



**ANNUAL INFORMATION FORM**

**of**

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**For the Year Ended December 31, 2018**

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## PRELIMINARY NOTES

### Date of Information

In this Annual Information Form (“AIF”), Ero Copper Corp., together with its subsidiaries, as the context requires, is referred to as “Ero”, “Ero Copper” or the “Company”. All information contained herein is presented as at December 31, 2018, unless otherwise stated.

### Currency

All dollar amounts in this AIF are expressed in Canadian dollars, except as otherwise indicated. References to “\$” or “dollars” are to Canadian dollars, references to “US\$” are to US dollars and references to “R\$” are to Brazilian Reais.

### Cautionary Note Regarding Forward Looking Information

This AIF contains “forward-looking information” within the meaning of applicable Canadian securities laws. Forward-looking information includes statements that use forward-looking terminology such as “may”, “could”, “would”, “will”, “should”, “intend”, “target”, “plan”, “expect”, “budget”, “estimate”, “forecast”, “schedule”, “anticipate”, “believe”, “continue”, “potential”, “view” or the negative or grammatical variation thereof or other variations thereof or comparable terminology. Such forward-looking information includes, without limitation, statements with respect to Mineral Reserve and Mineral Resource (as defined below) estimates; targeting additional Mineral Resources and expansion of deposits; the capital and operating cost estimates and the economic analyses (including cash flow projections) from the Vale do Curaçá Technical Report (as defined below), the NX Gold Technical Report (as defined below) and the Boa Esperança Technical Report (as defined below); the Company’s expectations, strategies and plans for the Vale do Curaçá Property (as defined below), the NX Gold Property (as defined below) and the Boa Esperança Property (as defined below), including the Company’s planned exploration, development and production activities; the results of future exploration and drilling, estimated completion dates for certain milestones; successfully adding or upgrading Mineral Resources and successfully developing new deposits; the costs and timing of future exploration and development; the timing and amount of future production at the Vale do Curaçá Property, the Boa Esperança Property and the NX Gold Property; the timing, receipt and maintenance of necessary approvals, licenses and permits from applicable governments, regulators or third parties; expectations regarding consumption, demand and future price of copper and gold; future financial or operating performance and condition of the Company and its business, operations and properties, including expectations regarding liquidity, capital structure, competitive position and payment of dividends; the possibility of entering judgments outside of Canada; expectations regarding future currency exchange rates; and any other statement that may predict, forecast, indicate or imply future plans, intentions, levels of activity, results, performance or achievements.

Forward-looking information is not a guarantee of future performance and is based upon a number of estimates and assumptions of management in light of management’s experience and perception of trends, current conditions and expected developments, as well as other factors that management believes to be relevant and reasonable in the circumstances, as of the date of this AIF including, without limitation, assumptions about: favourable equity and debt capital markets; the ability to raise any necessary additional capital on reasonable terms to advance the production, development and exploration of the Company’s properties and assets; future prices of copper, gold and other metal prices; the timing and results of exploration and drilling programs; the accuracy of any Mineral Reserve and Mineral Resource estimates; the geology of the Vale do Curaçá Property, the NX Gold Property and the Boa Esperança Property being as described in the Vale do Curaçá Technical Report, the NX Gold Technical Report and the Boa Esperança Technical Report, respectively; production costs; the accuracy of budgeted exploration and development costs and expenditures; the price of other commodities such as fuel; future currency exchange rates and interest rates; operating conditions being favourable such that the Company is able to operate in a safe, efficient and effective manner; political and regulatory stability; the receipt of governmental, regulatory and third party approvals, licenses and permits on favourable terms; obtaining required renewals for existing approvals, licenses and permits on favourable terms; requirements under applicable laws; sustained labour stability; stability in financial and capital goods markets; availability of equipment; positive relations with local groups and the Company’s ability to meet its obligations under its agreements with such groups; and satisfying the terms and conditions of the Company’s current loan arrangements. While the Company considers these assumptions to be reasonable, the assumptions are inherently subject to significant business, social, economic, political, regulatory, competitive and other risks and uncertainties, contingencies and other factors that could cause actual actions, events, conditions, results, performance or achievements to be materially different from those projected in the forward-looking information. Many assumptions are based on factors and events that are not within the control of the Company and there is no assurance they will prove to be correct.

Furthermore, such forward-looking information involves a variety of known and unknown risks, uncertainties and other factors which may cause the actual plans, intentions, activities, results, performance or achievements of the Company to be materially different from any future plans, intentions, activities, results, performance or achievements expressed or implied by such forward-looking information. Such risks include, without limitation:

- copper prices are volatile and may be lower than expected;
- mining operations are risky;
- mining operations require geologic, metallurgic, engineering, title, environmental, economic and financial assessments that may be materially incorrect and thus the Company may not produce as expected;
- geotechnical, hydrological and climatic events could suspend mining operations or increase costs;
- actual production, capital and operating costs may be different than those anticipated;
- currency fluctuations can result in unanticipated losses;
- the successful operation of the Vale do Curaçá Property and the NX Gold Property and the successful development and operation of the Boa Esperança Property depend on the skills of the Company's management and teams;
- operations during mining cycle peaks are more expensive;
- title to the Vale do Curaçá Property, the NX Gold Property and/or the Boa Esperança Property may be disputed;
- the Company may fail to comply with the law or may fail to obtain or renew necessary permits and licenses;
- compliance with environmental regulations can be costly;
- social and environmental activism can negatively impact exploration, development and mining activities;
- the construction and start-up of new mines is subject to a number of factors and the Company may not be able to successfully complete new construction projects;
- land reclamation and mine closure requirements may be burdensome and costly;
- the mining industry is intensely competitive;
- inadequate infrastructure may constrain mining operations;
- operating cash flow may be insufficient for future needs;
- fluctuations in the market prices and availability of commodities and equipment affect the Company's business;
- a failure to maintain satisfactory labour relations can adversely impact the Company;
- the Company's insurance coverage may be inadequate to cover potential losses;
- it may be difficult to enforce judgments and effect service of process on directors, officers and experts named herein;
- the directors and officers may have conflicts of interest with the Company;
- future acquisitions may require significant expenditures and may result in inadequate returns;
- failures of information systems or information security threats can be costly;
- the Company may be subject to costly legal proceedings;
- the Boa Esperança Property is located in an underdeveloped rural area;
- product alternatives may reduce demand for the Company's products;
- changes in climate conditions may affect the Company's operations;
- the Company is subject to restrictive covenants that limit its ability to operate its business;
- the Company's Brazilian operations are subject to political and other risks associated with operating in a foreign jurisdiction;
- the Company may be negatively impacted by changes to mining laws and regulations;
- corruption and fraud in Brazil relating to ownership of real property may adversely affect the Company's business;
- the Company is exposed to the possibility that applicable taxing authorities could take actions that result in increased tax or other costs that might reduce the Company's cash flow;
- inflation in Brazil, along with Brazilian governmental measures to combat inflation, may have a significant negative effect on the Brazilian economy and also on the Company's financial condition and results of operations;
- exchange rate instability may have a material adverse effect on the Brazilian economy;
- the Company's operations may be impaired as a result of restrictions to the acquisition or use of rural properties by foreigner investors or Brazilian companies under foreign control;
- recent disruptions in international and domestic capital markets may lead to reduced liquidity and credit availability for the Company;
- the Company may be responsible for corruption and anti-bribery law violations;
- investors may lose their entire investment;
- dilution from equity financing could negatively impact holders of the common shares of the Company (the "**Common Shares**");
- equity securities are subject to trading and volatility risks;
- sales by existing shareholders can reduce share prices;

- the Company does not intend to pay dividends;
- public companies are subject to securities class action litigation risk;
- if securities or industry analysts do not publish research or publish inaccurate or unfavourable research about the Company's business, the price and trading volume of the Common Shares could decline; and
- global financial conditions can reduce the price of the Common Shares.

Although the Company has attempted to identify important factors that could cause actual actions, events, conditions, results, performance or achievements to differ materially from those described in forward-looking information, there may be risks, uncertainties and other factors that cause actions, events, conditions, results, performance or achievements to differ from those anticipated, estimated or intended, including, without limitation, those referred to in this AIF under the heading "*Risk Factors*".

The Company cautions that the foregoing lists of important assumptions and factors are not exhaustive. Other events or circumstances could cause actual results to differ materially from those estimated or projected and expressed in, or implied by, the forward-looking information contained herein. There can be no assurance that forward-looking information will prove to be accurate, as actual results and future events could differ materially from those anticipated in such information. Accordingly, readers should not place undue reliance on forward-looking information.

Forward-looking information contained herein is made as of the date of this AIF and the Company disclaims any obligation to update or revise any forward-looking information, whether as a result of new information, future events or results or otherwise, except as and to the extent required by applicable securities laws.

### **Scientific and Technical Information**

Except as set out below, scientific and technical information contained in this Circular relating to the Vale do Curaçá property, which is located within the Curaçá Valley, northeastern Bahia State, Brazil, and consists of 85 mineral exploration rights currently held or under application to renew, six mining concessions and one mining concessions currently under application covering a total area of 125,095.8 ha (the "**Vale do Curaçá Property**"), is derived from, and in some instances is a direct extract from, and based on the assumptions, qualifications and procedures set out in, the report prepared in accordance with National Instrument 43-101, *Standards of Disclosure for Mineral Projects* ("**NI 43-101**") and entitled "2018 Updated Mineral Resources and Mineral Reserves Statements of Mineração Caraíba's Vale do Curaçá Mineral Assets, Curaçá Valley", dated October 17, 2018 with an effective date of August 1, 2018, prepared by Rubens Jose De Mendonça, MAusIMM, of Planminas – Projectos e Consultoria em Mineração Ltd. ("**Planminas**"), and Porfírio Cabaleiro Rodrigues, MAIG, Fábio Valério Câmara Xavier, MAIG, and Bernardo Horta de Cerqueira Viana, MAIG, all of GE21 Consultoria Mineral ("**GE21**") (the "**Vale do Curaçá Technical Report**"). Each of Rubens Jose De Mendonça, MAusIMM, Porfírio Cabaleiro Rodrigues, MAIG, Fábio Valério Câmara Xavier, MAIG, and Bernardo Horta de Cerqueira Viana, MAIG, reviewed and approved the scientific and technical information relating to the Vale do Curaçá Property contained in this AIF and is a "qualified person" and "independent" of the Company within the meanings of NI 43-101. In addition, information of a scientific or technical nature in respect of the Vale do Curaçá Property set out in the AIF under the heading "*Vale do Curaçá Property – Update Information with respect to the Vale do Curaçá Property*", has been reviewed and approved by Rubens Mendonça, MAusIMM, of Planminas who is a "qualified person" and "independent" of the Company within the meanings of NI 43-101.

Except as set out below, scientific and technical information contained in this Circular relating to the NX Gold Property, which is located approximately 18 km west of the town of Nova Xavantina, southeastern Mato Grosso State, Brazil, and consists of a single mining concession covering an area of 620 ha, where all gold mining and processing activities occur and eight exploration licenses covering an area of 31,096.15 ha (the "**NX Gold Property**" or the "**NX Gold Mine**"), is derived from, and in some instances is a direct extract from, and based on the assumptions, qualifications and procedures set out in, the report prepared in accordance with NI 43-101 and entitled "Mineral Resource and Mineral Reserve Estimate of the NX Gold Mine, Nova Xavantina", dated January 21, 2019 with an effective date of August 31, 2018, prepared by Porfírio Cabaleiro Rodrigues, MAIG, Leonardo Apparicio da Silva, MAIG, and Leonardo de Moraes Soares, MAIG, all of GE21 (the "**NX Gold Technical Report**"). Each of Porfírio Cabaleiro Rodrigues, MAIG, Leonardo Apparicio da Silva, MAIG, and Leonardo de Moraes Soares, MAIG, reviewed and approved the scientific and technical information relating to the NX Gold Property contained in this AIF and is a "qualified person" and "independent" of the Company within the meanings of NI 43-101. In addition, information of a scientific or technical nature in respect of the NX Gold Property set out in the AIF under the heading "*NX Gold Property – Update Information with respect to the NX Gold Property*", has been reviewed and approved by Porfírio Cabaleiro Rodrigues, MAIG, of GE21 who is a "qualified person" and "independent" of the Company within the meanings of NI 43-101.

Scientific and technical information contained in this AIF relating to the Boa Esperança property, which is located within southeastern Pará State, Brazil, and consists of a single mineral concession covering an area of approximately 4,034 ha (the

“**Boa Esperança Property**”), is derived from, and in some instances is a direct extract from, and based on the assumptions, qualifications and procedures set out in, the report prepared in accordance with NI 43-101 and entitled “Feasibility Study, Technical Report for the Boa Esperança Copper Project, Pará State Brazil”, dated September 7, 2017 with an effective date of June 1, 2017, prepared by Rubens Mendonça, MAusIMM of SRK Consultores do Brasil Ltda. (“**SRK**” or “**SRK Brazil**”) as at the date of the report (now of Planminas) and Carlos Barbosa, MAIG and Girogio di Tomi, MAusIMM, both of SRK Brazil (the “**Boa Esperança Technical Report**”). Each of Rubens Mendonça, MAusIMM, Carlos Barbosa, MAIG, and Girogio di Tomi, MAusIMM, reviewed and approved the scientific and technical information relating to the Boa Esperança Property contained in this AIF and is a “qualified person” and “independent” of the Company within the meanings of NI 43-101.

Reference should be made to the full text of the Vale do Curaçá Technical Report, the NX Gold Technical Report and the Boa Esperança Technical Report, each of which is available for review under the Company’s profile on SEDAR at [www.sedar.com](http://www.sedar.com).

## **CIM Definition Standards**

The Mineral Reserves and Mineral Resources for the Vale do Curaçá Property (including as used in the Vale do Curaçá Technical Report), the NX Gold Property (including as used in the NX Gold Technical Report) and the Boa Esperança Property (including as used in the Boa Esperança Technical Report) have been estimated in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum Definition Standards for Mineral Resources and Mineral Reserves adopted by the CIM Council on May 10, 2014 (the “**CIM Definition Standards**”), which are incorporated by reference in NI 43-101. The following definitions are reproduced from the CIM Definition Standards:

“**Feasibility Study**” means a comprehensive technical and economic study of the selected development option for a mineral project that includes appropriately detailed assessments of applicable Modifying Factors together with any other relevant operational factors and detailed financial analysis that are necessary to demonstrate, at the time of reporting, that extraction is reasonably justified (economically mineable). The results of the study may reasonably serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. The confidence level of the study will be higher than that of a Pre-Feasibility Study.

“**Indicated Mineral Resource**” means that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors as described below in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation. An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

“**Inferred Mineral Resource**” means that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

“**Measured Mineral Resource**” means that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation. A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proven Mineral Reserve or to a Probable Mineral Reserve.

“**Mineral Reserve**” means the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at pre-feasibility or feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified. The reference point at which Mineral Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported. The public disclosure of a Mineral Reserve must be demonstrated by a Pre-Feasibility Study or Feasibility Study.

“**Mineral Resource**” means a concentration or occurrence of solid material of economic interest in or on the Earth’s crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.

“**Pre-Feasibility Study**” means a comprehensive study of a range of options for the technical and economic viability of a mineral project that has advanced to a stage where a preferred mining method, in the case of underground mining, or the pit configuration, in the case of an open pit, is established and an effective method of mineral processing is determined. It includes a financial analysis based on reasonable assumptions on the Modifying Factors and the evaluation of any other relevant factors which are sufficient for a qualified person, acting reasonably, to determine if all or part of the Mineral Resource may be converted to a Mineral Reserve at the time of reporting. A Pre-Feasibility Study is at a lower confidence level than a Feasibility Study.

“**Probable Mineral Reserve**” means the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proven Mineral Reserve.

“**Proven Mineral Reserve**” means the economically mineable part of a Measured Mineral Resource. A Proven Mineral Reserve implies a high degree of confidence in the Modifying Factors.

For the purposes of the CIM Definition Standards, “**Modifying Factors**” are considerations used to convert Mineral Resources to Mineral Reserves. These include, but are not restricted to, mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors.

#### LIST OF ABBREVIATIONS

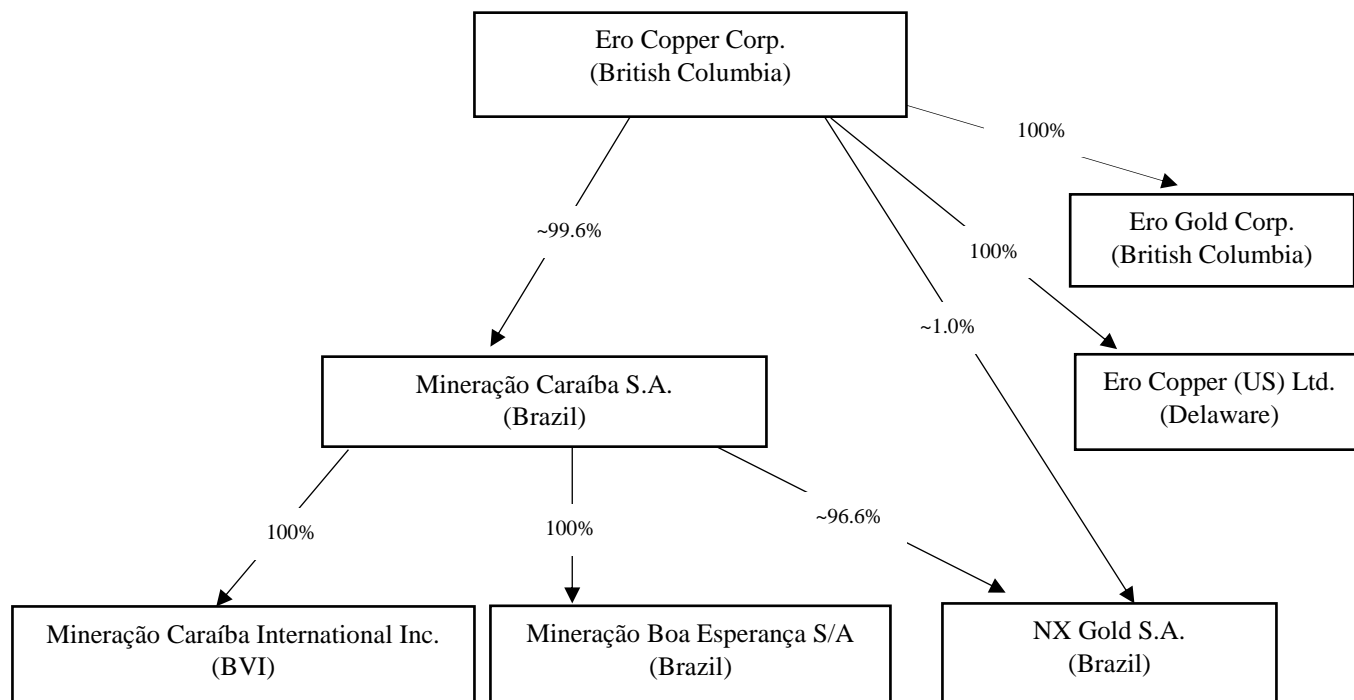
In this AIF, the following abbreviations have the meanings set forth below:

Cu	copper	Mt	megatonne
Ni	nickel	kt	kilotonne
Co	cobalt	t	metric tonne
Ag	silver	kg	kilogram
Au	gold	g	gram
Fe	iron	lb	pound
Mn	manganese	ml	millilitre
Zn	zinc	MW	megawatt
Cr	chromium	kW	kilowatt
Al	aluminium	MVA	megavolt amperes
Ca	calcium	kV	kilovolt
Mo	molybdenum	kWh	kilowatt hour
W	tungsten	Hz	hertz
Bi	bismuth	d	day
S	sulfur	h	hour
F	fluorine	s	second
Cl	chlorine	Ga	billion years
U	uranium	Ma	million years
As	arsenic	masl	metres above mean sea level
P	phosphorus	m <sup>3</sup>	cubic metre
Pb	lead	Mm <sup>3</sup>	cubic megametre
km	kilometre	mmWC	millimeter of water column
m	metre	Pa	pascal
cm	centimetre	mbar	atmospheric air pressure (bar)
mm	millimetre	°	degree
ft	foot	C	Celcius
ha	hectare	µm	micrometre
m <sup>3</sup>	cubic metre	oz	troy ounce
gpt or g/t	grams per tonne	g/t	grams per tonne
tph	Tonnes per hour		

## CORPORATE STRUCTURE

Ero Copper Corp. was incorporated under the *Business Corporations Act* (British Columbia) (“**BCABC**”) on May 16, 2016. Ero’s head office is located at Suite 1050, 625 Howe Street, Vancouver, British Columbia, Canada, V6C 2T6 and its registered office is located at Suite 2600, 595 Burrard Street, Vancouver, British Columbia, Canada, V7X 1L3.

The Company directly holds approximately 99.6% of the voting shares of Mineração Caraíba S.A. (“**MCSA**”) and directly and indirectly holds approximately 97.6% of the voting shares of NX Gold S.A. (“**NX Gold**”), each such company being formed under the laws of Brazil. The remaining voting shares of MCSA are held by a minority group of shareholders, including former employees of MCSA. The remaining voting shares of NX Gold are held by Tugalla B.V. (“**Tugalla**”), a company formed under the laws of The Netherlands, Branford RJ Participações S/A (“**Branford**”), a company formed under the laws of Brazil, and others, including former employees of NX Gold. The Company’s current organization chart is as follows:



## GENERAL DEVELOPMENT AND BUSINESS OF THE COMPANY

### General

Ero is a Vancouver-based mining company listed on the Toronto Stock Exchange (the “**TSX**”) under the ticker, “**ERO**” and is focused on the production, exploration and development of mining projects in Brazil.

Ero’s principal asset is its 99.6% ownership interest in MCSA. MCSA’s predominant activity is the production and sale of copper concentrate from the Vale do Curaçá Property, located within the Curaçá Valley, northeastern Bahia State, Brazil, with gold and silver produced and sold as by-products. For further details concerning the Vale do Curaçá Property, see “*Vale do Curaçá Property*”. In addition, MCSA holds a 100% interest in the Boa Esperança Property, a development project located within southeastern Pará State, Brazil. For further details concerning the Boa Esperança Property, see “*Boa Esperança Property*”.

Ero also currently owns, directly and indirectly (through MCSA), a 97.6% ownership interest in NX Gold. NX Gold’s predominant activity is the production and sale of gold from the NX Gold Property, located in Mato Grosso State, Brazil, with silver produced as a by-product. For further details concerning the NX Gold Property, see “*NX Gold Property*”.

The Vale do Curaçá Property, NX Gold Property and the Boa Esperança Property are the mineral projects material to Ero for the purposes of NI 43-101.



### Three Year History

Immediately prior to their acquisition by Ero, MCSA and NX Gold were engaged in court supervised judicial reorganization proceedings before the Lower Consumer and Corporate Court in Jaguarari, Bahia State, Brazil initiated on February 3, 2016 (the “**Judicial Reorganization**”). Aside from the Company, MCSA and NX Gold, the principal groups of parties to the Judicial Reorganization proceedings were tax creditors of MCSA, labour creditors of MCSA, suppliers of MCSA and certain other secured and unsecured creditors, including Itaú Unibanco S.A, Santander Bank, Banco ABC Brasil and Banco Votorantim (collectively, the “**Club Deal Banks**”) and other institutional lenders (the “**Other Institutional Lenders**”), namely Banco Fibra S.A., Banco Pine S.A., Banco Safra S.A., Banco do Nordeste do Brasil S.A. and Banco do Brasil. A series of events and circumstances led up to the Judicial Reorganization, beginning with the drop in London Metal Exchange benchmark copper prices in 2015 at a time when MCSA owed a considerable amount of debt to the above-mentioned groups of creditors. NX Gold was involved in such Judicial Reorganization proceedings on the basis of it being a guarantor of the debt owed by MCSA to the Club Deal Banks.

On December 12, 2016, the Company acquired a total of 60,678,219 common shares of MCSA, representing approximately 85% of the then total issued share capital of MCSA, for an aggregate purchase price of US\$3.00, pursuant to a share purchase agreement among Tugalla, Branford and the Company, and a share purchase agreement between Zinia Participações S/A (“**Zinia**”), a company formed under the laws of Brazil, and the Company (the “**MCSA Acquisition**”). In addition, on December 12, 2016, the Company acquired a total of 18,759,720 common shares of NX Gold, representing approximately 28% of the then total issued share capital of NX Gold, for an aggregate purchase price of US\$1.00, pursuant to a share purchase agreement between Zinia and the Company (the “**NX Acquisition**”, and together with the MCSA Acquisition, the “**Acquisitions**”). The cash consideration paid in connection with the Acquisitions was nominal and the Company agreed to assume all of the loans and borrowing and other obligations of MCSA and NX Gold in connection therewith.

In connection with the Acquisitions, the Company also entered into an investment agreement dated December 12, 2016, with Tugalla, Branford and, as intervening parties, Finges Investment B.V. and Aiolia Investments (the “**NX Gold Investment Agreement**”), pursuant to which the Company, through MCSA, later acquired an additional 69.56% interest in NX Gold by way of a capital increase transaction completed on August 18, 2017, further described below. In addition, so as to enable the Company to assume control of the management of NX Gold prior to its acquisition of an additional interest in NX Gold pursuant to the NX Gold Investment Agreement, Tugalla, Branford and the Company entered into a shareholders’ agreement dated December 12, 2016, with respect to NX Gold.

As part of the transactions related to the Acquisitions, the above-mentioned groups of creditors of MCSA, including the Club Deal Banks and Other Institutional Lenders provided no objection to the withdrawal of MCSA and NX Gold (as the guarantor of MCSA’s outstanding debt to the Club Deal Banks) from the Judicial Reorganization proceedings (which approval was ratified by the judge of the Lower Consumer and Corporate Court in Jaguarari, Bahia State, Brazil, on December 6, 2016). In exchange for the foregoing, Ero (through MCSA and NX Gold) agreed to pay, over a payment schedule, the full amounts due and outstanding to suppliers and labour creditors of MCSA and to pay the amounts under restructured loan agreements with the Club Deal Banks and the Other Institutional Lenders, as negotiated by the respective parties, which included grace periods with respect to principal repayments and interest, changes in the life of the loans, changes in the actual interest rates and the conditional reduction of the principal payable in the case of the loans with Club Deal Banks. Following withdrawal from Judicial Reorganization, NX Gold continues to guarantee the debt owed by MCSA to the Club Deal Banks. The restructured loan agreements with each of the Club Deal Banks and certain Other Institutional Lenders were subsequently replaced by the 2017 Credit Facility (as defined below) and the 2018 Credit Facilities (as defined below).

Neither Ero nor MCSA entered into agreements with tax creditors of MCSA at the time of withdrawal of MCSA and NX Gold from the Judicial Reorganization proceedings. Subsequent to such withdrawal from Judicial Reorganization proceedings, the Company and MCSA renegotiated a payment schedule for the outstanding taxes owed by MCSA to its tax creditors, pursuant to various amnesty programs available to all Brazilian companies.

In anticipation of the Acquisitions (including the related arrangements with the Club Deal Banks and the Other Institutional Lenders), the Company completed the following private placement offerings:

- a private placement offering of 10,000,000 units (the “**Founder Units**”) of the Company on September 2, 2016, at US\$0.01 per Founder Unit for aggregate gross proceeds of US\$100,000. Each one Founder Unit was comprised of one Common Share and one-third of a Common Share purchase warrant (the “**Founder Warrants**”), with each one Founder Warrant entitling the holder thereof to acquire one Common Share at a price of US\$1.20 until December 12, 2021, in accordance with the terms thereof and the Amended and Restated Warrant Indenture between the Company

and Computershare Trust Company of Canada, as warrant agent, originally entered into on September 2, 2016 and amended and restated on December 12, 2016 and on September 12, 2017 (the “**Warrant Indenture**”). As at the date of this AIF, a total of 3,166,662 Founder Warrants are issued and outstanding.

- a private placement offering of 18,400,000 subscription receipts of the Company (the “**Subscription Receipts**”) on September 8, 2016, at US\$1.00 per Subscription Receipt for aggregate gross proceeds of US\$18,400,000. Each one Subscription Receipt entitled the holder thereof to receive, upon conversion in accordance with its terms and the terms of the subscription receipt agreement dated September 8, 2016, between the Company and Computershare Trust Company of Canada, one unit comprised of one Common Share and one-third of a Common Share purchase warrant (the “**General Warrant**”), with each one General Warrant entitling the holder thereof to acquire one Common Share at a price of US\$1.20 until December 12, 2021, subject to certain acceleration rights of the Company and in accordance with the terms thereof and the Warrant Indenture. As at December 27, 2017, each of the 6,133,309 General Warrants had been exercised by the holders thereof.
- the private placement offering of 500,000 Common Shares and 8,949,089 units of the Company to Brasil Plural Special Situations Fundo de Investimento em Participações Multiestratégia Investimento no Exterior (“**Brasil Plural**”), Spectra II – Fundo de Investimento em Participações (“**Spectra II**”), Spectra III Fundo de Investimento em Participações Multiestratégia IE (“**Spectra III**”) on December 28, 2016, for aggregate gross proceeds of approximately US\$8,949,089. Each unit was comprised of one Common Share and one-third of a General Warrant. As at December 27, 2017, each of the 2,983,029 General Warrants had been exercised by the holders thereof.

Following the Acquisition, Ero contributed sufficient capital resources to enable MCSA to start-up and resume production of copper concentrate at the Vale do Curaca Property in February 2017.

On January 18, 2017, the Company completed a private placement offering of an aggregate principal amount of US\$2,750,000 unsecured convertible debentures bearing simple interest at an annual rate of 10%, payable on the maturity date of January 18, 2019 (the “**General Debentures**”). Pursuant to the subscription agreements between the Company and each subscriber of the General Debentures, the outstanding principal and accrued and unpaid interest on the General Debentures could be converted, subject to certain limitations and conditions, at the option of the holders thereof and until the maturity date of the General Debentures into units of the Company (the “**General Debenture Units**”) at a price of US\$0.75 per General Debenture Unit (subject to adjustment pursuant to the terms of the certificates representing the General Debentures). Each General Debenture Unit was comprised of one Common Share and one-quarter of a General Warrant. In January 2018, each holder of the General Debentures exercised their option to convert the outstanding principal and accrued and unpaid interest on their General Debentures into General Debenture Units and concurrently exercised their underlying General Warrants, such that an aggregate of 5,074,311 Common Shares were issued by the Company to the foregoing holders of General Debentures, of which, an aggregate of 1,014,861 Common Shares were issued upon exercise of the underlying General Warrants.

On June 14, 2017, the Company increased its ownership interest in MCSA to approximately 99.5% by purchasing shares issued from treasury for US\$34.3 million in connection with multiple capital call transactions. Thereafter, on December 14, 2017, the Company further increased its ownership in MCSA to approximately 99.6% by purchasing shares issued from treasury for US\$22.6 million.

On August 18, 2017, the Company, MCSA and NX Gold effected a capital increase transaction of NX Gold pursuant to the NX Gold Investment Agreement. Such capital increase transaction involved MCSA, through Tugalla’s and Branford’s subscription rights assigned to it under the NX Gold Investment Agreement, subscribing for R\$19.4 million of common shares of NX Gold in exchange for partial repayment and forgiveness of an intercompany loan provided to NX Gold by MCSA. As a result of such transaction, Ero’s direct interest in NX Gold was diluted to approximately 1% and its indirect interest in NX Gold, through MCSA, was increased to approximately 96.6%.

On October 19, 2017, the Company completed an initial public offering and secondary offering (together, the “**Offering**”) of an aggregate of 23,282,116 Common Shares at a price of \$4.75 per Common Share for total gross proceeds of \$110,591,051, with Ero and the Selling Shareholders (as defined below) receiving gross proceeds of \$47,500,000 and \$63,090,051, respectively. The Common Shares commenced trading on the TSX on October 19, 2017 under the symbol “**ERO**”. Pursuant to the Offering, Ero issued 10,000,000 Common Shares from treasury. In addition, 13,282,116 Common Shares were sold pursuant to a secondary offering by Brasil Plural, Spectra II, Spectra III, Ross Beaty, Taylor International Fund Ltd., Heritage Investments Trust, Randal Cowell, 1045373 BC Ltd., 1040350 BC Ltd., and Geoff Burns (collectively, the “**Selling Securityholders**”). The Offering was managed by a syndicate of underwriters, including BMO Capital Markets and Scotiabank as lead joint bookrunners and Canaccord Genuity Corp., GMP Securities L.P., Numis Securities Limited, PI Financial Corp.

and Raymond James Ltd. (collectively, the “**Underwriters**”) pursuant to the underwriting agreement dated October 11, 2017 among the Company, the Underwriters and the Selling Securityholders (the “**Underwriting Agreement**”). Subsequent to the Offering, and pursuant to the Underwriting Agreement, the Underwriters purchased an additional 3,492,317 Common Shares on November 1, 2017, pursuant to their exercise in full of the over-allotment option granted by Ero, for additional aggregate gross proceeds of \$16,588,505.75.

On December 21, 2017, the Company replaced US\$75.6 million in senior secured notes of MCSA held by Itau Unibanco S.A. and Banco Votorantim, two of the Club Deals Banks, with a new US\$50 million senior secured non-revolving credit facility (the “**2017 Credit Facility**”) with The Bank of Nova Scotia (“**Scotiabank**”) pursuant to the credit agreement dated December 21, 2017 among the Company and Scotiabank and the participation agreement dated December 21, 2017 between the Company and Scotiabank.

In October 2018, the Company announced the issuance of the operating license for the newly constructed Vermelhos Mine at the Vale do Curaçá Property, which allowed the Company to commence full production at the Vermelhos Mine.

On December 17, 2018, the Company replaced the 2017 Credit Facility and approximately US\$69 million in senior secured notes of MCSA held by Santander Bank and Banco ABC Brasil, the remaining two Club Deal Banks, and Banco Fibra S.A. and Banco Pine S.A., two of the Other Institutional Lenders, with a new US\$130 million debt financing with Scotiabank and Bank of Montreal, pursuant to the credit agreement dated as of December 13, 2018 among the Company, as borrower, Scotia, as administrative agent, joint lead arranger and sole bookrunner, Bank of Montreal as joint lead arranger and syndication agent, and Scotia and Bank of Montreal, as lenders (the “**Credit Agreement**”) and comprised of a US\$80 million senior secured amortizing non-revolving credit facility (the “**Term Facility**”) and a US\$50 million senior secured revolving term credit facility (the “**Revolving Credit Facility**”) (collectively the “**2018 Credit Facilities**”). The Term Facility features a five-year term with principal payments beginning two years after closing and with equal quarterly installments thereafter, while the Revolving Credit Facility is payable in a bullet at maturity, four years from closing. The Facilities will bear interest on a sliding scale at a rate of LIBOR plus 2.75% to 4.75% depending on the Company’s consolidated leverage ratio at the time. Commitment fees for the undrawn portion of the Revolving Credit Facility will also be on a sliding scale between 0.69% to 1.19%.

