which is a timber reserve with an area of 5,453 ha, located approximately 5 km from the study area; (ii) Pâ (timber reserve), with an area of 12,178 ha, located approximately 8 km from the study site; (iii) and 2 Bale (61,665 ha) wildlife reserve, located 22 km from the project area.

At least eight plant species are used locally for food (mainly fruits but also small numbers of species for leaves, powder/pulp, nuts, blossoms, and seeds) and traditional medicines. Wood is the main source of domestic energy for households in the area. The wood and stems of a number of species are used for timber and contribute the greatest proportion (44%) of income from natural resources followed by fruits (22%). Shea nuts and locust bean are poorly marketed indicating a rarity of these two species in the area. Compensation for the removal of species of economic value (e.g., shea nut and locust bean trees) due to land take by the proposed project are described in the resettlement action plan (ESIA Volume 1, Appendix L). Plant parts are also used for soil fertilisation and leaves are used for fodder.

Fauna is sparse in the project area with no exotic or endangered species identified on the concession. Twenty-seven species of animals were recorded as potentially occurring in the project area (Table II.16 of ESIA Volume 1, Appendix L) of which 30% are still present. About 28% of potentially occurring species are rare or have disappeared including large animal species primarily due to hunting and clearing of natural vegetation. A few species such as beavers, squirrels, partridges, and snakes are still relatively abundant in the project area.

Aquatic fauna is relatively abundant in the project area. 13 species were identified, with none classified as having significant conservation value.

Communities: The social baseline studies have identified 11 villages within the Yaramoko concession area likely to be impacted positively and negatively by the proposed development of the project, particularly Bagassi, which is the most populous and closest to the project (about 2 km). The nearest urban centre is Boromo (capital of Boromo Department with a population of 11,694) located approximately 50 km away. The population in the study villages is young with more than 50% less than 20 years old. In addition, there are two artisanal mining settlements at 55 Zone and at Bagassi South (Bagassi Sanmatenga). While the former is in Roxgold's proposed project site and will require evacuation, the latter is about 3 km south and is not likely to be affected.

Traditionally agriculture has been the main livelihood activity with some animal husbandry and commerce. The majority of local residents regardless of age and gender are engaged either directly or indirectly in artisanal mining. Though it started as a secondary income source during the dry season, a number of people are abandoning farming to mine throughout the year.

Archaeology and Cultural Heritage: Research was undertaken in 11 villages and a total of 298 ethnographical and 34 archaeological sites were found. The 34 archaeological sites identified include anthropogenic mounds and ironworks. Of the 298 sites found, five ethnographic sites and one archaeological site were found within the Yaramoko exploration permit area. Two of the sites, a sacred site "Sinlé" and the artisanal miners' cemetery, are located within 500 m of the proposed plant site (Section 3). Community consultations revealed the communities would prefer a fence to be erected around these sites to prevent unauthorized access or harm. Further details on the cultural heritage sites can be found Section II.7.7 of the ESIA Volume 1 (Appendix L).

19.2 Substantive Environmental and Social Issues

The ESIA identified potential negative and positive impact that the proposed project may have on sensitive receptors and proposed mitigation measures (Volume 2 of the ESIA, Appendix L). Only substantive environmental and social issues (issues that could affect the continuation of operations or maintenance of approvals; issues of major concern to local communities; and/or issues with management costs that could significantly affect the value of the assets) for the proposed project have been summarized below.

19.2.1 Reduced Water Quality Due to Seepage or Runoff from Mine Infrastructure

Gold mining has the potential to contaminate surface and ground water sources through acid rock drainage and metal leaching (ARDML) and the potential release of cyanide. Water users in Bagassi could potentially be impacted by contaminated water from the proposed temporary waste rock stockpile, which will eventually be used for backfill for the underground workings, the proposed temporary ore stockpile, and the proposed plant and associated surface infrastructure. The settlement of Banou could potentially be impacted by contaminated water from the proposed tailings storage facility and waste rock stockpile.

The ESIA did not identify acid rock drainage (ARD) generation as a key area of concern. As part of the feasibility study and to confirm the conclusion in the ESIA, SRK undertook a geochemical characterization program of the potential waste rock from the mine site (Appendix O) and reviewed the work done by Knight Piésold on the tailings material. The potential for each of these sources of contaminants to affect water quality in the vicinity of the proposed project is discussed below.

Temporary Waste Rock Stockpile (WRS) and Backfill

Geochemical test work and preliminary numerical predictive modelling undertaken by SRK (Appendix O) show that, Burkina Faso water quality guidelines may be exceeded in seepage waters from the waste rock and water in the post closure underground mine pool. As the WRS is temporary and a number of pollution containment measures are proposed (including seepage and runoff capture from the temporary waste rock stockpile), the potential sources of contamination are mainly limited to the backfilled underground workings after closure. Although no post closure hydrogeological modelling was undertaken, it is expected groundwater levels will rebound to pre-mining levels after closure. The water recovery within most of the mine is estimated to be completed after 50 years, though the crown pillar will only be flooded about 140 years after end of mine life. No decant to surface is therefore expected and thus any potential contaminant movement away from the workings post closure will be as associated with groundwater and is likely to occur a significant period after mine operations cease.

To confirm there are no potential long-term risks of contamination likely to arise from the workings once groundwater rebound occurs, additional geochemical characterisation of cemented rock backfill, and geochemical and hydrogeological modelling studies are recommended by SRK to take place during operation. This would be supported by ongoing monitoring of seepage from the dumps, as well as drinking water wells in the vicinity of the workings (nearest village). If the additional studies indicates potential pollution plumes could move away from the mine workings consideration should be given to seal the underground workings at closure.

Tailings Storage Facility

Knight Piesold's static testing show that the tailings material is non-acid forming (NAF) and that generally immediate metals release from the samples is minimal and not of significant concern. A sediment pond will be constructed southeast of the tailings storage facility to assist in containing contaminated seepage. SRK recommends additional data collection is required during operations to quantify the potential longer term risks associated with seepage and runoff from the tailings storage facility as input to closure planning. This would include kinetic testwork, characterization of the groundwater movement away from the tailings storage facility, groundwater modelling of seepage to predict post closure risks, and regular monitoring of the decant pool and any seepage in the sediment pond. Many of these measures are already captured in Roxgold's Environmental Monitoring Plan.

Ore Stockpile

A temporary ore stockpile will be erected during mining and has the potential to leach contaminants (such as arsenic) into the surface water and groundwater (Section 15.6). However, the stockpile will be temporary and long-term oxidation is unlikely to take place and thus the risk of ARDML risk is low. Proposed management and monitoring measures include separation of clean and dirty water on site and construction of sedimentation ponds to capture run-off and seepage from the proposed plant and the ore stockpiles for reuse and ongoing water quality management.

Cyanide

Geochemical characterization of the cyanidation tailings undertaken by Knight Piesold has demonstrated that the barren cyanidation leach solutions from the process plant could potentially exceeded Burkina Faso A1 drinking water standards for arsenic, barium, cadmium, cyanide, copper, iron, zinc, and sulfate. Cyanidation leach solutions also exceeded cyanide and copper quality guidelines for discharge to surface water. In addition, as the tailings storage facility lagoon may pose an attractive nuisance to both wildlife (birds) and humans (for livestock watering), putting these receptors at risk if concentrations of cyanide in the pool exceed guideline levels such as those in the International Cyanide Management Code. In addition if any release to the environment occurs via seepage or overflow of the spillway or containment pond, there is a risk of harm to downstream users such as community domestic supply, livestock watering and natural ecosystems.

Due to the tropical location of the Yaramoko deposit, it is expected that a degree of natural attenuation of the cyanide concentrations will occur within the tailings facility lagoon. Knight Piesold indicates that the concentration within the lagoon is expected to be below the required guideline levels without the requirement for additional cyanide destruction. In addition, Knight Peisold expects the designed low permeability soil liner and under-drainage system will limit discharge of entrained seepage from the tailings facility to the underlying groundwater to an acceptable level. There is an area of risk that cyanide levels will need to be monitored and controlled to ensure levels do not exceed guideline levels.

19.2.2 Reduced Groundwater Supply Due to Impact of Drawdown Cone

During operations, the groundwater level is expected to be lowered by dewatering of the underground mine and this may impact on community wells and boreholes. The hydrogeology study established that the lateral extent of the cone of depression around the mine varies between 1,500 – 2,000 m depending on the presence of faults, which can act as high permeability conduits for groundwater. Therefore, it is difficult to quantify at this stage as to whether there will be a direct effect on the local groundwater supply or whether the drawdown cone will be localised to the mine operations. As the mine develops, on-going hydrogeological studies should be completed to investigate the potential impact of the drawdown cone on any of the community water sources and if alternative water sources must be provided.

19.2.3 Dust from the Tailings Storage Facility

Nearby local communities may experience increased dust levels from the tailings storage facility, particularly when the Harmattan wind is blowing. The possible nuisance effect of elevated dust levels can be controlled by careful tailings slurry deposition to keep the surface damp (whilst avoiding excessive water use), as well as watering of the roads.

19.2.4 Loss of Farmland and Change in Livelihood

The proposed project is expected to displace approximately 100 farmers from 135 fields comprising 405 Ha (Appendix L). Some of these farmers will end up changing their livelihoods from land-based to services-based. Roxgold has prepared a plan to compensate for loss of income from farming that has been agreed to by the community. However, in SRK's experience on other projects in Africa, regardless of the fact farmers have agreed to the fair negotiation and compensation procedures in the RAP, following implementation of the plan resentments may arise particularly in those not directly benefitting from other aspects of the operation. Effective post implementation monitoring and communication with affected farmers will be critical to ensure livelihoods and standards of living are sustained and grievances, if they arise, are managed. Roxgold should work to establish and maintain a trustful relationship with the community farmers.

19.2.5 Conflict Due to Unmet Expectations

The proposed project is located in a rural environment with few employment opportunities, low education and skills levels, and poor infrastructure (Section 4.2). Hence the proposed project is expected by communities to create jobs, lead to community development, and improve services/ infrastructure. As, the project is relatively small it is unlikely to meet all stakeholder expectations. Roxgold has developed recruitment and procurement policies emphasising preferential employment of local people and use of services from local business. Roxgold has developed and needs to maintain a relationship of trust with the project's stakeholders.

19.2.6 Loss of Income from Artisanal Mining

Roxgold recognises artisanal mining is a major source of income in the local community and therefore plans to delay disrupting this activity as long as possible and then employing ex-artisanal miners from the local community to clear the site of current activities just prior to construction. The local artisanal miners will also be offered unskilled employment opportunities during the construction phase (in preference to those artisanal miners who are immigrants to the area). In parallel, Roxgold has been negotiating with the primary customary landowners on the Yaramoko project concession. Their buy-in to the project is key to the go-ahead and construction.

19.3 Proposed Management and Monitoring

Roxgold has developed a number of corporate policies, publicized its commitment to corporate social responsibility on its website and has begun developing some community engagement initiatives (http://www.roxgold.com/s/SocialResponsibility.asp). The ESIA includes an Environmental and Social Management Plan (ESMP) to address the impact identified. This is supported by a number of additional documents including:

- Monitoring Plan outlining the various environmental disciplines to be monitored throughout the life of the mine, the parameters to be monitored (including their units), the frequency of monitoring, location of monitoring sites, type of record keeping and frequency, and the criteria for evaluation in accordance with the requirements of national legislation (see Table IV.1 in Volume 2 of the ESIA, Appendix L);
- Resettlement Action Plan dealing with land acquisition and economic displacement of affected parties (Section 19.5.2);
- Conceptual Closure Plan (Section 19.6);
- Stakeholder Engagement Plan (Section 19.5.1); and

- Artisanal Miners Plan (Section 19.5.3).

Roxgold has established a seven person in-house team to assist with environmental and social management related to the project.

19.3.1 Water Management

Based on the proposed environmental control measures (i.e., low permeability soil liner and underdrainage system), seepages rates through the base of the tailings storage facility should not have a negative effect on shallow surface water or groundwater.

The water storage dam is the main collection and storage pond for clean process water on site, and is able to store up to 200,000 m^3 of water at the maximum operating level at Stage 1. This capacity will not be exceeded during operation.

The water storage dam is intended to be recharged through rainfall runoff from the catchment and ground water supply on site. The water collected in the water storage dam will be pumped back to the plant to supply plant raw water requirements and process make-up water requirements. Upon decommissioning, the water storage dam will remain in place.

19.4 Environmental Permitting

This section summarises the legal approvals and regulatory requirements required to develop the Yaramoko gold project from an environmental perspective. Environmental controls on the project arise primarily from the Mining Code (L031-2003/AN) and the Environmental Code (Law No. 006-2013/AN of April 2, 2013). The key mining permissions are discussed further in Section 3 of this report.

Article 76 of the Mining Code states that activities governed by the Mining Code shall be conducted so as to ensure environmental conservation, management, and restoration of mining sites following standards, conditions and methods set by the regulation in force. The Mining Code also specifies that with regards to financial provisioning for closure "holders of a mining title shall be bound to open and make deposits in a fiduciary account with the Central Bank of West African States (BCEAO) or a commercial bank in Burkina Faso. Such account shall serve as capital to cover the costs of implementation of environment conservation and restoration" (Article 78).

The Environmental Code stipulates that an ESIA is required. This must include a public enquiry and a mitigation and/or enhancement plan of negative or positive impact prior to the construction of a project likely to impact the environment. This requirement is supported by the associated Environmental Decree (Decree no.2001-342/PRES/PM/MEE), which outlines the scope, content, and administrative procedure for the preparation of an ESIA.

The primary environmental approval required by Roxgold to develop the Yaramoko project is an *Avis de Conformité et de Faisabilité Environmentale*, which is issued by the Ministry of Environment and Sustainable Development through its branch *Bureau Nationale des Evaluations Environnementales* (BUNEE). Such an *Avis* indicates a positive decision of the Minister of Environment on the submitted ESIA.

The process of obtaining approval is outlined below along with the current status of each phase of the process:

- BEGE prepared and submitted a terms of reference (ToR) for the ESIA to BUNEE on October 23, 2013 (resubmitted with corrections on December 13, 2013) and received an official signature indicating the Ministry's receipt of the ToR. SRK reviewed the ToR and provided comments to Roxgold. (Complete.)
- The ToR was considered accepted following no comment from BUNEE within the legally stipulated 2 week period. (Complete.)
- BEGE then produced a draft ESIA, which was reviewed by SRK in December 2013 with respect to GIIP. BEGE and Roxgold incorporated SRK's comments and edits as deemed necessary for the submission of an in-country compliant ESIA. Two SRK representatives participated in a site visit in December 2013 to ground-truth the findings contained within the first draft of the ESIA. Further to the employment of the environmental coordinator in February 2014 it became apparent there was still some additional documentation required before the final ESIA could be submitted. This included for example the production of a separate resettlement action plan (RAP) which required further negotiations with all parties who would potentially be affected by loss of land on the project footprint. (Complete.)
- The updated draft ESIA prepared by BEGE was submitted to the Ministry of Environment in March 2014 and it forwarded to BUNEE to comment. Comment were received from BUNEE, and along with input from Roxgold's new environmental co-ordinator, a final ESIA has been prepared and submitted to BUNEE on May 6, 2014. BUNEE has three to four weeks to review the ESIA.
- Once BUNEE has formally acknowledged receipt of the ESIA, public consultations will be organized in the mine area. The mine zone local administration officers are required to inform the public of this survey through media means or any other appropriate informational means used in the zone. Costs related to the Public Survey are charged to the promoter. A representative of the promoter can be part of the team undertaking the enquiry. The Public Survey report is shared with the promoter. The whole Public Survey is expected to take approximately 45 days (30 for the survey and 15 for writing the report). (Not yet complete.)
- Once the Public Survey is completed BUNEE creates a technical committee (*Comité Technique des Evaluations Environnementales*, COTEVE) to review the ESIA. The committee comprises approximately 25 people. The promoter and local consultant are required to be present to answer questions from committee members. The process takes approximately 10 working days. If there are gaps in the ESIA the document is returned to the promoter to be revised. (Not yet complete.)
- If the ESIA is deemed satisfactory BUNEE issues the *Avis de Conformité et de Faisabilité Environmental* (the positive decision of the Ministry of Environment). (Not yet complete.)
- Once the *Avis* is issued by the Ministry of Environment, an application must be filed with the National Commission of Mines to the Ministry of Mines and Energy, at least three months prior to the expiry date of the exploration permit (Not yet complete.) This application must include:
  - An application letter for an Exploitation Permit Request;
  - The ESIA with the results of the public survey, including an environmental and social management plan to minimize negative impact and enhance positive impact, and an environmental monitoring plan;
  - The bankable feasibility study (*Étude de Faisabilité Technique et Économique*);
  - A technical project summary report summarizing all work completed;
  - Expenses audit approved by a government audit firm;
  - Map of the exploration permit area; and
  - Draft statutes for a new exploitation joint venture company stating the mandatory 10% ownership by the Burkina Faso state.
- Following discussions, reviews and amendment to the application, the Ministry of Mines takes the study to the Council of Ministries and a decree authorizing the exploitation permit

is granted on the recommendation of the Minister of Mines. A mining convention between the Burkina Faso government and the promoter is also signed. The decree requires six compulsory signatures (a 15 working days process): president of Burkina Faso, prime minister, minister of mines and energy, minister of environment, minister of finance, minister of trade and industry (Not yet complete.)

In addition to the ESIA, the following plans were submitted as separate stand-alone documents:

- The Relocation and Compensation Plan;
- The Closure and Rehabilitation Plan;
- The Waste Management Plan; and
- The Dam Construction Plan.

The Relocation and Compensation Plan, the Closure and Rehabilitation Plan, and the Waste Management Plan will have to go through the COTEVE process with BUNEE (see above). An authorization from the water management administration of the mine area (*Boucle du Mouhoun*) must be received prior to initiating construction plans for a water reservoir dam. With this authorization, the Dam Construction Plan must be submitted to the Ministry of Water, Hydraulic Equipment, and Sanitation MEAHA (*Ministère de l'Eau, des Aménagements Hydrauliques et de l'Assainissement*).

19.5 Social or Community Relations Requirements

19.5.1 Stakeholder Engagement

SRK reviewed the stakeholder engagement plan prepared by Roxgold. The plan sets out a systematic approach with respect to information disclosure, consultations, negotiations, relationship building, grievance resolution, monitoring, and reporting. A copy of the plan is provided in Appendix L.

Stakeholder consultations for the ESIA process were started by BEGE in June 2012. A series of meetings were held with relevant government representatives at the provincial level, with residents of potentially affected villages, local leaders (traditional and elected), and other stakeholders. Open meetings were held in individual villages for discussion with community members.

During 2013, Roxgold maintained regular consultations with project stakeholders. About 85 meetings were held across the permit area with a variety of stakeholder groups in independent sessions involving over 575 participants. The main groups consulted included the Village Development Committee, chiefs and elders, religious leaders, women, and youth. Additional consultations were held with education and health representatives, law enforcement, and various governance administration officials. Consultations were recorded.

19.5.2 Land Acquisition

The land owner and current users including the artisanal miners are the main stakeholders with respect to the land acquisition process. Each village has a chief of land who is usually the village chief but can be a different person, as in the case of Bagassi and Doussi. The land chief has customary right over village land (all land without private title belongs to the state). This customary right is usually passed down through patrilineal inheritance. Non-land owning families in the village are given access to land for farming and building residential structures using an informal land distribution system that is not recognized through a land title under the land regulations. Formal sale and purchase of land has not been reported in the ESIA study villages except for in Bagassi, which is the capital of the commune. Access to land is usually only provided to village residents. However, sometimes there could be lending or borrowing from other villages managed under customary law.

The areas belonging to the government and local authorities consist mainly of sites for socio-economic infrastructure and other land development for the exploitation of natural resources.

Roxgold has undertaken meetings with the traditional (customary) landowner based in Bagassi to present the proposed project, its timeline with respect to the land take if the project goes ahead and the compensation mechanism. Baseline studies have identified 135 farm fields (comprising 405 Ha), with approximately 100 cultivators who will be eligible for compensation. A further 356 Ha of fallow land (i.e., not fields; used only for animal grazing or tree/wood products) exists on the project concession belonging to approximately 100 landowners, with some duplication of the field landowners.

The proposed project does not require physical displacement of people aside from the artisanal miners.

19.5.3 Artisanal Mining

The artisanal miners are one of the key stakeholder groups because they must relinquish their land use prior to the land being transferred to Roxgold. In SRK's opinion, Roxgold understands the importance of maintaining a constructive dialogue with the artisanal mining leaders and is currently holding meetings on needs basis.

Artisanal miners have been actively mining gold from the Yaramoko concession for over 20 years, and informal local infrastructure has developed. An assessment of artisanal mining within the Yaramoko project area was undertaken. The majority of artisanal miners are from Burkina Faso, also from Benin, Côte d'Ivoire, Ghana, Mali, and Togo.

When SRK visited the site in December 2013, the artisanal mining was on halt due to a recent accident in which 13 miners were killed. These miners are now buried next to the workings along with existing graves that may have to be accommodated within the mine infrastructure layout. This area will be protected with simple fencing, as agreed through community consultation.

Roxgold anticipates the artisanal miners will leave the site because near surface gold mineralization available to artisanal miners is depleted making this activity progressively less profitable. Artisanal miners are expected to relocate to other artisanal mining sites in the region (as observed on site over the last year).

The dwellings and other structures at the 55 Zone are made largely of straw, rice bags, and branches. These will be dismantled when the artisanal miners move out of the area.

Roxgold has developed a standalone management plan for the artisanal mining. The plan provides guidance on the proposed evacuation of the site on the basis of open dialogue with key leaders.

19.6 Mine Closure

There are no specific references to rehabilitation or mine closure requirements in the Environmental Code (L005/97/ADP) or the Environmental and Social Impact Assessment (ESIA) Decree (D2001-342/PRES/PM/MEE). However, the ESIA guideline for mining (*Guide Sectorial D'Étude et de la Notice d'Impact Sur L'Environnement des Projets Miniers*) refers to the need to develop a rehabilitation and closure plan as part of the ESMP for the project. The rehabilitation and closure plan should include a list of management measures, costs, responsibilities and schedule for implementation of the actions.

SRK prepared a conceptual closure plan for the project. According to this plan, the estimated cost of closure for the Yaramoko project is US$ 3.7 million. This includes an estimated 10 percent of the total for management overhead and 20 percent contingency. The conceptual closure plan is presented in Appendix N. The cost estimate is summarized in Table 38.

Table 38: Yaramoko Project Closure Estimate Summary

Description	Cost
General Cleaning	$1,000,000
Underground Infrastructure	$35,000
Quarry	$14,952
Processing Facilities Area	$481,446
Accommodation Area	$312,517
Magazine Area	$184,430
Tailings Storage Facility	$907,142
Post Closure Monitoring	$150,000
Total Base Estimate	**$3,085,487**
Project Management	$154,275
Subtotal Excluding Contingency	$3,239,762
Contingency 15%	$485,964
Total Estimated Project Cost	**$3,725,726**

At the time of final closure, the mine areas should be reclaimed to a safe and environmentally sound condition consistent with closure commitments developed during the life of the project. Specific closure objectives may be tied to the future land use and should be determined in collaboration with local communities and other stakeholders in the area. In the absence of stakeholder input, SRK has assumed the preferred final post-closure land use will be a savannah landscape commensurate with the existing small-scale agriculture and livestock grazing land uses.

During operations, Roxgold will develop closure criteria in communication with the regulatory authority to define specific end-points that demonstrate the closure objectives have been met. A post closure monitoring program will be designed to track progress of the site rehabilitation activities to reach the defined closure criteria.

Seepage water quality from the tailings storage facility will be monitored for a minimum period of five years following closure. If water quality does not meet discharge regulations after this period, monitoring will continue for a further period until acceptable water quality is achieved. Embankments monitoring will continue after closure, following cover construction. The existing monitoring equipment installed during construction of the infrastructure will be used and maintained for a minimum period of five years following closure.

The area over underground workings should be monitored for signs of subsidence.

Re-vegetation success will be monitored to ensure viable, self-sustaining vegetation growth over the rehabilitated areas and to determine if further vegetation support activities are warranted.

20 Capital and Operating Costs

The cost estimates reflect the joint efforts of Mintrex, SRK, Knight Piésold, Cardno BEC, and Roxgold. SRK and Roxgold coordinated the cost data into the cost estimate. The Qualified Persons accepting professional responsibility for this section are Ken Reipas, PEng (PEO # 100015286) of SRK, Ian Kerr (MIE Aust #3878951) of Mintrex, David Morgan (AIMM #202216 CPEng #974219) of Knight Piésold, and Geoff Bailey CPEng (FIEAust, NPER #378695) of Cardno BEC. Table 39 outlines the responsibilities of each contributor to the cost estimates.

Table 39: Cost Estimate Responsibility

Company	Responsibility
SRK	Design and estimates for -pre-development and sustaining CAPEX and OPEX for the underground mine and its equipment.
Mintrex	Design and estimate the processing plant, ancillary buildings, raw water abstraction, water and sewage treatment plant, site and access infrastructure.
Knight Piésold	Design and estimate the tailings storage facility, the water reservoir and related Earthworks.
Cardno BEC	Design and estimates for the electrical and control system, power distribution network, and connection of the project to the Burkina Faso electricity grid
Roxgold	Taxation and owner's costs and manage the interface between the contractors in relation to the battery limits.

20.1 Capital Costs

The Yaramoko project total capital cost estimate is $176.3 million, comprised of $106.5 million in pre-production capital and $69.8 million in sustaining capital.

Capital cost estimates were prepared to an accuracy level of +/- 15 % and are presented in US dollars as at the first quarter of 2014 (1Q14).

The project infrastructure capital cost estimate was prepared by Huy T. Nguyen and Naim Abou-Rjeily of Mintrex, under the supervision of Ian Kerr (MIE Aust #3878951) with the support of Knight Piésold for the tailings storage facility and water storage facility. The capital costs estimate for the underground mine was prepared by Mr. Ken Reipas, PEng (PEO # 100015286) and Mr. Benny Zhang, PEng (PEO#100115459) of SRK. This section presents summary of the Yaramoko project capital cost estimates. The full reports are presented by reference in Appendix P and Appendix E respectively.

The capital cost estimates include the following contingency rates:

- 5% contingency for supply and install of concrete, supply of mechanical equipment, spares and first fill cost, supply of electrical equipment, earthwork contract, supply of steelwork, supply of platework, supply of process plant buildings and supply of camp buildings;
- 8.5% contingency for EPCM cost;
- 10% contingency for overhead cost, owner’s cost, supply and install of 90kV power line cost, infrastructure, freight, supply of piping and installation for steelwork, platework, mechanical equipment, electrical and piping; and
- 12% contingency for mining pre-production cost.

The overall contingency rate is 8% ($8.7 million). No escalation has been applied to the capital costs.

Exchange rates used to develop the costs are as follows:

- Australian dollar = $0.893;
- Canadian dollar = $0.940;
- Franc (CFA) = $0.0021
- Euro (EUR) = $0.726;
- South African Rand (ZAR) = $0.0952; and
- British pound (GBP) = $1.662 as taken from website www.xe.com on February 13, 2014.

