

ANNUAL INFORMATION FORM



ALEXCO

ALEXCO RESOURCE CORP.

Suite 1225, Two Bentall Centre, 555 Burrard Street, Box 216
Vancouver, British Columbia, V7X 1M9
Telephone: (604) 633-4888
Facsimile: (604) 633-4887
E-Mail: info@alexcoresource.com
Website: www.alexcoresource.com

For the year ended December 31, 2019

Dated as of March 11, 2020

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PRELIMINARY NOTES

In this Annual Information Form (“AIF”), Alexco Resource Corp. is referred to as the “Corporation”, “Company” or “Alexco”. All information contained herein is as at and for the year ended December 31, 2019, unless otherwise specified. All dollar amounts in this AIF are expressed in Canadian dollars unless otherwise indicated.

Cautionary Statement Regarding Forward-Looking Statements

This AIF contains forward-looking statements within the meaning of the United States Private Securities Litigation Reform Act of 1995 and forward-looking information within the meaning of applicable Canadian securities laws (together, “forward-looking statements”) concerning the Corporation’s business plans, including but not limited to anticipated results and developments in the Corporation’s operations in future periods, planned exploration and development of its mineral properties, plans related to its business and other matters that may occur in the future, made as of the date of this AIF. Forward-looking statements may include, but are not limited to, statements with respect to amendments to the silver purchase agreement (“SPA” or the “Silver Purchase Agreement”) with Wheaton Precious Metals Corp. (“Wheaton”) and its impact on the Corporation, the resulting effect on pricing and other terms of the SPA, additional capital requirements to fund further exploration and development work on the Corporation’s properties, future remediation and reclamation activities, future mineral exploration, the estimation of mineral reserves and mineral resources, the realization of mineral reserve and mineral resource estimates, future mine construction and development activities, future mine operation and production, the timing of activities, the amount of estimated revenues and expenses, the success of exploration activities, permitting time lines, requirements for additional capital and sources and uses of funds. Any statements that express or involve discussions with respect to predictions, expectations, beliefs, plans, projections, objectives, assumptions or future events or performance (often, but not always, using words or phrases such as “expects”, “anticipates”, “plans”, “estimates”, “intends”, “strategy”, “goals”, “objectives” or stating that certain actions, events or results “may”, “could”, “would”, “might” or “will” be taken, occur or be achieved, or the negative of any of these terms and similar expressions) are not statements of historical fact and may be “forward-looking statements”.

Forward-looking statements are subject to a variety of known and unknown risks, uncertainties and other factors which could cause actual events or results to differ from those expressed or implied by the forward-looking statements. Such factors include, but are not limited to, risks related to actual results and timing of exploration and development activities; actual results and timing of mining activities; actual results and timing of environmental services operations; actual results and timing of remediation and reclamation activities; conclusions of economic evaluations; changes in project parameters as plans continue to be refined; future prices of silver, gold, lead, zinc and other commodities; possible variations in resources, grade or recovery rates; failure of plant, equipment or processes to operate as anticipated; accidents, labour disputes and other risks of the mining industry; First Nation rights and title; continued capitalization and commercial viability; global economic conditions; competition; delays in obtaining governmental approvals or financing or in the completion of development activities, and inability of the Corporation to obtain additional financing needed to fund certain contingent payment obligations on reasonable terms or at all. Furthermore, forward-looking statements are statements about the future and are inherently uncertain, and actual achievements of the Corporation or other future events or conditions may differ materially from those reflected in the forward-looking statements due to a variety of risks, uncertainties and other factors, including but not limited to those referred to in this AIF under the heading “Risk Factors” and elsewhere.

Forward-looking statements are based on certain assumptions that management believes are reasonable at the time they are made. In making the forward-looking statements included in this AIF, the Corporation has applied several material assumptions, including, but not limited to, the assumption that: (1) additional financing may be needed to fund certain contingent payment obligations to Wheaton; (2) additional financing needed for the capacity related refund under the SPA with Wheaton will be available on reasonable terms; (3) additional financing needed for further exploration and development work on the Corporation’s properties will be available on reasonable terms; (4) the proposed development of its mineral projects will be viable operationally and economically and proceed as planned; (5) market fundamentals will result in sustained silver, gold, lead and zinc demand and prices, and such prices will not be materially lower than those estimated by management in preparing the annual financial statements for the year ended December 31, 2019; (6) market fundamentals will result in sustained silver, gold, lead and zinc



demand and prices, and such prices will be materially consistent with or more favourable than those anticipated in the Prefeasibility Study (“PFS”) (as defined under “Description of the Business – KHSD Property”); (7) the actual nature, size and grade of its mineral resources are materially consistent with the resource estimates reported in the supporting technical reports, including the PFS; (8) labor and other industry services will be available to the Corporation at prices consistent with internal estimates; (9) the continuances of existing and, in certain circumstances, proposed tax and royalty regimes; and (10) that other parties will continue to meet and satisfy their contractual obligations to the Corporation. Statements concerning mineral reserve and resource estimates may also be deemed to constitute forward-looking information to the extent that they involve estimates of the mineralization that will be encountered if the property is developed. Other material factors and assumptions are discussed throughout this AIF and, in particular, under the heading “Risk Factors”.

The Corporation's forward-looking statements are based on the beliefs, expectations and opinions of management on the date the statements are made and should not be relied on as representing the Corporation's views on any subsequent date. While the Corporation anticipates that subsequent events may cause its views to change, the Corporation specifically disclaims any intention or any obligation to update forward-looking statements if circumstances or management's beliefs, expectations or opinions should change, except as required by applicable law. For the reasons set forth above, investors should not place undue reliance on forward-looking statements.

Technical Disclosure Cautionary Note to U.S. Investors – Information Concerning Preparation of Resource Estimates

The material scientific and technical information in respect of Alexco's Keno Hill Silver District (“KHSD”) project in this AIF, unless otherwise indicated is based upon the information contained in the PFS. Readers are encouraged to read the PFS, which is available under the Corporation's profile on SEDAR, for detailed information concerning KHSD. All disclosure contained in this AIF regarding the mineral reserves and mineral resource estimates and economic analysis on the property is fully qualified by the full disclosure contained in the PFS.

A production decision which is made without a feasibility study of mineral reserves demonstrating economic and technical viability carries additional potential risks which include, but are not limited to, the risk that additional detailed work may be necessary with respect to mine design and mining schedules, metallurgical flow sheets and process plant designs, and the noted inherent risks pertaining to the inclusion of approximately 2% Inferred Mineral Resources (as defined herein) in the mine plan.

This AIF has been prepared in accordance with the requirements of the securities laws in effect in Canada, which differ from the requirements of United States securities laws. The terms “mineral reserve”, “proven mineral reserve” and “probable mineral reserve” are Canadian mining terms as defined in accordance with Canadian National Instrument 43-101 – *Standards of Disclosure for Mineral Projects* (“NI 43-101”) and the Canadian Institute of Mining, Metallurgy and Petroleum (the “CIM”) – *CIM Definition Standards on Mineral Resources and Mineral Reserves*, adopted by the CIM Council, as amended. These definitions differ materially from the definitions in the United States Securities and Exchange Commission's (“SEC”) Industry Guide 7 under the United States Securities Act of 1933, as amended. Under SEC Industry Guide 7, a “final” or “bankable” feasibility study is required to report reserves, the three-year historical average price is used in any reserve or cash flow analysis to designate reserves, and the primary environmental analysis or report must be filed with the appropriate governmental authority.

In addition, the terms “mineral resource”, “measured mineral resource”, “indicated mineral resource” and “inferred mineral resource” are defined in and required to be disclosed by NI 43-101; however, these terms are not defined terms under SEC Industry Guide 7 and are normally not permitted to be used in reports and registration statements filed with the SEC. Investors are cautioned not to assume that all or any part of a mineral deposit in these categories will ever be converted into SEC Industry Guide 7 reserves. Under Canadian rules, Inferred Mineral Resources (as defined herein) can only be used in economic studies as provided under NI 43-101. Under Canadian rules, estimates of Inferred Mineral Resources may not form the basis of feasibility or pre-feasibility studies, except in rare cases. Investors are cautioned not to assume that all or any part of an Inferred Mineral Resource exists or is economically or legally mineable. An “Inferred Mineral Resource” is 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 (as defined herein) 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. Disclosure of “contained ounces” in a resource is permitted disclosure under Canadian regulations; however, the SEC normally only permits issuers to report mineralization that does not constitute “reserves” by SEC Industry Guide 7 standards as in place tonnage and grade without reference to unit measures.

Accordingly, information concerning mineral deposits contained in this AIF may not be comparable to similar information made public by U.S. companies subject to the reporting and disclosure requirements under the United States federal securities laws and the rules and regulations thereunder, including SEC Industry Guide 7.

The SEC has adopted amendments to its disclosure rules to modernize the mineral property disclosure requirements for issuers whose securities are registered with the SEC. These amendments became effective February 25, 2019 (the “SEC Modernization Rules”) and, following a two-year transition period, the SEC Modernization Rules will replace the historical property disclosure requirements for mining registrants that are included in SEC Industry Guide 7. Following the transition period, as a foreign private issuer that files its annual report of Form 40-F with the SEC pursuant to the multi-jurisdictional disclosure system, the Company is not required to provide disclosure on its mineral properties under the SEC Modernization Rules and will continue to provide disclosure under NI 43-101 and the CIM Definition Standards. If the Company ceases to be a foreign private issuer or lose its eligibility to file its annual report on Form 40-F pursuant to the multi-jurisdictional disclosure system, then the Company will be subject to the SEC Modernization Rules which differ from the requirements of NI 43-101 and the CIM Definition Standards.