## **Business of the Company**

### ***Principal Products and Operations***

The Company’s principal product is copper produced and sold from the Vale do Curaçá Property, with gold and silver produced and sold as by-products from the Vale do Curaçá Property. Gold and, as a by-product, silver is also produced and sold from the NX Gold Property. During the financial year ended December 31, 2018, the operations of the Vale do Curaçá Property processed 2,257,917 tonnes of material, producing 30,426 tonnes of copper and the operations of the NX Gold Property processed 117,857 tonnes of material, producing 39,808 ounces of gold. The following tables summarize the Company’s production for the financial years ended December 31, 2018 and 2017 from the Vale do Curaçá Property and the NX Gold Property:

	<b>Year Ended December 31, 2018</b>	<b>Year Ended December 31, 2017</b>
<b>Operating Information</b>		
<b>Copper (Vale do Curaçá Property)</b>		
Ore Processed (tonnes)	2,257,917	1,771,209
Grade (% Cu)	1.56%	1.31%
Cu Production (tonnes)	30,426	20,133
Cu Production (lbs)	67,076,849	44,384,986
Concentrate Grade (% Cu)	34.5%	35.2%
Recovery (%)	86.3%	86.8%
Concentrate Sales (tonnes)	87,307	56,341
Cu Sold in Concentrate (tonnes)	30,107	19,719

	Year Ended December 31, 2018	Year Ended December 31, 2017
<b>Operating Information</b>		
<b>Gold (NX Gold Property)</b>		
Ore milled (tonnes)	117,857	135,013
Head grade (grams per tonne Au)	11.55	6.59
Recovery (%)	91.0%	88.4%
Gold ounces produced (oz)	39,808	25,287
Gold Sales (tonnes)	39,808	26,441

During the year ended December 31, 2018, the Company generated net operating revenue of US\$233.1 million (based on the average annual exchange rate for Brazilian Real into US dollars of R\$1.00 = US\$0.2754). The following table summarizes the gross revenue of the Company for the financial year ended December 31, 2018 and 2017. Tabular amounts are in thousands of US dollars:

	Year Ended December 31, 2018 <sup>(1)</sup> (US\$000s)	Year Ended December 31, 2017 <sup>(2)</sup> (US\$000s)
<b>Gross Revenues:</b>		
Copper concentrate	197,448	130,199
Gold	49,077	33,208
	246,525	163,407
Less: Tax on Sales	(13,420)	(15,166)
<b>Net Operating Revenue</b>	<b>233,105</b>	<b>148,241</b>

**Notes:**

<sup>(1)</sup> Based on the average annual exchange rate for Brazilian Real to US dollars for 2018 of R\$1.00 = US\$0.2754.

<sup>(2)</sup> Based on the average annual exchange rate for Brazilian Real to US dollars for 2017 of R\$1.00 = US\$0.3217.

There are global copper and gold markets into which the Company can sell its copper concentrate and gold and, as a result, the Company is not dependent on a particular purchaser with regard to the sale of the copper concentrate and gold that it produces.

MCSA currently sells all of its final copper concentrate to the Paranapanema Company and IXM S.A. The Paranapanema Company smelts this copper concentrate for sale at its smelter located in Dias D'Ávila, Bahia State, Brazil. IXM S.A. ships the final copper concentrate purchased from MCSA for sale to international markets via the Barra dos Coqueiros port located in Barra dos Coqueiros, Sergipe State, Brazil. All concentrate is transported to buyers by road using standard highway trucks, which are weighed and sampled for final assay prior to shipping.

NX Gold currently sells all of its dore bars containing gold and silver to OMEX Comércio e Exportação de Metais Preciosos S.A., which takes delivery of dore bars at the NX Gold Property by airplane via a gravel airstrip located on the property.

**Competitive Conditions**

The Company's primary business is to produce and sell copper. The Company also produces and sells gold. Prices are determined by world markets over which the Company has no influence or control. Ero's competitive position is primarily determined by its costs compared to other producers throughout the world and its ability to maintain its financial integrity through metal price cycles. Costs are governed to a large extent by the grade, nature and location of the Company's Mineral Reserves as well as by input costs and the level of operating and management skill employed in the production process.

The mining industry is competitive, particularly in the acquisition of additional Mineral Reserves and Mineral Resources in all phases of operation, and the Company competes with many companies possessing similar or greater financial and technical resources. The Company also competes with other mining companies and other third parties over sourcing raw materials, equipment and supplies in connection with its production, development and exploration operations, as well as for skilled and experienced personnel and transportation capacity.

### *Specialized Skills and Knowledge*

The nature of the Company's business requires specialized skills, knowledge and technical expertise in the areas of geology, engineering, mine planning, mine operations, metallurgical processing, and environmental compliance. In addition to the specialized skills listed above, the Company also relies on staff members, contractors and consultants with specialized knowledge of logistics and operations in Brazil and local community relations. In order to attract and retain personnel with the specialized skills and knowledge required for the Company's operations, the Company maintains competitive remuneration and compensation packages. To date, the Company has been able to meet its staffing requirements.

### *Business Cycles*

The mining business is subject to global economic cycles which affect the marketability of products derived from mining.

### *Employees*

As at December 31, 2018, Ero and its subsidiaries employed a total of 1,935 employees (consisting of 11 employees of Ero, 1,656 employees of MCSA, 261 employees of NX Gold, 4 employees of Mineração Boa Esperança S/A and 3 employees of Ero Copper (US) Ltd.) and 1,418 contractors (consisting of 7 contractor of the Company, 1,197 contractors of MCSA and 214 contractors of NX Gold).

### *Foreign Operations*

Ero's material properties are the Vale do Curaçá Property, the NX Gold Property and the Boa Esperança Property, each located in Brazil. Foreign operations accounted for approximately 100% of the Company's revenue and represented approximately 97.1% of its assets as at December 31, 2018. Accordingly, the Company is entirely dependent on its foreign operations for the exploration and development of its properties and for production of copper and gold. Any changes in regulations or shifts in political attitudes in any of these jurisdictions, or other jurisdictions in which Ero has projects from time to time, are beyond the control of the Company and may adversely affect its business. Future development and operations may be affected in varying degrees by such factors as government regulations (or changes thereto) with respect to the restrictions on production, export controls, income taxes, expropriation of property, repatriation of profits, environmental legislation, land use, water use, land claims of local people, mine safety and receipt of necessary permits. The effect of these factors cannot be accurately predicted. See below under "*Risks Factors*".

The risks of the corporate structure of the Company and its subsidiaries are risks that are typical and inherent for companies that have material assets and property interests held indirectly through foreign subsidiaries and located in foreign jurisdictions. The Company's business and operations in Brazil are exposed to various levels of political, economic and other risks and uncertainties associated with operating in a foreign jurisdiction such as a difference in laws, business cultures and practices, banking systems and internal control over financial reporting. See below under "*Risk Factors*".

The Company has implemented a system of corporate governance, internal controls over financial reporting and disclosure controls and procedures that apply at all levels of the Company and its subsidiaries. These systems are overseen by the board of directors of the Company (the "**Board**") and implemented by the Company's senior management. The relevant features of these systems are set out below

### *Control over and Communication with Foreign Subsidiaries*

The Company controls its foreign subsidiaries by virtue of corporate oversight and by its ownership interest in such entities (see above under "*Corporate Structure*"). The Company's management has the (i) power to appoint and dismiss, at any time, any and all of the foreign subsidiaries' officers and directors, (ii) power to instruct the foreign subsidiaries' officers to pursue business activities in accordance with the Company's wishes, and (iii) legal right, as a shareholder, to require the officers of each such foreign subsidiary to comply with their fiduciary obligations. As a result, the management of the Company can effectively align its business objectives with those of the foreign subsidiaries and implement such objectives at the subsidiary level.

The Company maintains open communication with each of its operations in Brazil through several senior officers who are proficient in Brazilian Portuguese. In addition, all management team members in Brazil are fluent in Brazilian Portuguese and fluent (or proficient) in English. The primary language used in management and Board meetings is English and material documents relating to the Company and its operations that are provided to the Board are in English. If necessary, management

of the Company and the Board have access to independent translators to overcome any language differences. The Company does not currently have a formal communication plan or policy in place and has not to date, experienced any communication-related issues.

### Board and Management Expertise

A majority of the Company's directors and senior officers have experience in Brazil, being the jurisdiction in which the Company operates. In addition, the Board, through its corporate governance practices, regularly receives management and technical updates and progress reports in connection with the foreign subsidiaries, and in so doing, maintains effective oversight of their business and operations. Further, the Company's directors and senior officers visit the Company's operations in Brazil on a regular basis in order to ensure effective control and management of the Company's foreign operations. During these visits they come into contact with local employees, business persons and, in the case of senior officers, government officials; such interactions enhance the visiting directors' and officers' knowledge of local culture and business practices. To date, each of the Company's directors has visited the Vale do Curaçá Property at least one time in each calendar year and are scheduled to visit the Vale do Curaçá Property and the NX Gold Property during the first half of 2019. Certain senior officers visit the Company's operations quarterly, or more frequently if circumstances require, on a rotating basis.

### Internal Control Over Financial Reporting and Funds

The Company maintains internal control over financial reporting with respect to its operations in Brazil by taking various measures. Several of the Company's senior officers have the relevant language proficiency (Brazilian Portuguese) and each senior officer has local cultural understanding and relevant work experience in Brazil which facilitates better understanding and oversight of the Company's operations in the context of internal controls over financial reporting.

Pursuant to the requirements of National Instrument 52-109, *Certification of Disclosure in Issuers' Annual and Interim Filings*, the Company assesses the design of its internal controls over financial reporting on an annual basis. Furthermore, key controls for the accounts in scope are tested across the Company on an annual basis and the working papers of these tests performed at all the locations are reviewed at the head office level. Please refer to the Company's audited consolidated financial statements for the year ended December 31, 2018, a copy of which is available for review under the Company's profile on SEDAR at [www.sedar.com](http://www.sedar.com).

Differences in banking systems and controls between Canada and Brazil are addressed by having stringent controls over cash; especially over access to cash, cash disbursements, appropriate authorization levels, performing and reviewing bank reconciliations and the segregation of duties.

The Company ensures the flow of funds between Canada and Brazil functions as intended by:

- appointing common officers of the Company and MCSA/NX Gold;
- involving the Company's Chief Financial Officer, located in Vancouver, in hiring key finance personnel in Brazil; and
- closely monitoring the finance departments in Brazil, and by regular personal visits by the Chief Financial Officer, the Vice President, Finance and other key executives to Brazil.

### Records

All of the minute books and corporate records and documents of the foreign subsidiaries are filed at the relevant entity's headquarters, and with the relevant governmental or regulatory body in Brazil. The custodians of such documents report directly to the Company's head office and senior management team to ensure continued oversight.

### Environmental Protection

The Company's exploration, development and mining activities are subject to various levels of federal, state and local laws and regulations relating to the protection of the environment, including requirements for closure and reclamation of mining properties. Specific statutory and regulatory requirements and standards must be met throughout the exploration, development and mining stage of a property with regard to air quality, water quality, fisheries, wildlife and forestry management and protection, solid and hazardous waste management and disposal, noise, land use and reclamation. Details and qualification of the Company's mine closure and restoration obligations are set out in Note 11 of the Company's audited consolidated financial

statements for the year ended December 31, 2018, a copy of which is available for review under the Company's profile on SEDAR at [www.sedar.com](http://www.sedar.com).

The financial and operating effect of environmental protection requirements on the capital expenditures and earnings of each mineral property are not significantly different than those of similar sized mines and therefore do not and will not impact the Company's competitive position in the current or future financial years.

### ***Social and Environmental Policies***

The Company places great emphasis on providing a safe and secure working environment for all of its employees, contractors and consultants, and recognizes the importance of operating in a sustainable manner. The Board has adopted a Code of Business Conduct and Ethics of the Company (the "**Code**"), which sets out the standards which guide the conduct of the Company's business and the behavior of its directors, officers, employees and consultants. All new employees must read, and acknowledge that they will abide by, the Code when hired. The Code, among other things, sets out standards in areas relating to the Company's commitment to health and safety in its business operations and the identification, elimination or control of workplace hazards; promotion and provision of a work environment in which individuals are treated with respect, provided with equal opportunity and is free of all forms of discrimination and abusive and harassing conduct; and ethical business conduct and legal compliance.

The Board has also adopted a Whistleblowing Policy for individuals to report complaints and concerns regarding, among other things, accounting, internal accounting controls and auditing matters. As well, the Company has an Anti-Corruption Policy which requires that directors, officers, employees and consultants of the Company conduct business in a manner that does not contravene local and international anti-bribery and anti-corruption laws that apply to the Company, including the *Criminal Code* (Canada) and *Corruption of Foreign Public Officials Act* (Canada). The Lead Director and the Audit Committee of the Company (the "**Audit Committee**"), or a designated member thereof, are responsible for monitoring compliance with these policies and investigating any reported violations, although employees may approach the Company's external legal counsel if preferred for concerns under the Anti-Corruption Policy.

The Board has also established an Environmental, Health, Safety and Sustainability Committee to assist it in fulfilling its oversight responsibilities in respect of development, implementation and monitoring of the Company's health, safety, environment and sustainability policies. In particular, the Environmental, Health, Safety and Sustainability Committee is responsible for, among other things: developing policies and maintaining standards of performance that meet or exceed legal and regulatory requirements and industry standards in the areas of health, safety, and environmental stewardship; identifying risks related to the environment, health and safety and recommending the adoption of appropriate programs and procedures to reduce such risks; and requiring management to take steps to ensure that employees receive necessary training to meet health, safety and environmental standards.

## **VALE DO CURAÇÁ PROPERTY**

The scientific and technical information in this section relating to the Vale do Curaçá Property, other than the scientific and technical information under the heading "*Vale do Curaçá Property – Updated Information with respect to the Vale do Curaçá Property*", is a direct extract of the Executive Summary section contained in the Vale do Curaçá Technical Report, which has been conformed to be consistent with the formatting and other defined terms within this AIF. The entire Vale do Curaçá Technical Report, a copy of which is available for review under the Company's profile on SEDAR at [www.sedar.com](http://www.sedar.com), is incorporated by reference into this AIF and should be consulted for details beyond those incorporated herein.

The scientific or technical information set out in this AIF under the heading "*Vale do Curaçá Property - Updated Information with respect to the Vale do Curaçá Property*", has been reviewed and approved by Rubens Mendonça, MAusIMM, of Planminas who is a "qualified person" and "independent" of the Company within the meanings of NI 43-101 and an author of the Vale do Curaçá Technical Report.

### **Executive Summary**

Ero Copper is a Vancouver-based copper mining company whose primary asset is a 99.6% interest in MCSA, a Brazilian mining company operating in the Curaçá Valley, northeastern Bahia State, Brazil. The regional MCSA operations include fully integrated processing operations and three active producing mining locations within the Curaçá Valley. The active operations include the Caraíba Mine (comprised of the underground Pilar Mine ("**Pilar UG Mine**"), integrated Caraíba Mill and the inactive solvent extraction electrowinning plant ("**SX/EW Plant**")), the open pit Surubim Mine ("**Surubim OP Mine**") and

the underground Vermelhos Mine (“**Vermelhos UG Mine**”). The past producing operations include the historic open pit mines of R22 (“**R22 Mine**”), Angicos (“**Angicos Mine**”), and Suçuarana (“**Suçuarana Mine**”). Collectively the active and past-producing mines comprise the “MCSA Mining Complex”. Additionally, future operations are forecast to occur later in the production plan at Vermelhos West open pit (“**Vermelhos West OP**”), Surubim underground (“**Surubim UG**”) and the R22W open pit mine (“**R22W OP**”). The Caraíba and R22 Mines are located approximately 385 kilometers north-northwest of Salvador and 90 km southeast of Petrolina, in the State of Bahia, Brazil. The Suçuarana Mine is located 16 km south of the Caraíba Mine. The Surubim OP Mine is located approximately 33km north of the Caraíba Mine, while the Vermelhos UG Mine is located another 31km north-northwest of the Surubim OP Mine. The past producing Angicos Mine is located 10km north north-east of the Surubim OP Mine. Vermelhos West OP is located approximately 1.1km north-northeast of the Vermelhos UG Mine and the Surubim UG Mine is located directly beneath the current planned pit limits of the Surubim OP Mine (together the Surubim OP and Surubim UG Mine constitute the “**Surubim Mine**”). In aggregate, mining and development activities occur over approximately 100km in strike length across the Curaçá Valley.

The MCSA Mining Complex has an extensive operating history in the region. Open pit and processing operations started in 1979, while underground mining operations commenced in 1986. MCSA owns a 100% interest in the MCSA Mining Complex including the abovementioned mines, integrated processing facilities and all supporting infrastructure. The Caraíba Mine currently produces a nominal 3,000 tonnes per day (“**t/d**”) from underground operations that, combined with the nominal 3,000 to 5,000 t/d from satellite mining operations within the MCSA Mining Complex, serves as feed for the Caraíba Mill. The Caraíba Mill is currently producing high quality, low impurity copper concentrate grading 35% copper. The concentrate typically contains minor amounts of precious metals. Historical average grades of precious metals in concentrate are approximately 2 grams per tonne (“**g/t**”) gold and 43 g/t silver in concentrate.

The purpose of the Vale do Curaçá Technical Report is to set out and to provide background and supporting information on the Mineral Resources and Mineral Reserves for the MCSA Mining Complex. The Vale do Curaçá Technical Report was prepared by Planminas with contributions from GE21, and the MCSA technical team. The Vale do Curaçá Technical Report and estimates herein have been prepared following the guidelines of NI 43-101 and Form 43-101F1 – Technical Report.

## **1.1 Property Description and Ownership**

The MCSA Mining Complex is located in northeastern Bahia State, Brazil, about 385 km north-northwest of the capital city of Salvador. The center of the MCSA Mining Complex is located at 9° 52’ South, 39° 52’ West. As of the Effective Date, MCSA and its wholly owned subsidiaries hold or have applications in process for a north-trending set of 85 mineral exploration rights, 6 mining concessions and an additional 1 mining concession currently under application. The property, including mining and permits under application covers a total area of 129,361.7 ha. The exploration rights held or with applications in process cover an area of 125,095.8 ha and consist of areas up for renewal under normal course of business. MCSA holds 100% legal and beneficial ownership of exploration rights for a period varying up to three years with three-year extensions provided annual reporting requirements are performed on the property. Within the exploration rights, MCSA’s interests include the right to access the property, to engage in exploration, development, processing, and construction activities in support of mineral exploration and development. Where applicable, compensation is provided to the holder of surface rights for occupation or loss caused by the work.

Mining and development activities are contained within six mining concessions covering 3,299.61 ha including the Vermelhos UG Mine, currently ramping up to full production. In addition, MCSA has one application for mining covering 966.27 ha. Within the mining concessions, MCSA holds 100% legal and beneficial ownership. There are no time constraints provisioned with the mining concessions; however, operating permits and licenses are extended and renewed in normal course of business according to the nature of each permit and requirements therein.

Infrastructure maps of the MCSA Mining Complex and the broader Curaçá Valley are shown in Appendix D of the Vale do Curaçá Technical Report.

## **1.2 Geology and Mineralization**

The Curaçá Valley’s mafic-ultramafic complex is located within the Curaçá high-grade metamorphic gneissic terrain - part of the Salvador-Curaçá orogen, a northern extension of the Atlantic Coast Granulite Belt in the São Francisco Craton. The mining and development projects located within the MCSA Mining Complex lie within a Trans-Amazonian age belt bordered on the west by volcano-sedimentary rocks of the Jacobina Group and on the east by the Itiúba intrusive syenite rocks.



Known copper deposits are hosted within the Rio Curaçá and Tanque Novo sequences, differentiated by metamorphic facies. The two sequences are located across the base of the MCSA Mining Complex and include the mafic-ultramafic rocks as well as granite, granodiorite and syenite. Pyroxenite has been described within the mafic-ultramafic lenses at the Caraíba Mine, R22W Mine, Angicos Mine, Suçarana Mine, Surubim OP Mine and the Vermelhos UG Mine.

The Cu-rich deposits are hosted by irregular-shaped intrusive bodies of pyroxenite (hypersthene) and minor gabbro-norite that have been intruded into granulite facies gneiss and migmatite at the northern margin of the São Francisco Craton. The intrusions have been interpreted as either deformed sill-like bodies or irregular shaped intrusions into an anastomosing ductile shear zone.

### **1.3 Exploration Status**

Once open pit operations began in 1979, limited exploration work was performed regionally outside of the main Caraíba Mine area. Where it did occur, such exploration work focused primarily on annual replacement of mined reserves. The Caraíba Mine was privatized in 1994 and further exploration work was limited until the formation of the Codelco Joint Venture, formed in 2004 (the “**Codelco JV**”) which existed until 2008. Under the Codelco JV, work was conducted on several prospects outside of the Caraíba Mine area including an airborne Versatile Time Domain Electromagnetic survey over the Vermelhos District. Ground Moving-loop Electromagnetic and Bore-hole Electromagnetic test surveys were also conducted.

Near-surface copper mineralization in the Curaçá Valley has historically been well-defined by geochemical sampling methods. Mineralized mafic-ultramafic intrusions show anomalous copper, nickel, cobalt and silver. Several soil geochemical surveys have been conducted regionally throughout the Curaçá Valley. Recent leveling efforts undertaken by Ero Copper to normalize multiple surveys into a central database have been successful and have defined areas of near-surface exploration potential.

Historic regional exploration activities also included geophysical surveys performed locally on specific targets. These include ground magnetic, gravity and induced polarization (“**IP**”) surveys. Regional airborne geophysical surveys consist of a magnetic and radiometric survey flown by the Brazil National Department of Mineral Production (“**DNPM**”). Based on known deposits, mineralized mafic-ultramafic intrusions respond well to gravity, IP and EM surveys.

Since the acquisition of MCSA in late 2016, Ero Copper has worked with MCSA to compile, organize, validate, analyze and interpret the various historical data sets. A list of prioritized exploration targets using district-wide dataset compilation and validation has been created for the first time for the MCSA exploration permits throughout the Curaçá Valley. Priority targets occur in three main areas or “Districts”: the Pilar District, the Vermelhos District and the Surubim District.

In 2018, Ero Copper advanced an aggressive exploration program with an originally planned ~86,000 m of drilling with the objective of upgrading and increasing Mineral Resources and Reserves and starting to test new targets in the belt. In addition, Ero Copper continued development and production from the Pilar underground mine, Surubim open pit mine, and commenced production from the Vermelhos UG Mine.

By the end of the second quarter of 2018, a total of 17 drill rigs were operational in the Curaçá Valley: ten in the Pilar District (seven underground and three on surface); two in the Surubim District and five at the Vermelhos District. A total of ~80,400 meters were executed as of July 1, 2018. Moreover, Ero Copper commissioned and completed a ~24,000 line-km airborne electromagnetic and gravity geophysical survey focused on high-grade brownfield discoveries throughout the Curaçá Valley.

### **1.4 Development and Operations**

Mining operations within the Curaçá Valley are currently comprised of three primary operations: the Pilar UG Mine, the Surubim OP Mine and the Vermelhos UG Mine (currently undergoing test mining and processing). Production from these three mines currently serves as feed for the Caraíba Mill. Ongoing development and exploration activities include: the continued advancement of the primary ramp and associated infrastructure of the Pilar and Vermelhos UG Mines in support of mine life extensions as well as associated plant and site refurbishments undertaken in the normal-course of business. Exploration activities throughout the Curaçá Valley are focused on near-mine extensions, near-mine discoveries and new regional brownfield discoveries.

In support of the current Mineral Resources and Mineral Reserves estimate, a total of 505,830 m of diamond core drilling, 10,793 m of reverse circulation and 24,099 m of roto-percussive drilling had been performed through the end of May, 2018.

## 1.5 Mineral Resources and Mineral Reserves Estimates

Block model tonnage and grade estimates for the MCSA Mining Complex were classified and prepared in accordance with CIM Definition Standards, adopted by the CIM Council on May 10, 2014, and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines, adopted by CIM Council on November 23, 2003 (the “**CIM Guidelines**”) by Sr. Porfirio Cabaleiro Rodriguez with contributions by Fabio Valerio Xavier and Bernardo Viana, all of GE21. All are independent Qualified Persons as such term is defined under NI 43-101.

Mineral Reserves were classified according to the CIM Definition Standards and the CIM Guidelines by Planminas, an independent Qualified Person as such term is defined under NI 43-101.

### Mineral Resource

Cut-off grades of 0.68% copper were used for underground Mineral Resources and 0.18% for open pit Mineral Resources. Mineral Resources were estimated using ordinary kriging within 5m by 5m by 5m block sizes. Mineral Resources are shown inclusive of Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. Effective date of July 1, 2018 for the Pilar UG and Surubim Mines, and May 31, 2018 for the Vermelhos UG Mine, Vermelhos West OP and R22W OP estimates.

**Table 1-1: Mineral Resources**

<b>Mineral Resources</b>	<b>Category</b>	<b>Tonnage (000 tonnes)</b>	<b>Grade (Cu %)</b>	<b>Contained Cu (000 tonnes)</b>
<b>Pilar UG Mine</b>	Measured	15,595	1.92	300.2
	Indicated	9,254	1.85	171.5
	<b>Measured &amp; Indicated</b>	<b>24,849</b>	<b>1.90</b>	<b>471.6</b>
	Inferred	1,761	2.07	36.4
<b>Vermelhos UG Mine</b>	Measured	3,039	4.12	125.1
	Indicated	1,523	1.97	30.1
	<b>Measured &amp; Indicated</b>	<b>4,562</b>	<b>3.40</b>	<b>155.2</b>
	Inferred	1,995	1.19	23.6
<b>Vermelhos West OP</b>	Measured	5,502	0.60	33.0
	Indicated	2,645	0.60	15.9
	<b>Measured &amp; Indicated</b>	<b>8,147</b>	<b>0.60</b>	<b>48.9</b>
	Inferred	2,490	0.83	20.7
<b>Surubim Mine</b>	Measured	4,064	1.03	41.9
	Indicated	497	1.03	5.1
	<b>Measured &amp; Indicated</b>	<b>4,561</b>	<b>1.03</b>	<b>47.0</b>
	Inferred	83	0.85	0.7
<b>R22W OP</b>	Measured	306	0.54	1.7
	Indicated	2	0.79	0.0
	<b>Measured &amp; Indicated</b>	<b>308</b>	<b>0.54</b>	<b>1.7</b>
	Inferred	-	-	-
<b>Total Resources</b>	Measured	<b>28,506</b>	<b>1.76</b>	<b>501.8</b>
	Indicated	<b>13,921</b>	<b>1.60</b>	<b>222.6</b>
	<b>Measured &amp; Indicated</b>	<b>42,428</b>	<b>1.71</b>	<b>724.4</b>
	Inferred	<b>6,328</b>	<b>1.29</b>	<b>81.4</b>

1. Mineral Resource effective date of July 1, 2018 for the Pilar UG and Surubim Mines, and May 31, 2018 for the Vermelhos UG Mine, Vermelhos West OP and R22W OP.
2. Presented Mineral Resources inclusive of Mineral Reserves. All figures have been rounded to the relative accuracy of the estimates. Summed amounts may not add due to rounding.

3. Mineral Resource copper cut-off grades of 0.68% copper for underground Mineral Resources and 0.18% for open pit Mineral Resources. Mineral Resources have been estimated using ordinary kriging inside 5m by 5m by 5m block sizes. The Mineral Resource estimates were prepared in accordance with CIM Standards and CIM Guidelines, using geostatistical and/or classical methods, plus economic and mining parameters appropriate to the deposit.

### Mineral Reserve

The Mineral Reserves for the Pilar UG Mine, Vermelhos UG Mine, Vermelhos West OP, Surubim Mine and R22W OP are derived from the Measured and Indicated Mineral Resources as defined within the resource block models following the application of economic and other modifying factors further described below. Inferred Mineral Resources, where unavoidably included within a defined mining shape have been assigned zero grade.

Mineral Reserves were classified according to the CIM Definition Standards and the CIM Guidelines by Rubens Mendonça of Planminas, an independent Qualified Person as such term is defined under NI 43-101.

**Table 1-2: Mineral Reserves**

<b>Mineral Reserves</b>	<b>Category</b>	<b>Tonnage (000 tonnes)</b>	<b>Grade (Cu %)</b>	<b>Contained Cu (000 tonnes)</b>
<b>Pilar UG Mine</b>	Proven	6,969	1.71	119.3
	Probable	3,998	1.74	69.4
<b>Vermelhos UG Mine</b>	Proven	3,394	3.30	112.1
	Probable	528	2.36	12.5
<b>Vermelhos West OP</b>	Proven	815	0.70	5.7
	Probable	269	0.69	1.9
<b>Surubim Mine</b>	Proven	2,130	0.95	20.2
	Probable	3	0.80	0.0
<b>R22W OP</b>	Proven	283	0.53	1.5
	Probable	47	0.46	0.2
<b>Total</b>	<b>Proven</b>	<b>13,591</b>	<b>1.90</b>	<b>258.8</b>
	<b>Probable</b>	<b>4,846</b>	<b>1.73</b>	<b>84.0</b>
	<b>Proven &amp; Probable</b>	<b>18,437</b>	<b>1.86</b>	<b>342.8</b>

1. Mineral Reserve effective date of August 1, 2018.
2. All figures have been rounded to the relative accuracy of the estimates. Summed amounts may not add due to rounding.
3. Mineral Reserve estimates were prepared in accordance with the CIM Standards and the CIM Guidelines, using geostatistical and/or classical methods, plus economic and mining parameters appropriate for the deposit.
4. Mineral Reserves are based on a long-term copper price of US\$2.75 per pound ("lb"), and a USD:BRL foreign exchange rate of 3.20. Mineral Reserves are the economic portion of the Measured and Indicated Mineral Resources. Inferred Mineral Resources, where unavoidably included within a defined mining shape have been included in the Mineral Reserves estimate at zero grade.
5. Mineral Reserve estimates include mining dilution at zero grade.
6. Mining dilution and recovery factors vary for specific Mineral Reserve sources and are influenced by factors such as deposit type, deposit shape, stope orientation and selected mining method.

Other modifying factors considered in the determination of the Mineral Reserve estimate include:

- Maximum bench height of 10m for open pit mines. Maximum underground stope dimensions based on geotechnical assessments from previous studies and past operating experience within each mining area, combined with evaluation of induced stresses and the Rock Mass Rating.
- The Vertical Retreat Mining method with cemented paste fill was selected for the Pilar UG Mine, where the method is currently in use. For the Vermelhos UG Mine, Sublevel Open Stopping method was chosen as the mining method after consideration of the dip, plunge and thickness of the ore-bodies, the rock quality designation and overall competence of the host rock. Variations of this method are planned for the central high-grade area for the maximum possible recovery via cemented rockfill matrix filling.

- Within designed stopes, all contained material was assumed to be mined with no selectivity. Inferred Mineral Resources, where unavoidably included within a defined mining shape have been included in the Mineral Reserves estimate at zero grade.
- Dilution and mining recovery values vary by deposit as set forth below:
  - Pilar UG mine operational dilution of 10%, mining recovery of 96%
  - Vermelhos UG mine operational dilution of 20%, mining recovery of 100%
  - Surubim OP mine overall dilution of 12%, mining recovery of 100%
  - R22W overall dilution of 15%, mining recovery of 100%
  - Vermelhos West OP overall dilution of 10%, mining recovery of 90%
  - Surubim UG operational dilution of 10%, mining recovery of 96%

Additionally, Planminas presents the following accompanying comments to the Mineral Resource and Mineral Reserve estimate:

- MCSA holds the surface rights required to support the mine operations considered in the Mineral Reserve estimate. Future development beyond the stated Mineral Reserves of these areas may require additional acquisition of surface rights.
- As of the date of the Vale do Curaçá Technical Report, MCSA has successfully obtained the requisite permits to enable mining operations.
- Overall, Planminas considers that the components of the Mineral Reserve estimate (including but not limited to geology, mining, processing, infrastructure, logistics, market, environmental and social considerations) have been conducted at a feasibility level of study and in accordance with NI 43-101.

It is the opinion of the QPs that there are no known mining, metallurgical, infrastructure, permitting, legal, political, environmental, title, taxation, socio-economic, marketing or other relevant factors that could materially affect the potential development of the stated Mineral Reserves.

## **1.6 Recovery Method**

The Caraíba Mill has been designed to receive ore from both the Pilar UG Mine, via a production shaft supported by two primary underground jaw crushers as well as ore from throughout the Curaçá Valley (including the Vermelhos UG, Vermelhos West OP and Surubim Mines) via a primary cone crusher located on surface. The concentrator is operated 24 hours per day, 7 days per week with monthly scheduled downtime for routine maintenance. In its current configuration the plant is capable of processing a nominal 3.2 million tonnes of copper bearing ore per annum assuming 91% availability. The replacement of two ball mills previously sold by MCSA along with support equipment, would return the nominal capacity of the plant to the original design of 5.5 million tonnes per annum. The average plant throughput over the production plan is approximately 2.1 million tonnes per annum over the next 5 years.

Through the end of 2017, the Caraíba Mill has produced over 3.0 million tonnes of concentrate containing over 1.0 million tonnes of copper. The Caraíba Mill operating results from 2011 to 2017, and from January to June of 2018 are provided below in Table 1-3 and Table 1-4, respectively.

**Table 1-3: Caraíba Mill Processing Results, 2011 to 2017**

Year	Caraíba Mill Feed		Copper Production	
	Tonnes	Grade (% Cu)	Tonnes	Recovery (%)
2011	2,749,812	1.09	25,096	83.7
2012	2,717,980	1.07	24,827	85.4
2013	2,940,566	0.91	22,494	84.3
2014	3,014,269	1.01	25,717	84.7
2015	2,836,528	1.11	27,046	86.0
2016	826,759	0.71	4,895	83.5
2017	1,771,209	1.31	20,133	86.8

**Table 1-4: January 2018 to June 2018 Processing Results**

Year	Caraíba Mill Feed		Copper Production	
	Tonnes	Grade (%Cu)	Tonnes	Recovery (%)
2018 (Jan-Jun)	817,078	1.51	10,530	85.6

Table 1-5, below, shows the current production plan for the Caraíba Mill. Production has been adjusted from mined totals, where appropriate for forecast stockpiles and in-process inventories. Forecast Metallurgical Recoveries are discussed in greater detail in Chapter 17 – Recovery Methods.