The following items are specifically excluded from the capital cost estimate:

- No allowance has been made for escalation of prices;
- No allowance has been made for financing costs or interest;
- No allowance has been made for government approvals and special permits;
- No allowance has been made for currency exchange rate variations;
- No allowance has been made for GST (it is expected not to apply);
- No allowance has been made for owner's sunk costs prior to project implementation;
- High voltage power supply to borefields; and
- Borefields electrics (assumed powered by diesel generators).

20.1.1 Pre-Production Capital Costs

Table 40 provides a summary of the $106.5 million pre-production capital cost estimate for the project, including contingency.

Table 40: Yaramoko Pre-production Capital Cost Summary

Pre-production Capital	Total $M	2014	2015
Mine	$30.69	$2.36	$28.33
Process	$27.65	$8.29	$19.35
Duties & Levies on Process Equip.	$0.80	$0.24	$0.56
TSF and WSF Facility	$5.71	$1.71	$4.00
Infrastructure & Vehicles	$13.87	$4.16	$9.71
Power Line	$8.71	$2.61	$6.10
First fills & Capital Spares	$1.82	$0.55	$1.28
Owner	$8.52	$2.56	$5.97
Sub-total	**$97.77**	**$22.49**	**$75.29**
Contingency	$8.74	$1.78	$6.96
Total Pre-production Capital $M	**$106.51**	**$24.27**	**$82.24**

Details of the pre-production capital cost estimate are presented below.

The underground mine will be contractor operated from start up to Q2 2019, and owner operated from Q3 2019 to the end of mine life.

Work on the box cut and underground portal will commence on November 1, 2014. Initial capital costs are based on the 14-month pre-production period from November 1, 2014 through to

December 31, 2015. Mining sustaining capital costs are for the period from January 1, 2016 through to mid-April 2023 which is a 7.3 year production period.

Table 41 provides a breakdown on the underground mine pre-production capital cost estimate.

Table 41: Underground Mine Pre-production Capital Costs

Mine Capital Details	$M
Contractor Mobilization	$0.65
Contractor Overheads	$9.46
Box Cut & Portal	$2.17
Ventilation Raise Collars	$0.68
Surface Ventilation Fan	$0.16
Lateral Development	$8.30
Raising	$0.70
Waste Handling	$0.75
Definition Drilling	$0.11
Preproduction Mining	$6.57
Other Equipment	$1.16
Total Mining $M	**$30.69**

Significant contributions to the mining cost estimates were sourced from unit rates and costs from mining quotations received by Roxgold. The mining capital cost estimate is based on:

- Contractor quotations for underground mining and diamond drilling;
- SRK first principles cost build ups for some construction items;
- Quotations for mining equipment and supplies;
- SRK's in house cost database;
- Owners staffing costs provided by Roxgold and fully loaded labour rates; and
- A 7.5% import duty is added to supplies costs. No VAT is included.

Not included in Table 41 are the items listed below, provided by the mining contractor at no initial cost. The cost of these items has been included in the contractor's quoted unit rates.

- Generator (1 MVA) for initial power at the portal;
- Air compressor and portal water tanks, piping;
- Surface settling ponds;
- Backfill plant;
- Maintenance workshop and wash bay;
- Offices, stores and change house;
- Substations 415-11kV;
- All electrical distribution supplies and equipment;
- Ventilation fans (first main surface fan and underground auxiliary fans);
- Refuge stations;
- Underground explosives storage;
- Underground radio system;
- Central blasting system.

The construction of the Yaramoko project process facilities and surface infrastructure is based upon an engineering, procurement and construction management (EPCM) approach where the owner assumes the builder's risk.

Table 42 provides a breakdown on the process pre-production capital cost estimate.

Table 42: Process Pre-production Capital Costs

Process Capital Details	$M
Plant Bulk Earthworks	$0.67
Crushing	$1.64
Milling and Classification	$7.49
Leaching and Adsorption	$3.66
TSF and Decant Return	$0.24
Metal Recovery & Refining	$1.98
Reagents	$0.48
Services	$0.90
Construction Overheads	$2.75
EPCM	$7.83
Total Process $M	**$27.65**

The process capital estimate is based on:

- EPCM implementation strategy. It is assumed the EPCM engineer is based in Western Australia for the engineering and procurement phase;
- Current wage rates and the expected site safety regulations and work practices;
- Operating international air services with capacity to meet the program schedule;
- Availability of sufficient manpower resources in Burkina Faso to undertake the project in the timescale envisaged;
- A construction camp is available that meets the requirements of the construction workforce; and
- Voice communications around the plant will be by radio.

Table 43 provides a breakdown on the surface infrastructure pre-production capital cost estimate.

Table 43: Surface Infrastructure Pre-production Capital Costs

Infrastructure & Vehicles	$M
Plant Infrastructure	$4.04
Camp	$5.04
Roads	$0.89
Misc. Electrical	$1.78
Plant Vehicles	$1.42
Temporary Construction Facilities	$0.70
Total Infrastructure $M	**$13.87**

The owner's cost comprises:

- Construction insurance based on quote from Aon plc;
- The pre-production labour and expenses starting from July 2014 to November 2015. The salaries are based on Roxgold experience with similar sized operations;
- The pre-production expenses costs were estimated by Mintrex based on 65% of the general and administration (G&A) developed by Roxgold. This includes power cost for the camp during the project construction;
- Owner's general, training and business systems costs provided by Roxgold; and

- Mining and processing working capital costs provided by Roxgold.

20.1.2 Sustaining Capital Costs

Sustaining capital costs of $69.8 million are estimated for the period from January 1, 2016 through to mid-April 2023. No escalation has been applied to the capital costs.

Table 44 provides a summary of the sustaining capital cost estimate for the project.

Table 44: Sustaining Capital Costs

Sustaining Capital	Total $M	2016	2017	2018	2019	2020	2021	2022
Mine	$62.38	$15.70	$15.75	$13.49	$16.31	$1.07	$0.05	$0.00
Mine Contingency	$2.73	$0.45	$0.56	$0.53	$1.18	$0.00	$0.00	$0.00
Process	$0.59	$0.00	$0.11	$0.11	$0.11	$0.11	$0.11	$0.05
Tailings Storage Facility	$3.26	$0.00	$0.80	$0.43	$0.55	$0.58	$0.46	$0.43
Vehicles & Equipment	$0.86	$0.00	$0.03	$0.05	$0.65	$0.05	$0.05	$0.03
Total Sustaining Capital $M	**$69.81**	**$16.16**	**$17.24**	**$14.62**	**$18.79**	**$1.82**	**$0.67**	**$0.51**

The underground mine sustaining capital cost estimate is shown in Table 45.

When Roxgold takes over the underground mine operations in Q3 2019, SRK assumes that Roxgold will purchase the contractor's mobile mining equipment and fixed plant at their depreciated values. These capital costs are shown in Table 45.

Table 45: Underground Mine Sustaining Capital Cost Estimate

Mine Capital Details	$M
Contractor Overheads	$11.34
Buyout Mobile Fleet	$6.80
Buyout Fixed Plant	$5.83
Contractor Demobilization	$0.25
Lateral Development	$31.37
Raising	$2.10
Waste Handling	$2.78
Underground Construction	$1.91
Total Mining $M	**$62.38**

The major fixed plant units to be purchased by Roxgold include:

- A main surface ventilation fan;
- Surface maintenance shop;
- Underground electrical power distribution system;
- Backfill slurry plant;
- Auxiliary ventilation fans.

Mintrex has prepared a sustaining capital estimate in conjunction with Roxgold for the following specific areas:

- Tailing storage facility Stage 2 and onwards;
- Mobile equipment and vehicles;
- Process plant general; and
- Camp and administration.

20.2 Operating Cost Estimate

On site operating costs averaging $140 per tonne processed are estimated for the period from January 1, 2016 through to mid-April 2023.

Operating cost estimates and are presented in US dollars as at the first quarter of 2014 (1Q14) and are based on diesel fuel at $1.58 per litre ($5.98/US gallon) and electrical power at $0.17 per kWh.

Table 46 shows the site operating cost estimate.

Table 46: Site Unit Operating Cost Estimate

Unit Operating Costs	LoM Average	2015	2016	2017	2018	2019	2020	2021	2022	2023
Surface LG mining	$0.04	$2.00	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.16
UG Mining	$86.39	$0.00	$119.52	$108.58	$114.18	$95.34	$69.32	$71.33	$62.77	$23.68
Processing	$31.75	$20.68	$33.91	$33.91	$33.28	$33.28	$31.46	$31.46	$27.84	$27.84
G&A	$21.88	$0.00	$23.57	$23.57	$22.35	$22.35	$21.51	$21.51	$21.11	$21.11
Total Site Opex $/tonne	**$140.06**	**$22.68**	**$177.00**	**$166.07**	**$169.81**	**$150.97**	**$122.29**	**$124.30**	**$111.72**	**$72.79**

Details of the site operating cost estimate are presented below.

Table 47 shows the details of the average estimated life of mine operating cost. Costs in the table include contractor costs and Roxgold costs.

Table 47: Mine Operating Cost Estimate

Mine Operating Cost	$/tonne
Contractor Overheads	$18.48
Supervision, Safety, Training	$5.42
Lateral Development	$9.30
Cut & Fill Stoping	$0.36
Longhole Stoping	$11.42
UG Ore Handling	$5.17
Backfilling	$12.00
Mine Rehabilitation	$2.61
Maintenance	$6.82
Mine Services	$8.42
Construction & Utility	$1.90
Technical Services	$4.48
Total $/tonne	**$86.39**

Roxgold's attributable portion of the site operating cost is $39.27 per tonne, and the contractor's portion is $47.12 per tonne.

Underground operating costs include contractor's overheads, mine supervision, mine safety, mine operations and mine services, maintenance of mobile and stationary equipment, and technical services. All backfilling related costs are attributed to the underground mine including operation of the surface slurry plant, the cost of cement in backfill, and operation of a backfill rock quarry later in the mine life. The supply of bulk cement delivered to the site will cost an estimated $300 per tonne.

Table 48 shows a breakdown of the average process operating cost estimate.

Table 48: Process Operating Cost Estimate

Process Operating Cost	$/tonne
Labour	$11.07
Power	$6.31
Consumables	$8.49
Maintenance	$5.34
Laboratory	$0.53
Total $/tonne	**$31.75**

Table 49 provides a breakdown of the G&A operating cost estimate.

Table 49: Estimated G&A Operating Cost

G&A Item	$/tonne
Staff and staff support	$10.88
Office expenses (Ouagadougou and site)	$1.90
Insurances	$1.15
Legal fees, auditing	$0.41
Consultants	$0.77
Contracts (security, other)	$2.66
Community	$1.29
Other	$2.83
Total G&A	**$21.88**

21 Economic Analysis

This section summarizes the economic analysis completed to support the bankable feasibility of the Yaramoko project. The Qualified Person taking professional responsibility for this section is Brian Connolly, PEng (PEO #90545203) of SRK.

21.1 Summary

The Yaramoko project has been evaluated on a discounted cash flow basis. The results of the analysis show the Yaramoko project to be economically very robust. The pre-tax present value of the net cash flow with a 5% discount rate (PVNCF5%) is $300 million using a base gold price of $1,300/oz. Project post-tax PVNCF5% at a $1,300 gold price is $250 million on an all equity basis. Internal rates of return (IRR) are respectively 53.7% pre-tax and 48.4% post-tax.

The government of Burkina Faso is entitled to a 10% interest in the project. The economic analysis assumes that Roxgold will provide all development funding via loans to the mine operating entity, which will be paid back with interest from future gold sales. On this basis Roxgold's 90% interest in the project is expected to provide a PVNCF5% of $232 million and an IRR of 48.3% at a gold price of $1,300/oz.

Payback period is expected to be less than two years at a gold price of $1,300/oz. Payback period is defined as the time after process plant start-up that is required to recover the initial expenditures incurred developing the Yaramoko project. At this point in time the project's cumulative undiscounted net cash flow is zero.

Like most gold mining projects the key economic indicators of PVNCF5% and IRR are most sensitive to changes in gold price. A $100/oz reduction in the gold price would reduce Roxgold's PVNCF5% by $32 million, and reduce the IRR by 5.7%. A $100/oz increase in the gold price would increase Roxgold's PVNCF5% by $36 million, and increase the IRR by 6.4%.

The cash flow analysis has been prepared on a constant 2014 US dollar basis. No inflation or escalation of revenue or costs has been incorporated.

21.2 Production and Mill Feed

The quarterly underground mining schedule presented in Section 15.6 of this report was condensed into an annual production and mill feed schedule shown in Table 50. Life of mine mill feed totals 2,036.2 kt at a grade of 11.59 g/t gold. This feed is comprised of 1,996.2 kt underground ore plus 40 kt of surface oxide material. The oxide material is principally utilized to commission the process plant in the latter two months of 2015. Underground ore feed commences in January 2016 and continues for 7.4 years until late May 2023.

It is assumed all underground ore will be stockpiled adjacent to the crusher and rehandled to the plant as required to meet the processing schedule. Table 50 shows that a significant underground ore stockpile is maintained throughout the mine life. The stockpile size is equivalent to two to three months of production serving as a buffer between underground mining and process plant operation.

Table 50 includes annual estimates of recovered gold, based on the projected overall (i.e. gravity plus cyanidation) process recovery estimate of 97% presented in Section 12. A slightly lower recovery (i.e. 96%) was applied during the initial six month ramp-up period. Recovered gold is estimated to total 735,430 oz over the mine life, for an average of 99,500 ounces per year over the 7.4 year underground ore processing period. Payable gold after refinery losses and deductions is estimated at 99% of recovered gold or 728,075 ounces over the mine life.

Table 50: Mine Production and Mill Feed Schedule

	Units	Total	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
UG Ore Mined	kt	1,996.2	-	56.8	260.9	274.7	276.1	279.7	276.6	276.9	258.3	36.2
(to stockpile)	g/t	11.8		18.4	13.8	11.2	11.4	10.0	12.8	12.0	11.0	6.7
UG ore available for feed	kt			56.8	317.7	321.7	327.8	337.5	344.1	350.3	338.6	104.8
(i.e. mined + stockpile)	g/t			18.4	14.6	11.3	11.3	10.2	12.3	12.1	11.3	9.2
Plant Feed												
Feed from UG stockpile	kt	1,996.2	-	-	270.7	270.0	270.0	270.0	270.7	270.0	270.0	104.8
	g/t	11.8		-	15.0	11.4	11.3	10.2	12.3	12.0	11.6	9.2
Feed from Oxide stockpile	kt	40.0	0.0	30.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4
	g/t	0.0		0.0	-	-	-	-	-	-	-	0.0
Total Plant Feed	kt	2,036.2	0.0	30.7	270.7	270.0	270.0	270.0	270.7	270.0	270.0	114.2
	g/t	11.6		0.0	15.0	11.4	11.3	10.2	12.3	12.0	11.6	8.4
Process Recovery	g/t	96.9%		-	96.4%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%
Gold Recovered	'000 oz	735.4	-	-	126.2	95.8	95.1	86.0	104.0	100.9	97.5	30.0
Stockpile Remaining, End of Year												
UG Ore Stockpile	kt		-	56.8	47.0	51.7	57.8	67.6	73.4	80.3	68.6	-
	g/t		-	18.4	12.1	10.8	11.2	10.2	12.3	12.4	10.4	-
Oxide Stockpile	kt		40.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	-
	g/t		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-

21.3 Gold Pricing Assumptions

A base case gold price of $1,300/oz was utilized to evaluate the Yaramoko project. This price is very similar to current spot prices (i.e. $1,287/oz on Apr 22, 2014, the effective date of this report) and is lower than the three year trailing average metal price (i.e. $1,537/oz May 2011 to April 2014) often used to evaluate mining projects.

The gold price has been quite volatile over the past several years as shown in Figure 37. The impact of a wide range of higher and lower gold prices on project economic results is addressed as part of project sensitivity analysis.

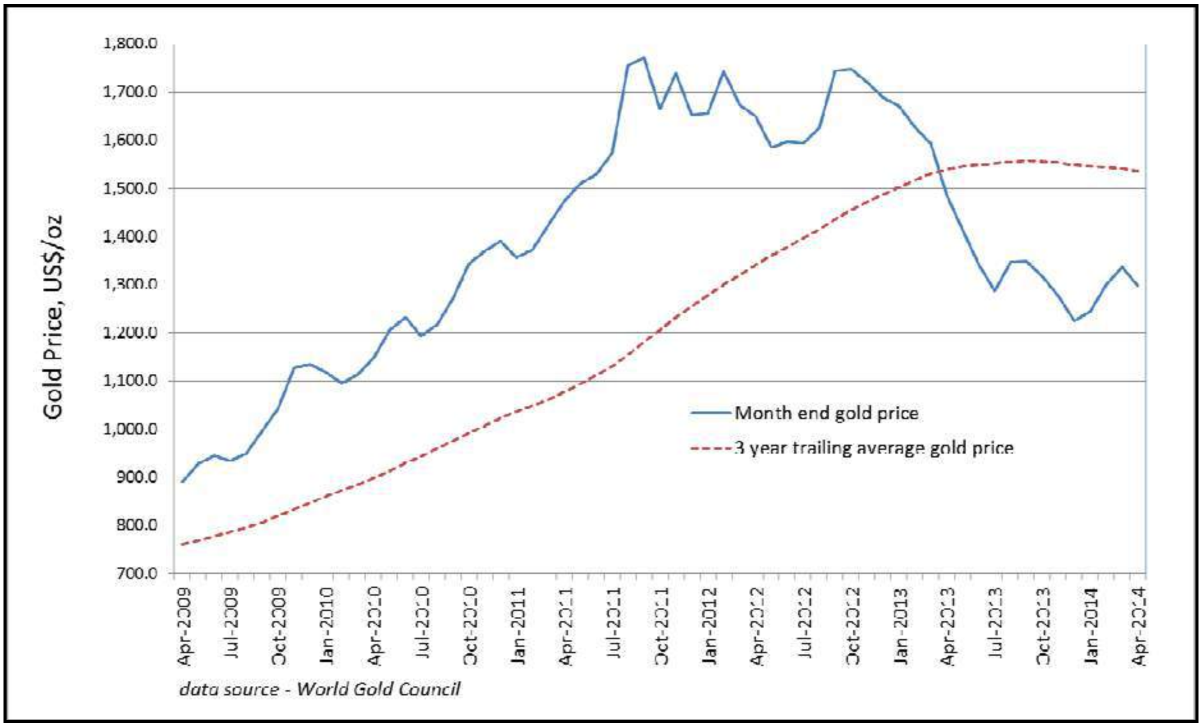


Figure 37: Historical Gold Price

21.4 Cost Estimates

21.4.1 Capital and Operating Costs

Capital and operating cost estimates are presented in Section 20 of this report. Initial capital is estimated at $106.5 million and sustaining capital is estimated at $69.8 million.

As presented in Section 20 life of mine on-site operating costs average $140.06/t milled. Off-site operating costs consist of doré transport and refining, which is estimated at $10/oz of recovered gold.

Capital and operating cost estimates are based on a diesel fuel price of $1.58/L and an electricity price of $0.17/kWh. The electricity price is based on utilizing grid power supplied by the Burkina Faso electricity utility. A power line to connect the mine to the utility is included within project initial capital costs estimates.

All cost estimates are in US dollar currency as of the first quarter 2014.

21.4.2 Closure and Salvage Value

The mine closure cost as presented in Section 17 is estimated at $3.7 million, and is assumed incurred in the final production year (2023). Roxgold has informed SRK that under Burkina Faso legislation an environmental fund needs to be established by the third year of operation, and contributions made to the fund after that point to ensure that closure funds are available at the end of the mine life.

No allowances for salvage value of equipment and facilities are included in the project economic evaluation.

21.4.3 Working Capital

It is estimated that approximately one week of gold production will be contained within mill circuits and between one to two weeks of gold production will be in doré inventory on site or in transit to the refinery. These delays in the receipt of gold revenue contribute to project working capital requirements. Working capital is also required to maintain an operating supplies inventory. It is planned that approximately three months of operating supplies will be purchased in advance and stored on site. Accounts payable, estimated at one month operating cost, partially offsets these working capital requirements.

21.4.4 All-in Unit Cost Estimates

Estimated unit cost estimates, based on World Gold Council non-GAAP metrics, are summarized in Table 51 below. The project is expected to produce gold at an all-in sustaining cost of $590/oz of payable gold. Including initial capital the all-in cost is estimated at $736/oz payable gold.

Table 51: All-in Sustaining Cost and All-in Cost

	$M	$/t milled	$/payable oz
Operating Cost			
Mining	176	86	242
Processing	65	32	89
G&A	45	22	61
Refining	7	4	10
Subtotal, Direct Operating Costs	293	**144**	**402**
Royalties	47	23	65
Total Operating Costs	340	**167**	**467**
Sustaining Capital, and Reclamation			
Underground Mining	62	31	86
Processing	1	0	1
Infrastructure	3	2	4
Environment	3	2	4
Owner's Cost	1	0	1
Contingency	3	2	4
Capital Expenditures (sustaining) and Reclamation	74	**36**	**101**
Corporate G&A Allowance	16	**8**	**22**
All-in Sustaining Cost*	**429**	**211**	**590**
Initial Pre-production Capital Cost			
Underground Mining	31	15	42
Processing	28	14	38
TSF and WSF Facility	6	3	8
Infrastructure	14	7	19
Power Line	9	4	12
First fills, spares, duties & levies	2	1	4
Owner's Cost	9	4	12
Contingency	9	4	12
Capital Expenditures (non-sustaining)	107	**52**	**146**
All-in Cost*	**536**	**263**	**736**

* based on World Gold Council June 27,2013 Press Release: "Guidance Note on Non-GAAP Metrics - All-In Sustaining Costs and All-in Costs"

21.5 Taxes and Royalties

A number of taxes and royalties are included in the economic evaluation, as described below. Roxgold provided SRK with advice on Burkina Faso mining legislation and taxation and worked together with SRK in the modelling of the tax treatment.

21.5.1 Government Royalty

The government of Burkina Faso assesses a gross revenue royalty on gold projects, with the royalty rate varying according to the world gold price. For gold prices less than $1,000/oz, the rate currently is 3.0%. For gold prices greater than or equal to $1,000/oz and less than $1,300/oz the rate rises to a 4.0%. For $1,300/oz and higher gold prices the rate is 5.0%.

21.5.2 Duties and Levies

The government of Burkina Faso assesses a customs duty of 5% and other levies totaling 2.5% on imported goods. During the pre-production period the company is exempt from the customs duty but the other levies are applicable. After start up all imported goods are assessed a total of 7.5% duties and levies. Project capital and operating cost estimates include allowances for government duties and levies.

21.5.3 Value Added Tax

Burkina Faso has a VAT rate currently set at 18%. The VAT is refunded with the exception of VAT on fuel. In this study the base case diesel fuel price of $1.58/L includes non-refundable VAT.

A detailed estimation of VAT for each non-fuel item has not been completed for this study. For the purposes of cash flow forecasting it is assumed that VAT is applicable on 50% of the capital costs and 80% of the operating costs and is refunded four months after it is charged.

21.5.4 Corporate Income Tax

A federal tax rate of 17.5% is applicable on income after deductions for gold mining projects in Burkina Faso. Deductions from income for the purpose of estimating income subject to tax include the following items:

Depreciation

SRK understands that there are a large number of asset classes with varying depreciation rates. Roxgold provided the following guidance as a conservative approximation of depreciation.

Underground development and facilities are depreciated using 30% declining balance method. All other facilities are depreciated using a 20% declining balance. Depreciation commences once the facilities are placed into service and the mine and mill are operating (i.e. 2016). Using the declining balance approach equipment and facilities are not fully depreciated over the mine life. Under base case assumptions un-depreciated assets at the end of the mine life total $24.7 million.

Carry Forward Costs

SRK understands that sunk exploration and other eligible project costs can be carried forward and deducted from income. Roxgold estimates that its eligible sunk project costs total $65 million.

Mine operating losses can also be carried forward and deducted from income in future years.

Other Deductions

Other deductions from income for the purposes of estimating income subject to tax include management fees and interest expenses which are discussed further in Section 21.6 below.

21.5.5 Withholding Taxes

The government of Burkina Faso assesses withholding taxes of 6.25% on interest income and dividends.

21.6 Government Carried Interest

Under the mining code of Burkina Faso the government is entitled to a 10% interest in the project upon formal award on an exploitation permit. Based on guidance provided by Roxgold the planned mechanism to develop and operate the mine and incorporate the government's interest has been modelled as follows:

- A Yaramoko operating company will be formed, with Roxgold holding 90% of the shares and the government of Burkina Faso holding 10% of the shares. Roxgold, as managing shareholder, will receive an annual management fee;
- Roxgold sunk costs and funds provided to develop the mine will be booked as loans to the operating company, to be repaid with interest out of available cash flow;
- The remaining operating company cash flow after sustaining capital requirements have been met will be distributed to the two shareholders in the form of dividends, with 10% of the dividends going to the government of Burkina Faso and 90% to Roxgold; and
- Dividends and interest received by Roxgold will be subject to Burkina Faso withholding taxes.

21.7 Economic Results

Base case economic results as summarized in Table 52 are favourable for the Yaramoko Project. The project pre-tax PVNCF5% is $300 million at the base gold price of $1,300/oz. Project post-tax PVNCF5% at $1,300 gold is $250 million on an all equity basis. Internal rates of return (IRR) are respectively 53.7% pre-tax and 48.4% post-tax.

The government of Burkina Faso is entitled to a 10% interest in the project. Roxgold's 90% interest is expected to provide a PVNCF5% of $232 million and an IRR of 48.3% at a gold price of $1,300/oz, assuming Roxgold provides all funds to develop the mine in the form of loans to the operating company that are repaid, with interest, from gold sales.

At a gold price of $1,300/oz, Roxgold's payback period is expected to be less than two years.

The government of Burkina Faso is estimated to receive an undiscounted $143 million from the Yaramoko project in the form of royalties, dividends, corporate taxes, and withholding taxes. This excludes VAT, duties and levies paid by Roxgold and by its suppliers and contractors.

Detailed cash flow estimates by year are presented in Table 53.