Qualified Person Under NI 43-101

Except where specifically indicated otherwise, the disclosure in this AIF of scientific and technical information regarding exploration projects on Alexco’s mineral properties has been reviewed and approved by Alan McOnie, FAusIMM, Vice President, Exploration, while that regarding mine development and operations has been reviewed and approved by Neil Chambers, P.Eng., Mine Superintendent, both of whom are Qualified Persons as defined by NI 43-101.

GLOSSARY OF TECHNICAL TERMS

The following is a glossary of certain mining terms and abbreviations used in this AIF:

Ag	Silver.
Assay	In economic geology, to analyze the proportions of metal in a rock or overburden sample; to test an ore or mineral for composition, purity, weight or other properties of commercial interest.
Au	Gold.
CIM	Canadian Institute of Mining, Metallurgy and Petroleum.
Deposit	A mineralized body which has been physically delineated by sufficient drilling, trenching, and/or underground work, and found to contain a sufficient average grade of metal or metals to warrant further exploration and/or development expenditures; such a deposit does not qualify as a commercially mineable ore body or as containing ore reserves, until final legal, technical, and economic factors have been resolved.
Dip	The angle at which a stratum or vein is inclined from the horizontal.



Fold	A bend in strata or any planar structure.
g/t	Grams per tonne
Grade	The amount of valuable metal in each tonne of mineralized rock, expressed as grams per tonne (“g/t”) for precious metals, as percent (%) for copper, lead and zinc.
Hectare	An area equal to 100 meters by 100 meters.
Indicated Mineral Resource	That part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation. 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	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.
km	Kilometers.
m	Meters.
Measured Mineral Resource	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, Proven Mineral Reserve, Probable Mineral Reserve	<p>Mineral Reserves are sub-divided in order of increasing confidence into Probable Mineral Reserves and Proven Mineral Reserves. A Probable Mineral Reserve has a lower level of confidence than a Proven Mineral Reserve.</p> <p>A Mineral Reserve is 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.</p> <p>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</p>



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. The terms “Mineral Reserve”, “Proven Mineral Reserve” and “Probable Mineral Reserve” used in this AIF are mining terms defined under CIM standards and used in accordance with NI 43-101. Mineral Reserves, Proven Mineral Reserves and Probable Mineral Reserves presented under CIM standards may not conform with the definitions of “reserves” or “proven reserves” or “probable reserves” under United States Industry Guide 7. See “Preliminary Notes – Technical Disclosure Cautionary Note to U.S. Investors – Information Concerning Preparation of Resource Estimates”.

Mineral Resource, Measured Mineral Resource, Indicated Mineral Resource, Inferred Mineral Resource

Mineral Resources are sub-divided, in order of increasing geological confidence, into inferred, indicated and measured categories. An Inferred Mineral Resource has a lower level of confidence than that applied to an Indicated Mineral Resource. An Indicated Mineral Resource has a higher level of confidence than an Inferred Mineral Resource but has a lower level of confidence than a Measured Mineral Resource.

A Mineral Resource is 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.

The terms “mineral resource”, “measured mineral resource”, “indicated mineral resource”, and “inferred mineral resource” used in this AIF are mining terms defined under CIM standards and used in accordance with NI 43-101. They are not defined terms under United States Industry Guide 7 and generally may not be used in documents filed with the SEC by U.S. companies. See “Technical Disclosure Cautionary Note to U.S. Investors – Information Concerning Preparation of Resource Estimates”.

Mineralization

The concentration of metals and their chemical compounds within a body of rock.

Modifying Factors

The factors 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.

Ore

A metal or mineral or a combination of these of sufficient value as to quality and quantity to enable it to be mined at a profit after the application of Modifying Factors.

Ounce or oz

A troy ounce or twenty penny weights or 480 grains or 31.103 grams.

Outcrop

An exposure of bedrock at the surface.



Pb	Lead.
Probable Mineral Reserve	The economically mineable part of an Indicated Mineral Resource 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	The economically mineable part of a Measured Mineral Resource. A Proven Mineral Reserve implies a high degree of confidence in the Modifying Factors.
PFS	A Pre-Feasibility Study is 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.
Quartz	A mineral composed of silicon dioxide.
Strike	Direction or trend of a geologic structure as it intersects the horizontal.
Ton (T)	Also referred to as “short ton”, a United States unit of weight equivalent to 2,000 pounds.
Tonne (t)	A metric unit of weight equivalent to volume multiplied by specific gravity; equivalent to 1.102 tons or 1,000 kilograms (2,204.6 pounds).
tpd	Tonnes per day
Vein	Thin sheet-like intrusion into a fissure or crack, commonly bearing quartz.
Zn	Zinc.

Metric Equivalents

The following table sets forth the factors for converting between Imperial measurements and metric equivalents:

To Convert From	To	Multiply By
Feet	Meters	0.3048
Meters	Feet	3.281
Miles	Kilometers (“ km ”)	1.609
Kilometers	Miles	0.6214
Grams	Ounces (Troy)	0.03215
Grams/Tonnes	Ounces (Troy)/Short Ton	0.02917
Tonnes (metric)	Pounds	2,205
Tonnes (metric)	Short Tons	1.1023
One troy ounce	Grams	31.103



CORPORATE STRUCTURE

The Corporation was incorporated under the *Business Corporations Act* (Yukon) on December 3, 2004 under the name “Alexco Resource Corp.” Effective December 28, 2007, it was continued under the *Business Corporations Act* (British Columbia).

The Corporation's head office is located at Suite 1225, Two Bentall Centre, 555 Burrard Street, Box 216, Vancouver, British Columbia, V7X 1M9, Canada, and its registered and records office is located at 400 - 725 Granville Street, Vancouver, British Columbia, V7Y 1G5, Canada.

At the end of its most recently completed financial year, the Corporation had the following wholly-owned subsidiaries:

- Alexco Keno Hill Mining Corp., organized under the laws of British Columbia (“**AKHM**”);
- Alexco Exploration Canada Corp., organized under the laws of British Columbia (“**AEC**”);
- Elsa Reclamation & Development Company Ltd., organized under the laws of Yukon (“**ERDC**”);
- Environmental Group Division (collectively “**AEG**”)
 - Alexco Environmental Group Inc., organized under the laws of Yukon (“**AEG Canada**”)⁽¹⁾;
 - Alexco Water and Environment Inc., organized under the laws of Colorado (“**AWE**”)⁽¹⁾;
 - Alexco Environmental Group Holdings Inc., organized under the laws of British Columbia (“**AEG Holdings**”)⁽¹⁾; and
 - Contango Strategies Ltd., organized under the laws of Saskatoon (“**Contango**”)⁽¹⁾.

Note:

(1) As described above under “General Development of the Business – Three Year History and Significant Acquisitions”, AEG was sold on February 14, 2020. The information provided above regarding the AEG subsidiaries is presented as at the financial year-end of December 31, 2019.

Unless otherwise indicated or the context otherwise requires, reference to the term the “Corporation” or “Alexco” in this AIF includes Alexco Resource Corp. and its subsidiaries.

GENERAL DEVELOPMENT OF THE BUSINESS

Formation of the Corporation

In 2005, the Corporation completed a series of transactions pursuant to which it acquired a number of mineral property interests and rights to certain operating contracts in Yukon Territory and British Columbia, the most significant of which properties are located in Yukon Territory’s Keno Hill Silver District.

The Corporation operates a mining business, comprised of mineral exploration and mine development and operation in Canada, primarily in Yukon Territory.

As at December 31, 2019 the Corporation also operated an Environmental Group Division, AEG, through the provision of a variety of mine and industrial site related environmental services, which was sold on February 14, 2020, as described below.



In June 2005, the Corporation was selected as the preferred purchaser of the assets of United Keno Hill Mines Limited and UKH Minerals Limited (collectively, “**UKHM**”) by a court appointed interim receiver and receiver-manager of UKHM. In February 2006, following negotiation of a subsidiary agreement (the “**Subsidiary Agreement**”) between the Government of Canada, the Government of Yukon (collectively, the “**Government Group**”) and the Corporation, the Supreme Court of Yukon conditionally approved the purchase of the assets of UKHM by Alexco through its wholly-owned subsidiary, ERDC, final closing of which acquisition was effected in December 2007. Under the terms of the Subsidiary Agreement, the Corporation is indemnified by the Government of Canada for all liabilities, including environmental liabilities, arising directly or indirectly as a result of the pre-existing condition of the Keno Hill mineral rights and other assets acquired from UKHM. The Subsidiary Agreement provides that ERDC may bring any mine into production on the UKHM Mineral Rights (as hereinafter defined) by designating a production unit from the mineral rights relevant to that purpose and then assuming responsibility for all costs of the production unit's water related care and maintenance and water related components of closure reclamation. The Subsidiary Agreement further requires ERDC to pay into a separate reclamation trust a 1.5% net smelter return royalty, up to an aggregate maximum of \$4 million for all production units, from any future production from the UKHM Mineral Rights, commencing once earnings from mining before interest, taxes and depreciation exceed actual exploration costs, up to a maximum of \$6.2 million, plus actual development and construction capital.