**Table 1-5: Caraíba Mill Production Plan**

Caraíba Mill	Unit	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
Production Tonnage	tonnes	1,246,140	1,866,606	1,883,059	2,145,954	2,184,343	2,171,938	2,908,778	3,016,546	1,452,747	18,876,112
Grade (%Cu)	% Cu	1.63	2.24	2.34	2.58	2.13	2.10	1.21	1.20	1.18	1.81
Metallurgical Recovery	%	85.55	88.62	89.12	87.76	87.41	87.71	85.52	85.09	85.97	87.25
Copper Production	tonnes	17,419	37,131	39,234	48,604	40,598	40,068	30,067	30,806	14,773	298,700
Concentrate Grade	% Cu	34.87	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	34.99
Dry Concentrate Production	tonnes	49,948	106,088	112,098	138,869	115,994	114,481	85,904	88,016	42,208	853,608

\* 2018 production statistics include forecast production from August to December of 2018, corresponding to the Mineral Reserve estimate effective date of August 1, 2018.

## 1.7 Infrastructure

The MCSA Mining Complex infrastructure includes fully integrated mining and processing operations located within the Curaçá Valley. All supporting infrastructure required for mining operations are currently in place. Primary components include:

- Pilar UG Mine with current capacity of 3,800 t/d;
- Surubim OP Mine, currently nearing the end of the designed open pit, with design capacity of 3,000 t/d;
- Vermelhos UG Mine, currently test mining and processing, with design capacity of 2,500 t/d;
- Pilar processing plant with a nameplate capacity of 9,600 t/d;
- access to water via an MCSA owned, operated and maintained 86km permanent steel pipeline, 80 cm in diameter, from the São Francisco River;
- water treatment plant;
- metallurgical laboratory;
- main substation and transformers, each configured with 60 MVA / 230 kV / 13.8 kV;

- power lines supplied by Companhia Hidroelétrica do São Francisco, a Brazilian State-owned power company;
- ancillary surface buildings including maintenance, security and administration; and
- inactive Solvent Extraction and Electrowinning operations with installed production capacity of approximately 5,000 tonnes of copper cathode per annum.

## 1.8 Environment

The current permitting status for the active operations of the MCSA Mining Complex:

- The Caraíba Mine and integrated processing operations were granted a renewed Operating License on April 5, 2017 – valid for three years at which point an additional renewal application will be submitted.
- Surubim OP Mine obtained its Operating License through Ordinance No. 13.741/2010, which was allowed to expire on November 18, 2015. On September 7, 2017, a new operating license was issued through Ordinance No. 14775, valid for two years.
- The Vermelhos UG Mine obtained its Operating License through Institute of Environment and Water Resources Ordinance No. 17064, valid for two years.
- MCSA maintains an excellent relationship with the communities throughout the Curaçá Valley, having held regular meetings and consultation sessions with local stakeholders regularly over the last 40 years. In support of this relationship, MCSA undertakes several key initiatives annually focused on sustainable community development ensuring the social license to operate.

## 1.9 Capital and Operating Costs

Capital and operating costs are shown for the years 2018 through 2026. It is anticipated that a combination of resource conversion and delineation of new mineralization within the Curaçá Valley will continue to augment the production profile, subject to satisfactory exploration results, technical, economic, legal and environmental conditions.

Total capital costs are estimated at R\$750.4 million and are summarized in Table 1-6. All costs are shown in Brazilian Reals, unless otherwise noted.

**Table 1-6: MCSA Mining Complex – Total Capital Expenditures**

<b>Total Capital Expenditure</b>	<b>Unit</b>	<b>2018<sup>1</sup></b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>Total</b>
Development	R\$M	40.8	106.9	70.8	39.5	24.5	39.7	16.8	-	-	338.9
Sustaining	R\$M	36.8	65.2	33.7	27.1	11.2	13.2	1.0	0.1	-	188.3
Equipment	R\$M	18.7	16.2	0.4	2.3	3.8	6.0	4.4	-	-	51.9
Exploration / Drilling	R\$M	22.0	-	-	-	-	-	-	-	-	22.0
Infrastructure	R\$M	21.9	8.7	9.1	0.3	2.3	1.0	1.0	-	-	44.3
Others	R\$M	6.4	2.5	1.3	1.3	2.2	1.9	8.0	-	-	23.7
Social, Health, & Environment	R\$M	6.6	11.8	10.5	5.5	4.1	3.9	5.5	2.9	0.3	51.1
Ventilation	R\$M	11.2	13.0	1.8	1.2	0.9	0.9	1.2	-	-	30.3
<b>Total</b>	<b>R\$M</b>	<b>164.5</b>	<b>224.3</b>	<b>127.6</b>	<b>77.2</b>	<b>49.0</b>	<b>66.7</b>	<b>37.9</b>	<b>2.9</b>	<b>0.3</b>	<b>750.4</b>

An operating cost forecast model was generated utilizing MCSA's extensive historical cost data and consumption coefficients. Mine and plant activities are subdivided and adjusted selectively, reflecting the impact of producing from different areas and changes in the infrastructure going forward. A fixed and variable component was included in all estimations, allowing the costs to reflect the production rate of each year. Operating costs per tonne and operating costs per pound of copper produced are summarized in Table 1-7 and Table 1-8, respectively. C1 Cash Cost<sup>1</sup> is a non-IFRS measure. Please refer to section 22.5 of the Vale do Curaçá Technical Report for additional detail regarding non-IFRS measures.

**Table 1-7: MCSA Mining Complex - Operating Costs per Tonne**

Operating Cost Summary	Unit	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total
Underground Mining Cost - Pilar	R\$/t*	94.91	92.97	105.71	104.61	113.71	113.58	135.81	147.86	113.13	114.34
Open Pit Mining Cost - R22W	R\$/t*	-	-	-	-	-	-	11.98	-	-	11.98
Underground Mining Cost - Vermelhos	R\$/t*	106.47	151.29	167.19	124.89	115.72	114.37	123.69	-	-	131.97
Open Pit Mining Cost - Vermelhos	R\$/t*	-	-	-	-	-	-	10.97	22.66	-	13.62
Underground Mining Cost - Surubim	R\$/t*	-	-	-	-	-	-	-	57.14	57.10	57.13
Open Pit Mining Cost - Surubim	R\$/t*	20.61	-	-	-	-	-	-	-	-	20.61
Plant Cost	R\$/t**	26.37	36.15	36.92	34.65	34.66	35.03	28.39	27.97	33.65	32.41
Operational Support & Selling Cost	R\$/t**	13.22	22.60	22.95	21.67	20.04	20.13	13.84	13.43	15.84	17.99
G&A Cost	R\$/t**	14.68	21.59	19.97	17.63	17.36	17.42	13.01	12.54	21.82	16.80

\*Total tonnes mined

\*\*Tonnes processed

**Table 1-8: MCSA Mining Complex – Operating Cost per Pound of Copper Produced**

		2018 <sup>1</sup>	2019	2020	2021	2022	2023	2024	2025	2026	Total
Exchange Rate	R\$/US\$	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80
Ore Treated	(tonnes)	1,246,140	1,866,606	1,883,059	2,145,954	2,184,343	2,171,938	2,908,778	3,016,546	1,452,747	18,876,112
<b>Copper Contained</b>	<b>(tonnes)</b>	<b>17,476</b>	<b>37,133</b>	<b>39,235</b>	<b>48,602</b>	<b>40,599</b>	<b>40,068</b>	<b>30,063</b>	<b>30,805</b>	<b>14,773</b>	<b>298,754</b>
<b>Copper Contained</b>	<b>(lbs)</b>	<b>38,528,558</b>	<b>81,863,807</b>	<b>86,497,747</b>	<b>107,148,910</b>	<b>89,504,689</b>	<b>88,334,045</b>	<b>66,278,551</b>	<b>67,914,372</b>	<b>32,569,934</b>	<b>658,640,613</b>
Operational Support	000 R\$	16,469	42,194	43,214	46,500	43,783	43,727	40,249	40,506	23,018	339,662
Pilar Underground Mining	000 R\$	88,883	213,989	213,975	221,909	216,683	202,890	218,639	201,345	85,100	1,663,413
Pilar Open Pit Mining	000 R\$	-	-	-	-	-	-	10,337	-	-	10,337
Surubim Open Pit Mining	000 R\$	25,850	-	-	-	-	-	-	-	-	25,850
Surubim Underground Mining	000 R\$	-	-	-	-	-	-	-	57,812	39,716	97,528
Vermelhos Open Pit Mining	000 R\$	-	-	-	-	-	-	37,830	22,841	-	60,671
Vermelhos Underground Mining	000 R\$	21,373	94,869	119,207	85,723	76,944	76,006	70,799	-	-	544,921
Processing	000 R\$	32,863	67,474	69,513	74,363	75,715	76,094	82,573	84,387	48,883	611,866
<b>Sub Total</b>	<b>000 R\$</b>	<b>185,438</b>	<b>418,527</b>	<b>445,910</b>	<b>428,495</b>	<b>413,127</b>	<b>398,716</b>	<b>460,427</b>	<b>406,891</b>	<b>196,717</b>	<b>3,354,248</b>
Less Precious Metal Income	000 R\$	(17,501)	(36,417)	(38,600)	(47,819)	(39,942)	(39,421)	(29,581)	(30,308)	(14,878)	(294,467)
Less Capitalized Development	000 R\$	(22,835)	(71,694)	(58,505)	(37,340)	(24,502)	(24,896)	(6,371)	-	-	(246,143)
<b>Total</b>	<b>000 R\$</b>	<b>145,102</b>	<b>310,417</b>	<b>348,804</b>	<b>343,337</b>	<b>348,683</b>	<b>334,399</b>	<b>424,475</b>	<b>376,584</b>	<b>181,839</b>	<b>2,813,638</b>
<b>C1 Cash Cost</b>	<b>R\$/lb</b>	<b>3.77</b>	<b>3.79</b>	<b>4.03</b>	<b>3.20</b>	<b>3.90</b>	<b>3.79</b>	<b>6.40</b>	<b>5.54</b>	<b>5.58</b>	<b>4.27</b>
<b>C1 Cash Cost</b>	<b>US\$/lb</b>	<b>0.99</b>	<b>1.00</b>	<b>1.06</b>	<b>0.84</b>	<b>1.03</b>	<b>1.00</b>	<b>1.69</b>	<b>1.46</b>	<b>1.47</b>	<b>1.12</b>
Treatment, Refining, & Other	US\$/lb	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
<b>Adjusted Net C1 Cash Cost (USD/lb)</b>	<b>US\$/lb</b>	<b>0.95</b>	<b>0.96</b>	<b>1.02</b>	<b>0.81</b>	<b>0.99</b>	<b>0.96</b>	<b>1.65</b>	<b>1.42</b>	<b>1.43</b>	<b>1.09</b>

## 1.10 Economic Analysis

An economic analysis was prepared for the MCSA Mining Complex using the following primary assumptions:

- The economic analysis considers commencing on the Effective Date and does not include actual performance achieved through July 31, 2018.
- The economic analysis of MCSA's Vale do Curaçá Mineral Assets is based on solely on Mineral Reserves and includes no Measured and Indicated Mineral Resources, which are not part of the Mineral Reserves estimate.
- Total ore processed of 18.9 million tonnes at an average feed grade of 1.81% copper.
- Total sales of 298,624 tonnes of contained copper in concentrate.
- Copper price of US\$3.00 per lb., gold and silver prices of US\$1,250 and US\$17.50 per ounce, respectively.
- USD:BRL exchange rate of 3.80.

<sup>1</sup> C1 Cash cost of copper produced (per lb) is the sum of production costs, net of capital expenditure development costs and by-product credits, divided by the copper pounds produced. C1 cash costs reported by the Company include treatment, refining charges, offsite costs, and certain tax credits relating to sales invoiced to the Company's Brazilian customer on sales. By-product credits are calculated based on actual precious metal sales (net of treatment costs) during the period divided by the total pounds of copper produced during the period. C1 cash cost of copper produced per pound is a non-IFRS measure used by the Company to manage and evaluate operating performance of the Company's operating mining unit, and is widely reported in the mining industry as benchmarks for performance, but does not have a standardized meaning and is disclosed in addition to IFRS measures.

The Vale do Curaçá Mineral Assets comprising the MCSA Mining Complex produce an undiscounted after-tax cash flow of R\$2.7 billion, or US\$704.9 million. The after-tax cash flow summary model is shown below in Table 1-9: After-tax Cash Flow Summary, MCSA Mining Complex. As there is no up-front investment required for the MCSA Mining Complex, internal rate of return (“IRR”) and payback are not meaningful measures.

The after-tax Net Present Value (“NPV”) at an 8% discount rate is US\$533.8 million. Average C1 Cash Costs over the production forecast period are estimated to be US\$1.09 per lb of copper produced.

After-tax sensitivity analyses were prepared considering changes in copper price, foreign exchange, capital costs and operating costs. The analysis shows that the MCSA Mining Complex is most sensitive to copper price and exchange rates.

**Table 1-9: After-tax Cash Flow Summary, MCSA Mining Complex**

Assumptions		2018 <sup>1</sup>	2019	2020	2021	2022	2023	2024	2025	2026	Total
Exchange Rate	R\$/US\$	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80
Copper Price	US\$/tonne	6,614	6,614	6,614	6,614	6,614	6,614	6,614	6,614	6,614	6,614
Copper Price	US\$/lb	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>Production</b>											
Ore Mined	tonnes	1,244,340	1,866,606	1,883,059	2,145,954	2,184,343	2,171,938	2,938,374	2,986,950	1,447,747	18,869,312
Copper Grade Mined	%	1.63	2.25	2.34	2.58	2.13	2.10	1.21	1.20	1.18	1.81
Ore Processed	tonnes	1,246,140	1,866,606	1,883,059	2,145,954	2,184,343	2,171,938	2,908,778	3,016,546	1,452,747	18,876,112
Copper Grade Processed	%	1.63	2.24	2.34	2.58	2.13	2.10	1.21	1.20	1.18	1.81
Metallurgical Recovery	%	85.8	88.6	89.1	87.8	87.4	87.7	85.5	85.1	86.0	87.3
<b>Copper Contained</b>	<b>tonnes</b>	<b>17,476</b>	<b>37,133</b>	<b>39,235</b>	<b>48,602</b>	<b>40,599</b>	<b>40,068</b>	<b>30,063</b>	<b>30,805</b>	<b>14,773</b>	<b>298,754</b>
<b>Copper Contained</b>	<b>lbs</b>	<b>38,528,558</b>	<b>81,863,807</b>	<b>86,497,747</b>	<b>107,148,910</b>	<b>89,504,689</b>	<b>88,334,045</b>	<b>66,278,551</b>	<b>67,914,372</b>	<b>32,569,934</b>	<b>658,640,613</b>
<b>Capex</b>											
<b>Total</b>	<b>000 R\$</b>	<b>164,498</b>	<b>224,311</b>	<b>127,557</b>	<b>77,176</b>	<b>49,023</b>	<b>66,736</b>	<b>37,926</b>	<b>2,941</b>	<b>282</b>	<b>750,450</b>
<b>Operating Costs</b>											
General & Administrative	000 R\$	18,291	40,303	37,599	37,823	37,910	37,835	37,835	37,835	31,703	317,134
Operational Support	000 R\$	16,469	42,194	43,214	46,500	43,783	43,727	40,249	40,506	23,018	339,662
Pilar Underground Mining	000 R\$	88,883	213,989	213,975	221,909	216,683	202,890	218,639	201,345	85,100	1,663,413
Pilar Open Pit Mining	000 R\$	-	-	-	-	-	-	10,337	-	-	10,337
Surubim Open Pit Mining	000 R\$	25,850	-	-	-	-	-	-	-	-	25,850
Surubim Underground Mining	000 R\$	-	-	-	-	-	-	-	57,812	39,716	97,528
Vermelhos Open Pit Mining	000 R\$	-	-	-	-	-	-	37,830	22,841	-	60,671
Vermelhos Underground Mining	000 R\$	21,373	94,869	119,207	85,723	76,944	76,006	70,799	-	-	544,921
Processing	000 R\$	32,863	67,474	69,513	74,363	75,715	76,094	82,573	84,387	48,883	611,866
<b>Sub Total</b>	<b>000 R\$</b>	<b>203,728</b>	<b>458,830</b>	<b>483,510</b>	<b>466,318</b>	<b>451,036</b>	<b>436,551</b>	<b>498,262</b>	<b>444,727</b>	<b>228,420</b>	<b>3,671,382</b>
<b>Depreciation/Exhaustion</b>	<b>000 R\$</b>	<b>48,055</b>	<b>104,247</b>	<b>114,632</b>	<b>148,125</b>	<b>132,862</b>	<b>138,905</b>	<b>131,637</b>	<b>127,805</b>	<b>80,487</b>	<b>1,026,755</b>
<b>Total Costs</b>	<b>000 R\$</b>	<b>251,783</b>	<b>563,077</b>	<b>598,141</b>	<b>614,443</b>	<b>583,899</b>	<b>575,456</b>	<b>629,899</b>	<b>572,532</b>	<b>308,907</b>	<b>4,698,137</b>
<b>Revenue</b>											
Copper Sales	tonnes	17,476	37,133	39,235	48,602	40,599	40,068	30,063	30,805	14,773	298,754
Gross Metal Revenue	000 R\$	439,234	933,266	986,094	1,221,522	1,020,374	1,007,028	755,591	774,239	371,305	7,508,653
Total Net Metal Revenue	000 R\$	438,431	885,412	936,233	1,159,816	968,771	956,131	717,464	735,099	360,870	7,158,226
Other Revenue <sup>2</sup>	000 R\$	1,635	3,924	3,924	3,924	3,924	3,924	3,924	3,924	3,924	33,027
<b>Total Net Revenue</b>	<b>000 R\$</b>	<b>440,066</b>	<b>889,336</b>	<b>940,157</b>	<b>1,163,740</b>	<b>972,695</b>	<b>960,055</b>	<b>721,388</b>	<b>739,023</b>	<b>364,794</b>	<b>7,191,253</b>
<b>Cash Flow</b>											
Revenue	000 R\$	440,066	889,336	940,157	1,163,740	972,695	960,055	721,388	739,023	364,794	7,191,253
Opex (ex-Depreciation & Exhaustion)	000 R\$	(203,728)	(458,830)	(483,510)	(466,318)	(451,036)	(436,551)	(498,262)	(444,727)	(228,420)	(3,671,382)
Less Capitalized Development <sup>3</sup>	000 R\$	22,835	71,694	58,505	37,340	24,502	24,896	6,371	-	-	246,143
Income & Social Contribution Taxes	000 R\$	-	(37,152)	(38,341)	(60,809)	(58,590)	(59,417)	(12,924)	(24,000)	(7,035)	(298,268)
Other Taxes & Credits	000 R\$	25,488	18,837	21,793	28,124	22,191	24,517	17,933	19,928	9,899	188,711
Employee Profit Sharing & Bonuses	000 R\$	-	(14,222)	(34,364)	(34,474)	(47,566)	(33,877)	(33,506)	(12,295)	(16,899)	(227,203)
<b>Operating Cash Flow</b>	<b>000 R\$</b>	<b>284,661</b>	<b>469,664</b>	<b>464,241</b>	<b>667,602</b>	<b>462,195</b>	<b>479,624</b>	<b>201,000</b>	<b>277,929</b>	<b>122,339</b>	<b>3,429,254</b>
CAPEX	000 R\$	(164,498)	(224,311)	(127,557)	(77,176)	(49,023)	(66,736)	(37,926)	(2,941)	(282)	(750,450)
<b>Free Cash Flow</b>	<b>000 R\$</b>	<b>120,163</b>	<b>245,353</b>	<b>336,685</b>	<b>590,426</b>	<b>413,171</b>	<b>412,888</b>	<b>163,074</b>	<b>274,988</b>	<b>122,057</b>	<b>2,678,804</b>
<b>Accumulated Free Cash Flow</b>	<b>000 R\$</b>	<b>120,163</b>	<b>365,515</b>	<b>702,200</b>	<b>1,292,626</b>	<b>1,705,797</b>	<b>2,118,685</b>	<b>2,281,759</b>	<b>2,556,747</b>	<b>2,678,804</b>	<b>2,678,804</b>
<b>Free Cash Flow</b>	<b>000 US\$</b>	<b>31,622</b>	<b>64,567</b>	<b>88,601</b>	<b>155,375</b>	<b>108,729</b>	<b>108,655</b>	<b>42,914</b>	<b>72,365</b>	<b>32,120</b>	<b>704,949</b>
<b>Accumulated Free Cash Flow</b>	<b>000 US\$</b>	<b>31,622</b>	<b>96,188</b>	<b>184,789</b>	<b>340,165</b>	<b>448,894</b>	<b>557,549</b>	<b>600,463</b>	<b>672,828</b>	<b>704,949</b>	<b>704,949</b>
<b>EBITDA</b>	<b>000 US\$</b>	<b>68,203</b>	<b>132,158</b>	<b>135,567</b>	<b>193,358</b>	<b>143,726</b>	<b>144,316</b>	<b>60,394</b>	<b>77,446</b>	<b>35,888</b>	<b>991,056</b>
<b>Results</b>											
After-Tax NPV <sub>8</sub>	000 US\$	533,775									
IRR	%pa	n/a									
Simple Payback	years	n/a									

(1) 2018 based on the 5 months from the Effective Date (August 1, 2018) to December 31, 2018  
(2) Other Revenue includes recovery of water pipeline operating costs and scrap sales  
(3) Removal of Pilar UG capitalized development originally included in operating costs

Earnings before interest, taxes, depreciation and amortization is a non-IFRS measure. Please see Section 22.5 of the Vale do Curaçá Technical Report for additional detail regarding non-IFRS measures used by the Company.

## 1.11 Conclusions and Recommendations

### Mineral Exploration and Geology

In general terms, the geological descriptions, sampling procedures and density tests that were evaluated were found to be of acceptable quality and in accordance with industry best practices.



It was noted that the data collection process was executed with the aim of maintaining data security. Data was stored in a standardized database, which was found to be secure and auditable.

The complexity of the mineralization controls and the quantity and phases of data in the Curaçá Valley merits the use of visualization and data integration tools that are more advanced than those which MCSA had at its disposal at the time of the Vale do Curaçá Technical Report.

While GE21 believes that the current quality assurance and quality control (“QA/QC”) program can guarantee the quality of the exploration data used in the resource estimates, GE21 suggests that a chain of custody program be implemented for good measure.

GE21 supervised the process through which density was determined and concluded that it was in conformity with industry best practices.

### QA/QC

GE21 performed the evaluation of the data generated subsequent to the last validation (performed mid-2017) and concluded that the QA/QC procedures are being followed using the same standards and in accordance with the recommendations set forth at that time. GE21 considers the standard QA/QC procedures to be in accordance with mining industry best practice and appropriate for use in the Mineral Resource estimate.

It should be noted that based on the analysis of the QA/QC results that the MCSA laboratory provided good precision at lower copper grades, below 2% Cu. However, it was also observed that the MCSA laboratory displayed a tendency to underestimate the higher-grade copper values above 2% Cu, as observed on the last validation. It is strongly recommended that the calibration of the equipment and standards for samples of grades greater than 2% Cu be evaluated by the laboratory.

### Geological Model

The procedure that was adopted to produce the 3D geological model (wireframes), consisting of generating triangulations between interpreted geological cross sections, was executed properly and in accordance with the opinions of GE21 staff. Due to the plunge of the mineralized zone at the Pilar UG Mine towards the north and the east-west geological cross sections, a pattern of sub-vertical discontinuous lenses was created locally within the regions of lower drill hole density. Despite these occurrences, verification of the mineralized zone interpretation was performed within regions of denser drill spacing.

GE21 noted that, with respect to the integration and interpretation of geological data, limited lithostructural mapping (mine, surface and subsurface) had been undertaken and no supporting petrographic data was used. GE21 also notes that the field interpretation and 3D interpretation were historically focused on interpreting only copper grade, therefore, few vertical and horizontal lithostructural geological sections were developed which may provide greater understanding and control of aspects relating to the geology. The authors of the Vale do Curaçá Technical Report note that Ero Copper and MCSA have assembled a new fully integrated geological model using GOCAD software, which has made it possible to integrate several sources of information including: historic and recent drilling, surface mapping, geophysics, geochemistry, multi-element ICP and structural data. This work remains ongoing and a core focus of the Company’s geology team.

### Grade Estimation

The variograms that were used in the estimation method are satisfactory and consistent with respect to the grade estimation that was calculated via Ordinary Kriging, making use of search anisotropy determined in the variographic study.

The Kriging estimation strategy that was chosen made it possible to classify the resource in accordance with an empirically calculated search radius and the requisite data density for resource classification.

GE21 considers the resource classification model and the analysis of criteria for the classification of those Mineral Resources, to be satisfactory although some items could be improved. Such recommended improvements did not impose limitations on the classification of Measured and Indicated Resources.

### Mineral Resources Estimate

GE21 has not identified any mining, metallurgical, infrastructure, permitting, legal, political, environmental, technical, or other relevant factors that could materially affect the potential development of Mineral Resources.

### Mineral Reserve Estimate

Planminas has carried out the appropriate review work to satisfy itself that the Mineral Reserve can be technically and profitably extracted through to the production and sale of copper concentrate. Consideration has been given to all technical areas of study, the associated capital and operating costs, and relevant factors including marketing, permitting, environmental and social. Planminas is satisfied that the technical and economic feasibility has been demonstrated.

The Mineral Reserve is compliant with the guidelines of NI 43-101.

Regarding the Mineral Resources and Mineral Reserves estimation, the authors recommend a work program to include the following:

- review the interpretation of the identified resource potential targets within the Vermelhos UG Mine;
- review the resources model considering both grade and structural behavior in conjunction with a more selective stope design, aimed at reducing dilution;
- continue to consolidate and integrate Company's geological model with historic drilling, surface mapping, geophysics, geochemistry, and structural data, expanding on the work started during 2017 using GOCAD software;
- review the influence of outlier intercepts on the resource estimation so that such intercepts may be further analyzed for use in the grade estimation method; and,
- perform a resource classification process based on Kriging variance and risk index.

In addition, the authors recommend that the QA/QC program include mass controls during sample crushing and pulverization in order to evaluate the quality of the comminution procedures and ensure no sample loss during sample preparation.

**Table 1-10: Proposed Budget for Recommended Work**

<b>Program</b>	<b>Budget (US\$)</b>
Review the interpretation of targets within the Vermelhos UG Mine	\$30,000
Perform additional Vermelhos UG Mine drill core sampling	\$50,000
Review the resources model considering both grade and structural behavior	\$80,000
Review the influence of high-grade outliers on the resource estimation	\$15,000
Perform a resource classification process based on Kriging variance and risk index	\$20,000
Metallurgical testing on oxides (including tailings) and Vermelhos ore pre-sorting	\$350,000
Multi-Element Assay Checks	\$5,000
<b>Total</b>	<b>\$550,000</b>

## Updated Information with respect to the Vale do Curaçá Property

The following update has been prepared by Ero personnel and reviewed and approved by Rubens Mendonça, MAusIMM, of Planminas who is a “qualified person” and “independent” of the Company within the meanings of NI 43-101 and an author of the Vale do Curaçá Technical Report.

### Mineral Resource and Mineral Reserve Estimates as at December 31, 2018

The Mineral Resource estimates contained in the Vale do Curaçá Technical Report were prepared as at July 1, 2018 for the Pilar UG and Surubim Mines, and May 31, 2018 for the Vermelhos UG Mine, Vermelhos West OP and R22W OP. The Mineral Reserve estimates contained in the Vale do Curaçá Technical Report were prepared as at August 1, 2018. As production at the Vale do Curaçá Property has continued since the preparation of these estimates, the Mineral Resources and Mineral Reserves at the Vale do Curaçá Property have decreased. Accordingly, set out below is an internal update of the Mineral Resource and Minerals Reserve estimates as at December 31, 2018, based on a 0.68% copper grade cut-off considered for underground resources and a 0.18% copper grade cut-off for open pit resources, and accounting for the material mined since the since the preparation of the Mineral Resource and Mineral Reserve estimates contained in the Vale do Curaçá Technical Report.

Mineral Resources are shown inclusive of Mineral Reserves.

**Table 1-11: Vale do Curaca Property Mineral Resource Estimate, December 31, 2018**

Mineral Resources	Category	Tonnage (000 tonnes)	Grade (Cu %)	Contained Cu (000 tonnes)
<b>Pilar UG Mine</b>	Measured	14,456	1.91	275.9
	Indicated	9,178	1.83	167.8
	<b>Measured &amp; Indicated</b>	<b>23,634</b>	<b>1.88</b>	<b>443.6</b>
	Inferred	1,758	2.07	36.3
<b>Vermelhos UG Mine</b>	Measured	2,945	4.18	123.2
	Indicated	1,523	1.97	30.1
	<b>Measured &amp; Indicated</b>	<b>4,468</b>	<b>3.43</b>	<b>153.3</b>
	Inferred	1,995	1.19	23.6
<b>Vermelhos West OP</b>	Measured	5,502	0.60	33.0
	Indicated	2,645	0.60	15.9
	<b>Measured &amp; Indicated</b>	<b>8,147</b>	<b>0.60</b>	<b>48.9</b>
	Inferred	2,490	0.83	20.7
<b>Surubim Mine</b>	Measured	3,664	1.04	37.9
	Indicated	497	1.03	5.1
	<b>Measured &amp; Indicated</b>	<b>4,161</b>	<b>1.03</b>	<b>43.1</b>
	Inferred	83	0.85	0.7
<b>R22W OP</b>	Measured	306	0.54	1.7
	Indicated	2	0.79	0.0
	<b>Measured &amp; Indicated</b>	<b>308</b>	<b>0.54</b>	<b>1.7</b>
	Inferred	-	-	-
<b>Total Resources</b>	Measured	26,874	1.76	471.7
	Indicated	13,884	1.58	218.8
	<b>Measured &amp; Indicated</b>	<b>40,718</b>	<b>1.70</b>	<b>690.5</b>
	Inferred	6,326	1.29	81.4

1. Mineral Resource effective date of December 31, 2018.
2. Presented Mineral Resources inclusive of Mineral Reserves. All figures have been rounded to the relative accuracy of the estimates. Summed amounts may not add due to rounding.
3. Mineral Resource copper cut-off grades of 0.68% copper for underground Mineral Resources and 0.18% for open pit Mineral Resources. Mineral Resources have been estimated using ordinary kriging inside 5m by 5m by 5m block sizes. The Mineral Resource estimates were prepared in accordance with CIM Definition Standards and CIM Guidelines, using geostatistical and/or classical methods, plus economic and mining parameters appropriate to the deposit.

**Table 1-12: Vale do Curaca Property Mineral Reserve Estimate, December 31, 2018**

Mineral Reserves	Category	Tonnage (000 tonnes)	Grade (Cu %)	Contained Cu (000 tonnes)
<b>Pilar UG Mine</b>	Proven	6,778	1.72	117.1
	Probable	3,887	1.69	65.8
<b>Vermelhos UG Mine</b>	Proven	3,258	3.38	110.3
	Probable	528	2.36	12.5
<b>Vermelhos West OP</b>	Proven	815	0.70	5.7
	Probable	269	0.69	1.9
<b>Surubim Mine</b>	Proven	1,774	0.97	17.2
	Probable	3	0.80	0.0
<b>R22W OP</b>	Proven	283	0.53	1.5
	Probable	47	0.46	0.2
<b>Total</b>	<b>Proven</b>	12,917	1.95	251.7
	<b>Probable</b>	4,736	1.70	80.4
	<b>Proven &amp; Probable</b>	17,653	1.88	332.1

1. Mineral Reserve effective date of December 31, 2018.
2. All figures have been rounded to the relative accuracy of the estimates. Summed amounts may not add due to rounding.
3. Mineral Reserve estimates were prepared in accordance with the CIM Definition Standards and the CIM Guidelines, using geostatistical and/or classical methods, plus economic and mining parameters appropriate for the deposit.
4. Mineral Reserves are based on a long-term copper price of US\$2.75 per pound (“lb”), and a USD:BRL foreign exchange rate of 3.20. Mineral Reserves are the economic portion of the Measured and Indicated Mineral Resources. Inferred Mineral Resources, where unavoidably included within a defined mining shape have been included in the Mineral Reserves estimate at zero grade.
5. Mineral Reserve estimates include mining dilution at zero grade.
6. Mining dilution and recovery factors vary for specific Mineral Reserve sources and are influenced by factors such as deposit type, deposit shape, stope orientation and selected mining method.

## NX GOLD PROPERTY

The scientific and technical information in this section relating to the NX Gold Property, other than the scientific and technical information under the heading “*NX Gold Property – Updated Information with respect to the NX Gold Property*”, is a direct extract of the Executive Summary section contained in the NX Gold Technical Report, which has been conformed to be consistent with the formatting and other defined terms within this AIF. The entire NX Gold Technical Report, a copy of which is available for review under the Company’s profile on SEDAR at [www.sedar.com](http://www.sedar.com), is incorporated by reference into this AIF and should be consulted for details beyond those incorporated herein.

The scientific or technical information set out in this AIF under the heading “*NX Gold Property - Updated Information with respect to the NX Gold Property*”, has been reviewed and approved by Porfirio Cabaleiro Rodrigues, MAIG, of GE21 who is a “qualified person” and “independent” of the Company within the meanings of NI 43-101 and an author of the NX Gold Technical Report.

### Executive Summary

#### 1.1 Introduction

The purpose of the NX Gold Technical Report is to set out and provide background and supporting information on the current Mineral Resources and Mineral Reserves for the NX Gold Mine, a producing underground gold mining operation located in the State of Mato Grosso Brazil and wholly-owned by NX Gold, a company formed under the laws of Brazil. The NX Gold Technical Report has been prepared by GE21 on behalf of Ero Copper of Vancouver, Canada and existing under the BCABC.

Ero Copper is a publicly listed company that trades on the TSX under the ticker, “ERO”. Ero Copper’s principal asset is its 99.6% ownership interest in MCSA. MCSA’s predominant activity is the production and sale of copper concentrate from the Vale do Curaçá Property, which is located within the Curaçá Valley, northeastern Bahia State, Brazil, with gold and silver

produced and sold as by-products. Ero Copper also currently owns, directly and indirectly (through MCSA) a 97.6% ownership interest in NX Gold.

The NX Gold Mine was constructed and commenced commercial production in 2012, with the first full year of production occurring in 2013. As of the end of June 2018, approximately 166,000 troy ounces of gold had been produced from the NX Gold Mine. Subsequent to the effective date of the report, full year 2018 production totaled 39,808 ounces of gold and 24,573 ounces of silver produced as a by-product. As of the date of the NX Gold Technical Report, there are currently 5 drill rigs operating on the property. Exploration activities are underway on the central Santo Antônio exploration target as well as extensions of the Brás and Buracão orebodies to depth and along strike. Additional drill testing of exploration targets located east of the Buracão orebody is planned for 2019.

Doré bars containing gold and silver, as well as lesser amounts of lead, are shipped from the mine weekly by airplane via a gravel airstrip located on the property. Ore is currently produced from two adjacent high-grade, north-dipping and east-west striking, shear-zone hosted, quartz vein orebodies called Brás and Buracão, accessed from a single mine portal and decline.