Table 52: Base Case Economic Results Summary

	Units	LoM Total
Gold Revenue		
Gold Price	$/oz	1,300
Gold Sales	000 oz	728.1
Gold Sales Revenue	$M	946
Operating Costs		
Mining	$M	-176
Processing	$M	-65
G&A	$M	-45
Gold transport and refining	$M	-7
Total Opex excluding royalty	$M	-293
Royalty	$M	-47
Total Opex including Royalty	$M	-340
Capital and Closure Costs		
Development capital	$M	-106.5
Sustaining capital	$M	-69.8
Closure	$M	-3.7
Total capital and closure costs	$M	-180.0
Project Net Cash Flow, pre-tax	**$M**	**427**
PVNCF 5%	$M	300
PVNCF 7.5%	$M	253
PVNCF 10%	$M	214
IRR	%	53.7%
Payback Period	years	1.5
Project Net Cash Flow, post tax, all equity basis		
Income Tax, all equity basis	$M	-68
Project Net Cash Flow, post tax all equity basis	**$M**	**358**
PVNCF 5%	$M	250
PVNCF 7.5%	$M	210
PVNCF 10%	$M	176
IRR	%	48.4%
Payback Period, post-tax	years	1.6
Roxgold Net Cash Flow, post tax		
Project Net Cash Flow, pre-tax, from above	$M	427
Income Tax, with interest & mgmt fee deduction	$M	-56
Withholding taxes on interest and dividends	$M	-16
Dividends to government (re gov't 10% carried interest)	$M	-23
Roxgold Net Cash Flow, post tax	**$M**	**331**
PVNCF 5%	$M	232
PVNCF 7.5%	$M	195
PVNCF 10%	$M	165
IRR	%	48.3%
Payback Period	years	1.5

Table 53: Base Case Cash Flow Details

	Units	Total	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Plant feed	tonnes	2,036.2		30.7	270.7	270.0	270.0	270.0	270.7	270.0	270.0	114.2
Au grade	g/t	11.59		0.00	15.04	11.38	11.29	10.22	12.32	11.98	11.58	8.41
Process recovery	%	96.9%		0.0%	96.4%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%
Recovered gold	000 oz	735.4		0.0	126.2	95.8	95.1	86.0	104.0	100.9	97.5	30.0
Payable gold	000 oz	728.1		0.0	125.0	94.8	94.1	85.2	103.0	99.9	96.5	29.7
Revenue												
Gold price	$/oz	1,300		1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300
Gross revenue	$000	946,498		0	162,442	123,300	122,369	110,720	133,851	129,809	125,459	38,548
Operating Costs												
Surface oxide mining	$000	-80		-61	0	0	0	0	0	0	0	-19
Underground mining	$000	-175,912		0	-32,355	-29,315	-30,827	-25,740	-18,766	-19,259	-16,946	-2,704
Processing	$000	-64,645		-634	-9,181	-9,156	-8,984	-8,984	-8,517	-8,493	-7,517	-3,180
G&A	$000	-44,556		0	-6,382	-6,365	-6,035	-6,035	-5,824	-5,808	-5,698	-2,410
Total On-site Operating Costs	$000	-285,193	0	-695	-47,918	-44,835	-45,846	-40,759	-33,106	-33,560	-30,161	-8,312
Transport & refining	$000	-7,354		0	-1262	-958	-951	-860	-1040	-1009	-975	-300
Total Operating Cost excluding royalty	$000	-292,547		-695	-49,181	-45,793	-46,797	-41,619	-34,146	-34,568	-31,136	-8,612
Royalty	$000	-47,325		0	-8,122	-6,165	-6,118	-5,536	-6,693	-6,490	-6,273	-1,927
Total Operating Cost including royalty	$000	-339,872		-695	-57,303	-51,958	-52,915	-47,155	-40,839	-41,059	-37,409	-10,539
Operating Margin	**$000**	**606,626**		**-695**	**105,139**	**71,342**	**69,454**	**63,565**	**93,012**	**88,751**	**88,050**	**28,008**
Capital Costs												
Total Initial Capital	$000	-106,513	-24,269	-82,244								
Total Sustaining Capital	$000	-69,810			-16,156	-17,237	-14,615	-18,794	-1,821	-673	-513	0
Total Capital Costs	$000	-176,323	-24,269	-82,244	-16,156	-17,237	-14,615	-18,794	-1,821	-673	-513	0
Reclamation & Closure												
Environmental Fund Contributions & Withdrawals	$000	0			0	0	-1,118	-522	-522	-522	-522	3,204
Reclamation & Closure Costs	$000	-3,726			0	0	0	0	0	0	0	-3,726
Total Reclamation and Closure	$000	-3,726			0	0	-1,118	-522	-522	-522	-522	-522
Working Capital												
Total Working Capital Requirement	$000			-43	-5,484	-3,594	-3,459	-3,245	-5,152	-4,891	-4,936	0
Change in Working Capital	$000	0		-43	-5,442	1,890	135	215	-1,907	261	-45	4,936
VAT, *excl VAT on fuel (in fuel price)*	rate											
VAT paid net of refunds	$000	0	-728	-1,773	-284	116	-3	137	876	13	168	1,479
Project Net Cash Flow, pre-tax equity basis	**$000**	**426,578**	**-24,997**	**-84,754**	**83,257**	**56,110**	**53,853**	**44,601**	**89,639**	**87,829**	**87,139**	**33,901**
Payback Period	Years	1.5			1.0	0.5	-	-	-	-	-	-
PVNCF 5%	$000	300,248	-24,395	-78,773	73,697	47,302	43,237	34,104	65,278	60,914	57,558	21,326
PVNCF 7.5%	$000	253,012	-24,109	-76,041	69,486	43,562	38,893	29,964	56,020	51,059	47,124	17,054
PVNCF 10%	$000	213,662	-23,834	-73,464	65,605	40,195	35,071	26,405	48,244	42,973	38,759	13,708
IRR	%	53.7%										
Income Tax, all equity basis												
Operating margin	$000	606,626	-	-695	105,139	71,342	69,454	63,565	93,012	88,751	88,050	28,008
Depreciation	$000	-151,612	-	0	-27,154	-25,415	-23,657	-22,424	-19,463	-14,572	-10,849	-8,078
Losses carried forward	$000	695	-	695	0	0	0	0	0	0	0	0
Previous year losses & sunk costs claimed	$000	-65,695	-	0	-65,695	0	0	0	0	0	0	0
Income subject to tax	$000	390,014	-	0	12,290	45,927	45,797	41,141	73,549	74,179	77,202	19,930
Income Tax, all equity basis	$000	-68,252	-	0	-2,151	-8,037	-8,014	-7,200	-12,871	-12,981	-13,510	-3,488
Project Net Cash Flow, post tax all equity basis	**$000**	**358,325**	**-24,997**	**-84,754**	**81,106**	**48,073**	**45,839**	**37,401**	**76,768**	**74,848**	**73,629**	**30,413**
Payback Period	Years	1.6			1.0	0.6	-	-	-	-	-	-
PVNCF 5%	$000	250,134	-24,395	-78,773	71,793	40,526	36,803	28,598	55,905	51,911	48,634	19,132
PVNCF 7.5%	$000	209,701	-24,109	-76,041	67,691	37,323	33,105	25,127	47,976	43,513	39,818	15,300
PVNCF 10%	$000	176,030	-23,834	-73,464	63,911	34,437	29,851	22,142	41,317	36,621	32,750	12,298
IRR	%	48.4%										

Table 53 (continued): Base Case Cash Flow Details

	Units	Total	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Income Tax, based on financing provided by Roxgold												
Operating margin	$000	606,626	0	-695	105,139	71,342	69,454	63,565	93,012	88,751	88,050	28,008
Management fees	$000	-20,000	-2,000	-2,000	-2,000	-2,000	-2,000	-2,000	-2,000	-2,000	-2,000	-2,000
Interest expense accrued on loans	$000	-50,863	-5,754	-7,875	-15,428	-10,198	-6,814	-3,712	-1,082	0	0	0
Depreciation	$000	-151,612	0	0	-27,154	-25,415	-23,657	-22,424	-19,463	-14,572	-10,849	-8,078
Losses carried forward	$000	18,324	7,754	10,570	0	0	0	0	0	0	0	0
Previous year losses & sunk costs claimed	$000	-83,324	0	0	-60,557	-22,767	0	0	0	0	0	0
Income subject to tax	$000	319,151	0	0	0	10,962	36,983	35,429	70,467	72,179	75,202	17,930
Income Tax, with interest & mgmt fee deduction	$000	-55,851	0	0	0	-1,918	-6,472	-6,200	-12,332	-12,631	-13,160	-3,138
Government of Burkina Faso Carried Interest												
Project net cash flow, pre-tax	$000	426,578	-24,997	-84,754	83,257	56,110	53,853	44,601	89,639	87,829	87,139	33,901
Management fee	$000	-20,000	-2,000	-2,000	-2,000	-2,000	-2,000	-2,000	-2,000	-2,000	-2,000	-2,000
Project development loan	$000	114,224	27,688	86,536	0	0	0	0	0	0	0	0
Project development loan payback	$000	-114,224	0	0	-68,628	-45,596	0	0	0	0	0	0
Sunk costs payback	$000	-65,000	0	0	0	-1,631	-22,792	-27,053	-13,524	0	0	0
Income tax, with interest & mgmt fee deduction	$000	-55,851	0	0	0	-1,918	-6,472	-6,200	-12,332	-12,631	-13,160	-3,138
VAT on accrued interest expense, net of refunds	$000	0	-690	218	-453	314	203	186	158	65	0	0
Interest paid on loan and sunk costs	$000	-50,863	0	0	-12,176	-5,279	-22,792	-9,534	-1,082	0	0	0
Project cash flow distributable as dividends	$000	234,863	0	0	0	0	0	0	60,858	73,263	71,979	28,763
Dividends to government (10% carried interest)	$000	23,486	0	0	0	0	0	0	6,086	7,326	7,198	2,876
Roxgold Net Cash Flow, post tax												
Project net cash flow, pre-tax	$000	426,578	-24,997	-84,754	83,257	56,110	53,853	44,601	89,639	87,829	87,139	33,901
Income tax, with interest & mgmt fee deduction	$000	-55,851	0	0	0	-1,918	-6,472	-6,200	-12,332	-12,631	-13,160	-3,138
VAT on interest expense, net of refunds	$000	0	-690	218	-453	314	203	186	158	65	0	0
Withholding tax on interest and dividends	$000	-16,390	0	0	-761	-330	-1,425	-596	-3,491	-4,121	-4,049	-1,618
Dividends to government (10% carried interest)	$000	-23,486	0	0	0	0	0	0	-6,086	-7,326	-7,198	-2,876
Roxgold Net Cash Flow, post tax	$000	**330,850**	**-25,688**	**-84,536**	**82,043**	**54,176**	**46,160**	**37,991**	**67,888**	**63,815**	**62,732**	**26,269**
Payback Period	Years	1.5			1.0	0.5	-	-	-	-	-	-
PVNCF 5%	$000	232,423	-25,069	-78,570	72,622	45,671	37,060	29,049	49,438	44,259	41,436	16,525
PVNCF 7.5%	$000	195,438	-24,775	-75,846	68,473	42,061	33,337	25,523	42,427	37,099	33,925	13,215
PVNCF 10%	$000	164,529	-24,492	-73,275	64,649	38,809	30,060	22,492	36,538	31,223	27,903	10,622
IRR	%	**48.3%**										

21.8 Sensitivity Analysis

The project's PVNCF5% and IRR sensitivity to changes in gold price is shown in Table 54. The base case price of $1,300/oz provides a PVNCF5% of $232 million and a 48.3% IRR to Roxgold. If the gold price rises 23% to $1,600/oz the PVNCF5% would rise 47% to $342 million and the IRR would rise to 66.7%. Conversely, a 23% reduction in the gold price to $1,000/oz results in a 45% drop in Roxgold's PVNCF5% to $128 million and a reduction in IRR to 28.3%. At the lower price the payback period rises from 1.5 years to 3.2 years.

Table 54: Project Economics Sensitivity to Gold Price

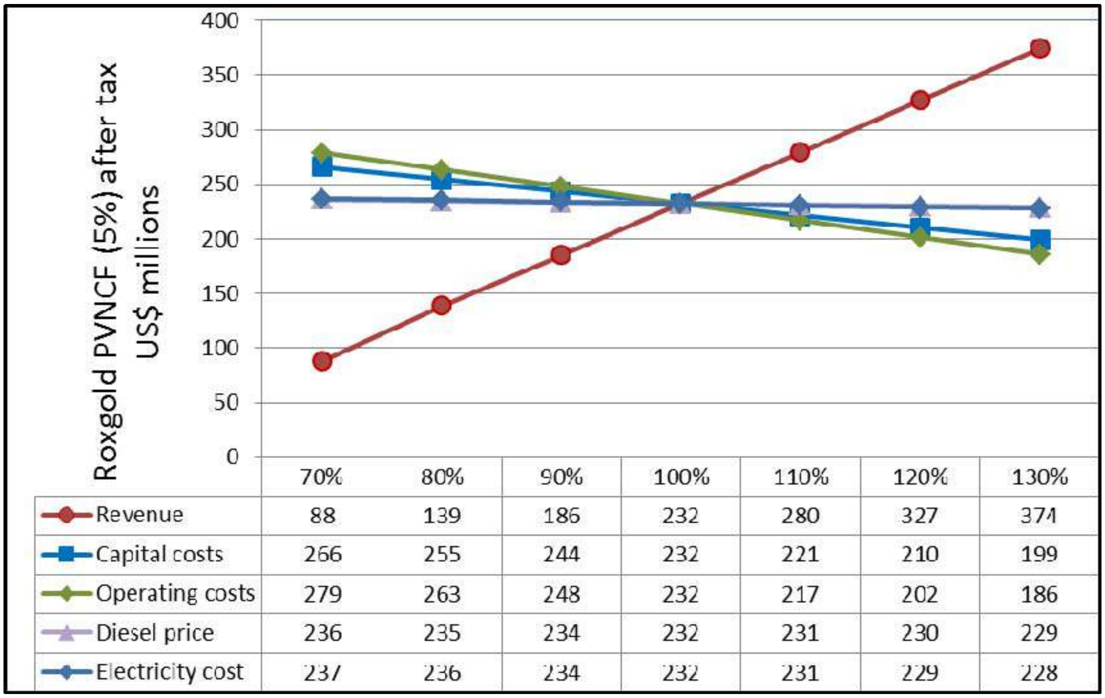
Gold Price	US$/oz	$1,000	$1,100	$1,200	**$1,300**	$1,400	$1,500	$1,600
Project NCF pre-tax, all equity basis								
Project NCF pre-tax	$M	226	296	366	**427**	496	565	634
PVNCF 5%	$M	147	201	254	**300**	353	406	459
PVNCF 7.5%	$M	118	165	212	**253**	300	346	393
PVNCF 10%	$M	94	136	178	**214**	255	296	338
IRR	%	30.4%	38.8%	46.9%	**53.7%**	61.4%	68.8%	76.1%
Payback	years	3.1	2.2	1.8	**1.5**	1.2	1.1	0.9
Project NCF post-tax, all equity basis								
Project NCF post-tax	$M	193	251	308	**358**	415	472	530
PVNCF 5%	$M	124	168	212	**250**	294	337	381
PVNCF 7.5%	$M	98	137	176	**210**	248	287	325
PVNCF 10%	$M	77	112	146	**176**	210	244	278
IRR	%	27.8%	35.2%	42.5%	**48.4%**	55.0%	61.5%	67.8%
Payback	years	3.2	2.4	1.9	**1.6**	1.4	1.2	1.0
Roxgold NCF post-tax, with all project financing provided by company								
Roxgold NCF post-tax	$M	198	244	290	**331**	378	425	473
PVNCF 5%	$M	128	165	201	**232**	269	305	342
PVNCF 7.5%	$M	102	135	167	**195**	228	260	292
PVNCF 10%	$M	80	110	139	**165**	193	222	251
IRR	%	28.3%	35.6%	42.5%	**48.3%**	54.6%	60.9%	66.7%
Payback	years	3.2	2.3	1.8	**1.5**	1.3	1.1	1.0

The sensitivity of the PVNCF5% and IRR of Roxgold's 90% interest in the project to +/- 30% changes in the key operating parameters of revenue, capital costs, operating costs, and oil price are shown in Figure 38 and Figure 39. The sensitivities results due to a particular parameter change assume the remaining parameters remain unaffected.

A review of Figure 38 and Figure 39 shows that, like most mining projects, the PVNCF5% and IRR are most sensitive to changes in revenue parameters, which include gold price, process plant head grade, and, on the downside, process plant recovery. Note that base case process plant recovery is quite high at 97%, and cannot exceed 100%, so the upside on revenue is limited to improvements in gold price and head grade.

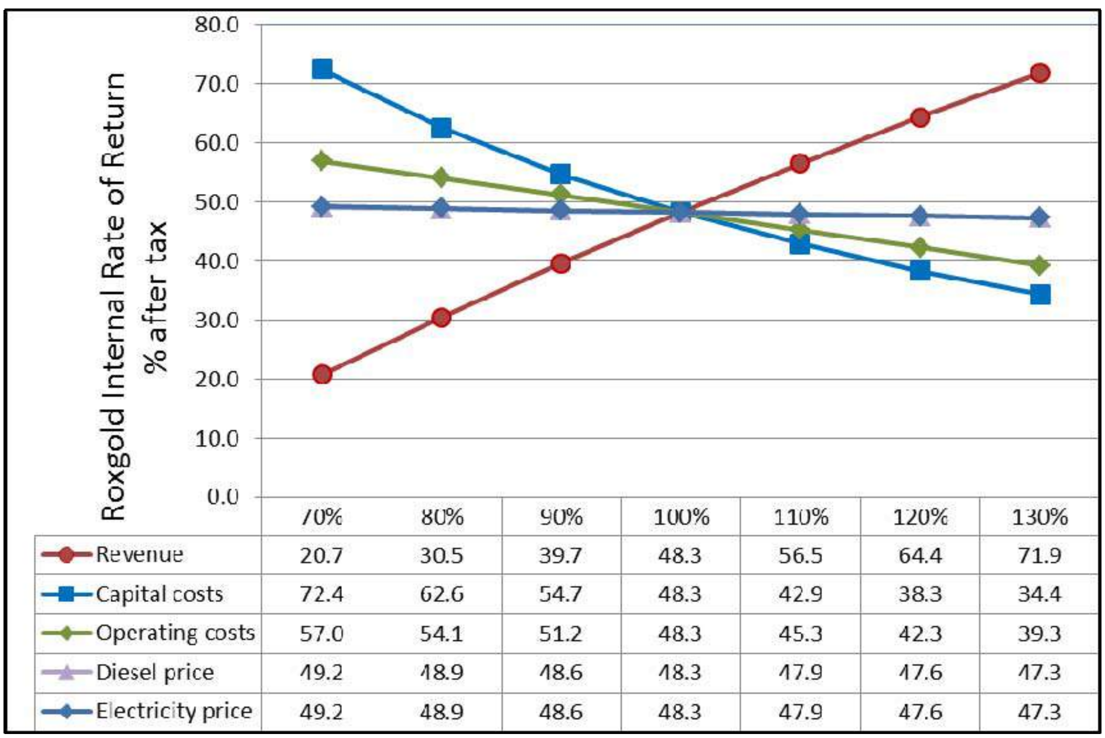
The project PVNCF5% is slightly more sensitive to changes in operating costs than to capital costs. This is attributed to the fact that total base case operating costs excluding royalties are about 1.6 times total capital costs. Of the parameters examined the project is least sensitive to changes in the diesel fuel price and electricity price. These two components each represent less than 10 % of base case operating costs.

The IRR is more sensitive to changes in project capital costs, which are weighted heavily at the front-end of the project, than to operating costs.



	70%	80%	90%	100%	110%	120%	130%
Revenue	88	139	186	232	280	327	374
Capital costs	266	255	244	232	221	210	199
Operating costs	279	263	248	232	217	202	186
Diesel price	236	235	234	232	231	230	229
Electricity cost	237	236	234	232	231	229	228

Figure 38: Roxgold PVNCF5% Sensitivity to Key Input Parameters



	70%	80%	90%	100%	110%	120%	130%
Revenue	20.7	30.5	39.7	48.3	56.5	64.4	71.9
Capital costs	72.4	62.6	54.7	48.3	42.9	38.3	34.4
Operating costs	57.0	54.1	51.2	48.3	45.3	42.3	39.3
Diesel price	49.2	48.9	48.6	48.3	47.9	47.6	47.3
Electricity price	49.2	48.9	48.6	48.3	47.9	47.6	47.3

Figure 39: Roxgold IRR Sensitivity to Key Input Parameters

22 Adjacent Properties

While the Yaramoko gold project is located in an area of Burkina Faso containing several other gold deposits, including the Mana and Siou mines operated by SEMAFO Inc. and the pre-development Houndé gold project of Endeavour Mining Corporation, there are no adjacent properties that are considered relevant to the purpose of this technical report.

The development plans for the Yaramoko project envision the construction of a power line to connect to the existing power line servicing the Mana project.

23 Other Relevant Data and Information

There are no other relevant data available about the Yaramoko gold project.

24 Interpretation and Conclusions

24.1 General

During the summer of 2013, a group of independent consultants was mandated by Roxgold to prepare a feasibility study to bankable standards to demonstrate the economic viability of an underground mine and onsite concentrator targeting the Indicated mineral resources defined in the 55 Zone of the Yaramoko project.

This technical report provides a summary of the results and findings from each major area of investigation including exploration, geological modelling, mineral resource and mineral reserve estimation, mine design, process design, infrastructure design, environmental management, capital and operating costs and economic analysis. The level of investigation for each of these areas is considered to be consistent with that normally expected with feasibility studies for resource development projects.

The financial analysis performed from the results of this feasibility study clearly demonstrates the robust economic viability of the proposed Yaramoko project using the base case assumptions considered.

The following sections summarize the risks and opportunities for each area of investigation.

24.2 Geology

24.2.1 Risks

The mineral resource model for the 55 Zone is based on geology and analytical information collected from core borehole samples drilled at a range of spacing (25 m for the Indicated mineral resources to more than 50 m elsewhere) and detailed structural geology investigations. The mineral resources were evaluated using a geostatistical block modelling approach constrained by gold mineralization wireframes. Estimates were substantially classified to delineate regular areas of Indicated and Inferred mineral resources, primarily on the basis of the confidence in the geological model and in the block estimates.

The robustness of the resource model was tested using various assumptions and parameters (compositing, capping, and boundary treatment). The results show that the block model is relatively insensitive to slight changes in the modelling assumptions considered. There is a risk, however, that at the reporting cut-off grade, the Indicated tonnage and grade estimates are over or under estimated, particularly along the fringes of the deposit that are informed by more widely spaced sampling.

The bulk of the contained gold is located within a dilatational quartz vein zone and is characterized by very high grade. There is a risk that the higher grade dilatational quartz vein zone may be less continuous than modelled. This risk is, however, considered low because the geometry of the modelled dilatational structure is based on detailed structural geology investigations.

There is a risk that the extent of the gold mineralization is different than the constraining domains used, particularly for the higher grade gold mineralization. The impact of the use of a quartz vein sub-domain to constrain the higher grade gold mineralization was tested by considering an alternative domain modelling approach. At the reporting cut-off grade, there is a risk that the Indicated quantity and grade estimates are lower than those predicted by the SRK model.

24.2.2 Opportunities

The feasibility study targets the Indicated mineral resources of the 55 Zone only, primarily above the 4884 m elevation. The Indicated mineral resources are enclosed in a larger envelope of Inferred mineral resources extending laterally and at depth. The 55 Zone remains open to the West, the East and at depth. There is a good opportunity to increase the mineral resources available to mining with infill drilling targeting the Inferred mineral resources, along the fringes of the Indicated mineral resources particularly to the West, the East and at depth.

At depth, high grade gold mineralization was intersected. The confidence in the geological continuity of those intercepts is poor at the present borehole spacing. Infill drilling targeting these depth extensions offers an opportunity to expand the high grade gold mineralization.

A series of small mineralized zones intersected near surface in the footwall of the 55 Zone was not considered for this feasibility study. These structures present an opportunity to expand the mineral resources with additional delineation drilling.

Finally, the 55 Zone occupies only a small fraction of the Yaramoko project. Exploration work completed by Roxgold elsewhere on the property is yielding encouraging results (e.g. Bagassi South, 109 Zone, 109 Hill, 117 Zone, 300 Zone and Haho), indicating that there is a good opportunity to delineate additional, near surface gold mineral resources elsewhere on the Yaramoko project.

24.3 Underground Mine Plan Risks and Opportunities

24.3.1 Risks

External Dilution

There is a risk of increased external dilution beyond the planned amount. Excessive gouging of wall rocks during development could lead to more wall rock dilution than planned, as could excessive deviation of blast holes. This would reduce the mill head grade and have a negative impact on revenue.

Heat in the Underground Working Environment

There is a risk that excessive temperatures underground could adversely impact the planned mining productivities. This risk was mitigated by planning for a large contingency in ventilation air flow rate. In addition, the shallow depth of the mine significantly limits heating from air auto compression and from increasing rock temperature at depth.

24.3.2 Opportunities

Backfill System

It may be possible to change the backfill type and backfill system to a lower cost solution. The estimated cost of backfilling with cemented rock fill is nominally $15 per tonne of ore (44% of this is cement cost).

It may be possible to design a more economical solution based on incorporating tailings into the backfill supply. This would require a technical study supported by strength testing and other analysis. Such an option would have the benefit of eliminating the need for a dedicated backfill rock quarry. SRK understands that Roxgold is actively pursuing this potential opportunity.

24.4 Processing and Infrastructure

24.4.1 Risks

Processing plant and ancillary facility construction costs and schedule

The simplicity of the flow sheet and the relatively small size of the proposed processing plant and ancillary infrastructures help reduce the risks associated with the processing and infrastructure aspect. The main risks to the project are cost overrun and schedule of construction and commissioning.

Associated with these risks are geotechnical ground conditions that could force relocation of certain infrastructure with potential impact on cost and construction schedule.

Groundwater contamination from tailings storage facility

There is a low risk that water seepage from the tailings storage facility may contaminate ground water. This risk can be mitigated with the use of a liner at a cost of approximately $1.0M.

Power supply

The availability of grid power supply presents a risk as well as an opportunity as noted below. Permitting and delivery of the proposed grid connection may force extending the use of diesel generation longer than anticipated with an impact on power costs.

24.4.2 Opportunities

Water balance

It is possible that underground mine dewatering will meet process water requirements. This provides an opportunity to remove a tailings thickener. Tailings thickener removal, however, could prevent realizing an opportunity to use tailings as paste backfill.

Power supply

Early delivery of the proposed grid connection would provide an opportunity to lower power costs.

24.5 Hydrogeology

24.5.1 Risks

The hydrogeology model is based on limited field hydrogeology investigations supplemented with a structural/geotechnical review of brittle faults and hydrogeological evaluation of rock geotechnical data and core observations. This approach placed a significant reliance on indirect sources of data and therefore placed greater uncertainty in the study results.

The permeability of the faults in the vicinity of the Yaramoko project is not well understood. The limited hydrogeological tests show that faults have the potential to transmit groundwater flow. The permeability of the other modelled faults was derived from structural geology interpretation. There is a risk that water ingress into the underground mine will be higher than predicted, causing disruption to mining. The mine dewatering system was planned with excess capacity to mitigate that risk.

24.5.2 Opportunities

The hydrogeology model and water ingress predictions are conservative, owing to the limited field testing completed. Additional investigations would help refine the hydrogeology model and improve predictions, possibly leading to a lower underground mine water ingress forecast.

24.6 Mine Geotechnical

24.6.1 Risks

Crown pillar assessments have been completed to provide very short-term, quasi-temporary stope crown pillars with a minimum factor of safety of 1.2 and an anticipated 2 to 5 year lifespan that would allow extraction of the pillar towards the end of mine life. The unknown extent of the near surface underground artisanal mining presents a risk of crown pillar failure and holing through to surface during and following Roxgold's mining activities. Appropriate surface exclusion zones and a suitable underground probing program should be established to prevent access along the vein during this late stage mining.