Also, under the Subsidiary Agreement, ERDC is retained through the Government Group as a paid contractor responsible on a continuing basis for the environmental care and maintenance and ultimate closure reclamation of the former UKHM Mineral Rights. The original Subsidiary Agreement provided that ERDC was responsible for the development of the ultimate closure reclamation plan for fees of 65% of agreed commercial contractor rates, and this plan development is currently ongoing. Upon acceptance and regulatory approval, the closure reclamation plan will be implemented by ERDC at full agreed commercial contractor rates. During the period required to develop the plan, the original Subsidiary Agreement also provided that ERDC was responsible for carrying out the environmental care and maintenance of the UKHM Mineral Rights for a reducing fixed annual fee adjusted each year for certain operating and inflationary factors.

In July 2013, an amended and restated Subsidiary Agreement (the “**ARSA**”) was executed with the Government of Canada. Recognizing that developing the closure reclamation plan is more complicated than originally anticipated, the ARSA provides for the Government of Canada to contribute a higher proportion of closure plan development costs than provided for under the Subsidiary Agreement, retroactive to 2009. Going forward, ERDC will receive 95% of agreed commercial contractor rates for ongoing development of the closure reclamation plan. Furthermore, with respect to care and maintenance activity during the closure reclamation planning phase, the original reducing fee scale is replaced by a fixed fee of \$850,000 per year, representing approximately 50% of estimated fully-billable care and maintenance fees.

Since 2006, the Corporation has carried out exploration activities on several of its properties within the Keno Hill District, with a significant component of that activity having been focused on the Bellekeno property and the Bellekeno mine, which commenced commercial production effective January 1, 2011.

Wheaton Precious Metals Silver Purchase Agreement

In October 2, 2008, the Corporation entered into a Silver Purchase Agreement with Wheaton Precious Metals (formerly Silver Wheaton). The agreement was subsequently amended on October 20, 2008, December 10, 2008, December 22, 2009, March 31, 2010, January 15, 2013, March 11, 2014 and June 16, 2014, respectively). Under the terms of the agreement:

- the Corporation and certain of its subsidiaries received up-front deposit payments from Wheaton totaling US\$50 million, and received further payments of the lesser of US \$3.90 (increasing by 1% per annum after the third year of full production) and the prevailing market price for each ounce of payable silver delivered, if as and when delivered;



- Wheaton would receive 25% of the life of mine silver produced by the Corporation from its Keno Hill Silver District properties; and
- the initial silver deliveries were to come from the Bellekeno mine.

In light of a sharply reduced silver price environment, Bellekeno mining operations were suspended as of September 30, 2013.

On March 29, 2017 the Corporation and certain of its subsidiaries and Wheaton entered into an amendment agreement to the Silver Purchase Agreement (the “Amended SPA”) pursuant to which, among other things, the following amendments were made to the Silver Purchase Agreement:

- Wheaton will continue to receive 25% of the life of mine payable silver from the KHSD. The production payment (originally US\$3.90 per ounce) will be based on monthly average silver head grade from the mill and monthly average silver spot price;
- The actual monthly production payment will fall within a defined grade and pricing range governed by upper and lower numeric criteria (ceiling grade/price and floor grade/price) according to the following formula:

$$\frac{(\text{Ceiling Grade} - \text{Deemed Shipment Head Grade})}{(\text{Ceiling Grade} - \text{Floor Grade})} \times \frac{(\text{Ceiling Price} - \text{Deemed Shipment Silver Price})}{(\text{Ceiling Price} - \text{Floor Price})} \times \text{Market Price}$$

Floor Grade	=	600 g/t Ag
Floor Price	=	US\$13/oz Ag
Ceiling Grade	=	1,400 g/t Ag
Ceiling Price	=	US\$25/oz Ag
Deemed Shipment Head Grade	=	Calculated monthly mill silver head grade
Deemed Shipment Silver Price	=	Average monthly silver price
Market Price	=	Spot silver price prior to day of sale

- The date for completion of the 400 tonne per day mine and mill completion test date was extended to December 31, 2019, and further extended out to December 31, 2020; and
- The Wheaton area of interest remains one (1) km around existing Alexco holdings in the KHSD.

In consideration of the foregoing amendments, the Corporation issued 3,000,000 shares to Wheaton with a fair value of US\$4,934,948.

Three-Year History

2019 to date

- On March 28, 2019, the Corporation announced the results of a positive PFS for expanded silver production at Keno Hill Silver District.
- On April 23, 2019 the Corporation completed a private placement, on a bought deal basis, of 1,842,200 flow-through common shares at a price of \$1.90 per share for gross proceeds of \$3,500,000. The flow-through common shares comprise: (i) 1,579,000 flow-through shares with respect to “Canadian exploration



expenses" (the "CEE Shares") priced at \$1.90 per CEE Share; and (ii) 263,200 flow-through shares with respect to "Canadian development expenses" (the "CDE Shares") priced at \$1.90 per CDE Share.

- On June 7, 2019, the Corporation completed a bought deal public offering and issued 6,500,000 common shares at a price of US\$1.00 (\$1.33) per share for aggregate gross proceeds of US\$6,500,000 (\$8,634,000) for net cash proceeds of US\$5,775,000 (\$7,669,000).
- In addition to the mining business described above, the Corporation also operated an environmental services business through its Environmental Group Division, AEG, providing a variety of mine and industrial site related environmental services including management of the regulatory and environmental permitting process, environmental assessments and reclamation and closure planning. On February 14, 2020, the Corporation entered into a share purchase Agreement ("**AEG Sale Agreement**") for the sale of the Corporation's Environmental Group Division of companies, AEG, to AEG's Executive Management ("**AEG Management**") led by Jim Harrington, AEG President. Under the terms of this AEG Sale Agreement, AEG Management purchased all of the shares of AEG in consideration for payment to Alexco of \$13,350,000. On closing of the transaction, AEG Management paid \$12,100,000 in cash, with the balance of \$1,250,000 payable pursuant to a promissory note that matures on February 14, 2021. Further particulars relating to the business of AEG, including activities being conducted under the Subsidiary Agreement, are described below under "Description of the Business – Environmental Services".

Alexco retained ownership of ERDC and will execute the clean-up of historical mines in the District under its existing contractual arrangement with the Federal Government of Canada.

2018

- On February 26, 2018, the Corporation announced that it had entered into a credit agreement with Sprott Private Resource Lending (Collector), L.P. to provide a US\$15,000,000 credit facility to be used for the development of the Keno Hill Project. The facility is available for drawdown for a period of 12 months and matures February 23, 2021 and bears an interest rate on the funds drawn down equal to the greater of (a) a fixed rate of 8% per annum, calculated daily and compounded monthly; and (b) a floating rate equal to 7% per annum plus LIBOR, calculated and compounded monthly. In consideration for providing the credit facility, the Corporation issued to the lender 1,000,000 warrants, each warrant exercisable for one common share of the Corporation at an exercise price of \$2.25 until February 23, 2023, subject to the Corporation's right to accelerate the expiry date of the warrants on not less than 30 days' notice in the event that the closing price of the Corporation's common shares on the Toronto Stock Exchange is greater than \$5.625 for a period of more than 20 consecutive trading days. On February 14, 2019 the Corporation extended the availability period for draw down by six months (the expiry date was extended to August 23, 2019 from the previous expiry date of February 23, 2019) by issuing 171,480 common shares of the Corporation to the lender.
- On June 14, 2018, the Corporation completed an offering, on a bought deal basis, of 4,703,000 flow-through common shares at a blended price of approximately \$1.92 per share for gross proceeds of \$9,041,150. The securities issued under the offering were comprised of (i) 966,500 flow-through shares with respect to "Canadian exploration expenses" issued at \$2.05 per share; (ii) 1,736,500 flow-through shares with respect to "Canadian exploration expenses" that also qualify as "flow-through mining expenditures" issued at \$2.05 per share; and (iii) 2,000,000 flow-through shares with respect to "Canadian development expenses" issued at \$1.75.



2017

- On May 30, 2017, the Corporation completed an underwritten private placement of 4,205,820 “flow-through” common shares at a price of \$2.15 per share for gross proceeds of \$9,042,513. The underwriter, Canaccord Genuity Corp., received a cash commission of \$542,550 representing 6% of the gross proceeds, as well as 126,174 underwriter’s warrants, with each underwriter’s warrant entitling the holder to purchase one common share at a price of \$2.15 until May 30, 2019.

DESCRIPTION OF THE BUSINESS

The Corporation operates a mining business, comprised of mineral exploration and mine development and operation in Canada, primarily in Yukon Territory.

At December 31, 2019, the Corporation had 115 permanent and seasonal employees. A total of 11 were employed in the care and maintenance of the Bellekeno mine and mill site care and maintenance, a further 9 were employed in mineral exploration and evaluation activities. A total of 82 were employed in the environmental services business (which has since been sold), with the remaining 13 employed in respect of executive management and administrative support. Significant aspects of both the mining business and the environmental services business require specialized skills and knowledge in areas that include geology, mining, metallurgy, engineering, environmental contamination treatment, permitting and regulatory compliance, as well as environmental and social policy issues. Any re-start of Alexco’s mining operations will necessitate the hiring of additional mine and mill personnel.

Mining Business

The Corporation's principal mining business activities are currently being carried out within the Keno Hill District in Yukon Territory. The Keno Hill District (the "**District**") is a storied silver mining region in Canada, encompassing over 35 former mines that produced variously from approximately 1918 through 1988, with published information from the Yukon Government’s Minfile database reporting more than 214 million ounces of silver produced at average grades of 44.7 ounces per tonne silver, 5.6% lead and 3.1% zinc.