The NX Gold Technical Report and estimates herein have been prepared following the guidelines of NI 43-101.

The NX Gold Technical Report provides a summary of the work completed by NX Gold and its independent consultants as of the effective date of the report, August 31, 2018 (in this section, the “**Effective Date**”). All dollar amounts presented in the report are stated in US dollars unless otherwise specified.

## 1.2 Property Description

NX Gold owns a 100% interest in the NX Gold Mine, located in the eastern portion of the State of Mato Grosso, Brazil. The mine is located 18km west of the town of Nova Xavantina, with a population of approximately 20,000 people, and approximately 670 km east of Cuiabá, the capital city of Mato Grosso. The total NX Gold Mine property, including exploration concessions, measures 31,716.2 ha. The property is comprised of one mining concession, where all current mining and processing activities occur (registration number 866269/1990), that totals 620 ha and eight exploration licenses covering an area of 31,096.2 ha. Within the mining concession, NX Gold holds 100% legal and beneficial ownership, including surface rights. There are no time constraints provisioned with the mining concessions; however, operating permits and licenses are extended and renewed in normal course of business according to the nature of each permit and requirements therein. All relevant licenses and operational permits in support of the mine’s operation are in good standing.

Within the exploration concessions, NX Gold’s interests include the right to access the property and to engage in exploration, development, processing, and construction activities in support of mineral exploration and development. Where applicable, compensation is provided to the holder of surface rights for occupation or loss caused by the work. All exploration concessions are currently valid and, for those concessions where expiration dates are approaching, applications are expected to be submitted for renewal at the time of expiry.

**Table 1: NX Gold Mining and Exploration Concessions**

<b>DNPM Process Number</b>	<b>Area (ha)</b>	<b>DNPM Status</b>	<b>Holder</b>	<b>Expiration</b>
866269/1990	620.00	Mining Concession	NX Gold	-
866120/2013	17.87	Exploration Concession	NX Gold	January 2020
866015/2014	7,098.54	Exploration Concession	NX Gold	December 2018
866013/2014	9,559.75	Exploration Concession	NX Gold	December 2018
866559/2015	4,571.90	Exploration Concession	NX Gold	March 2019
866320/2017	43.99	Exploration Concession	NX Gold	September 2019
866685/2014	9,325.20	Exploration Concession	NX Gold	October 2020
866207/2018	84.73	Exploration Concession	NX Gold	July 2021
866208/2018	394.17	Exploration Concession	NX Gold	July 2021
<b>Total Hectares:</b>	<b>31,716.15</b>			

### **1.3 Geology & Mineralization**

Gold and silver mineralization at the NX Gold Mine can be characterized as a shear-zone hosted, sulphide-rich, laminated quartz vein. Economic mineralization on the property, to date, has been hosted within the northeast trending Araés shear zone that cross-cuts the deformed and metamorphosed volcano-sedimentary sequence of the Proterozoic Cuiabá Group and is generally associated with felsic dikes.

Economic gold and silver mineralization at the NX Gold Mine is structurally controlled within the Araés shear zone. Gold and silver is currently mined from two major sulphide-rich, laminated quartz veins dipping approximately 40 degrees to the north-northwest and striking to the west-southwest – the Brás and Buracão veins. Vein dimensions are variable throughout the deposit, with an average thickness of 4 meters. Local occurrences of up to 10 meters in vein thickness are common. Where gold and silver grades are found in economic concentrations, the veins typically contain approximately 2 to 15 percent total sulphide represented mostly by pyrite and galena, as well as minor chalcopyrite, bornite, pyrrhotite, and sphalerite. Higher gold and silver grades are generally associated with galena, chalcopyrite, bornite, and sphalerite.

### **1.4 Exploration**

The occurrence of gold in the Araés shear zone has been known for over 80 years. Although limited information exists, extensive artisanal (garimpeiro) mining activity has occurred in open pit and in underground operations prior to the formalization of the mine concessions in 1990. Between 1985 and 2004 two companies, Mineração Araés and Mineração Nova Xavantina, conducted geological and metallurgical studies, geological mapping and a total of 2,306 meters of drilling in 8 diamond drill holes. In 2004, MCSA acquired the mineral and surface rights for the property. Between 2006 and 2012, MCSA drilled a total of 41,135 meters in 204 surface diamond drill holes. In 2013, the property was transferred to NX Gold, a subsidiary of MSCA. Between 2013 and 2015, NX Gold drilled a total of 27,822 meters in 104 surface diamond drill holes and a total of 9,427 meters in 107 underground diamond drill holes. In December of 2016, MCSA (and its interest in NX Gold) was acquired by Ero Copper.

Other exploration activities undertaken from 2013 to 2015 included regional geological mapping, soil sampling and a 1,969 line-kilometer airborne magnetic survey completed in 2013.

In 2018, prior to the Effective Date and in support of the current mineral resource and reserve estimate, NX Gold drilled a total of 3,324 meters in 7 surface diamond drill holes. The drilling followed standard industry procedures including measuring core recovery, rock quality design (RQD), taking photos of the core boxes, geological logging of the core, sampling, and assaying. NX Gold inserts a series of certified reference material, blanks, and laboratory duplicates in the stream of samples to verify the assay results as part of its QA/QC procedures.

Subsequent to the Effective Date, a total of 7 core drill rigs were mobilized to the property to undertake exploration drill programs focused on extending the mine's life by adding mineral reserves and mineral resources through exploration drilling. Priority exploration targets currently being drilled include the central Santo Antonio zone, down-dip extensions of the Brás and Buracão orebodies and newly identified exploration targets east of the Brás orebody.

### **1.5 Drilling, Sample Preparation, Analysis and Security**

Several drill programs have been conducted at the NX Gold Mine. The bulk of the drilling occurred during the period from 2006 to 2012 when the property was held by MCSA, and then more recently by NX Gold. During the period from 2006 to 2012, approximately 43,000 meters of drilling in 236 drill holes was performed in support of moving the mine into commercial production. The global drill hole database at the NX Gold Mine includes 323 drill holes totaling 74,586 meters of surface drilling, and 139 drill holes totaling 11,322 meters of underground drilling.

Drilling and assaying undertaken in support of the current mineral resource and reserve estimate has been carried out using sampling, security and QA/QC procedures that are in line with industry best practices.

Beginning in 2015, a full QA/QC program meeting generally recognized industry best practices has been in use. Standardized procedures are used in all aspects of the exploration data acquisition and management including surveying, drilling, sampling, sample security, assaying, and database management.

QA/QC measures, as part of the routine core sampling procedures, use blank, standard and duplicate samples to allow verification of the fire assay results produced by the NX Gold laboratory. For the 2014 to 2018 drilling programs, control

samples were inserted at the frequency of 1 gold certified reference, 1 blank sample and 1 duplicate pulp sample every 20 samples.

The authors of the NX Gold Technical Report performed an evaluation of the data used in the determination of the Mineral Resource estimate and found the results to be in accordance with industry best practice and appropriate for use in the current Mineral Resource estimate.

## 1.6 Mineral Resources and Mineral Reserves Estimates

### Mineral Resource

Block model tonnage and grade estimates for the NX Gold Mine were classified according to the CIM Definition Standards by Sr. Porfirio Cabeleiro Rodrigues and Sr. Leonardo de Moraes Soares, both Qualified Persons as such term is defined in NI 43-101. A gold cut-off grade of 1.40 gpt was considered for Mineral Resources using cost parameters for similar sized underground mines operating in Brazil based on the experience of the qualified persons and peak gold price over the last 10 years. All block sizes used in the Mineral Resource estimate are 10 meters (x), by 10 meters (y), by 2 meters in height (z) with sub-blocks of 2.5 meters (x), by 2.5 meters (y), by 0.5 meters in height (z).

Both the Stock Work and Santo Antônio exploration targets have not been included in the current Mineral Resource and Mineral Reserve estimate due to lack of sample density as at the Effective Date.

**Table 2: Mineral Resource Estimate**

Deposit	Classification	Tonnes (kt)	Au (g/t)	Au (koz)
Brás Vein	Indicated	80.9	15.04	39.1
	<i>Inferred</i>	<i>39.6</i>	<i>18.96</i>	<i>24.1</i>
Buracão Vein	Indicated	4.8	30.39	4.7
	<i>Inferred</i>	<i>1.7</i>	<i>23.54</i>	<i>1.3</i>
<b>Total</b>	<b>Indicated</b>	<b>85.7</b>	<b>16.01</b>	<b>44.1</b>
	<b><i>Inferred</i></b>	<b><i>41.3</i></b>	<b><i>19.13</i></b>	<b><i>25.4</i></b>

1. Effective date of August 31, 2018.
2. Presented Mineral Resources inclusive of Mineral Reserves. All figures have been rounded to reflect the relative accuracy of the estimates. Summed amounts may not add due to rounding.
3. Cut-off gold grade of 1.40 g/t.
4. Mineral resource estimated by ordinary kriging inside 10m by 10m by 2m blocks (sub-blocks of 2.5m by 2.5m by 0.5m).

### Mineral Reserves

The Mineral Reserve estimates for the NX Gold Mine were prepared in accordance with the guidelines of NI 43-101 and the CIM Definition Standards by NX Gold engineering personnel under the supervision of GE21.

It is the opinion of GE21 that the current Mineral Reserves for the underground operation have been estimated in a manner consistent with industry best practices, CIM Definition Standards and NI 43-101 guidelines.

**Table 3: Mineral Reserve Estimate**

Deposit	Probable Reserves	Tonnage (kt)	Au Grade (g/t)	Au Total (koz)
Brás Vein	Planned Stopes	60.9	11.40	22.4
	Gallery Development	2.5	11.00	0.9
	<b>Probable Reserves</b>	<b>63.4</b>	<b>11.40</b>	<b>23.3</b>
Buracão Vein	Planned Stopes	1.9	13.80	0.8
	Gallery Development	0.5	6.60	1.1
	<b>Probable Reserves</b>	<b>2.4</b>	<b>12.30</b>	<b>1.9</b>
<b>Total Probable Reserves</b>		<b>65.8</b>	<b>11.40</b>	<b>25.2</b>

1. Effective date of August 31, 2018.
2. All figures have been rounded to reflect the relative accuracy of the estimates. Summed amounts may not add due to rounding.
3. Mineral Reserve cut-off gold grade of 3.2 g/t.
4. The Mineral Reserve estimates are prepared in accordance with the CIM Definition Standards, and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines, using geostatistical and/or classical methods, plus economic and mining parameters appropriate for the deposit. Mineral Reserves are based on a long-term gold price of US\$1,250 per oz, and a USD:BRL foreign exchange rate of 3.20. Mineral Reserves are the economic portion of the Indicated Mineral Resources. Mineral Reserve estimates include mining dilution at 5% grading 0.5g/t Au and 7% grading 0.5g/t Au for the Brás and Buracão Veins, respectively. Practical mining shapes (wireframes) were designed using geological wireframes / mineral resource block models as a guide.
5. Assumes mining dilution of 5% grading 0.5g/t Au and 7% grading 0.5g/t Au for the Brás and Buracão Veins, respectively.
6. Mining recovery of 95%.

Other modifying factors considered in the determination of the Mineral Reserve estimate include:

- A cut-off grade of 3.2 g/t gold was applied in the determination of economic blocks within the Mineral Resource Estimate based on actual operating cost data and past operating performance of the mine.
- The mining method employed for the Brás and Buracão veins is overhand cut and fill, with backfill requirements generated from waste development.
- Maximum stope spans between sill pillars of 17m by 17m for the Buracão vein and 39m by 10m for the Brás vein based on geotechnical mapping, modeled rock quality and uniaxial compression test results.

Additionally, GE21 presents the following accompanying comments to the Mineral Resource and Mineral Reserve estimate:

- NX Gold holds the surface rights and requisite permits required support the mining operation as outlined in the Mineral Reserve estimate. Future development beyond the stated Mineral Reserves may require the acquisition of additional surface rights.
- GE21 has not identified any known mining, metallurgical, infrastructure, permitting, legal, political, environmental or other relevant factors that could materially affect the development or extraction of the stated Mineral Reserves.
- GE21 has carried out the appropriate review to satisfy that the Mineral Reserve can be technically and profitably extracted. Consideration has been given to all technical areas of the operations, the associated capital and operating costs, and relevant factors including marketing, permitting, environmental, land use and social factors. GE21 is satisfied that technical and economic feasibility has been demonstrated.

## 1.7 Mining Methods

Underground mining operations (primary ramp development) at the NX Gold Mine started in 2009 with the opening of the main mine portal at level +300 (surface elevation). The current development of the underground mine reaches level -195 for the Brás vein and +43 Level for the Buracão vein. Ore above levels -115 and +61 for the Brás and Buracão veins, respectively, have been assumed to have been extracted for the purposes of the current Mineral Reserves and no sill pillar recovery is planned. Current operating depths are 450 meters and 250 meters below surface for the Brás and Buracão veins, respectively.

The mining method employed for the Brás and Buracão veins is overhand cut and fill, with backfill requirements generated from waste development. The application of this mining method has been in use since the start of the NX Gold Mine and is



based on desired selectivity, geometry of the orebodies (both planned and previously mined) as well as the rock mechanic characteristics of the footwall and hanging wall. With only a few exceptions, all development occurs in the more competent footwall of the deposit. The geometries of the Brás and Buracão orebodies vary down plunge and along strike, but can broadly be described along the following:

**Table 4: Brás and Buracão Average Orebody Dimensions**

<b>Vein</b>	<b>Dip (°)</b>	<b>Avg. Strike Length (m)</b>	<b>Avg. Thickness (m)</b>
<b>Brás</b>	32 to 45	100	6.0
<b>Buracão</b>	32 to 40	70	2.5

The Brás vein is divided into vertical panels of approximately 64 meters on average with inter-level spacing of 14 meters, while the Buracão vein is divided into vertical panels of approximately 25 meters with inter-level spacing of 14 meters. Based on geotechnical studies, the maximum hydraulic radius adopted for inter-level spacing is 4 meters. Mining blocks are separated by pillars that average approximately 5 meters along strike and 5 meters down plunge.

On average, the mining method results in approximately 6,300 tonnes per month of waste, with stope backfilling requirements of approximately 4,000 tonnes per cut and fill cycle. Ore production currently averages approximately 4,000 tonnes per month for Brás and approximately 1,250 tonnes per month for Buracão. In its current configuration, the mine is capable of producing up to 120,000 tonnes of ore per annum.

### 1.8 Recovery Methods

The metallurgical process has been engineered and optimized to leach gold ores containing preg-robbing units capable of adsorbing gold from cyanide solutions, such as the carbonaceous phyllite unit that exists in the Brás and Buracão veins.

Metallurgical recoveries at the NX Gold Mine have been sequentially optimized since commissioning to recover gold and silver from the quartz vein orebodies containing carbonaceous phyllite (a preg-robbing unit found in the orebodies at the NX Gold Mine). This optimization work has resulted in recoveries increasing from approximately 40% in 2012 when the plant was commissioned, to current metallurgical recoveries of 91% (average from January through June 2018). Average feed grade to the plant is currently approximately 13 g/t gold and 22 g/t silver. 2018 Production from the NX Gold Mine to the Effective Date is shown below in Table 5.

**Table 5: Nova Xavantina Plant Performance to Effective Date**

<b>January 1<sup>st</sup> – August 31<sup>st</sup>, 2018</b>	
Mill Feed (000 tonnes)	66,859
Gold Grade (gpt Au)	13.65
Metallurgical Recovery (%)	91.4
Mass of Bullion (kg)	2,629
<b>Au Production (oz)</b>	<b>26,824</b>
<b>Ag Production (oz)</b>	<b>16,449</b>

Subsequent to the Effective Date, full year 2018 production totaled 39,808 ounces of gold and 24,573 ounces of silver produced as a by-product. The 2018 results were highlighted by 117,857 tonnes of ore grading 11.55 grams per tonne gold processed, resulting in the production of 39,808 ounces of gold after metallurgical recoveries that averaged 91.0% during the period.

Processing takes place at the Nova Xavantina Plant. Unit operations include a conventional 3 stage crush, milling and a combination of gravity concentration with intensive leaching and flotation followed by carbon in leach. Gold and silver are produced from solution via electrolysis followed by smelting of doré bars containing both gold and silver. The installed crushing and grinding capacity is approximately 80 tph and 44.5 tph, respectively, resulting in an installed annual plant capacity in excess of 300,000 tonnes per annum. The plant is currently operating at less than one-third of its installed capacity.

Based on the current Mineral Reserve estimate, the production plan for the Nova Xavantina Plant is set forth below in Table 6. As at the time of the NX Gold Technical Report, seven drill rigs were actively conducting exploration activities within in-mine exploration targets (Santo Antônio vein) as well as down-plunge extensions of Brás and Buracão. These programs are focused on increasing Mineral Reserves and Mineral Resources and extending mine life.

**Table 6: Nova Xavantina Plant Production Plan**

	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	Total
Production (000 tonnes)	10,162	10,191	9,546	9,651	10,723	8,365	5,479	1,719	65,835
Gold Grade (gpt Au)	11.15	10.86	11.87	12.14	10.92	12.40	11.05	10.11	11.44
Metallurgical Recovery (%)	90.1	90.1	90.1	90.1	90.1	90.1	90.1	90.1	90.1
Mass of Bullion (kg)	218	235	226	218	218	235	226	218	1,792
<b>Au Production (oz)</b>	<b>3,279</b>	<b>3,202</b>	<b>3,279</b>	<b>3,389</b>	<b>3,389</b>	<b>3,002</b>	<b>1,751</b>	<b>503</b>	<b>21,794</b>
<b>Ag Production (oz)</b>	<b>1,748</b>	<b>1,888</b>	<b>1,818</b>	<b>1,748</b>	<b>1,399</b>	<b>1,510</b>	<b>1,454</b>	<b>1,399</b>	<b>12,965</b>

## 1.9 Project Infrastructure

The facilities at the NX Gold Mine include the mine portal, the Nova Xavantina Plant, tailings storage facility mechanical workshop, administrative offices, metallurgical laboratory, security gate and guard facilities, medical clinic, cafeteria and gravel airstrip used to fly out doré bars after production.

National electrical service is available on site from the town of Nova Xavantina, located approximately 18 km from the NX Gold Mine. Water in sufficient quantities to support mining and processing operations is sourced from surface run-off and a fully permitted groundwater well located on the property.

## 1.10 Permitting, Environment and Social Considerations

The NX Gold Mine is a fully permitted gold mine currently in operation. An environmental action program was developed for NX Gold prior to the mine reaching commercial production. NX Gold follows the guidelines set forth in the program to reduce its impact and recover impacted areas within the vicinity of the mine. NX Gold adheres to a program of frequent environmental monitoring including water quality control, as well as re-vegetation of historic artisanal mining areas that pre-date NX Gold.

The mine's closure plan, adapted to the current social and environmental context within the area of the NX Gold Mine, has been designed to maximize the physical, chemical, biological, and socio-economic stability of the area after mining activities have concluded. The current estimated reclamation liabilities are approximately R\$20.2 million.

NX Gold maintains an excellent relationship with the neighboring community of Nova Xavantina, as well as smaller neighboring land-owners, providing among others, community outreach, children's educational programs and sponsorship of local sporting events and teams. NX Gold has provided technical and financial support towards the environmental rehabilitation of areas previously impacted by historic artisanal mining activities and has remained an important economic contributor to the region through both direct and indirect jobs, royalties and tax revenue.

## 1.11 Capital and Operating Costs

Capital and operating costs are shown for 2018 and 2019 reflecting the period of operation from September 2018 to April 2019. For the purposes of the report, mine reclamation and closure are assumed to commence on the conclusion of mining of the Mineral Reserves; however, NX Gold is actively undertaking exploration activities to increase the mine's life. It is anticipated that a combination of Mineral Resource conversion, extension of the Brás and Buracão veins, and delineation of target areas will serve to augment the production profile and increase mine life subject to satisfactory exploration results, technical, economic, legal and environmental conditions.

Total capital costs are estimated at R\$21.2 million, of which R\$20.2 million is related to mine closure in 2019. Due to the nature of the production plan, as outlined by the current Mineral Reserve estimate, there are no capital requirements (development or ventilation) required to access the ore bodies nor any equipment needs; however, an investment of R\$1.0 million over 2018 and 2019 is planned to refurbish the mine's secondary escapeway.

**Table 7: Forecast Capital Expenditures**

<b>Total Capital Expenditures</b>		<b>2018</b>	<b>2019</b>
Secondary Escapeway	R\$	800,000	200,000
Mine Closure	R\$	0	20,218,405
<b>Total</b>	<b>R\$</b>	<b>800,000</b>	<b>20,418,405</b>

An operating cost forecast was prepared using the mine's operating history and current consumption coefficients. Mine and plant activities are subdivided and adjusted based on production allocation between Brás and Buracão as well as modeled plant head grade. The expected C1 Cash Cost<sup>2</sup> of the NX Gold Mine averages US\$594 per ounce of gold produced.

**Table 8: Operating Cost Summary**

		<b>2018</b>	<b>2019</b>	<b>Total</b>
Exchange Rate	US\$/BRL	3.80	3.80	3.80
Ore Treated	tonnes	39,549	26,286	65,835
<b>Gold Contained</b>	<b>oz</b>	<b>13,150</b>	<b>8,644</b>	<b>21,794</b>
Operational Support	000 R\$	3,488	4,070	7,558
Underground Mining	000 R\$	12,786	11,810	24,596
Processing	000 R\$	9,197	8,665	17,863
<b>Sub Total</b>	<b>000 R\$</b>	<b>25,471</b>	<b>24,545</b>	<b>50,017</b>
Less Silver Credit	000 R\$	(479)	(383)	(862)
<b>Total</b>	<b>000 R\$</b>	<b>24,992</b>	<b>24,162</b>	<b>49,155</b>
<b>C1 Cash Cost</b>	<b>R\$/oz</b>	<b>1,901</b>	<b>2,795</b>	<b>2,255</b>
<b>C1 Cash Cost</b>	<b>US\$/oz</b>	<b>500</b>	<b>736</b>	<b>594</b>

## 1.12 Economic Analysis

An economic analysis was prepared for the NX Gold Mine using the following primary assumptions:

- Considers commencing on the Effective Date and does not include actual performance achieved prior to August 31, 2018
- Total ore processed of 65.8 thousand tonnes at an average head grade of 11.37 g/t gold
- Production is assumed to equal sales, with total sales of 21,794 ounces of gold and 12,965 ounces of silver
- Metal prices of US\$1,250 per ounce of gold and US\$17.50 per ounce of silver
- USD:BRL foreign exchange rate of 3.80
- No taxes payable over the production forecast as a result of accumulated net operating losses being applied against taxes payable

<sup>2</sup> C1 Cash cost of gold produced (per oz) is the sum of production costs, net of capital expenditure development costs and silver by-product credits, divided by the gold ounces produced. By-product credits are calculated based on actual silver sales during the period divided by the total ounces of gold produced during the period. C1 cash cost of gold produced per pound is a non-IFRS measure used by the Company to manage and evaluate operating performance of the Company's operating mining unit and is widely reported in the mining industry as benchmarks for performance but does not have a standardized meaning and is disclosed in addition to IFRS measures.

- CFEM royalty based on 1% of gross revenue

The NX Gold Mine produces an undiscounted after-tax cash flow of approximately R\$31 million (approximately US\$8.2 million) over the remainder of the production forecast of approximately 7.5 months.

The after-tax NPV at a 5% discount rate is US\$8.1 million. Due to the relatively short mine life and limited up-front and ongoing capital requirements to achieve the stated production plan, the after-tax cash flow is similar to the NPV. As there is no meaningful capital required to achieve the production forecast and cash flows as outlined, IRR and payback are not meaningful measures. The results of the economic analysis are shown below in Table 9.

In addition, an after-tax sensitivity analysis was performed considering changes in gold price, foreign exchange rates, and capital and operating costs. The analysis shows that the NX Gold Mine is most sensitive to gold prices and foreign exchange rates.

**Table 9: Economic Analysis of the NX Gold Mine**

Assumptions		2018 <sup>1</sup>	2019
Exchange Rate	R\$/US\$	3.80	3.80
Gold Price	US\$/oz	1,250	1,250
<b>Production</b>			
Ore Mined	tonnes	39,549	26,286
Gold Grade Mined	g/t	11.49	11.37
Ore Processed	tonnes	39,549	26,286
Gold Grade Processed	g/t	11.49	11.37
Global Recovery	%	90.0	90.0
<b>Gold Contained</b>	<b>oz</b>	<b>13,150</b>	<b>8,644</b>
<b>Capex</b>			
<b>Total</b>	<b>000 R\$</b>	<b>800</b>	<b>20,418</b>
<b>Operating Costs</b>			
General & Administrative	000 R\$	2,147	1,943
Operational Support	000 R\$	3,488	4,070
Underground Mining	000 R\$	12,786	11,810
Processing	000 R\$	9,197	8,665
<b>Sub Total</b>	<b>000 R\$</b>	<b>27,619</b>	<b>26,488</b>
<b>Depreciation/Exhaustion</b>	<b>000 R\$</b>	<b>12,082</b>	<b>9,273</b>
<b>Total Costs</b>	<b>000 R\$</b>	<b>39,701</b>	<b>35,762</b>
<b>Revenue</b>			
Gold Sales	tonnes	13,150	8,644
Gross Metal Revenue	000 R\$	62,463	41,061
Total Net Metal Revenue	000 R\$	62,312	41,030
<b>Total Net Revenue</b>	<b>000 R\$</b>	<b>62,966</b>	<b>57,088</b>
<b>Cash Flow</b>			
Revenue	000 R\$	62,966	57,088
Opex (ex-Depreciation & Exhaustion)	000 R\$	(27,619)	(26,488)
Income & Social Contribution Taxes	000 R\$	(6,465)	(819)
Other Taxes & Credits	000 R\$	(1,273)	(1,177)
Employee Bonuses	000 R\$	-	(4,000)
<b>Operating Cash Flow</b>	<b>000 R\$</b>	<b>27,609</b>	<b>24,604</b>
CAPEX	000 R\$	(800)	(20,418)
<b>Free Cash Flow</b>	<b>000 R\$</b>	<b>26,809</b>	<b>4,186</b>
<b>Accumulated Free Cash Flow</b>	<b>000 R\$</b>	<b>26,809</b>	<b>30,995</b>
<b>Free Cash Flow</b>	<b>000 US\$</b>	<b>7,055</b>	<b>1,102</b>
<b>Accumulated Free Cash Flow</b>	<b>000 US\$</b>	<b>7,055</b>	<b>8,157</b>
<b>Results</b>			
After-Tax NPV <sub>5</sub>	000 US\$	8,056	
IRR	%pa	n/a	
Simple Payback	years	n/a	

(1) 2018 based on the 4 months from the Effective Date to December 31, 2018

## 1.13 Conclusions and Recommendations

The procedures and processes adopted by NX Gold personnel to produce the geological models was reviewed in detail by GE21 and, in the opinion of the qualified persons, was executed according to industry standards. Sampling, QA/QC, security and data control were similarly in line with industry best practices and support the current Mineral Resource and Reserve estimate.

Regarding the Mineral Resources and Mineral Reserves estimation process, and to ensure continuity of the mining operations, the authors recommend a work program that includes the following:

- Validate the integration between surface and underground topographic bases, allowing better adherence between the drill hole survey data sets and underground channel samples in stopes;
- Consolidate the integration of the geological model with surface and underground geological mapping, applying sample assay data as a base for horizontal projection of underground maps;
- Intensify the exploratory program in the regions classified as exploration potential to further define and classify these zones into incremental Mineral Resources (and Mineral Reserves);
- Undertake an additional infill drilling campaign to promote the classification of Indicated Mineral Resources into Measured Resources.
- The hanging wall of the deposit, in the opinion of the authors of the NX Gold Technical Report, is competent enough for the current mining method with appropriate mining support. GE21 recommends NX Gold undertake a third-party geotechnical study to further evaluate the potential to reduce sill pillar thickness with the aim of increasing mine recovery.

Table 10 below presents a proposed budget for recommended work programs:

**Table 10: Recommended Work Programs**

<b>Program</b>	<b>Budget (US\$ 000)</b>
Check between surface and underground topographic bases	\$10
Integration of geological model with surface and underground geological mapping	\$50
Exploration drill program in the regions classified as exploration potential (estimated 14,400 meter program)	\$1,800
Infill drill program to promote the classification from Indicated to Measured Mineral Resources (estimated 9,600 meter program)	\$1,200
Geotechnical sill pillar design review to improve mine recovery	\$300
<b>Total</b>	<b>\$3,360</b>

#### **Updated Information with respect to the NX Gold Property**

The following update has been prepared by Ero personnel and reviewed and approved by Porfirio Cabaleiro Rodrigues, MAIG, of GE21 who is a “qualified person” and “independent” of the Company within the meanings of NI 43-101 and an author of the Vale do Curaçá Technical Report.

#### Mineral Resource and Mineral Reserve Estimates as at December 31, 2018

The Mineral Resource and Mineral Reserve estimates contained in the NX Gold Technical Report were prepared as at August 31, 2018. As production at the NX Gold Property has continued since the preparation of these estimates, the Mineral Resources and Mineral Reserves at the NX Gold Property have decreased. Accordingly, set out below is an internal update of the Mineral Resource and Minerals Reserve estimates as at December 31, 2018, based on a 1.40 g/t gold grade cut-off considered for Mineral Resources and a 3.20 g/t gold grade cut-off for Mineral Reserves, and accounting for the material mined since the since the preparation of the Mineral Resource and Mineral Reserve estimates contained in the NX Gold Technical Report. Due to the

limited mineral inventory as at August 31, 2018, material mined exceeded the Mineral Resource estimate. Exploration drilling is currently focused on increasing Mineral Resources, Mineral Resources and mine life.

**Table 11: NX Gold Mineral Resource Estimate, December 31, 2018**

Deposit	Classification	Tonnes (kt)	Au (g/t)	Au (koz)
Brás Vein	Indicated	55.7	14.9	26.7
	<i>Inferred</i>	38.0	18.96	23.2
Buracão Vein	Indicated	1.75	30.55	1.7
	<i>Inferred</i>	1.65	23.54	1.2
<b>Total</b>	<b>Indicated</b>	<b>57.45</b>	<b>15.38</b>	<b>28.4</b>
	<b><i>Inferred</i></b>	<b>39.65</b>	<b>19.15</b>	<b>24.4</b>

1. Effective date of December 31, 2018.
2. Presented Mineral Resources inclusive of Mineral Reserves. All figures have been rounded to reflect the relative accuracy of the estimates. Summed amounts may not add due to rounding.
3. Cut-off gold grade of 1.40 g/t.
4. Mineral resource estimated by ordinary kriging inside 10m by 10m by 2m blocks (sub-blocks of 2.5m by 2.5m by 0.5m).

**Table 12: NX Gold Mineral Reserve Estimate, December 31, 2018**

Deposit	Probable Reserves	Tonnage (kt)	Au Grade (g/t)	Au Total (koz)
Brás Vein	Planned Stopes	33.7	11.40	22.4
	Gallery Development	-	-	-
	<b>Probable Reserves</b>	<b>33.7</b>	<b>11.10</b>	<b>12.0</b>
Buracão Vein	Planned Stopes	0.2	17.13	0.1
	Gallery Development	-	-	-
	<b>Probable Reserves</b>	<b>0.2</b>	<b>17.13</b>	<b>0.1</b>
<b>Total Probable Reserves</b>		<b>33.8</b>	<b>11.13</b>	<b>12.1</b>

1. Effective date of December 31, 2018.
2. All figures have been rounded to reflect the relative accuracy of the estimates. Summed amounts may not add due to rounding.
3. Mineral Reserve cut-off gold grade of 3.2 g/t.
4. The Mineral Reserve estimates are prepared in accordance with the CIM Definition Standards, and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines, using geostatistical and/or classical methods, plus economic and mining parameters appropriate for the deposit. Mineral Reserves are based on a long-term gold price of US\$1,250 per oz, and a USD:BRL foreign exchange rate of 3.20. Mineral Reserves are the economic portion of the Indicated Mineral Resources. Mineral Reserve estimates include mining dilution at 5% grading 0.5g/t Au and 7% grading 0.5g/t Au for the Brás and Buracão Veins, respectively. Practical mining shapes (wireframes) were designed using geological wireframes / mineral resource block models as a guide.
5. Assumes mining dilution of 5% grading 0.5g/t Au and 7% grading 0.5g/t Au for the Brás and Buracão Veins, respectively.
6. Mining recovery of 95%.

## BOA ESPERANÇA PROPERTY

The scientific and technical information in this section relating to the Boa Esperança Property is a direct extract of the Executive Summary section contained in the Boa Esperança Technical Report, which has been conformed to be consistent with other defined terms and formatting within this AIF. The entire Boa Esperança Technical Report, a copy of which is available for review under the Company's profile on SEDAR at [www.sedar.com](http://www.sedar.com), is incorporated by reference into this AIF and should be consulted for details beyond those incorporated herein.

### Executive Summary

SRK was commissioned by Ero to prepare a NI 43-101 compliant Feasibility Study ("FS") for the Boa Esperança Deposit ("Boa Esperança" or the "Project") as part of the Boa Esperança Property located in Pará, Brazil. The Project was acquired by MCSA from Corporacion Nacional Del Cobre (Codelco) in 2007 and is now 100% owned by MCSA. In December 2016, Ero acquired approximately 85.0% interest in MCSA. In June 2017, Ero acquired an additional 14.5% by subscribing for shares from treasury for a total interest in MCSA of approximately 99.5%.

This Technical Report is an update of a prior 2015 report prepared by SRK. The original 2015 report has been updated based on work performed throughout various studies developed for the Project by third-party technical and engineering firms throughout the course of the Project's ownership under MCSA. SRK has reviewed the contents and, where relevant, has accepted and/or modified the conclusions therein based on the judgment of the authors and the recommendations therein. There has been no new material scientific or technical information about the property since the publication of these reports. It is the opinion of the authors of this Technical Report that the information contained in such reports has been appropriately reviewed and are current for the purposes of NI 43-101. A full list of references relevant to the Project is listed in Chapter 27 – References.

### 1.1 Property Description and Location

The Boa Esperança copper deposit is located in the municipality of Tucumã, Pará State, Brazil. The site is located approximately 40 km to the southwest of the town. Tucumã can be accessed by state highway PA-279, which connects the town of Xinguara to the town of São Felix do Xingu, a stretch of road that runs for approximately 160 km. The junction of PA-279 with federal highway BR-155 is in Xinguara. The latter is the main highway leading to the city of Marabá, situated around 220 km north of Xinguara.

### 1.2 Ownership

MCSA acquired the Boa Esperança copper deposit concession from Corporación Nacional del Cobre (Codelco) in 2007 and became the legal owner of the mineral rights to the Boa Esperança copper deposit. In December 2016, Ero acquired approximately 85.0% interest in MCSA. In June 2017, Ero acquired an additional 14.5% by subscribing for shares from treasury for a total interest in MCSA of approximately 99.5%.