The footwall infrastructure will likely be impacted by a number of interactions with fault structures that may result in poor ground conditions or water inflow. The design and placement of large excavations or intersections should consider the interpreted fault location, and ground conditions should be verified with cover drilling. Additional investigations should be completed to improve the confidence in brittle fault model prior to, or concurrent with decline advance.

24.6.2 Opportunities

There is an opportunity to increase stope size up to 51 m high by 25 m long by vein width. Additional geotechnical and structural geology investigations on of on-ore excavations are required to test this opportunity to determine the presence and persistence of adverse wedge forming joint sets. Early mine life stope performance should be monitored and calibrated against the predicted performance.

24.7 Environmental and Social

24.7.1 Risks

Delay in obtaining environmental and/or project approvals

Despite Roxgold's best efforts to ensure the ESIA and supporting documentation complies with Burkina Faso regulatory requirements, there is a risk that government expectations may not be fully met and additional studies may be required. The authorities may also take longer to approve the permit applications than currently envisaged. This could delay construction. Roxgold's country manager and environmental manager are communicating regularly with the authorities to facilitate the approval process.

Delay in obtaining access to land

There is a risk of a delay in project start-up if the departure of the artisanal miners is delayed and/or the primary landowners demand compensation for their departure. Roxgold has been negotiating with these parties regarding the process of land acquisition and any associated compensation for loss of livelihoods. Roxgold's local recruitment plans also aim to minimize disruption to livelihoods in the area and optimize the positive benefits associated with the project.

Unmet community expectations

The nearby communities have high expectations relating to job creation, community development and improvement in services and infrastructure. Meeting these expectations will be a significant challenge resulting in possible dissatisfaction with Roxgold and the associated risks of community action against the project and loss of social license to operate. Roxgold expects to minimize this risk with its social management plans relating to community development, stakeholder engagement and artisanal miners.

Reputational risks

Artisanal mining activities on the site present significant health and safety risks (as evidenced by the loss of life in 2013). Although unrelated to any project activities, there is a risk the project may be blamed for any future incidents associated with this activity on the Yaramoko site, potentially causing reputational harm to Roxgold through negative media or community relations.

Long term impacts of groundwater movement away from the mine workings

The geochemical assessment of the waste rock suggests that there is a risk that water quality from backfilled underground workings may not comply with Burkina Faso water quality standards. Although the ESIA indicates no significant impacts are predicted, there is limited data on the long term potential of contaminant generation and potential for any contamination to move away from the workings post closure. During operation, Roxgold will need to undertake further studies to confirm the ESIA and feasibility study assumptions. Mitigation may require sealing the underground workings at closure to prevent contaminants entering groundwater.

Cyanide concentration levels in the tailings storage facility

Cyanide destruction is not proposed in the waste management system. The testing available suggests concentration of available cyanide in the tailings pool will be below the regulatory requirement of 50 ppm and therefore is expected not to pose a risk to birdlife or livestock who may be attracted to the pool as a source of water. The low permeability of the tailings facility will minimize the risk to groundwater. This assumption is based on the designed floor permeability rates and experience at similar operations and will need to be confirmed during operations by close monitoring to ensure compliance with the International Cyanide Management Code. There is a risk, however, that mitigation measures will need to be undertaken to manage cyanide concentrations (such as adding a second tailings thickener, the use of hydrogen peroxide or SO_2 for cyanide destruction, etc) with an impact on sustaining capital and operating costs.

Impacts on community water supply

This could arise from three potential sources:

- Drawdown around the mine workings as a result of mine dewatering. The exact extent of the drawdown cone cannot be confirmed at this stage because of faults acting as preferential flow pathways. This risk can be mitigated by ongoing groundwater monitoring of community boreholes and providing alternative water supplies, if required;
- A low risk of acid rock drainage and metal leaching based on static test work (associated with elevated cyanide concentrations in the tailings pond). This risk will be mitigated during operations with longer term geochemical test work, hydrogeological assessment of the tailings area and regular monitoring of the tailings pond and sedimentation pond water; and
- Long term water quality risk associated with the mine workings discussed above.

25 Recommendations

The results of the feasibility study demonstrate that the development of the proposed Yaramoko project has sound financial merit at the base case assumptions considered. The results are considered sufficiently reliable to guide Roxgold's management in a decision to build the project.

Analysis of the results and findings from each major area of investigation completed as part of this feasibility study suggests several recommendations for further investigations to mitigate risks, improve the base case designs and or to be considered during the operation of the project. The following paragraphs summarize the key recommendations arising from this study. Each recommendation is not contingent on the results of other recommendations and can be completed in a single phase, concurrently. Where appropriate a cost for the recommended work is included, otherwise the cost is included in the capital and/or operating cost for the project.

25.1 Geology

- Additional infill and step-out drilling is warranted to improve the delineation of the 55 Zone, targeting the areas of Inferred mineral resources with a potential to improve classification. Testing the depth extensions of the gold zones will be more cost effective from underground drilling stations. Approximately 20,000 m of surface core drilling ($4.0M) and 15,000 m of underground core drilling ($2.0M) are adequate to target the fringes of the deposits and to improve the classification of the Inferred mineral resources, respectively;
- Exploration drilling is also warranted to continue the investigation of other gold occurrences on the Yaramoko project with the objective of demonstrating their geological continuity to support mineral resource evaluation. Approximately 10,000 m of surface core drilling ($2.0M) is proposed to define new mineral resources at other targets; and
- Additional structural geology investigations should be carried out to improve the structural geology model of the 55 Zone with a specific emphasis on the brittle fault model to improve hydrogeology and rock geotechnical modelling (approximately $100,000).

At the conclusion of the recommended drilling programs, the geological and mineral resource model should be revised to consider the new drilling information.

25.2 Underground Mining

- The box cut should utilize a steel arch design with complete backfilling around the steel "culvert." (estimated cost is included in mine capital);
- The box cut design should be optimized (minimized) based on criteria for a short term excavation that avoids the rainy season (estimated cost is $7,500);
- Evaluation of backfilling alternatives that may be more cost efficient than the planned use of cemented rock fill (estimated cost is $150,000);
- Undertake a ventilation/heat load study to predict the underground working conditions (estimated cost is $20,000); and
- The underground environment should be monitored, particularly later in the mine life, to identify any opportunities to reduce the very large planned air flow contingency. The cost of this work will be covered by Roxgold's planned mining staff.

25.3 Processing

- Gravity testwork – gravity gold recovery is currently designed at 50%. Additional test work should be completed to determine the range expected (minimum, expected and maximum) to help control the gravity circuit. Bleed to gravity should be maximized for water balance. Additional gravity recoverable gold testing and circuit modelling should also be done. This test work should be completed during operation. The annual costs are estimated at $30,000;
- Ore variability should be monitored when there are major changes to the proposed mine plan and mine development (especially for changes to the mine plan). Additional on-site testing should be completed from time to time in accordance with an updated mine plan during production, to plan in advance if issues are apparent especially in the comminution circuit. This test work would be completed during operation at a cost of approximately $50,000;
- Test work shows very low oxygen demand. However oxygen injection rather than air injection is included in the final design. Tests should be done during initial production to optimise oxygen demand and injection. These tests should be conducted during the first year of operation at a cost of approximately $15,000; and
- Critical size build-up in grinding may potentially be an issue with the waste component in the blend, noting that the blended BRWi / BBWi ratio is below the normal 1.2 limit of concern. If there exists the possibility that greater proportions of waste will be included in the mill feed, or high degrees of variability in mill feed competency are expected, then it is recommended that additional SMC testwork is performed to support the selection of the SAG Mill circuit and confirm the results. Given that a larger SAG mill motor capacity has been specified, this risk is largely mitigated. The cost for such a program is estimated at approximately $50,000

25.4 Hydrogeology

- SRK recommends pre-grouting of open exploration holes that intercept the mine in order to eliminate the potential for injury during blasting and to eliminate or reduce the risk of direct inflow from the surface during rainfall events; and
- SRK recommends that packer testing should be conducted on a selection of additional core boreholes that may be drilled in the area. Packer tests provide good information on the variability of a borehole as it intersects various hydrogeological units and can provide detailed hydraulic properties of various horizons.

25.5 Mine Geotechnical

- To improve the brittle fault model, SRK recommends photo relogging of the remainder of the core photograph database and verification of the brittle fault model (estimated at $50,000);
- SRK recommends onsite field investigation during mine development, including core logging and underground geotechnical/ structural mapping, to test the spatial distribution, orientation, and characteristics of modelled faults (estimated cost is $150,000 including drilling);
- SRK recommends pilot holes be drilled from surface to help plan the surface collar preparation work from the east and west return air raises. Estimated cost is included in mine capital (estimated cost is $75,000); and
- Backfill strength testing should be undertaken for the planned cemented rock backfill. This should include fresh rock and weathered zone material (estimated cost is $25,000).

25.6 Environmental and Social Recommendations

Two key factors drive the feasibility of any mining project, namely the financial aspects of the project and the necessary permitting requirements to obtain a mining license, related approvals and commence construction and operations.

Once Roxgold has obtained the *Avis de Conformité et de Faisabilité Environemental,* the construction of the project can commence. However, a number of additional studies are recommended to understand better the possible environmental and social impacts caused by the proposed project. These include:

Climate

- Continuing climate data collection on site to establish variation between project site and other long-term monitoring data sources. This is part of the routine monitoring work undertaken during operation.

Cemented Rock Fill

- Geochemical characterisation of cemented rock backfill should be undertaken during mine operation to fully quantify the leaching characteristics of this material. The results of the geochemical characterisation should then be incorporated into mine pool water quality predictions and contaminate transport assessments for post closure scenarios. Approximately $25,000 should be allocated for this work during the operation.

Water Quality Monitoring

Further studies are required to investigate the impacts of the ore stockpile on water quality and the long term leaching potential of the tailings storage facility on surface and ground water quality as follows:

- Characterization of leaching potential from ore stockpile (approximately $20,000);
- Further hydrogeological modelling should be undertaken for post closure to quantify the rebound of groundwater levels and movement away from the operations (approximately $50,000);
- Kinetic leaching (such as ASTM D 5744 – Humidity cell test) or alternative accelerated weathering tests should be undertaken to characterize the long term leaching potential of tailings material under extended atmospheric weathering conditions (approximately $20,000);
- Using the results of kinetic leach testing, geochemical predictive modelling should be undertaken to predict water quality of seepage from tailings materials both during mine life and following closure (approximately $50,000);
- Prediction of contaminant fate and transport away from the underground workings and tailings storage facility sources should be made in order to predict water quality at receptor locations during the life of the mine and post closure (approximately $50,000);
- Baseline water quality monitoring should be continued into 2014 to understand natural background exceedances with a frequency reduced to quarterly monitoring. This will allow a comprehensive database to be developed to provide a seasonal baseline and enable any long-term changes in groundwater quality to be identified. This is part of the routine monitoring work undertaken during operation;
- Regular monitoring of drinking water should be undertaken to confirm that there are no impacts on the drinking water supply and assessment of water quality should be made

against representative drinking water guidelines. This is part of the routine monitoring work undertaken during operation;

- Regular monitoring of seepage away from the project infrastructure should be undertaken during operations and post closure in appropriately sited monitoring wells to confirm that seepage from the mine facilities has not impacted groundwater and assessment of water quality should be made against representative drinking guidelines. This is part of the routine monitoring work undertaken during operation; and
- Where possible, (using toe drains etc.) any seepage from the tailings storage facility should be captured and pumped back to the tailings storage facility pond to minimize impacts to surface water courses. This is included in the operating costs.

Water Balance

- While the Knight Piésold report includes a preliminary water balance, some stochastic modelling is recommended, particularly for a climate where there is a prolonged dry season and the resultant likelihood of shortfall in water supply (approximately $10,000 in consulting fees).

Air Quality

- Locate additional air quality and noise monitoring points at the boundary between the project infrastructure and the closest villages (Bagassi, Haro, Banou, and the exploration camp) to provide a more robust baseline. The establishment of monitoring location is nominal ($10,000) with analytical costs on an ongoing basis estimated at approximately $5,000 per year; and
- Consider the cover designs for the waste rock dumps and tailings facilities to minimize the generation of windblown dust from the surface of these facilities. Implementation of this recommendation would be included in the operating costs.

26 References

AGP Mining Consultants Inc., 2012: NI43-101 Technical Report, Mineral Resource Estimate for the Yaramoko, 55 Zone, West-Central Burkina Faso. Report prepared for Roxgold by P. Desautels, PGeo. Dated September 19, 2012. 156 pages. Report available at www.sedar.com

AGP Mining Consultants Inc., 2013a: Resource Update Report for the Yaramoko, 55 Zone, West-Central Burkina Faso. Report prepared for Roxgold by P. Desautels, PGeo and L. Jones, PEng. Dated April 17, 2013. 159 pages. Report available at www.sedar.com

AGP Mining Consultants Inc., 2013b: NI 43-101 Preliminary Economic Assessment for the Yaramoko Project, Burkina Faso. Report prepared for Roxgold by P. Desautels, PGeo, L. Jones, PEng, G. Challiner, CEng, G.Zurowski, PEng, and M. Colantonio, PEng. Dated October 29, 2013. 289 pages. Report available at www.sedar.com

ALS Metallurgy, 2014: Metallurgical Testwork conducted upon Composites from the Yaramoko Project for Mintrex Engineering Pty Ltd/Roxgold Inc. Report prepared by R. Grogan, W. Harding, B. Kay, and K. Wagner. Dated February 2014. 349 pages.

Analytical Solutions Inc., 2013: Review of the Yaramoko Project, 55 Zone, West-Central Burkina Faso Assay Quality Control Program (February – November 2013). Internal report prepared on behalf of Roxgold Inc. Dated December 1, 2013. 25 pages.

Analytical Solutions Inc., 2014: Assay Procedures Memo. Internal memo prepared on behalf of Roxgold Inc. Dated April 23, 2014. 7 pages.

Béziat, D., Dubois, M., Debat, P., Nikiéma, S., Salvi, S., Tollon, F., 2008. Gold metallogeny in the Birimian craton of Burkina Faso (West Africa). Journal of African Earth Sciences, 50, pp. 215-233.

Bond, F.C., 1961: Crushing and Grinding Calculations. British Chemical Engineering, Vol 6, Nos 6 and 8.

Bond, F.C., 1963: Metal Wear in Crushing and Grinding. 54th Ann. Mtg of Inst. Chem. Engrs. Houston, Texas.

Leube, A., Hirdes, W., Mauer, R., Kesse, G.O., 1990. The Early Proterozoic Birimian Supergroup of Ghana and some aspects of its associated gold mineralization. Precambr. Res. 46, 139–165.

GeoMinEx Consultants Inc., 2013. A Contribution to the Geology of Paleoproterozoic Mesothermal Orogenic Lode Gold Mineralization in Zone 55, Yaramoko Project, Houndé Greenstone Belt, Burkina Faso: Lithologies, Hydrothermal Silicate-Carbonate Alteration and Metallic Mineral Assemblages on selected samples utilizing Petrography, Ore Microscopy and Scanning Electron Microscope. Internal report prepared for Roxgold dated May 15, 2013. 391pp.

Groves, D.I., Goldfarb, R.J., Gebre-Mariam, M., Hagemann, S.G., Robert, F., 1998. Orogenic Gold Deposits: a proposed classification in the context of their crustal distribution and relationship to other gold deposit types. Ore Geology Reviews 13, 7-27.

Huot, D., Sattran, V., Zuda, P., 1987. Gold in Birimian Greenstone Belts of Burkina Faso, West Africa. Economic Geology 82, 8, pp. 2033-2047.

Jenike and Johanson Pty Ltd., 2014. Report 30044-1 for the Yaramoko Gold Ore Project. Report prepared for Mintrex on behalf of Roxgold. Dated February 20, 2014. 74 pages.

Metelka, V.; Baratoux, L.; Naba, S.; and Jessell, M.W., 2011. A geophysically constrained litho-structural analysis of the Eburnian greenstone belts and associated granitoid domains, Burkina Faso, West Africa. Precambrian Research, Volume 190, pp 48-69.

Metelka, V., 2011. Geophysical and remote sensing methodologies applied to the analysis of regolith and geology in Burkina Faso, West Africa. PhD thesis. Université de Toulouse. 203pp.

Olson, S.F., Diakit,, K., Ott, L., Guindo, A., Ford, Ch.R.B., Winer, N., Hanssen, E., Lay, N., Bradley, R. and Pohl, D.: Regional setting, structure and descriptive geology of the Middle Proterozoic Syama gold deposit, Mali, West Africa. Economic Geology, vol. 87, 1992, pp. 310-331

Orway Mineral Consultants, 2014. Yaramoko Project BFS Comminution Circuit Design. Report prepared for Mintrex on behalf of Roxgold. Dated March 7, 2014. 28 pages.

Riverstone Resources Inc., 2008 Rapport Semestriel, Permis de Recherche «Yaramoko» (Province des Balés, degré carré de Houndé). 1 juillet 2007 – 31 décembre 2007. Report prepared by PC Delisle and D. Ouattara in January 2008. 22 pages.

Semafo, 2013: Advanced Technical Report, Mana Property, Burkina Faso, Reserev and Resource Update as at June 30, 2013. National Instrument 43-101 technical report prepared Crevier, M., Thibert, F., Roy, R., Moryoussef, P., and Duchesne, S. of SEMAFO Inc. Report dated October 4, 2013. 166 pages. Report available on at www.sedar.com

SRK Consulting (Canada) Inc., 2013a. Yaramoko Aeromagnetic Interpretation. Internal Report prepared for Roxgold. Authored by Fonseca, A. Dated February 20th, 2013. 56 slides.

SRK Consulting (Canada) Inc., 2013b. Structural Geology Investigations on the Yaramoko Gold Project. Internal Report prepared for Roxgold. Authored by Ravenelle J.F. and Couture J.F. Dated April 4th, 2013. 79 slides.

Willemyns P., 1982. Programme des Nations Unies pour le Développement, Projet UPV 74-004, Rapport Final Technique de synthèse de Recherches géologiques et minières dans les sillons de Boromo et Houndé – Haute-Volta 1974-1982.

Vancouver Petrographics Ltd., 2012. Report 120040. Internal report prepared for Roxgold dated February 2012. 52pp.

Villeneuve M., Cornée J.J., 1994. Structure, evolution and palaeogeography of the West Africancraton and bordering belts during the Neoproterozoic; Precambrian Research Volume 69, Issues 1–4, Pages 307–326)

APPENDIX A

Mineral Tenure Information
Yaramoko Exploration Permit

MINISTERE DES MINES
ET DE L'ENERGIE

SECRETARIAT GENERAL

DIRECTION GENERALE DES MINES
ET DE LA GEOLOGIE

BURKINA FASO

Unité - Progrès - Justice

Arrêté N° 2013 000102 /MME/SG/DGMG portant renouvellement à titre exceptionnel du permis de recherche «YARAMOKO» de la société ROXGOLD BURKINA FASO SARL

LE MINISTRE DES MINES ET DE L'ENERGIE

VISA CF n° EE 128
20 MAI 2013

Ministère de l'Economie et des Finances
Direction du contrôle des Marchés Publics et des Engagements Financiers du Ministère des Mines et de l'Energie
Le Directeur D.C.M.E.F
Burkina Faso

VU la Constitution ;

VU la loi n° 031 – 2003/AN du 08 mai 2003, portant code minier au Burkina Faso;

VU le décret n° 2012-1038/PRES du 31 décembre 2012, portant nomination du Premier Ministre;

VU le décret n° 2013- 002/PRES/PM du 02 janvier 2013, portant composition du Gouvernement du Burkina Faso ;

VU le décret n° 2008 – 403/PRES/PM /SGG- CM du 10 juillet 2008, portant organisation type des départements ministériels ;

VU le décret n° 2013- 104/PRES/PM du 07 mars 2013, portant attributions des membres du Gouvernement ;

VU le décret n° 2012-280/ PRES/ PM/SGG-CM du 03 avril 2012, portant organisation du Ministère des Mines, des Carrières et de l'Energie;

VU le décret n° 2005 – 047/PRES/PM/MCE du 03 février 2005, portant gestion des autorisations et titres miniers ;

VU le décret n° 2010–075/PRES/PM/MCE/MEF du 03 mars 2010, portant fixation des taxes et redevances minières ;

VU l'arrêté n° 2005–013/MCE/SG/DGMGC du 17 mars 2005, portant attributions, organisation et fonctionnement de la DGMGC ;

VU les arrêtés d'application n°2002/031/MCE/SG/DGMGC du 06/06/2002, n°2002/056/MCE/SG/DGMGC du 23/07/2002, n°2002/057/MCE/SG/DGMGC du 23/07/2002, n°02/058/MCE/SG/DGMGC du 23/07/2002 du code minier ;

VU l'arrêté n° 2012–192/MCE/SG/DGMGC du 18 septembre 2012, portant transfert du permis de recherche « YARAMOKO » à la société ROXGOLD BURKINA FASO SARL;

VU la demande de la société **ROXGOLD BURKINA FASO SARL** enregistrée le **28 mars 2013**.

ARRETE

ARTICLE 1 : Il est renouvelé dans les conditions du présent arrêté, le permis dénommé «YARAMOKO» de la société **ROXGOLD BURKINA FASO SARL**, situé dans la province des **Balé** pour la recherche de l'**or**.

ARTICLE 2 : Ce permis couvre une superficie de **167** Km². Il est défini par les sommets dont les coordonnées cartésiennes (X, Y) en UTM sont les suivantes :

Sommets	X	Y
A	452 800	1 306 000
B	462 900	1 306 000
C	465 600	1 310 000
D	471 700	1 310 000
E	471 700	1 293 600
F	465 800	1 293 600
G	465 800	1 300 250
H	464 000	1 300 250
I	464 000	1 301 200
J	452 800	1 301 200
Ellipsoïde : Clarke 1880	Datum : Adindan, Zone 30 N	

ARTICLE 3: La validité du permis va du **08/09/2010** au **08/09/2016**. Il ne peut plus être renouvelé conformément aux dispositions législatives et réglementaires en vigueur.

ARTICLE 4 : La société **ROXGOLD BURKINA FASO SARL** bénéficie des avantages douaniers et fiscaux conformément aux dispositions du minier.

ARTICLE 5: Les exonérations douanières mentionnées à l'article 4 ci-dessus excluent les taxes et redevances pour les services rendus.

ARTICLE 6 : La société **ROXGOLD BURKINA FASO SARL** est tenue de communiquer au Directeur Général des Mines et de la Géologie :

- un rapport d'activités au terme de chaque semestre calendaire et un rapport annuel d'activités sur les résultats des travaux de recherche de l'année établis selon les canevas définis par les dispositions de la section 3 de l'arrêté portant définition des formes des rapports d'activités des titulaires des titres miniers et des autorisations.
- le programme prévisionnel de travail et le budget des dépenses de l'année suivante.

Elle fournira en outre :

1. Tous les renseignements miniers recueillis sur le permis ;
2. Un rapport de synthèse sur tous les travaux exécutés à la fin de chaque période de validité du permis ;
3. Tous les échantillons géologiques et minéralogiques demandés par l'Administration des Mines.

2

ARTICLE 7 : Sur l'ensemble du permis et durant toute sa période de validité, il est interdit à la société **ROXGOLD BURKINA FASO SARL** de mener des activités d'exploitation ou d'orpaillage.

ARTICLE 8: Toute transaction relative au permis de recherche est libre mais tous les documents relatifs à cette transaction doivent être soumis au Ministre chargé des Mines et en cas de réalisation de plus value suite à cette transaction, elle doit être notifiée à l'Administration fiscale s/c de l'Administration des Mines.

ARTICLE 9 : Le non respect de la législation minière en vigueur est passible des sanctions prévues par les dispositions légales et réglementaires en la matière, sans préjudice du retrait du bénéfice du code minier et/ou du permis de recherche.

ARTICLE 10 : Le présent arrêté sera publié au journal Officiel du Faso et partout où besoin sera.

