

São Jorge Gold Project, Pará State, Brazil (Latitude 6.48°S, Longitude 55.58°W)

Amended Independent Technical Report on Mineral Resources

Prepared by Coffey Consultoria e Serviços Ltda on behalf of:

Brazil Resources Inc.(BRI)

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1 SUMMARY

1.1 Introduction

Coffey Consultoria e Serviços Ltda, (Coffey) has been commissioned by Brazil Resources Inc. (BRI) to prepare an updated Independent Technical Report on the Mineral Resource for the São Jorge Gold Project (the Project) in Para State, Brazil. This update is in attendance to the agreement with Brazilian Gold Corporation (BGC) pursuant to which BRI acquired all of the outstanding common shares of BGC by way of a plan of arrangement under the Business Corporations Act (British Columbia) as stated on the BRI News Release dated November 22, 2013 and is based on the 2012 BGC. São Jorge Gold Project, Pará State, Brazil, Amended Independent Technical Report on Mineral Resources. Coffey is unaware of any exploration work that has been undertaken on this project since 2012.

All programs of sampling, assaying and exploration drilling to the effective date have been included in this report. Changes in commodity pricing and operational costing, as well as the improved and updated mineral resource basis, denote that the economic analysis is no longer current. Thus this report presents the results of the mineral resource estimation only.

This report complies with Canadian National Instrument 43-101 'Standards of Disclosure for Mineral Projects' of June 2011 (the Instrument) and the resource classifications adopted by CIM Council in December 2010.

All costs in this study have been expressed in US dollars unless noted otherwise.

1.2 Location

The São Jorge Gold Project is located in the southeast of Pará State, Brazil, in the municipality of Novo Progresso. The region is known as Tapajós and São Jorge is located 320km south of the main regional city Itaituba. Access to the São Jorge Gold Project from the cities of Itaituba or Novo Progresso is via highway BR163 (+80% paved) or a 1 hour flight in a light aircraft from Itaituba.

1.3 Ownership

BRI, through its Brazilian subsidiary Brazilian Resources Mineração Ltda., is the sole registered and beneficial holder of eleven gold exploration concessions and applications in the São Jorge area for a total landholding of 58,500ha. Two of these concessions (850.044/06 and 850.631/04) are under appeal and awaiting a decision by the DNPM, however these areas are covered by newer BGC concessions with the first right of refusal held by BGC.

BGC, the former owner of the Project, had one of the largest land positions in the Tapajos region (approx. 3,500 km²) and completed an extensive exploration program in 2011 with over 27,000m of diamond drilling and expenditures of approximately \$15M with over 14,000m of the drilling completed on the São Jorge Gold Project.



On November 22, 2013, BGC completed an agreement with BRI (the "Arrangement Agreement"), pursuant to which BRI acquired all of the outstanding common shares of BGC.

BRI is a public mineral exploration company with a focus on the acquisition and development of projects in emerging producing gold districts in Brazil, Paraguay and other parts of South America.

1.4 Geology

The São Jorge property is underlain by a granitoid pluton dominantly composed of an amphibole-biotite monzogranite. The gold mineralization is hosted in a circular shaped body comprised of the younger São Jorge granite. The intrusive body measures approximately 1.2km in diameter and is generally massive, grey to pink in colour with a porphyritic granular texture. The São Jorge intrusion trends 290° and is sub-parallel to the strike of the regional Cuiú-Cuiú - Tocantinzinho shear zone, which also hosts several important gold deposits including the Palito mine, Tocantinzinho and Cuiú-Cuiú deposit, and Bom Jardim and Batalha gold prospects.

1.5 Mineralization

Gold mineralization is related to a hydrothermal alteration zone in the monzogranite along a structurally controlled fracture - vein system approximately 1,400m long and up to 160m wide, and intersected in drill holes up to 350m below surface; the mineralization is open along strike and down dip. The main trend is 290° with an almost vertical dip. The main mineralized zone is defined by a fairly sharp but irregular contact between altered and unaltered monzogranite to the southwest and a more gradational transition from altered to unaltered rocks to the northeast. Strong alteration is associated with discrete quartz veinlets (1 to 2cm wide), associated with coarse pyrite grains and clusters that cut zones of intense quartz flooding.

1.6 Project Status

BGC conducted an exploration program on the São Jorge Gold Project, during 2011, in an effort to increase the mineralized resource and raise confidence in the continuity of the deposit.

The 2011 exploration program consisted of soil geochemistry (2,240 samples), geophysics (120 linear km IP) and diamond drilling (14,708m in 37 holes) in the deposit area as well as limited regional prospecting and sampling on the surrounding property.

The results from the program have been made public and the results of the diamond drilling program were used to estimate the updated mineral resource that is reported in this document.

The project is managed under an exploration permit granted by Brazilian authorities and which is in good standing.



1.7 Resources

Resource estimates for the São Jorge Gold Project have been generated by Coffey on the basis of analytical and technical results available up to 22 November 2013. The resources are reported in this Independent Technical report on Mineral Resource São Jorge Gold Project, Para State, Brazil, National Instrument 43-101, dated 15 January, 2014.

The Resource Statement has been determined with an effective date of 17th September 2012 and has been prepared and reported in accordance with Canadian National Instrument 43-101, Standards of Disclosure for Mineral Projects (the Instrument) and the classifications adopted by CIM Council in December 2010. The resource estimate has been classified as an Indicated and Inferred Mineral Resource based on the confidence of the input data, geological interpretation, and grade estimation.

In recognition of a improvement in the three year trailing average gold price since the resource declaration in the report dated September 2010, and consistent with the PEA dated July 2011, in this report Indicated and Inferred Mineral Resources are reported at a cut-off grade of 0.3g/t Au.

The cutoff grade value estimated by Coffey is based on economic, process recovery, government taxes, etc. and represents total revenue value in grams per tonnes that is explained as the sum of process cost + mining costs plus G&A + other costs divided by price (US\$) per 1ounce (31.1035g) and multiplied by process recovery. These results are shown in the Table 1.7_1.



	Table 1.7_1 São Jorge Gold Project	
N	lineral Resource Estimates Summ	ary
Item	Value	Measured Unit
Mining cost	1.39	(\$/t mined)
Processing cost	7.19	(\$/t)
G&A	1.54	(\$/t)
Recovery	90	(%)
Royalty etc	1.50	(%)
Gold Price	1,300	(\$/oz)
CoG	0.3	g/t

The summary of the total resources (oxide +sulfide) is:

14.42Mt at an average grade of 1.54g/t Au of Indicated Mineral Resources; and

28.19Mt at an average grade of 1.14g/t Au of Inferred Mineral Resources.

Table 1.7_2 lists the resource tonnes, grade and contained gold ounces per category and for alternative cutoff grades above the preferred cutoff of 0.3g/t Au for the total resource. Tables 1.7_3 and 1.7_4 summarise the resources at various cutoff grades (including and above the cutoff grade for resource declaration of 0.3g/t Au) for the oxide and sulphide mineralisation respectively.



Table 1.7_2 São Jorge Gold Project Mineral Resource Estimates Summary - 22th November 2013 5E x 5mN x 5mRL Selective Mining Unit					
Effective date - 22th November 2013	e - Lower Cutoff Grade Million Tonnes Average Grade Contained Gold				
	(g/t Au)		(g/t Au)	(KOZS)	
Indicated	0.3	14.42	1.54	715	
Mineral	0.4	12.15	1.77	690	
Resource	0.5	10.49	1.97	666	
Inferred	0.3	28.19	1.14	1035	
Mineral Resource	0.4	22.43	1.35	971	
	0.5	18.78	1.52	918	

NB* figures may not reconcile due to rounding

Table 1.7_3 São Jorge Gold Project Mineral Resource Estimates - Oxides - 22th November 2013 5E x 5mN x 5mRL Selective Mining Unit					
Effective date - 22th November	Lower Cutoff Grade	Million Tonnes	Average Grade	Contained Gold	
2013	(g/t Au)		(g/t Au)	(KOZS)	
Indicated Mineral Resource	0.3	1.78	1.42	81	
	0.4	1.49	1.63	78	
	0.5	1.25	1.86	75	
Inferred Mineral Resource	0.3	1.97	1.10	70	
	0.4	1.57	1.30	65	
	0.5	1.30	1.47	62	

NB* figures may not reconcile due to rounding

Table 1.7_4 São Jorge Gold Project Mineral Resource Estimates - Sulfides - 22th November 2013 5E x 5mN x 5mRL Selective Mining Unit						
Effective date - 22th November 2013	Lower Cutoff Grade	Million Tonnes	Average Grade	Contained Gold		
	(g/t Au)		(g/t Au)	(Kozs)		
Indicated Mineral Resource	0.3	12.64	1.56	634		
	0.4	10.67	1.78	612		
	0.5	9.24	1.99	591		
Inferred Mineral Resource	0.3	26.23	1.15	965		
	0.4	20.86	1.35	905		
	0.5	17.48	1.52	856		

NB* figures may not reconcile due to rounding



The independent qualified persons responsible for the mineral resource estimate in this report and summarised in Tables 1.7_2 are Messrs Porfirio Rodriguez and Leonardo M. Soares. Mr Rodriguez is a professional Mining Engineer with 34 years of experience in mineral resource and mineral reserve estimation. His experience includes uranium, iron ore, gold and nickel. Mr. Rodriguez is a Member of the Australian Institute of Geoscientists (MAIG). Mr Leonardo M. Soares is a geologist with 11 years of experience, most of them in resource estimation on gold properties. His experience includes iron ore, gold and copper. Mr. Soares is a Member of the Australian Institute of Geoscientists (MAIG). Both Messrs Rodriguez and Soares are independent of BRI as that term is defined in Section 1.5 of the Instrument.

Mineral resources which are not mineral reserves do not have demonstrated economic viability. The estimate of mineral resources may be materially affected by environmental, permitting, legal, marketing, or other relevant issues.

These mineral resources have been estimated on the basis of a block model of the deposit which, in the opinion of Coffey, has been constrained to honour appropriate geological domains. Grades have been interpolated into individual blocks by Multiple Indicator kriging (MIK), using search radii and these are fully supported by the variography analysis. Coffey has estimated and classified the mineral resources contained within the São Jorge Gold Project deposit using procedures which are generally accepted within the industry and that these procedures have been properly applied.

The estimation was prepared correctly based on the methodology and parameters used at the time; and, the selective mining unit (SMU) block size of $5m \times 5m \times 5m$ was considered reasonable at the time of the estimation based on the QP experience with gold mining in Brazil.

1.8 Interpretations and Conclusions

Coffey, in compliance with Canadian National Instrument 43-101 which regulates the public disclosure of mining companies in Canada, concluded that the São Jorge Gold Project is validated in accordance with the best practices.

It is concluded that:

- The resource estimation is not different from that presented by BGC in December 2012, as no new drilling data information has been generated since then.
- The resource tonnage has increased significantly since the estimate in 2011 as a result of last drilling campaign conducted by BGC.
- The resource grade has increased significantly since the last estimate in 2011 as a result of infill drilling and sampling and a smaller search ellipse in this estimate.



- Potential head grade enhancement may be possible through selective mining of internal waste based on pit mapping and grade control;
- Potential head grade enhancement may result from further upgrading of inferred resource to indicated;

1.9 Recommendations

Coffey has considered as recommendations:

- A new exploration program and budget to drill test and support the conversion of targets to mineral resources; and
- A study to determine the optimum drilling grid for Mineral Resource conversion from inferred to indicated, based on the current database. One method is based on analysis of kriging variances for existing samples in the study area. Usually this kind of study can save on budget and time for exploration drilling campaigns;

Coffey recommends the following specific exploration programs for the São Jorge project:

- Deposit drilling to upgrade any near surface (surface to approx. 200m depth) inferred resources to indicated resources.
- Modelling and interpretation of geophysical data:
 - Airborne magnetic survey completed by Fugro in 2006 that covers the entire property to identify possible structures for follow-up exploration.
 - Induced polarization survey (120 line km) completed by Fugro in 2011 that covers the strike extents of the São Jorge deposit with a particular emphasis on the resistivity +/- chargeability anomaly located along strike and for 2.5km southeast of the São Jorge deposit.
- Trenching and sampling of targets identified by the modelling and interpretation of the geophysical data.
- Near-deposit diamond drilling of geophysical-geochemical targets.
- Regional geochemical program to identify new targets on the largely unexplored São Jorge property. The program would consist of regional soil traverses using the existing east-west roads that cross the property.

Coffey recommends an exploration program for the São Jorge project to fulfil these points that is estimated will cost in the order of \$4,000,000.



2 INTRODUCTION

2.1 Scope of Work

Coffey Consultoria e Serviços Ltda, (Coffey) has been commissioned by Brazil Resources Inc.(BRI) to prepare an updated Independent Technical Report on Mineral Resource for the São Jorge Gold Project (the Project) in Para State, Brazil. This update is in attendance to the agreement with Brazilian Gold Corporation (BGC) pursuant to which BRI acquired all of the outstanding common shares of BGC by way of a plan of arrangement under the Business Corporations Act (British Columbia) as stated on the BRI News Release dated November 22, 2013, and is based on the 2012 BGC. São Jorge Gold Project, Pará State, Brazil, Amended Independent Technical Report on Mineral Resources. Coffey is unaware of any exploration work that has been undertaken on this project since September 2012.

All programs of sampling, assaying and exploration drilling to the effective date have been included in this report. Changes in commodity pricing and operational costing, as well as the improved and updated mineral resource basis, denote that the economic analysis is no longer current or material. Thus this report presents the results of the mineral resource estimation only.

This report complies with Canadian National Instrument 43-101 'Standards of Disclosure for Mineral Projects' of June 2011 (the Instrument) and the resource classifications adopted by CIM Council in December 2010.

All costs in this study have been expressed in US dollars unless noted otherwise.

2.2 Principal Sources of Information

In addition to a site visit undertaken by Porfirio Cabaleiro, to the São Jorge Gold Project in July, 2012, the authors of this report have relied on information provided by BGC, extensive discussion with BGC, and numerous studies completed by other internationally recognized independent consulting and engineering groups. A full listing of the principal sources of information is included in Section 19 of this report and a summary of the main documents is provided below:

- MPH Consulting Limited (March 2006) Technical Report on São Jorge Project, Pará State, Brazil for BrazMin Corp.;
- SRK Consulting (October 2006) Resource Estimate and Technical Report for the São Jorge Project, Brazil for Brazmin Corp;
- Coffey (2008) NI43-101 Technical Report (resource estimate) on São Jorge Project, Para State, Brazil, for Talon Resources;
- Coffey (September 2010) NI43-101 Technical Report (resource estimate) on São Jorge Project, Para State, Brazil, for Brazilian Gold Corporation;



- Hidrovia Hidrogeologia e Meio Ambiente (May 2011) Contracted report for São Jorge Preliminary Assessment;
- Coffey (June, 2011)
 Preliminary Economic Assessment NI 43-101 Technical Report on São Jorge Project, Pará State, Brazil for Brazilian Gold Corporation.
- The 2012 the Amended Independent Technical Report on Mineral Resources São Jorge Gold Project, Pará State, Brazil, prepared by Coffey for Brazilian Gold Corp.

Coffey wishes to acknowledge the assistance provided to it by BGC and its consultants, particularly Michael Schmulian, Technical Manager – Advanced Projects for BGC.

Coffey has made enquiries to establish the completeness and authenticity of the information provided and identified and a draft of this report was provided to BRI, along with a written request to identify any material errors or omissions prior to lodgement.

2.3 Qualifications and Experience

Coffey is a highly respected international consulting firm specializing in the areas of geology, mining and geotechnical engineering, metallurgy, hydrogeology, hydrology, tailings disposal, environmental science and social and physical infrastructure.

The "qualified persons" (as defined in NI 43-101) for the purpose of this report are Porfirio Cabaleiro Rodriguez and Leonardo Soares.

This report has been compiled by Mr. Rodriguez, who is a professional Mining Engineer with 34 years of experience in mineral resource and mineral reserve estimation. His experience is spread across several commodities including uranium, iron ore, gold and nickel, among others. Mr. Rodriguez is a Member of the Australian Institute of Geoscientists (MAIG). Mr. Rodriguez visited the São Jorge Gold project site between the 13th and 14thJuly 2012. Mr Rodriguez is an associate consultant with Coffey.

Mr. Rodriguez was supported by Leonardo Soares, a geologist with 9 years of experience, most of them in resource estimation on gold properties. His experience is spread across several commodities including iron ore, gold, copper, among others. Mr. Soares is a Member of the Australian Institute of Geoscientists (MAIG).Mr Soares is an employee of Coffey

Neither Coffey nor the authors of this report have or have had any material interest in BRI or related entities or interests. Coffey's relationship with BRI is solely one of professional association between client and independent consultant. This report is prepared in return for fees based on agreed commercial rates and the payment of these fees is in no way contingent on the results of this report.

2.4 Units of Measurements and Currency

Metric (SI) units are used throughout this report unless noted otherwise. Currency is United States dollars ("US\$"). At the time of writing this report, on 15th January 2014 the currency



exchange rate was 2.34 Brazilian Reals per US\$, the gold price was quoted at US\$1,239/Troy ounce, and the three years average price was calculated at US\$1,550/Troy ounce.

Coffey did not convert any currency figures during this study. Coffey used a conversion factor of 31.1035 grams per Troy ounce,



2.5 Abbreviations

A full listing of abbreviations used in this report is provided in Table 2.5_1.

Table 2.5_1 São Jorge Gold Project List of Abbreviations					
	Description		Description		
\$	United States of America dollars	l/hr/m ²	litres per hour per square metre		
"	Inches	М	million		
μ	Microns	m	metres		
3D	three dimensional	Ма	thousand years		
AAS	atomic absorption spectrometry	Mg	Magnesium		
Au	Gold	ml	millilitre		
bcm	bank cubic metres	mm	millimetres		
CC	correlation coefficient	Mtpa	million tonnes per annum		
cm	Centimetre	N (Y)	northing		
Co	Cobalt	Ni	nickel		
CRM	certified reference material or certified standard	NPV	net present value		
Cu	Copper	NQ ₂	Size of diamond drill rod/bit/core		
CV	coefficient of variation	°C	degrees centigrade		
DDH	diamond drillhole	ОК	Ordinary Kriging		
DTM	digital terrain model	P80 -75µ	80% passing 75 microns		
E (X)	Easting	Pd	palladium		
EDM	electronic distance measuring	ppb	parts per billion		
Fe	Iron	ppm	parts per million		
G	Gram	psi	pounds per square inch		
Ga	Giga annun				
g/m ³	grams per cubic metre	PVC	poly vinyl chloride		
g/t	grams per tonne of gold	QC	quality control		
HARD	Half the absolute relative difference	QQ	quantile-quantile		
HDPE	High density poly ethylene	RC	reverse circulation		
HQ ₂	Size of diamond drill rod/bit/core	RL (Z)	reduced level		
Hr	Hours	ROM	run of mine		
HRD	Half relative difference	RQD	rock quality designation		
ICP- AES	inductivity coupled plasma atomic emission spectroscopy	SD	standard deviation		
ICP- MS	inductivity coupled plasma mass spectroscopy	SG	Specific gravity		
ISO	International Standards Organisation	Si	silica		
kg	Kilogram	SMU	selective mining unit		
kg/t	kilogram per tonne	t	tonnes		
km	Kilometres	t/m ³	tonnes per cubic metre		
km ²	square kilometres	tpa	tonnes per annum		
kW	Kilowatts	UC	Uniform conditioning		
kWhr/t	kilowatt hours per tonne	w:o	waste to ore ratio		



3 RELIANCE ON OTHER EXPERTS

This report was prepared as a National Instrument 43-101 Technical Report, in accordance with Form 43-101F1, for Brazil Resources Inc. by Coffey Consultoria e Serviços Ltda (Coffey). The quality of information and conclusions contained herein are consistent with the level of effort involved in Coffey's services and based on:

- i) The 2012 the Amended Independent Technical Report on Mineral Resources São Jorge Gold Project, Pará State, Brazil, prepared by Coffey for BGC,
- ii) information available at the time of preparation provided by BGC,
- iii) third party technical reports prepared by Government agencies and previous tenements holders, along with other relevant published and unpublished third party information, and
- iv) the assumptions, conditions and qualifications set forth in this report. This report is intended to be used by BRI, subject to the terms and conditions of its contract with Coffey. This contract permits BRI to file this report as a Technical Report with Canadian Securities Regulatory Authorities pursuant to National Instrument 43-101, Standards of Disclosure for Mineral Projects. Any other use of this report by any third party is at that party's sole risk.