The legal status of MCSA's mining rights is as follows:

- The Final Exploration Report was presented to the DNPM on April 10, 2008 and was approved by the DNPM on July 30, 2009;
- MCSA filed for the Mining Concession through the presentation of an Economic Exploitation Plan (Plano de Aproveitamento Econômico or PAE), which was filed with the DNPM on May 5, 2010; and
- The Preliminary License was filed with the DNPM on March 22, 2012.

All criteria to obtain the mining rights have been fulfilled and the Ero is awaiting final approval of the change status to a full Mining Concession after issuance of the Installation License, currently under review by the Pará State environmental agency.

The Mineral Resources and Mineral Reserves disclosed in this report are completely contained within the Exploration Licence held by MCSA. MCSA is either the beneficial owner or has the right to the required surface rights for the envisioned operations.

### 1.3 Geology and Mineralization

The Carajás Mineral Province, where the Boa Esperança copper deposit is located, is on the east side of the Amazon Craton and is considered one of the most important mineral provinces in Brazil. It is a region of high economic importance, as it hosts the world's largest known high-grade Fe deposits, as well as world-class Cu-Au deposits, such as Salobo, Sossego, 118, Cristalino and Igarapé Bahia-Alemão. Deposits of Mn, Ni, Cr, Al and Zn have also been identified in the province. The existence of high-grade significant deposits elsewhere in the region provides no assurance regarding the size, extent, grade, or value of any deposits or prospective deposits at the Boa Esperança.

The Carajás Mineral Province encompasses two distinct tectonic domains, both of these Archean in age. The South Block, which is the older of the two (3.0 to 2.86 Ga) and is where the Boa Esperança deposit is located, is called the Rio Maria Block and contains a typical granite-greenstone belt terrain. The North Block, which is the younger domain (2.8 to 2.5 Ga), is called Carajás and is composed of volcano-sedimentary rocks and granitoids, which host the large Fe, Cu-Au, Mn, Ni and Zn deposits in the province. These two blocks are considered to be products of the juxtaposition of volcanic island arcs and plutonic-like Andes environments, associated with an intra-continental mantle plume.

The Boa Esperança copper deposit occurs within an isolated hill, which is elongated in a NNE direction and located 38 km SW following a straight line from the town of Tucumã. The topographic high is supported mainly by breccias composed of quartz and magnetite, which cut the Neoproterozoic biotite-granite (2.78 Ga), the host of the copper mineralization. The Neoproterozoic biotite granite intrudes into the Mesoproterozoic Rio Maria granodiorite (2.85 Ga).

Mineralization consists of a series of brecciated zones, which are aligned N60°-70°E and incline in a SE direction (60°-70°SE). However, another alignment of about N40°E was observed in the field and coincides with the elongation of the Boa Esperança hill.

### 1.4 Exploration Status

Project exploration has consisted of ground geological mapping and sampling, geophysical surveys and exploration drilling. Ground geophysical surveys completed include magnetic and gravity surveys and induced polarization electrical surveys.

The geophysical surveys were completed by Codelco during the period from 2003 to 2006. The exploration work conducted by MCSA includes confirmation drilling conducted during the period from 2008 through 2013, and site-specific studies in support of this and prior feasibility studies.

The Project's first drillhole campaign began in 2003 under the supervision of Codelco. Codelco completed four drillhole campaigns in 2003-2004, 2005 and 2006. Codelco completed 62 core drillholes, totaling 21,956.12 m on a 200 m x 200 m drilling grid that was infill drilled to 100 m x 100 m.

MCSA completed additional drilling between 2008 and 2013, totaling 36,016.13 m, for a project total of 57,972.25 m in 165 core holes. Infill drilling was completed to approximately 50 and 25 m centers for the core of the deposit.

The deposit has been drilled sufficiently to allow for the definition of Mineral Resources as defined under NI 43-101.

### 1.5 Mineral Resource Estimate

The Mineral Resource estimate was prepared by SRK Senior Geologist Rafael Russo Sposito and supervised by SRK Principal Resource Geologist Carlos César Barbosa; Mr. Barbosa is a Qualified Person and is independent of MCSA as defined by NI 43-101.

The Mineral Resource estimate was prepared using a three-dimensional percentage block model of 10 m x 10 m x 5 m. In addition, oxidation state and resource classification codes were assigned to each block. The resource estimation was conducted using Geovia GEMSTM (v6.6) software. Other graphs were created using GSLIB software.

The Mineral Resources are constrained to a pit optimization shell run with the following parameters:

- Copper price: US\$4.00 per pound;
- Mining cost: US\$2.25/t moved;
- Processing cost + G&A: US\$8.21/t processed;



- TC/RC: US\$0.32/lb copper; and
- Recovery: 91%.

The internal copper CoG (excluding mining costs) is 0.20 %.

The Measured, Indicated and Inferred Mineral Resources within the pit optimization shell are given in Table 1. The copper grades are undiluted grades within the grade shell wireframes.

**Table 1: Mineral Resource statement, Boa Esperança Copper Project, Pará State, Brazil, SRK Consultores do Brasil LTDA., June 1, 2017**

Domain	Category	Quantity (Mt)	Cu %	Contained Cu (tonnes)
Sulfide	Measured	41.00	0.81	332,100
	Indicated	26.17	0.62	162,254
	Measured + Indicated	67.17	0.73	490,341
	Inferred	1.35	0.56	7,560
Secondary Sulfide	Inferred	2.05	0.69	14,145
<b>Total</b>	<b>Measured</b>	<b>41.00</b>	<b>0.81</b>	<b>332,100</b>
	<b>Indicated</b>	<b>26.17</b>	<b>0.62</b>	<b>162,254</b>
	<b>Measured + Indicated</b>	<b>67.17</b>	<b>0.73</b>	<b>490,341</b>
	<b>Inferred</b>	<b>3.40</b>	<b>0.64</b>	<b>21,760</b>

Source: SRK

Effective Date: June 1, 2017

(1) Tonnes and grade are rounded to reflect approximation.

(2) Mineral Resources are stated at a cut-off grade of 0.2% Cu and are fully contained within an optimized pit shell.

(3) Stated Mineral Resources are inclusive of Mineral Reserves.

Mineral Resources are not Mineral Reserves and have not demonstrated economic viability. Mineral Resource estimates do not account for mineability, selectivity, mining loss and dilution. These Mineral Resource estimates include Inferred Mineral Resources that are normally considered too geologically speculative to allow for the application of economic considerations that would see them categorized as Mineral Reserves. There is also no certainty that these Inferred Mineral Resources will be converted to Measured and Indicated categories through further drilling or into Mineral Reserves once economic considerations have been applied.

## 1.6 Mineral Reserve Estimate

The conversion of Mineral Resources to Mineral Reserves requires accumulated knowledge achieved through pit optimization, pit design, economics and associated modifying parameters.

The Mineral Reserves were calculated based on a cut-off grade of 0.28% Cu and a life of mine (“LoM”) copper price of US\$ 7,000/t LME Cu.

In accordance with the CIM classification guidelines, only Measured and Indicated Mineral Resource categories are converted to Proven and Probable Mineral Reserves respectively (through inclusion within the open-pit mining limits). Inferred Mineral Resources, where unavoidably mined, have been treated as waste and assigned zero grade.

Table 2 shows the Boa Esperança mine open pit ore reserve statement.

**Table 2: Mineral Reserve Statement for the Boa Esperança copper deposit, State of Para, Brazil, SRK Consultores do Brasil Ltda. as of June 1, 2017**

<b>Mineral Reserve Classification</b>	<b>Volume</b>	<b>Density</b>	<b>Dry Tonnes</b>	<b>Cu</b>	<b>Contained Cu</b>
	<i>m<sup>3</sup> x 1,000</i>	<i>t/m<sup>3</sup></i>	<i>t x 1,000</i>	<i>%</i>	<i>t x 1,000</i>
Proven	5,744.50	3.225	18,528.1	0.96	178.05
Probable	315.6	3.089	975.0	0.72	7.02
<b>Total</b>	<b>6,060.10</b>	<b>3.218</b>	<b>19,503.1</b>	<b>0.95</b>	<b>185.07</b>

- (1) Effective Date: June 1, 2017
- (2) Open pit Mineral Reserves assume full mine recovery;
- (3) Open pit Mineral Reserves are diluted along lithological boundaries and assume selective mining unit of 2.5 m x 2.5 m x 5 m;
- (4) The strip ratio was calculated to be 1.93 (waste to ore);
- (5) Reserves are based on a price of US\$ 7,000/t LME Cu throughout the life of the mine;
- (6) Reserves are based on a cut-off grade of 0.28% Cu;
- (7) Mineral Resource tonnage and contained metal have been rounded to reflect the accuracy of the estimate. As a result of this rounding, the numbers may not add up;
- (8) Contained copper is reported as in-situ and does not include process recovery; and
- (9) The Mineral Reserve estimate was calculated by Rubens Mendonça, BSc, MBA, Chartered Professional Member of the AusIMM, Mining Manager of SRK Consultores do Brasil as at the date of the report (currently Director of Planminas), in accordance with the standards set out in CSA, NI 43-101 and generally accepted CIM "Estimation of Mineral Resource and Mineral Reserves Best Practices" guidelines.

## 1.7 Mining Methods

Boa Esperança is a copper deposit, averaging approximately 0.95% Cu diluted grade within the minable pit. The mineralization is close to the surface and the resource is appropriate for an open pit mining operation.

The final pit design in this feasibility phase of the Boa Esperança project totals 19.5 Mt of Proven and Probable Mineral Reserves with an average diluted grade of 0.95% Cu. From this total, 17.5 Mt is classified as high grade material with an average Cu content of 1.02% and the remaining 2.0 Mt as low grade material, with a grade of 0.34% Cu.

Waste materials amount to 37.7 Mt, which is comprised of 19.6 Mt of saprolite, 8.9 Mt of weathered rock and 9.2 Mt of fresh rocks. The LoM strip ratio of waste to ore is 1.93.

The operation of the Boa Esperança mine will utilize conventional open pit mining techniques and small size mining equipment to mine a total of 57.2 Mt of material over the life of the mine. This comprises 19.5 Mt of ore and 37.7 Mt of waste materials. A total of 5.1 Mt of ore will be moved from the stockpiles to the plant.

The main mine equipment selected for the Boa Esperança project consists of 4.0 m<sup>3</sup> hydraulic excavators, on-highway 35t trucks and drills.

It has been assumed that 100% of weathered and fresh rocks and 10% of saprolites will be drilled and blasted in 10-meter-high benches. Ore will be hauled to the primary crusher or to the run of mine (ROM) stockpiles close to the primary crusher. Waste materials will be hauled to different dumps and destinations. Grade control will be performed through drilling, sampling and assaying materials within the pit limits using the production drills.

The mine is scheduled to operate in three 8 hour shifts, 7 days per week, 365 days per year. Whenever mine production needs to be reduced or interrupted, the primary crusher will be fed from the regularization pile using a front-end loader.

### 1.7.1 Geotechnical

Three distinct layers of materials were identified: saprolite, weathered rocks and fresh rocks.

Based on the Planer Rupture models between berms performed in studies 8 and 9, steeper angles for the excavated slopes in the weathered and fresh rocks have been proposed. However, for the saprolite, a shallower angle is recommended, as this material forms a less cohesive soil and is more likely to fail at steep slope face or inter-ramp angles.

Table 3 shows the slope geometry proposed by SRK for each type of material.

**Table 3: Proposed angles for each type of material**

	Saprolite	Weathered Rock	Fresh Rock
<b>Bench Height</b>	10,0 m	10,0 m	10,0 m
<b>Berm Width</b>	7,0 m	5,0 m	5,0 m
<b>Slope Face Angle</b>	45°	70°	83°
<b>Inter-Ramp Angle</b>	31,5°	49°	58°

## 1.8 Mineral Processing and Metallurgical Testing

This section describes the experimental work performed with the samples of two different rock types from Boa Esperança deposit, Tucumã, PA, namely "breccia" and "granite".

In early test work, the Boa Esperança deposit was considered as a conventional disseminated copper deposit. However, it has two distinct geological features, a breccia and a granite rock type. The sulphide minerals have been concentrated in faults and open spaces within the granite body.

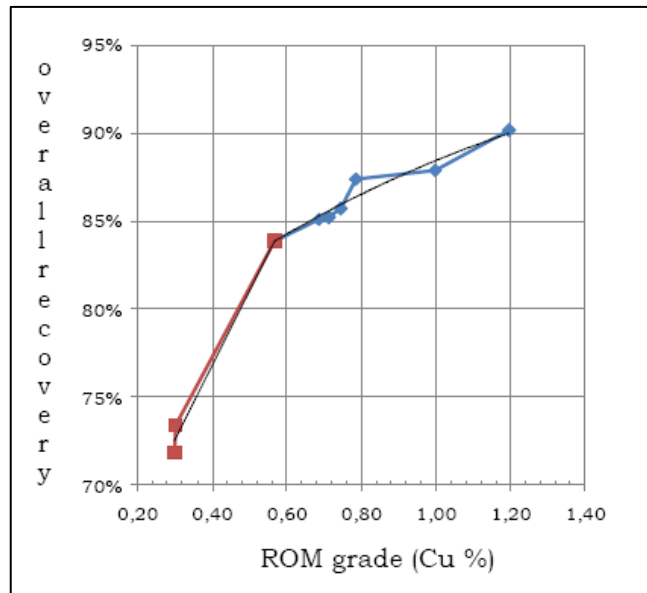
An experimental program was developed in two primary stages to characterize the ore and evaluate pre-concentration methods: bench scale testing performed on a trays jig, followed by continuous tests with a small-scale pilot plant.

Their results confirmed the previous experimental conclusions:

- 30% of the crushing product is under 3mm and shows copper enrichment factors between 1.55 and 2.0 as compared to the ROM copper grade. The coarse fraction which fed the jig had a copper grade enrichment factor between 0.75 and 0.8 of the ROM grade, implying copper is mostly contained in the minus 3mm fraction.
- 50% of the mass was rejected in jigging. The copper recovery varied from 86% to 96%. Adding to this recovery the recovery of the copper contained in the finer fraction (-3 mm) of the crushed product, the total recovery of the circuit increased to 90% to 96%.
- After the jigging continuous testing, the jig concentrate was crushed to minus 3.35 mm and recombined with the natural fines (minus 3 mm) from each rock type then ground to 106 µm. Locked cycle froth flotation locked tests were performed to concentrate the copper sulphide.
- The tailings of this initial flotation were refloatated to concentrate pyrite (sequential flotation).
- The tailings of this second stage flotation were submitted to magnetic separation and yielded an iron ore concentrate and the final fine tailing.
- The conclusion of this work is that pre-concentration is an effective method for rejecting a significant mass of ROM feed, with minimum copper losses. In practice, this will reduce the size of the crushing and concentrating plant and as a result - the capital and operating costs.
- It was also demonstrated that jigging using simple equipment as the AllMineral jig (a Baum-type pneumatic jig) is effective. More sophisticated equipment, such as dense media separators, or specialized jigs with artificial beds or for special use, are unnecessary.
- The pre-concentration study was followed by blending the jig concentrate with the minus 3 mm of the ROM, grinding and performing froth flotation and magnetic separation testing.
- The main deleterious contaminants like F, Cl, U, As, P, Pb and Zn are present in the concentrate in traces such that significant smelter penalties are not anticipated.
- Bond crushability indexes varied from 14.9 to 18.1 kWh/t, averaging 16.7 kWh/t indicating difficult crushing plant feed.

- Bond ball mill work indexes ranged from 13.9 to 17.0 kWh/t with an average of 15.7 kWh/t, indicating a medium/hard plant feed.

The result used to estimate the predicted recovery, as a function of feed grade is summarized in Figure 1. The blue line shows the recovery for ROM grades greater or equal to 0.57% Cu and the red shows expected recovery for grades below 0.57% Cu.



**Figure 1: Overall recovery (%) x ROM grade (% Cu)**

## 1.9 Recovery Methods

Open pit mining is planned for a production rate of 2.31 million tonnes (Mt) per year at an average ore grade of 1.14% Cu. Ore will be processed in a concentrator at a rate of 9,033.6 tonnes per day (t/d) (primary crushing) using conventional processes considered standard to the industry. The processing flowsheet, as well as the initial mass balance is based on work performed in 2011 by, “Consolidação do Desenvolvimento de Processo – Projeto Boa Esperança”, dated January 2011 (the “2011 Metallurgical Report”), the results of which were reviewed and verified by SRK.

Although not used specifically as the basis for process design criteria, confirmatory variability test work was undertaken by SGS-Geosol and reported in the following studies: “Final Report – Flotation Testwork on Copper Samples from the Boa Esperança Project”, dated May 10, 2012 (the “2012 Metallurgical Report”). Subsequent to that work, several additional confirmatory campaigns were conducted, producing the following reports:

- “VLC-Testes de sedimentação e filtração-15/12/14”;
- “Simulação de britagem Metso, novembro 2014”; and,
- “SGS Geosol – Testes de Wi-04/09/14”, “SGS Geosol – Final Report-Jigging, flotation and magnetic separation on a composite sample for the Boa Esperança Project – Final Report – SG0014-1403/rev02 – 10/04/2015”.

The final process design and mass balance was performed by incorporating a jigging pre-concentration stage prior to flotation, based on favorable metallurgical testwork results.

### 1.9.1 Final Process Flowsheet Design

The process flowsheet includes three-stage crushing, screening, jigging, ball mill grinding, copper rougher flotation, two stages of copper cleaner flotation and pyrite flotation from the copper rougher and scavenger flotation tailing. The final copper concentrate is thickened prior to pressure filtration and the flotation tailing is cycloned, dewatered, thickened and filtered prior to discharge to the tailing storage facility. The pyrite concentrate from the pyrite flotation is sent to the high sulfur pond.

### **1.9.2 Final Process Material Balance**

Process plant material balances have been developed for the crushing circuit, screening circuits, jigging, grinding, copper flotation, regrind, pyrite flotation, concentrate / tailing thickeners and dewatering circuits.

### **1.9.3 Final Process Plant Water Balance**

The water balance includes the water requirements for both raw water and recycled process water. A fresh water requirement of 143 m<sup>3</sup>/hr is estimated and is based on an overall process plant water requirement of 560.8 m<sup>3</sup>/hr with 552.0 m<sup>3</sup>/hr being provided as recycled process water. Water losses of 156.3 m<sup>3</sup>/hr are estimated. It is assumed that the gland seal water for pumps, water for reagents preparation, potable water and make-up water will be provided by clean raw water. The rest of the water requirements within the process plant will be from recycled process water.

### **1.10 Tailings**

SRK reviewed and relied upon the work performed by VOGBR Recursos Hídricos & Geotecnia (Minas Gerais, Brazil) during 2014-2015 who developed the Basic Design of the B2 Dam and the Conceptual Design of the Water Pond that will be implemented at the Boa Esperança Mine. The dams will have distinct purposes as shown below.

#### **1.10.1 Water Pond**

The reservoir of the water pond will have the purpose of storing clean water to meet the supply demands of the plant, considering a flow of 150 m<sup>3</sup>/hour during uninterrupted operations for a year. In December 2014, MCSA contracted VOGBR to develop the current work. The Water Pond will be built in the Jatobá Creek, within the limits of the MCSA properties.

#### **1.10.2 B2 Dam**

The reservoir of the B2 Dam will have the purpose of containing the hazardous tailings resulting from the copper ore beneficiation and to recover water to rationalize the use of new water, minimizing the need to collect water in the waterbodies of the region. In December 2014, MCSA contracted VOGBR to develop the current work. At that time, the construction of a waterproof dam constituted by a compacted soil embankment to meet the new tailings volumes generated in the Boa Esperança Copper Mine project was assessed. The considered operational life of the mine was 11 years.

The tailings to be deposited in the B2 Dam will be classified according to the ABNT NBR 10.004/2006 Standard as Class I tailings (hazardous). Since the tailings are Class I, the B2 Dam shall be watertight observing a minimum layer of non-saturated soil of 1.50m, measured between the bottom of the deposit and the critical water level. In addition, the design shall include the definition of the leak detection system and waterproofing system.

#### **1.10.3 Tailings Storage**

Studies for the Basic Design of sapolite and tailing dump aimed to define the geometry of its final arrangement and to size the proposed structures to internal and surface drainage systems.

The geometry proposed for the dump was adequate with regards to the geotechnical stability, showing security factors for normal and critical conditions equal to 1.5 and 1.3, respectively.

The final configuration of the dumps will consist of berms measuring 10 meters wide and benches with 10 meters' height, with final angle of 2H:1V, after compaction of the tailing and enveloping with compacted soil of the sapolite and tailings dump. The volumetric capacity for the disposal of tailing and waste in the final configuration is 15.4 Mm<sup>3</sup>.

The bottom drain system will be used to collect the contributions from the input of incident waters in the dump, avoiding its saturation. These drains should be protected by a sapolite layer, to prevent that the traffic or surface draining damages the granular material of the section.

The materials to be disposed will be transported by conveyor belts, in the case of the waste processing plant, and dump trucks from the pit, in the case of the sapolite.

#### **1.10.4 Hydrology**

Studies conducted in the period of January to November 2011, consisted of the following steps:

- Inventory of water sources and users;
- Flow measurements in major drainages;
- Preparation of hydrogeological conceptual model;
- Evaluation of impacts to water resources;
- Assessment of water availability; and
- Projection of the monitoring network.

During the months of February and September 2011 flow measurements related to the rainy and dry periods were conducted in the Project area in conjunction with environmental permit work. In each of these periods five different points located in the main drainages were established for the implementation of flow measurements. Also in the month of September a flow measurement was held in the Branco River, located approximately 15 km south of the Project.

The hydrogeological system in the region has the typical characteristics of formations located in crystalline basement aquifers. This is an aquifer consisting of a shallow weathered mantle with metric thickness (Porous Aquifer), superimposed over the crystalline basement (Fractured Aquifer), deformed and fractured.

The results indicate that the Project area has a low water potential, as many springs and surface water bodies have intermittent flow, becoming dried during the dry season. The underground reservoirs were also evaluated as an alternative to water capturing. However, tests performed in tubular wells showed low production capacity, with pump flow rate of about 6 m<sup>3</sup>/h.

The water pond designed by VOGBR will have the purpose of storing clean water to meet the demand of the plant, estimated at a flow of 150m<sup>3</sup>/hour, working for a year without interruption. The water pond will be located in the Jatobá stream, within the area owned by MCSA.

#### **1.10.5 Project Infrastructure**

Based on the estimated production volumes of copper concentrates, the best logistic alternatives between the Project and ports have been reviewed.

Tucumã, PA was considered as the starting point for the Project, considering:

- Domestic transportation;
- Cargo handling at the port;
- Sea transportation.

For domestic transportation, haulage by truck appears to be the only viable ground transportation. Although Para's State is crossed by the Carajas' Railroad and the Tocantins River, both of these alternatives present some deficiencies that hinder the utilization of the routes.

Vila do Conde has shown the best conditions for loading since Itaqui is limited to train transport options. Further, Vila do Conde is a better organized industrial port, with ample area which can be leased from the port authorities or from third companies.

The primary logistic challenges facing the Project are:

- Long distance to port;
- Limited accessibility to the railroad, owned by a private company with a track record of poor third-party service levels;
- Limited port infrastructure; and,

- Chronic congestion at ports near the Project.

### **1.10.6 Environmental Management and Permitting**

The Pará State Environmental Agency granted a Preliminary License (PL) to MCSA on March 7, 2012 which was subsequently renewed on June 19, 2013. MCSA filed for an Installation License request on April 1, 2013 which is currently under analysis.

A grant for well drilling and evaluation of water potential (considering future groundwater collection for the installation phase) was issued. The formal request for water use will be submitted immediately after the issuance of the Installation License (IL).

The IL is prepared when the project design has advanced far enough for engineering plans to be submitted to the government for approval. The IL is accompanied by an Environmental Control Plan referred to as a PCA (Plano de Controle Ambiental) and a Degraded Area Recovery Plan or PRAD (Plano de Recuperação de Áreas Degradadas). Once the IL has been granted, the DNPM can issue a Mining Concession. It is at this licensing stage that the Legal Reserve is defined. The Legal Reserve is an area whose size depends on state rules requiring the preservation of a portion of the natural biota. It is legalized by the Rural Environmental Register (Cadastro Ambiental Rural – CAR) or at the Real Estate Notary Office as property of the enterprising party, in accordance with Federal Law # 12.651/2012. In Pará the law has established that 80% of the propriety area should remain as a Legal Reserve. This percentage may be changed depending on the specific conditions of Environmental – Economical Zone in each region. This is regulated by the Brazilian Forest Code, Law # 12.651/2012 and Pará State Decree # 2.099/2010.

The area earmarked for deforestation covers 38.65 ha at this stage of the project. The Legal Reserve is being discussed with the Environmental Agency (SEMA) and will be a condition of the IL. The environmental agency is analyzing the IL process for the granting of this license.

The Operating License (OL) allows the project to begin operations and is issued after all of the appropriate environmental measures have been implemented and verified by the authorities. The OL must be renewed during the life of the mine. When the OL is up for renewal, a report summarizing environmental performance must be presented.

If, during the operation, there are substantial changes to the initial project plan (e.g. an additional treatment plant), this will require another specific IL, which will subsequently become an OL.

The baseline characterization studies and environmental impact assessment (EIA) for the Project were prepared and submitted to SEMA in 2008.

The EIA classifies areas of influence into three categories:

- Área Diretamente Afetada (ADA) = Directly Affected Area;
- Área de Influência Direta (AID) = Directly Influenced Area; and
- Área de Influência Indireta (AII) = Indirectly Influenced Area.

Changes to the boundary of the Project area were necessary due to a demand made by the Pará State Environmental Agency during the review of the PL application. The ADA now includes village P07 and drainage of about 200m, which were previously not included. This update added approximately 1,202.1 ha to the ADA. Additionally, the AID now includes springs which flow to the Branco River and Jatobá Creek. The main drainage affected by the project totals 7,204.4 ha.

The final Environmental Control Plan (PCA) was submitted to the environmental agency in April, 2013, and the Company is waiting for grant of the Installation License which is necessary for construction, and ultimately, mining activities, post conversion to an Operating License.

### **1.11 Economic Analysis**

Forecast copper prices over the LOM are presented in Table 4.

**Table 4: Copper Prices - US\$/t-Cu**

Commodity	Yr -2	Yr -1	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9
Metallic Copper	6,063	6,614	6,614	6,614	6,614	6,614	6,614	6,614	6,614	6,614	6,614

The price of the copper concentrate is considered CIF at the port of Shanghai, China. Logistics costs to transport copper concentrate from Boa Esperança to China are presented in Table 5 and Table 6. The logistic cost was considered as 50% "Bulk" and 50% "Container". The economic analysis also considered losses of 0.2% in concentrate transportation for both cases.

**Table 5: Logistic Costs - Container**

Items	Cost (R\$/t-conc)
Copper Project Conc (Truck)	175.01
Handling & Storage (Port)	124.39
Ocean Freight	132.30
<b>Total Freight</b>	<b>R\$431.71</b>

**Table 6: Logistic Costs - Bulk**

Items	Cost (R\$/t-conc)
Copper Project Conc (Truck)	175.01
Handling & Storage (Port)	67.57
Ocean Freight	236.25
<b>Total Freight</b>	<b>R\$478.83</b>

All currency is in Brazilian Reais (\$R) unless otherwise stated. The following exchange rates have been considered throughout the economic section of the report

**Table 7: Exchange Rates**

Currency	Exchange Rate (R\$ per US\$)	
	Yr -2	Yr -1 – Yr 9
Reais	\$3.60	\$3.80

### 1.11.1 Capital Expenditures

The capital cost estimate developed for this Feasibility Study comprises the costs associated with the engineering, procurement, construction, commissioning and pre-operation required for all project facilities. SRK relied upon third-party estimation based on studies developed for the project by engineering firms according to the following scope:

- SRK Consulting - Mine Equipment Schedule, Mineral Resources, Mineral Reserves, mine equipment capital and mining operating costs, environment and mine closure;
- Tecnomin Projects e Consultoria Ltda (Minas Gerais, Brazil) - Plant basic engineering;
- Tyno Consultoria Tributária e Empresarial Ltda (Bahia, Brazil) - Fiscal;
- VOGBR Recursos Hídricos & Geotecnia (Minas Gerais, Brazil) - Basic Project of Tailings Dam and Conceptual Design of Water Pond.

The required quotations for equipment, materials and services were obtained mainly by MCSA's Procurement Department (MCPD) and formal enquiries to well-known vendors in the mining business mainly in the 2<sup>nd</sup> quarter 2015. Based on the deceleration in global mining activity and contraction in the Brazilian economy from the period of 2015 to 2017, no escalation was applied for the current capital cost estimates. SRK has reviewed the costing and third-party reports and is of the opinion that the the estimates are valid for the purposes of this report.

The capital estimate is shown in Table 8.



**Table 8: Capital Costs Summary by Area**

Area	% of Total	LoM Cost (R\$000's)	Initial (R\$000's)	Ongoing (R\$000's)
Pre-Production	14	89,306	89,306	0
Infrastructure	1	6,615	6,615	0
Mine	8	48,075	35,778	12,298
Plant	39	244,109	244,109	0
Power & Automation	12	76,709	76,709	0
Utility Systems	2	12,065	12,065	0
Administration & Support	4	23,562	23,562	0
Tailings Storage Facilities	7	45,439	45,439	0
Water Pond	1	6,398	6,398	0
Indirect Costs	10	59,740	59,740	0
Salvage	-4	(24,796)	0	(24,796)
Closure	6	39,898	0	39,898
<b>Total</b>	<b>100%</b>	<b>R\$627,120</b>	<b>R\$599,721</b>	<b>R\$27,400</b>

**1.11.2 Operating Costs**

Operating costs are based on mine, process, tailings and infrastructure facilities design criteria, engineering, as well as budgetary and vendor quotes. All operating costs include supervision staff, operations labor, maintenance labor, consumables, electricity, fuels, lubricants, maintenance parts and any other operating expenditure identified by contributing engineers. The operating costs are shown on Table 9.

**Table 9: Project Operating Costs**

Item	R\$/t-RoM	R\$/t-Conc	LoM (R\$000's)
Mining	15.69	561.27	305,774
Processing	19.28	689.72	375,741
G&A	9.54	341.59	186,086
<b>Total</b>	<b>R\$44.48</b>	<b>R\$1,592.58</b>	<b>R\$867,598</b>

**1.11.3 Economic Results**

The financial analysis results, shown on Table 10, indicate an after-tax net present value (NPV) for the project at an 8% discount rate of US\$195.3 million with an IRR of 32.7%. Payback from Project start is approximately 3.6 years.

**Table 10: Economic Results**

Item	Unit or Factor	Value
Ore Mined	kt	19,500.3
Mined Cu (contained)	kt	185.0
Recovered Cu	kt	163.4
Payable Cu	kt	156.9
<b>Sales Volumes, Prices and Delivery Costs</b>		
Cu Price (average over production period)	\$/t-Cu	6,614
Treatment Charges (TC)	US\$/t conc.	78.50
Refining Charges (RC)	¢/lb	7.85
Tonnes Cu sold	kt	156.9
<b>Revenue</b>		
Gross Revenue	R\$000's	3,943,195
Logistics & Sales Costs	R\$000's	(333,113)
CFEM Royalty	R\$000's	(63,104)
<b>Gross Income</b>	<b>R\$000's</b>	<b>3,546,942</b>
TC / RCs	R\$000's	(454,875)
<b>Net Revenue</b>	<b>R\$000's</b>	<b>3,488,320</b>
<b>Operating Costs</b>		
Mining	R\$000's	(305,774)

<b>Item</b>	<b>Unit or Factor</b>	<b>Value</b>
Process	R\$000's	(375,741)
G&A	R\$000's	(186,086)
<b>Total Operating Costs</b>	<b>R\$000's</b>	<b>(867,600)</b>
Project Capital (Equity)	R\$000's	(626,126)
Financing Interest	R\$000's	-
Income & Social Contribution Taxes	R\$000's	(251,907)
<b>Operating Cash Flow</b>	<b>R\$000's</b>	<b>1,972,596</b>
Initial Capital	R\$000's	599,719
Equity for funding	R\$000's	-
Share Holders Equity	R\$000's	599,719
Ongoing Capital	R\$000's	12,298
<b>Free Cash Flow</b>	<b>R\$000's</b>	<b>1,345,477</b>
<b>After-tax NPV 8% (per annum)</b>	<b>US\$000's</b>	<b>195,295</b>
<b>IRR</b>		<b>32.7%</b>
<b>Payback</b>	<b>Yrs</b>	<b>3.6</b>

## 1.12 Conclusions and Recommendations

### Conclusions

SRK concurs with the geological interpretation of the mineralization of the Boa Esperança deposit as silica- and sulfide-filled breccias containing copper and cobalt mineralization associated with magnetite, as a variant of an iron-oxide-copper-gold (IOCG) hydrothermal deposit type. SRK concludes that the mineralization has been sufficiently defined through exploration methods, including core drilling, to support the Mineral Resource and Mineral Reserve estimation for use in a Feasibility Study.

SRK has carried out the appropriate review work to satisfy itself that the Mineral Reserve can be technically and profitably extracted through to the production and sale of copper concentrate. Consideration has been given to all technical areas of study, the associated capital and operating costs, and relevant factors including marketing, permitting, environmental and social. SRK is satisfied that the technical and economic feasibility has been demonstrated.

The Mineral Resource and Mineral Reserve Estimates are compliant within the guidelines of NI 43-101 and SRK has not identified any mining, metallurgical, infrastructure, permitting, legal, political, environmental, technical, or other relevant factors that could materially affect the potential development of estimated Mineral Reserves and Mineral Resources.

### Recommendations

SRK recommends that analytical procedures be standardized, including documentation of procedures, performing check assays and duplicate sampling to provide increased confidence in the database.

SRK also recommends that the tailings filter sizing should be confirmed based on updated material characterization incorporating cyclone and dewatering screen additions to optimize the process and to support the analysis of a filter press to replace the vacuum filter belt.

In addition, it is recommended that social-environmental management practices be undertaken to ensure the success of the operation as well as a review of acid rock potential, and the potential operating costs associated with its treatment.

Finally, SRK recommends that a conceptual geomechanical model be developed to ensure final pit dimensions.

The estimated cost for the recommended work is presented below in Table 11.