Ouagadougou, le 22 MAI 2013

Ministère des Mines et de l'Energie * MINISTRE

Salif Lamoussa KABORE
Officier de l'Ordre National

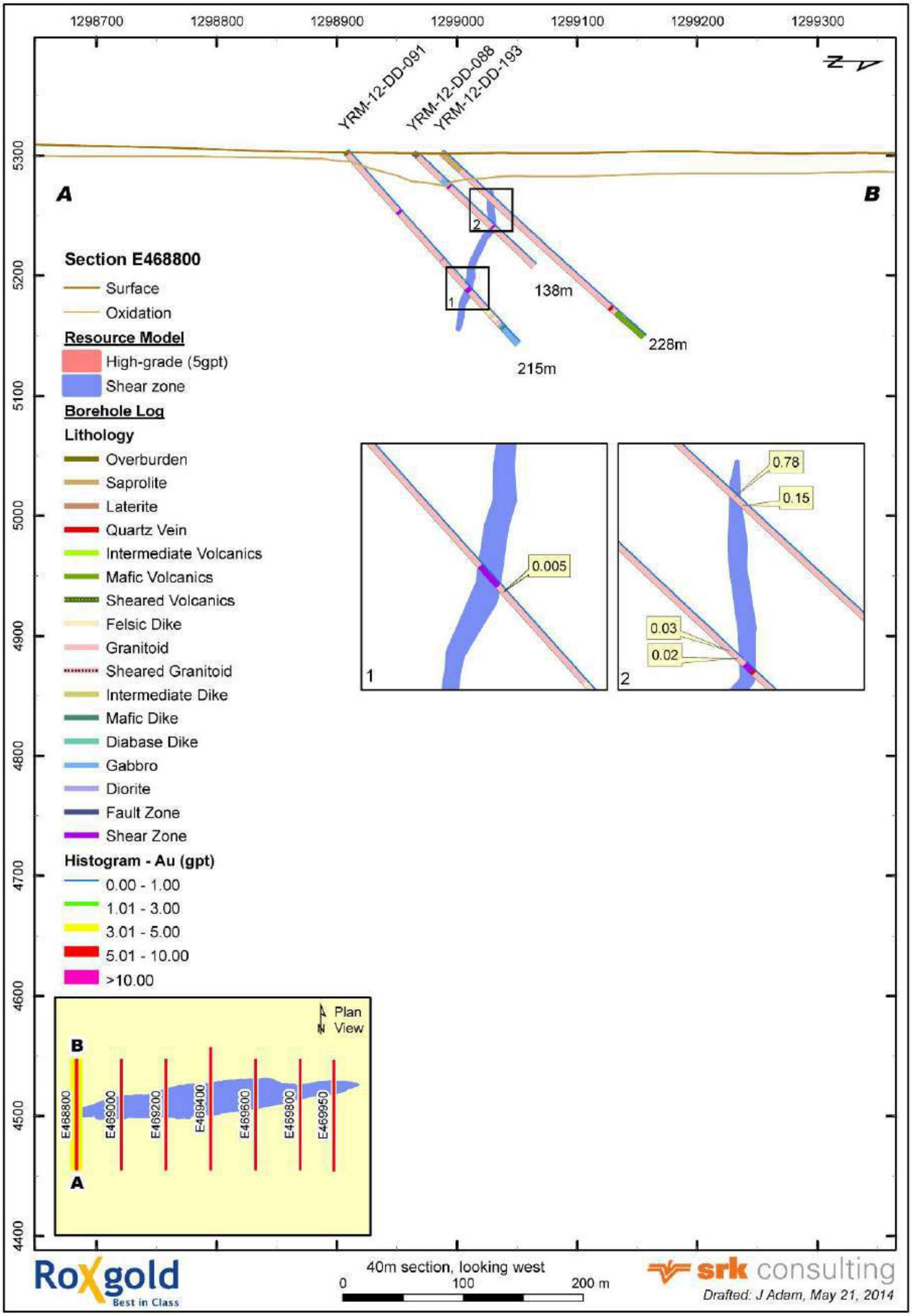
Ampliations

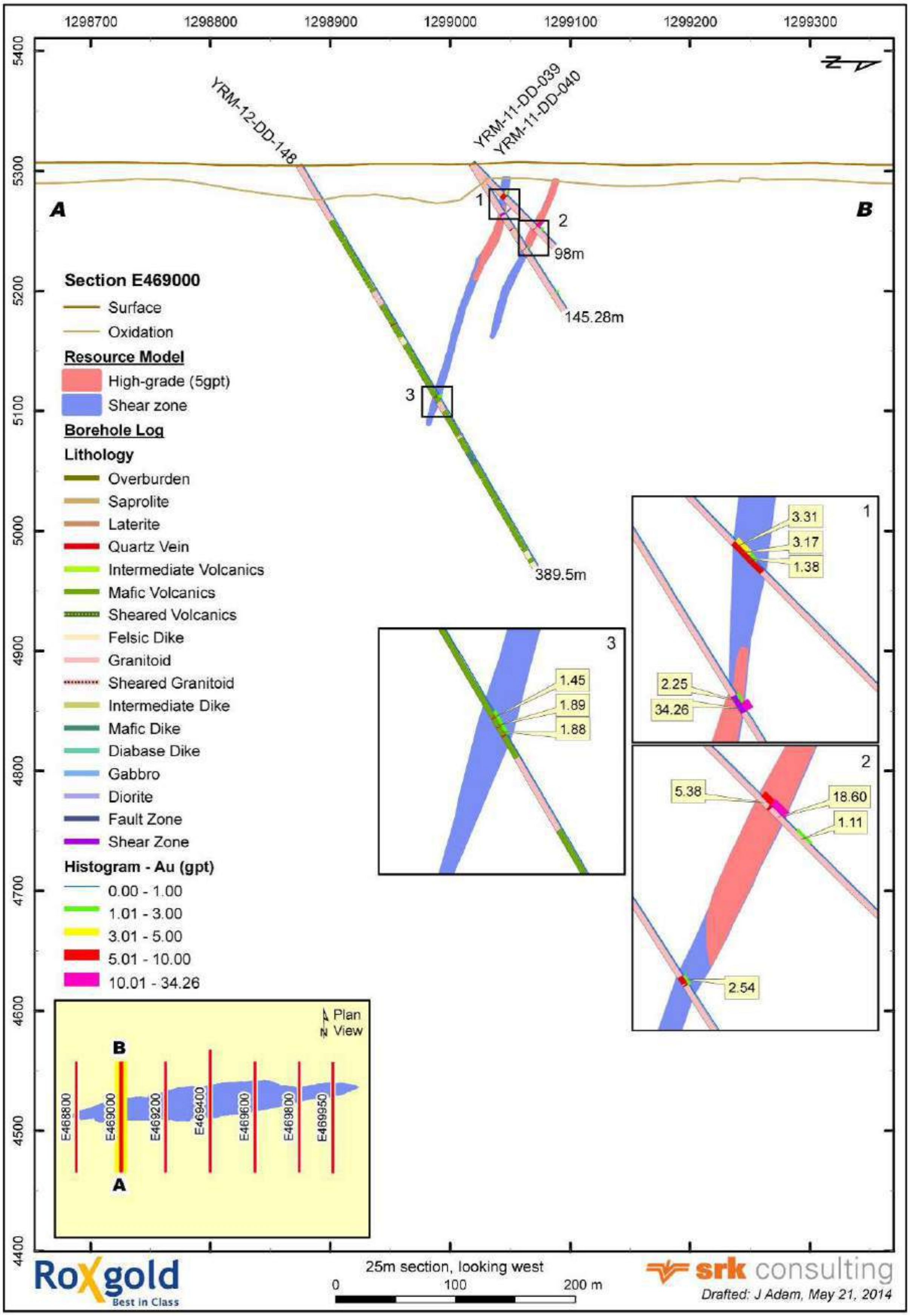
1- SP/ CABINET
2- ITS
4- DGMG
2- BUMIGEB
1- DGD/MEF
1- DGI/MEF
1- Gouverneur / Région de la Boucle du Mouhoun
3- ROXGOLD BURKINA FASO SARL
1 - J.O.
1 – Classement

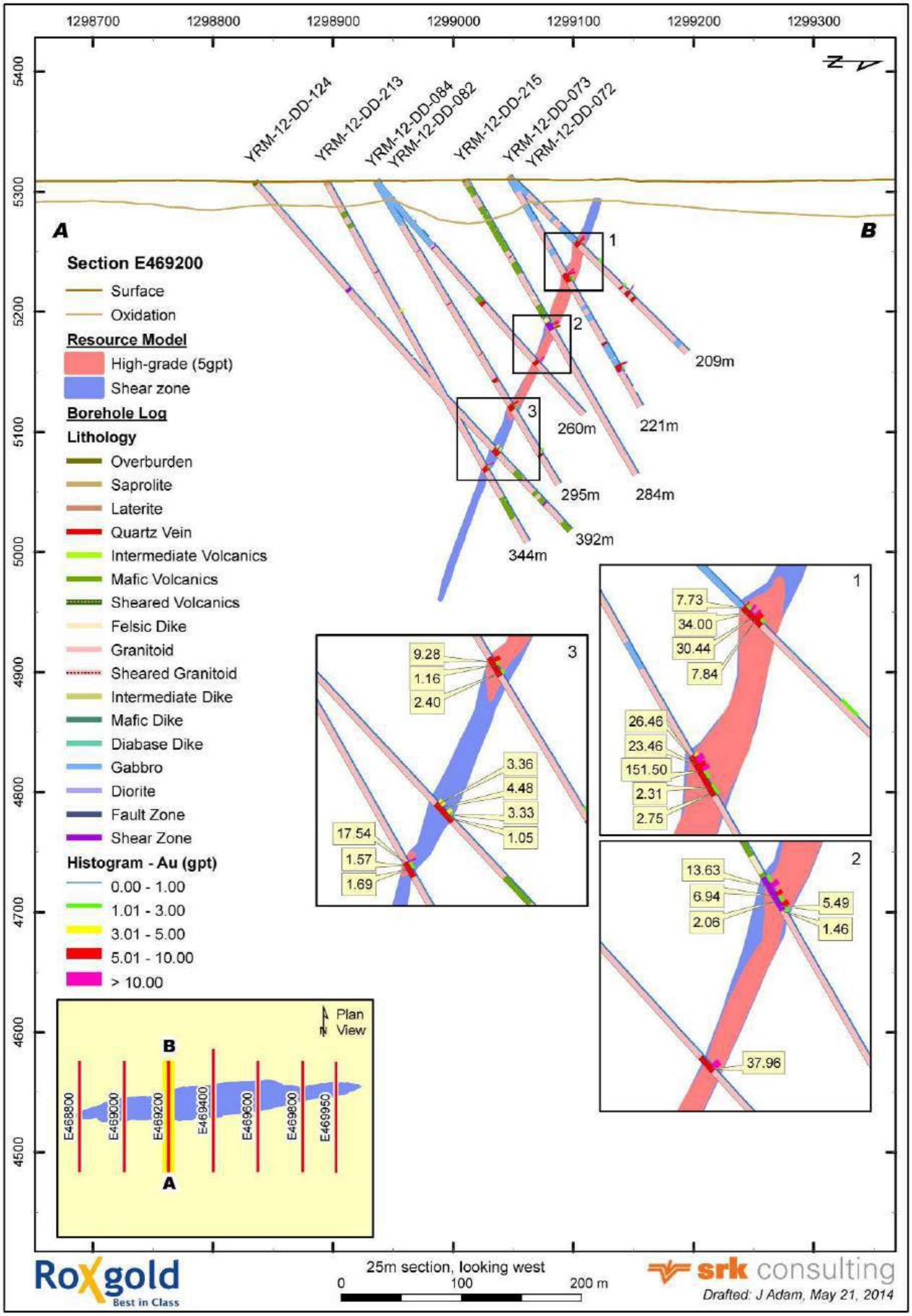
3

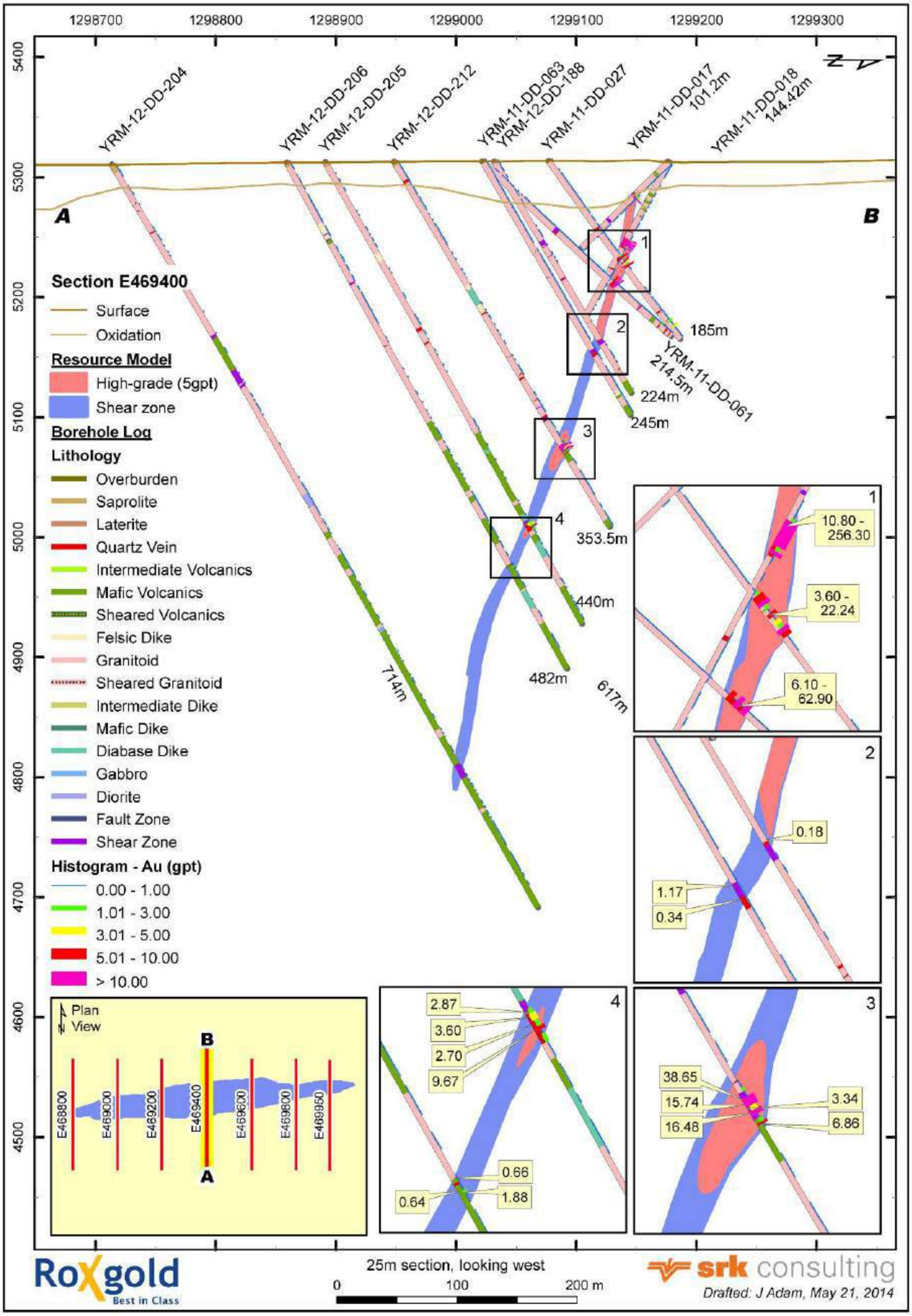
APPENDIX B

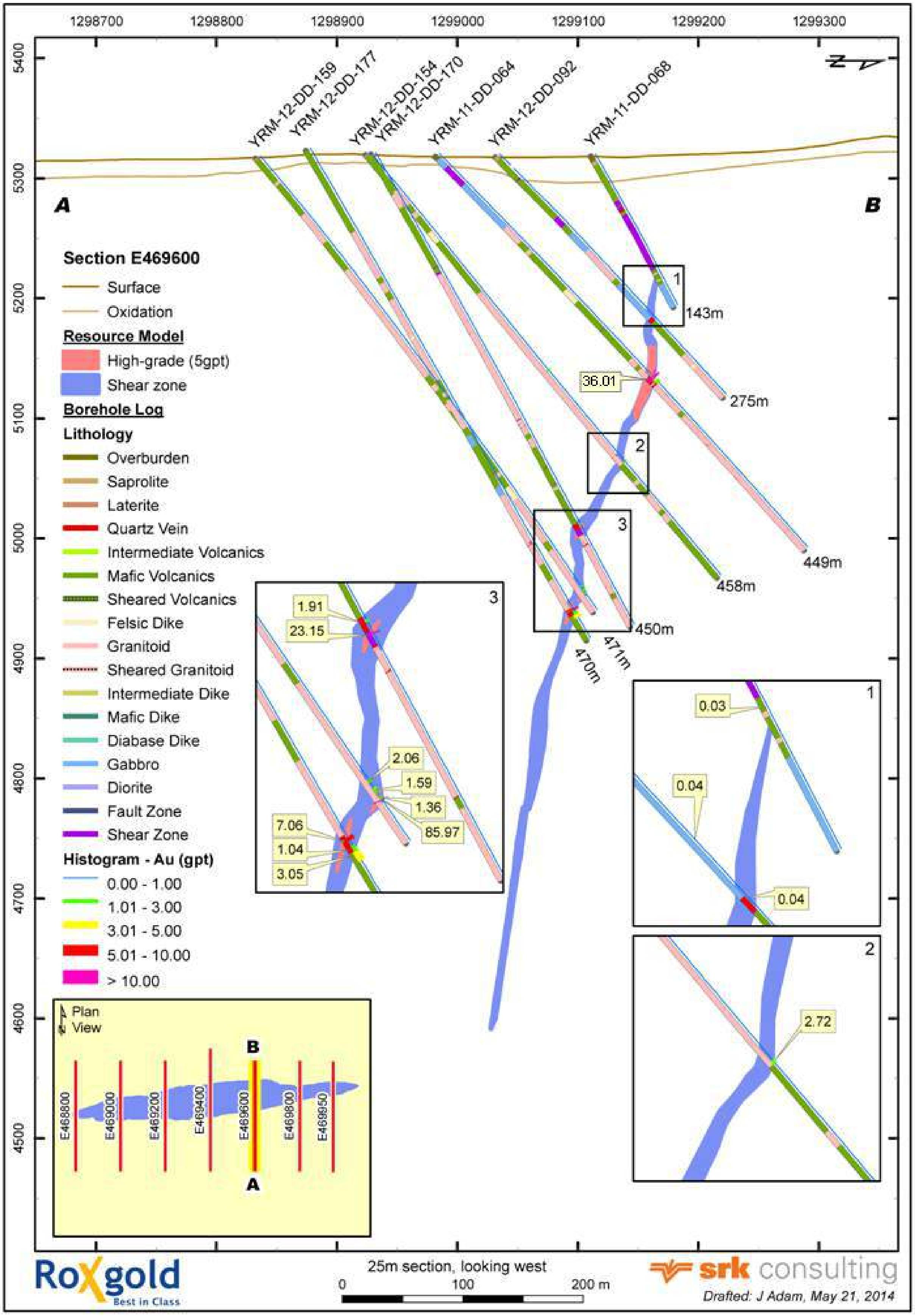
Select Vertical Cross-Sections Through 55 Zone

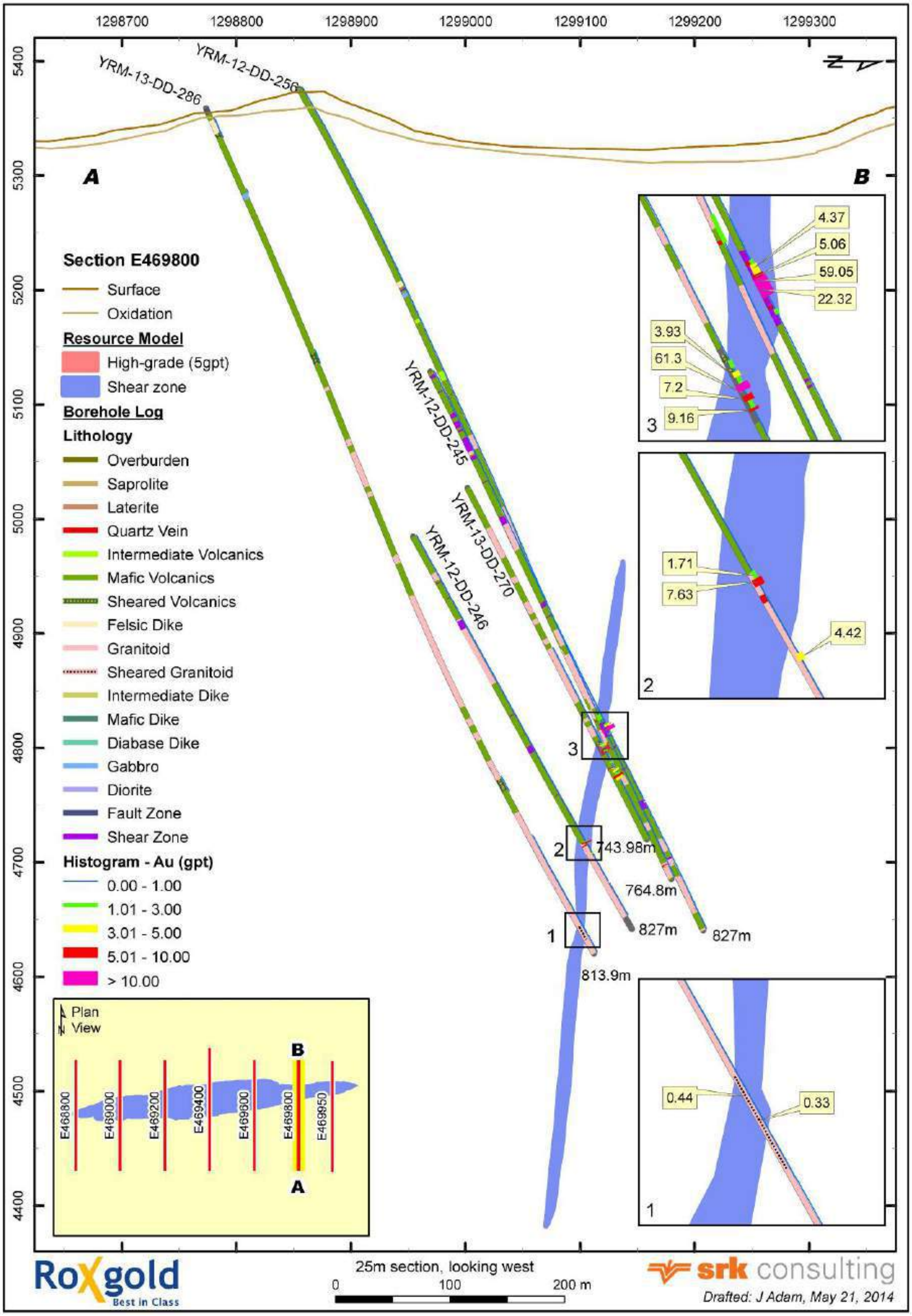

1298700
1298800
1298900
1299000
1299100
1299200
1299300
YRM-12-DD-091
YRM-12-DD-088
YRM-12-DD-193
5300
5200
5100
5000
4900
4800
4700
4600
4500
4400
A
B
138m
228m
215m
Section E468800
Surface
Oxidation
Resource Model
High-grade (5gpt)
Shear zone
Borehole Log
Lithology
Overburden
Saprolite
Laterite
Quartz Vein
Intermediate Volcanics
Mafic Volcanics
Sheared Volcanics
Felsic Dike
Granitoid
Sheared Granitoid
Intermediate Dike
Mafic Dike
Diabase Dike
Gabbro
Diorite
Fault Zone
Shear Zone
Histogram - Au (gpt)
0.00 - 1.00
1.01 - 3.00
3.01 - 5.00
5.01 - 10.00
>10.00
0.005
0.78
0.15
0.03
0.02
Plan View
E468800
E469000
E469200
E469400
E469600
E469800
E469950
40m section, looking west
0
100
200 m
Roxgold Best in Class
srk consulting
Drafted: J Adam, May 21, 2014

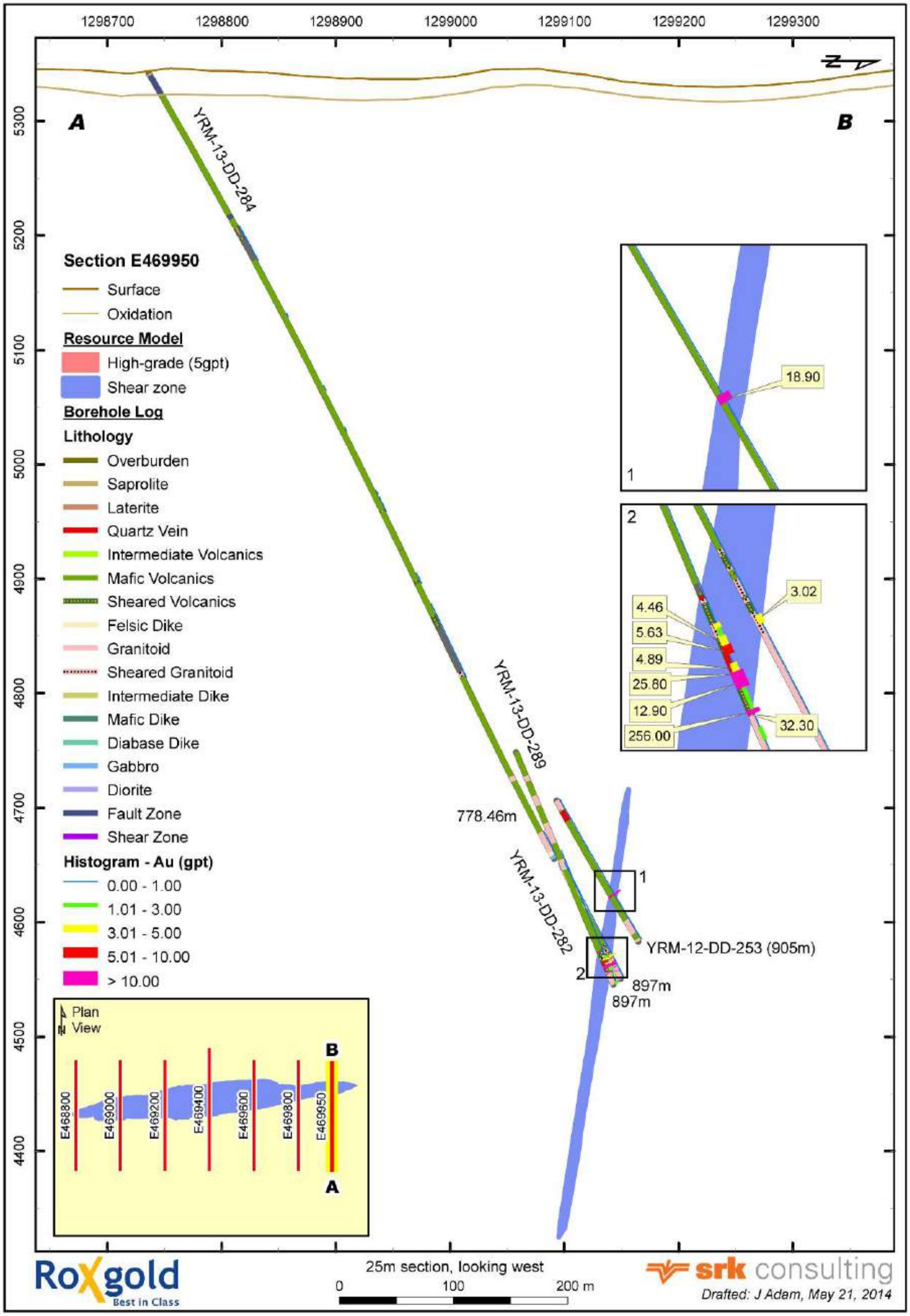

1298700
1298800
1298900
1299000
1299100
1299200
1299300
5400
5300
5200
5100
5000
4900
4800
4700
4600
4500
4400
YRM-12-DD-148
YRM-11-DD-039
YRM-11-DD-040
A
B
98m
145.28m
389.5m
Section E469000
Surface
Oxidation
Resource Model
High-grade (5gpt)
Shear zone
Borehole Log
Lithology
Overburden
Saprolite
Laterite
Quartz Vein
Intermediate Volcanics
Mafic Volcanics
Sheared Volcanics
Felsic Dike
Granitoid
Sheared Granitoid
Intermediate Dike
Mafic Dike
Diabase Dike
Gabbro
Diorite
Fault Zone
Shear Zone
Histogram - Au (gpt)
0.00 - 1.00
1.01 - 3.00
3.01 - 5.00
5.01 - 10.00
10.01 - 34.26
3.31
3.17
1.38
2.25
34.26
1.45
1.89
1.88
5.38
18.60
1.11
2.54
Plan View
E468800
E469000
E469200
E469400
E469600
E469800
E469950
Roxgold
Best in Class
25m section, looking west
0
100
200 m
srk consulting
Drafted: J Adam, May 21, 2014


1298700
1298800
1298900
1299000
1299100
1299200
1299300
5400
5300
5200
5100
5000
4900
4800
4700
4600
4500
YRM-12-DD-124
YRM-12-DD-213
YRM-12-DD-084
YRM-12-DD-082
YRM-12-DD-215
YRM-12-DD-073
YRM-12-DD-072
A
B
Section E469200
Surface
Oxidation
Resource Model
High-grade (5gpt)
Shear zone
Borehole Log
Lithology
Overburden
Saprolite
Laterite
Quartz Vein
Intermediate Volcanics
Mafic Volcanics
Sheared Volcanics
Felsic Dike
Granitoid
Sheared Granitoid
Intermediate Dike
Mafic Dike
Diabase Dike
Gabbro
Diorite
Fault Zone
Shear Zone
Histogram - Au (gpt)
0.00 - 1.00
1.01 - 3.00
3.01 - 5.00
5.01 - 10.00
> 10.00
209m
260m
221m
295m
284m
392m
344m
1
7.73
34.00
30.44
7.84
26.46
23.46
151.50
2.31
2.75
2
13.63
6.94
2.06
5.49
1.46
37.96
3
9.28
1.16
2.40
3.36
4.48
3.33
1.05
17.54
1.57
1.69
Plan View
B
A
E468800
E469000
E469200
E469400
E469600
E469800
E469950
25m section, looking west
0
100
200 m
Roxgold
Best in Class
srk consulting
Drafted: J Adam, May 21, 2014