A final draft of this report was provided to BRI, along with a written request to identify any material errors or omissions, prior to lodgement.

The authors of this report are not qualified to provide extensive comment on legal and environmental issues associated with the BRI concessions in Brazil included in Section 4 of this report. Assessment of these aspects has relied on information provided by BRI and has not been independently verified by Coffey.

Coffey has relied on BGC's lawyers Pinheiro Neto Advogados (PINHEIRONETO), of São Paulo, Brazil for their opinion on the title for the São Jorge mineral concessions (September 2013) and Coffey has received a memorandum from them supporting BRI's claims.

The prior owner of the project, Talon Resources, has used a number of external experts in respects to the São Jorge Gold Project. They have not been relied upon but are listed below for reference:

- Geophysical Lasa Engenharia e Prospeccoes S.A. and MPH Consulting Limited;
- Prior resource estimates SRK Consulting;
- Metallurgical SGS Lakefield Limited;
- Analytical SGS Geosol Lakefield Limited; and



- Technical Reports MPH Consulting Limited.
- Legal FFA Legal and Veiranos Advogados, both of Rio de Janeiro, Brasil;

BGC has used a number of external experts in respect to the São Jorge Gold Project, including:

- Geophysical Fugro Lasa Geomag;
- Metallurgical testwork Testwork Desenvolvimento de Processo Ltda and SGS Geosol;
- Waste rock characterization Global Resource Engineering Ltd; and
- Analytical Acme Laboratories Ltd.

BRI used pinheiro Netos Advogados, of São Paulo, to prepare a Due Diligence Report - Acquisition of Brazilian Gold Corporation.



4 PROPERTY DESCRIPTION AND LOCATION

4.1 Background Information on Brazil

Brazil occupies a land surface area of about 8.5 million square kilometres, slightly larger than Australia. The climate is largely tropical, with more temperate regions in the south. The topography is mostly flat, with rolling lowlands in the north, some plains and a narrow coastal belt. The total population is about 198 million and literacy is about 89%. The official language is Portuguese, while English, Spanish and French are also spoken. The capital city is Brasilia, located in the centre of the country.

Political conditions in Brazil are stable. Brazil has been a member of the World Trade Organisation since 1995 and is a founding member of Mercosul, a trade liberalisation program for South America.

The fundamentals of Brazilian macro-economic policy are based primarily on fiscal austerity, the control of inflation and free foreign exchange. The strength of the world economy and the high level of liquidity in international financial resources have accelerated production, led to more intense global trade and created favourable conditions for foreign investment and the recovery of the country's economy since 2004.

Brazil's economy, aided by a benign international environment, rebounded very positively after the global financial crisis and grew approximately 2.5% in 2012 (2.7% in 2011, 7.7% in 2010, -0.2% in 2009, and 5.1% in 2008) delivering sustained growth, coupled with booming exports, healthy external accounts, moderate inflation, decreasing unemployment and reductions in the debt-to-GDP ratio. President Rousseff and her economic team have continued the fiscal and monetary policies of former president Lula da Silva and have pursued necessary microeconomic reforms.

Brazil has made strong progress in the last decade. Brazil's (largely domestic) government debt has been reduced in recent years to 38.8% of GDP, of which 15.6% is external debt. Total foreign debt, while falling, is still large in relation to Brazil's export base. Over time this concern will be reduced by healthy export growth, which has anchored the positive trade and current accounts. Personal incomes improved since 2004 after a significant decline over the previous decade. Income and land distribution remains skewed.

Sustaining high growth rates in the longer term depend on the impact of President Rousseff's structural reform program and efforts to build a more welcoming climate for investment, both domestic and foreign.

Brazil's export of resources, oil and gas has been reported for January 2011 as being up 37.2%, primarily driven by strong commodity prices. Brazil is the world's largest producer of niobium and iron ore, the second largest producer of tantalum, and the third largest producer of aluminium, graphite and manganese.



The 1995, constitutional amendment provided a landmark in Brazilian mining legislation by granting foreign companies the right to hold majority ownership in Brazilian projects and equality of fiscal and economic treatment. Today, numerous multi-national mining companies are active in Brazil, including Anglo American Plc, Rio Tinto Plc and BHP Billiton Limited.

4.2 Mineral Tenure

Tenements in Brazil are granted subject to various conditions prescribed by the Mining Code, including the payment of rent and reporting requirements and each tenement is granted subject to standard conditions that regulate the holder's activities or are designed to protect the environment. These standard conditions are not detailed in this report, however where a tenement is subject to further specific conditions, these are detailed in the notes accompanying the tenement schedule.

Mineral tenements in Brazil generally comprise Prospecting Licenses, Exploration Licenses and Mining Licenses.

The holder of a granted Prospecting License, Exploration License or Mining License is not required to spend a set annual amount per hectare in each tenement on exploration or mining activities. Therefore, there is no statutory or other minimum expenditure requirement in Brazil. However, annual rental payments are made to the DNPM (Departamento Nacional de Produção Mineral) and the holder of an Exploration License must pay rates and taxes, ranging from R\$2.02 to R\$3.06, or ranging from US\$0.84 to US\$1.29 per hectare, to the Local Government.

Lodging a caveat or registering a material agreement against the tenement may protect various interests in a Mining License.

If a mineral tenement is located on private land, then the holder must arrange or agree with the landowners to secure access to the property.

4.2.1 Prospecting Licenses

A Prospecting License entitles the holder, to the exclusion of all others, to explore for minerals in the area of the License, but not to conduct commercial mining. A Prospecting License may cover a maximum area of 50 hectares and remains in force for up to 5 years. The holder may apply for a renewal of the Prospecting License which is subject to DNPM approval. The period of renewal may be up to a further 5 years.

4.2.2 Exploration Licenses

An Exploration License entitles a holder, to the exclusion of all others, to explore for minerals in the area of the License, but not to conduct commercial mining. The maximum area of an Exploration License is 2,000 hectares outside of the Amazonia region and 10,000 hectares within the Amazonia region (Amazonas, Para, Mato Grosso, Amapa, Rondonia, Roraima and Acre states). An Exploration License remains in force for a maximum period of 3 years and



can be extended by no more than a further 3 year period. Any extension is at DNPM's discretion and will require full compliance with the conditions stipulated by the Mining Code that must be outlined in a report to DNPM applying for the extension of the License.

Once the legal and regulatory requirements have been met, exploration authorisation is granted under an Exploration License, granting its holder all rights and obligations relating to public authorities and third parties. An Exploration License is granted subject to conditions regulating the conduct of activities. These include the requirement to commence exploration work no later than 60 days after the Exploration License has been published in the Federal Official Gazette and not to interrupt it without due reason for more than 3 consecutive months or 120 non-consecutive days; to perform exploration work under the responsibility of a geologist or mining engineer legally qualified in Brazil; to inform DNPM of the occurrence of any other mineral substance not included in the exploration permit and to inform DNPM of the start or resumption of the exploration work and any possible interruption.

If the holder of an exploration License proves the existence of a commercial ore reserve on the granted exploration License, the DNPM cannot refuse the grant of a mining License with respect to that particular tenement if the License holder has undertaken the following:

- An exploration study to prove the existence of an ore reserve.
- A feasibility study on the commercial viability of the reserve.
- The grant of an environmental License to mine on the particular tenement.

4.2.3 Mining Licenses

A Mining License entitles the holder to work, mine and take minerals from the mining lease subject to obtaining certain approvals.

Mining rights can be denied in very occasional circumstances, where a public authority considers that a subsequent public interest exceeds that of the utility of mineral exploration, in which case the Federal Government must compensate the mining concession holder.

A Mining License in Brazil covers an area of between 2,000 hectares and 10,000 hectares, depending on the geographical area, as detailed above, and remains in force indefinitely. The holder must report annually on the status and condition of the mine.

As with other mining tenements, a Mining License is granted subject to conditions regulating the conduct of activities. Standard conditions regulating activities include matters such as:

- The area intended for mining must lie within the boundary of the exploration area.
- Work described in the mining plan must be commenced no later than 6 months from the date of publication of the grant of the Mining License, except in the event of a force majeure.



- Mining activity must not cease for more than 6 consecutive months once the operation has begun, except where there is proof of force majeure.
- The holder must work the deposit according to the mining plan approved by the DNPM.
- The holder must undertake the mining activity according to environmental protection standards stipulated in an environmental License obtained by the holder.
- The holder must pay the landowner's share of mining proceeds according to values and conditions of payments stipulated by law, which is a minimum of 50% of CFEM (see below), but is usually agreed to be higher under a contract between the holder of the Mining License and the landowner.
- The holder must pay financial compensation to States and local authorities for exploring mineral resources by way of a Federal royalty being the CFEM, which is a maximum of 3% of revenue, depending on commodity. In Pará State, the royalty on gold deposits is 1%.

An application for a Mining License may only be granted solely and exclusively to individual firms or companies incorporated under Brazilian law, which will have a head office, management and administration in Brazil, and are authorized to operate as a mining company.

4.3 **Project Location**

The São Jorge Gold Project is located in the southeast of Pará State, in the municipality of Novo Progresso, approximately 70km north of the town of Novo Progresso. Regional highway BR-163 passes through the São Jorge project site. The region is known as the Tapajós and São Jorge is located 320km south of the main regional city Itaituba (Figures 4.3_1). Itaituba is located at the intersection of the Trans-Amazonica Highway with the Tapajós River. The topographical coordinates of the project are 6.48° latitude South and 55.58° longitude West. The nearest major cities with connections to international flights are Belém and Manaus.

BRI plans, but have to confirm, to make Novo Progresso its base for operations. Novo Progresso has a population of approximately 60,000 people and can supply the project with labour, fuel and equipment that will be necessary to develop the project.







4.4 Tenement Status

BRI, through its Brazilian subsidiary Brazilian Resources Mineracao Ltda (BRML)., is the sole registered and beneficial holder of eleven gold exploration concessions and applications in the São Jorge area.

The mineral rights of São Jorge Project are represented by the Processes DNPM Nrs. 850.058/2002, 850.275/2003, 850.019/2006, 850.044/2006, 850.555/2013, 850.556/2013, 850.557/2013, 850.631/2004. 850.960/2010, 851.036/2013 and 851.094/2005, which comprise an aggregate area of 80,7953 hectares in the Municipalities of Itaituba and Novo Progresso, in the State of Pará.;

The description of the mineral tenure is based on information supplied to Coffey by the BRI team and updated from information contained in a legal opinion, elaborated by Pinheiro Neto Advogados, lawyers based in São Paulo, dated 25 September 2013.

Processes DNPM Nrs. 850.058/2002 and 850.275/2003 are exploration licences for gold ore, held by BRML, valid until December 30, 2013. Extensions may be applied for, as long as the titleholder submits an interim report and justifies the extension. The request for extension must be submitted at least 60 days prior to the expiry date of the licences.

In the past, there were issues involving the mineral rights represented by Processes DNPM Nrs. 850.058/2002, 850.275/2003 and 850.024/2002. All such rights were acquired by BRML and later the DNPM declared null the process N. 850.024/2002 (due to several irregularities), which terminated the disputes over priority rights in the areas and allowed DNPM to grant exploration licences to BRML in processes 850.058/2002 and 850.275/2003.

Recently, however, the previous titleholder of DNPM process N. 850.275/2003, Pedro Pacheco dos Santos Lima Neto, lodged a petition to the DNPM claiming that the process 850.058/2002 also had some irregularities and should have been declared null as well. BRML replied to that petition trying to demonstrate the regularity of process N. 850.058/2002. The DNPM has not reviewed any of those petitions yet.

All the other nine mineral rights are still current applications for exploration licences for gold ore, of which BRML is the titleholder of four, Regent is the titleholder of the other four and Brazmin Ltda. is the titleholder of the last one. The lawyers are still confirming what is the relationship between Brazmin and BGC in what concerns these mineral rights. Be that as it may, it is important to highlight that exploration works cannot be performed until the respective exploration licences are granted. Furthermore, it is important to consider the possibility that the proposed new mining legislation – which is currently under review at the Brazilian Congress – may transform applications for exploration licences into competitive processes where third parties may be allowed to bid for the areas currently covered by the applications.



It is worth noting that the application for exploration licence lodged by BRML, represented by Process Nr. 850.631/2004, which comprises an area of 6558,.48 hectares, was denied by the DNPM. Brazmin appealed against the decision that denied the application for exploration licence and the DNPM recently recognized a mistake in the denial and is now reviewing the application again in order to grant the exploration permit.

In relation to DNPM Process N. 850.960/2010, the DNPM identified a partial overlap with DNPM Process N. 850.631/2004, mentioned abovewhich was initially denied by the DNPM. BRML appealed claiming that the overlap should not have been considered. The DNPM still has not ruled on the matter, however BRML believesthe DNPM will now recognize that the overlap still exists and will remove the overlapped area, which will result in three separate areas of 988.88ha, 244.46ha and 34.74ha. BRML will have to opt for one of those areas and will be allowed to lodge new applications for the other two areas.

Details of BRI's total gold concession holdings in the São Jorge region are found in Table 4.4_1 and Figure4.4_1.



Table 4.4_1							
São Jorge Gold Project							
	Summary of BGC Concession Status in the São Jorge Region						
№ _DNPM	Titleholder	Status	Phase	Substance	District	State	
851094/2005	Brazilian Resources Mineração Ltda.	IN PROGRESS	APPLICATION FOR EXPLORACTION	MINÉRIO DE OURO	Itaituba	Pará	
850058/2002	Brazilian Resources Mineração Ltda.	IN PROGRESS	EXPLORACTION LICENSE	MINÉRIO DE OURO	Novo Progresso	Pará	
850275/2003	Brazilian Resources Mineração Ltda.	IN PROGRESS	EXPLORACTION LICENSE	MINÉRIO DE OURO	Novo Progresso	Pará	
850960/2010	Brazilian Resources Mineração Ltda.	IN PROGRESS	APPLICATION FOR EXPLORACTION	MINÉRIO DE OURO	Itaituba	Pará	
850631/2004	Brazmin Ltda	PENDING APPEAL	APPLICATION FOR EXPLORACTION	MINÉRIO DE OURO	Itaituba	Pará	
850557/2013	Mineração Regent Brasil Ltda.		APPLICATION FOR EXPLORACTION	MINÉRIO DE OURO	Itaituba	Pará	
850555/2013	Mineração Regent Brasil Ltda.		APPLICATION FOR EXPLORACTION	MINÉRIO DE OURO	Itaituba	Pará	
850556/2013	Mineração Regent Brasil Ltda.		APPLICATION FOR EXPLORACTION	MINÉRIO DE OURO	Itaituba	Pará	
851036/2013	Mineração Regent Brasil Ltda.		APPLICATION FOR EXPLORACTION	MINÉRIO DE OURO	Itaituba	Pará	
850019/2006	Brazilian Resources Mineração Ltda.		EXPLORACTION LICENSE	MINÉRIO DE OURO	Itaituba	Pará	
850044/2006	Brazilian Resources Mineração Ltda.		EXPLORACTION LICENSE	MINÉRIO DE OURO	Novo Progresso	Pará	





4.5 Royalties and Agreements

Based on information supplied to Coffey by BRI's lawyers PINHEIRONETO, of São Paulo, BRI has complied with all its contractual obligations in respect to the original owners of the licenses (see Section 6.2 regarding Ownership History). The following payments and agreements listed below are the remaining contractual obligations to be completed by BRI:

 Payment by BRML to Pedro Pacheco dos Santos Lima Neto and Tapajós Mineração Ltda. of an amount equivalent to 1% of the proven mineral resources within the area represented by DNPM process N.850.275/2003;



 Payment by BRML to Pedro Pacheco dos Santos Lima Neto of royalties equivalent to 2% over the gross revenue obtained from the sale of mineral substances mined from the area of mineral rights represented by DNPM N. 850.627/2003 (due only after the costs and investments made by BRML for the implementation of the project have been recovered); and

Pedro Pacheco and Tapajós sent a notice to BRML on 14 March 2013 claiming payment of an installment calculated based on the proven mineral resources at São Jorge based on a feasibility study. Pedro Pacheco and Tapajós claim that such feasibility study was prepared and they never received payment related thereto. BRML responded to the notice on 16 May 2013 stating that no feasibility study was prepared, but rather a preliminary assessment that should not be considered as a basis for the calculation of the payment due to Pedro Pacheco and Tapajós.

4.6 Environmental Liabilities

Prior to acquisition of the property by BGC, Talon had completed and filed at the Secretaria Estadual de Meio Ambiente– SEMA, an Environment Control Report ("Relatório de Controle Ambiental- RCA") and a request for an extension to the Environmental License for Exploration License 024(replaced by Concessions 058 and 275).

This license was previously obtained on May 26, 2006 and was valid until May 25, 2007. An extension has been submitted and is under review by SEMA. BGC expects to extend the environmental license 058 and 275 (covering the São Jorge Pit) for one additional year, starting on the effective date that it will be approved by SEMA. BGC has not yet undertaken any environmental study since acquiring the São Jorge Gold Project from Talon and Coffey has no new information about that issue.

4.7 Permitting

No additional permits are required at the current stage of exploration.



5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Project Access

Access to the São Jorge Gold Project from the city of Itaituba is via 320km of mostly paved roads on highway BR 163, and secondary roads that transect the property (Figure 4.3.1).

Itaituba is a well-established city with good port facilities on the Tapajós River and a capacity for large freight aircraft. Itaituba is located on the Transamazon highway, and is approximately 1,000km west of Marabá, which is 1,500km from Brasília via the Belem-Brasília highway. Itaituba can be reached by scheduled jet aircraft from Manaus and Belem, where international connections are available. The area can also be reached by a one hour flight from Itaituba using the un-paved airstrip in the village of Morais de Almeida.

BRI has planned to base its operations in Novo Progresso as this town is much closer to the project, using the following criteria;

- Located 70km by paved tarmac road south of the project;
- Town of 60,000 people capable of supplying manpower and services to the project;
- Novo Progresso airport is currently being upgraded with a longer and wider tarmac runway;
- Commercial daily flights from Belem and Alto Floresta;
- Hydro-electric transmission line from Novo Progresso supplies power to the project; and
- Rapidly improving infrastructure.