The Corporation’s mineral property holdings within the Keno Hill district cover the most prospective geological areas to host silver mineralization, including all of the significant historic producing former mines and most of the other mineral occurrences. In addition to the deposits described below that are within the Keno Hill Silver District (previously defined as "**KHSD**") as detailed in the prefeasibility study with an effective date of March 28, 2019, as amended February 13, 2020, the Corporation holds several other less advanced property interests within the District, including but not limited to the Silver King, Elsa, Husky, Sadie Ladue and McQuesten properties, which potentially could become material properties depending on the results of exploration programs the Corporation may carry out on them in the future, as well as the separate Elsa Tailings Property (*see technical report dated June 16, 2010, entitled “Mineral Resource Estimation, Elsa Tailings Project, Yukon, Canada”*). In the Keno Hill District, Yukon, Alexco owns 100% of 725 Quartz Mining Leases, 873 Quartz Claims, 24 Placer Mining Claims, one Quartz Mining Licence and 50% of three Quartz Mining Leases, two (2) Crown Grants 50% of three Quartz Mining Leases, in addition to six (6) fee simple lots and seven (7) surface leases. Of those, the mineral rights acquired from UKHM (the "**UKHM Mineral Rights**") and therefore subject to the capped 1.5% net smelter return royalty provided for under the Subsidiary Agreement (see “General Development of the Business – Three Year History and Significant Acquisitions”) total 676 quartz mining leases, 121 quartz mining claims and two (2) crown grants.

Other non-material mineral property interests of the Corporation include Harlan properties in the Yukon, and certain net smelter return royalties in respect of the Brewery Creek, Ida-Oro (formerly Klondike) and Sprogge properties in the Yukon and the Telegraph Creek, Iskut River, Kiniskan Lake and Manson Creek properties in British Columbia.



KHSD Property

The Corporation's KHSD property (as detailed in the PFS) encompasses the Flame & Moth, Birmingham, Lucky Queen, Bellekeno, and Onek deposits.

An independent technical report dated May 8, 2019 with an effective date of March 28, 2019, as amended February 13, 2020, prepared by Mining Plus Canada ("**Mining Plus**") entitled "NI 43-101 Technical Report, Prefeasibility Study of the Keno Hill Silver District Project, Yukon Territory, Canada" (the "PFS") was filed and is available on SEDAR under the Corporation's profile at www.sedar.com.

Attached as Schedule "A" to this AIF is the summary contained in the PFS, which has been updated and conformed to be consistent with other disclosure within this AIF.

The detailed disclosure contained in the PFS is hereby incorporated by reference. Re-start of mining operations and/or development work is dependent on a number of factors, including permitting, sustained improvements in silver markets and the effectiveness of cost structure reduction measures. Accordingly, there is no certainty as to when these factors will be achieved.

Environmental Services

General

As described above under "General Development of the Business – Three Year History and Significant Acquisitions", AEG was sold on February 14, 2020. The information provided in this section is presented as at the financial year-end of December 31, 2019, unless otherwise indicated.

The Corporation's Environmental Group Division, AEG, is in the business of managing risk and unlocking value at mature, closed or abandoned sites through integration and implementation of the Corporation's core competencies, which include management of environmental services, implementation of innovative treatment technologies, execution of site reclamation and closure operations, and, if appropriate, rejuvenation of exploration and development activity. The Corporation's principal markets for these services are in Canada, the United States and the Americas, with the Canadian market serviced primarily through subsidiaries including ERDC, the U.S. market and the balance of the Americas through certain subsidiaries not including ERDC. The Corporation provides its services to a range of industrial sectors, but with a particular focus on current and former mine sites.

The Corporation offers its clients a unique combination of environmental remediation expertise in the area of site reclamation and closure, an ability to manage complex permitting and regulatory programs on a turnkey basis, and strong operations management. In addition, the Corporation seeks to strategically leverage off its environmental services group, accessing opportunities to enhance asset value through effective liability risk management and efficient site operations. This is accomplished through unlocking potential exploration and development opportunities at contaminated or abandoned sites through cost effective and responsible environmental remediation and liability transfer.

The Corporation executes its environmental services business plan by using and applying the intellectual property assets, including the Patents, and the specialized skill sets and knowledge it maintains in-house. While there are a significant number of firms providing environmental services in North America, these assets, skill sets and knowledge provide Alexco with a strong competitive advantage. Consolidated revenue from environmental services for the year ended December 31, 2019 totaled \$29,206,000, compared to \$19,880,000 in 2018, all of which was derived from sales to external unrelated parties. During the year ended December 31, 2019, the Corporation recorded revenues from two customers representing 10% or more of total environmental services revenue, in the amounts of \$8,740,000 and \$6,730,000. During 2018 AEG had three customers representing 10% or more of total revenue, in the amounts of \$4,780,000, 4,020,000 and \$3,780,000.



Keno Hill Project

As described above (see “General Development of the Business – Three Year History and Significant Acquisitions”), under the Subsidiary Agreement, Alexco’s subsidiary ERDC was retained through the Government Group as a paid contractor responsible on a continuing basis for the environmental care and maintenance and ultimate closure reclamation of the former UKHM Mineral Rights.

Pursuant to the Subsidiary Agreement, ERDC shares the responsibility for the development of the ultimate closure reclamation plan with the Government of Canada, for which it would receive fees of 65% of agreed commercial contractor rates, and this plan development is currently ongoing. Upon acceptance and regulatory approval, the closure reclamation plan will be implemented by ERDC at full agreed contractor rates. During the period required to develop the plan and until the closure plan is executed, ERDC is also responsible for carrying out the environmental care and maintenance at various sites within the UKHM Mineral Rights, for a fixed annual fee adjusted each year for certain operating and inflationary factors and determined on a site-by-site basis. Under the Subsidiary Agreement, the portion of the annual fee amount so determined which was billable by ERDC in respect of each site reduced by 15% each year until all site-specific care and maintenance activities were replaced by closure reclamation activities; provided however that should a closure reclamation plan be prepared but not accepted and approved, the portion of annual fees billable by ERDC would revert to 85% until the Subsidiary Agreement was either amended or terminated. ERDC receives agreed commercial contractor rates when retained by the Government Group to provide environmental services in the Keno Hill District outside the scope of care and maintenance and closure reclamation planning under the Subsidiary Agreement. As a result of these terms, the Corporation has previously recognized an environmental services contract loss provision to reflect aggregate future losses estimated to be realized with respect to care and maintenance activity during the closure planning phase.

In July 2013, the Corporation executed an amended and restated Subsidiary Agreement, the ARSA, with the Government of Canada. Recognizing that developing the closure reclamation plan is more complicated than originally anticipated, the ARSA provides for the Government of Canada to contribute a higher proportion of those costs than provided for under the Subsidiary Agreement. Going forward, ERDC receives 95% of agreed commercial contractor rates for ongoing development of the closure reclamation plan. Furthermore, with respect to care and maintenance activity during the closure planning phase, the original reducing fee scale was replaced by a fixed fee of \$850,000 per year, representing approximately 50% of estimated fully-billable fees.

Competitive Conditions

The exploration and mining business is a competitive business. Significant and increasing competition exists for mining opportunities internationally. The Corporation competes with numerous other companies possessing much greater financial and technical research resources. Competition is particularly intense with respect to the acquisition of desirable undeveloped gold properties. Please see “Risk Factors”.

Employees

In the exploration and mining business there is significant and increasing competition for attracting and retaining employees. Please see “Risk Factors”.

Social and Environmental Policies

The Corporation maintains a written Code of Business Conduct and Ethics (the “**Code**”), compliance with which is mandatory for all directors, officers and employees, and the full text of which may be viewed at the Corporation’s web site. Included within the Code is a requirement that all directors, officers and employees comply with all laws and governmental regulations applicable to Alexco’s activities, including but not limited to maintaining a safe and healthy work environment, promoting a workplace that is free from discrimination or harassment and conducting all activities in full compliance with all applicable environmental laws. All directors, officers and employees are required to certify in writing their acknowledgement of and compliance with the Code, at the time of hiring and at least annually thereafter. A senior executive of the Corporation is formally appointed the role of Company Ethics Officer,



responsible for ensuring adherence to the Code, investigating any reported violations, and ensuring appropriate responses, including corrective action and preventative measures, are taken when required.

RISK FACTORS

The following are major risk factors management has identified which relate to the Corporation's business activities. Such risk factors, as well as risks not currently known to the Corporation or that the Corporation currently deems to be immaterial, could materially affect the Corporation's future business, financial condition, results of operations, earnings and prospects, and could cause events to differ materially from those described in forward-looking statements relating to the Corporation. Though the following are major risk factors identified by management, they do not comprise a definitive list of all risk factors related to the Corporation's business and operations. Readers are encouraged to review other specific risk factors which are discussed elsewhere in this AIF, as well as in the Corporation's consolidated financial statements (under the headings "Description of Business and Nature of Operations", "Significant Accounting Policies" and "Financial Instruments" and elsewhere within that document) and in the Corporation's annual and quarterly management's discussion and analysis (under the headings "Critical Accounting Estimates" and "Risk Factors" and elsewhere within that document) for its most recently completed financial year, being the year ended December 31, 2019, and its other disclosure documents, all as filed on the SEDAR website at www.sedar.com.