**Table 11: Proposed Budget for Recommended Work**

<b>Program</b>	<b>Budget (US\$)</b>
Check assays at secondary laboratory	\$6,000
Duplicate core samples, including cutting, shipping & analysis	12,000
Confirm tailings thickener design and filter sizing	40,000
Expand studies on acid rock drainage and treatment	32,000
Develop a conceptual geomechanical model	30,000
<b>Total</b>	<b>\$120,000</b>

## **RISK FACTORS**

An investment in the Company is speculative and involves a high degree of risk due to the nature of the Company's business. The following risks, as well as risks currently unknown to the Company, could adversely affect the Company's current or future business, properties, operations, results, cash flows, financial condition and prospects and could cause future results, cash flows, financial condition, prospects, events or circumstances to differ materially from those currently expected, including the estimates and projections contained in this AIF. Investors should carefully consider the risks described below and elsewhere in this AIF. The risks described below and elsewhere in this AIF do not purport to be an exhaustive summary of the risks affecting the Company and additional risks and uncertainties not currently known to the Company or not currently perceived as being material may have an adverse effect on the Company.

### **Risks Related to the Company**

#### ***Copper and gold prices are volatile and may be lower than expected***

The Company's business and its ability to sustain operations are dependent on, amongst other things, the market price of copper and gold. The prices of copper and gold realized by the Company will affect future development decisions, production levels, earnings, cash flows, the financial condition and prospects of the Company. If the world market prices of copper and/or gold were to drop and the prices realized by the Company on copper and/or gold sales were to decrease significantly and remain at such level for any substantial period, the Company's business, financial condition, results of operations, cash flows and prospects would be negatively affected.

Some factors that affect the price of copper and gold include: industrial demand; forward or short sales of copper and gold by producers and speculators; future levels of copper and gold production; and rapid short-term changes in supply and demand due to speculative or hedging activities by producers, individuals or funds. Copper and gold prices are also affected by macroeconomic factors including: confidence in the global economy; expectations of the future rate of inflation; the availability and attractiveness of alternative investment vehicles; the strength of, and confidence in, the US dollar, the currency in which the price of copper and gold is generally quoted, and other major currencies; global political or economic events; and costs of production of other copper and gold producing companies. All of the above factors can, through their interaction, affect the price of copper and gold by increasing or decreasing the demand for or supply of copper and gold.

The price of copper and gold has fluctuated widely in recent years, and future material price declines could cause commercial production from the Vale do Curaçá Property or the NX Gold Property or the development of, and commercial production from, the Boa Esperança Property to be less profitable than expected and could render such properties uneconomic. Continuing to conduct mining in a low copper and/or gold price environment would have a material adverse effect on the Company's business, financial condition, results of operations, cash flows and prospects. Depending on the current and expected price of copper and gold, projected cash flows from planned or current mining operations may not be sufficient to warrant commencing or continuing mining, and the Company could be forced to discontinue development or commercial production. The Company may be forced to sell one or more portions of the Vale do Curaçá Property, NX Gold Property or the Boa Esperança Property to generate cash. Future production from the Vale do Curaçá Property, NX Gold Property and the Boa Esperança Property will be dependent on a price of copper or gold, as the case may be, that is adequate to make a deposit economically viable. Furthermore, future mine plans using significantly lower copper or gold prices could result in material write-downs of the

Company's investment in the Vale do Curaçá Property, NX Gold Property and the Boa Esperança Property, as the case may be, and in reductions in Mineral Reserve and Mineral Resource estimates. The occurrence of any of the foregoing could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows and prospects.

A declining or sustained low price of copper could negatively impact the profitability of the Vale do Curaçá Property or gold could negatively impact the profitability of the NX Gold Property, and could affect the Company's ability to finance the exploration and development of other properties in the future. In addition, a declining or sustained low price of copper could require a reassessment of the feasibility of the Boa Esperança Property. Although the price of copper is only one of several factors that the Company will consider in making a development and production decision on the Boa Esperança Property, if the Company determines from a reassessment that the Boa Esperança Property is not economically viable in whole or in part, then operations may cease or be curtailed and the Boa Esperança Property may never be fully developed or developed at all. The occurrence of any of the foregoing could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows and prospects.

### ***Mining operations are risky***

The Company's current business, and any future development or mining operations, involve various types of risks and hazards typical of companies engaged in the mining industry. Such risks include, but are not limited to: (i) industrial accidents; (ii) unusual or unexpected rock formations; (iii) structural cave-ins or slides and pitfall, ground or slope failures and accidental release of water from surface storage facilities; (iv) fire, flooding and earthquakes; (v) rock bursts; (vi) metal losses in handling and transport; (vii) periodic interruptions due to inclement or hazardous weather conditions; (viii) environmental hazards; (ix) discharge of pollutants or hazardous materials; (x) failure of processing and mechanical equipment and other performance problems; (xi) geotechnical risks, including the stability of the underground hanging walls and unusual and unexpected geological conditions; (xii) unanticipated variations in grade and other geological problems, water, surface or underground conditions; (xiii) labour disputes or slowdowns; (xiv) work force health issues as a result of working conditions; and (xv) force majeure events, or other unfavourable operating conditions.

These risks, conditions and events could result in: (i) damage to, or destruction of, the value of the Vale do Curaçá Property, the NX Gold Property, the Boa Esperança Property or their facilities; (ii) personal injury or death; (iii) environmental damage to the Vale do Curaçá Property, the NX Gold Property, the Boa Esperança Property, surrounding lands and waters, or the properties of others; (iv) delays or prohibitions on mining or the transportation of minerals; (v) monetary losses; and (vi) potential legal liability and any of the foregoing could have a material adverse effect on the Company's business, financial condition, results of operation, cash flows or prospects. In particular, underground refurbishment and exploration activities present inherent risks of injury to people and damage to equipment. Significant mine accidents could occur, potentially resulting in a complete shutdown of the Company's operations at the Vale do Curaçá Property or the NX Gold Property which could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

There are also risks related to the reliance on the reliability of current and new or developing technology; the reliance on the work performance of outside consultants, contractors, and manufacturers; changes to project parameters over which the Company does not have complete control such as the copper, gold and silver prices or labour or material costs; unknown or unanticipated or underestimated costs or expenses; unknown or unanticipated or underestimated additions to the scope of work due to changing or adverse conditions encountered as a mine is developed; unexpected variances in the geometry or quality of ore zones; unexpected reclamation requirements or expenses; permitting time lines; unexpected or unknown ground conditions; unexpected changes to estimated parameters utilized to estimate past timelines, projections, or costs; and liquidity risks. An adverse change in any one of such factors, hazards and risks may result in a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

### ***Mining operations require geologic, metallurgic, engineering, title, environmental, economic and financial assessments that may be materially incorrect and thus the Company may not produce as expected***

The operations of mining properties or mining companies are based in large part on geologic, metallurgic, engineering, title, environmental, economic and financial assessments, which involve uncertainty. Such assessments may differ materially from actual results, which may result in a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects. These assessments include a series of assumptions regarding such factors as the ore body geometries, grades, recoverability, regulatory and environmental restrictions, future prices of metals and operating costs, future capital expenditures and royalties and government levies which will be imposed over the producing life of the Mineral Reserves. There are numerous uncertainties inherent in estimating quantities of Mineral Resources and Mineral Reserves and estimates in projecting potential future rates of mineral production, including factors subject to change and beyond the Company's

control. Mineral Reserves and Mineral Resources estimates are based on limited samples and interpretations, which may not be representative of actual Mineral Reserves and Mineral Resources. In addition, title and rights of access to the Company's properties can never be guaranteed. Although select title and environmental reviews were conducted in connection with the Acquisitions, this review cannot guarantee that any unforeseen defects in the chain of title will not arise to defeat the Company's title to certain assets or that environmental defects, liabilities or deficiencies do not exist or are not greater than anticipated.

The Company's calculations of Mineral Resources and Mineral Reserves are estimates and depend upon geological interpretation and statistical inferences drawn from drilling and sampling analysis, which may prove to be inaccurate. Actual recoveries of copper and gold from mineralized material may be lower than those indicated by test work. Any material change in the quantity of mineralization, grade or stripping ratio, may affect the economic viability of Ero's properties. In addition, there can be no assurance that metal recoveries in small-scale laboratory tests will be duplicated in larger scale tests under on-site conditions or during production. Notwithstanding pilot plant tests for metallurgical recovery and other factors, there remains the possibility that the mineralized material may not perform in commercial production in the same manner as it did in testing. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. Mining and metallurgy are inexact sciences and, accordingly, there always remains an element of risk that a mine may not prove to be commercially viable.

Until a deposit is actually mined and processed, the quantity of Mineral Resources and Mineral Reserves and grades must be considered as estimates only. In addition, the quantity of Mineral Resources and Mineral Reserves may vary depending on, amongst other things, metal prices, cut-off grades and operating costs. Any material change in quantity of Mineral Reserves, Mineral Resources, grade, percent extraction of those Mineral Reserves recoverable by underground mining techniques or the stripping ratio for those Mineral Reserves recoverable by open pit mining techniques may affect the economic viability of Ero's mining projects and could have a material adverse effect on its future revenues, cash flows, profitability, results of operations, financial condition and prospects and result in write-downs of the Company's investment in mining properties and increased amortization charges.

Inferred Mineral Resources are also considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves. Due to the uncertainty which may attach to Inferred Mineral Resources, there is no assurance that Inferred Mineral Resources will be upgraded to Proven Mineral Reserves or Probable Mineral Reserves as a result of continued exploration or as a result of economic considerations being applied to them.

In addition, market fluctuations in the price of copper, gold and silver, as well as increased production costs, reduced recovery rates or increased operating and capital costs due to inflation or other factors, may render the exploitation of certain Mineral Reserves and Mineral Resources uneconomic and may ultimately result in a restatement of Mineral Reserves, Mineral Resources or both. Such a restatement could affect depreciation and amortization rates and have an adverse effect on the Company's financial performance.

***Geotechnical, hydrological and climatic events could suspend mining operations or increase costs***

All mining operations face geotechnical, hydrological and climate challenges. Unanticipated adverse geotechnical and hydrological conditions, such as landslides, subsidence and uplift, embankment failures and rock fragility may occur in the future and such events may not be detected in advance. Geotechnical instabilities and adverse climatic conditions can be difficult to predict and are often affected by risks and hazards outside of the Company's control, such as severe weather and seismic activity.

Geotechnical failures could result in limited or restricted access to mines, suspension of operations, environmental damage, government investigations, increased monitoring costs, remediation costs, loss of ore and other impacts, which could result in loss of revenue or increased costs, and could result in a material adverse effect on the Company's business, financial condition, results of operations, cash flows and prospects.

***Actual production, capital and operating costs may be different than those anticipated***

Ero prepares estimates of future productions, capital costs and operating costs of production for operations at the Vale do Curaçá Property and the NX Gold Property. In addition, as a result of the substantial expenditures involved in the development of a mineral project such as the Boa Esperança Property, the need to project years into the future, the need to make assumptions and use models that may not adequately approximate reality, and the fluctuation of costs over time, a development project is prone to material cost overruns. The Vale do Curaçá Technical Report, the NX Gold Technical Report and the Boa Esperança Technical Report estimate capital costs and cash operating costs based upon, among other things:

- anticipated tonnage, grades and metallurgical characteristics of the ore to be mined and processed;
- anticipated recovery rates of copper, gold and other metals from the ore;
- cash operating costs of comparable facilities and equipment;
- anticipated availability of labour and equipment; and
- anticipated foreign exchange rates.

Capital costs, operating costs, production and economic returns, and other estimates may differ significantly from those anticipated by the Vale do Curaçá Technical Report, the NX Gold Technical Report and the Boa Esperança Technical Report, and there can be no assurance that the Company's actual capital or operating costs will not be higher than currently anticipated or that returns will not be lower than anticipated. The Company's actual costs may vary from estimates for a variety of reasons including, without limitation: limitations inherent in modelling; changes to assumed third party costs; short term operating factors; operational decisions made by the Company; revisions to mine plans; risks and hazards associated with development and mining described elsewhere in this AIF; natural phenomena, such as inclement weather conditions, water availability, floods, and earthquakes; and unexpected supply chain distributions, labour shortages or strikes. Operating costs may also be affected by a variety of factors including, without limitation: changing strip ratios, ore metallurgical grade-recovery curves, the availability of processing operations, the availability of storage capacity, the availability of supplies, equipment and facilities necessary to continue operations at the Vale do Curaçá Property or the NX Gold Property and to complete development work at the Boa Esperança Property, the cost and availability of consumables and mining and processing equipment, labour costs, the availability and productivity of skilled labour, the cost of commodities, general inflationary pressures, currency exchange rates, technological and engineering problems, accidents or acts of sabotage or terrorism, the regulation of the mining industry by various levels of government and quasi-governmental organizations and political factors. Many of these factors are beyond the Company's control. Furthermore, significant cost overruns could make the Boa Esperança Property uneconomical. Failure to achieve estimates or material increases in costs could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows and prospects.

Furthermore, unforeseen delays in the construction and commissioning of mining projects or other technical difficulties may result in even further capital expenditures being required. Any delay in the development of a project or cost overruns or operational difficulties with regards to the Vale do Curaçá Property, the NX Gold Property or the Boa Esperança Property may have a material adverse effect on the Company's business, financial condition, results of operations, cash flows and prospects.

***Currency fluctuations can result in unanticipated losses***

Currency fluctuations may affect the Company's capital costs and the costs that the Company incurs at its operations. Copper and gold are sold throughout the world based principally on a US dollar price, but a portion of the Company's operating and capital expenses are incurred in Brazilian Reais and Canadian dollars. The appreciation of foreign currencies, particularly the Brazilian Real against the US dollar would increase the costs of copper and gold production at such mining operations, which could materially and adversely affect the Company's earnings and financial condition. The Company has entered into foreign exchange swap contracts to help manage the currency fluctuation risk of the Brazilian Real against the US dollar. However, there is no assurance that such hedging contracts or any other steps taken to help mitigate foreign currency fluctuations will be effective.

***The successful operation of the Vale do Curaçá Property and the NX Gold Property and the successful development and operation of the Boa Esperança Property depend on the skills of the Company's management and teams***

The Company's business is dependent on retaining the services of its key management personnel with a variety of skills and experience, including in relation to the development and operation of mineral projects. The success of the Company is, and will continue to be, dependent to a significant extent on the expertise and experience of its directors and senior management. Failure to retain, or loss of, one or more of these people could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects. The Company's success will also depend to a significant degree upon the contributions of qualified technical personnel and the Company's ability to attract and retain highly skilled personnel. Competition for such personnel is intense, and the Company may not be successful in attracting and retaining qualified personnel, or in obtaining the necessary work permits to hire qualified expatriates. The Company's inability to attract and retain these people could have a material adverse effect on its business, financial condition, results of operations, cash flows or prospects.

### ***Operations during mining cycle peaks are more expensive***

During times of increased demand for metals and minerals, price increases may encourage expanded mining exploration, development and construction activities. These increased activities may result in escalating demand for and cost of contract exploration, development and construction services and equipment. Increased demand for and cost of services and equipment could cause exploration, development and construction costs to increase materially, resulting in delays if services or equipment cannot be obtained in a timely manner due to inadequate availability, and increased potential for scheduling difficulties and cost increases due to the need to coordinate the availability of services or equipment, any of which could materially increase project exploration, development or construction costs, result in project delays, or increase operating costs.

### ***Title to the Vale do Curaçá Property, the NX Gold Property and/or the Boa Esperança Property may be disputed***

Although the Company has received title opinions for the Vale do Curaçá Property, the NX Gold Property and the Boa Esperança Property there is no guarantee that title to such properties will not be challenged or impugned. The Company's claims may be subject to prior unregistered agreements or transfers and title may be affected by unidentified or unknown defects. The Company has conducted an investigation on the title of properties that it has acquired to confirm that there are no claims or agreements that could affect its title to its mineral tenure or surface rights. There is no guarantee that such title will not be challenged or impaired. If title to the Company's properties is disputed, it may result in the Company paying substantial costs to settle the dispute or clear title and could result in the loss of the property, which events may affect the economic viability of the Company. Title insurance generally is not available for mineral tenure or surface rights and the Company's ability to ensure that it has obtained secure claim to title may be constrained.

### ***The Company may fail to comply with the law or may fail to obtain or renew necessary permits and licenses***

The Company's operations are subject to extensive laws and regulations governing, among other things, such matters as environmental protection, management and use of toxic substances and explosives, health, exploration and development of mines, commercial production and sale of by-products, ongoing and post-closure reclamation, construction and operation of tailings dams, safety and labour, taxation and royalties, maintenance of mineral tenure, and expropriation of property. The activities of the Company require licenses and permits from various governmental authorities.

The costs associated with compliance with these laws and regulations and of obtaining licenses and permits are substantial, and possible future laws and regulations, changes to existing laws and regulations and more stringent enforcement of current laws and regulations by governmental authorities, could cause additional expenses, capital expenditures, restrictions on or suspensions of the Company's operations and delays in the development of its properties. There is no assurance that future changes in such laws and regulations, if any, will not adversely affect the Company's operations. Moreover, these laws and regulations may allow governmental authorities and private parties to bring lawsuits based upon damages to property and injury to persons resulting from the environmental, health and safety practices of the Company's past and current operations, or possibly even the actions of former property owners, and could lead to the imposition of substantial fines, penalties or other civil or criminal sanctions. The Company may fail to comply with current or future laws and regulations. Such non-compliance can lead to financial restatements, civil or criminal fines, penalties, and other material negative impacts on the Company.

The Company is required to obtain or renew further government permits and licenses for its current and contemplated operations, including the issuance of an installation license and operation license with respect to the Boa Esperança Property. Obtaining, amending or renewing the necessary governmental permits and licenses can be a time-consuming process potentially involving numerous regulatory agencies, involving public hearings and costly undertakings on the Company's part. The duration and success of the Company's efforts to obtain, amend and renew permits and licenses are contingent upon many variables not within its control, including the interpretation of applicable requirements implemented by the relevant permitting or licensing authority. The Company may not be able to obtain, amend or renew permits or licenses that are necessary to its operations, or the cost to obtain, amend or renew permits or licenses may exceed what the Company believes it can ultimately recover from a given property once in production. Any unexpected delays or costs associated with the permitting and licensing process could impede the ongoing operation of the Vale do Curaçá Property and the NX Gold Property, and could delay the development or impede the operation of the Boa Esperança Property. To the extent necessary permits or licenses are not obtained, amended or renewed, or are subsequently suspended or revoked, the Company may be curtailed or prohibited from proceeding with planned development, commercialization, operation and exploration activities. Such curtailment or prohibition may result in a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

### ***Compliance with environmental regulations can be costly***

The Company's mining operations at the Vale do Curaçá Property and the NX Gold Property, the Company's development of the Boa Esperança Property, and the exploration of these properties are all subject to environmental regulation. Regulations cover, among other things, water quality standards, land reclamation, the generation, transportation, storage and disposal of hazardous waste, the construction and operation of tailings dams, and general health and safety matters. There is no assurance that the Company has been or will at all times be in full compliance with all environmental laws and regulations or hold, and be in full compliance with, all required environmental and health and safety approvals and permits. The potential costs and delays associated with compliance with such laws, regulations, approvals and permits could prevent the Company from economically operating or proceeding with the further development and exploration of the Vale do Curaçá Property, the NX Gold Property and/or the Boa Esperança Property, and any non-compliance with such laws, regulations, approvals and permits at the Vale do Curaçá Property, the NX Gold Property and/or the Boa Esperança Property could result in a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

Environmental approvals and permits are currently, and may in the future be, required in connection with the Company's current and planned operations. To the extent such environmental approvals and permits are required and not obtained, the Company's plans and the operation of mines may be curtailed or it may be prohibited from proceeding with planned exploration or development of additional mineral properties. Failure to comply with applicable environmental laws, regulations and permitting requirements may result in enforcement actions, including orders issued by regulatory or judicial authorities causing operations to cease or be curtailed, and may include corrective measures requiring capital expenditures, installation of additional equipment, or remedial actions.

There is no assurance that any future changes in environmental regulation will not adversely affect the Company's operations. Changes in government regulations have the potential to significantly increase compliance costs and thus reduce the profitability of current or future operations.

Environmental hazards may also exist on the properties on which the Company holds interests that are unknown to the Company at present and that have been caused by previous or existing owners or operators of the properties and for which the Company may be liable for remediation. Parties engaged in mining operations, including the Company, may be required to compensate those suffering loss or damage by reason of the mining activities and may have civil or criminal fines or penalties imposed for violations of applicable environmental laws or regulations, regardless of whether the Company actually caused the loss or damage. The costs of such compensation, fines or penalties could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

### ***Social and environmental activism can negatively impact exploration, development and mining activities***

There is an increasing level of public concern relating to the effects of mining on the natural landscape, on communities and on the environment. Certain non-governmental organizations, public interest groups and reporting organizations ("NGOs") who oppose resource development can be vocal critics of the mining industry. In addition, there have been many instances in which local community groups have opposed resource extraction activities, which have resulted in disruption and delays to the relevant operation. While the Company seeks to operate in a socially responsible manner and believes it has good relationships with local communities in the regions in which it operates, NGOs or local community organizations could direct adverse publicity against and/or disrupt the operations of the Company in respect of one or more of its properties, regardless of its successful compliance with social and environmental best practices, due to political factors, activities of unrelated third parties on lands in which the Company has an interest or the Company's operations specifically. Any such actions and the resulting media coverage could have an adverse effect on the reputation and financial condition of the Company or its relationships with the communities in which it operates, which could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

### ***The construction and start-up of new mines is subject to a number of factors and the Company may not be able to successfully complete new construction projects***

The success of construction projects and the start-up of new mines by the Company is subject to a number of factors including the availability and performance of engineering and construction contractors, mining contractors, suppliers and consultants, the receipt of required governmental approvals and permits in connection with the construction of mining facilities and the conduct of mining operations (including environmental and regulatory permits), the successful completion and operation of mining stopes, processing plants and conveyors to move ore, among other operational elements. Any delay in the performance of any one or more of the contractors, suppliers, consultants or other persons on which the Company is dependent in connection with



its construction activities, a delay in or failure to receive the required governmental approvals and permits in a timely manner or on reasonable terms, or a delay in or failure in connection with the completion and successful operation of the operational elements in connection with new mines could delay or prevent the construction and start-up of new mines as planned. There can be no assurance that current or future construction and start-up plans implemented by the Company will be successful, that the Company will be able to obtain sufficient funds to finance construction and start-up activities, that personnel and equipment will be available in a timely manner or on reasonable terms to successfully complete construction projects, that the Company will be able to obtain all necessary governmental approvals and permits or that the completion of the construction, the start-up costs and the ongoing operating costs associated with the development of new mines will not be significantly higher than anticipated by the Company. Any of the foregoing factors could adversely impact the Company's business, financial condition, results of operations, cash flows and prospects.

The capital expenditures and time required to develop new mines or other projects are considerable and changes in costs or construction schedules can affect project economics. Thus, it is possible that actual costs may change significantly and economic returns may differ materially from the Company's estimates.

Commercial viability of a new mine or development project is predicated on many factors. Mineral Reserves and Mineral Resources projected by feasibility studies and technical assessments performed on the Company's projects may not be realized, and the level of future metal prices needed to ensure commercial viability may not materialize. Consequently, there is a risk that startup of new mine and development projects may be subject to write-down and/or closure as they may not be commercially viable.

Any uncertainty and inability in the estimation, recalculation or replacement of Mineral Reserves and Mineral Resources could materially affect the Company's results of operations, cash flows and financial position.

To ensure the continued operation of the business and realize the Company's growth strategy, it is essential that the Company continues to realize its existing identified Mineral Reserves, convert Mineral Resources into Mineral Reserves, increase the Company's Mineral Resource base by adding new Mineral Resources from areas of identified mineralized potential and otherwise successfully undertaking exploration, and/or acquire new Mineral Reserves and Mineral Resources. The life of mine estimates included herein may not be correct.

***Land reclamation and mine closure requirements may be burdensome and costly.***

Land reclamation and mine closure requirements are generally imposed on mining companies, which may require the Company, amongst other things, to minimize the effects of land disturbance. Such requirements may include control and treatment of any discharge of potentially dangerous effluents, including solutions that may contain cyanide and heavy metals, from the site and restoring the site's landscape to its pre-disturbance form. The actual costs of reclamation and mine closure are uncertain and planned expenditures as outlined in the Vale do Curaçá Technical Report, the NX Gold Technical Report and the Boa Esperança Technical Report may differ materially from the actual expenditures required. Therefore, the amount that the Company will be required to spend could be materially higher than current estimates. Any additional amounts required to be spent on reclamation and mine closure may have a material adverse effect on the Company's financial performance, financial position and results of operations and may cause the Company to alter its operations. Although liabilities for estimated reclamation and mine closure costs have been included in the Company's financial statements, it may be necessary to spend higher amounts than what has been estimated in the financial statements to fund all required reclamation and mine closure activities.

***The mining industry is intensely competitive***

The mining industry is intensely competitive. The Company competes with other mining companies, many of which have greater resources and experience. Competition in the mining industry is primarily for: (i) properties which can be developed and can produce economically; (ii) the technical expertise to find, develop, and operate such properties; (iii) labour to operate such properties; and (iv) capital to fund such properties. Such competition may result in the Company being unable to acquire desired properties, to recruit or retain qualified employees and consultants or to acquire the capital necessary to fund its operations and develop its properties. The Company's inability to compete with other mining companies for these resources could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

Many competitors not only explore for and mine minerals, but conduct refining and marketing operations on a worldwide basis. In the future, the Company may also compete with such mining companies in refining and marketing its products to international

markets. Any inability to compete with established competitors could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

***Inadequate infrastructure may constrain mining operations***

Continued production at the Vale do Curaçá Property and the NX Gold Property and any potential commercial production at the Boa Esperança Property, each depend on adequate infrastructure. In particular, reliable power sources, water supply, transportation and surface facilities are all necessary to develop and operate mines. Failure to adequately meet these infrastructure requirements or changes in the cost of such requirements could affect the Company's ability to continue production at the Vale do Curaçá Property and the NX Gold Property or to develop or commence production at the Boa Esperança Property and could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

***Operating cash flow may be insufficient for future needs***

The exploration, development and operation of the Company's mineral properties will require the commitment of substantial financial resources that may not be available. The amount and timing of expenditures will depend on a number of factors, including the progress of ongoing exploration and development, success of the Company's ongoing operations, the results of consultants' analyses and recommendations, the rate at which operating losses are incurred, the execution of any joint venture agreements with strategic partners and the acquisition of additional property interests, some of which are beyond the Company's control. The Company's business strategies may not be successful and it may not be profitable in any future period. The Company's operating results have varied in the past and they may continue to fluctuate in the future. In addition, the Company's operating results may not follow any past trends.

The Company had negative operating cash flow for the financial year ended December 31, 2016 and positive operating cash flow for the financial years ended December 31, 2017 and 2018. To the extent that the Company has negative operating cash flow in future periods, the Company may need to allocate a portion of its cash reserves to fund such negative operating cash flow. The Company may also be required to raise additional funds through the issuance of equity or debt securities. There can be no assurance that additional capital or other types of financing will be available when needed or that these financings will be on terms favourable to the Company.

***Fluctuations in the market prices and availability of commodities and equipment affect the Company's business***

The cash flows and profitability of the Company's business will also be affected by the market prices and availability of commodities and equipment that are consumed or otherwise used in connection with the Company's operations and development projects. Prices of such commodities and resources are also subject to volatile price movements, which can be material and can occur over short periods of time due to factors beyond the Company's control.

If there is a significant and sustained increase in the cost of certain commodities, the Company may decide that it is not economically feasible to continue certain or all of the Company's commercial production, development and exploration activities and this could have an adverse effect on profitability. Higher worldwide demand for critical resources like input commodities, drilling equipment, mobile mining equipment, tires and skilled labour could affect the Company's ability to acquire them and lead to delays in delivery and unanticipated cost increases, which could have an effect on the Company's operating costs, capital expenditures and production schedules. The occurrences of one or more of these events may result in a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

***A failure to maintain satisfactory labour relations can adversely impact the Company***

The Company's operations and further development of the Vale do Curaçá Property, the NX Gold Property and the Boa Esperança Property are dependent upon the efforts of its employees and the Company's relations with its unionized and non-unionized employees, and the Company's operations would be adversely affected if it failed to maintain satisfactory labour relations. Some of MCSA's and NX Gold's employees are represented by labour unions under various collective bargaining agreements. Collective bargaining agreements of MCSA must be renewed annually, in September of each year, while NX Gold's collective bargaining agreements were renewed in May 2018, and every two years thereafter. The Company may not be able to satisfactorily renegotiate its collective bargaining agreements when they expire and may face tougher negotiations or higher compensation demands than would be the case for non-unionized labour. In addition, the existing collective bargaining agreements may not prevent a strike or work stoppage at the Company's facilities in the future. Further, relations between the Company and its employees may be affected by changes in the scheme of labour relations that may be introduced by the relevant

governmental authorities who have jurisdiction over the various aspects of the Company's business. Changes in such legislation or in the relationship between the Company and its employees may have a material adverse effect on the Company's business, results of operations and financial condition.

***The Company's insurance coverage may be inadequate to cover potential losses***

The Company's business is subject to a number of risks and hazards (as further described in this AIF). Although the Company maintains insurance to protect against certain risks in such amounts as it considers to be reasonable, its insurance will not cover all the potential risks associated with its activities, including current and any future mining operations. The Company may also be unable to obtain or maintain insurance to cover its risks at economically feasible premiums, or at all. Insurance coverage may not continue to be available or may not be adequate to cover any resulting liability. Moreover, insurance against risks such as environmental pollution or other hazards as a result of exploration, development or production may not be available to the Company on acceptable terms. The Company might also become subject to liability for pollution or other hazards which it is not currently insured against and/or in the future may not insure against because of premium costs or other reasons. Losses from these events may cause the Company to incur significant costs which could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

***It may be difficult to enforce judgments and effect service of process on directors, officers and experts named herein***

Some of the directors and officers of the Company reside outside of Canada, and each of Planminus, GE21 and SRK Brazil is incorporated, continued or otherwise organized under the laws of a foreign jurisdiction. Some or all of the assets of those persons may be located outside of Canada. Therefore, it may not be possible for investors to collect or to enforce judgments obtained in Canadian courts predicated upon the civil liability provisions of applicable Canadian securities laws against such persons. Moreover, it may not be possible for investors to effect service of process within Canada upon such persons.

***The directors and officers may have conflicts of interest with the Company***

Certain directors and officers of the Company are or may become associated with other mining and/or mineral exploration and development companies which may give rise to conflicts of interest. Directors who have a material interest in any person who is a party to a material contract or a proposed material contract with the Company are required, subject to certain exceptions, to disclose that interest and generally abstain from voting on any resolution to approve such a contract. In addition, directors and officers are required to act honestly and in good faith with a view to the best interests of the Company. Some of the directors and officers of the Company have either other full-time employment or other business or time restrictions placed on them and accordingly, the Company will not be the only business enterprise of these directors and officers. Further, any failure of the directors or officers of the Company to address these conflicts in an appropriate manner or to allocate opportunities that they become aware of to the Company could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

***Future acquisitions may require significant expenditures and may result in inadequate returns***

The Company may seek to expand through future acquisitions; however, there can be no assurance that the Company will locate attractive acquisition candidates, or that the Company will be able to acquire such candidates on economically acceptable terms, if at all, or that the Company will not be restricted from completing acquisitions pursuant to the terms and conditions from time to time of arrangements with third parties, such as the Company's creditors. Future acquisitions may require the Company to expend significant amounts of cash, resulting in the Company's inability to use these funds for other business or may involve significant issuances of equity or debt. Future acquisitions may also require substantial management time commitments, and the negotiation of potential acquisitions and the integration of acquired operations could disrupt the Company's business by diverting management and employees' attention away from day-to-day operations. The difficulties of integration may be increased by the necessity of coordinating geographically diverse organizations, integrating personnel with disparate backgrounds and combining different corporate cultures.

The Acquisitions and any future acquisition involve potential risks, including, among other things: (i) mistaken assumptions and incorrect expectations about mineral properties, Mineral Resources, Mineral Reserves and costs; (ii) an inability to successfully integrate any operation the Company acquired or acquires, as applicable; (iii) an inability to recruit, hire, train or retain qualified personnel to manage and operate the operations acquired; (iv) the assumption of unknown liabilities; (v) mistaken assumptions about the overall cost of equity or debt; (vi) unforeseen difficulties operating acquired projects, which may be in geographic areas new to the Company; and (vii) the loss of key employees and/or key relationships at the acquired project. In addition, Ero's acquisitions of MCSA and NX Gold were completed with certain of the prior shareholders thereof

on an “as is where is” basis, and therefore the Company has no rights of recourse and indemnities against the sellers. Future acquisitions may be subject to similar or other limitations as to rights of recourse and indemnities against the sellers.

MCSA and NX Gold, and future acquisition candidates may have liabilities or adverse operating issues that the Company failed or fails to discover through due diligence prior to the acquisition. If the Acquisitions prove to have, or if the Company consummates any future acquisitions with, unanticipated liabilities or adverse operating issues or if acquisition-related expectations are not met, the Company’s business, results of operations, cash flows, financial condition or prospects may be materially adversely affected. The potential impairment or complete write-off of goodwill and other intangible assets related to any such acquisition may reduce the Company’s overall earnings and could negatively affect the Company’s balance sheet.

***Failures of information systems or information security threats can be costly***

The Company has entered into agreements with third parties for hardware, software, telecommunications and other information technology (“IT”) services in connection with its operations. Such operations depend, in part, on how well the Company and its suppliers protect networks, equipment, IT systems and software against damage from a number of threats, including, but not limited to, cable cuts, damage to physical plants, natural disasters, terrorism, fire, power loss, hacking, computer viruses, vandalism and theft. The Company’s operations also depend on the timely maintenance, upgrade and replacement of networks, equipment, IT systems and software, as well as pre-emptive expenses to mitigate the risks of failures. Any of these and other events could result in information system failures, delays and/or increase in capital expenses. The failure of information systems or a component of information systems could, depending on the nature of any such failure, adversely impact the Company’s reputation, results of operations, cash flows and financial condition.

Although to date the Company has not experienced any material losses relating to cyber-attacks or other information security breaches, there can be no assurance that it will not incur such losses in the future. The Company’s risk and exposure to these matters cannot be fully mitigated because of, among other things, the evolving nature of these threats. As a result, cyber security and the continued development and enhancement of controls, processes and practices designed to protect systems, computers, software, data and networks from attack, damage or unauthorized access remain a priority. As cyber threats continue to evolve, the Company may be required to expend additional resources to continue to modify or enhance protective measures or to investigate and remediate any security vulnerabilities.

Any of these factors could have a material adverse effect on the Company’s results of operations, cash flows and financial position.

***The Company may be subject to costly legal proceedings***

The Company may be subject to regulatory investigations, civil claims, lawsuits and other proceedings in the ordinary course of its business. The results of these legal proceedings cannot be predicted with certainty due to the uncertainty inherent in regulatory actions and litigation, the difficulty of predicting decisions of regulators, judges and juries and the possibility that decisions may be reversed on appeal. Defense and settlement costs of legal disputes can be substantial, even with claims that have no merit. Management is committed to conducting business in an ethical and responsible manner, which it believes will reduce the risk of legal disputes. However, if the Company is subject to legal disputes, there can be no assurances that these matters will not have a material adverse effect on the Company’s business, financial condition, results of operations, cash flows or prospects.