5.2 Physiography and Climate

The climate is tropical with an annual rainfall of around 2,000mm and seasonal variations with a drier period between July and November and a wetter period between December and May. The average annual temperature is approximately 27.5°C with minimal month to month variations.

The topography is gently rolling with elevations of 150m to 400m above mean sea level. Vegetation varies from tropical rainforest, with the project area located within farmland.

5.3 Local Infrastructure and Services

São Jorge is an exploration camp comprising:

- Housing facilities for 40 persons (exploration and drilling crews);
- Kitchen and mess hall;
- Office with phone and internet;
- Core storage and logging facility;



• Hydro-electric and generator power.

A core shed has been constructed to house all the drillcore from the project. The São Jorge exploration site is connected to the regional power line from the locality of Novo Progresso with emergency backup supplied by diesel generators. However, as reported by Coffey (2011), the power line will require upgrading to 138 kV capacity along with a local substation at the plant site.

A skilled work force and labour are mainly sourced from Novo Progresso located 70km to the south. Fuel, food and service companies are located in Novo Progresso.

A small open pit and 2 small leach pads remain from the previous garimpo operation that was in place in early 2000.

The local economy consists mainly of cattle ranching, logging and small scale mining.

Water for industrial and potable use has been assumed to be drawn from the Jamanxim River, 9 km to the west of the project site.



6 HISTORY

6.1 Exploration History

The exploration history for the São Jorge property is summarised in Table 6.1_1 below.

Table 6.1_1 São JorgeGold Project Exploration Property History						
Date	Date Entity Work Program Significant Results					
Before 1990	Informal miners during Tapajós Gold Rush	Alluvial and saproliteGarimpo mining	Some gold production (not reported)			
1993 - 1995	RTDM	Mapping, soil sampling, trenching, auger and diamond drilling (26 holes for 4350.3m)				
1997 - 1998	RTDM	Scoping study and diamond drilling with 16 drillholes	First mineral resource estimation by RTDM (non- compliant with NI 43-101 guidelines)			
1998	Altoro	Negotiated property with RTDM but didn't advance with the option due to a merger with Solitario Resources				
2001 - 2005	Tapajós Mineração Ltda	Garimpo open pit mining operation	Production of gold by heap leaching (final production not reported); final pit 400m long, 80m wide and 20 to 30m deep			
2005	Talon (previously named BrazMin)	Phase I diamond drilling program of 48 drillholes for 10,104m.	Defined a envelope of a vein and stockwork zone of 700m strike extent			
2006	Talon	Phase II diamond drilling program of 34 drillholes for 7,952m and airborne and ground geophysics	New targets and extensions from Wilton Zone defined to the west – 'Kite zone" and east "Wilton East zone". First NI 43-101-compliant mineral resource estimation.			
2007	Talon	Extension of regional soil sampling grid	Anomalous gold values along 600m on one line			
2011	BGC	120 linar km of soil geochemistry and geophysics (IP), and drilling (14,708m) in 37 holes	Increased the mineral resource and upgraded the resource classification			

Gold is reported to have been first discovered in the Tapajos region in the 18thcentury. Significant production has been recorded since the end of the 1970s and beginning of the 1980s, when the BR 163 (Cuiaba - Santarém road) was opened. A gold rush started in the Tapajos region with thousands of garimpeiros entering the region that was until then totally isolated. Production from the region apparently peaked between 1983 and 1989, with as many as 300,000 garimpeiros reportedly extracting somewhere between 500,000oz and 1Moz per year, predominantly based on alluvial gold. Up until 1993, production was officially


estimated at 7Moz, but real production is unknown. Production has since declined, reaching an average of 160,000oz of gold per year in the late 1990s.

São Jorge is located in the eastern part of the so called "Tapajos Gold District". São Jorge garimpo mining reportedly commenced in the 1970s. There are no published records to support the timing or amount of production. The exploration of the São Jorge area was initiated by Rio Tinto Desenvolvimento Minerais Ltda ("RTDM"), a subsidiary of Rio Tinto Plc Mineral Group, in 1993. At that time the São Jorge garimpeiro workings (Wilton Pit), was approximately 30m in diameter. Following sampling in this small open pit, RTDM applied for four exploration licences in order to acquire the bedrock mining rights. Additionally they negotiated an agreement with the landowner Wilton Amorim, which enabled them to initiate exploration on the property.

The RTDM exploration program involved a 300m line spacing airborne magnetic survey, 200m by 200m soil sampling grid around the São Jorge garimpo workings, 202 auger holes totalling 1,868m (drilled on a 50m by 20m grid with infill 8m by 8m), trenching with channel sampling (total of 1,071 samples collected in 16 trenches), detailed geological mapping to define the geological and structural framework and 26 diamond drillholes for a total of 4,350.3m.

In 1997, as part of a scoping study, RTDM estimated a non-compliant NI43-101 mineral resource for the São Jorge Property and completed an additional 16 diamond drillhole program to test conclusions of the scoping study (see Section 6.3 below).

In March 1998, Altoro Gold Corp. (Altoro) negotiated an agreement on the property with RTDM and reviewed all data by check sampling of drillholes and surface sampling at the garimpeiro pit. However, due to a merger with Solitario Resources Corporation, no further work was completed on the property. In early 2003, RTDM relinquished the four São Jorge exploration licenses.

One of the licenees (No 850.024/02), was immediately acquired by a private individual and subsequently optioned to Centaurus Mineração e Participações Ltda (Centaurus). No exploration work was undertaken by Centaurus.

From 2001 to 2005, garimpeiro operations were undertaken by Tapajós Mineração Ltda (TML). These operations included small heap leach pads using cyanide solutions to recover gold. Production by TML was reported at 15,000t of ore per month grading 0.3 to 0.7g/t of gold. Harron (2004) reported an estimated production of "approximately 1,500 oz of gold per year."

After garimpeiro operations ceased on the property, a pit of approximately 400m long, 80m wide and 20 to 30m deep had been excavated over the Wilton Pit area.

On July 16, 2004 Talon acquired from Centaurus a 100% interest in the São Jorge exploration licenses and in April 2005 entered into an agreement with Jaguar Resources Limited acquiring a 100% interest in the three adjacent claims.



On 14 June, 2010 BGC acquired from Talon a 100% interest in the São Jorge exploration licenses. BGC initiated a new exploration program in early 2011 consisting of soil sampling, geophysics and core drilling. The conclusions from the program are published in this report.

6.1.1 Resource History

In 1997, RTDM reported a saprolite resource of 3.2Mt at a grade of 1.31g/t gold and a fresh rock resource of 33Mt at a grade of 1.49g/t gold. This historical resource estimate was classified as "potential resources" and did not comply with current NI 43-101 guidelines. Coffey has not reviewed this resource estimate and methodology as only the reference of the results has been located in historical technical reports and it has been superseded by subsequent resource estimates.

In 2006, SRK Consulting Inc (SRK) completed a NI43-101 compliant mineral resource estimation for Talon (formerly BrazMin Corp) which is filed on SEDAR. Although this report was relevant and compliant at the time of preparation, it should not be relied upon as it is no longer current. Comment is provided here purely to present historical background.

In 2008, Coffey released a NI43-101compliant mineral resource estimation for Talon which is filed on SEDAR.

In 2010, Coffey released a NI43-101 compliant mineral resource estimation for BGC which is filed on SEDAR.

In 2011,Coffey released a NI43-101 compliant Preliminary Economic Assessment for BGC which is filed on SEDAR.

In 2012, Coffey released a NI43-101 compliant mineral resource estimation for BGC which is filed on SEDAR.

In 2013, Coffey's Canadian Toronto based office, released a NI43-101 compliant Preliminary Economic Assessment for BGC which is filed on SEDAR.

6.1.2 Production History

Harron (2004) reported a non-official garimpo production for São Jorge Gold Project of approximately 1,500oz of gold per year between 2001 and 2005. No official records are available for the Garimpo operation that had existed previously at São Jorge.



7 GEOLOGICAL SETTING AND MINERALISATION

7.1 Regional Geology

The São Jorge Gold Project is located within the Tapajós District (Figure 7.1_1) situated in the south-central portion of the Amazon Craton. The Amazon craton became tectonically stable at the end of the Late Proterozoic period. The Craton is generally divided into the Guyana Shield north of the Amazon River and the Brazil Shield south of the Amazon River. The provinces have a northwest trend across the shields. The Brazil Shield has, as its nucleus, the Archean granitoid - greenstone terranes of the Carajás-Imataca Province in the east. The structural provinces become younger towards the west and are dominantly granitic rocks of Paleoproterozoic age. There is a general agreement that in this region, initial oblique collision tectonism was associated with crustal shortening linked to subduction and or accretion of magmatic arcs and early continental nucleation.

The main units that form the basement of the Tapajós Gold Province are the Paleoproterozoic Cuiú-Cuiú Metamorphic Suite (2.0 to 2.4Ga old), and the Jacareacanga Metamorphic Suite, also of possible Paleoproterozoic age (>2.1Ga). The Cuiú-Cuiú Suite comprises gneisses, migmatites, granitoid rocks and amphibolites. The Jacareacanga Suite comprises a supracrustal sedimentary-volcanic sequence, which has been deformed and metamorphosed to greenschistfacies. Both Suites are intruded by granitoids of the Parauari Intrusive Suite consisting of a monzodiorite dated at 1.9 to 2.0Ga. These form the basement of the extensive felsic to intermediate volcanic rocks of the Iriri Group, dated at 1.87 to 1.89Ga, including comagmatic and anorogenic plutons of the Maloquinha Suite with intrusive events dated at 1.8 to 1.9Ga. The Iriri - Maloquinha igneous event is associated with a strong extensional period. Regional structural analysis in the Tapajós area has identified important lineaments that trend mainly northwest to southeast with a less well defined transverse east to west set.

The primary gold mineralization in the Tapajos region is related to:

- Lode like mesothermal orogenic gold deposits, in the context of quartz veins in shear zones with local hydrothermal alteration in the context of the basement rocks, and
- Stockwork and disseminated gold with a more pervasive hydrothermal alteration in the context of the granitic and volcanic rocks, similar to porphyry and epithermal styles of mineralization.

The São Jorge gold deposit is related to the east extension of the regional 450km long northwest-southeast Cuiú-Cuiú - Tocantinzinho lineament which also hosts several important gold deposits including the Palito mine, Tocantinzinho deposit and Cuiú-Cuiú, Bom Jardim and Batalha gold prospects (Figure 7.1_1).





7.2 Project Geology

The São Jorge property is covered by a granitoid pluton dominantly composed of an amphibole-biotite monzogranite (Figure 7.2_1). In the past, this pluton was interpreted to comprise one granitoid series, however geological research completed by the Federal University of Pará (UFPA) indicates that the pluton is heterogeneous and is comprised of two main granitoid series including:

- Older São Jorge granite massive granites and granite porphyries composed of amphibolite, biotite monzogranite to quartz monzogranite rocks and biotite leucomonzogranites to syenogranite rocks, massive, displaying only local, nonpenetrative foliation;
- Younger São Jorge granite massive granites composed of biotite leuco-monzogranite and syenogranites occurring as circular shaped bodies, with locally brecciated foliation indicating brittle-ductile deformation as in the vicinity of gold mineralization.

The São Jorge granites frequently include 5 to 10cm long, oval-shaped mafic enclaves. They also display local rapakivi texture characterized by sparse crystals of K-feldspar mantled by plagioclase.





The São Jorge mineralised envelope is currently estimated at 1,400 metres in length, striking WNW-ESE (110-290 degrees). The mineralised zone attains a maximum thickness of approximately 160 metres and has been shown to extend to at least 350 metres depth (limit of drilling). The mineralised zone/s are subvertical (Pedley, 2011).

7.2.1 Lithology

Typically soil, laterite, saprolite and saprock comprise the upper 30 to 40 metres. Below this is fresh granite of a fairly narrow range of primary composition. Microscope work on representative samples indicates the following ranges for the major rock forming minerals in the weakly to moderately altered lithologies:

Quartz:	20 to 35 %			
Plagioclase:	20 to 35 %			
K-feldspar (Microcline):	15 to 40 %			
Mafic minerals (chl/biot/amph):	1 to 20 %			

Based upon these compositions the primary rock is mostly monzogranite though lesser amounts of granodiorite (where microcline content is lower) are present. Depending on the contribution of hornblende, biotite and magnetite, a prefix of hornblende or biotite may be

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added to the rock name. The 'original' unaltered composition is typified by that of the 3rd sample (Figure 7.2.1_1 from Pedley, 2011).



The Figure 7.2.1_1 shows typical São Jorge lithologies; from top to bottom they are monzogranite with large orange/pink microcline crystals, 35% plagioclase (largely altered to sericite), 20% quartz; granodiorite comprised of 35% quartz, 30% plagioclase, 15% microcline and 15% chlorite (reddish colouration is due to fine hematite within plagioclase); and very weakly altered hornblende monzogranite comprised of 20% quartz, 30% plagioclase, 20% microcline, 18% hornblende, 6% biotite and 1 % chlorite. This sample is most representative of the original rock composition (Pedley, 2011).

The São Jorge granites are mostly medium grained and equigranular but where potassic alteration is advanced, microcline crystals up to 100mm size may give the rock a coarse porphyritic texture. A small percentage (<0.5%) of the rock mass is comprised of fine grained aplites which are pink/orange K-feldspar rich, cross-cutting and up to three metres thick. A small amount of leuco-granite is present in some boreholes; comprised mainly of K-feldspar, possibly as a result of pervasive potassic alteration. Where intensely sheared, the granite composition and texture is unrecognisable and the lithology is best described as a low-grade metamorphic granite or meta-granite (Pedley, 2011).



7.2.2 Alteration minerals

The main variable in the São Jorge lithology is alteration. The main visible alteration types are:

- Sericitisation of plagioclase
- Chloritisation of hornblende and biotite
- Microclinisation (potassic) alteration of plagioclase
- Epidotisation of mafics and as a sassauritisation product within plagioclase
- Hematite development probably after magnetite
- Carbonatisation. Although widespread (in small quantities of 0 to 4%) it is difficult to recognise in core samples and has not been used in the classification of assemblages.

In addition to the above is the development of new quartz (silicification) (Pedley, 2011).

7.2.3 Alteration assemblages

The intensity of alteration and the relative proportions of the main alteration minerals is variable and changes are typically gradational, but five alteration assemblages have been recognised as those which can be identified relatively easily in core and importantly, correlated between boreholes. The alteration minerals, in probable order of genesis/advancement, reflecting change from potassic to phyllic alteration, are:

$\textbf{Fe-oxide} \rightarrow \textbf{chlorite} \rightarrow \textbf{microcline} \text{ and } \textbf{epidote} \rightarrow \textbf{sericite} \text{ and } \textbf{quartz}$

The alteration assemblages of São Jorge rocks are illustrated in Figures 7.2.3_1 to 7.2.3_5.



A. No or very weak alteration (nada zone).



Figure 7.2.3_1 illustrates the pale grey hornblende-magnetite monzogranite, sometimes with clusters of biotite and magnetite, in this case totally unaltered. Crystals are typically euhedral.



B. Fe-oxide +/- chlorite alteration (Fe-Ox-chl zone)



Figure 7.2.3_2illustrates the Fe-oxide +/- chlorite assemblage, in this case very little chlorite present (hornblende remains largely unaltered).

Hematite formation within feldspar crystals gives this alteration type a distinct reddish colouration. Chlorite typically forms veins and patches. Hornblende is partially/largely preserved. Crystals are euhedral to subhedral. Primary magnetite is largely replaced. Widely spaced narrow (<0.2m) mineralised zones of quartz-sericite alteration may be present. With increasing pervasive alteration this zone grades into the K-feldspar – epidote – chlorite zone, or; with a greater frequency of fracture controlled alteration/mineralisation may be classified as the heterogeneous ore type.





C. K-feldspar – epidote– chlorite alteration (K-feld – ep – chl zone)

Figure 7.2.3_3illustrates the K-feld - ep - chl zone. It presents large K-feldspar crystals and visible chlorite veins.

Sericite comprises less than 4-5% of the rock. Increased alteration is present, notably microclinisation forming overgrowths and new large K feldspar crystals. Microcline crystals may reach 100mm or more. Plagioclase takes on a light greenish appearance due to replacement by epidote. New quartz is not as abundant as it is in the mixed assemblage. Chlorite is abundant forming veins and aggregates.



D. Sericite – K-feldspar – chlorite – epidote alteration (mixed zone)



Figure 7.2.3_4illustrates the mixed zone, in this case sericite is present in relatively small amounts (15%).

Sericite is an essential component of this assemblage, and epidote and K-feldspar are always present in varying amounts. A distinguishing criteria of this assemblage is that the alteration is pervasive. There is some variation in the relative proportion of sericite which may comprise between 5 and 50% by volume; largely reflecting the intensity of the alteration. With increasing intensity the epidote and K-feldspar component is reduced, replaced by a sericite-quartz assemblage; it may be possible to subdivide the assemblage based upon the amount of sericite and epidote present.

Typically this alteration assemblage has a greenish/grey patchy or 'marbled' appearance. Original crystal forms are largely/entirely destroyed though less intensely altered varieties exist. New quartz is common, probably after K-feldspar (Pedley, 2011). It is distinct in core and provides a useful 'marker' for correlation.

E. Heterogenous (variable) zone

The importance of this assemblage was recognised midway through the re-logging exercise; on some sections it may be incorrectly logged as Fe-Ox +/- chl or K-feldspar-epidote-chlorite assemblage. It is typified by weak to moderately altered rock of these assemblages but with



small (10mm to 0.5m) altered zones with quartz, sericite, epidote and appears to be fracture controlled as opposed to pervasive.



Figure 7.2.3_5 illustrates the heterogeneous (variable) zone alteration. In this picture there are several small zones of intense sericite-quartz alteration separated by sections of weak Fe-Ox +/- chl alteration. This heterogeneous appearance is typical of this mineralisation type.

7.2.4 Alteration Intensity

Alteration intensity is logged using a scale of 0 to 3:

- 0 none or very minor alteration
- 1 weak alteration
- 2 moderate to strong alteration
- 3 intensely altered.



There is a general increase in intensity with advancement through to 'mixed' alteration but there are exceptions to this. The mixed zone displays the greatest range of alteration intensity, possibly controlled by the proximity to shear zones where alteration is most intense.

7.2.5 Structure

The mineralised and altered portions of the São Jorge granite reflect zones of moderate shearing evident as numerous small (less than 2-3 metres, mostly less than 0.5 metre) ductile shears with foliation approaching mylonitic textures in places, and widespread micro-shearing and brecciation. Quartz and feldspar crystals are affected by cataclasis forming cryptocrystalline aggregates.







The Figure 7.2.5_1 shows a typical small shear zone. **On top:** Foliation and cataclastic textures. **On bottom:** Typical quartz veining adjacent to most intense shearing then rock becomes less sheared but still brecciated. In both cases alteration is advanced (sericite dominated) and very intense.

The shear zones are typically discontinuous; they can be correlated between some boreholes but not others. Generally, shear zones are within the most advanced alteration zones. Quartz veining, boudin structures, carbonate veinlets and hematite are typical of the shear zones. Sericite may comprise up to 60% of the central parts of the shear zones, and this lithology is logged as meta-granite. Adjacent to these zones the granites showing micro-shearing and brecciation and a general destruction of the igneous textures (cataclasis) for several metres around the structure (Pedley, 2011).