Section E469400
Surface
Oxidation
Resource Model
High-grade (5gpt)
Shear zone
Borehole Log
Lithology
Overburden
Saprolite
Laterite
Quartz Vein
Intermediate Volcanics
Mafic Volcanics
Sheared Volcanics
Felsic Dike
Granitoid
Sheared Granitoid
Intermediate Dike
Mafic Dike
Diabase Dike
Gabbro
Diorite
Fault Zone
Shear Zone
Histogram - Au (gpt)
0.00 - 1.00
1.01 - 3.00
3.01 - 5.00
5.01 - 10.00
> 10.00
YRM-12-DD-204
YRM-12-DD-206
YRM-12-DD-205
YRM-12-DD-212
YRM-11-DD-063
YRM-12-DD-188
YRM-11-DD-027
YRM-11-DD-017 101.2m
YRM-11-DD-018 144.42m
YRM-11-DD-061
185m
214.5m
224m
245m
353.5m
440m
482m
617m
714m
A
B
Plan View
E468800
E469000
E469200
E469400
E469600
E469800
E469950
25m section, looking west
0 100 200 m
Drafted: J Adam, May 21, 2014
Roxgold Best in Class
srk consulting


Section E469600
Surface
Oxidation
Resource Model
High-grade (5gpt)
Shear zone
Borehole Log
Lithology
Overburden
Saprolite
Laterite
Quartz Vein
Intermediate Volcanics
Mafic Volcanics
Sheared Volcanics
Felsic Dike
Granitoid
Sheared Granitoid
Intermediate Dike
Mafic Dike
Diabase Dike
Gabbro
Diorite
Fault Zone
Shear Zone
Histogram - Au (gpt)
0.00 - 1.00
1.01 - 3.00
3.01 - 5.00
5.01 - 10.00
> 10.00
YRM-12-DD-159
YRM-12-DD-177
YRM-12-DD-154
YRM-12-DD-170
YRM-11-DD-064
YRM-12-DD-092
YRM-11-DD-068
A
B
143m
275m
449m
458m
450m
471m
470m
36.01
1.91
23.15
2.06
1.59
1.36
85.97
7.06
1.04
3.05
0.03
0.04
0.04
2.72
Plan View
E468800
E469000
E469200
E469400
E469600
E469800
E469950
25m section, looking west
0 100 200 m
Drafted: J Adam, May 21, 2014


Section E469800
Surface
Oxidation
Resource Model
High-grade (5gpt)
Shear zone
Borehole Log
Lithology
Overburden
Saprolite
Laterite
Quartz Vein
Intermediate Volcanics
Mafic Volcanics
Sheared Volcanics
Felsic Dike
Granitoid
Sheared Granitoid
Intermediate Dike
Mafic Dike
Diabase Dike
Gabbro
Diorite
Fault Zone
Shear Zone
Histogram - Au (gpt)
0.00 - 1.00
1.01 - 3.00
3.01 - 5.00
5.01 - 10.00
> 10.00
YRM-13-DD-286
YRM-12-DD-256
YRM-12-DD-245
YRM-13-DD-270
YRM-12-DD-246
743.98m
764.8m
827m
827m
813.9m
Plan View
E468800
E469000
E469200
E469400
E469600
E469800
E469950
25m section, looking west
0
100
200 m
Roxgold Best in Class
srk consulting
Drafted: J Adam, May 21, 2014


1298700
1298800
1298900
1299000
1299100
1299200
1299300
5300
5200
5100
5000
4900
4800
4700
4600
4500
4400
A
B
YRM-13-DD-284
YRM-13-DD-289
YRM-13-DD-282
YRM-12-DD-253 (905m)
778.46m
897m
897m
Section E469950
Surface
Oxidation
Resource Model
High-grade (5gpt)
Shear zone
Borehole Log
Lithology
Overburden
Saprolite
Laterite
Quartz Vein
Intermediate Volcanics
Mafic Volcanics
Sheared Volcanics
Felsic Dike
Granitoid
Sheared Granitoid
Intermediate Dike
Mafic Dike
Diabase Dike
Gabbro
Diorite
Fault Zone
Shear Zone
Histogram - Au (gpt)
0.00 - 1.00
1.01 - 3.00
3.01 - 5.00
5.01 - 10.00
> 10.00
1
18.90
2
4.46
5.63
4.89
25.80
12.90
256.00
3.02
32.30
Plan View
B
A
E468800
E469000
E469200
E469400
E469600
E469800
E469950
Roxgold
Best in Class
25m section, looking west
0
100
200 m
srk consulting
Drafted: J Adam, May 21, 2014

APPENDIX C

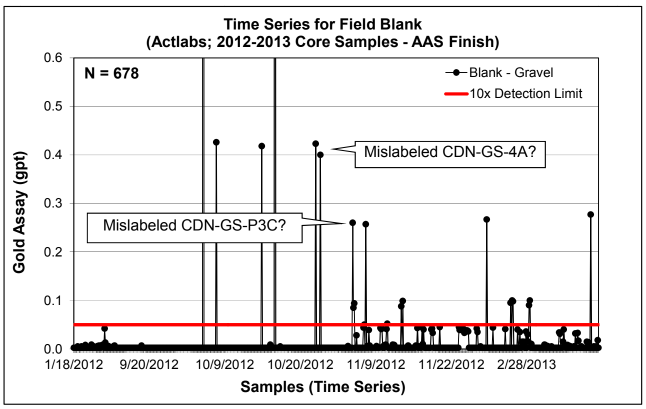
Analytical Quality Control Data and Relative Precision Charts

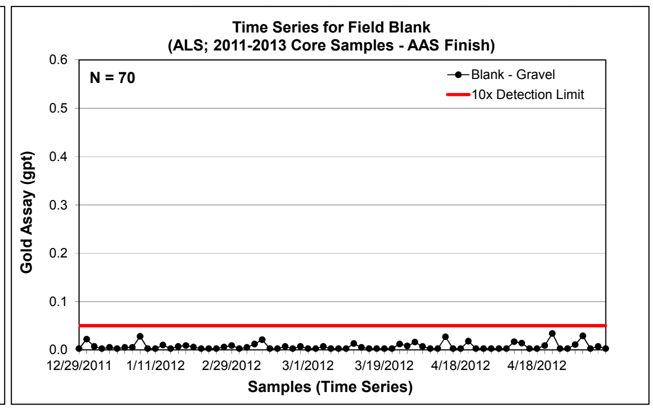
Time series plots for field blank (gravel) assayed by Actlabs, ALS, BIGS, SGS in Ouagadougou, SGS in Tarkwa and TSL during core drilling at 55 Zone between 2011 and 2013.

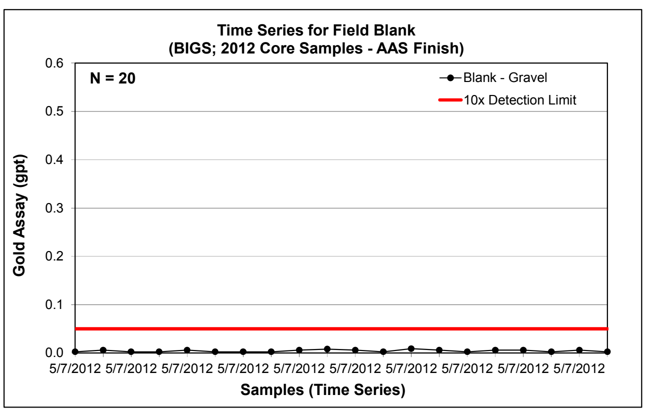
srk consulting

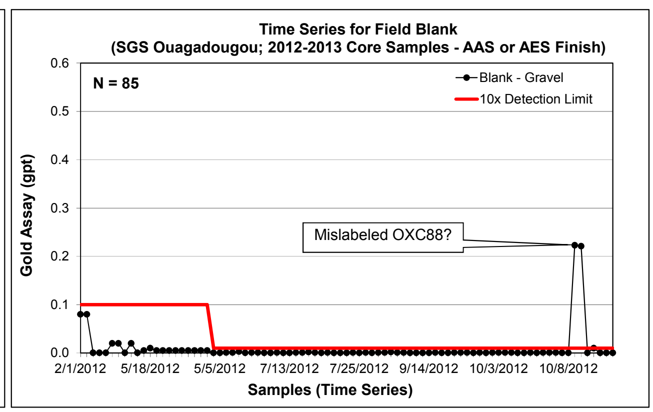
Project	55 Zone of the Yaramoko Gold Project
Data Series	2011-2013 Blanks
Data Type	Core Samples
Commodity	Au in gpt
Laboratory	Actlabs, ALS, BIGS, SGS Ouaga
Analytical Method	Fire assay - AAS, AES or Grav. finish
Detection Limit	0.001 to 0.01 gpt Au

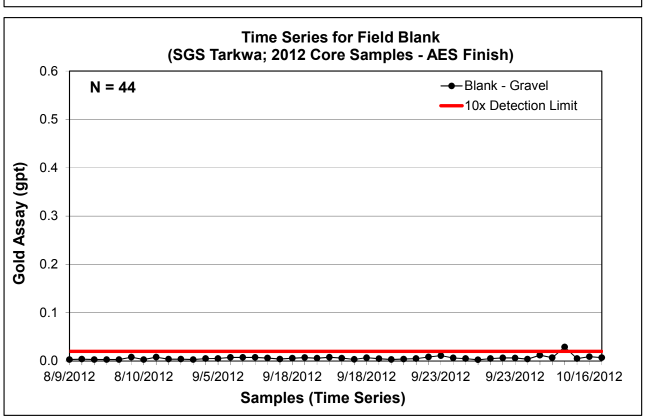
Statistics	**Act-labs**	**ALS**	**BIGS**	**SGS Ouaga**	**SGS Tarkwa**	**TSL**
Sample Count	678	70	20	85	44	61
Detection Limit	0.005	0.005	0.005	Varied	0.002	Varied
Standard Deviation	-	-	-	-	-	-
Data Mean	0.030	0.007	0.005	0.009	0.006	0.073
Upper Limit (10xDL)	3%	0%	0%	0%	2%	3%

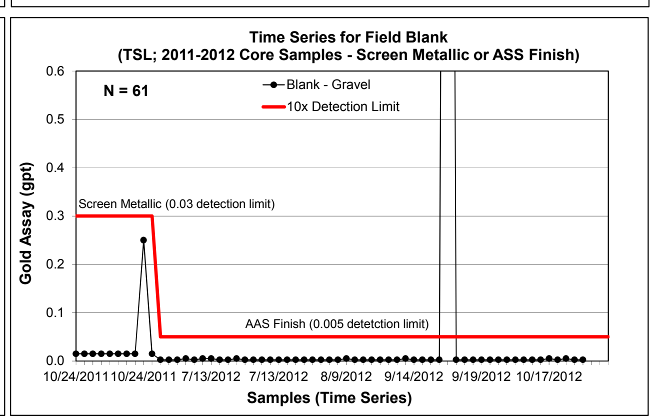










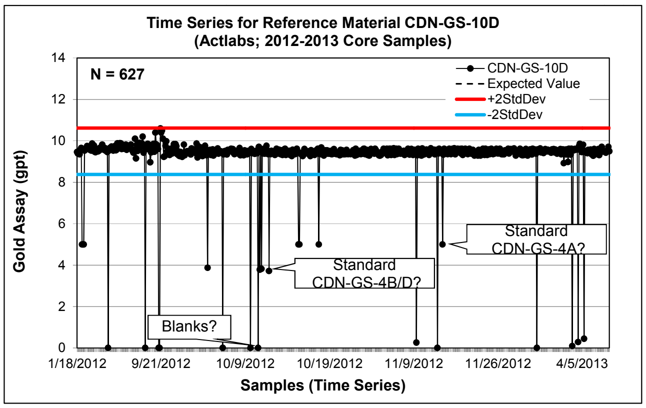


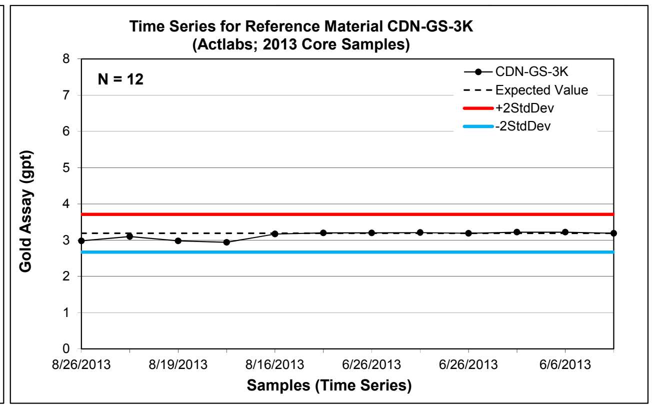
Time series plots for certified reference materials assayed by Actlabs in Ouagadougou during core drilling at 55 Zone between 2012 and 2013.

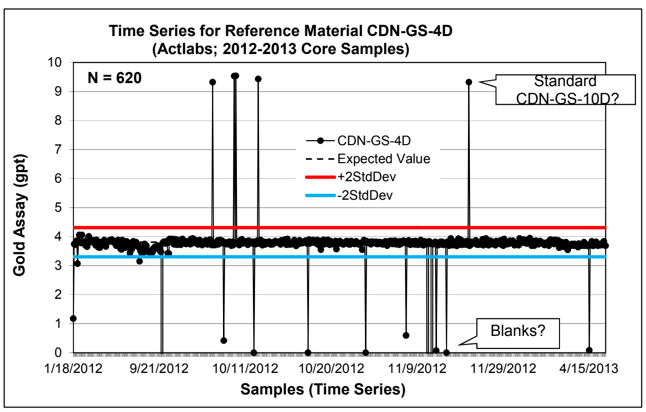
srk consulting

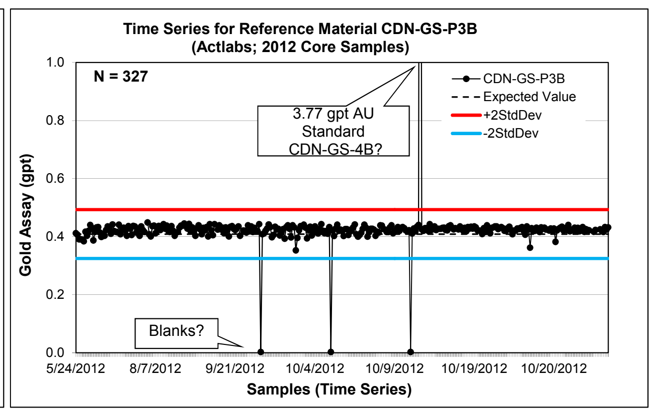
Project	55 Zone of the Yaramoko Gold Project
Data Series	2012-2013 Standards
Data Type	Core Samples
Commodity	Au in gpt
Laboratory	Actlabs
Analytical Method	Fire assay - AAS finish
Detection Limit	0.005 gpt (Au)

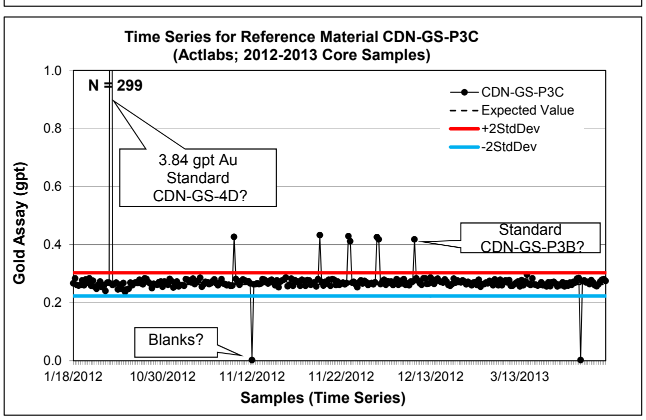
	CDN-GS-				
Statistics	**10D**	**3K**	**4D**	**P3B**	**P3C**
Sample Count	627	12	620	327	299
Expected Value	9.50	3.19	3.81	0.41	0.26
Standard Deviation	0.56	0.26	0.25	0.04	0.02
Data Mean	9.22	3.13	3.27	0.43	0.28
Outside 2StdDev	4%	0%	3%	1%	3%
Below 2StdDev	24	0	14	3	2
Above 2StdDev	0	0	5	1	8









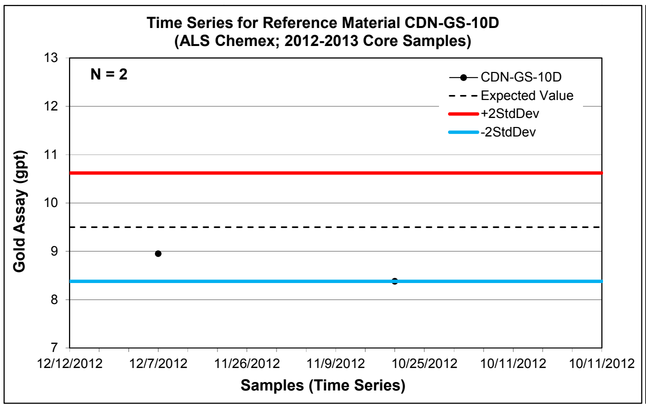


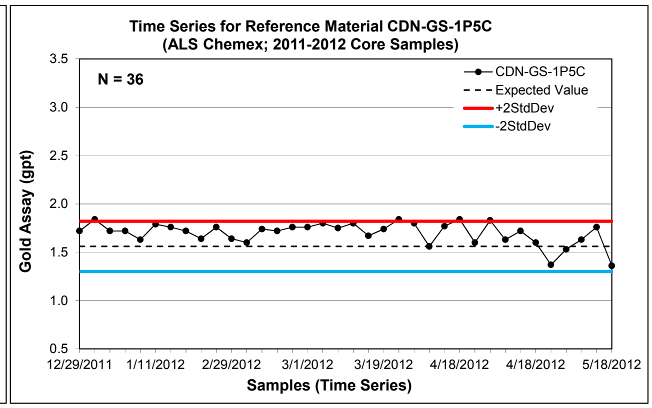
Time series plots for certified reference materials assayed by ALS in Ouagadougou during core drilling at 55 Zone between 2011 and 2013.

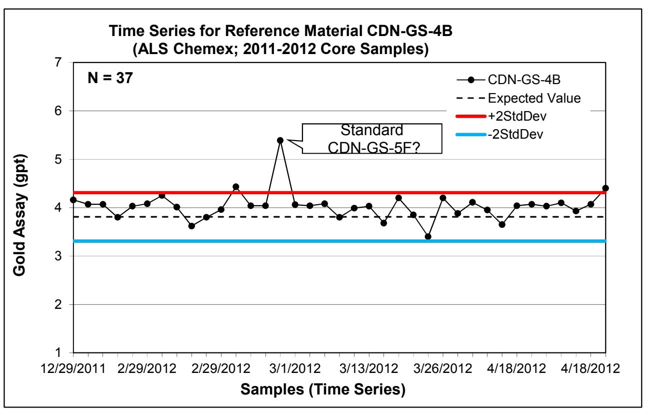
srk consulting

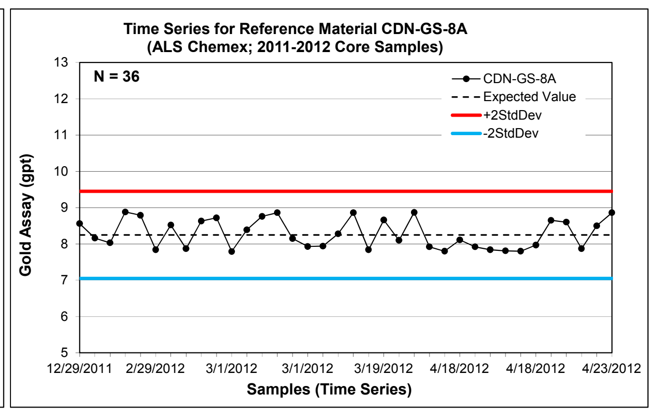
Project	55 Zone of the Yaramoko Gold Project
Data Series	2011-2013 Standards
Data Type	Core Samples
Commodity	Au in gpt
Laboratory	ALS Chemex
Analytical Method	Fire assay - AAS/gravimetric finish
Detection Limit	AAS: 0.005 gpt (Au), Grav: 0.05 gpt (Au)

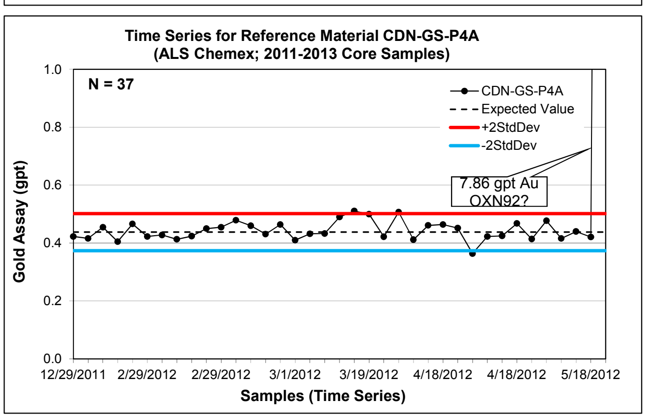
	CDN-GS-				
Statistics	**10D**	**1P5C**	**4B**	**8A**	**P4A**
Sample Count	2	36	37	36	37
Expected Value	9.50	1.56	3.81	8.25	0.44
Standard Deviation	0.56	0.13	0.25	0.60	0.03
Data Mean	8.67	1.70	4.04	8.28	0.64
Outside 2StdDev	0%	11%	8%	0%	11%
Below 2StdDev	0	0	0	0	1
Above 2StdDev	0	4	3	0	3









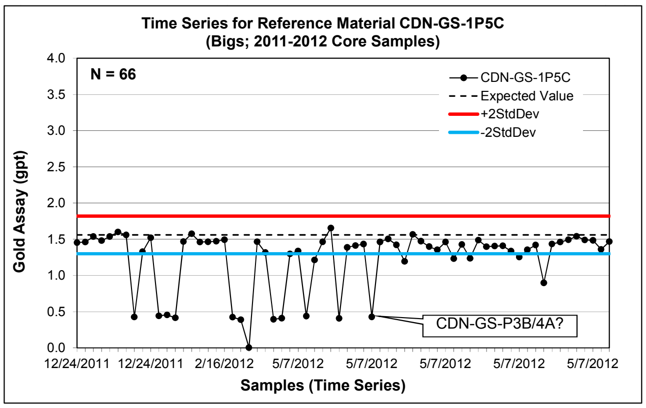


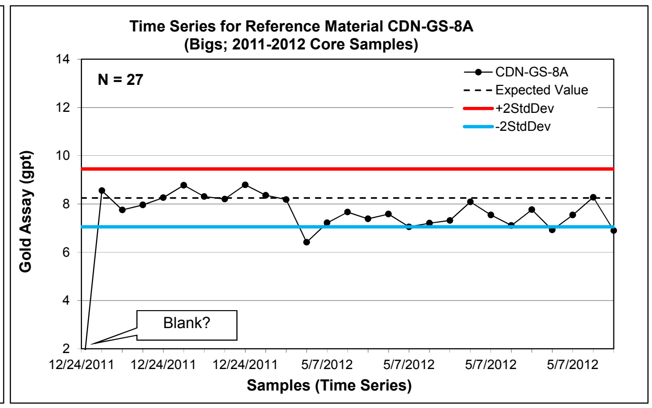
Time series plots for certified reference materials assayed by BIGS in Ouagadougou during core drilling at 55 Zone between 2011 and 2012.

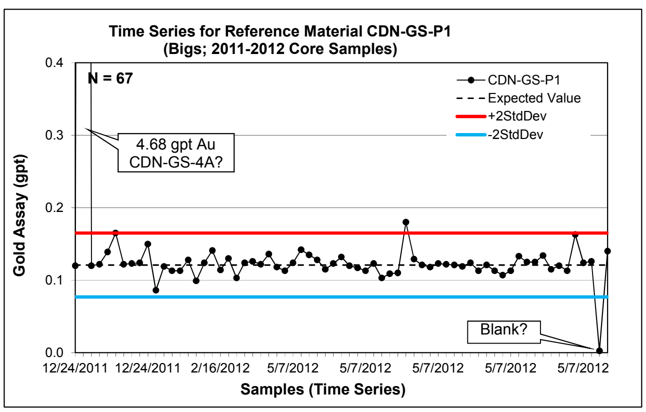
srk consulting

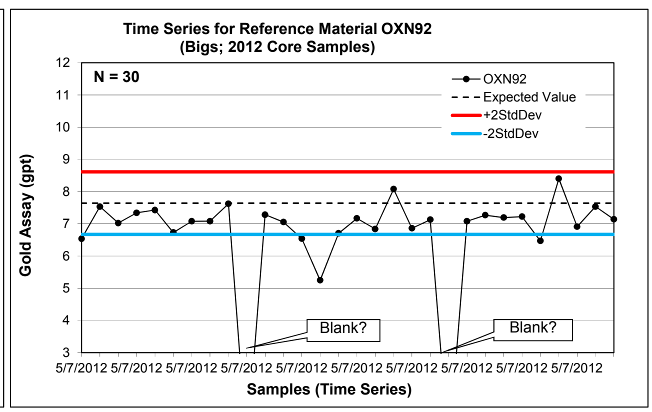
Project	55 Zone of the Yaramoko Gold Project
Data Series	2011-2012 Standards
Data Type	Core Samples
Commodity	Au in gpt
Laboratory	Bigs
Analytical Method	Fire assay - AAS finish
Detection Limit	0.005 gpt (Au)

	CDN-GS-			
Statistics	**1P5C**	**8A**	**P1**	**OXN92**
Sample Count	66	27	67	30
Expected Value	1.56	8.25	0.12	7.64
Standard Deviation	0.13	0.60	0.02	0.48
Data Mean	1.23	7.47	0.19	6.62
Outside 2StdDev	29%	15%	4%	20%
Below 2StdDev	19	4	1	6
Above 2StdDev	0	0	2	0







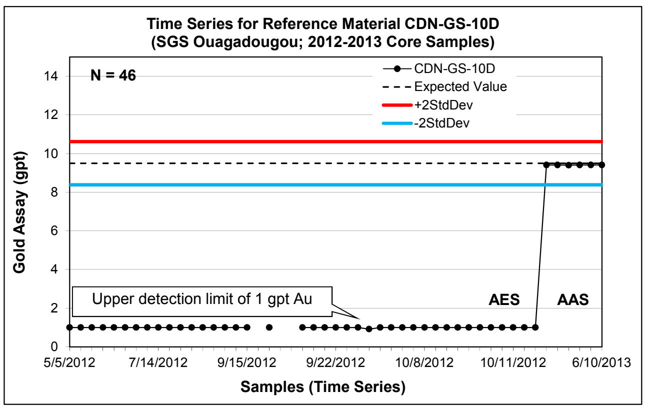


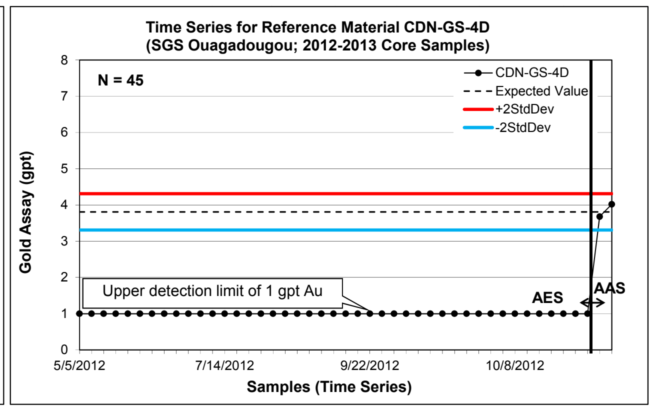
Time series plots for certified reference materials assayed by SGS in Ouagadougou during core drilling at 55 Zone between 2012 and 2013.