Negative Cash Flow From Operating Activities

The Corporation has not yet consistently achieved positive operating cash flow, and there are no assurances that the Corporation will not experience negative cash flow from operations in the future. The Corporation has incurred net losses in the past and may incur losses in the future and will continue to incur losses until and unless it can derive sufficient revenues from its mineral projects. Such future losses could have an adverse effect on the market price of the Corporation's common shares, which could cause investors to lose part or all of their investment.

Forward-Looking Statements May Prove Inaccurate

Readers are cautioned not to place undue reliance on forward-looking statements. By their nature, forward-looking statements involve numerous assumptions, known and unknown risks and uncertainties, of both a general and specific nature, that could cause actual results to differ materially from those suggested by the forward-looking statements. See "Preliminary Notes – Cautionary Statement Regarding Forward-Looking Statements".

Dilution

The Corporation expects to require additional funds to finance its growth and development strategy. If the Corporation elects to raise additional funds by issuing additional equity securities, such financing may substantially dilute the interests of the Corporation's shareholders. The Corporation may also issue additional securities in the future pursuant to existing and new agreements in respect of its projects or other acquisitions and pursuant to existing securities of the Corporation.

Exploration, Evaluation and Development

Mineral exploration, evaluation and development involves a high degree of risk and few properties which are explored are ultimately developed into producing mines. With respect to the Corporation's properties, should any mineral resources exist, substantial expenditures will be required to confirm mineral reserves which are sufficient to commercially mine, and to obtain the required environmental approvals and permitting required to commence commercial operations. Should any mineral resource be defined on such properties there can be no assurance that the mineral resource on such properties can be commercially mined or that the metallurgical processing will produce economically viable and saleable products. The decision as to whether a property contains a commercial mineral deposit and should be brought into production will depend upon the results of exploration programs and/or technical studies, and the recommendations of duly qualified engineers and/or geologists, all of which involves significant expense. This decision will involve consideration and evaluation of several significant factors including, but not limited to: (1) costs of bringing a property into production, including exploration and development work, preparation



of appropriate technical studies and construction of production facilities; (2) availability and costs of financing; (3) ongoing costs of production; (4) market prices for the minerals to be produced; (5) environmental compliance regulations and restraints (including potential environmental liabilities associated with historical exploration activities); and (6) political climate and/or governmental regulation and control.

The ability of the Corporation to sell, and profit from the sale of any eventual production from any of the Corporation's properties will be subject to the prevailing conditions in the marketplace at the time of sale. Many of these factors are beyond the control of the Corporation and therefore represent a market risk which could impact the long-term viability of the Corporation and its operations.

Infrastructure

Mining, processing, development and exploration activities depend, to one degree or another, on adequate infrastructure. Reliable roads, bridges, power sources and water supply are important determinants, which affect capital and operating costs. The lack of availability on acceptable terms or the delay in the availability of any one or more of these items could prevent or delay exploitation and or development of the Corporation's properties. If adequate infrastructure is not available in a timely manner, there can be no assurance that the exploitation and or development of the Corporation's properties will be commenced or completed on a timely basis, if at all; that the resulting operations will achieve the anticipated production volume; or that the construction costs and ongoing operating costs associated with the exploitation and or development of the Corporation's properties will not be higher than anticipated. In addition, unusual or infrequent weather phenomena, sabotage, government or other interference in the maintenance or provision of such infrastructure could adversely affect the Corporation's operations and profitability.

Figures for the Corporation's Resources are Estimates Based on Interpretation and Assumptions and May Yield Less Mineral Production Under Actual Conditions than is Currently Estimated

In making determinations about whether to advance any of its projects to development, the Corporation must rely upon estimated calculations as to the mineral resources and grades of mineralization on its properties. Until ore is actually mined and processed, mineral resources and grades of mineralization must be considered as estimates only. The determination of the Corporation's estimated mineral resources by appropriately qualified persons requires significant judgements regarding the interpretation of complex geological and engineering data including the size, depth, shape and nature of the deposit and anticipated plans for mining, as well as estimates of future commodity prices, foreign exchange rates, capital requirements and production costs. These geological interpretations and statistical inferences used to develop the mineral resource estimates are imprecise and are drawn from drilling and sampling which may prove to be unreliable. Alexco cannot be certain that:

- reserve, resource or other mineralization estimates will be accurate; or
- mineralization can be mined or processed profitably.

Any material changes in mineral resource estimates and grades of mineralization will affect the economic viability of placing a property into production and a property's return on capital. The Corporation's resource estimates have been determined and valued based on assumed future prices, cut-off grades and operating costs that may prove to be inaccurate. Extended declines in market prices for silver, gold, lead, zinc and other commodities may render portions of the Corporation's mineralization uneconomic and result in reduced reported mineral resources.

Amendments to Share Purchase Agreement with Wheaton

The amendments to the SPA with Wheaton, requires that to satisfy the completion test under the Amended SPA, the Corporation will need to recommence operations on the KHSD Property and operate the mine and mill at 400 tonnes per day on or before December 31, 2020. If the completion test is not satisfied by December 31, 2020, the outcome could materially adversely affect the Corporation as it would be required to pay a capacity related refund to Wheaton in the maximum amount of US\$8.8 million. The Corporation would need to raise additional capital to finance the capacity related refund and there is no guarantee that the Corporation will be able to raise such



additional capital. In the event that the Corporation cannot raise such additional capital, the Corporation will default under the terms of the Amended SPA. The valuation model for the embedded derivative asset related to the SPA with Wheaton is based on a number of assumptions. The value of the derivative asset as at December 31, 2019 is \$15,160,000. If, for example, the silver price was to increase to US\$25.00 per ounce, and all other assumptions remained the same, the approximate derivative asset value would be negative (\$1,652,000) and could be classified as a derivative liability.

Keno Hill District

While the Corporation has conducted exploration activities in the Keno Hill District, further review of historical records and/or additional exploration and geological testing will be required to determine whether any of the mineral deposits it contains are economically recoverable. There is no assurance that such exploration and testing will result in favourable results. The history of the Keno Hill District has been one of fluctuating fortunes, with new technologies and concepts reviving the District numerous times from probable closure until 1989, when it did ultimately close down for a variety of economic and technical reasons. Many or all of these economic and technical issues will need to be addressed prior to the commencement of any future production on the Keno Hill properties.

Mining Operations

The business of exploration for minerals and mining involves a high degree of risk. Few properties that are explored are ultimately developed into mineral deposits with significant value. Decisions by the Corporation to proceed with the construction and development of mines, including Bellekeno, are based on development plans which include estimates for metal production and capital and operating costs. Until completely mined and processed, no assurance can be given that such estimates will be achieved. Failure to achieve such production and capital and operating cost estimates or material increases in costs could have an adverse impact on the Corporation's future cash flows, profitability, results of operations and financial condition. The Corporation's actual production and capital and operating costs may vary from estimates for a variety of reasons, including: actual resources mined varying from estimates of grade, tonnage, dilution and metallurgical and other characteristics; short-term operating factors, such as the need for sequential development of resource bodies and the processing of new or different resource grades; revisions to mine plans; risks and hazards associated with mining; natural phenomena, such as inclement weather conditions, water availability, floods, fire, rock falls and earthquakes, unusual or unexpected ground conditions, geological formation pressures, equipment failure and failure of retaining dams around tailings disposal areas which may result in, among other adverse effects, environmental pollution and consequent liability; and unexpected labour shortages or strikes. Costs of production may also be affected by a variety of factors, including changing waste ratios, metallurgical recoveries, labour costs, commodity costs, general inflationary pressures and currency rates. In addition, the risks arising from these factors are further increased while any such mine is progressing through the ramp-up phase of its operations and has not yet established a consistent production track record. No assurance can be given that minerals will be discovered in sufficient quantities to justify commercial operations or that funds required for development can be obtained on a timely basis.

Furthermore, mining operations at the Bellekeno mine project were suspended as of early September 2013 as a result of sharp and significant declines in precious metals prices during the second quarter of 2013. Re-start of mining operations at Keno Hill is dependent on a number of factors, including sustained improvements in silver markets, the effectiveness of cost structure reduction measures, the maintenance of current metal prices and the fluctuation of foreign exchange rates and the uncertainties around the results of these factors are significant. A re-start of underground production operations will require additional capital investment in excess of the capital resources currently on hand. There can be no assurance of a re-start of mining operations or continued access to financing in the future, and an inability to generate or secure such funding may require the Corporation to substantially curtail and/or defer its planned exploration and development activities.

Employee Recruitment and Retention

Recruitment and retention of skilled and experienced employees is a challenge facing the mining sector as a whole. During the late 1990s and early 2000s, with unprecedented growth in the technology sector and an extended cyclical



downturn in the mining sector, the number of new workers entering the mining sector was depressed and significant number of existing workers departed, leading to a so-called “generational gap” within the industry. Since the mid-2000s, this factor was exacerbated by competitive pressures as the mining sector experienced an extended cyclical upturn. Any re-start of mining operations will necessitate the re-hiring of mine and mill personnel. It may be difficult for Alexco to find and hire qualified people in the mining industry who are situated in the Yukon, or to obtain all of the necessary services or expertise in Yukon or to conduct operations on Alexco’s projects at reasonable rates. If qualified people and services or expertise cannot be obtained in the Yukon, we may need to seek and obtain those services from people located outside of this area, which may require work permits and compliance with applicable laws and could result in delays and higher costs.