7.3 Mineralisation

Gold mineralisation is associated with sulfides; at least 99 percent of sulfide is pyrite. Chalcopyrite, and very rare galena and molybdenite make up less than 1%. sulfide is either disseminated (Figure 7.3_1) or within veins/veinlets (Figure 7.3_2) or small semi-massive blebs/lenses (figure 7.3_3), comprising up to a maximum of 10% by volume by metre of core. Grains are typically < 2mm fine euhedral to subhedral but in exceptional specimens sulfide grains may reach 8-10mm in size.









As is illustrated in Figure 7.3_4, mineralisation is best developed within the central portions of the deposit, typically associated with sericite (phyllic alteration):

- within the mixed zone, as disseminations and semi-massive accumulations. Sulfide is
 more abundant in the mixed zone than in any other assemblage but gold mineralisation
 appears to be equally well developed within the less pervasively altered heterogeneous
 zone.
- within numerous small fracture controlled altered and mineralised concentrations within the heterogeneous and Fe-Ox +/- chlorite zones (Figure 7.3_4). This style of mineralisation is typically within sulfide veins up to 100 mm thick and is more likely to contain chalcopyrite than the other mineralisation styles. Some of the best grade intersections are within this fracture controlled ore-type.

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8 DEPOSIT TYPES

The São Jorge mineral deposit is a post-tectonic granite intrusion related gold deposit. The origin of gold mineralization is thought to be related to late stage volatile enriched intrusive phases controlled by extensional tectonics in the context of a regional lineament.

Analogous deposits associated with granitic intrusives in the Amazonia craton are the multimillion ounce Omai gold deposit in Guyana (Goldfarb et al 2001) and the Tocantinzinho gold deposit owned by Eldorado Gold, located approximately 80km northwest from the São Jorge property along the same regional lineament (Figure 7.2_1).



9 EXPLORATION

BGC has finalized the exploration programs on the São Jorge project and the database generated up to 2011 is reported in this Technical Report.

Talon (operating under Brazmin) commissioned MPH Consulting Limited ("MPH") to review and rebuild the RTDM geophysical database comprised of processed IP data. In a memo dated March 2004, MPH identified 3 conductors at São Jorge in the vicinity of the Wilton Pit and the Wilton West Areas. The strongest conductor (Zone 1) corresponds to the mineralization associated with the Wilton Pit and extending along a northwest-southeast trend from 656,600mE to 6,568,300mE. MPH also identified a conductor (Zone 2) that appears to trend west from Zone 1 at 656,800mE and a conductor south of and sub-parallel to Zone 1 (Zone 3).

In July 2006, an airborne magnetic and radiometric survey was carried out by Fugro with a total of 2,284 line kilometres completed (with line spacing between 100 to 400m). The preliminary interpretation identified major northwest-southeast trends. At the same time, a 28.55 line kilometre ground IP and 33.26 line kilometre ground magnetometer survey was completed covering the Wilton Pit.

In 2011, BGC completed 14,708m of drilling and infill sampling of historic drill core, over 120 line km of soil geochemistry and geophysics (IP) across and along strike of the São Jorge deposit (Figure 9_2). This work has outlined a significant IP anomaly southeast and along strike of the deposit that has a similar geophysical signature to the São Jorge deposit, i.e. high resistivity and moderate to high chargeability. The high resistivity likely represents silica alteration and the moderate to high chargeability disseminated sulfides, both directly correlated to gold content. Figure 9_2 shows that the IP target with soil geochemistry extends for 2.5km south of the deposit and represents a sizeable target for future exploration.





Coffey considers the exploration potential to be good along strike of the main identified São Jorge shear structure along with sub-parallel regional structures as identified in the airborne magnetic survey completed in 2006.



10 DRILLING

BGC in 2011 completed a diamond drilling program (14,708m in 37 holes) at the São Jorge Gold Project to test the continuity of mineralization 100m below previous intercepts (0 masl) and infill along strike where previous drilling was widely spaced. The results of this drilling are now available and have been incorporated with the previous drilling and were used in the resource estimate that is the focus of this report.

Diamond drilling has been completed at the São Jorge Gold Project, as summarized in Table 10_1 below.

Table 10_1 São Jorge Gold Project							
Summary Drilling Statistics for São Jorge Gold Project							
Drill Hole Identification	Number of Drillholes	Metres Drilled					
Rio Tinto Desenvolvimento Mineral – RTDM (FSJ01-FSJ10)	10 DDH	1,700					
Rio Tinto Desenvolvimento Mineral – RTDM (FSJ11- FSJ26)	16 DDH	2,690					
Talon Phase I (SJD01- SJD 48)	48 DDH	10,104					
Talon Phase II (SJD 49- SJD 82)	34 DDH	7,952					
BGC (SJD 83 - SJD119)	37 DDH	14,708					
Total	145 DDH	37,154					

Data collection can be subdivided into three distinct periods: The first period relates to data collected by RTDM. The second period relates to data collected under work programs managed by Talon and a third period by BGC. As such, further comments are directly attributed to each company. BRI has not done any drilling.

Data collection methods applied by BGC and Talon have been reviewed by Coffey and as such, have been directly assessed. Drilling completed by RTDM was undertaken prior to Coffey involvement so no detailed review has been undertaken.

Figure 10_1 below illustrates drillholes (in red) and deposit outline (in blue) in the area of the deposit and topographic contours, Figure 10_2 presents drillhole positions (in red) and deposit outline (in blue) over a satellite image; note the garimpeiro pit in the centre of the deposit.









10.1 RTDM Drilling

Diamond drilling undertaken by RTDM was comprised of an initial phase of 10 drillholes comprising FSJ-01 to FSJ-10 for a total of about 1,700m with the deepest drillhole penetrating 150m below surface. These holes were inclined at 50° to 55°. All core drilled was BQ (36.5mm) diameter. The second phase of drilling by RTDM comprised 16 drillholes (FSJ-11 to FSJ-26) for a total of approximately 2,690m. Drillholes were drilled with a 50° to 55° inclination with a north or south azimuth. Five drillholes were drilled at an azimuth ranging from 20° degrees to 35° degrees, approximately perpendicular to the deposit strike. Core drilled during this campaign was HQ (63.5mm) and NQ (47.6mm) in diameter. Details of RTDM drilling procedures were reviewed by Harron (2006). Down hole surveys were not completed for RTDM holes and possible deviation may have occurred but verification of this deviation is not possible.

10.2 Talon Drilling

In 2005 Talon completed a Phase I diamond drilling program with a total of 10,104m from 48 drillholes completed, mainly targeting the Wilton Zone.

From May to September 2006, Talon conducted a Phase II drilling program with a total of 34 drillholes completed for 7,952m. From this phase, 8 drillholes for 2,302m targeted an in-fill program at the Wilton pit, and another 5,650m tested prospective targets. Two new extensions, the "Kite zone" located northwest, and the "Wilton East zone', located east of the pit, were defined.

Drilling was contracted to Geoserv Pesquisas Geologicas SA of Rio de Janeiro, a subsidiary of Boart Longyear. Drilling equipment used on the project included two Diakore and one Longyear 38 drilling rigs. Overburden, laterite and saprolite rock was drilled using HQ core equipment. Unweathered rock was drilled with NQ diameter core.

The majority of drillholes over the Wilton Pit area were drilled with a north or south azimuth and inclined about 55°. Talon drilled 5 vertical drillholes and some drillholes with northeast and southwest orientations to test for sub-horizontal and oblique structures in the deposit.

The Talon drilling procedures include:

- Storage of all core in wooden core boxes at drill site;
- Twice daily collection of core from drill site;
- Storage of core in secure corrugated metal and wood core shed;
- Run markers with metal tags indicating drilled depth;
- Measurement and recording of core recovery for each drilling run;
- Photography of core before splitting;
- Measurement of RQD, and magnetic susceptibility for part of the drillholes;



Detailed logging of alteration, lithology, structures and sulfides.

Collar coordinates are based on the UTM coordinate SAD69, UTM zone 21S. Talon holes were surveyed by the drilling contractor using a Sperry Sun multi shot tool and later a reflex single shot tool. Initially holes were surveyed at 3m intervals and then with a better knowledge of drillhole deviations, variably from 40 to 90m intervals. Several holes were oriented using the downhole "spear" technique. Drill collar coordinates are recorded using a differential GPS system by Terra Engineering based in Novo Progresso, Pará state.

10.3 BGC Drilling

BGC had drilled about 14,708 metres in 37 drillholes from January to December 2011. All of this data, along with the historic drill hole information, supports the updated mineral resource presented in this report. BGC implemented the exploration program keeping the same procedures and philosophy as Talon.

The Figure 10.3_1 shows a drill rig operating on the São Jorge Gold Project site in 2011.





10.3.1 Density Determinations

BGC has taken a total of 1,099 measurements of density on core using the immersion in water method.

This method is commonly used to determine the Density (Specific Gravity) in the mining industry. The immersion method for obtaining specific gravity on the basis of displaced water volume (weight) is extremely simple and straightforward and requires only two determinations: the weight of the completely water-immersed sample and its oven dry weight (in air). The specific gravity (SG) of the samples was calculated by substitution in the formula:

SG= <u>weight in air</u> Weight in air - weight in water



The density used in the resource estimation was discussed and agreed during the site visit and is summarized in Table 10.3.1_1.

Table 10.3.1_1 São Jorge Gold Project Bulk Density for São Jorge Gold Project					
Material	Density g/cm ³				
Oxide rock	2.64				
Fresh rock	2.69				
Altered mineralized rock	2.72				

Pedley, 2011, tested variation in density for each type of alteration zone. These results are presented in Table 10.3.1_2. As can be observed; there is no significant variation of density between the different alteration assemblages.

Table 10.3.1_2 São Jorge Gold Project						
Bulk Density for São Jorge Gold Project						
Alteration Assemblage´s Density g/cm ³						
Alteration Type Mean Min Max						
Nada	2.68	2.62	2.77			
Fe-Ox-Chl	2.69	2.64	2.78			
Kf-ep-chl	2.68	2.63	2.72			
heterogeneous	2.71	2.65	2.83			
Sericite	2.70	2.68	2.72			
Kf-ep-chl-ser (mixed)	2.70	2.64	2.78			

Average Specific Gravity of all monzogranite samples with grades <0.3 g/t Au is 2.69

The average Specific Gravity of all monzogranite samples with grades ≥0.3 g/t Au is 2.72.

Coffey concurs that the method to determine the Density was in accordance with mining industry best practices.

10.4 Drilling Results and Quality

Core recovery data for RTDM holes was not available for review. Harron (2006) indicates that RTDM drilling had an overall core recovery greater than 95% with the exception of the transition from saprolite to fresh rock.

Talon drillhole core recovery averaged 99% with a minimum recovery of 68% for one drilling run. Coffey inspected 4 representative drillholes and noted that all had excellent recovery.

BGC drill core recovery averaged 99.3%; the mineralized hosted rock is very competent thus providing a good drill core recovery.



Significant drill results have not been individually reported as this is a resource estimate and would involve an extensive table that is summarised in the resource section of this report (Section 14.2 and Figure 14.2_1). Generally drilling was orientated north-south and the holes inclined to the north or south. These drill intersections were all significant and included in the resource estimation process as discussed in Section 14; the nature of the mineralization has been described in section 9.

Coffey considers the drilling procedures to be of an acceptable industry standard.



11 SAMPLE PREPARATION, ANALYSES AND SECURITY

BGC has undertaken exploration activities at São Jorge in 2011 for which the results was released in Dezember 2012. BGC geologists supervised all core sampling undertaken and collected samples at 2m or 3m lengths for most of the sampling. Talon and RTDM collected core samples between 0.5m and 1.5m intervals based on the geological logging of rock types, geological controls and observed mineralization consistent with the mineralization model discussed in Section 9.

BGC, as Coffey had recommended, sampled historic core not previously sampled between the higher grade intervals. This contributed to an improved model and estimate confidence. The gold mineralization in São Jorge is very subtle with no clearly defined visible geological controls.

Coffey has reviewed and verified the exploration data from the 2011 exploration program that is included in this document.

11.1 Sample Preparation and Analysis

The sample preparation and analysis of core samples completed by RTDM were discussed by Harron, 2004.

Sample preparation and analysis of core samples taken by Talon were performed by SGS Lakefield-Geosol Ltda. ("Geosol"), an ISO 9000-2001 certified laboratory. Sample preparation procedures completed by the Geosol preparation laboratories based in Parauapebas and Itaituba were:

- Drying and weighting of whole sample;
- Crushing of sample to -2mm;
- Sample homogenization and splitting to a 1kg sub-sample;
- Pulverization to 95% passing -150 mesh;
- Splitting of pulverized material to 50 gram pulp.

Sample pulps were air freighted to the Geosol analytical laboratory in Belo Horizonte, Minas Gerais State, Brazil. Sample pulps were analyzed for gold using a lead flux fire assay technique with an atomic absorption finish. Selected samples were subsequently sent for silver, lead, zinc analysis by ICP spectrometry using a multi-acid digestion technique. Abnormally high assays were re-analyzed by the laboratory. The detection limit of gold assays was 5ppb Au. Coarse rejects from the Parauapebas and Itaituba laboratories were sent to the São Jorge exploration office and stored in the core shed. Fifty gram pulp rejects were also stored in the Talon offices in Rio de Janeiro.

Sample preparation and analysis of core samples taken by BGC, for the 2011 / 2012 campaign were performed by Acme Laboratories.



Acme Labs performed each procedure for sample preparation and analysis, as follows:

- Crush split and pulverize 500g drill core to 200 mesh
- Fire Assay fusion Au by ICP-ES on 50g charges

Coffey has reviewed and verified the procedures for sample preparation and analysis from the 2011 / 2012 exploration program as described here, and concurs they are in accordance with mining industry best practices.

11.2 Sample Security

Core is stored in a locked and secure core shed. After logging, core samples are marked for splitting and sampling by BGC geologists. Core sample intervals are measured and collected by BGC technical staff. Each core sample is placed in a doubled plastic bag and with two sample tags. Each bag is closed with a uniquely numbered plastic seal that is tamper proof. Seal numbers, sample numbers and sample intervals are recorded by BGC. Sample bags are collected for shipping in rice bags with each rice bag closed with a numbered plastic seal. Samples are stored in the BGC core shed until transported by truck to the Acme preparation laboratories in Itaituba in Pará state. The referred laboratory is 320km by road from the São Jorge project. After samples are received by the lab, seal numbers and sample numbers are reported to BGC for confirmation.

Coffey considers the core sampling security to be above current industry best practice.

11.3 Adequacy of Procedures

The current analytical method is appropriate. Sufficient quality control data exists to allow thorough review of the analytical performance of samples taken by BGC.

Quality control data from the RTDM period is not available for analysis as it has not been located.

The sampling methods, chain of custody procedures and analytical techniques are all considered appropriate and are compatible with accepted industry standards although the sample preparation of gold should be reviewed in light of the QAQC analysis in the following section.



12 DATA VERIFICATION

12.1 Geological Database

Coffey had validated the BGC database for São Jorge Gold Project using the Gemcom Surpac Software System Database Audit tool with no inconsistencies noted.

A comparison of hardcopy assay and geological logging versus the digital database was performed on a total of 10% of the BGC São Jorge Gold Project drillholes. No errors were identified with the original log and the digital database.

12.2 QAQC

12.2.1 RTDM Drill Samples

Coffey has not been able to verify the RTDM drill sample QAQC data as it has not been located.

12.2.2 Talon Drill Samples

Talon set in place a QAQC programme that included the submission of blanks, field duplicates, standards and pulp duplicates with ALS (Umpire assays).

This quality control data of drilling used in the resource estimation has been assessed statistically using a number of comparative analyses for each dataset. The objectives of these analyses was to determine relative precision and accuracy levels between various sets of assay pairs and the quantum of relative error. The results of the statistical analyses are presented as summary plots, which include the following:

- Thompson and Howarth Plot, showing the mean relative percentage error of grouped assay pairs across the entire grade range, used to visualize precision levels by comparing against given control lines.
- Rank % HARD Plot, which ranks all assay pairs in terms of precision levels measured as half of the absolute relative difference from the mean of the assay pairs (% HARD), used to visualize relative precision levels and to determine the percentage of the assay pairs population occurring at a certain precision level.
- Mean vs % HARD Plot, used as another way of illustrating relative precision levels by showing the range of % HARD over the grade range.
- Mean vs %HRD Plot is similar to the above, but the sign is retained, thus allowing negative or positive differences to be computed. This plot gives an overall impression of precision and also shows whether or not there is significant bias between the assay pairs by illustrating the mean percent half relative difference between the assay pairs (mean % HRD).
- Correlation Plot is a simple plot of the value of assay 1 against assay 2. This plot allows an overall visualisation of precision and bias over selected grade ranges. Correlation coefficients are also used.



- Quantile-Quantile (Q-Q) Plot is a means where the marginal distributions of two datasets can be compared. Similar distributions should be noted if the data is unbiased.
- Standard Control Plot shows the assay results of a particular reference standard over time. The results can be compared to the expected value, and the ±10% precision lines are also plotted, providing a good indication of both precision and accuracy over time.

Au Standards

Talon used a total of 20 Au standards (inserted by the SGS - Geosol sample preparation laboratory at a rate of 1 in every 20 samples). The standards were supplied by the SGS-Geosol Parauapebas and Itaituba sample preparation laboratories. The standards supplied and inserted by SGS-Geosol are a combination of internal and commercial standards. As the SGS made standards may not be as reliable as commercially available certified standards, and do not represent external control (as SGS-Geosol know the expected result of these standards).

In general the standard assay result indicated acceptable accuracy was being achieved, with the majority of standards falling within 90% of the Standard Tolerance Values (Table 12.2.2_1). The minor outliers identified are potentially associated with sample submission errors (mixing of samples).

All standards were analysed using the Coffey's QC Assure statistical software, with an example of the summary figures produced below in Table12.2.2_1.

<u>Blanks</u>

Coffey performed an analysis on blanks data provided by BGC. The blank material was sourced by Talon from unmineralized São Jorge Granites collected at one specific site at the project and submitted at a frequency of about five percent. BGC has kept the same routine.

Overall the blank data is within acceptable limits. The results are presented in Table12.2.2_1 below.

Field Duplicates

Talon completed field duplicate assaying $\frac{1}{4}$ of the NQ sized core at a frequency of 5% (1 in 20 samples). The procedure was to split the NQ sized core in half then $\frac{1}{4}$ the half core. Coffey considers this practice to not be representative as it does not represent the normal $\frac{1}{2}$ NQ core submitted and creates a bias in the sample size submitted. The results are presented in Figure 12.2.2_2 below.

Based on the analysis, Coffey can conclude:

- A good precision was achieved for 81.81% of the data within 20% HARD.
- No apparent bias exists represented by both samples returning a similar mean value.



In summary the analysis of the 1/4 sized core has poor precision with no apparent bias present. It is clear that for this ¼ NQ size of sample (which doesn't represent the ½ NQ size taken) that there is a significant nugget effect resulting in low precision results.







12.2.3 BGC Drill Samples

Coffey confirmed BGC sampling procedures are in accordance with mining industry best practices. All procedures were summarized in this section as demonstrated by BGC's geosciences team.