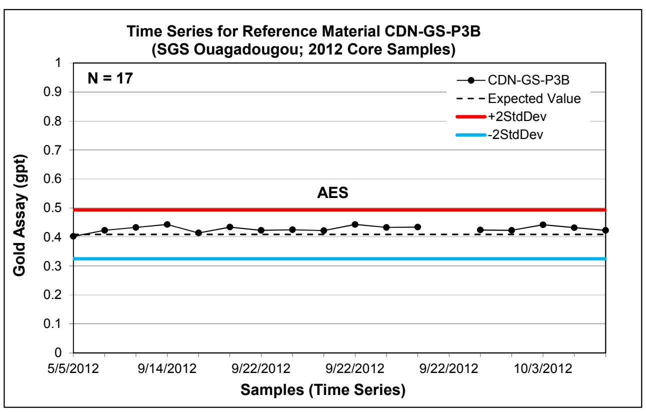
srk consulting

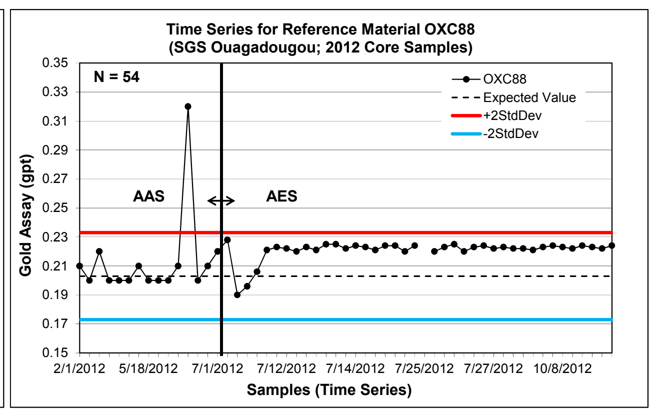
Project	55 Zone of the Yaramoko Gold Project
Data Series	2012-2013 Standards
Data Type	Core Samples
Commodity	Au in gpt
Laboratory	SGS Ouagadougou
Analytical Method	Fire assay - AAS/AES finish
Detection Limit	AAS: 0.01 gpt (Au), AES: 0.001 gpt (Au)

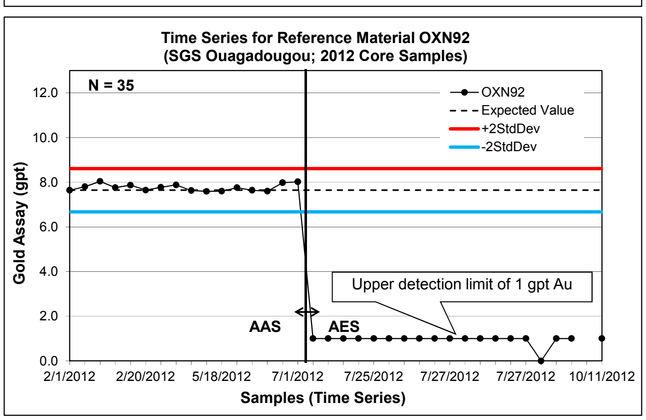
Statistics	**CDN-GS-10D**	**4D**	**P3B**	**OXC88**	**OXN92**	**SH55**
Sample Count	46	45	17	54	35	5
Expected Value	9.50	3.81	0.41	0.20	7.64	1.38
Standard Deviation	0.56	0.25	0.04	0.02	0.48	0.01
Data Mean	2.09	1.13	0.43	0.22	4.06	1.39
Outside 2StdDev	87%	96%	0%	2%	54%	60%
Below 2StdDev	40	43	0	0	19	1
Above 2StdDev	0	0	0	1	0	2

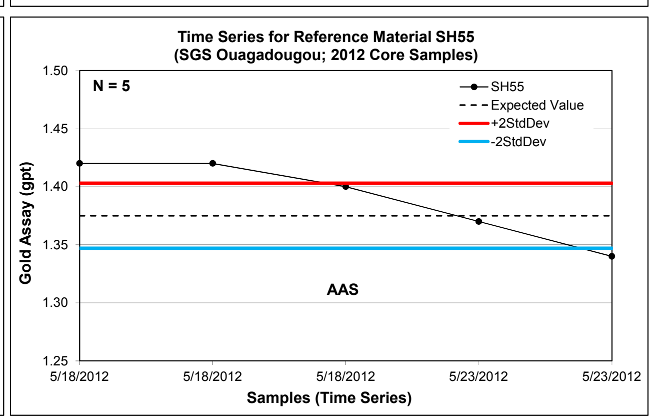










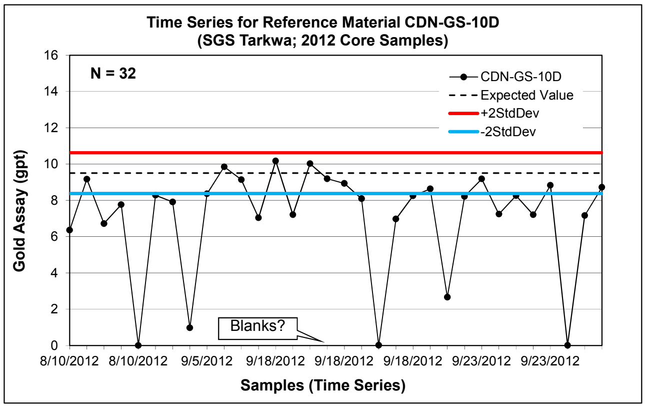


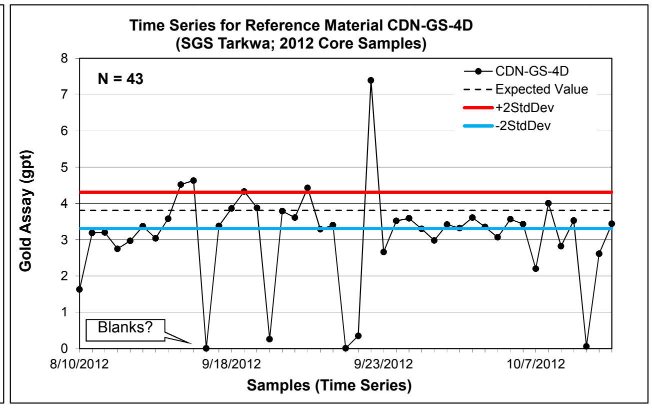
Time series plots for certified reference materials assayed by SGS in Tarkwa, Ghana, during core drilling at 55 Zone in 2012.

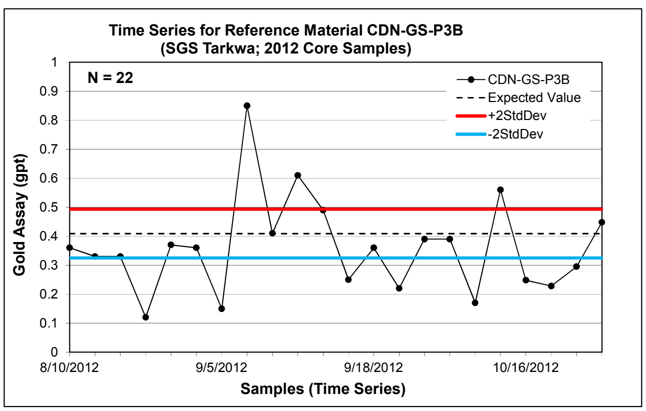
srk consulting

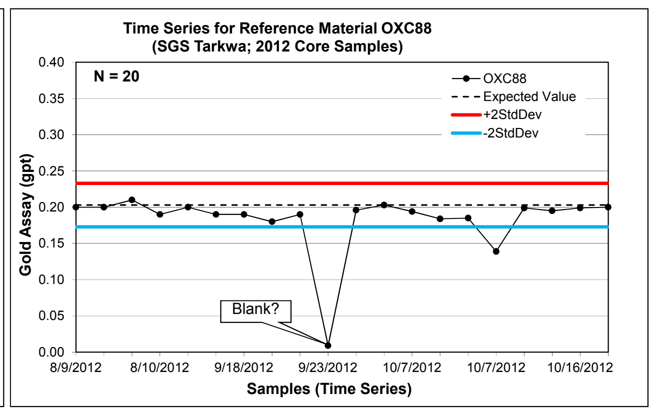
Project	55 Zone of the Yaramoko Gold Project
Data Series	2012 Standards
Data Type	Core Samples
Commodity	Au in gpt
Laboratory	SGS Tarkwa
Analytical Method	Fire assay - AES
Detection Limit	0.002 gpt (Au)

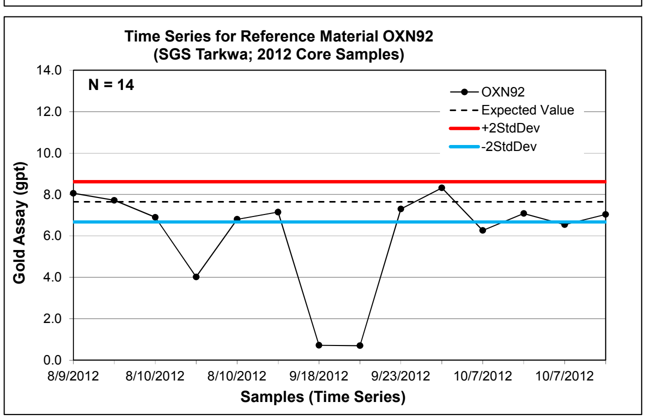
	CDN-GS-				
Statistics	**10D**	**4D**	**P3B**	**OXC88**	**OXN92**
Sample Count	32	43	22	20	14
Expected Value	9.50	3.81	0.41	0.20	7.64
Standard Deviation	0.56	0.25	0.04	0.02	0.48
Data Mean	7.08	3.10	0.36	0.18	6.04
Outside 2StdDev	66%	56%	50%	10%	36%
Below 2StdDev	21	19	8	2	5
Above 2StdDev	0	5	3	0	0







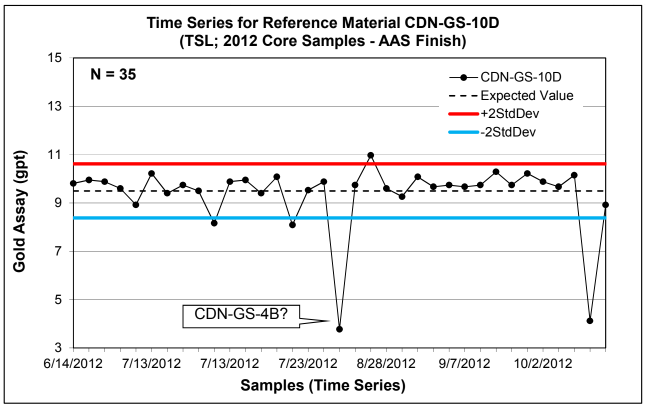


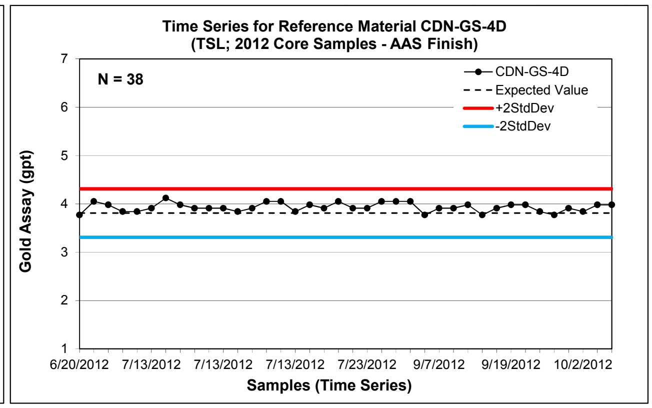


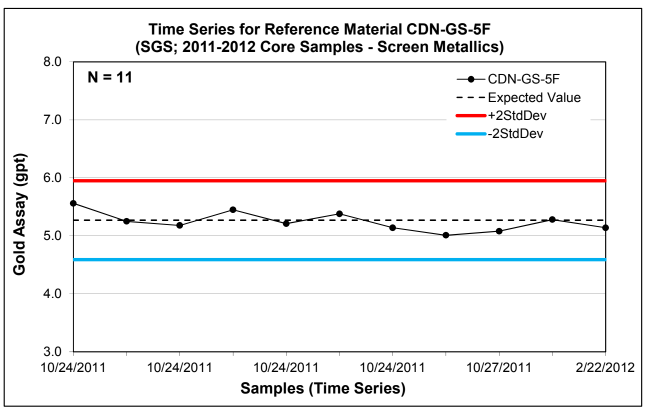
Time series plots for certified reference materials assayed by TSL in Saskatoon, Saskatschewan, during core drilling at 55 Zone between 2011 and 2012.

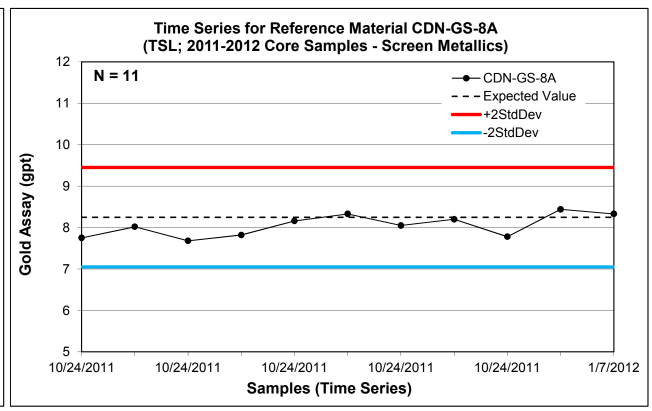
Project	55 Zone of the Yaramoko Gold Project
Data Series	2011-2012 Standards
Data Type	Core Samples
Commodity	Au in gpt
Laboratory	TSL
Analytical Method	Fire assay - Screen Metallic/AAS
Detection Limit	0.03 (Screen Metallic) 0.005 (AAS)

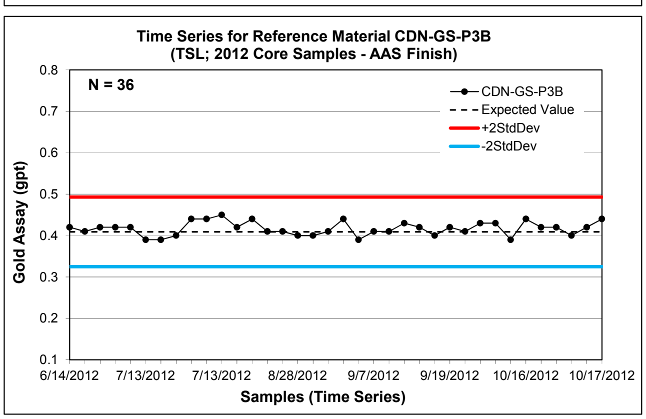
	CDN-GS-					
Statistics	**10D**	**4D**	**5F**	**8A**	**P3B**	**OXC88**
Sample Count	35	38	11	11	36	15
Expected Value	9.50	3.81	5.27	8.25	0.41	0.20
Standard Deviation	0.56	0.25	0.34	0.60	0.04	0.02
Data Mean	9.35	3.93	5.24	8.05	0.42	0.21
Outside 2StdDev	14%	0%	0%	0%	0%	0%
Below 2StdDev	4	0	0	0	0	0
Above 2StdDev	1	0	0	0	0	0

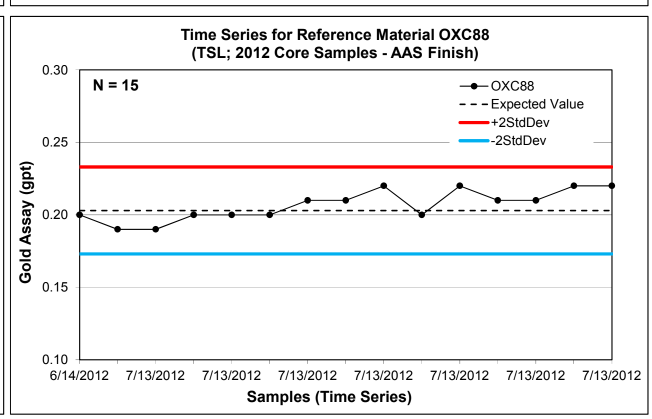








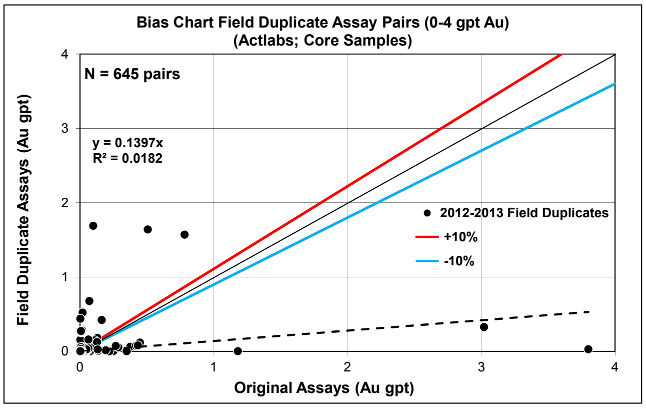


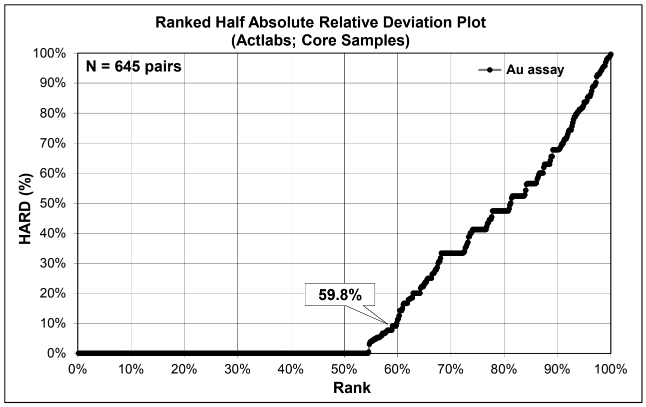


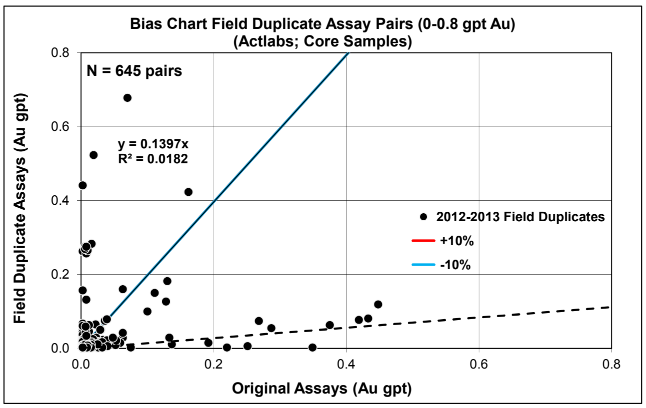
Bias charts and precision plots for quarter core field duplicates assayed by Actlabs in Ouagadougou during core drilling at 55 Zone between 2012 and 2013.

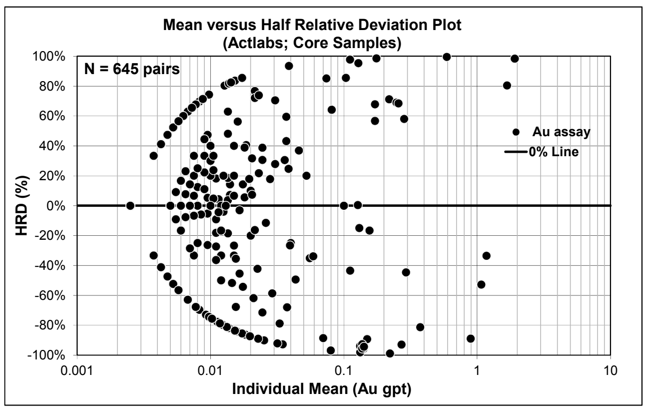
Project	55 Zone of the Yaramoko Gold Project
Data Series	2012-2013 Field Duplicates
Data Type	Core Samples
Commodity	Au in gpt
Analytical Method	Fire Assay - AAS Finish
Detection Limit	0.005 gpt Au
Original Dataset	Original Assays
Paired Dataset	Field Duplicate Assays

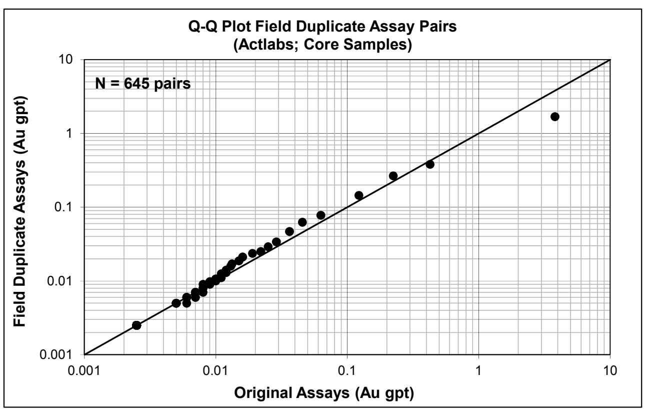
Statistics	**Original**	**Field Duplicate**
Sample Count	645	645
Minimum Value	0.0025	0.0025
Maximum Value	3.80	1.69
Mean	0.027	0.023
Median	0.003	0.003
Standard Error	0.008	0.005
Standard Deviation	0.204	0.123
Correlation Coefficient	0.2099	
Pairs ≤ 10% HARD	59.8%	

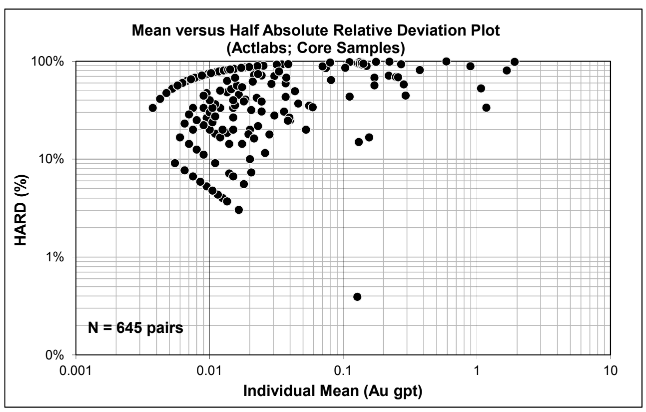










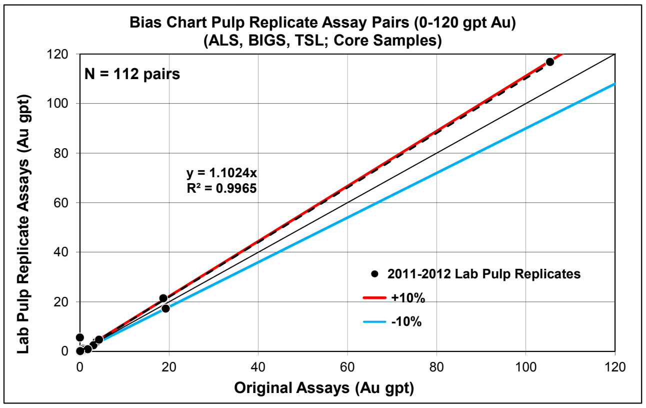


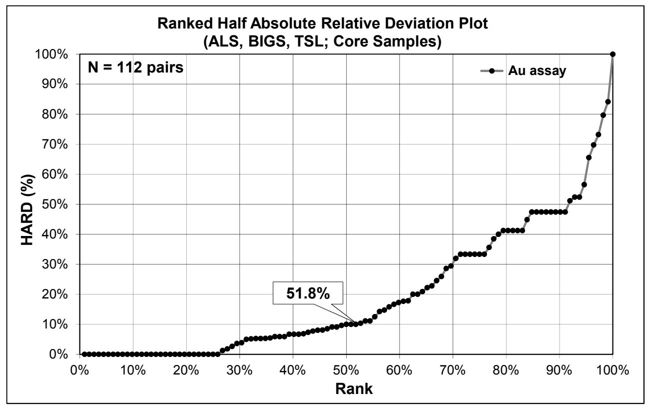
Bias charts and precision plots for lab-aware pulp replicates assayed by ALS, BIGS and TSL during core drilling at 55 Zone between 2011 and 2012.