Dependence on Management

The success of the operations and activities of the Corporation is dependent to a significant extent on the efforts and abilities of its management team. The Corporation does not maintain key employee insurance on any of its employees. The Corporation depends on key personnel and cannot provide assurance that it will be able to retain such personnel. Failure to retain such key personnel could have a material adverse effect on the Corporation’s business and financial condition.

Permitting and Environmental Risks and Other Regulatory Requirements

The current or future operations of the Corporation, including development activities, commencement of production on its properties and activities associated with the Corporation’s mine reclamation and remediation business, require permits, approvals, authorizations, or licenses from various federal, territorial and other governmental authorities, and such operations are and will be governed by laws, regulations and agreements governing prospecting, development, mining, production, taxes, labour standards, occupational health, waste disposal, toxic substances, land use, environmental protection, mine safety and other matters. Companies engaged in the development and operation of mines and related facilities and in mine reclamation and remediation activities generally experience increased costs and delays as a result of the need to comply with the applicable laws, regulations and permits. There can be no assurance that all permits, permit modifications, approvals, authorizations, licenses, and license modifications which the Corporation may require for the conduct of its operations will be obtainable on reasonable terms or that such laws and regulations would not have an adverse effect on any project which the Corporation might undertake. Specifically, the Corporation requires a renewal of its Water Use License in order for it to be fully permitted for the ore production and processing from the Bermingham deposit and the Flame & Moth, Lucky Queen, Bellekeno and Onek deposits. Additionally, subsequent to completion of the environment assessment of the Corporation’s Existing State of Mine Reclamation Plan at Keno Hill by the Yukon Environmental and Social-Economic Assessment Board, the Corporation will need an amendment to its WUL by the Yukon Water Board to authorize the activities necessary to effect closure of the site. There can be no guarantee that the Corporation will receive the amendments and the renewal. Additionally, delays in receiving any requisite license amendments and renewals could adversely affect the Corporation’s profitability. The Corporation had originally expected to receive the WUL renewal in 2019. However subsequent delays in the permitting process have extended the time expected for award of the final license to the first quarter of 2020.

Any failure by the Corporation to comply with applicable 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 against the Corporation. The Corporation may be required to compensate those suffering loss or damage by reason of the Corporation’s mining operations or mine reclamation and remediation activities and may have civil or criminal fines or penalties imposed upon it for violation of applicable laws or regulations.

Amendments to current laws, regulations and permits governing operations and activities of mining companies and mine reclamation and remediation activities could have a material adverse impact on the Corporation. As well, policy changes and political pressures within and on federal, territorial and First Nation governments having jurisdiction over or dealings with the Corporation could change the implementation and interpretation of such laws, regulations and permits, also having a material adverse impact on the Corporation. Such impacts could result in one or more



of increases in capital expenditures or production costs, reductions in levels of production at producing properties or abandonment or delays in the development of new mining properties.

Surety Bonding Risks

Alexco secures its obligations for reclamation and closure costs with surety bonds provided by leading global insurance companies in favour of regulatory authorities in the Yukon. These surety bonds include the right of the surety bond provider to terminate the relationship with Alexco on providing notice of up to 90 days. The surety bond provider would, however, remain liable to the regulatory authorities for all bonded obligations existing prior to the termination of the bond in the event Alexco failed to deliver alternative security satisfactory to the regulator. Alexco may require substantial additional capital to accomplish its exploration and development plans and fund strategic growth and there can be no assurance that financing will be available on terms acceptable to Alexco, or at all. Alexco may require substantial additional financing to advance the Keno Hill Silver District to production. These financing requirements could adversely affect Alexco's ability to access the capital markets in the future. Failure to obtain sufficient financing, or financing on terms acceptable to Alexco, may result in a delay or indefinite postponement of exploration, development or production at its properties. Additional financing may not be available when needed and the terms of any agreement could impose restrictions on the operation of our business. Failure to raise financing when needed could have a material adverse effect on our business, financial condition, results of operations and prospects.

Potential Profitability of Mineral Properties Depends Upon Factors Beyond the Control of the Corporation

The potential profitability of mineral properties is dependent upon many factors beyond the Corporation's control. For instance, world prices of and markets for gold, silver, lead and zinc are unpredictable, highly volatile, potentially subject to governmental fixing, pegging and/or controls and respond to changes in domestic, international, political, social and economic environments – including international trade restrictions. During the year ended December 31, 2018, the prices of silver, lead and zinc have steadily declined. Another factor is that rates of recovery may vary from the rate experienced in tests and a reduction in the recovery rate will adversely affect profitability and, possibly, the economic viability of a property. Profitability also depends on the costs of operations, including costs of labour, materials, equipment, electricity, environmental compliance or other production inputs. Such costs will fluctuate in ways the Corporation cannot predict and are beyond the Corporation's control, and such fluctuations will impact on profitability and may eliminate profitability altogether. Mine site care and maintenance costs during 2019 totaled \$2,062,000 compared with \$2,603,000 for 2018. The costs were mainly consistent between periods with decrease due to less site-based expenditures and mill maintenance expenditures in 2019. Additionally, due to worldwide economic uncertainty, the availability and cost of funds for development and other costs have become increasingly difficult, if not impossible, to project. These changes and events may materially affect the financial performance of the Corporation.

First Nation Rights and Title

The nature and extent of First Nation rights and title remains the subject of active debate, claims and litigation in Canada, including in the Yukon and including with respect to intergovernmental relations between First Nation authorities and federal, provincial and territorial authorities. There can be no guarantee that such claims will not cause permitting delays, unexpected interruptions or additional costs for the Corporation's projects. These risks may have increased after the Supreme Court of Canada decision of June 26, 2014 in *Tsilhqot'in Nation v. British Columbia*.

Title to Mineral Properties

The acquisition of title to mineral properties is a complicated and uncertain process. The properties may be subject to prior unregistered agreements of transfer, unregistered liens, or land claims, and title may be affected by undetected defects. Although the Corporation has made efforts to ensure that legal title to its properties is properly recorded in the name of the Corporation, there can be no assurance that such title will ultimately be secured. Title insurance generally is not available for mining claims in Canada. As a result, the Corporation may be constrained in its ability to operate its mineral properties or unable to enforce its rights with respect to its mineral properties. An



impairment to or defect in the Corporation's title to its mineral properties would adversely affect the Corporation's business and financial condition.

Capitalization and Commercial Viability

The Corporation will require additional funds to further explore, develop and mine its properties. The Corporation has limited financial resources, and there is no assurance that additional funding will be available to the Corporation to carry out the completion of all proposed activities, for additional exploration or for the substantial capital that is typically required in order to place a property into commercial production. Although the Corporation has been successful in the past in obtaining financing through the sale of equity securities, there can be no assurance that the Corporation will be able to obtain adequate financing in the future or that the terms of such financing will be favourable. Failure to obtain such additional financing could result in the delay or indefinite postponement of further exploration and development of its properties.

Critical Accounting Estimates and Judgments

The preparation of financial statements in conformity with International Financial Reporting Standards requires management to make estimates and assumptions that affect the reported amounts and the valuation of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenditures during the period reported. Actual outcomes could differ from these estimates. The Corporation's consolidated financial statements include estimates which, by their nature, are uncertain. The impacts of such estimates are pervasive throughout the consolidated financial statements, and may require accounting adjustments based on future occurrences. Significant judgments about the future and other sources of estimation uncertainty at the financial position reporting date, including those that could result in a material adjustment to the carrying amounts of assets and liabilities, in the event that actual results differ from assumptions made include, but are not limited to, uncertainties and assumptions with respect to mineral resources, impairment and impairment reversals of non-current non-financial assets, decommissioning and rehabilitation provision, and the fair value of derivatives. If the Corporation's management rely on the information in the financial statements in making certain decisions, which information later proves to be inaccurate, it could have an adverse effect on the operating results of the Corporation.

The Corporation prepares budgets and estimates of cash costs and capital costs for its operations. Despite the Corporation's best efforts to budget and estimate such costs, the costs required by the Corporation's projects may be significantly higher than anticipated. The Corporation's actual costs may vary from estimates for a variety of reasons, including: short-term operating factors; risk and hazards associated with mining; natural phenomena, such as inclement weather conditions and unexpected labour shortages or strikes. Operational costs may also be affected by a variety of factors, including: ore grade metallurgy, labour costs, the cost of commodities, general inflationary pressures and currency exchange rates. Many of these factors are beyond the Corporation's control. Failure to achieve estimates or material increases in costs could have an adverse impact on the Corporation's business, results of operations and financial condition. Furthermore, delays in mining projects or other technical difficulties may result in even further capital expenditures being required. Any delays or costs overruns or operational difficulties could have a material adverse effect on the Corporation's business, results of operations and financial condition.

General Economic Conditions May Adversely Affect the Corporation's Growth and Profitability

The unprecedented events in global financial markets since 2008 have had a profound impact on the global economy and led to increased levels of volatility. Many industries, including the mining industry, are impacted by these market conditions. Some of the impacts of the current financial market turmoil include contraction in credit markets resulting in a widening of credit risk, devaluations and high volatility in global equity, commodity, foreign currency exchange and precious metal markets, and a lack of market liquidity. If the current turmoil and volatility levels continue they may adversely affect the Corporation's growth and profitability. Specifically:

- a global credit/liquidity or foreign currency exchange crisis could impact the cost and availability of financing and the Corporation's overall liquidity;



- the volatility of silver and other commodity prices would impact the Corporation's revenues, profits, losses and cash flow;
- volatile energy prices, commodity and consumables prices and currency exchange rates would impact the Corporation's operating costs; and
- the devaluation and volatility of global stock markets could impact the valuation of the Corporation's equity and other securities.