Coarse Reject Duplicate Sampling

When an original sample is made into a smaller sub- sample, it is crushed and split then pulverised and split again. The final sub-sample is never exactly the same grade as the original. The coarse duplicates measure this error.

- A coarse reject sample (returned from the lab) is split into two equal halves (CDA and CDB) ideally using a clean riffle-splitter. If a riffle-splitter is not available a good cone-andquarter split is acceptable. The duplicates (CDA and CDB) are inserted at every 44th and 46th number in the sampling sequence.
- The technicians usually made sure that they have enough coarse reject samples which should grade between 0.3 and 1.0 g/t Au.
- ¼ core samples are not duplicates and they are not used as duplicates because it is expected to indicate the short range variability of the mineralisation (in the case of gold it is normally high).

Blank Samples

Contamination can occur in a lab especially with gold as it sticks to the equipment. A blank sample tests if contamination has occurred due to inadequate clean out of equipment between samples; it should return an Au value of less than 2x the detection limit.

- BGC blank material consists of coarse crushed aggregate from the "Geraldo Mineiro" Granite quarry which contains less than 0.005 ppm Au.
- Insert 2 blanks within/after mineralisation per 100 samples and a blank as the first sample of each batch.

Standard Samples

Standards are the best way to measure the instrument or analytical error and are inserted by the mining company.

BGC used low, medium and high grade standards. The standard samples are pre packaged as 50g sachets purchased from Rocklab.

The analytical results for the Blanks and Standard samples are presented in Table12.2.2_1.

Sample dispatch and sample logs

BGC sent the samples as each batch was ready. The team confirmed that they followed the procedures as described below:

Do not submit a batch with less than 80 samples and a batch should never mix projects.



- The senior technician must prepare the sample submission sheet and the laboratory requisition form, and email to the laboratory before the samples arrive at the lab. The document for the lab should only be a list of the sample numbers, security tags and volume numbers (there must be nothing to indicate which samples is a QAQC samples).
- The complete sample sheet (showing QAQC samples) should be emailed to the Senior Geologist and the Database Manager as soon as the samples have been dispatched.
- The senior technician must keep an organised digital and paper directory of all the sampling information.



Table 12.2.2_1 São Jorge Gold Project										
			Sub	mitted Bla	nks and Sta	andards				
Standard Name	Expected Value (EV)	+/-10% (EV))	Date range	No of Analyses	Minimum	Maximum	Mean	% Within +/- 10 of EV	% RSD (from EV)	% Bias (from EV)
			Tale	on and BGC	Submitted	Blanks				
*Sample Blank	5ppb	0.0 to 50ppb	2005 - 2008	353	1	319	7	96	NA	NA
*Sample Blank	0.01ppm	0.005 to 0.01ppm	2011	150	0.005	0.02	0.01	NA	47.59	-61.23
	SGS Geosol Submitted Standards									
SG14	989ppb	890 to 1088ppb	2005 - 2008	14	908	1197	1046	71	7.96	5.85
AUSK-2	3663 ppb	3297 to 4030 ppb	2005 - 2008	34	3596	5820	3753	97	9.73	2.44
AUOE-2	615 ppb	554 to 676 ppb	2005 - 2008	39	578	635	613	100	2.62	-0.28
OXA26	79 ppb	71 to 86 ppb	2005 - 2008	3	72	82	76	100	5.49	-3.38
SH13	1315 ppb	1183 to 1446 ppb	2005 - 2008	23	1111	1356	1246	83	4.62	-5.2
OXH37	1286 ppb	1157 to 1414 ppb	2005 - 2008	5	1236	1279	1255	100	1.24	-2.36
OXN33	7378 ppb	6640 to 8115 ppb	2005 - 2008	17	678	7752	7038	94	22.9	-4.6
OREAS 7PB	2770 ppb	2493 to 3047 ppb	2005 - 2008	5	2577	2829	2709	100	3.98	-2.19
OREAS 10PB	7150 ppb	6435 to 7865 ppb	2005 - 2008	4	6956	7303	7129	100	2.43	-0.29
OREAS 18PB	3630 ppb	3267 to 3993 ppb	2005 - 2008	9	3335	3760	3473	100	4.85	-4.32
SP17	18125 ppb	16312 to 19937 ppb	2005 - 2008	20	17611	18856	18232	100	2.19	0.6
GS-P5	525 ppb	472 to 577 ppb	2005 - 2008	16	504	543	523	100	2.61	-0.35
GS-1PS	1580 ppb	1422 to 1738 ppb	2005 - 2008	6	1478	1646	1559	100	3.17	-1.34
Acme Submitted Standards										
OREAS 54PA(SH)	2.90ppm	2.68 to 3.12ppm	2011	66	0.00	3.18	2.85	84.85	16.18	-1.78
OREAS 17c(SJ)	3.04ppm	2.87 to 3.21ppm	2011	6	3.06	3.35	3.17	66.67	3.61	4.35
OREAS 50c_SM	0.836ppm	0.780 to 0.892ppm	2011	88	0.350	0.958	0.837	82.95	7.79	0.132
OXE86_SM	0.613	0.571 to 0.655ppm	2011	6	0.587	0.614	0.601	100	1.574	-1.903
OREAS 52_SL	0.346	0.312 to 0.380ppm	2011	81	0.320	0.404	0.346	95.06	4.577	0.054


12.3 Data Quality Summary

The standards data has shown a high accuracy as returned by the SGS Geosol laboratory although it is noted that SGS supplied the standards to Talon.

The standards data returned by Acme Labs shows relatively good accuracy and is suitable for resource estimation.

The field duplicate data determined by the analysis of the $\frac{1}{4}$ NQ core returned relatively poor precision suggesting a significant nugget effect although not changing the actual mean of the samples. It also suggests that the sample size is too small. This $\frac{1}{4}$ sized core is considered by Coffey to not be a suitable practice in that it does not represent the $\frac{1}{2}$ NQ core normally analysed and has the potential to introduce a sample size bias.

All data was detailed in Appendix B.



13 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Mineral Processing

The mineral processing options are not the subject of this report.

13.2 Metallurgical Testing 2006

In 2006, SGS was commissioned to undertake metallurgical tests. Test work was performed on three carefully composed drill core samples from the São Jorge gold project, of high, medium and low grade samples. The gold head grades of samples SJ MET-01, SJ MET-02 and SJ MET-03 were 6.5g/t, 1.8g/t and 0.6g/t Au respectively. Coffey has reviewed the test work results and judges them to have been completed to industry standards.

SGS performed a comprehensive mineralogical and analytical approach of sample SJ MET-01, including fire assay, heavy liquid separation, super-panning, ore microscopy, and electron microprobe. Results showed that the gold was present mainly in its native form with the native gold content ranging from 74.6% to 95.5% of the total gold occurrence. In terms of liberation, gold occurred as liberated particles, particles associated with pyrite and particles associated with non-sulfides. The grain size ranged from 1 μ m to 212 μ m, with the majority of grains below 50 μ m.

The gold balance shows that liberated gold accounted for approximately 17% of the head grade, with the majority of gold grains being less than 50µm in size. Approximately 62% and 13% of the gold was associated with pyrite and pyrite/non-sulfide binaries, respectively. Test work showed this gold can be recovered by flotation, followed by cyanidation. Gold attached to pyrite can be recovered by direct cyanidation. To extract gold locked in pyrite, however, finer grinding will be required.

The Bond ball mill work index of a composite of the three samples was determined to be 16.8kWh/t (metric) in a test using a 150 mesh closing screen.

The recovery of gold by gravity separation ranged from 33% to 43%. Gold extraction by CIL from the gravity separation tailing ranged from 97% from the highest grade sample to 86% from the lowest grade sample, resulting in overall gold recoveries by gravity separation and CIL ranging from 98% (SJ MET-01) to 91% (SJ MET-03). The cyanide consumption was low at 0.1 to 0.3kg/t NaCN. Test results of the recovery of gold from the gravity separation tailing by flotation ranged from 94% to 98%.

Overall gold recoveries by gravity separation and flotation were 96% to 99%. Further upgrading and/or subsequent treatment would be required after flotation which could lead to some additional loss of gold.

The São Jorge samples responded well to the conventional gold recovery processes tested.

A summary of test work results is shown in the Tables 13.2_1 to 13.2_4 and Figures 13.2_1 to 13.2_3 below.



Table 13.2_1							
São Jorge Gold Project							
Head Sample Analysis (excluding SJ MET 01)							
Head Sample	SJ ME	T 02	SJ ME	T 03			
Assays	Assays Au g/t S (%) Au g/t S (%)						
Average	1.82	0.87	0.64	0.52			

	Table 13.2_2										
	São Jorge Gold Project										
	Summary of Gravity Separation Tests										
Test	Sample	K80		Gravity C	oncentrate	Gravity Tail Assay	Head Assay, g/t				
No.		m	Wt	Assay	% Recovery		calc.	direct			
			%	Au, g/t	Au	Au, g/t	Au	Au			
G2	SJ MET-02	92	0.092	522 35.2 0.88 1.36 1.8							
G3	SJ MET-03	91	0.088	262	32.8	0.47	0.70	0.64			





	Table 13.2_3 São Jorge Gold Project									
Test No.Reagent Addition (kg/t)Reagent 							ll Gold very, %			
		NaCN	CaO	NaCN	CaO	Au	g/t Au	g/t Au	Gravity only	Gravity + CIL
CIL 2	SJ MET-02	0.70	0.69	0.10	0.64	89.6	0.09	0.87	35.2	93.3
CIL 3	SJ MET-03	0.77	0.71	0.12	0.67	86.1	0.07	0.51	32.8	90.7



A comparison of the metallurgical test work results is shown in Table 13.2_4. Each additional recovery process adds specific capital and operating costs to the gold recovery plant, the simplest and cheapest method being gravity separation of gold from gangue material.



Table 13.2_4 São Jorge Gold Project							
Comparison of Metallurgical Test Results							
Sample	Sample Gravity Only Gravity + CIL Gravity + Flotation						
SJ MET-02	35.2	93.3	97.3				
SJ MET-03	32.8	90.7	95.6				



In summary, the mineralized samples responded very well to gravity separation, CIL and flotation. Although flotation gave the highest overall gold recovery, further upgrading and/or treatment of the flotation concentrate would be required with the added risk of some, undefined, gold loss associated with the downstream processes.

13.3 Metallurgical Testing 2012

A second phase of testwork was carried out by Testwork Desenvolvimento de Processo Ltda who published a report titled "Gravimetric Concentration and Leaching Laboratory Test Report – dated 23 February 2012, Doc No:003-2012 Brazilian Gold Rev. 0" in order to determine the most economical processing route for the ore based on using CIL as the metal extraction method. The report was translated to English from Portuguese.

Several basic metallurgical tests were carried out on the master composite sample in order to reaffirm the conceptual flow sheet that was selected for the 2011 PEA. The test work focused on estimating reagent consumption rates, metal recovery, grind size and leaching kinetics.



Results from the test work program were then used to determine a preliminary operating and capital cost estimates for the process plant and associated infrastructure.

The test work program was designed to obtain metallurgical information that is required in order to develop the most appropriate flow sheet for the deposit. The test work comprised chemical analysis on head samples, size by size distribution, leaching of the individual size fractions in order to establish leaching kinetics and gravity test work. Leaching was conducted on both gravity concentration tails and non-gravity tails with and without the addition of activated carbon. Finally, the effects on recovery with variation in cyanide addition rates were examined. Refer to Appendix 1 which contains the metallurgical report generated by Testwork Desenvolvimento de Processo Ltda on the head sample identified as MET-01.

13.3.1 Sample Selection and Location

Samples were selected from 9 bore holes covering a strike length of 600 m over a vertical depth of 60 to 350 m below surface in the main portion of the São Jorge deposit. The samples are the remainder of the original 3.5 to 4.0 kilogram core samples submitted for assays. A selection of 30 samples with a grade of between 0.5 and 1.5 g/t Au were taken. A weighted average grade calculated for the 30 samples was made. From the 30 samples selected, samples were added and removed until a representative combination of 18 samples with an average grade of close to 1.0 g/t Au was defined. All samples were crushed to P_{80} = 1.68 mm and composited into a single representative sample from which a number of 1 kg sub-samples were taken for leach and gravity recovery testwork. The mean calculated head grade for the range of tests carried out was 0.78 g/t, well below the diluted resource grade of 0.91 g/t as reported by the Preliminary Economic Assessment and NI-43-101 Technical report dated June 12, 2012.

The mineral samples were delivered in bags that were labelled MET-01. This was the only sample that was used for the metallurgical test work program for this phase.

13.3.2 Head Samples and Assays

Four 1-kg sub-samples were selected at random, homogenized once more and divided into six 500g samples and one 1-kg sample in order to perform:

- Au analysis via fire assay on the six 500g samples;
- Ag, S, Fe, Cu, As, Hg, CO₃²⁻, ICP multi-element, C_{TOTAL} (total carbon) analyses on the one, 1-kg sample.

Assay results obtained from the head sample MET 01 analysis are listed in Table 13.3.2_1.



Table 13.3.2_1 São Jorge Gold Project Chemical Analysis								
Hg ppm <0.001								
Ag	ppm	<3						
As	ppm	<10						
Fe	%	2.84						
Cu	ppm	166						
S	%	1.23						
C (Organic)	%	0.027						
C (Elemental)	%	<0.005						
C (Carbonitic)	%	0.454						

The same sample was also analysed for gold content. Results can be seen in Table 13.3.2_2

Table 13.3.2_2 São Jorge Gold Project					
	Gold Analysis				
		0.587			
	g/t	0.744			
Cold		1.177			
Goiu		0.872			
		0.618			
		0.684			
AVERAGE		0.780			
	DP	0.219			



Table 13.3.2_3	
São Jorge Gold Project	
Calculated and Assayed Heads	
Description	Gold Assays g/t
Head Assay	0.78
Test 1 Experimental Test Work	0.49
Test 2 Experimental Test Work	0.59
Granulometric weighted Average	0.91
Gravity Concentration Test	0.86
Kinetic Leaching w/o Gravity (w/o carbon) (P80 106 microns)	0.67 - 0.87
Kinetic Leaching w/o Gravity (w carbon) (P80 106 microns)	0.61 – 0.78
Kinetic Leaching w/o Gravity (w/o carbon) (P80 75 microns)	0.72 – 1.10
Kinetic Leaching w/o Gravity (w carbon) (P80 75 microns)	0.55 – 0.79

If a gold nugget effect exists, then metallic screening will need to be performed. This was partially simulated in the Granulometric test work on a sample screened and each size fraction individually leached with cyanide. The grades for the individual screens ranged from 0.63 g/t Au to 1.44 g/t Au. The highest grade reported in the plus 150 micron fraction.

13.3.3 Granulometric Test Work

A 3kg sample was crushed to P_{80} = 125 µm, dried and separated into size fractions of +100, +115, +150, +200, +325 and -325 mesh.

These fractions were leached and both the solids and the solutions were analysed to verify gold distribution by fraction. Results can be seen in the Table 13.3.3_1.



Table 13.3.3 _1 São Jorge Gold Project								
Mooh	Sizo	Recov	ery of Gold	I by Size Fracti	on Recovery of Au	por fraction in		
wesh	Size	Concentration	raiings	per Fraction	Recovery of Au Relation to	the Feed		
Tyler	(µm)	(g/t)	(g/t)	Au (%)	Au (%)	Au (%) Cumulative		
100	150	1.44	0.14	90.6%	18.9%	18.9%		
115	125	0.63	0.14	77.0%	6.3%	25.2%		
150	106	0.72	0.19	74.4%	2.8%	28.0%		
200	75	1.18	0.17	85.3%	19.4%	47.4%		
325	45	0.70	0.16	76.4%	2.4%	49.9%		
-325	-45	0.78	0.10	86.9%	35.8%	85.7%		
Weighte	ed Average	0.91	0.13					

The recovery of gold per fraction varied between 90.6% and 74.4%, with an average of 81.8%. The recalculated concentration of gold per fraction varied between 1.44 and 0.63g/t, having a head concentration of 0.91g/t. The gold assays for the screen fractions varied from 0.63 g/t Au to 1.44 g/t Au in the coarsest fraction. This suggests that there is either nugget effect or encapsulation of gold in complexes such as pyrite

From the results obtained a grind versus recovery curve was derived. The total gold recovery can be determined based on the summation of the grams of gold recovered passing a certain screen fraction divided by the summation of the grams of gold from the assayed head passing that same screen fraction. The graph in Figure 13.3.3_1 indicates that the recovery increases for the finer fractions (0 is actually minus 45 micron).





13.3.4 Grindability Testing

Testwork was carried out to determine the Bond Ball Mill work index on three samples collected from drill holes at different depths along the deposit. Sample SJ-WI-LOW was from approximately 200 to 250 m below surface, SJ-WI-INT was from approximately 135 to 175 m below surface and SJ-WI-SUP was from 30 to 45 m below surface. BGC has a record of the location of each drill core sample that comprises the composite sample. No further grindability test work has been conducted.

The results are shown below in Table 13.3.4_1. The Bond ball mill work index of the three samples varied from 13.7 to 15.5 kWh/t (metric) in a test using a 150 mesh closing screen.

Table 13.3.4_1 São Jorge Gold Project Bond Work Index values					
Sample Identification	Bond Ball Work Index kWh/t				
SJ-WI-LOW	15.2				
SJ-WI-INT	15.5				
SJ-WI-SUP	13.7				

....



From the values obtained above, the ore can be categorized as medium to hard in regards to the Ball Mill Work Index.

13.3.5 Gravity Concentration Test Work

The test was conducted to determine the GRG (Gravity Recoverable Gold) according to the Knelson procedure for small quantities of ore.

A 10kg sample was crushed into three different granulometric fractions ($P_{80} = 212$, $P_{80} = 106$ and $P_{80} = 75 \ \mu$ m), and at each increment of crushing the ore was passed through the Knelson MD3 concentrator to recover the free coarse gold. See Figure 13.3.4_1.





The gravity concentration test work was conducted by testing for gold recovery, then grinding the tails to a smaller particle size and retesting the gravity recovery. This was repeated down to the 75 micron size fraction.

The test results indicate that 66% recovery of gold is achievable, however this conclusion has been based on a test methodology that may not be replicated in a commercial-scale mill, hence the results and will require verification.

From the test results it was shown that an overall recovery of 36.5% with a gold grade of 38.91 g/t Au was achieved when the entire sample was ground to a P_{80} of 212 microns. The gravity tailings were further ground to a particle size of P_{80} 106 microns which then recovered an additional 17.2% of the gold in relation to the feed grade. The tailings from the second stage of concentrating were then ground to a particle size of P_{80} 75 microns and returned a further gold recovery of 12.4%. The cumulative recoveries total 66 % recovery.

The gravity concentrate is of low grade, less than 50 g/t Au, and would require further upgrading, likely at some loss of recovery, if it were to be sold to a smelter. An alternative would be to further treat this material in an Intense Leach Reactor (ILR) however this process was not explored in this phase of test work program.

13.3.6 Pre-Lime Addition

The first leaching tests were experimental, using the $P_{80} = 106 \ \mu m$ to verify the need to predose the ore with lime. The samples were placed into bottles, the percentage of solids was adjusted to 50% and the pH of the pulp was adjusted to 10-11. The bottles were placed on a bottle roller and the pH was checked every 30 minutes to verify if the pH had changed. Results are listed in Table 13.3.6_1.