Moreover, pursuant to the Acquisitions, the Company acquired operations that have been ongoing for a significant period of time. The Company inherited certain liabilities as a result and has been subject to a number of claims (including claims related to tax, labour and social security matters and civil action) in the course of its business which individually are not material and have not been accrued for in its financial statements as it is not probable that a cash outflow will occur. While the Company believes that a significant number of these claims are unlikely to be successful, if all such existing claims were decided against it, the Company could be exposed to liability of up to approximately R\$75 million, which could have an adverse impact on the Company’s business, financial condition, results of operations, cash flows or prospects.

Additionally, the legal system in Brazil has inherent uncertainties that could limit the legal protections available to the Company, which include: (i) inconsistencies between and within laws; (ii) limited judicial and administrative guidance on interpreting Brazilian legislation, particularly that relating to business, corporate and securities laws; (iii) substantial gaps in the regulatory structure due to a delay or absence of enabling regulations; (iv) a lack of judicial independence from political, social and commercial forces; (v) corruption; and (vi) bankruptcy procedures that are subject to abuse, any of which could have a material adverse effect on the Company’s business, financial condition, results of operations, cash flows or prospects.

Furthermore, it may be difficult to obtain swift and equitable enforcement of a Brazilian judgement, or to obtain enforcement of a judgement by a court of another jurisdiction, which could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

***The Boa Esperança Property is located in an underdeveloped rural area***

The Boa Esperança Property is located in an underdeveloped rural area, resulting in technical challenges for conducting mineral exploration and development and any potential mining activities at the property. The Company benefits from modern mining transportation skills and technologies for exploring and operating in such areas. Nevertheless, the Company may sometimes be unable to overcome problems related to underdevelopment or unseasonable weather at a commercially reasonable cost, which could negatively affect the Company's mineral exploration and development and any potential mining activities at the property and have a material adverse effect on the Company. The rural location of the Boa Esperança Property also results in increased costs associated with land access and infrastructure, including powerlines, water pipelines and transportation.

***Product alternatives may reduce demand for the Company's products***

Copper and gold have a number of different applications. Alternative technologies are continually being investigated and developed with a view to reducing production costs or for other reasons, such as minimizing environmental or social impact. If competitive technologies emerge that use other materials in place of copper or gold, demand and price for copper or gold might fall, which could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

***Changes in climate conditions may affect the Company's operations***

A number of governments have introduced or are moving to introduce climate change legislation and treaties at the international, national, state/provincial and local levels. Regulation relating to emission levels (such as carbon taxes) and energy efficiency is becoming more stringent. If the current regulatory trend continues, this may result in increased costs at the Company's operations. In addition, the physical risks of climate change may also have an adverse effect on the Company's operations. These risks include the following:

- changes in sea levels could affect ocean transportation and shipping facilities that are used to transport supplies, equipment and workforce and products from the Company's operations to world markets;
- extreme weather events (such as prolonged drought or rainy seasons) have the potential to disrupt operations at the Company's mines and may require the Company to make additional expenditures to mitigate the impact of such events; and
- the Company's facilities depend on regular supplies of consumables (diesel, tires, reagents, etc.) to operate efficiently. In the event that the effects of climate change or extreme weather events cause prolonged disruption to the delivery of essential commodities, production levels at the Company's operations may be reduced.

There can be no assurance that efforts to mitigate the risks of climate change will be effective and that the physical risks of climate change will not have an adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

***The Company is subject to restrictive covenants that limit its ability to operate its business***

The Company and its subsidiaries are subject to certain affirmative and restrictive covenants contained in the Credit Agreement and certain loan agreements entered into with the Other Institutional Lenders. The loan agreements contain operating and financial covenants that could restrict the Company's and its subsidiaries' ability to, among other things: incur additional indebtedness needed to fund its respective operations; pay dividends or make certain other distributions; make investments; create liens; sell or transfer assets; or enter into transactions with affiliates. In addition, the Company and its subsidiaries must maintain certain financial ratios and satisfy non-financial maintenance and other covenants. Compliance with the covenants and financial ratios may impair the Company and its subsidiaries and thereby the Company's ability to finance future operations or capital needs or to take advantage of other favourable corporate opportunities. The restrictions on the Company's ability to manage its business in management's sole discretion could adversely affect the Company's business by, among other things, limiting its ability to take advantage of business opportunities that management believes would be beneficial to shareholders and limiting their ability to adjust to changing market conditions. The Company's and its subsidiaries' ability to comply with such covenants and financial ratios will depend on future performance and may be affected by events beyond the control of the Company and its subsidiaries, including economic, financial and industry conditions.

## **Risks Related to the Company's Foreign Operations**

### ***The Company's Brazilian operations are subject to political and other risks associated with operating in a foreign jurisdiction***

The Vale do Curaçá Property, the NX Gold Property and the Boa Esperança Property are located in Brazil, exposing the Company to the socioeconomic conditions as well as the laws governing the mining industry in the country. Inherent risks with conducting foreign operations include, but are not limited to: high rates of inflation; extreme fluctuations in currency exchange rates, military repression; war or civil war; social and labour unrest; organized crime; hostage taking; terrorism; violent crime; expropriation and nationalization; renegotiation or nullification of existing concessions, licenses, approvals, permits and contracts; illegal mining; changes in taxation policies; restrictions on foreign exchange and repatriation; and changing political norms, currency controls and governmental regulations that favour or require the Company to award contracts in, employ citizens of, or purchase supplies from, the jurisdiction.

The Brazilian government frequently intervenes in the Brazilian economy and occasionally makes significant changes in policies and regulations. Changes, if any, in mining or investment policies or shifts in political attitude in Brazil may adversely affect the Company's operations or profitability. Operations may be affected in varying degrees by government regulations with respect to, but not limited to, restrictions on production, price controls, export controls, currency remittance, importation of parts and supplies, income and other taxes, royalties, the repatriation of profits, expropriation of property, foreign investment, maintenance of concessions, licenses, approvals and permits, environmental matters, land use, land claims of local people, water use and mine safety. Failure to comply strictly with applicable laws, regulations and local practices relating to mineral right applications and tenure could result in loss, reduction or expropriation of entitlements, or the imposition of additional local or foreign parties as joint venture partners with carried or other interests.

In addition, uncertainty over whether the Brazilian government will implement changes in policy or regulation may contribute to economic uncertainty in Brazil. Historically, Brazilian politics have affected the performance of the Brazilian economy. Past political crises have affected the confidence of investors and the public, generally resulting in an economic slowdown.

Global economic crises could negatively affect investor confidence in emerging markets or the economies of the principal countries in Latin America, including Brazil. Such events could materially and adversely affect the Company's business, financial condition, results of operations, cash flows or prospects.

The Company continues to monitor developments and policies in Brazil and the impact thereof to its operations; however, they cannot be accurately predicted and could have an adverse effect on the Company's operations or profitability.

### ***The Company may be negatively impacted by changes to mining laws and regulations***

The Company's activities are subject to various laws governing prospecting, exploration, development, production, taxes, labour standards and occupational health, mine safety, toxic substances and other matters. Mining, exploration and development activities are also subject to various laws and regulations relating to the protection of the environment. Although the Company believes that its activities are currently carried out in accordance with all applicable rules and regulations, no assurance can be given that new rules and regulations will not be enacted or that existing rules and regulations will not be applied in a manner that could limit or curtail production or development of the Company's properties. Amendments to current laws and regulations governing the Company's operations and activities or more stringent implementation of such laws and regulations could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

It is uncertain how the current and past operations of the Company will be affected by future legal changes or more stringent enforcement of past and current laws and regulations by governmental authorities. The Company may be subject to administrative, civil and criminal sanctions should a more conservative interpretation of past and current laws and regulations be adopted by governmental authorities.

### ***Corruption and fraud in Brazil relating to ownership of real property may adversely affect the Company's business***

Under Brazilian law, real property ownership is normally transferred by means of a transfer deed, and subsequently registered at the appropriate real property registry office under the corresponding real property record. There are uncertainties, corruption and fraud relating to title ownership of real property in Brazil, mostly in rural areas. In certain cases, a real property registry office may register deeds with errors, including duplicate and/or fraudulent entries, and, therefore, deed challenges frequently occur, leading to judicial actions. Property disputes over title ownership are frequent in Brazil, and, as a result, there is a risk

that errors, fraud or challenges could adversely affect the Company's ability to operate, although ownership of mining rights are separate from ownership of land.

***The Company is exposed to the possibility that applicable taxing authorities could take actions that result in increased tax or other costs that might reduce the Company's cash flow***

The Company pays a variety of taxes, fees and other governmental charges in connection with the operation of the Company's business, including income taxes, mining royalties, ad valorem property taxes, sales and use taxes, inventory taxes, social security contributions and various assessments. These taxes, fees and other charges are assessed by a variety of taxing authorities pursuant to applicable laws, regulations and rules. The Brazilian tax regime is complex and subject to a variety of interpretations by government authorities. Such complexity may expose the Company to unpredicted challenges to day to day practices in bookkeeping, accounting and payment of taxes. From time to time, the Company may enter into specific agreements with such taxing authorities that provide for the reduction, abatement or deferral of such taxes, fees or charges in exchange for certain payments or undertakings on the Company's part. If the Company enters into any such arrangements, the Company can give no assurance that any such reduction, abatement or deferral arrangements will be honored or that the applicable taxing authorities will not take actions that materially increase the amount of such taxes, fees or other governmental charges that the Company is required to pay. In addition, the Company may incur additional and unanticipated costs and expenses in connection with the Company's efforts to resist any proposed increases in such taxes, fees or other charges or in connection with the Company's efforts to enforce any reduction, abatement or deferral arrangements that the Company has previously put in place.

The Brazilian government may implement changes to the Brazilian tax regime that may affect the Company. These changes could include changes in prevailing tax rates and the imposition of new or temporary taxes, the proceeds of which are earmarked for designated government purposes. Some of these changes may result in increases in the Company's tax payments, which could have an adverse effect on the Company's operations or profitability. The Company cannot provide assurance that it will be able to be profitable following any increases in Brazilian taxes applicable to the Company and its operations.

The Company is subject to a number of ongoing proceedings in Brazil related to tax matters that have not been accounted for in its financial statements, given the Company's assessment of the probability of adverse judgment against it. If all such tax matters were decided against it, the Company could be exposed to liability of up to approximately R\$52 million, which could have an adverse impact on the Company's business, financial condition, results of operations, cash flows or prospects.

***Inflation in Brazil, along with Brazilian governmental measures to combat inflation, may have a significant negative effect on the Brazilian economy and also on the Company's financial condition and results of operations***

In the past, high levels of inflation have adversely affected the economies and financial markets of Brazil, and the ability of its government to create conditions that stimulate or maintain economic growth. Moreover, governmental measures to curb inflation and speculation about possible future governmental measures have contributed to the negative economic impact of inflation in Brazil and have created general economic uncertainty. As part of these measures, the Brazilian government has at times maintained a restrictive monetary policy and high interest rates that have limited the availability of credit and economic growth. Brazil may experience high levels of inflation in the future. Inflationary pressures may weaken investor confidence in Brazil and lead to further government intervention in the economy, including interest rate increases, restrictions on tariff adjustments to offset inflation, intervention in foreign exchange markets and actions to adjust or fix currency values, which may trigger or exacerbate increases in inflation, and consequently have an adverse impact on the Company. In an inflationary environment, the value of uncollected accounts receivable, as well as of unpaid accounts payable, declines rapidly. If Brazil experiences high levels of inflation in the future and price controls are imposed, the Company may not be able to adjust the rates the Company charges its customers to fully offset the impact of inflation on the Company's cost structures, which could adversely affect the Company's results of operations or financial condition.

***Exchange rate instability may have a material adverse effect on the Brazilian economy***

The Brazilian Real has experienced frequent and substantial variations in relation to the US dollar and other foreign currencies during the last decades. Depreciation of the Brazilian Real against the US dollar could create inflationary pressures in Brazil and cause increases in interest rates, which could negatively affect the growth of the Brazilian economy as a whole and harm the Company's financial condition and results of operations. On the other hand, appreciation of the Brazilian Real relative to the US dollar and other foreign currencies could lead to a deterioration of the Brazilian foreign exchange current accounts, as well as dampen export-driven growth. Depending on the circumstances, either depreciation or appreciation of the Brazilian Real could have a material adverse effect on the Brazilian economy.

***The Company's operations may be impaired as a result of restrictions to the acquisition or use of rural properties by foreigner investors or Brazilian companies under foreign control***

Non-resident individuals and non-domiciled foreign legal entities are subject to restrictions for the acquisition or lease for agricultural purpose or ownership or access rights in respect of rural properties in Brazil. Limitations also apply to legal entities domiciled in Brazil controlled by foreign investors, such as the Company's subsidiaries through which the Company operates in Brazil.

Accordingly, the Company's current and future operations may be impaired as a result of such restrictions on the acquisition or use of rural properties, and the Company's ownership or access rights in respect of any rural properties in Brazil may be subject to legal challenges, all of which could result in a material adverse effect on the Company's business, results of operations, financial condition and cash flows.

***Recent disruptions in international and domestic capital markets may lead to reduced liquidity and credit availability for the Company***

The disruptions recently experienced in the international and domestic capital markets have led to reduced liquidity and increased credit risk premiums for certain market participants and have resulted in a reduction of available financing. Companies located in countries in the emerging markets may be particularly susceptible to these disruptions and reductions in the availability of credit or increases in financing costs, which could result in them experiencing financial difficulty. In addition, the availability of credit to entities operating within the emerging and developing markets is significantly influenced by levels of investor confidence in such markets as a whole and as such any factors that impact market confidence (for example, a decrease in credit ratings, state or central bank intervention in one market or terrorist activity and conflict) could affect the price or availability of funding for entities within any of these markets.

***The Company may be responsible for corruption and anti-bribery law violations***

The Company's business is subject to the United States *Foreign Corrupt Practices Act of 1977* ("FCPA") and the Corruption of Foreign Public Officials Act (Canada) ("CFPOA"), which generally prohibit companies and company employees from engaging in bribery or other prohibited payments to foreign officials for the purpose of obtaining or retaining business. The FCPA also requires companies to maintain accurate books and records and internal controls, including at foreign-controlled subsidiaries. Since all of the Company's presently held interests are located in Brazil, there is a risk of potential FCPA violations. In addition, the Company is subject to the anti-bribery laws of Brazil and of any other countries in which it conducts business in the future. The Company's employees or other agents may, without its knowledge and despite its efforts, engage in prohibited conduct under the Company's policies and procedures and the FCPA, the CFPOA or other anti-bribery laws for which the Company may be held responsible. The Code and the Anti-Corruption Policy mandate compliance with these anti-corruption and anti-bribery laws and the Company has implemented training programs, internal monitoring and controls, and reviews and audits to ensure compliance with such laws. However, there can be no assurance that the Company's internal control policies and procedures will always protect it from recklessness, fraudulent behavior, dishonesty or other inappropriate acts committed by its affiliates, employees, contractors or agents. If the Company's employees or other agents are found to have engaged in such practices, the Company could suffer severe penalties and other consequences that may have a material adverse effect on its business, financial condition and results of operations.

**Risks Related to the Common Shares**

***Investors may lose their entire investment***

An investment in the Common Shares is speculative and may result in the loss of an investor's entire investment. Only potential investors who are experienced in high risk investments and who can afford to lose their entire investment should consider an investment in the Company.

***Dilution from equity financing could negatively impact holders of Common Shares***

The Company may from time to time raise funds through the issuance of Common Shares or the issuance of debt instruments or other securities convertible into Common Shares. The Company cannot predict the size or price of future issuances of Common Shares or the size or terms of future issuances of debt instruments or other securities convertible into Common Shares, or the effect, if any, that future issuances and sales of the Company's securities will have on the market price of the Common Shares. Sales or issuances of substantial numbers of Common Shares, or the perception that such sales or issuances could occur,



may adversely affect prevailing market prices of the Common Shares. With any additional sale or issuance of Common Shares, or securities convertible into Common Shares, investors will suffer dilution to their voting power and the Company may experience dilution in its earnings per share.

***Equity securities are subject to trading and volatility risks***

The securities of publicly traded companies can experience a high level of price and volume volatility and the value of the Company's securities can be expected to fluctuate depending on various factors, not all of which are directly related to the success of the Company and its operating performance, underlying asset values or prospects. These include the risks described elsewhere in this AIF. Factors which may influence the price of the Company's securities, including the Common Shares, include, but are not limited to:

- worldwide economic conditions;
- changes in government policies;
- investor perceptions;
- movements in global interest rates and global stock markets;
- variations in operating costs;
- the cost of capital that the Company may require in the future;
- metals prices;
- the price of commodities necessary for the Company's operations;
- recommendations by securities research analysts;
- issuances of equity securities or debt securities by the Company;
- operating performance and, if applicable, the share price performance of the Company's competitors;
- the addition or departure of key management and other personnel;
- significant acquisitions or business combinations, strategic partnerships, joint ventures or capital commitments by or involving the Company or its competitors;
- news reports relating to trends, concerns, technological or competitive developments, regulatory changes and other related industry and market issues affecting the mining sector;
- litigation;
- publicity about the Company, the Company's personnel or others operating in the industry;
- loss of a major funding source; and
- all market conditions that are specific to the mining industry.

There can be no assurance that such fluctuations will not affect the price of the Company's securities, and consequently purchasers of Common Shares may not be able to sell Common Shares at prices equal to or greater than the price or value at which they purchased the Common Shares or acquired them by way of the secondary market.

***Sales by existing shareholders can reduce share prices***

Sales of a substantial number of Common Shares in the public market could occur at any time. These sales, or the market perception that the holders of a large number of Common Shares intend to sell Common Shares, could reduce the market price of the Common Shares. If this occurs and continues, it could impair the Company's ability to raise additional capital through the sale of securities.

***The Company does not intend to pay dividends***

The Company has not, since the date of its incorporation, declared or paid any dividends or other distributions on its Common Shares. The Company is currently restricted from declaring or paying dividends or distributions until the secured obligations under the 2018 Credit Facilities have been satisfied pursuant to the terms and conditions set out in the Credit Agreement.

The declaration and payment of any dividends in the future is at the discretion of the Board and will depend on numerous factors, including compliance with applicable laws, financial performance, contractual restriction (as noted above), working capital requirements of the Company and its subsidiaries and such other factors as its directors consider appropriate.

### ***Public companies are subject to securities class action litigation risk***

In the past, securities class action litigation has often been brought against a company following a decline in the market price of its securities. If the Company faces such litigation, it could result in substantial costs and a diversion of management's attention and resources, which could materially harm its business.

### ***If securities or industry analysts do not publish research or publish inaccurate or unfavourable research about the Company's business, the price and trading volume of the Common Shares could decline***

The trading market for the Common Shares will depend on the research and reports that securities or industry analysts publish about the Company and its business. The Company does not have any control over these analysts. The Company cannot assure that analysts will cover it or provide accurate or favourable coverage. If one or more of the analysts who cover the Company downgrade its stock or change their opinion of the Common Shares, price of Common Shares would likely decline. If one or more of these analysts cease coverage of the Company or fail to regularly publish reports, the Company could lose visibility in the financial markets, which could cause the price and trading volume of the Common Shares to decline.

### ***Global financial conditions can reduce the price of the Common Shares***

Following the onset of the credit crisis in 2008, global financial conditions were characterized by extreme volatility and several major financial institutions either went into bankruptcy or were rescued by governmental authorities. While global financial conditions subsequently stabilized, there remains considerable risk in the system given the extraordinary measures adopted by government authorities to achieve that stability. Global financial conditions could suddenly and rapidly destabilize in response to future economic shocks, as government authorities may have limited resources to respond to future crises. Future economic shocks may be precipitated by a number of causes, including a rise in the price of oil, geopolitical instability and natural disasters. Any sudden or rapid destabilization of global economic conditions could impact the Company's ability to obtain equity or debt financing in the future on terms favourable to the Company. Additionally, any such occurrence could cause decreases in asset values that are deemed to be other than temporary, which may result in impairment losses. Further, in such an event, the Company's operations and financial condition could be adversely impacted.

Furthermore, general market, political and economic conditions, including, for example, inflation, interest and currency exchange rates, structural changes in the global mining industry, global supply and demand for commodities, political developments, legislative or regulatory changes, social or labour unrest and stock market trends will affect the Company's operating environment and its operating costs, profit margins and share price. Any negative events in the global economy could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

## **DIVIDENDS AND DISTRIBUTIONS**

The Company has not, since the date of its incorporation, declared or paid any dividends or other distributions on its Common Shares, and does not currently have a policy with respect to the payment of dividends or other distributions. The Company is currently restricted from declaring or paying dividends or distributions until the secured obligations under the 2018 Credit Facilities have been satisfied pursuant to the terms and conditions set out in the Credit Agreement.

The declaration and payment of any dividends in the future is at the discretion of the Board and will depend on numerous factors, including compliance with applicable laws, financial performance, contractual restrictions (as noted above), working capital requirements of the Company and its subsidiaries and such other factors as its directors consider appropriate.

## **DESCRIPTION OF CAPITAL STRUCTURE**

The Company's authorized share capital consists of an unlimited number of Common Shares without par value. As at March 14, 2019, there are 84,938,648 Common Shares issued and outstanding, 5,016,187 Common Shares issuable pursuant to outstanding options of the Company to purchase Common Shares ("**Options**") pursuant to the stock option plan of the Company adopted by the Board on May 15, 2017, 215,288 Common Shares issuable pursuant to outstanding performance share units of the Company ("**PSUs**") pursuant to the share unit plan of the Company adopted by the Board on September 7, 2017 and 3,166,662 Common Shares issuable pursuant to outstanding Founder Warrants.

All of the Common Shares rank equally as to voting rights, participation in a distribution of the assets of the Company on a liquidation, dissolution or winding-up of the Company and entitlement to any dividends declared by the Company. The holders of the Common Shares are entitled to receive notice of, and to attend and vote at, all meetings of shareholders (other than

meetings at which only holders of another class or series of shares are entitled to vote). Each Common Share carries the right to one vote. In the event of the liquidation, dissolution or winding-up of the Company, or any other distribution of the assets of the Company among its shareholders for the purpose of winding-up its affairs, the holders of the Common Shares will be entitled to receive, on a pro rata basis, all of the assets remaining after the payment by the Company of all of its liabilities. The holders of Common Shares are entitled to receive dividends as and when declared by the Board in respect of the Common Shares on a pro rata basis.

Any alteration of the rights, privileges, restrictions and conditions attaching to the Common Shares under the Company's Articles of Incorporation (“**Articles**”) must be approved by at least two-thirds of the Common Shares voted at a meeting of the Company's shareholders.

## MARKET FOR SECURITIES

### Market

The Common Shares are listed for trading on the TSX under the trading symbol “ERO”.

### Trading Price and Volume

The following table sets out information relating to the monthly trading of the Common Shares on the TSX for each of the months indicated.

Period	High (\$)	Low (\$)	Volume
January 2018	9.05	7.20	1,257,873
February 2018	8.19	6.87	292,368
March 2018	9.07	7.67	165,106
April 2018	8.50	7.65	2,052,710
May 2018	9.84	7.23	3,400,515
June 2018	10.85	9.31	2,284,068
July 2018	9.86	8.37	1,097,180
August 2018	8.94	7.62	1,253,560
September 2018	12.25	8.45	3,072,379
October 2018	12.35	9.17	2,500,070
November 2018	10.70	8.55	2,067,869
December 2018	11.34	9.38	3,071,907

The closing price of the Common Shares as quoted by the TSX on December 31, 2018 was \$9.81.

### Prior Sales

The following table summarizes the securities of the Company (each convertible into one Common Share) that are outstanding but not listed or quoted on a marketplace that have been issued by the Company during the financial year ended December 31, 2018:

Date of Issue	Type of Securities	Aggregate Number Issued	Exercise Price (\$)
January 18, 2018	Options	60,000	7.95
January 23, 2018	Options	125,000	7.76
June 19, 2018	Options	174,000	10.25
July 16, 2018	Options	200,000	9.01

Date of Issue	Type of Securities	Aggregate Number Issued	Exercise Price (\$)
December 31, 2018	Options	1,155,519	9.76
December 31, 2018	PSUs	215,288 <sup>(1)</sup>	N/A

Note:

<sup>(1)</sup> Assumes that 100% of the 215,288 PSUs granted on December 31, 2018 will vest. The PSUs will vest three years from the date of grant and the actual number of PSUs that will vest may range from 0% to 200% of the number granted, subject to the satisfaction of certain performance conditions. Please refer to the Company's management information circular dated March 14, 2019 ("*Compensation Committee Decisions Relating to 2018 Compensation – Options and Share Based Awards*"), a copy of which is available for review under the Company's profile on SEDAR at [www.sedar.com](http://www.sedar.com).

## DIRECTORS AND EXECUTIVE OFFICERS

### Director and Executive Officer Profiles

The following table sets forth the name of each director and executive officer of the Company as at December 31, 2018 and the date of this AIF, their province or state and country of residence, their position(s) and office(s) held with the Company, their principal occupation(s) during the preceding five years, the date they became a director of the Company, if applicable, and the number and percentage of Common Shares they beneficially own, or control or direct, directly or indirectly. Each director's term will expire immediately prior to the next annual meeting of shareholders of the Company.

Name and Residence	Position(s) and Office(s) with Ero	Principal Occupation(s) During Past Five Years	Director Since	Number of Common Shares Held <sup>(1)</sup>
Christopher Noel Dunn Massachusetts, USA	Executive Chairman Director	Executive Chairman, Ero Copper Corp. since May 16, 2016; Co-Managing Partner of Ero Resource Partners LLC since February 2014 (currently inactive); Managing Director of Liberty Metals & Mining LLC from 2011 until 2013.	May 16, 2016	3,026,767 <sup>(2)</sup>
David Strang <sup>(17)</sup> British Columbia, Canada	President and Chief Executive Officer Director	Director, President and Chief Executive Officer, Ero Copper Corp. since May 16, 2016; Co-Managing Partner of Ero Resource Partners LLC since February 2014 (currently inactive); CEO and Director, Lumina Copper Corp. from August 2008 until August 2014.	May 16, 2016	5,255,936 <sup>(3)</sup>
Wayne Drier British Columbia, Canada	Chief Financial Officer	Chief Financial Officer, Ero Copper Corp. since March 2017; Executive, Corporate Development, Asanko Gold Inc. from July 2014 until March 2017; Vice President: Strategy & Development, Coalspur Mines Ltd. from July 2011 until June 2014.	-	166,333 <sup>(4)</sup>
Michel (Mike) Richard Santiago, Chile	Chief Geological Officer	Chief Geological Officer (previously, Senior Vice President Exploration), Ero Copper Corp. since January 2017; Director New Business Development South America, Lundin Mining Corporation from April 2012 to January 2016; General Manager TEMCL, Teck Resources Limited from May 1994 until March 2012.	-	2,000,000 <sup>(5)</sup>
Anthea Bath	Vice President, Technical Services	Vice President, Technical Services, Ero Copper Corp. since July 2018; Vice President, Strategic Market Development and Commercial, Sibanye-Stillwater from September 2016 until June 2018; and Chief Executive Officer of PentaQuark Energy from August 2012 until August 2016.	-	Nil <sup>(6)</sup>

<b>Name and Residence</b>	<b>Position(s) and Office(s) with Ero</b>	<b>Principal Occupation(s) During Past Five Years</b>	<b>Director Since</b>	<b>Number of Common Shares Held<sup>(1)</sup></b>
Makko DeFilippo Arizona, USA	Vice President, Corporate Development	Vice President, Corporate Development, Ero Copper Corp. since February 2017; Director Corporate Finance, Global Mining Advisory Practice from January 2016 until January 2017; Partner, Ero Resource Partners from January 2014 until January 2016; Investment Analyst, Liberty Metals & Mining, LLC from October 2011 until December 2013.	-	6,324 <sup>(7)</sup>
Deepk Hundal British Columbia, Canada	Vice President, General Counsel and Corporate Secretary	Vice President, General Counsel & Corporate Secretary, Ero Copper Corp. since July 2017; General Counsel, Retirement Concepts Senior Services Ltd. & Pacific Reach Properties Ltd., from July 2014 until July 2017; Vice President, Legal, Elgin Mining Ltd. from May 2012 until July 2013; Vice President, Legal and Corporate Secretary, Aura Minerals Inc. from June 2007 until April 2012.	-	10,526 <sup>(8)</sup>
Pablo Mejia	Vice President, Exploration	Vice President, Exploration, Ero Copper Corp. since June 2018; Senior Consultant, Mira Geoscience Ltd. from January 2016 until May 2018; and Assistant Professor, Escuela de Ingenieria de Antioquia from July 2015 until December 2015.	-	Nil <sup>(9)</sup>
Michal Romanowski Arizona, USA	Vice President, Evaluations and Planning	Vice President, Evaluations and Planning, Ero Copper Corp. since January 2017; Partner, Ero Resource Partners LLC from May 2014 until December 2016; Investment Analyst, Liberty Metals & Mining LLC from January 2013 until April 2014; Principal Consultant, Romanowski & Company from January 2011 until December 2013.	-	200,000 <sup>(10)</sup>
Jonathan Singh British Columbia, Canada	Vice President, Finance	Vice President, Finance, Ero Copper Corp. since February 2017; Chief Financial Officer of: Aurora Mineral Resources Group from September 2011 until January 2016, Kaminak Gold Corporation, from October 2011 until January 2016, Kivalliq Energy Corporation, from October 2011 until January 2016, West Melville Metals Inc., from September 2011 until September 2015, and Bluestone Resources Inc., September 2011 until February 2014.	-	127,333 <sup>(11)</sup>
Lyle Braaten <sup>(14)(16)</sup> British Columbia, Canada	Director (Independent)	President and Chief Executive Officer, Miedzi Copper Corp. since March 2012; Vice President, Legal, Lumina Gold Corp. since June 2014; Vice President, Legal Counsel, Luminex Resources Corp. since August 2018; Vice President, Legal, Anfield Gold Corp. from May 2016 until December 2017; Special Counsel, Innergex Renewable Energy Inc. (a successor to Alterra Power Corp.) since June 2008.	July 27, 2016	316,666 <sup>(12)</sup>
Steven Busby <sup>(16)(17)</sup> British Columbia, Canada	Director (Independent)	Chief Operating Officer of Pan American Silver Corp. since 2008.	July 27, 2016	366,666 <sup>(12)</sup>

<u>Name and Residence</u>	<u>Position(s) and Office(s) with Ero</u>	<u>Principal Occupation(s) During Past Five Years</u>	<u>Director Since</u>	<u>Number of Common Shares Held<sup>(1)</sup></u>
Robert Getz <sup>(15)(16)</sup> Connecticut, USA	Director (Independent)	Managing Partner, Peckslund Capital Partners since December 2015. Partner and Co-Founder, Cornerstone Equity Investors from September 1996 until December 2016.	June 14, 2018	216,666 <sup>(13)</sup>
John Wright <sup>(14)(15)(17)</sup> British Columbia, Canada	Director (Independent)	Business Development with Capstone Mining Corp. since December 2006.	July 27, 2016	866,666 <sup>(12)</sup>
Matthew Wubs <sup>(14)(15)</sup> British Columbia, Canada	Director (Independent)	Co-Chief Executive Officer, Westland Insurance Group Ltd. since January 2016; Chief Financial Officer, Westland Insurance Group Ltd. from January 2002 until December 2015.	July 27, 2016	2,455,935 <sup>(12)</sup>

**Notes:**

- (1) On a non-diluted basis.
- (2) Mr. Dunn also holds 1,000,000 Founder Warrants and 525,185 Options and 20,902 PSUs, entitling him to acquire in the aggregate an additional 1,546,087 Common Shares, assuming that 100% of the PSUs vest. The PSUs will vest three years from the date of grant and the actual number of PSUs that will vest may range from 0% to 200% of the number granted, subject to the satisfaction of certain performance conditions. Please refer to the Company's management information circular dated March 14, 2019 (under "Compensation Committee Decisions Relating to 2018 Compensation – Options and Share Based Awards"), a copy of which is available for review under the Company's profile on SEDAR at www.sedar.com.
- (3) Mr. Strang also holds 1,000,000 Founder Warrants and 525,185 Options and 20,902 PSUs, entitling him to acquire in the aggregate an additional 1,546,087 Common Shares, assuming that 100% of the PSUs vest.
- (4) Mr. Drier also holds 702,139 Options and 15,676 PSUs, entitling him to acquire in the aggregate an additional 717,815 Common Shares, assuming 100% of the PSUs vest.
- (5) Mr. Richard also holds 666,666 Founder Warrants and 217,948 Options and 16,721 PSUs, entitling him to acquire in the aggregate an additional 901,335 Common Shares, assuming 100% of the PSUs vest.
- (6) Ms. Bath holds 258,092 Options and 10,451 PSUs, entitling her to acquire in the aggregate 268,543 Common Shares, assuming 100% of the PSUs vest.
- (7) Mr. DeFilippo also holds 305,902 Options and 11,496 PSUs, entitling him to acquire in the aggregate an additional 317,398 Common Shares, assuming 100% of the PSUs vest.
- (8) Mr. Hundal also holds 233,092 Stock Options and 10,451 PSUs, entitling him to acquire in the aggregate an additional 244,353 Common Shares, assuming 100% of the PSUs vest.
- (9) Mr. Mejia holds 190,665 Options and 7,316 PSUs, entitling him to acquire in the aggregate 197,981 Common Shares, assuming 100% of the PSUs vest.
- (10) Mr. Romanowski also holds 66,666 Founder Warrants and 133,092 Stock Options and 10,451 PSUs, entitling him to acquire in the aggregate an additional 210,209 Common Shares, assuming 100% of the PSUs vest.
- (11) Mr. Singh also holds 184,855 Stock Options and 6,270 PSUs, entitling him to acquire in the aggregate an additional 191,125 Common Shares, assuming 100% of the PSUs vest.
- (12) Each of Messrs. Braaten, Busby, Wright and Wubs also hold 66,666 Founder Warrants and 55,000 Options, entitling each of them to acquire in the aggregate an additional 121,666 Common Shares.
- (13) Mr. Getz also holds 49,000 Options, entitling him to acquire an additional 49,000 Common Shares.
- (14) Member of the Audit Committee. Mr. Wubs is the Chairman of this committee.
- (15) Member of the Compensation Committee. Mr. Getz is the Chairman of this committee.
- (16) Member of the Nominating and Corporate Governance Committee. Mr. Braaten is the Chairman of this committee.
- (17) Member of the Environmental, Health, Safety and Sustainability Committee. Mr. Busby is the Chairman of this committee.