These factors could have a material adverse effect on Alexco's financial condition and results of operations.

Operating Hazards and Risks

In the course of exploration, development and production of mineral properties, certain risks, particularly including but not limited to unexpected or unusual geological operating conditions including rock bursts, cave-ins, fires, flooding and earthquakes, may occur. It is not always possible to fully insure against such risks and the Corporation may decide not to insure against such risks as a result of high premiums or other reasons. Should such liabilities arise, they could reduce or eliminate any future profitability and result in increasing costs and a decline in the value of the securities of the Corporation.

Adverse weather conditions could also disrupt the Corporation's environmental services business and/or reduce demand for the Corporation's services.

Competition

Significant and increasing competition exists for mining opportunities internationally. There are a number of large established mining companies with substantial capabilities and far greater financial and technical resources than the Corporation. The Corporation may be unable to acquire additional attractive mining properties on terms it considers acceptable and there can be no assurance that the Corporation's exploration and acquisition programs will yield any reserves or result in any commercial mining operation.

Certain of the Corporation's Directors and Officers are Involved with Other Natural Resource Companies, Which May Create Conflicts of Interest from Time to Time

Some of the Corporation's directors and officers are directors or officers of other natural resource or mining-related companies. These associations may give rise to conflicts of interest from time to time. As a result of these conflicts of interest, the Corporation may miss the opportunity to participate in certain transactions.

The Corporation May Fail to Maintain Adequate Internal Control Over Financial Reporting Pursuant to the Requirements of the Sarbanes-Oxley Act

Section 404 of the Sarbanes-Oxley Act ("**SOX**") requires an annual assessment by management of the effectiveness of the Corporation's internal control over financial reporting. The Corporation may fail to maintain the adequacy of its internal control over financial reporting as such standards are modified, supplemented or amended from time to time, and the Corporation may not be able to ensure that it can conclude, on an ongoing basis, that it has effective internal control over financial reporting in accordance with Section 404 of SOX. The Corporation's failure to satisfy the requirements of Section 404 of SOX on an ongoing, timely basis could result in the loss of investor confidence in the reliability of its financial statements, which in turn could harm the Corporation's business and negatively impact the trading price or the market value of its securities. In addition, any failure to implement required new or improved controls, or difficulties encountered in their implementation, could harm the Corporation's operating results or cause it to fail to meet its reporting obligations. Future acquisitions of companies, if any, may provide the Corporation with challenges in implementing the required processes, procedures and controls in its acquired operations. No evaluation can provide complete assurance that the Corporation's internal control over financial reporting will detect or uncover all failures of persons within the Corporation to disclose material information otherwise required to be reported. The effectiveness of the Corporation's processes, procedures and controls could



also be limited by simple errors or faulty judgments. Although the Corporation intends to expend substantial time and incur substantial costs, as necessary, to ensure ongoing compliance, there is no certainty that it will be successful in complying with Section 404 of SOX.

As a “foreign private issuer”, the Corporation is exempt from Section 14 proxy rules and Section 16 of the Securities Exchange Act of 1934

The Corporation is a “foreign private issuer” as defined in Rule 3b-4 under the United States Securities Exchange Act of 1934, as amended (the “U.S. Exchange Act”). Equity securities of the Corporation are accordingly exempt from Sections 14(a), 14(b), 14(c), 14(f) and 16 of the U.S. Exchange Act pursuant to Rule 3a12-3 of the U.S. Exchange Act. Therefore, the Corporation is not required to file a Schedule 14A proxy statement in relation to the annual meeting of shareholders. The submission of proxy and annual meeting of shareholder information on Form 6-K may result in shareholders having less complete and timely information in connection with shareholder actions. The exemption from Section 16 rules regarding reports of beneficial ownership and purchases and sales of common shares by insiders and restrictions on insider trading in our securities may result in shareholders having less data and there being fewer restrictions on insiders’ activities in our securities.

It may be difficult to enforce judgments or bring actions outside the United States against the Corporation and certain of our directors

The Corporation is a Canadian corporation and certain of its directors, officers and experts are neither citizens nor residents of the United States. A substantial part of the assets of the Corporation and of certain of these persons are located outside the United States. As a result, it may be difficult or impossible for an investor:

- to enforce in courts outside the United States judgments obtained in United States courts based upon the civil liability provisions of United States federal securities laws against these persons and the Corporation; or
- to bring in courts outside the United States an original action to enforce liabilities based upon United States federal securities laws against these persons and the Corporation.

It may be difficult to anticipate the effects of the Coronavirus to the Corporation

Readers are cautioned that the Corporation has not assessed the potential impacts, if any, that the Coronavirus may have on its business and operations, which could include the Company’s ability to purchase products and/or services at reasonable costs in the operation of its business.

DIVIDENDS

The Corporation has not paid any dividends on its common shares since its incorporation. Any decision to pay dividends on common shares in the future will be made by the board of directors on the basis of the earnings, financial requirements and other conditions existing at such time.

DESCRIPTION OF CAPITAL STRUCTURE

The authorized capital of the Corporation consists of an unlimited number of common shares, without par value. As at the close of business on March 11, 2020, 119,994,664 common shares of the Corporation were issued and outstanding.

The holders of the common shares are entitled to vote at all meetings of holders of common shares, to receive dividends if, as and when declared by the directors and to participate rateably in any distribution of property or assets upon the liquidation, winding-up or other dissolution of the Corporation. The common shares carry no pre-emptive rights, conversion or exchange rights, or redemption, retraction, repurchase, sinking fund or purchase fund



provisions. There are no provisions requiring a holder of common shares to contribute additional capital and no restrictions on the issuance of additional securities by the Corporation. There are no restrictions on the repurchase or redemption of common shares by the Corporation except to the extent that any such repurchase or redemption would render the Corporation insolvent.

MARKET FOR SECURITIES

Trading Price and Volume

The common shares of the Corporation are listed and posted for trading on the Toronto Stock Exchange (the “**TSX**”) and on the NYSE American Equities Exchange (the “**NYSE American**”) under the symbol “AXU”. Prior to August 12, 2019, the trading symbol on the Toronto Stock Exchange was “AXR”. The following tables set forth the market price range and trading volumes of the Corporation’s common shares on each of the TSX and NYSE American for the periods indicated in 2019.

TSX

Period	Volume	High (C\$)	Low (C\$)
December	5,772,990	3.19	2.29
November	4,645,080	2.53	2.01
October	4,639,227	2.53	2.01
September	9,195,616	3.73	2.20
August	8,457,795	3.45	2.09
July	5,142,117	2.45	1.37
June	2,482,756	1.62	1.26
May	904,631	1.47	1.31
April	2,022,902	1.60	1.26
March	1,389,235	1.86	1.53
February	2,419,832	1.87	1.45
January	1,335,342	1.51	1.14

NYSE American

Period	Volume	High (US\$)	Low (US\$)
December	35,585,473	2.46	1.72
November	20,395,977	1.93	1.53
October	21,029,102	2.08	1.62
September	43,010,521	2.81	1.66
August	38,449,986	2.60	1.57
July	19,731,516	1.87	1.04
June	10,212,529	1.24	0.95



May	4,145,785	1.10	0.95
April	7,848,470	1.22	0.93
March	6,574,805	1.41	1.15
February	7,724,430	1.42	1.11
January	5,840,863	1.07	0.86

Securities Not Listed or Quoted

The only classes of securities of the Corporation that are not listed or quoted on a marketplace are stock options, restricted shares units (“**RSUs**”), and deferred share units (“**DSUs**”). As of December 31, 2019, 9,892,900 stock options, 412,006 RSUs and 280,000 DSUs were outstanding.

Prior Sales

The following table sets forth, for the financial year ended December 31, 2019, details of the price at which securities have been issued or are to be issued by the Corporation, the number of securities issued at that price and the date on which the securities were issued:

Date of Issue	Type of Securities	No. of Securities	Issue or Exercise Price per Security	Reason for Issue
January 4, 2019	Stock Options	2,029,000	\$1.27	Grant of Stock Options
January 4, 2019	RSUs	166,662	\$1.27	Vesting of RSUs
February 1, 2019	RSUs	43,335	\$1.48	Vesting of RSUs
February 6, 2019	RSUs	78,328	\$1.48	Vesting of RSUs
February 6, 2019	Stock Options	15,000	\$0.60	Exercise of Stock Options
February 14, 2019	Common Shares	171,480	\$1.23	Credit Facility ⁽¹⁾
February 15, 2019	RSUs	98,330	\$1.65	Vesting of RSUs
February 21, 2019	Stock Options	55,000	\$0.60	Exercise of Stock Options
February 21, 2019	Stock Options	20,000	\$0.84	Exercise of Stock Options
March 28, 2019	Stock Options	50,000	\$1.76	Grant of Stock Options
April 23, 2019	“Flow-Through” Common Shares	1,842,200	\$1.90	April 2019 Private Placement
April 23, 2019	Underwriter’s Warrants	55,266	\$1.70	April 2019 Private Placement
May 10, 2019	RSUs	5,333	\$1.42	Vesting of RSUs
June 7, 2019	Common Shares	6,500,000	US\$1.00	June 2019 Offering
June 7, 2019	Underwriter’s Warrants	260,000	US\$1.00	June 2019 Offering
July 17, 2019	Common Shares	256,000	US\$1.00	Exercise of Warrants
July 22, 2019	Common Shares	4,000	US\$1.00	Exercise of Warrants