Table 13.3.6_1 São Jorge Gold Project pH Variation with Time									
Time (h) pH Test 1 Time (h) pH Test 2									
Start	10.84	Start	10.82						
0.5	10.40	0.5	10.49						
1.5	10.20	1.5	10.20						
2.0	10.20	2.0	10.15						
2.5	10.20	2.5	10.13						
3.0	10.15	3.0	10.10						
4.0	10.10	4.0	10.05						

From the results contained in Table 13.3.6_1, it is concluded that it will not be necessary to pre-dose this particular ore with lime as it was not necessary to add lime to adjust the pH.

13.3.7 Kinetic Curves for Leaching Without Gravity Concentration

The leach kinetic curves were conducted individually for different values of P_{80} (106 and 75 μ m). For each assay, a 1.2kg sample was taken from the mill feed, ground to the desired P_{80} size, dried, homogenized and sampled into six 200g sub-samples that were then individually leached during various pre-determined time periods.

Test conditions are defined below:

- With and without the addition of activated carbon to the pulp;
- P₈₀ = 75 and 106 μm;
- Without pre-dosing the ore with lime;
- pH adjusted to between 10-11;
- 50% solids;
- Total residence time of 32 hours;
- Leaching kinetics (recovery of gold as a function of time) Collection of aliquots (gold, cyanide, pH) at 2, 6, 10, 20, 24 and 32 hours; and
- Cyanide concentration 1000 mg/L.

It is not entirely understood why a carbon-in-leach test was performed other than perhaps to demonstrate that a CIL circuit may be beneficial for feasibility design. The problem with this test is that some of the results showed high tailings gold grades which suggests that some carbon was still present in the tailings. Screening of the solid tailings that includes carbon must be performed carefully to ensure that no carbon, which contains gold, reports to the tailings. Such a result was reported in the 24 hours bottle roll test where the recovery was only 71.8%. Results are listed in the Table 13.3.7_1.



Table 13.3.7_1 São Jorge Gold Project Leach Recovery without the use of Gravity Separation										
Time (h)	MET - 01 – WITHOUT GRAVIMETRIC CONCENTRATION $P_{80} = 106 \ \mu m$ without $P_{80} = 106 \ \mu m$ with $P_{80} = 75 \ \mu m$ without $P_{80} = 75 \ \mu m$ with									
	Ci	arbon	Activated	d carbon	Activated carbon		Activated carbon			
	Real (%)	Adjusted (%)	Real (%)	Adjusted (%)	Real (%)	Adjusted (%)	Real (%)	Adjusted (%)		
0	0	0	0	0	0	0	0	0		
2	46.4	47.9	66.4	56.2	41.5	41.6	50.3	50.3		
6	78.1	79.1	74.9	84.5	86.6	76.9	89	83.1		
10	79.1	85.4	87.9	88.4	91.8	87.5	81	89.7		
20	83.9	86.9	87.4 89 90.7 91.9 91.4 91.4							
24	86.2	86.9	86.3	89	90	92.1	71.8	91.4		
32	87	87	89	89	92.1	92.1	87.9	91.4		

13.3.8 Kinetic Curves for Leaching With Gravity Concentration

Gravity concentration on the sample was carried out prior to leaching in order to remove the maximum amount of free gold possible with the least amount of mass.

The leach kinetic tests were conducted on individual tailing samples that were generated from the gravity tests having P_{80} values of 106 and 75 μ m. For each assay, a 1.2kg sample of gravity concentration tailings was sampled and sub-divided into six 200 g samples that were leached individually.

Test conditions are defined below:

- With and without the addition of activated carbon to the pulp;
- P₈₀ = 75 and 106 μm;
- Without pre-dosing the ore with lime;
- pH adjusted to between 10-11;
- 50% solids;
- Total residence time of 32 hours;
- Leaching kinetics (recovery of gold as a function of time) Collection of aliquots (gold, cyanide, pH) at 2, 6, 10, 20, 24 and 32 hours; and
- Cyanide concentration 1000mg/L.

Tables 13.3.8_1 and 13.3.8_2 indicated the result of the gravity test work on the different grind sizes prior to gravity separation.



	Table 13.3.8_1										
	São Jorge Gold Project										
	Gravity Concentration before Leaching P ₈₀ 106 Microns										
ID Weight (kg) % with the second seco											
Conc. 1	0.047	1.60%	1.60%	26.582	1.254	26.58	49.50%	49.50%			
Final Tailings	2.953	98.40%		0.434	1.282	0.85	50.50%	100.00%			
Calculated Feed	3.000			0.850	2.536						
Analysed Feed	3.000			0.700							

Table 13.3.8_2 São Jorge Gold Project Gravity Concentration before Leaching P ₈₀ 75 Microns								
ID	ID Weight (kg) % with the second seco							
Conc. 1	0.035	1.12%	1.20%	25.808	0.901	25.81	40.75%	40.75%
Final Tailings	2.965	98.80%		0.442	1.311	0.74	59.25%	100.00%
Feed Calculated	3.000			0.740	2.212			
Feed Analysed	3.000			0.700				



Table 13.3.8_3 indicates the gold recovery on the tails produced from gravity separation.

Table 13.3.8_3 São Jorge Gold Project Leach Recovery rates on the Gravity Tails								
	1		MET - 01 – V	VITH GRAVITY CON	CENTRATION			
Time (h)	Time (h) P ₈₀ = 106µm without Activated Carbon		P ₈₀ = 106µm with	P ₈₀ = 106µm with Activated Carbon Carbo		thout Activated rbon	P_{80} = 75µm with Activated Carbon	
	Real (%)	Adjusted (%)	Real (%)	Adjusted (%)	Real (%)	Adjusted (%)	Real (%)	Adjusted (%)
0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2	61.90%	61.80%	64.90%	64.70%	77.40%	76.70%	67.30%	67.50%
6	80.10%	84.30%	83.70%	84.50%	84.30%	88.50%	79.80%	87.20%
8	82.20%	86.10%	85.80%	85.70%	76.90%	88.70%	88.40%	88.30%
20	86.20%	86.20%	82.80%	85.80%	88.70%	88.70%	86.10%	88.40%
24	81.70%	86.20%	76.50%	85.80%	85.40%	88.70%	75.50%	88.40%
36	86.10%	86.20%	84.20%	85.80%	87.10%	88.70%	78.20%	88.40%



Recovery rates for the samples that were subjected to gravity separation followed by leaching of the gravity tails have been adjusted to reflect possible overall recovery rates for the combined processes. In order to derive a final recovery it was estimated that a recovery rate of 98 % can be achieved when the gravity concentrate is subjected to leaching. This needs to be confirmed in the next phase of metallurgical testing. The results are listed in Table 13.3.8_4.

Table 13.3.8_4 São Jorge Gold Project Calculated Overall Recoveries from Gravity Separation and Leaching							
	MET - 01 – WITH GRAVITY CONCENTRATION						
Time (h)	P ₈₀ = 106 µm without Activated Carbon	P_{80} = 106 µm with Activated Carbon	P ₈₀ = 75 µm without Activated Carbon	P_{80} = 75 µm with Activated Carbon			
	Adjusted (%)	Adjusted (%)	Adjusted (%)	Adjusted (%)			
0	0.00%	0.00%	0.00%	0.00%			
2	76.55%	78.27%	87.24	82.60			
6	89.88%	90.00%	93.20	92.55			
8	90.95%	90.71%	93.30	93.10			
20	91.01%	90.77%	93.30	93.15			
24	91.01%	90.77%	93.30	93.15			
36	91.01%	90.77%	93.30	93.15			

From the data obtained, it has been observed that a finer grind size of P_{80} 75 microns results in higher gold recovery. When comparing overall recovery rates for samples ground to P_{80} 75 microns the recovery was similar regardless if the samples were subjected to gravity separation prior to leaching. A coarser grind size of P_{80} 106 microns resulted in lower overall recoveries even when the samples were subjected to gravity separation prior to leaching. This is illustrated in Figure 13.3.8_1 below





Figures 13.3.8_2 and 13.3.8_3 illustrate the effect of both grind size and gravity separation on recovery.



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Further test work is required in order to determine the overall benefit of gravity separation on São Jorge mineralized material.

13.3.9 Optimization of Cyanide Dosage

To determine the influence of the initial concentration of cyanide in the pulp, bottle roll tests were conducted on a sample that was crushed to P_{80} = 75 µm. For each dosage of cyanide, two assays were run, and the results reflect the average. The tests were conducted under the following conditions:

- Per cent of solids 50% solids;
- pH of the pulp adjusted to between 10-11;
- P₈₀ 75µm;
- Total residence time 24 hours;
- Analyses for gold, cyanide and pH
- Initial concentration of cyanide 300, 500, 700 and 1500 mg/L; and
- No activated carbon was added to the slurry.

Table 13.3.9_1 below indicates the gold recovery rates as a function of cyanide consumption.

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Table 13.3.9_1 São Jorge Gold Project Gold Recovery Rates as a Function of Cyanide Consumption						
NaCN			MET 01			
Initial	Feed	Tailings	Gold Recovery	Consumption		
(g/t)	(g/t)	(g/t)	(%)	NaCN (g/t)		
300	0.71	0.17		248		
300	0.75	0.17	77.30%	238		
500	0.77	0.06		319		
500	1.08	0.15	89.00%	398		
700	0.92	0.08		318		
700	0.92	0.07	92.20%	320		
1500	0.79	0.06		620		
1500	0.84	0.07	92.00%	650		

Figure 13.3.9_1 indicates Cyanide consumption versus Recovery.



The tests performed at different concentration levels of cyanide were beneficial in showing that maximum gold recovery, greater than 92% was achievable for 700 grams of cyanide per tonne of ore.

When comparing the cyanide consumption for all tests that were conducted for this phase of work, the average consumption rate is in the range of 600 g/t. Further test work needs to be performed in order to establish optimum cyanide consumption rates.

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13.4 Additional Metallurgical Testing

Additional bottle roll tests were conducted on left over samples from column leach tests. This work was conducted by Testwork Process Development Ltda for Brazilian Gold Corporation, AusIMM registration number 304552, Report 002-2013 Brazilian Gold Rev 0 entitled, "Leaching tests with São Jorge Ore", dated January 2013. Refer to Appendix 2 which contains the metallurgical report generated by Testwork Desenvolvimento de Processo Ltda.

A number of 24 hour bottle roll tests were carried out on both the oxide and sulfide ore in order to determine the effect of grind size on recovery and also to estimate a gold recovery value for the oxide ore. The tests were performed on material containing a slightly higher head grade for the sulfide ore than that used in earlier metallurgical test work. The samples were taken from left over material from earlier column tests and were identified as SJ-LCH-001, and SJ-LCH-002.

The leaching tests were carried out in the following conditions:

- Size: P₈₀ = 106 and 75 μm
- Carbon: Without
- % solids: 50% solids
- pH: 10.5 to 11.0
- Cyanide: 1000 ppm (initial)
- Time: 24 hours
- Sampling: 24 h (Au, pH and NaCN).

Table 13.4_1 shows a summary of the leaching results.

Table 13.4_1 São Jorge Gold Project									
Summary of Leaching Results									
SAMPLE		OXIDE	E ORE			SULFIE	DE ORE		
P ₈₀	P ₈₀ = 106 μm P ₈₀ = 75 μ			• 75 µm	P ₈₀ =	106 µm	P ₈₀ =	P ₈₀ = 75 μm	
Analysed Feed (g/t)	1,03 1,18								
Calculated Feed (g/t)	1	1,13 1,32		0,97		1,01			
	Tailings	Recovery.	Tailings	Recovery.	Tailings	Recovery.	Tailings	Recovery.	
	0,149	86,96%	0,168	86,10%	0,082	91,72%	0,102	91,13%	
Leaching	0,149	86,80%	0,157	88,41%	0,084	90,74%	0,049	94,60%	
	0,078	92,31%	0,188	86,19%	0,061	94,24%	0,048	95,85%	
	0,173	86,05%	0,118	91,24%	0,069	92,66%	0,055	93,41%	
Global Recovery (%)	87	7,9%	88	3,0%	92	2,4%	93	3,7%	

Initial results indicate that grind size has little effect on the oxide ore with both grind sizes achieving virtually the same average recovery rate of 88 %. The finer grind size on the sulfide ore resulted in an increase in recovery of 1.3 %. The oxide ore exhibited a lower gold recovery as compared to the sulfide ore which may indicate some sort of organic fouling



during the leaching cycle thus leading to possible preg robbing of gold laden solution. This needs to be further examined in the next phase of test work.

13.4.1 Column Tests

Two column tests were performed on the São Jorge ore samples, one on the oxide ore and one on the sulfide ore in order to evaluate the potential for heap leaching of low grade material.

Samples were received in plastics bags and were identified as SJ-LCH-001, and SJ-LCH-002. For the oxide ore, samples were selected from 8 drill holes and for the sulphide ore samples were selected from 9 drill holes all at different depths along the deposit. A total of 20 samples for the oxide and 23 samples for the sulphide with varying grades were composited using a weight average to generate the final master composite.

The samples were crushed to 3/8", homogenized and divided into a 20 kg sub-sample which were then used in the column leaching tests. The rest of the sample was homogenized again and one head sample was taken for gold analysis from each of the two original samples, SJ-LCH-001 and SJ-LCH-002.

The 20 kg sub-samples SJ-LCH-001 (oxidized material), and SJ-LCH-002 (sulfide material) were placed in two separate columns.

To determine the gold grades in the head samples, three sub-samples of 500g of each material (oxidized and sulfide) were sent for gold analysis. Tables 13.4.1_1 and 13.4.1_2 show the results.

Table 13.4.1_1 São Jorge Gold Project Head Sample Sulfide Ore	
Sulfide Ore g/t	
SJ-AL1-T1	1.08
SJ-AL1-T1	0.96
SJ-AL1-T1	1.48
Average	1.18
SD	0.27

Table 13.4.1_2 São Jorge Gold Project Head Sample Oxide Ore						
Oxidized Ore g/t						
SJ-AL1-T2	1.08					
SJ-AL1-T2	1.18					
SJ-AL1-T2	0.82					
Average	1.03					
SD	0.19					

The samples were leached in the following conditions:

- Agglomeration with 500 g/t of cyanide and 1 kg/t of lime
- Leaching solution 500 mg/L of NaCN
- pH 10.5

The cyanide solutions were prepared every day, no carbon adsorption was used.

Total leach time was 30 days. After that water was pumped through the column to wash the residual cyanide for 4 days. The columns were than discharged, the samples were dried, crushed to 1/8" (3 mm), homogenized and sampled for gold analysis.

A summary of the results is shown in the Table 13.4.1_3.

Table 13.4.1_3 São Jorge Gold Project Column Leaching Results						
Ore	Head (Grade (g/t)	Tailings Au	Recoveries (%)		
	Analysed	Calculated	(g/t)			
Sulfide	1.18	1.20	0.56	53.0%		
Oxidized	1.08	1.09	0.23	78.9%		





Initial column tests indicate that the gold recovery achieved for the sulfide material was 53 % and for the oxides 78.9 % based on 30 days leach cycle time. The graph above indicates that after 30 days of leaching maximum recovery has not yet been reached for both ores. Extended leach times should result in slightly higher metal recoveries for both ores. The sulfide material exhibited a rapid rise in recovery at the beginning of the leach cycle, this may be due to the quick "washing" of the ore. Initially the cyanide solution passes rapidly over the ore surface leaching all the available gold. However after sometime the gold becomes more difficult to leach due to the low permeability of the ore. As a result agglomeration tests utilizing cement should be carried out in order to improve on permeability and percolation of the cyanide solution.

13.4.2 Conclusion and Recommendations

13.4.2.1 Conclusions

As an update to the PEA (Coffey 2013), Coffey Mining has undertaken a process flow design and scoping-level cost estimate for a gold processing mill based on limited metallurgical testwork conducted in 2006, 2012 and 2013 as reported in previous and current technical reports.



The testwork that has been completed, in conjunction with costing estimates, has resulted in the proposal of a fairly standard gold plant process flowsheet for precious metal recovery. Carbon-in-Leach (CIL), an established gold recovery process, is included in the flowsheet while flotation and gravity separation are excluded, as available information currently indicates that high recoveries can be achieved by a combination of fine grinding (P_{80} of 75 microns) and leaching.

The proposed flowsheet incorporates crushing, grinding, thickening, CIL and an Elution (ADR) circuit to produce gold bullion. In addition, a Counter Current Decantation (CCD) circuit is incorporated into the flow sheet for tailings management and cyanide recovery.

A number of specific conclusions have been drawn from the results of tests conducted in 2006, 2012 and 2013, as segmented and summarized below.

Column Tests

- Further column test work on the oxide material should be performed in order to test the technical and economic viability of heap leaching. It is recommended that further leach tests be carried out using coarser feed material, i.e. P₈₀ 50 mm, P₈₀ 25mm and P₈₀ 13mm in order to establish optimum crush size.
- Heap leach recoveries for both the oxide and sulfide material were 78.9 % and 53.0 %, respectively.
- Cyanide consumption for the oxide was determined to be approximately 1.1 g/t while for the sulfide it was 1.2 g/t. Column leach tests do not accurately predict reagent consumption for full scale heap leach operations. Typical cyanide consumption for a heap leach operation would be 25 % to 40 % of the consumption predicted from column leach tests. Lime consumption predicted from column tests would also be higher than full scale operation.
- Due to the nature of the Oxide ore which contributed to poor permeability during the initial column tests, further column tests incorporating cement in the agglomeration mix needs to be explored.
- Column tests should be performed over a 60 day period in order to obtain leach cycle times, establish maximum recovery rates and generate leaching kinetic curves for coarser crushed material.
- Bottle roll test work on material ground to P₈₀ 1.7mm (10 mesh), P₈₀ 250 micron, P₈₀ 106 micron and P₈₀ 75micron should be performed in order to establish ultimate recovery of the ore.
- Moisture content of the heap leach ore should be determined before and after leaching in order to establish the amount of make- up water required.
- Further column tests should be carried out using site water as opposed to tap water in order to determine the effects of site water on leach kinetics.
- Percolation rates were measured to be 10 L/m²/h.



Gravity and Leach Testwork Sulfide & Oxide Ore Phase 2

- The data reviewed suggests that collection of gold through gravity concentration is viable based on recovery, but not feasible based on the low concentrate grades reported. It would have been beneficial to have performed gravity upgrading and/or leach tests on the first pass gravity concentrate in order to establish cyanide consumption rates and overall recoveries.
- Gravity concentrate recoveries should be revised and stated with the grade of the concentrate produced.
- The selection of the metallurgical sample needs to be verified in order to determine if the samples represents the deposit as it is currently defined.
- The recoveries by granulometric fraction were between 74 % and 87 % for the finer fractions and 90.6 % for the coarser, 150 µm, fraction. As the process of sieving classifies material exclusively with respect to size, this may indicate that part of the gold (coarse and liberated) has been retained in the mesh.
- For met samples SJ-AL1-T1 which represents the sulfides and SJ-AL2-T2 which represents the oxides, gold recovery for the finer ground samples P₈₀ 75 microns ranged from 91.1 to 95.8 % for the sulfides and between 86.1 to 91.2 % for the oxides.
- For met samples SJ-AL1-T1 which represents the sulfide ore, gold recovery was increased from an average of 92.4 % to 93.7 % using a finer grind that is a P₈₀ 75 microns as compared to a P₈₀ 106 microns.
- For met samples SJ-AL2-T2, which represents the oxide ore, the finer grind size did not affect recovery as both a grind size at P₈₀ 75 microns and of P₈₀ 106 microns resulted in the same recovery rates.
- For met sample SJ-AL2-T2 low gold recoveries averaging 88 % may be attributed to organic fouling;
- The GRG tests show how the gold is gradually liberated during the crushing process, and the results indicated that it was possible to attain a maximum gold recovery of 66% when the ore is crushed in stages to a P₈₀ equalling 74 µm. It should be noted that the material was initially ground to a P₈₀ of 212 microns and then subjected to gravity concentration. From the test results it was shown that an overall recovery of 36.5% with a gold grade of 38.91 g/t Au was achieved when the entire sample was ground to a P₈₀ of 212 microns. The gravity tailings were further ground to a particle size of P₈₀ 106 microns which then recovered an additional 17.2% of the gold in relation to the feed grade. The tailings from the second stage of concentrating were then ground to a particle size of P₈₀ 75 microns and returned a further gold recovery of 12.4%. The cumulative recoveries total 66 %



recovery. As a result of the three stages of grinding, the final gravity recovery that was achieved could be overstated.