Based on the disclosure available on the System for Electronic Disclosure by Insiders (SEDI), as of the date of this AIF, the directors and executive officers of the Company, as a group, beneficially owned, or controlled or directed, directly or indirectly, 15,015,818 Common Shares, representing approximately 17.7% of the total number of Common Shares outstanding before giving effect to the conversion of any Options, PSUs and Founder Warrants held by such directors and executive officers.

**Cease Trade Orders, Bankruptcies, Penalties or Sanctions**

Except as set out below, none of the Company's directors or executive officers is, as at the date hereof, or was within 10 years before the date hereof, a director, chief executive officer or chief financial officer of any company (including the Company) that (a) was subject to a cease trade order, an order similar to a cease trade order or an order that denied the relevant company access to any exemption under securities legislation, that was in effect for a period of more than 30 consecutive days (an "Order") that was issued while the director or executive officer was acting in the capacity as director, chief executive officer or chief financial officer, or (b) was subject to an Order that was issued after the director or executive officer ceased to be a director, chief executive officer or chief financial officer and which resulted from an event that occurred while that person was acting in the capacity as director, chief executive officer or chief financial officer.

Except as set out below, none of the Company's directors or executive officers, nor, to its knowledge, any shareholder holding a sufficient number of its securities to affect materially the control of the Company (a) is, as at the date hereof, or has been

within the 10 years before the date hereof, a director or executive officer of any company (including the Company) that, while that person was acting in that capacity, or within a year of that person ceasing to act in that capacity, became bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency or was subject to or instituted any proceedings, arrangement or compromise with creditors or had a receiver, receiver manager or trustee appointed to hold its assets, or (b) has, within the 10 years before the date hereof, become bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency, or become subject to or instituted any proceedings, arrangement or compromise with creditors, or had a receiver, receiver manager or trustee appointed to hold the assets of such director, executive officer or shareholder.

None of the Company's directors or executive officers, nor, to its knowledge, any shareholder holding a sufficient number of its securities to affect materially the control of the Company, has been subject to (a) any penalties or sanctions imposed by a court relating to securities legislation or by a securities regulatory authority or has entered into a settlement agreement with a securities regulatory authority, or (b) any other penalties or sanctions imposed by a court or regulatory body that would likely be considered important to a reasonable investor in making an investment decision.

On April 20, 2009, while Robert Getz was a director of Palladon Ventures, Ltd. ("**Palladon**"), Palladon became subject to a cease trade order in British Columbia as a result of certain deficiencies in its August 31, 2008 and November 30, 2008 interim financial statements, management's discussion and analysis and failure to file a business acquisition report. Palladon rectified all deficiencies identified in the cease trade order and the cease trade order was subsequently revoked on August 26, 2009. In September 2010, while Mr. Getz was a director of EarthRenew Corporation ("**EarthRenew**"), a private company, EarthRenew appointed a receiver-manager pursuant to the *Bankruptcy and Insolvency Act* (Canada) in respect of its assets and undertakings. Mr. Getz is no longer a director of EarthRenew.

### **Conflicts of Interest**

To the best of the Company's knowledge, there are no existing or potential material conflicts of interest between the Company and any of its directors or officers as of the date hereof. However, certain of the Company's directors and officers are, or may become, directors or officers of other companies with businesses which may conflict with its business. Accordingly, conflicts of interest may arise which could influence these individuals in evaluating possible acquisitions or in generally acting on the Company's behalf.

Pursuant to the BCBCA, directors and officers of the Company are required to act honestly and in good faith with a view to the best interests of the Company. As required under the BCBCA and the Articles:

- a director or senior officer who holds any office or possesses any property, right or interest that could result, directly or indirectly, in the creation of a duty or interest that materially conflicts with that individual's duty or interest as a director or senior officer of the Company, must promptly disclose the nature and extent of that conflict; and
- a director who holds a disclosable interest (as such term is defined under the BCBCA) in a contract or transaction into which the Company has entered or proposes to enter may generally not vote on any directors' resolution to approve such contract or transaction.

Generally, as a matter of practice, directors and officers who have disclosed a material interest in any contract or transaction that the Board is considering will not take part in any Board discussion respecting that contract or transaction. If on occasion such directors do participate in the discussions, they will refrain from voting on any matters relating to matters in which they have disclosed a material interest. In appropriate cases, the Company will establish a special committee of independent directors to review a matter in which directors or officers may have a conflict.

### **AUDIT COMMITTEE**

The Audit Committee provides assistance to the Board in fulfilling its obligations relating to the integrity of the internal financial controls and financial reporting of the Company. The external auditors of the Company report directly to the Audit Committee. The Audit Committee's primary duties and responsibilities include: (i) reviewing and reporting to the Board on the annual audited financial statements (including the auditor's report thereon) and unaudited interim financial statements and any related management's discussion and analysis, if any, and other financial disclosure related thereto that may be required to be reviewed by the Audit Committee pursuant to applicable legal and regulatory requirements; (ii) reviewing material changes in accounting policies and significant changes in accounting practices and their impact on the financial statements; (iii) overseeing the audit function, including engaging in required discussions with the Company's external auditor and reviewing a summary of the annual audit plan at least annually, overseeing the independence of the Company's external auditor, overseeing the

Company's internal auditor, and pre-approving any non-audit services to the Company; (iv) reviewing and discussing with management the appointment of key financial executives and recommending qualified candidates to the Board; (v) reviewing with management and the Company's external auditors, at least annually, the integrity of the internal controls over financial reporting and disclosure; (vi) reviewing management reports related to legal or compliance matters that may have a material impact on the Company and the effectiveness of the Company's compliance policies; and (vii) establishing whistleblowing procedures and investigating any complaints or concerns it deems necessary. The full text of the Audit Committee mandate is attached to this AIF as Appendix "A".

### **Composition of the Audit Committee**

The Audit Committee is composed of Messrs. Matthew Wubs (Chair), Lyle Braaten and John Wright, all of whom are independent directors and all of whom are financially literate, in each case within the meaning of National Instrument 52-110, *Audit Committees*.

### **Relevant Education and Experience**

Each of the members of the Audit Committee has extensive education and experience relevant to the performance of their responsibilities as members of the Audit Committee.

Matthew Wubs graduated with a B.A. from the University of British Columbia in 1992 and has been a Chartered Professional Accountant since 1996. Mr. Wubs is the Co-Chief Executive Officer of Westland Insurance Group Ltd., one of the largest private insurance brokerage operations in Canada. Westland directly manages over \$700 million in premium volume through its brokerage, insurance company and wholesale operations. Mr. Wubs is responsible for oversight of insurance, reinsurance, risk management, finance and M&A. He joined Westland in the role of Controller in 1997. In 2001 he was promoted to Chief Financial Officer, a position he held until 2015 when he was promoted to Co-Chief Executive Officer. Previous to Westland, he held a consulting role in Management Information Systems at International Forest Products Ltd. and obtained his Chartered Professional Accountant designation while working at Deloitte LLP. Mr. Wubs is also a director of Westland Insurance Company Limited, a provincially licensed property and casualty insurer and has been on the board's audit committee for 11 years.

Lyle Braaten graduated with a B.Sc. from the University of Calgary in 1986 and an LL.B. from the University of British Columbia in 1989. He has been the President and Chief Executive Officer of Miedzi Copper corp. since March 2012, the Vice President, Legal Counsel and a director of Lumina Gold Corp. since June 2014 and the Vice President, Legal Counsel and a director of Luminex Resources Corp. since August 2018. He was the General Counsel of Magma Energy Corp. from June 2008 to May 2011 when it acquired Plutonic Power Corp. and changed its name to Alterra Power Corp. Prior to joining Magma, he was involved in the management of a mid-sized law firm and served as its Managing Director from 2001 to 2008 with overall responsibility for the oversight of the firm's financial results and reporting. He has been an audit committee member of Lumina Gold Corp. since July 2014 and Luminex Resources Corp. since August 2018 and has at least four years' experience in audit committee positions.

John Wright was a co-founder, and former Director, President and Chief Operating Officer of Pan American Silver Corp. Mr. Wright was also the co-founder of Equinox Resources. Previously, he spent 10 years with Teck Cominco where he worked at the Trail Smelter operations and later participated in the management of the feasibility studies, marketing and mine construction at the Afton, Highmont, Bull Moose and David Bell Mines. Mr. Wright is a director of Bitterroot Resources Ltd., SilverCrest Metals Inc. and Luminex Resources Corp. and a former director of Lumina Copper Corp., Northern Peru Copper Corp., Global Copper Corp. and Regalito Copper Corp. Mr. Wright has been involved in multiple asset purchases and sales and the accounting associated therewith. Mr. Wright was an audit committee member of Northern Peru Copper Corp. and Regalito Copper Corp. and has at least seven years' experience in audit committee positions.

### **Pre-Approval Policies and Procedures**

The Audit Committee mandate requires that the Audit Committee pre-approve any retainer of the auditor of the Company to provide any non-audit services to the Company that it deems advisable in accordance with applicable legal and regulatory requirements and policies and procedures of the Board. The Audit Committee is permitted to delegate pre-approval authority to one of its members; however, the decision of any member of the Audit Committee to whom such authority has been delegated must be presented to the full Audit Committee at its next scheduled meeting.



## External Auditor Service Fees

The following table discloses the aggregate fees billed to the Company and its subsidiaries by its external auditors in the financial years ended December 31, 2018 and 2017:

Financial Year End	Audit Fees <sup>(1)</sup>	Audit Related Fees	Tax Fees	All Other Fees
December 31, 2018	US\$370,035	US\$9,698 <sup>(2)</sup>	US\$19,971 <sup>(3)</sup>	Nil
December 31, 2017	US\$234,000	US\$91,500 <sup>(4)</sup>	US\$22,800 <sup>(5)</sup>	US\$259,200 <sup>(6)</sup>

Note:

- (1) The aggregate fees billed for the audit of the annual consolidated financial statements of the Company, quarterly interim review of the Company and of its Brazilian subsidiaries and statutory audits of the Company's Brazilian subsidiaries.
- (2) The aggregate fees billed for professional services rendered by the external auditors in connection with assistance in diagnosing the impacts of adopting and implementing new International Financial Reporting Standards on leasing (IFRS 16) on the Company's subsidiaries in Brazil.
- (3) The aggregate fees billed for professional services rendered by the external auditors in connection with the review of income tax of the Company's Brazilian subsidiaries for the 2013 to 2017 fiscal years.
- (4) The aggregate fees billed for professional services rendered by the external auditors in connection with an internal review of the unaudited financial statements of the Company for the period ended September 30, 2017, assistance in diagnosing the impacts of adopting and implementing International Financial Reporting Standards on the Company's subsidiaries and specified audit related procedures in Brazil.
- (5) The aggregate fees billed for professional services rendered by the external auditors in connection with the review of income tax and social contribution taxes of the Company's Brazilian subsidiaries for the 2013 to 2017 fiscal years.
- (6) The aggregate fees billed for professional services rendered by the external auditor in connection with the Company's prospectus and related services associated with the Offering.

## PROMOTERS

Christopher Noel Dunn, the Executive Chairman and a director of Ero, may be considered to be a promoter of the Company in that he took the initiative in organizing the business of the Company. The following table sets out the number and percentage of each class of voting securities and equity securities of Ero beneficially owned, or controlled or directed, directly or indirectly, by Mr. Dunn as at the date of this AIF.

Designation of Class	Number of Securities	Percentage of Class
Common Shares	3,026,767	3.56% <sup>(1)</sup>
Options	525,185	10.47%
PSUs	20,902	9.71%
Founder Warrants	1,000,000	31.58%

Notes:

- (1) Calculated on a non-diluted basis. As at March 14, 2019, there are 84,938,648 Common Shares issued and outstanding.

Additional information about Mr. Dunn is disclosed elsewhere in this AIF in connection with his capacity as a director and officer of the Company.

David Strang, the President and Chief Executive Officer and a director of Ero, may be considered to be a promoter of the Company in that he took the initiative in organizing the business of the Company. The following table sets out the number and percentage of each class of voting securities and equity securities of Ero beneficially owned, or controlled or directed, directly or indirectly, by Mr. Strang as at the date of this AIF.

Designation of Class	Number of Securities	Percentage of Class
Common Shares	5,255,936	6.19% <sup>(1)</sup>
Options	525,185	10.47%
PSUs	20,902	9.71%
Founder Warrants	1,000,000	31.58%

Notes:

- (1) Calculated on a non-diluted basis. As at March 14, 2019, there are 84,938,648 Common Shares issued and outstanding.

Additional information about Mr. Strang is disclosed elsewhere in this AIF in connection with his capacity as a director and officer of the Company.

Other than as disclosed in this AIF, neither Mr. Dunn nor Mr. Strang have received, directly or indirectly, anything of value, including money, property, contracts, options or rights of any kind from Ero or its subsidiaries, and neither Ero nor its subsidiaries have received any assets, services or other consideration from Mr. Dunn or Mr. Strang in return.

### LEGAL PROCEEDINGS AND REGULATORY ACTIONS

To the Company's knowledge, there are no legal proceedings material to the Company to which it is a party, or has been a party to, or of which any of its property is the subject matter of, or was the subject matter of, since the beginning of the financial year ended December 31, 2018, and no such proceedings or actions are known by the Company to be contemplated.

There have been no penalties or sanctions imposed against the Company by a court relating to securities legislation or by a securities regulatory authority during the financial year ended December 31, 2018 or other penalties or sanctions imposed by a court or regulatory body against the Company since incorporation that would likely be considered important to a reasonable investor in making an investment decision, and the Company has not entered into any settlement agreements before a court relating to securities legislation or with a securities regulatory authority during the financial year ended December 31, 2018.

### INTEREST OF MANAGEMENT AND OTHERS IN MATERIAL TRANSACTIONS

Other than as described below or as disclosed elsewhere herein, no director or executive officer of the Company or any of its subsidiaries or any person or company that beneficially owns, or controls or directs, directly or indirectly, more than 10 percent of the outstanding Common Shares, or any of their respective associates or affiliates, has or has had any material interest, direct or indirect, in any transaction within the three most recently completed financial years or during the current financial year that has materially affected or is reasonably expected to materially affect the Company or any of its subsidiaries.

On January 18, 2017, the Company completed a private placement offering, issuing an aggregate principle amount of US\$2,750,000 of General Debentures as described in this AIF under the heading "*General Development and Business of the Company – Three Year History*". David Strang, the President and Chief Executive Officer of the Company and Matthew Wubs, a director of the Company, each participated in the offering by subscribing to US\$500,000 of General Debentures. In January 2018, Messrs Strang and Wubs both exercised their option to convert the outstanding principal and accrued and unpaid interest (US\$53,562) on their General Debentures into General Debenture Units and concurrently exercised the underlying General Warrants. As a result, they were each issued an aggregate of 922,602 Common Shares by the Company, of which, 184,520 Common Shares were issued upon exercise of the underlying General Warrants.

### AUDITORS, TRANSFER AGENT AND REGISTRAR

The Company's auditors are KPMG LLP, Chartered Professional Accountants, having an address at Suite 1100 – 777 Dunsmuir Street, PO Box 10426 Pacific Centre, Vancouver, British Columbia, Canada V7Y 1K3.

The transfer agent and registrar for the Common Shares is Computershare Investor Services Inc., having an address at 510 Burrard Street, 3<sup>rd</sup> Floor, Vancouver, British Columbia V6C 3B9. The warrant agent for the Founder Warrants is Computershare Trust Company of Canada, having an address at 510 Burrard Street, 2<sup>nd</sup> Floor, Vancouver, British Columbia V6C 3B9.

### MATERIAL CONTRACTS

Except for material contracts entered into in the ordinary course of business, set out below are material contracts to which the Company or any of its subsidiaries are a party, entered into prior to or since the date of incorporation of the Company and which still remain in effect and material to the Company. Copies of such material contracts are available for review under the Company's profile on SEDAR at [www.sedar.com](http://www.sedar.com).

- The investor rights agreement dated March 22, 2017 between the Company and Tembo Capital Mining Fund II LP, acting by its general partner, Tembo Capital Mining GP LP, acting by its general partner, Tembo Capital Mining GP Ltd. ("**Tembo**") entered into in connection with the Company's private placement offering of 18,423,593 Common Shares at a price of US\$1.50 per Common Share on March 22, 2017 ("**Tembo Investor Rights Agreement**"). Pursuant to the Tembo Investor Rights Agreement, for so long as Tembo's affiliate, Ndovu Capital IX B.V. ("**Ndovu**"), holds at least 5% of the issued and outstanding Common Shares, Ndovu is entitled to request from the Company,

among other things, monthly reports of financial and operation performance, and meetings with management of the Company, and has a participation right to subscribe for Common Shares, securities convertible into or exchangeable for Common Shares, or any other securities of the Company, as applicable, in order to preserve its proportionate interest in the total issued and outstanding Common Shares, in connection with any equity financings and certain other non-cash transactions involving the issuance of equity securities by the Company;

- the (i) First Amendment of the Public Deed of Rectification and Ratification to the Public Deed of Credit Opening Registered in Book 006/2011 on Sheets 61 to 83V Both sides, on February 23, 2011, at the Notary Office for the District of Jaguarari, Bahia, Signed Between the Northeast Bank of Brazil S.A. and the Credited Signed at the End, with Mortgage Guarantee, Registered in Book 2-A of the General Registry under Number R-10/151 on February 23, 2011 dated December 29, 2016 between Banco do Nordeste do Brasil S.A. and MCSA (ii) Budget Attachment to Public Deed for Credit Opening dated February 23, 2011 between Banco do Nordeste do Brasil S.A. and MCSA; (iii) General Provisions of Public Deed for Credit Opening dated February 23, 2011 between Banco do Nordeste do Brasil S.A. and MCSA; and (iv) Public Deed for Credit Opening dated February 23, 2011 between Banco do Nordeste do Brasil S.A. and MCSA. This loan originally comprised a US\$12.088 million debt obligation, with an annual interest rate of 10%. Pursuant to the restructuring, the principle is not payable for 29 months commencing on December 2, 2016, the annual interest rate is subject to a 25% discount if the interest payments are made on the due dates and the maturity date of the loan is now December 29, 2026, please see “*General Development and Business of the Company – Three Year History*” for further information;
- Underwriting Agreement referred to under “*General Development and Business of the Company – Three Year History*”; and
- the Credit Agreement referred to under “*General Development and Business of the Company – Three Year History*”.

#### INTEREST OF EXPERTS

Information of a scientific or technical nature in respect of the Vale do Curaçá Property is included in this AIF based upon the Vale do Curaçá Technical Report prepared by Rubens Jose De Mendonça, MAusIMM, of Planminas, and Porfirio Cabaleiro Rodrigues, MAIG, Fábio Valério Câmara Xavier, MAIG, and Bernardo Horta de Cerqueira Viana, MAIG, all of GE21, who are “qualified persons” and “independent” of the Company within the meanings of NI 43-101. In addition, information of a scientific or technical nature set out in the AIF under the heading “*Vale do Curaçá Property – Updated Information with respect to the Vale do Curaçá Property*”, has been reviewed and approved by Rubens Mendonça, MAusIMM, of Planminas, who is a “qualified person” and “independent” of the Company within the meanings of NI 43-101. To the best of the Company’s knowledge, after reasonable inquiry, as of the date hereof, the aforementioned individuals and their firms do not beneficially own, directly or indirectly, any Common Shares.

Information of a scientific or technical nature in respect of the NX Gold Property is included in this AIF based upon the NX Gold Technical Report prepared by Porfirio Cabaleiro Rodrigues, MAIG, Leonardo Apparicio da Silva, MAIG, and Leonardo de Moraes Soares, MAIG, all of GE21, who are “qualified persons” and “independent” of the Company within the meanings of NI 43-101. In addition, information of a scientific or technical nature set out in the AIF under the heading “*NX Gold Property – Updated Information with respect to the NX Gold Property*”, has been reviewed and approved by Porfirio Cabaleiro Rodrigues, MAIG, of GE21, who is a “qualified person” and “independent” of the Company within the meanings of NI 43-101. To the best of the Company’s knowledge, after reasonable inquiry, as of the date hereof, the aforementioned individuals and their firms do not beneficially own, directly or indirectly, any Common Shares.

Information of a scientific or technical nature in respect of the Boa Esperança Property is included in this AIF based upon the Boa Esperança Technical Report prepared by Rubens Mendonça, MAusIMM, of SRK Brazil as at the date of the report (now of Planminas) and Carlos Barbosa, MAIG, and Girogio di Tomi, MAusIMM, both of SRK Brazil, who are “qualified persons” and “independent” of the Company within the meanings of NI 43-101. To the best of the Company’s knowledge, after reasonable inquiry, as of the date hereof, the aforementioned individuals and their firms do not beneficially own, directly or indirectly, any Common Shares.

KPMG LLP, Chartered Professional Accountants, the auditors of the Company, has advised the Company that it is independent of the Company in accordance with the Rules of Professional Conduct of the Chartered Professional Accountants of British Columbia.

## ADDITIONAL INFORMATION

Additional information relating to the Company may be found under the Company's profile on SEDAR at [www.sedar.com](http://www.sedar.com). Additional information, including directors' and officers' remuneration and indebtedness, principal holders of the Company's securities, and securities authorized for issuance under equity compensation plans, is contained in the Company's information circular for its most recent annual meeting of shareholders that involves the election of directors.

Financial information is provided in the Company's annual audited consolidated financial statements for the year ended December 31, 2018 and the Management's Discussion and Analysis relating thereto and may be found on SEDAR.

Copies of these documents may be obtained by contacting the Company at:

Ero Copper Corp.  
Suite 1050 – 625 Howe Street  
Vancouver, B.C. V6C 2T6  
Tel: (604) 449-9244  
Fax: (604) 398-3767  
Email: [info@erocopper.com](mailto:info@erocopper.com)

**APPENDIX “A”  
ERO COPPER CORP.  
AUDIT COMMITTEE MANDATE**

**1. Introduction**

The Audit Committee (the “**Committee**” or the “**Audit Committee**”) of Ero Copper Corp. (“**Ero**” or the “**Company**”) is a committee of the Board of Directors (the “**Board**”) of the Company. The Committee shall oversee the accounting and financial reporting practices of the Company and the audits of the Company’s financial statements and exercise the responsibilities and duties set out in this Mandate.

**2. Membership**

*Number of Members*

The Committee shall be composed of three or more members of the Board.

*Independence of Members*

Each member of the Committee must be independent, subject to any exemptions or relief that may be granted from such requirement. “Independent” shall have the meaning, as the context requires, given to it in National Instrument 52-110 Audit Committees, as may be amended from time to time.

*Chair*

At the time of the annual appointment of the members of the Audit Committee, the Board shall appoint a Chair of the Audit Committee. The Chair shall be a member of the Audit Committee, preside over all Audit Committee meetings, coordinate the Audit Committee’s compliance with this Mandate, work with management to develop the Audit Committee’s annual work-plan and provide reports of the Audit Committee to the Board.

*Financial Literacy of Members*

At the time of his or her appointment to the Committee, each member of the Committee shall have, or shall acquire within a reasonable time following appointment to the Committee, the ability to read and understand a set of financial statements that present a breadth and level of complexity of accounting issues that are generally comparable to the breadth and complexity of the issues that can reasonably be expected to be raised by the Company’s financial statements.

*Term of Members*

The members of the Committee shall be appointed annually by the Board. Each member of the Committee shall serve at the pleasure of the Board until the member resigns, is removed, or ceases to be a member of the Board. Unless a Chair is elected by the Board, the members of the Committee may designate a Chair by majority vote of the full Committee membership.

**3. Meetings**

*Number of Meetings*

The Committee may meet as many times per year as necessary to carry out its responsibilities.

*Quorum*

No business may be transacted by the Committee at a meeting unless a quorum of the Committee is present. A majority of members of the Committee shall constitute a quorum.

### ***Calling of Meetings***

The Chair, any member of the Audit Committee, the external auditors, the Chairman of the Board, the Chief Executive Officer or the Chief Financial Officer may call a meeting of the Audit Committee by notifying the Company's Corporate Secretary who will notify the members of the Audit Committee. The Chair shall chair all Audit Committee meetings that he or she attends, and in the absence of the Chair, the members of the Audit Committee present may appoint a chair from their number for a meeting.

### ***Minutes; Reporting to the Board***

The Committee shall maintain minutes or other records of meetings and activities of the Committee in sufficient detail to convey the substance of all discussions held. Upon approval of the minutes by the Committee, the minutes shall be circulated to the members of the Board. However, the Chair may report orally to the Board on any matter in his or her view requiring the immediate attention of the Board.

### ***Attendance of Non-Members***

The external auditors are entitled to attend and be heard at each Audit Committee meeting. In addition, the Committee may invite to a meeting any officers or employees of the Company, legal counsel, advisors and other persons whose attendance it considers necessary or desirable in order to carry out its responsibilities. At least once per year, the Committee shall meet with the internal auditor and management in separate sessions to discuss any matters that the Committee or such individuals consider appropriate.

### ***Meetings without Management***

The Committee shall hold unscheduled or regularly scheduled meetings, or portions of meetings, at which management is not present.

### ***Procedure***

The procedures for calling, holding, conducting and adjourning meetings of the Committee shall be the same as those applicable to meetings of the Board.

### ***Access to Management***

The Committee shall have unrestricted access to the Company's management and employees and the books and records of the Company.

## **4. Duties and Responsibilities**

The Committee shall have the functions and responsibilities set out below as well as any other functions that are specifically delegated to the Committee by the Board and that the Board is authorized to delegate by applicable laws and regulations. In addition to these functions and responsibilities, the Committee shall perform the duties required of an audit committee by any exchange upon which securities of the Company are traded, or any governmental or regulatory body exercising authority over the Company, as are in effect from time to time (collectively, the "**Applicable Requirements**").

### ***Financial Reports***

#### **(a) General**

The Audit Committee is responsible for overseeing the Company's financial statements and financial disclosures. Management is responsible for the preparation, presentation and integrity of the Company's financial statements and financial disclosures and for the appropriateness of the accounting principles and the reporting policies used by the Company. The auditors are responsible for auditing the Company's annual consolidated financial statements and for reviewing the Company's unaudited interim financial statements.

**(b) Review of Annual Financial Reports**

The Audit Committee shall review the annual consolidated audited financial statements of the Company, the auditors' report thereon and the related management's discussion and analysis of the Company's financial condition and results of operation ("MD&A"). After completing its review, if advisable, the Audit Committee shall approve and recommend for Board approval the annual financial statements and the related MD&A.

**(c) Review of Interim Financial Reports**

The Audit Committee shall review the interim consolidated financial statements of the Company, the auditors' review report thereon and the related MD&A. After completing its review, if advisable, the Audit Committee shall approve and recommend for Board approval the interim financial statements and the related MD&A.

**(d) Review Considerations**

In conducting its review of the annual financial statements or the interim financial statements, the Audit Committee shall:

- (i) meet with management and the auditors to discuss the financial statements and MD&A;
- (ii) review the disclosures in the financial statements;
- (iii) review the audit report or review report prepared by the auditors;
- (iv) discuss with management, the auditors, and internal legal counsel (if any), as requested, any litigation claim or other contingency that could have a material effect on the financial statements;
- (v) review the accounting policies followed and critical accounting and other significant estimates and judgements underlying the financial statements as presented by management;
- (vi) review any material effects of regulatory accounting initiatives or off-balance sheet structures on the financial statements as presented by management, including requirements relating to complex or unusual transactions, significant changes to accounting principles and alternative treatments under Canadian GAAP;
- (vii) review any material changes in accounting policies and any significant changes in accounting practices and their impact on the financial statements as presented by management;
- (viii) review management's report on the effectiveness of internal controls over financial reporting;
- (ix) review the factors identified by management as factors that may affect future financial results;
- (x) review results of the Company's audit committee whistleblower hotline program; and
- (xi) review any other matters, related to the financial statements, that are brought forward by the auditors, management or which are required to be communicated to the Audit Committee under accounting policies, auditing standards or Applicable Requirements.

**(e) Approval of Other Financial Disclosures**

The Audit Committee shall review and, if advisable, approve and recommend for Board approval financial disclosure in a prospectus or other securities offering document of the Company, press releases disclosing, or based upon, financial results of the Company and any other material financial disclosure, including financial guidance provided to analysts, rating agencies or otherwise publicly disseminated.

## *Auditors*

### **(a) General**

The Audit Committee shall be responsible for oversight of the work of the auditors, including the auditors' work in preparing or issuing an audit report, performing other audit, review or attest services or any other related work.

### **(b) Nomination and Compensation**

The Audit Committee shall review and, if advisable, select and recommend for Board approval the external auditors to be nominated and the compensation of such external auditor. The Audit Committee shall have ultimate authority to approve all audit engagement terms and fees, including the auditors' audit plan.

### **(c) Resolution of Disagreements**

The Audit Committee shall resolve any disagreements between management and the auditors as to financial reporting matters brought to its attention.

### **(d) Discussions with Auditors**

At least annually, the Audit Committee shall discuss with the auditors such matters as are required by applicable auditing standards to be discussed by the auditors with the Audit Committee.

### **(e) Audit Plan**

At least annually, the Audit Committee shall review a summary of the auditors' annual audit plan. The Audit Committee shall consider and review with the auditors any material changes to the scope of the plan.

### **(f) Quarterly Review Report**

The Audit Committee shall review a report prepared by the auditors in respect of each of the interim financial statements of the Company.

### **(g) Independence of Auditors**

At least annually, and before the auditors issue their report on the annual financial statements, the Audit Committee shall obtain from the auditors a formal written statement describing all relationships between the auditors and the Company; discuss with the auditors any disclosed relationships or services that may affect the objectivity and independence of the auditors; and obtain written confirmation from the auditors that they are objective and independent within the meaning of the applicable Rules of Professional Conduct/Code of Ethics adopted by the provincial institute or order of chartered professional accountants to which the auditors belong and other Applicable Requirements. The Audit Committee shall take appropriate action to oversee the independence of the auditors.

### **(h) Evaluation and Rotation of Lead Partner**

At least annually, the Audit Committee shall review the qualifications and performance of the lead partner(s) of the auditors and determine whether it is appropriate to adopt or continue a policy of rotating lead partners of the external auditors.

### **(i) Requirement for Pre-Approval of Non-Audit Services**

The Audit Committee shall approve in advance any retainer of the auditors to perform any non-audit service to the Company that it deems advisable in accordance with Applicable Requirements and Board approved policies and procedures. The Audit Committee may delegate pre-approval authority to a member of the Audit Committee. The decisions of any member of the Audit Committee to whom this authority has been delegated must be presented to the full Audit Committee at its next scheduled Audit Committee meeting.



**(j) Approval of Hiring Policies**

The Audit Committee shall review and approve the Company's hiring policies regarding partners, employees and former partners and employees of the present and former external auditors of the Company.

**(k) Communication with Internal Auditor**

The internal auditor shall report regularly to the Committee. The Committee shall review with the internal auditor any problem or difficulty the internal auditor may have encountered including, without limitation, any restrictions on the scope of activities or access to required information, and any significant reports to management prepared by the internal auditing department and management's responses thereto.

The Committee shall periodically review and approve the mandate, plan, budget and staffing of the internal audit department. The Committee shall direct management to make changes it deems advisable in respect of the internal audit function.

The Committee shall review the appointment, performance and replacement of the senior internal auditing executive and the activities, organization structure and qualifications of the persons responsible for the internal audit function.

**(l) Financial Executives**

The Committee shall review and discuss with management the appointment of key financial executives and recommend qualified candidates to the Board, as appropriate.

***Internal Controls***

**(a) General**

The Audit Committee shall review the Company's system of internal controls.

**(b) Establishment, Review and Approval**

The Audit Committee shall require management to implement and maintain appropriate systems of internal controls in accordance with Applicable Requirements, including internal controls over financial reporting and disclosure and to review, evaluate and approve these procedures. At least annually, the Audit Committee shall consider and review with management and the auditors:

- (i) the effectiveness of, or weaknesses or deficiencies in: the design or operation of the Company's internal controls (including computerized information system controls and security); the overall control environment for managing business risks; and accounting, financial and disclosure controls (including, without limitation, controls over financial reporting), non-financial controls, and legal and regulatory controls and the impact of any identified weaknesses in internal controls on management's conclusions;
- (ii) any significant changes in internal controls over financial reporting that are disclosed, or considered for disclosure, including those in the Company's periodic regulatory filings;
- (iii) any material issues raised by any inquiry or investigation by the Company's regulators;
- (iv) the Company's fraud prevention and detection program, including deficiencies in internal controls that may impact the integrity of financial information, or may expose the Company to other significant internal or external fraud losses and the extent of those losses and any disciplinary action in respect of fraud taken against management or other employees who have a significant role in financial reporting; and
- (v) any related significant issues and recommendations of the auditors together with management's responses thereto, including the timetable for implementation of recommendations to correct weaknesses in internal controls over financial reporting and disclosure controls.

### ***Compliance with Legal and Regulatory Requirements***

The Audit Committee shall review reports from the Company's management members on: legal or compliance matters that may have a material impact on the Company; the effectiveness of the Company's compliance policies; and any material communications received from regulators. The Audit Committee shall review management's evaluation of and representations relating to compliance with specific applicable law and guidance, and management's plans to remediate any deficiencies identified.

### ***Audit Committee Hotline Whistleblower Procedures***

The Audit Committee shall establish procedures for (a) the receipt, retention, and treatment of complaints received by the Company regarding accounting, internal accounting controls, or auditing matters; and (b) the confidential, anonymous submission by employees of the Company of concerns regarding questionable accounting or auditing matters. Any such complaints or concerns that are received shall be reviewed by the Audit Committee and, if the Audit Committee determines that the matter requires further investigation, it will direct the Chair of the Audit Committee to engage outside advisors, as necessary or appropriate, to investigate the matter and will work with management and the general counsel to reach a satisfactory conclusion.

### ***Audit Committee Disclosure***

The Audit Committee shall prepare, review and approve any audit committee disclosures required by Applicable Requirements in the Company's disclosure documents.

### ***Delegation***

The Audit Committee may, to the extent permissible by Applicable Requirements, designate a sub-committee to review any matter within this mandate as the Audit Committee deems appropriate.

## **5. Independent Advisors**

The Audit Committee shall have the authority to retain external legal counsel, consultants or other advisors to assist it in fulfilling its responsibilities and to set and pay the respective compensation for these advisors without consulting or obtaining the approval of the Board or any Company officer. The Company shall provide appropriate funding, as determined by the Audit Committee, for the services of these advisors.

## **6. No Rights Created**

This Mandate is a statement of broad policies and is intended as a component of the flexible governance framework within which the Audit Committee, functions. While it should be interpreted in the context of all applicable laws, regulations and listing requirements, as well as in the context of the Company's Notice of Articles and Articles, it is not intended to establish any legally binding obligations.

## **7. Mandate Review**

The Committee shall review and update this Mandate annually and present it to the Board for approval.

Adopted: May 15, 2017