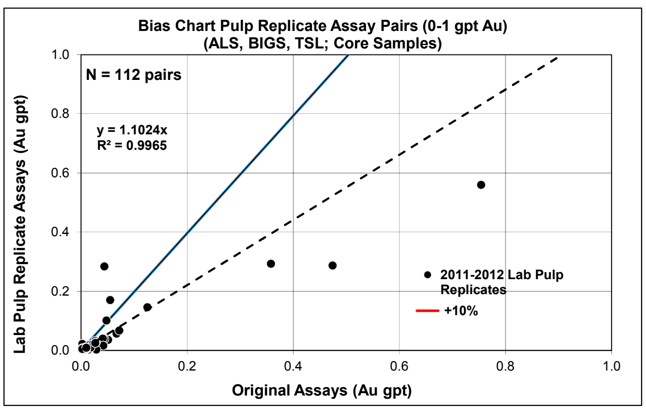
srk consulting

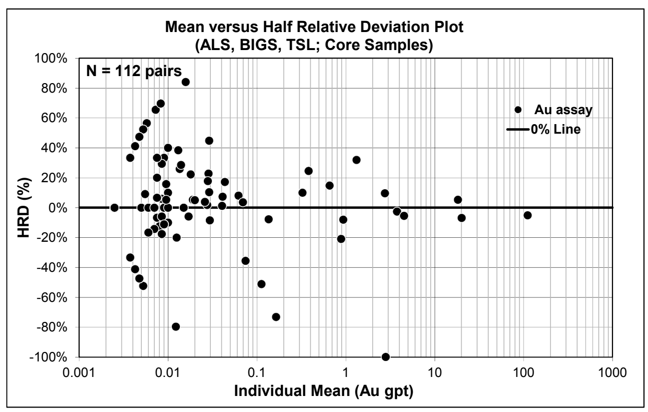
Project	Yaramoko Gold Project
Data Series	2011-2012 Lab Pulp Replicates
Data Type	Core Samples
Commodity	Au in gpt
Analytical Method	Fire Assay
Detection Limit	0.005 gpt Au
Original Dataset	Original Assays
Paired Dataset	Lab Pulp Replicate Assays

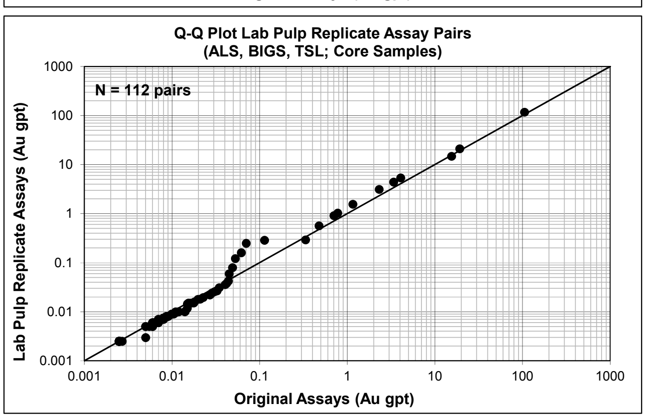
Statistics	**Original**	**Field Duplicate**
Sample Count	112	112
Minimum Value	0.003	0.003
Maximum Value	105.40	116.80
Mean	1.434	1.590
Median	0.008	0.008
Standard Error	0.968	1.069
Standard Deviation	10.243	11.310
Correlation Coefficient	0.9982	
Pairs ≤ 10% HARD	51.8%	

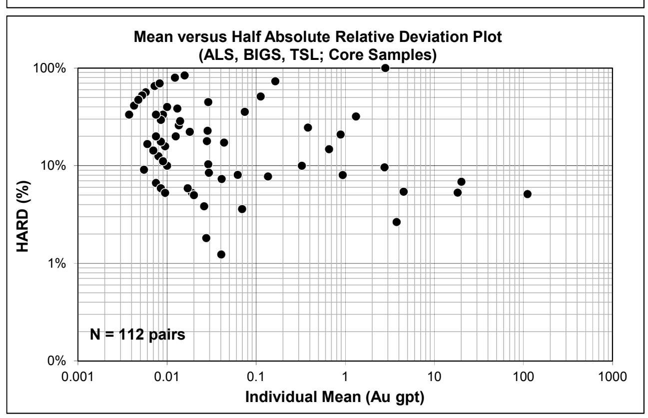












APPENDIX D

Metallurgical Testing Report by ALS Metallurgy for Mintrex

APPENDIX E

Underground Mine Planning Report by SRK

APPENDIX F

Hydrogeology Report by SRK UK

APPENDIX G

Rock Geotechnical Report by SRK

APPENDIX H

Process Plant Report by Mintrex

APPENDIX I

Infrastructure and Services Report by Mintrex

APPENDIX J

Tailings Storage Facility and Water Storage Facility Report by Knight Piésold

APPENDIX K

Project Implementation Report by Mintrex

APPENDIX L

Environmental and Social Impact Assessment Study Report by BEGE

APPENDIX M

Resettlement Action Plan

APPENDIX N

Closure Plan Report by SRK UK

APPENDIX O

Geochemistry Report by SRK UK

APPENDIX P

Infrastructure Capital Costs Report by Mintrex

APPENDIX Q

Operations Report by Mintrex

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Technical Report for the Yaramoko Gold Project, Burkina Faso* having an effective date of April 22, 2014.

I, Jean-François Couture, do hereby certify that:

1) I am a Corporate Consultant (Geology) with the firm of SRK Consulting (Canada) Inc. ("SRK") with an office at Suite 1300, 151 Yonge Street, Toronto, Ontario, Canada;
2) I am a graduate of the Université Laval in Quebec City with a BSc. in Geology in 1982. I obtained an MSc. A. in Earth Sciences and a Ph.D. in Mineral Resources from Université du Québec à Chicoutimi in 1986 and 1994, respectively. I have practiced my profession continuously since 1982. From 1982 to 1988, I conducted regional mapping programs in the Precambrian Shield of Canada, from 1988 to 1996; I conducted mineral deposit studies for a variety of base and precious metals deposits of hydrothermal and magmatic origins. From 1996 to 2000, I was a Senior Exploration Geologist responsible for the development, execution and management of exploration program for base and precious metals in Precambrian terranes, including volcanogenic sulphide deposits. Since 2001 I have authored and co-authored several independent technical reports on several base and precious metals exploration and mining projects worldwide;
3) I am a Professional Geoscientist registered with the Association of Professional Geoscientists of the province of Ontario (APGO#0197) and l'Ordre des Géologues du Québec (OGQ#1106);
4) I personally visited the project area from February 6 to 15, 2013;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for sections 1 to 11, 18, 22 and share the responsibility for section 13. I accept professional responsibility for those sections of this technical report;
8) I have had no prior involvement with the subject property. ;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) SRK Consulting (Canada) Inc. was retained by Roxgold Inc. to prepare a feasibility study, including a mineral resource and mineral reserve statement, for the Yaramoko gold project located in Burkina Faso in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and Canadian Securities Administrators' National Instrument 43-101 guidelines. This assignment was completed using the environmental and social requirements applicable at the time in Burkina Faso and taking cognisance of good international industry practice as specified in the IFC Performance Standards;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Yaramoko gold project or securities of Roxgold Inc.; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

["signed and sealed"]

Toronto, Ontario — Jean-François Couture, PGeo (APGO#0197)
June 4, 2014 — Corporate Consultant (Geology)

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Technical Report for the Yaramoko Gold Project, Burkina Faso* having an effective date of April 22, 2014.

I, Ken Reipas, do hereby certify that:

1) I am a Principal Consultant with the firm of SRK Consulting (Canada) Inc. (SRK) with an office at Suite 1300 - 151 Yonge Street, Toronto, Ontario, Canada;
2) I am a graduate of Queen's University in 1981, I obtained a B.Sc in Mining Engineering . I have practiced my profession continuously since 1981. My work has involved mine planning and mine supervision/operations for 16 years, and consulting on underground mining projects in several countries since 1997. Prior to joining SRK, he worked at several open pit and underground mining operations in Canada involved in the bulk mining of iron, coal, gold and base metals. Positions held included Chief Engineer and Mine Superintendent. Since 1997, his consulting projects have included technical studies and reports, mine planning and reserves, project economics, and due diligence reviews;
3) I am a professional Engineer registered with the Association of Professional Engineers Ontario #100015286;
4) I have personally inspected the subject project on August 11-14, 2013;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for sections 14 and 15 (excluding sub-sections 15.1 and 15.2), and I share responsibility for Section 20. I accept professional responsibility for those sections of this technical report;
8) I have had no prior involvement with the subject property;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) SRK Consulting (Canada) Inc. was retained by Roxgold Inc. to prepare a feasibility study, including a mineral resource and mineral reserve statement, for the Yaramoko gold project located in Burkina Faso in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and Canadian Securities Administrators' National Instrument 43-101 guidelines. This assignment was completed using the environmental and social requirements applicable at the time in Burkina Faso and taking cognisance of good international industry practice as specified in the IFC Performance Standards;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Yaramoko Gold Project or securities of Roxgold Inc; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

"signed and sealed"
Ken Reipas, PEng
Principal Consultant, SRK Consulting (Canada) Inc.

Toronto, Ontario
June 4, 2014

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Technical Report for the Yaramoko Gold Project, Burkina Faso* having an effective date of April 22, 2014.

I, Brian Connolly, do hereby certify that:

1) I am a Principal Mining Engineer with the firm of SRK Consulting (Canada) Inc. (SRK) with an office at Suite 1300 - 151 Yonge Street, Toronto, Ontario, Canada;
2) I am a graduate of University of British Columbia with a B.A.Sc in Mineral Engineering in 1973, and have practiced my profession continuously since 1973. My work has involved mine engineering and technical services management at operating mines for 18 years and consulting on mining projects since 1995. My industry and consulting experience has frequently involved mining project economic analysis and financial modelling;
3) I am a professional engineer registered with Professional Engineers Ontario with membership number 90545203;
4) I have not personally visited the project site;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for Section 21and accept professional responsibility for this section of this technical report;
8) I have had no prior involvement with the subject property;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) SRK Consulting (Canada) Inc. was retained by Roxgold Inc. to prepare a feasibility study, including a mineral resource estimate, for the Yaramoko gold project in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and Canadian Securities Administrators' National Instrument 43-101 guidelines;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Yaramoko project or securities of Roxgold Inc; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

["signed and sealed"]

Toronto, ON — Brian Connolly, P.Eng. (PEO#90545203)
June 4, 2014 — Principal Consultant (Mining Engineering)

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Technical Report for the Yaramoko Gold Project, Burkina Faso* having an effective date of April 22, 2014.

I, Sebastien Bernier, do hereby certify that:

1) I am a Principal Consultant (Resource Geology) with the firm of SRK Consulting (Canada) Inc. ("SRK") with an office at Suite 101, 1984 Regent Street South, Sudbury, Ontario, Canada;
2) I am a graduate of the University of Ottawa in 2001 with BSc (Honours) Geology and I obtained MSc Geology from Laurentian University in 2003. I have practiced my profession continuously since 2002. I worked in exploration and commercial production of base and precious metals mainly in Canada. I have been focussing my career on geostatistical studies, geological modelling and resource modelling of base and precious metals since 2004;
3) I am a Professional Geoscientist registered with the Ordre des Géologues du Québec (OGQ #1034), the Association of Professional Geoscientist of Ontario (APGO #1847) and Professional Engineers and Geoscientists of Newfoundland and Labrador (PEGNL #05958);
4) I have not personally visited the project area but relied on a site visit conducted by Dr Jean-Francois Couture, a co-author of this technical report;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and share responsibility for Section 13 and accept professional responsibility for this section of this technical report;
8) I have had no prior involvement with the subject property;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) SRK Consulting (Canada) Inc. was retained by Roxgold Inc. to prepare a feasibility study, including a mineral resource and mineral reserve statement, for the Yaramoko gold project located in Burkina Faso in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and Canadian Securities Administrators' National Instrument 43-101 guidelines. This assignment was completed using the environmental and social requirements applicable at the time in Burkina Faso and taking cognisance of good international industry practice as specified in the IFC Performance Standards;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Yaramoko Gold Project or securities of Roxgold Inc.; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

["signed and sealed"]

Sudbury, Ontario
June 4, 2014

Sébastien Bernier (APGO #1847)
Principal Consultant (Resource Geology)

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Technical Report for the Yaramoko Gold Project, Burkina Faso* having an effective date of April 22, 2014.

I, Bruce Murphy, do hereby certify that:

1) I am a Principal Consultant with the firm of SRK Consulting (Canada) Inc. (SRK) with an office at Suite 2200 - 1066 West Hastings Street, Vancouver, British Columbia, Canada;
2) I am a graduate of the University of the Witwatersrand in 1989, I obtained a BSc. Hons. in Mining and Exploration Geology and in 1996 I obtained a MSc. Eng. Mining. I have practiced my profession continuously since 1989 in the field of underground and open pit rock mechanics in both an operational and consulting environment;
3) I am a Fellow of the South African Institute of Mining and Metallurgy (#56806);
4) I have personally inspected the subject project from July 22 to 25, 2013;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for Section 15.2 and accept professional responsibility for that section of this technical report;
8) I have had no prior involvement with the subject property;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) SRK Consulting (Canada) Inc. was retained by Roxgold Inc. to prepare a feasibility study, including a mineral resource and mineral reserve statement, for the Yaramoko gold project located in Burkina Faso in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and Canadian Securities Administrators' National Instrument 43-101 guidelines. This assignment was completed using the environmental and social requirements applicable at the time in Burkina Faso and taking cognisance of good international industry practice as specified in the IFC Performance Standards;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Yaramoko gold project or securities of Roxgold Inc; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

	["signed"]
Vancouver British Columbia	Bruce Murphy FSAIMM
June 4, 2014	Principal Consultant – Rock Mechanics

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Technical Report for the Yaramoko Gold Project, Burkina Faso* having an effective date of April 22, 2014.

I, Anthony Rex, do hereby certify that:

1) I am a Corporate Consultant (Hydrogeology) with the firm of SRK Consulting (UK) Ltd. (SRK UK) with an office at 5th Floor Churchill House, 17 Churchill Way, Cardiff, CF10 2HH, UK;
2) I am a graduate of the University of Southampton in 1983 where I obtained a BSc in Geology (Hons); the University of Leicester in 1987 where I obtained a PhD in Geology and Geochemistry and the University of Birmingham in 1991 where I obtained a MSc in Hydrogeology. I have practiced my profession continuously since 1983 (including a PhD and a Masters degree course) working in hydrogeology, geology, geochemistry and contaminated land/reclamation. I specialise in mine water management and have authored/co-authored technical studies on numerous vein gold mineral deposits in West Africa. I have wide experience in groundwater and water management studies associated with mining projects in West Africa;
3) I am a professional Hydrogeologist registered with the Geological Society of London (Fellowship Number: 1001078);
4) I have not personally visited the project area;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for the Hydrogeology section (15.1) and accept professional responsibility for that section of this technical report;
8) I have had no prior involvement with the subject property;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) SRK Consulting (Canada) Inc. was retained by Roxgold Inc. to prepare a feasibility study, including a mineral resource and mineral reserve statement, for the Yaramoko gold project located in Burkina Faso in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and Canadian Securities Administrators' National Instrument 43-101 guidelines. This assignment was completed using the environmental and social requirements applicable at the time in Burkina Faso and taking cognisance of good international industry practice as specified in the IFC Performance Standards;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Yaramoko gold project or securities of Roxgold Inc.; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

	["signed and sealed"]
Cardiff, UK	Anthony Rex, CGeol
June 4, 2014	Corporate Consultant (Hydrogeology)

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Technical Report for the Yaramoko Gold Project, Burkina Faso* having an effective date of April 22, 2014.

I, Fiona Cessford, do hereby certify that:

1) I am a Corporate Consultant (Environment) with the firm of SRK Consulting (UK) Ltd. (SRK UK) with an office at 5th Floor Churchill House, 17 Churchill Way, Cardiff, CF10 2HH, UK;
2) I am a graduate of Bristol University in 1989 and Brunel University in 1997. I obtained a BSc in Biology (Hons) and an MSc in Environmental Science with Legislation and Management, respectively. I have practiced my profession continuously since 1989. I worked with UK's Environment Agency in water management and pollution control for 8 years, followed by 15 years in SRK's South African and UK practices where my experience spans preparation and management of ESIAs, audit and due diligence, management planning, closure planning, technical advice on water and waste issues, risk management and environmental reporting;
3) I am a professional Environmental Scientist registered with the South African Council for Natural Scientific Professions (Reg. No. 400053/03);
4) I have not personally visited the project;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for section 19 (excluding sub-section 19.2.1) and accept professional responsibility for that section of this technical report;
8) I have had no prior involvement with the subject property;
9) I have read National Instrument 43-101 and confirm that Section 19 of the technical report has been prepared in compliance therewith;
10) SRK Consulting (Canada) Inc. was retained by Roxgold Inc. to prepare a feasibility study, including a mineral resource and mineral reserve statement, for the Yaramoko gold project located in Burkina Faso in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and Canadian Securities Administrators' National Instrument 43-101 guidelines. This assignment was completed using the environmental and social requirements applicable at the time in Burkina Faso and taking cognisance of good international industry practice as specified in the IFC Performance Standards;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Yaramoko gold project or securities of Roxgold Inc.; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

["signed and sealed"]

Cardiff, UK — Fiona Cessford, PrSciNat (Reg. No. 400053/03)
June 4, 2014 — Corporate Consultant (Environment)

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Technical Report for the Yaramoko Gold Project, Burkina Faso* having an effective date of April 22, 2014.

I, Rob Bowell, do hereby certify that:

1) I am a Chartered Professional Chemist, Chartered Geologist and a Certified Professional European Geologist. I am currently employed as a consulting geochemist with the firm of SRK Consulting (UK) Ltd, with an office address of 5th Floor Churchill House, 17 Churchill Way, Cardiff, CF10 2HH, UK;
2) I graduated with a Bachelors of Science Degree, First Class Honours in Geochemistry from Owen’s College, Manchester University, Manchester UK, June 1988. I graduated with a Doctorate in Geochemistry from Southampton University, Southampton, UK in June 1991. I have been employed as a geochemist in the mining and mineral exploration business and in applied academia, for the past 25 years, since my graduation from university.
3) I am a Chartered Chemist of the Royal Society of Chemistry, London, UK and have been since 1997 (Membership number 332782). I am a Chartered Geologist and Certified Professional European Geologist through the Geological Society of London since 1997 and European Association of Professional Geologists since 2000 (Registration number 1007245). I am a Fellow of the Institute of Mining, Metallurgy and Materials and have been since 2010.
4) I have not personally visited the project area;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for Section 19.2.1 and accept professional responsibility for this section of this technical report;
8) I have had no prior involvement with the subject property;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) SRK Consulting (Canada) Inc. was retained by Roxgold Inc. to prepare a feasibility study, including a mineral resource and mineral reserve statement, for the Yaramoko gold project located in Burkina Faso in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and Canadian Securities Administrators’ National Instrument 43-101 guidelines. This assignment was completed using the environmental and social requirements applicable at the time in Burkina Faso and taking cognisance of good international industry practice as specified in the IFC Performance Standards;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Yaramoko Gold Project or securities of Roxgold Inc; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

	[“signed and sealed”]
Cardiff, United Kingdom	Eur.Geol. Robert Bowell PhD C.Chem. C.Geol
June 4, 2014	Corporate Consultant (Geochemist)

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Technical Report for the Yaramoko Gold Project, Burkina Faso* having an effective date of April 22, 2014.

I, Leendert Lorenzen, do hereby certify that:

1) I am a Senior Principal Engineer (Process) with the firm of Mintrex Pty Ltd. (Mintrex) with an office at Level 3, 516 Hay St, Subiaco, Western Australia, Australia;;
2) I graduated with a B.Sc of Engineering (Chemical), M.Sc in Engineering (Metallurgy), cum laude and a Ph.D. (Metallurgical Engineering) from Stellenbosch University, Stellenbosch, South Africa. I completed an Executive Development Programme Diploma in Business Management from Stellenbosch University Business School in 1999. I have worked as a chemical and metallurgical engineer for a total of 32 years. From 1983 to 1988, I worked for the Anglo American Corporation in South Africa on a variety of gold and uranium plants. From 1988 to 1990; I worked for Somchem in South Africa as a senior systems engineer. From 1990 to mid-2008 I was employed by Stellenbosch University in South Africa as senior lecturer, professor, and dean of engineering. During that time I supervised 70 post graduate students and published more than 75 peer received international papers (more than 20 papers on gold extraction technology). In 2008, I joined BHP Billiton in Australia. I was appointed Executive Consultant and Group General Manager (Metallurgy) with Snowden Mining end of 2009. My work mostly focuses on mineralogy, technical and process plant audits, technical and competent person's reports and independent engineering reviews for clients worldwide. I joined Mintrex in 2013 where I am a member of the executive management team. Since joining Mintrex I have managed both feasibility studies and EPCM projects;
3) I am a Fellow of the Australasian Institute of Mining and Metallurgy (FAusIMM #304479), Fellow of the Southern African Institute of Mining and Metallurgy (FSAIMM #20258), Fellow of the Institute for Chemical Engineers (FIChemE), Fellow of the Institute of Engineers Australia (FIEAust #3671379) as well as a Chartered Professional Engineer (Australia), Chartered Engineer (UK) and Professional Engineer (South Africa);
4) I have not personally visited the project area but relied on a site visit conducted by Ian Kerr, a co-author of this technical report;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co- author of this report and responsible for sections 12 and 16 and accept professional responsibility for those sections of this technical report;
8) I have had no prior involvement with the subject property;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) Mintrex Pty Ltd. was retained by Roxgold Inc. to prepare a feasibility study, for the Process Plant and Infrastructure components of the Yaramoko gold project located in Burkina Faso in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using good international industry practice and the environmental and social requirements applicable at the time in Burkina Faso;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Yaramoko gold project or securities of Roxgold Inc; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

["signed and sealed"]

Perth, Australia
June 4, 2014

Leendert (Leon) Lorenzen, BEng (Chemical), MSCEng (Metallurgical), PhD (Metallurgical Engineering), FAusIMM (304479), FIEAust (3671379), FSAIMM (20258), CPEng, CEng, PrEng
Senior Principal Engineer (Process)

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Technical Report for the Yaramoko Gold Project, Burkina Faso* having an effective date of April 22, 2014.

I, Ian James Kerr, do hereby certify that:

1) I am a Principal Engineer (Civil) with the firm of Mintrex Pty Ltd. (Mintrex) with an office at Level 3, 516 Hay St, Subiaco, Western Australia, Australia;
2) I am a graduate of the University of Canterbury, Christchurch, New Zealand with a Bachelor of Engineering (Honours Division 2) in Civil Engineering, completed in 1982. I have practiced my profession continuously since 1983. From 1983 to 1986, I worked for the Port Authority in Nelson NZ on a variety of civil engineering projects including wharves and land reclamations including berth dredging. From 1988 to 2002; I worked for Placer Dome and its subsidiaries, working on mining projects in Australia, Papua New Guinea, Fiji, Venezuela, China and the Philippines. I was the Vice President, Project Development for the Asia Pacific region based in Sydney Australia from 1996 to 1999. From 2002 to 2003 I completed a feasibility study for WMC Resources for an expansion of the Mt Keith Nickel project to increase throughput to 16 Mtpa and from 2003 to 2005 I was the Project Manager for the Westonia Mines Feasibility Study. In 2005 to 2006 I was appointed Senior Project Manager by Lycopodium; an Australian based EPCM Engineering Company and worked on various feasibility studies until appointed as the Project Manager for a $300m upgrade of the Tom Price process plant.
   I joined Mintrex in 2008 and have held the position of Manager of Projects prior to my current appointment as Business Growth Manager. I am a member of the executive management team and a Company Director. Since joining Mintrex I have managed both feasibility studies and EPCM projects.
3) I am a Professional Engineer, BE Civil (Hons), registered with the Institute of Engineers Australia (MIE Aust 3878951), and a member of the Institute of Directors, AAICD (# 2233030);
4) I personally visited the project area from August 11 to 14, 2013;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for sections 17 (excluding sub-sections 17.3, 17.4, 17.5, 17.9), and I share responsibility for Section 20. I accept professional responsibility for those sections of this technical report;
8) I have had no prior involvement with the subject property;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) Mintrex Pty Ltd. was retained by Roxgold Inc. to prepare a feasibility study, for the Process Plant and Infrastructure components of the Yaramoko gold project located in Burkina Faso in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using good international industry practice and the environmental and social requirements applicable at the time in Burkina Faso.
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Yaramoko gold project or securities of Roxgold Inc.; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

["signed and sealed"]

Perth, Australia
June 4, 2014

Ian James Kerr, BE Civil (Hons) (MIE Aust, 3878951)
Principal Engineer (Civil)

Knight Piésold
CONSULTING

Knight Piésold Pty Ltd
Level 1, 184 Adelaide Terrace,
East Perth WA 6004
P.O. Box 6837, East Perth, 6892
Ph: 08 9223 6300
ABN: 67 001 040 419

CERTIFICATE OF QUALIFIED PERSON

I, David Morgan, Knight Piésold Pty Limited, do hereby certify that:

a) I am a Civil Engineer with Knight Piésold Pty Ltd with a business address at Level 1, 184 Adelaide Terrace, East Perth 6004.

b) This certificate applies to the technical report entitled "Technical Report for The Yaramoko Gold Project, Burkina Faso" having an effective date of April 22, 2014 (the "**Technical Report**").

c) I am a graduate of University of Manchester, (BSc, Civil Engineering, 1980), and the University of Southampton (MSc, Irrigation Engineering, 1981). I am a member in good standing of the Australasian Institute of Mining and Metallurgy (Australasia, 202216) and a Chartered Professional Engineer and member of the Institution of Engineers Australia (Australia, 974219). My relevant experience includes Project Director – Akyem Gold project, Project Director – Geita Gold Mine, Project Director – Ahafo Gold Project where I was involved with the design and construction of the tailings storage facilities, water dams and sediment control.

d) By reason of my education, affiliation with a professional association and past relevant work experience, I am a "qualified person" for the purposes of National Instrument 43-101-"Standards of Disclosure for Mineral Projects" ("NI 43-101").

e) I personally inspected the Yaramoko Project from August 11 to 15, 2013.

f) I am responsible for Sections 17.3, 17.4 and 17.5 of the Technical Report and contributed to Section 20.

g) I am independent of the issuer as described by Section 1.5 of NI 43-101.

h) I have had no prior involvement with the property that is the subject of the Technical Report.

i) I have read NI 43-101 and the parts of the Technical Report that I am responsible for have been prepared in compliance with NI 43-101.

j) At the effective date of the Technical Report, to the best of my knowledge, information and belief, 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.

Signed and sealed, dated this 4th day of June, 2014 at Perth, Western Australia, Australia.

David Morgan

Common
KNIGHT PIÉSOLD
PTY. LIMITED
A.C.N. 001 040 419
Seal

KP Server\...\David Morgan - Certificate of Qualified Person 20140529.docx

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Technical Report for the Yaramoko Gold Project, Burkina Faso* having an effective date of April 22, 2014.

I, Geoff Bailey, do hereby certify that:

1) I am a Principal Engineer (Electrical and Power) with the firm of Cardno BEC Pty Ltd. ("Cardno BEC") with an office at Suite 1, 87 Canning Hwy, South Perth, Western Australia, Australia;
2) I am a graduate of the Curtin University, Perth Western Australia.; From 1977 to 1979 I worked with Hamersley Iron as electrical foreman at Tom Price and Paraburdoo. From 1979 to 1986, I worked for Alcoa of Australia as an electrical engineer, responsible for many projects at 3 refineries across the State of Western Australia. From 1986 to 1991, I worked as a senior electrical engineer for a variety of EPCM consultancy firms in Perth mainly involved with the mining industry and related projects. In 1991 to 1996, I was a co-owner, director and principal engineer of a small electrical design, construction and commissioning company, GIS Engineering, in Western Australia. The company's focus was on the design and construction of mining projects which included gold, nickel, copper and phosphate processing plants in Australia, South East Asia and Africa. By 1996, I sold my share in GIS to pursue other opportunities, namely the formation of a consultancy company focused on the electrical design of mining and infrastructure projects, BEC Engineering. From 1996 to present day I have been the Managing Director of BEC Engineering, in South Perth, Western Australia. I have been involved with many mining projects in Australia and all over the world, including Africa and South America. During this time, I have personally been responsible for numerous power systems studies in West Africa, pertaining to the connection of process plants to the local power grid. I oversaw the company grow from 12 employees to a peak of 130 and establishment of new offices in Brisbane, Queensland and Dar-Es-Salam, Tanzania. In 2011, BEC Engineering merged with Cardno to become Cardno BEC where I have maintained my position of Managing Director.
3) I am a Professional Engineer, BE Electrical, Fellow with the Institute of Engineers Australia (FIE Aust 3878951), and registered on the National Professional Engineers Register NPER;
4) I personally visited the project area from March 19 to 21, 2014;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for section 17.9, share responsibility for section 20, and accept professional responsibility for those sections of this technical report;
8) I have had no prior involvement with the subject property;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) Cardno BEC was engaged by Mintrex to prepare the electrical and power systems portions of the feasibility study, for the Process Plant and Infrastructure components of the Yaramoko gold project located in Burkina Faso in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using good international industry practice and the environmental and social requirements applicable at the time in Burkina Faso.;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Yaramoko gold project or securities of Roxgold Inc.; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

["signed and sealed"]

Perth, Australia — Geoffrey Allen Bailey, BE Electrical, FIE Aust 3878951, NPER
June 4, 2014 — Principal Engineer