- The tailings from the gravity concentration were subjected to leaching with and without carbon present. It was observed that carbon reported to the solid residue which increased the reported tailings grade and reduced the gold recovery (24 hour test).
- Gravity gold recovery reached 49.5 % and 40.7 % when the ore was crushed at P_{80} levels of 106 μm and 75 μm , respectively.
- For met sample MET -01, a grind size of P_{80} = 75 microns resulted in an overall recovery of 92.1 % and was achieved without the use of gravity separation. With gravity separation gold recovery can be slightly increased to 93 %. At the coarser grind size of P_{80} = 106 microns overall recovery was slightly lower at 91.0 % with the aid of gravity separation. Overall recovery is a combination of gravity recovery and leaching. Further test work is recommended to validate the benefit of gravity separation.
- As the testwork was performed on a lower grade material, it is expected that as the head grade is increased, so too will the recovery of gold. This can be seen in Figure 13.4.2_1 below.ed grade





At an anticipated head grade of approximately 1.57 g/t Au, the overall recovery is expected to be in the range of 94.0 % or slightly higher, if the process incorporates a CIL circuit with a feed size of P_{80} = 75 microns or finer.

- The results from sample MET-01 indicates no great consumers of cyanide, such as thiocyanate, ferrocyanide or copper cyanide, exist in large concentrations in the solution;
- The ore is categorized as medium to hard with a Ball Mill work index ranging from 13.7 to 15.7 kWh/t;
- Results indicate that, at a fine grind of P₈₀ 75 microns, and a slightly higher grade of ore (1.18 g/t gold) a recovery of 93.7 % is achievable;
- Leach kinetics curves indicate that maximum gold recovery can be achieved after 22 hours of leaching for the sulfide ore. Leach kinetic curves were not generated for the oxide ore.

13.4.2.2 Metallurgical Testwork Recommendations

 In order to fully understand and define the metallurgical response of the oxide and sulfide deposits a number of variability samples would be required. These samples would be used not only to develop the resource block model but would also be used in the grinding and leach test program. The results of this testwork would be inputted back into the block model in order to allow for metal extractions to be predicted across the deposit.



- Future samples must be chosen to be representative of the ore that will be mined in the first 5 years of the mine life. They should be selected by the Project Geologist in collaboration with the Lead Process Engineer and Mining Engineer.
- The different lithologies along with the master composite for each deposit should be submitted for head analysis. Elements for analysis would include gold, silver, copper, sulphur and iron.
- A representative sample from each lithology along with the master composites for the deposit should be submitted for mineralogical examination in order to obtain bulk modal analyses data and liberation data. Also QEMSCAN analysis should be performed on the final tails from the deposits in order to better understand the mineral composition within the ore body thus indicating how metallurgical performance may be affected.
- The next phase of the program requires more comminution data such as; Modified Bond ball mill work index tests, several full Bond ball mill work index determinations, Bond rod mill work index, crushing work index, abrasion work index, Unconfined Compression tests (UCS), SAG Mill Comminution tests (SMC) and JKTech drop weight tests in order to properly size the comminution circuit.
- On the master composite for the sulfide ore, a HPGR (high pressure grinding rolls) evaluation should be considered as an option to SAG milling. This would require a Static Pressure Test (SPT) to be performed.
- A series of flotation tests should be considered on both ore types in order to establish if flotation would be an appropriate flowsheet option in order to optimize gold recovery.
- Further gravity tests should be carried out on both ore types at various grinds in order to confirm original findings.
- Leaching of the gravity concentrate should be carried out in order to determine overall recovery rates and establish leach kinetic curves along with reagent consumptions.
- Leach kinetic curves need to be established on master composite samples for both the oxide and sulfide ore.
- Once optimum conditions have been established with the master composites, further bench tests should be performed on the variability samples using the same set of conditions.
- Once optimum conditions have been established from bench tests, locked-cycle testing and potentially a pilot plant trial should be conducted in order to confirm initial findings.
- Reagent optimization for both ore types needs to be established.
- Settling tests on the tailings for both ores types are required. This would involve appropriate flocculent selection (ionic, cationic, neutral, coagulant) settling test work (feed percent solids, dosage, pH), specific gravity determination and viscosity measurements on tailings, with and without thickening.



- As the deposit consists of approximately 15% oxide (laterite and saprolite) material and 85% sulfide material the next phase of test work needs to include both gravity and leach test work on a composite sample that represents this ratio in order to determine what effect a blended ore has on recovery, if any, as this may be a possible process route.
- Further testing needs to be carried out on the oxide material as it may be processed separately for the first 18 months of production. This would include the same testwork that has been carried out on the sulfides.
- Testwork involving thickening of the leach tails is recommended for the next phase of work for both oxide and sulfide material in order to establish maximum obtainable densities for the CCD circuit.
- The ore rheology needs to be well defined and understood to thwart any potential viscosity issues which may arise from the processing of the oxides alone.
- Environmental testwork, as it relates to the processing plant and tailings storage facility is required.



14 MINERAL RESOURCE ESTIMATES

14.1 Introduction

Coffey has estimated the Mineral Resource for the São Jorge Gold Project as at 17th September 2012 and amended on 7th December 2012. All grade estimation was completed using Multiple Indicator Kriging ('MIK') for gold. This estimation approach was considered appropriate based on a review of a number of factors, including the quantity and spacing of available data, the interpreted controls on mineralization, and the style of mineralization. The estimation was constrained by a wireframe that separated altered mineralized rock from unaltered rock.

The resource estimate was amended because Coffey identified a grade variance between the resource published with Effective Date 17 September 2012 and the block model which was imported for engineering studies for a new Preliminary Economic Assessment. Coffey's standard procedure when importing a block model into the mine design software includes internal verification of the block model data. Coffey has completed a thorough and detailed investigation and has confirmed that the data in the block model is correct. Further "independent verification" was completed by a Coffey office outside of Toronto, not associated with the São Jorge study, and proficient in the commercial software used for the resource estimate. This work has confirmed the variance and the resulting positive grade revisions to the São Jorge resource estimate.

14.2 Geological Modelling

Previous resource estimates for São Jorge did not use a geological model; simple grade shells were used to control the estimation.

BGC geologists mapped alteration 'assemblages' to define meaningful zones that could be correlated between drill holes and sections. Alteration intensity, sulfide percentage and gold grade data are also helpful, particularly in areas of uncertainly (Pedley, 2011).

The work done by BGC geologists can be summarized as:

- Data was imported into Gemcom GEMS 6.3. Alteration zones were drawn on sections as polylines, based mainly upon the alteration assemblages but also with consideration of alteration intensity, sulphide percent and gold assay data where available.
- 8 zones, A to G and I, were defined, between 10 and 70 metres thick and extending from the base of oxide to the limit of drilling. For the most part alteration type was consistent within these zones. In some sections alteration zones were re-classified based upon logic; for example, a zone logged as Fe-Ox +/- chl in one hole maybe logged as heterogeneous in another but being the same zone were considered the same zone in final model.



- Unmineralised (but altered) material within the alteration zones were common; the model did not attempt to model grade. Correlatable internal zones of no mineralisation or alteration (nada) were left out of the wireframe models.
- Material of no or weak alteration on the margins of the deposit was not modelled.

Coffey has modelled an envelope based upon BGC geologists' geological model (Figure 14.2_1). The interpretation was completed using 27 vertical sections oriented as shown in Figure 14.2_2. The interpretation and wireframe models have been developed using the Gemcom Surpac mine planning software package.

For the purpose of resource estimation, one mineralized domain was interpreted and was modelled around all alteration zones. The domain is depicted in plan and section in Figure 14.2_2 and Figure 14.2_3. As the mineralization is very diffuse, internal waste intervals were accepted within the mineralized domain. There are no non-sampled intervals; every interval was sampled for the estimation process.







An oxidation domain was defined based on the contact of the weathered rock (oxide) with the fresh rock (sulfide) using codes defined in the geological description table of the database.





This domain was built using an intersection between the surface weathering DTM created using the contacts points. The Figure 14.2_3 shows the oxidation example.

14.3 Block Model Development

A three-dimensional block model was constructed for the São Jorge Gold Project, covering all the interpreted mineralization zones and including suitable additional waste material to allow later pit optimisation studies. The block model has been developed using Gemcom Surpac software.



A block size of 5mE x 5mN x 5mRL has been used for all materials without sub-blocking. The attributes coded into the block models included mineralization, grade and weathering. A visual review of the wireframe solids and the block model indicates robust flagging of the block model. Bulk density has been coded to the block model based on the defined density values listed in Table10.3_1.

Table 14.3_1shows the summary of the block model created.

Table 14.3_1 São Jorge Gold Project Block Model Summary						
	Y	Х	Z			
Minimum Coordinates	9,282,400	656,500	-300			
Maximum Coordinates	9,283,300	658,100	270			
User Block Size	5	5	5			
Min. Block Size	5	5	5			
Rotation	0	0	0			

14.4 Statistical Analysis

The drillhole database was composited to a 1m downhole composite interval, recording the geological model. The 1m composites were used for all statistical, geostatistical and grade estimation studies. The decision to use 1m composites was based on the sample lengths in the database, considering the samples inside the zone estimated and reported in this document. Figures 14.4_1 and 14.4_2 illustrate the predominant sample lengths for oxide and sulfide rock respectively.



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Statistical analysis of the composite datasets was completed on the 2 domains (oxide and sulfide). The element included in the composite database is Au (grams per tonne). Descriptive statistics are presented in Table14.4_1.

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Table 14.4_1 São Jorge Gold Project Summary Statistics – 1m Composites				
		Au (g/t)		
	Count	2303		
	Minimum	0.001		
Ovide Deels Demain	Maximum	11.10		
Oxide Rock Domain	Mean	0.257		
	Std. Dev.	0.817		
	CV	3.183		
	Count	22319		
	Minimum	0.001		
Sulfide Deals Domain	Maximum	32.373		
Suifide Rock Domain	Mean	0.336		
	Std. Dev.	1.160		
	CV	3.457		

Indicator classes have been defined for the single mineralized domain. The conditional statistics for the mineralized domain to be estimated by Multiple Indicator Kriging are listed in Table 14.4_2.

Multiple Indicator Kriging estimates the cumulative grade distribution frequency rather than the grades itself for each block, then it uses the interclass means of grade to estimate the median grade inside the block.

Multiple Indicator Kriging works on a probabilistic basis to define the distribution of the grades of samples within each search window, providing a discrete approximation to the CCDF for each block. As this distribution is based on the samples found within the search window centred on any given point, it changes from block to block to reflect local grade variability.

Table 14.4_2 São Jorge Gold Deposit Indicator Class Means					
Class Superior Limit	Mean Grade	Class Prob	CumlProb		
0.10	0.021	15183	66%		
0.25	0.161	17968	79%		
0.50	0.357	19698	86%		
1.00	0.709	21017	92%		
1.50	1.221	21615	95%		
2.00	1.724	21985	96%		
3.00	2.439	22341	98%		
4.51	3.628	22571	99%		
6.50	5.447	22700	99%		
10.02	8.073	22771	100%		







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14.5 Variography

14.5.1 Introduction

Variography is used to describe the spatial variability or correlation of an attribute (gold, silver, etc). The spatial variability is traditionally measured by means of a variogram, which is generated by determining the averaged squared difference of data points at a nominated distance (h), or lag (Srivastava and Isaacs, 1989). The averaged squared difference (variogram or γ (h)) for each lag distance is plotted on a bivariate plot, where the X-axis is the lag distance and the Y-axis represents the average squared differences (γ (h)) for the nominated lag distance.

Several types of variogram calculations are employed to determine the directions of the continuity of the mineralization:

- Traditional variograms are calculated from the raw assay values.
- Log-transformed variography involves a logarithmic transformation of the assay data.
- Gaussian variograms are based on the results after declustering and a transformation to a Normal distribution.
- Pairwise-relative variograms attempt to 'normalise' the variogram by dividing the variogram value for each pair by their squared mean value.
- Correlograms are 'standardized' by the variance calculated from the sample values that contribute to each lag.

Fan variography involves the graphical representation of spatial trends by calculating a range of variograms in a selected plane and contouring the variogram values. The result is a contour map of the grade continuity within the domain.

The variography was calculated and modelled in the mining planning software, Gemcom Surpac Software. The rotations are tabulated as input into Gemcom Surpac Software (geological convention), with X representing the bearing, Y representing dip and Z representing plunge. Dip and dip direction of major, semi-major and minor axes of continuity are also referred to in the text.

14.5.2 São Jorge Variography

Grade and indicator variography was generated to enable grade estimation via MIK and change of support analysis to be completed. Nine indicator thresholds (Table 14.5_1) were investigated for the mineralized domain. Interpreted anisotropy directions correspond well with the modelled geology and overall geometry of the interpreted domain. This interpretation appears to cross-cut the trend of the interpreted alteration envelopes, while being contained within them.

An extensive variogram modelling was done, before deciding by the final variogram attitude, it was found close to the secondary behaviour one can found on the altered zones attitude,



meanwhile the global bearing of the mineralised domain seen to be aligned with the direction $N115^{\circ}$ a secondary alignment, can be noted to be roughly West-East, as can be observed on the figure 14.5.2_1



Figure 14.5.1_2 shows a graphic presentation of the Variogram used to estimate the São Jorge Gold Project.

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	Table 14.5_1 São Jorge Gold Project Variogram Models Summary - Nested Spherical												
Cutoff grade	Cutoff grade Variable (Nugget) C0 C1 A1 C2 A2 C3 A3 Bearing Plunge Dip Ratio SM Ratio RM								Ratio RM				
0.3	Au	0.30	0.39	7	0.37	42	-	-	90	-50	-80	1.3	4.02
0.4	Au	0.30	0.39	7	0.37	42	-	-	90	-50	-80	1.3	4.02
0.5	Au	0.30	0.39	7	0.37	42	-	-	90	-50	-80	1.3	4.02
0.75	Au	0.30	0.39	7	0.37	42	-	-	90	-50	-80	1.3	4.02
0.85	Au	0.30	0.39	7	0.37	42	-	ľ	90	-50	-80	1.3	4.02
1	Au	0.30	0.39	7	0.37	42	-	-	90	-50	-80	1.3	4.02
1.2	Au	0.30	0.39	7	0.37	42	-	-	90	-50	-80	1.3	4.02
1.5	Au	0.30	0.39	7	0.37	42	-	-	90	-50	-80	1.3	4.02
2	Au	0.30	0.39	7	0.37	42	-	-	90	-50	-80	1.3	4.02





14.6 Grade Estimation

Resource estimation for the São Jorge mineralization was completed using MIK within the oxide and sulfide mineralized domains.

Grade estimation was carried out using the Gemcom Surpac Software implementation Indicator kriging algorithms.

The MIK technique is implemented by completing a series of Ordinary Kriging ("OK") estimates of binary transformed data. A composite sample, which is equal to or above a nominated cutoff or threshold, is assigned a value of 1, with those below the nominated indicator threshold being assigned a value of 0. The indicator estimates, with a range between

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0 and 1, represent the probability the point will exceed the indicator cutoff grade. The probability of the points exceeding a cutoff can also be considered broadly equivalent to the proportion of a nominated block that will exceed the nominated cutoff grade.

The estimation of a complete series of indicator cutoffs allows the reconstitution of the local histogram or conditional cumulative distribution function (ccdf) for the estimated point. Based on the ccdf, local or block properties, such as the block mean and proportion (tonnes) above or below a nominated cutoff grade can be investigated.

14.7 Multiple Indicator Kriging Parameters

MIK estimates were completed for relevant domains using the indicator variogram models (Section 14.5) and a set of ancillary parameters controlling the source and selection of composite data. The sample search parameters were defined based on the variography and the data spacing. A total of 9 indicator thresholds were estimated for oxide and sulfide mineralised domains (see Table 14.5_1).

The sample search parameters are provided in Table14.7_1. Soft boundaries were used in all estimation passes. The specific effect of this is to allow samples lying within the sulfide grade domain to be used for the estimation of the oxide domain and vice versa. This strategy allows adequate estimation in areas where the estimation domains are adjacent to each other which might otherwise remain unestimated in any given estimation pass due to a lack of available composites in the search neighbourhood. A three-pass estimation strategy was applied to each domain, applying progressively expanded and less restrictive sample searches to successive estimation passes, and only considering blocks not previously assigned an estimate.

Table 14.7 1

	São Jorge Gold Project									
	Multiple Indicator Kriging Sample Search Parameters									
	Rotation Search Distance Max.									Max.
Zone	Zone Estimation X Y Z X Y Z					z	Min. No. of Comp.	Max. No. of Comp.	No. of Comp. per Hole	
	1	90	-80	-50	28	21.5	7.0	16	32	6
Sulfide	2	90	-80	-50	65	50.0	16.2	12	32	6
	3	90	-80	-50	150	115.4	37.3	6	32	6
	1	90	-80	-50	28	21.5	7.0	16	32	6
Oxide	2	90	-80	-50	65	50.0	16.2	12	32	6
	3	90	-80	-50	150	115.4	37.3	6	32	6

All relevant statistical information was recorded to enable validation and review of the MIK estimates. The recorded information included:

Number of samples used per block estimate.



- Average distance to samples per block estimate.
- Estimation flag to determine in which estimation pass a block was estimated.
- Number of drillholes from which composite data were used to complete the block estimate.
- Conditional variances for the block.
- The MIK estimates were reviewed visually and statistically prior to being accepted. The review included the following activities:
 - Comparison of the MIK CCDF estimate versus the CCDF of the composite dataset, including weighting where appropriate to account for data clustering.
 - Visual checks of cross sections, long sections, and plans.

The comparison between the frequency distributions of Au grades in the block model and set of composited samples leads to the conclusion that both fix to the same law. The figures 14.7_1 and 14.7_2 present these comparisons.

- Part Samp represent the Cumulative distribution of samples
- Au Avg sample are the Au grade for each Cotoff grade on samples
- Part Blk represent the Cumulatiove disptibuition for all mineralised blocks



Au Avg BLK are the Au grade for each Cotoff grade on all blocks





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14.8 Resource Reporting

The summarised Amended Resource Statement in Table 14.8_3 has been determined with an Effective Date of 17th September 2012 and has been prepared and reported in accordance with Canadian National Instrument 43-101, Standards of Disclosure for Mineral Projects (the Instrument) and the classifications adopted by CIM Council in December 2010.

The definitions of resources established by CIM are as follows:

- A Mineral Resource is 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.
- An "Inferred Mineral Resource" is that part of a Mineral Resource for which quantity and grade or quality can be estimated on the basis of geological evidence and limited sampling and reasonably assumed, but not verified, geological and grade continuity. The estimate is based on limited information and sampling gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.
- An "Indicated Mineral Resource" is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics, can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough for geological and grade continuity to be reasonably assumed.
- A "Measured Mineral Resource" is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough to confirm both geological and grade continuity.

This resource estimate has been classified as Indicated and Inferred Mineral Resources based on the confidence of the input data, geological interpretation, and grade estimation.

In recognition of an improvement in the three year trailing average gold price since the resource declaration in the report dated September July 2010, and consistent with the PEA dated July 2011, in this report Indicated and Inferred Mineral Resources are reported at a cutoff grade of 0.3g/t Au.

The 0.3g/t cutoff grade value estimated by Coffey is based on economic, process recovery, government taxes, etc. and represents total revenue value in grams per tonnes that is



explained as the sum of process cost + mining costs plus G&A + other costs divided by price (US\$) per 1 ounce (31.1035g) and multiplied by process recovery. These results are shown in the Table 14.8_1. A Strip ratio of 5 t/t was considered

Table 14.8_1 São Jorge Gold Project Mineral Resource Estimates Summary				
Item	Value	Measured Unit		
Mining cost	1.39	(\$/t mined) (SR~5)		
Processing cost	7.19	(\$/t)		
G&A	1.54	(\$/t)		
Recovery	90	(%)		
Royalty etc	1.50	(%)		
Gold Price	1,300	(\$/oz)		
CoG	0.3	g/t		

Figures 14.8_1, 14.8_2 and 14.8_3 illustrate the distribution of block grades in plan view, vertical section and isometric section.









The key criteria for resource classification are listed in Table 14.8_2.

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Table 14.8_2						
	Sao Jorge Project					
Confidence Levels of Key Categorisation Criteria						
Items	Discussion	Confidence				
Drilling Techniques	Diamond drilling is Industry standard approach.	High				
Logging	Standard nomenclature and apparent high quality.	High				
Drill Sample Recovery	Very good recovery recorded.	High				
Sub-sampling Techniques & Sample Preparation	Accepted practice followed.	High				
Quality of Assay Data	Available Talon data shows no bias although precision is not high possibly due to either sample preparation methodol or sample size. BGC data collection has followed all the procedures and is compatible with mining industry best practices.	Moderate				
Verification of Sampling and Assaying	Umpire samples taken although results returned low to moderate precision.	Moderate-High				
Location of Sampling Points	Survey of all collars with downhole survey for Talon and BGC Drilling. No downhole survey for RTDM drilling.	Moderate				
Data Density and Distribution	Approximately 30m x 30m spaced drilling which is somewhat sparse given the generally poor continuity of grade that is evident.	Moderate				
Audits or Reviews	Coffey is unaware of external reviews.	N/A				
Database Integrity	No Material errors identified.	High				
Geological Interpretation	The broad mineralisation constraints are subject to a large amount of uncertainty concerning mineralisation trends as a reflection of drilling density and geological complexity. Closer spaced drilling is recommended to solve this issue.	Moderate				
Estimation and Modelling Techniques	Multiple Indicator Kriging.	High				
Cutoff Grades	Lower Cutoff Grade of 0.3g/t Au applied to define the mineralised zone.	High				
Mining Factors or Assumptions	5mE by 5mN by 5mRL SMU.	High				



A summary of the estimated resources for the São Jorge Gold Project is provided in Tables 14.8_3 to 14.8_5 below. The resource was classified to the -200mRL, as a estimated limit for a reasonable open pit economic operation. Material below -200mRL was considered too far from data and shows atypical grade distribution as a result and remains unclassified. The notable difference in grade between indicated and inferred mean grades can be explained by lack of drilling and variability of the gold mineralisation. It can be expected that with additional drilling the average grade of the Inferred Mineral resource will increase as higher grade zones are intersected. This grade increase may be partly at the expense of tonnage.

Table 14.8_3						
Grade Tonnage Total Report Multiple Indicator Kriging Estimate - 22th November 2013 5E x 5mN x 5mRL Selective Mining Unit						
	Lower Cutoff Grade (g/t Au) Million Tonnes Average Grade Contained Gold (g/t Au) (Kozs)					
Indicated Mineral Resource	0.3 0.4 0.5	14.42 12.15 10.49	1.54 1.77 1.97	715 690 666		
Inferred Mineral Resource	0.3 0.4 0.5	28.19 22.43 18.78	1.14 1.35 1.52	1035 971 918		

NB* figures may not reconcile due to rounding

Table 14.8_4 São Jorge Gold Project Grade Tonnage Report – Oxide Multiple Indicator Kriging Estimate, 2014						
	5E x 5ml	N x 5mRL Selective M	lining Unit			
	Lower Cutoff Grade (g/t Au) Million Tonnes Average Grade Contained Gol (g/t Au) (Kozs)					
	0.3	1.78	1.42	81		
Indicated Mineral	0.4	1.49	1.63	78		
	0.5	1.25	1.86	75		
Lafama d Minanal	0.3	1.97	1.10	70		
Interred Mineral Resource	0.4	1.57	1.30	65		
1.0000100	0.5	1.30	1.47	62		

NB* figures may not reconcile due to rounding



Table 14.8_5 São Jorge Gold Project						
Grade Tonnage Report – Sulfide Multiple Indicator Kriging Estimate - 22th November 2013 5E x 5mN x 5mRL Selective Mining Unit						
	Lower Cutoff Grade (g/t Au) Million Tonnes Average Grade Contained Gold (g/t Au) (Kozs)					
	0.3	12.64	1.56	634		
Indicated Mineral	0.4	10.67	1.78	612		
Resource	0.5	9.24	1.99	591		
	0.3	26.23	1.15	965		
Interred Mineral Resource	0.4	20.86	1.35	905		
Resource	0.5	17.48	1.52	856		

NB* figures may not reconcile due to rounding

The independent qualified persons responsible for the mineral resource estimate in this report are Messrs Porfirio Rodriguez and Leonardo M. Soares. Mr Rodriguez is a professional Mining Engineer with 34 years of experience in mineral resource and mineral reserve estimation. His experience includes uranium, iron ore, gold and nickel. Mr. Rodriguez is a Member of the Australian Institute of Geoscientists (MAIG). Mr Leonardo M. Soares is a geologist with 11 years of experience, most of them in resource estimation on gold properties. His experience includes iron ore, gold and copper. Mr. Leonardo M. Soares is member of the Australian Institute of Geoscientists (MAIG). Both Messrs Rodriguez and Soares are independent of BRI as that term is defined in Section 1.5 of the Instrument.

Mineral resources which are not mineral reserves do not have demonstrated economic viability. The estimate of mineral resources may be materially affected by environmental, permitting, legal, marketing, or other relevant issues.

Figures 14.8_4 and 14.8_5 illustrate the distribution of resource classification in the block model in plan view, block model and isometric section. Note that the blue coloured blocks for Indicated resources denotes those blocks for which a measured resource may be declared in the future if overall data confidence is improved.







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The grade-tonnage curves for the mineral resources estimated are illustrated in Figures 14.8_6 to 14.8_9.













15 ADJACENT PROPERTIES

There are no adjacent or nearby concessions to those of BGC although the São Jorge gold deposit is related to the east extension of the regional 450km long northwest-southeast Cuiú-Cuiú - Tocantinzinho lineament which also hosts several important gold deposits including the Palito mine, Tocantinzinho and Cuiú-Cuiú deposits, and Bom Jardim and Batalha gold prospects.



16 OTHER RELEVANT DATA AND INFORMATION

There is nothing to report under this item.



17 INTERPRETATION AND CONCLUSIONS

Coffey, in compliance with Canadian National Instrument 43-101 which regulates the public disclosure of Resources, concluded that the São Jorge Gold Project is validated in accordance with Industry Standard Practices..

The estimation was prepared correctly based on the methodology and parameters used at the time; and the selective mining unit (SMU) block size of $5m \times 5m \times 5m$ was considered reasonable at the time of the estimation based on the QP experience with gold mining in Brazil.



18 **RECOMMENDATIONS**

Coffey has considered as recommendations:

- Potential head grade enhancement through selective mining of internal waste based on pit mapping and grade control;
- Potential head grade enhancement when upgrading inferred resource to indicated;
- Increased indicated resource and total resource should result in significantly more ounces falling within a pit shell as compared to the 2011 PEA, in addition to the more favourable gold price, exchange rates and metallurgical test work completed on January 2013;
- To investigate the exploration potential, Coffey recommends a new program and budget to increase information and support the conversion of targets to mineral resources;
- Coffey recommends a study to determine the optimum grid for Mineral Resource conversion from inferred to indicated, based on the current database. One method is based on analysis of kriging variances for existing samples in the study area. Usually this kind of study can save on the budget and time for the exploration drilling campaigns. Figures 18_1 and 18_2 illustrate the kriging variance in plan and section and highlight with the colour coding that infilling drilling is required where the kriging confidence is moderate to low (green zones).







Coffey recommends the following specific exploration programs for the São Jorge project:

- Deposit drilling to upgrade any near surface (surface to approx. 200 m depth) inferred resources to indicated resources.
- Modelling and interpretation of geophysical data:
 - Airborne magnetic survey completed by Fugro in 2006 that covers the entire property to identify possible structures for follow-up exploration.
 - Induced polarization survey (120 line km) completed by Fugro in 2011 that covers the strike extents of the São Jorge deposit with a particular emphasis on the resistivity +/- chargeability anomaly located along strike and for 2.5km southeast of the São Jorge deposit.
- Trenching and sampling of targets identified by the modelling and interpretation of the geophysical data.
- Near deposit diamond drilling of geophysical-geochemical targets.
- Regional geochemical program to identify new targets on the largely unexplored São Jorge property. The program would consist of regional soil traverses using the existing east-west roads that cross the property.

The trenching, sampling and near deposit drilling will be contingent on successful target generation from the geophysical data interpretation.

The proposed budget to carry out the programs outlined above is summarized in the Table 18_1.



	Table 18_1					
São Jorge Gold Project						
Exploration Cost Estimate						
Task	Detail	Cost (US\$)				
Deposit drilling to upgrade inferred to indicated						
	Drilling (5,000 m)	\$1,750,000				
	Assaying (5,000 samples)	\$200,000				
Modelling and interpretation of geophysical data		\$30,000				
Trenching of geophysical- geochemical targets						
	Trenching (2,000m)	\$20,000				
	Assaying (1,000 samples)	\$40,000				
Near-deposit diamond drilling of geophysical-geochemical targets						
	Drilling (2,000m)	\$700,000				
	Assaying (1,000 samples)	\$40,000				
Regional geochemistry program						
	Assaying (2,000 samples)	\$80,000				
Travel and Accommodation		\$100,000				
Field Supervision and Support		\$500,000				
Administration		\$100,000				
Subtotal		\$3,560,000				
Contingency (15%)		\$534,000				
Total		\$4,094,000				



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Appendix A

Certificate of Qualified Persons



Certificate of Qualified Person – Porfirio C. Rodriguez

I, Porfirio Cabaleiro Rodriguez, Mine Engineer, as an author of this report entitled "São Jorge Gold Project, Pará State, Brazil. Amended Independent Technical Report on Mineral Resources" prepared for Brazil Resources Inc. and with effective date 17th September 2012 and updated 3 th December 2013, do hereby certify that:

- 1. I am an Associate Consultant with Coffey Consultoria e Serviços Ltda, of Av Afonso Pena, 1500, 5° andar, Centro- CEP 30.130-000;
- 2. I am a graduate of the Federal University of Minas Gerais, Brazil and hold a Bachelor of Science Degree in Mining Engineering (1978) and I have practiced my profession continuously since 1979.
- 3. I am a professional Mining Engineer with more than 34 years of relevant experience in Resource and Reserve estimation, involving mining properties in Brazil, including iron ore, gold, uranium, and nickel .
- 4. My experience covers resources estimation on Brazil and Colombia, including gold mineralization related to hydrothermal alteration zone on,Mato Grosso Brazil (São Vicente, São Francisco and Nova Xavantina gold deposits) and El Gigante deposit on California Vetas Colombia, among othersi
- 5. I am a member of the Australian Institute of Geoscientists ("MAIG") #3708.
- 6. I have read the definition of "qualified person" set out in National Instrument 43 101 (NI43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfil the requirements to be a "Qualified Person" for the purposes of NI43-101.
- 7. I have visited the São Jorge Gold Project between the 13th and 14thJuly 2012.
- 8. I prepared and am responsible for all sections of this report.
- 9. I am independent of Brazil Resources Inc., pursuant to section 1.5 of the Instrument.
- 10. I have had no prior involvement with the property that is the subject of the Technical Report, except as a consultant to Brazilian Gold Corrporation Inc for the preparation of the PEA in 2011.
- 11. I have read NI 43-101 and, the Technical Report and I hereby certify that the Technical Report has been prepared in accordance with NI 43-101 and meets the form requirements of Form 43-101 F1.
- 12. At the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.
- I do not have nor do I expect to receive a direct or indirect interest in the São Jorge Gold Project of Brazil Resources Inc and I do not beneficially own, directly or indirectly, any securities of Brazil Resources Inc or any associate or affiliate of such company.

Belo Horizonte, Brazil, 18th November, 2013.

Porfirio Cabaleiro Rodriguez BSc(Mining Engineer), MAIG #3708.



Certificate of Qualified Person – Leonardo de Moraes Soares

I, Leonardo de Moraes Soares, Geologist, as an author of this report entitled "São Jorge Gold Project, Pará State, Brazil. Amended Independent Technical Report on Mineral Resources" prepared for Brazilian Resources Inc. and with effective date 17th September 2012 and 18th November 2013, do hereby certify that:

- 1. I am a Senior Mineral Resource Geologist with Coffey Consultoria e Serviços Ltda, of Av Afonso Pena, 1500, 5° andar, Centro- CEP 30.130-000;
- 2. I am a graduate of the Federal University of Minas Gerais, Minas Gerais State, Brazil and hold a Bachelor of Science Degree in Geologist (2002) and I have practiced my profession continuously since 2002.
- 3. I am a professional geologist with more than 11 years of relevant experience in Resource and Reserve estimation, involving mining properties in Brazil, including iron ore, gold, copper and among others.
- I have relevant experience with exploration and resource estimate on gold deposits on similar mineralisaton as Crixás (Anglogold), Nova Xavantina (Caraíba - MCSA), Turmalina and Pilar (Jaguar Mining), Faina (Troy Inc.) and others.
- 5. I am a member of the Australian Institute of Geoscientists ("MAIG") #5180.
- 6. I have read the definition of "qualified person" set out in National Instrument 43 101 (NI43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfil the requirements to be a "Qualified Person" for the purposes of NI43-101.
- 7. I prepared and am responsible for the geological information and geological modelling sections of this report.
- 8. I am independent of Brazil Resources Inc, pursuant to section 1.5 of the Instrument.
- 9. I have had no prior involvement with the property that is the subject of the Technical Report.
- 10. I have read NI 43-101 and, the Technical Report and I hereby certify that the Technical Report has been prepared in accordance with NI 43-101 and meets the form requirements of Form 43-101 F1.
- 11. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.
- 12. I do not have nor do I expect to receive a direct or indirect interest in the São Jorge Gold Project of Brazil Resources Inc and I do not beneficially own, directly or indirectly, any securities of Brazil Resources Inc t or any associate or affiliate of such company.

Belo Horizonte, Brazil, 3th December, 2013.

Leonardo de Moraes Soares BSc(Geologist), MAIG #5180.



Appendix B

QA/QC - São Jorge Gold Project



Duplicates São Jorge (All Data)



Pearson CC> 70% indicates a strong correlation of the results. However, it is observed (QQPlot) that although the results exhibit the same distribution they have

different averages.



(Standard: BK) Standard: Element: Units: BK Au g/t No of Analyses Minimum: 150 0.00 0.02 0.00 0.00 ppm 0.01 0.01 Maximum: Detection Limit: Expected Value (EV): E.V. Range: Mean: Std Deviation: 0.01 to 0.01 % in Tolerance % Bias % RSD 0.00 % -61.23 % 47.59 % Standard Control Plot (Standard: BK) 0.020 (1/ 0.015 1/ 0.010 ₹ 0.005 ٨ H 0.000 ITA11 000967 ITA11 001395 ITA10 000064 ITA10 0001 34 ITA10 000236 ITA10 0003 15 ITA11 000435 ITA11 000443 ITA11 0006 13 ITA11 000706 ITA11 0011 71 ITA11001300 ITA11 001337 ITA11 001364 Batch Au g/t Expected Value = 0.01 EV Range (0.01 to 0.01) Mean of Au g/t = 0.00 Cumulative Deviation from Assay Mean (Standard: BK) ITA10000064 ITA10000134 ITA10000236 ITA10000315 ITA11000435 ITA11000443 ITA11000613 ITA11000706 ITA11000967 ITA11001171 ITA11001300 ITA11001337 ITA11001364 ITA11001395 Batcl Au a/t Mean of Cumulative Sum of Au g/t - Mean (g/t) = 0.03 Cumulative Sum of Au g/t - Expected Value (g/h 90- - 70- - 70- - 70- - 0 **Cumulative Deviation from Expected Value** (Standard: BK) ITA 100000 64 ITA 100001 34 ITA 100002 36 ITA 100003 15 ITA 11 0004 35 ITA 110004 43 ITA 11 0006 13 ITA 110007 06 ITA 110009 67 ITA 110011 71 ITA 110013 00 ITA 110013 37 ITA 110013 64 ITA 110013 95 Batch Mean of Cumulative Sum of Au g/t - Expected Value (g/t) = -0.43 Au g/t

Printed: 17-mai-2012 13:59:18

Data Imported: 17-mai-2012 13:56:33

Blanck SJ





Standard OREAS 54pa_ SJ (Standard: SH)

Printed: 17-mai-2012 14:05:26 Data Imported: 17-mai-2012 14:03:06





Standard OREAS 17c SJ (Standard: SH)





Standard SM(OREAS 50c)_SJ (Standard: SM)



Printed: 17-mai-2012 14:18:59 Data Imported: 17-mai-2012 14:17:46




Standard SM(OXE86)_SJ (Standard: SM)

Printed: 17-mai-2012 15:26:34 Data Imported: 17-mai-2012 15:24:10

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Standard SL(OREAS 52c)_SJ (Standard: SL)



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Appendix C

Statistics and Variography











Target São Jorge	Strike Variogram
Ore: Sulfide+Oxide	major: 48,8636 -> 99 (20)
Variable: Au	· · · · ·
Variogram structuresModelSphericalStructureSillRangeNugget0.300710.39720.3742	
	Down Dip Variogram
Ellingo Oriontation	1000icrajor: 29.320 - 70.421 (28)
Bearing90Plunge-50Dip-80Maior/Semi-maior1.3Maior/Menor4.0	
Omni Variogram	Non Down Dip Variogram
anteres 1. 41 - marces - margan interes	Eli-informintegenities & Verspenities