July 25, 2019	Stock Options	20,000	\$0.60	Exercise of Stock Options
July 25, 2019	Stock Options	10,000	\$0.84	Exercise of Stock Options
August 20, 2019	Stock Options	89,000	\$0.60	Exercise of Stock Options
August 27, 2019	Stock Options	37,500	\$0.84	Exercise of Stock Options
August 28, 2019	Stock Options	2,000	\$1.75	Exercise of Stock Options
August 26, 2019	Common Shares	55,266	\$1.70	Exercise of Warrants
August 29, 2019	Common Shares	666,667	\$2.25	Exercise of Warrants
September 3, 2019	Stock Options	90,000	\$0.84	Exercise of Stock Options
September 6, 2019	Stock Options	5,000	\$1.27	Exercise of Stock Options
September 9, 2019	Common Shares	333,333	\$2.25	Exercise of Warrants
September 23, 2019	Stock Options	66,000	\$0.60	Exercise of Stock Options
October 17, 2019	Stock Options	15,000	\$0.60	Exercise of Stock Options
October 17, 2019	Stock Options	35,000	\$0.84	Exercise of Stock Options
December 12, 2019	Stock Options	190,000	\$0.60	Exercise of Stock Options
December 17, 2019	Stock Options	1,974,900	\$2.61	Grant of Stock Options
December 17, 2019	RSUs	235,000	\$2.61	Grant of RSUs
December 17, 2019	RSUs	78,331	\$2.59	Vesting of RSUs
December 17, 2019	DSUs	280,000	2.61	Grant of DSUs
December 23, 2019	Stock Options	53,000	\$2.07	Exercise of Stock Options
December 23, 2019	Stock Options	100,000	\$1.73	Exercise of Stock Options
December 30, 2019	Stock Options	50,000	\$0.84	Exercise of Stock Options

Notes:

- (1) Issued to Sprott Private Resource Lending (Collector), LP in consideration for extending availability draw-down period by six months for credit facility.

DIRECTORS AND OFFICERS

Name, Occupation and Security Holding

The name, province or state, country of residence, position or office held with the Corporation and principal occupation during the past five years of each director and executive officer of the Corporation as at December 31, 2019 and as at the date hereof are described as follows:

Name and Address⁽¹⁾	Office or Position Held	Principal Occupation During the Past Five Years	Previous Service as a Director
Clynton R. Nauman Washington, USA	Chairman, Chief Executive Officer	Chairman and Chief Executive Officer of the Corporation, since December 2004.	Since December 3, 2004



	and Director		
Elaine Sanders British Columbia, Canada	Director ⁽²⁾⁽³⁾⁽⁵⁾	VP and Chief Financial Officer of Trilogy Metals Inc., a mineral exploration and development company, since November 2011.	Since June 28, 2016
Karen McMaster Northwest Territories, Canada	Director ⁽³⁾⁽⁴⁾⁽⁵⁾	Since 2003, Ms. McMaster, BA, LLB, MBA has worked as an independent consultant focusing on strategic and economic development of organizations including risk assessment, contract management, EHS excellence, governance and capacity building at the community level.	Since April 11, 2018
Michael D. Winn California, USA	Director ⁽³⁾⁽⁴⁾	President of Seabord Capital Corp., providing investment analysis and financial services to companies in the oil & gas, mining and energy sectors, since January 2013; President of Terrasearch Inc., a consulting company providing analysis on mining and energy companies, from 1997 through 2012.	Since January 11, 2005
Richard N. Zimmer British Columbia, Canada	Lead Director ⁽²⁾⁽⁴⁾	Member of the Board of Directors of several other publicly-listed and two private companies since June 2011.	Since May 2, 2012
Rick Van Nieuwenhuysse British Columbia, Canada	Director ⁽³⁾⁽⁴⁾	Formerly the President and Chief Executive Officer of Trilogy Metals Inc. (1999 to 2019), a mineral exploration and development company.	Since January 11, 2005
Terry Krepiakovich British Columbia, Canada	Director ⁽²⁾⁽⁵⁾	Member of the Board of Directors of several publicly-listed and private companies since July 2011.	Since July 22, 2009
Alan McOnie Bay of Plenty, New Zealand	Vice President, Exploration	Vice President, Exploration of the Corporation, since December 2010.	N/A
Bradley Thrall Washington, USA	President	President of the Corporation, since December 2004.	N/A
Jim Harrington Colorado, USA	AEG President ⁶	AEG President of the Corporation since February 16, 2007 (which includes time served as Vice President of AEG).	N/A
Michael Clark British Columbia, Canada	Chief Financial Officer, Corporate Secretary and Company Ethics Officer	Chief Financial Officer of the Corporation, since December 2014.	N/A

- (1) The information as to the jurisdiction of residence and principal occupation, not being within the knowledge of the Corporation, has been furnished by the respective individuals individually.
- (2) Member of the Audit Committee.
- (3) Member of the Nominating & Corporate Governance Committee.
- (4) Member of the Environmental, Health, Safety & Technical Committee.
- (5) Member of the Compensation Committee.
- (6) As of the date of this AIF, pursuant to the sale of AEG on February 14, 2020, Mr. Harrington is no longer an executive officer of the Corporation.

Each of the Corporation's directors is elected by the Corporation's shareholders at an annual meeting to serve until the next annual meeting of shareholders or until a successor is elected or appointed. The board of directors appoints



the Corporation's executive officers annually after each annual meeting, to serve at the discretion of the board of directors.

Based on information provided by such persons, as at the date hereof the directors and executive officers of the Corporation as a group beneficially owned, directly or indirectly, or exercised control or direction over, an aggregate of 5,914,072 common shares of the Corporation (including 1,940,299 shares owned by ALM Investments ULC (formerly Asset Liability Management Group ULC), a company controlled by Mr. Nauman), representing 4.9% of the issued and outstanding common shares of the Corporation. In addition, the directors and executive officers of the Corporation as a group also hold stock options for the purchase of an aggregate of 7,326,000 common shares in the capital of the Corporation, representing 74% of all outstanding options of the Corporation. Lastly, the directors and executive officers of the Corporation as a group held RSUs and DSUs that can be settled by way of shares issued from treasury for a further 395,335 and 280,000 common shares, respectively.

Cease Trade Orders, Bankruptcies, Penalties or Sanctions

To the knowledge of the Corporation, none of the Corporation's directors or executive officers is, as at the date of this AIF, or has been, within ten years before the date of this AIF, a director, chief executive officer or chief financial officer of any Corporation (including the Corporation) that:

- (a) was subject to an Order (as defined below) 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;

"Order" means a cease trade order, an order similar to a cease trade order, or an order that denied the relevant Corporation access to any exemption under securities legislation and, in each case, that was in effect for a period of more than 30 consecutive days.

None of the Corporation's directors or executive officers or, to the Corporation's knowledge, any shareholder holding a sufficient number of securities of the Corporation to affect materially the control of the Corporation:

- (a) is, as at the date of this AIF, or has been within the 10 years before the date of this AIF, a director or executive officer of any Corporation (including the Corporation) 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 of this AIF, 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 the proposed director; or
- (c) has been subject to:
 - (i) 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
 - (ii) 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.



Conflicts of Interest

The directors of the Corporation are required by law to act honestly and in good faith with a view to the best interest of the Corporation and to disclose any interests which they may have in any project or opportunity of the Corporation. If a conflict of interest arises at a meeting of the board of directors, any director in a conflict will disclose his interest and abstain from voting on such matter. In determining whether or not the Corporation will participate in any project or opportunity, that director will primarily consider the degree of risk to which the Corporation may be exposed and its financial position at that time.

To the best of the Corporation's knowledge, there are no known existing or potential conflicts of interest among the Corporation, its promoters, directors, officers or other members of management of the Corporation as a result of their outside business interests except that certain of the directors, officers, promoters and other members of management serve as directors, officers, promoters and members of management of other public companies, and therefore it is possible that a conflict may arise between their duties as a director, officer, promoter or member of management of such other companies.

As described above under "General Development of the Business – Three Year History and Significant Acquisitions", AEG was sold on February 14, 2020. The information provided in this section is presented as at the financial year-end of December 31, 2019 unless otherwise indicated.

James Harrington, MSc., the Senior Vice President and Chief Technical Officer of AEG Canada (a subsidiary of the Corporation), owns a holding company ("Arete") which holds all of the shares of Alexco Environmental Group (US) Inc., a former subsidiary of the Corporation ("AEG US"). The sale of AEG US to Mr. Harrington's holding company is not considered a material transaction and was reviewed and approved by a special committee of independent directors, as well as the board of directors, of the Corporation prior to completion of the transaction. The purpose of the transaction was to enable Arete to complete the purchase of a redevelopment project which involves significant environmental work, which could, if purchased, provide an opportunity for the Corporation's environmental group with respect to the environmental work without exposing the Corporation to environmental risk from ownership of such project.

The directors and officers of the Corporation are aware of the existence of laws governing accountability of directors and officers for corporate opportunity and requiring disclosures by directors of conflicts of interest and the Corporation relies upon such laws in respect of any directors' and officers' conflicts of interest or in respect of any breaches of duty by any of its directors or officers. Such directors or officers in accordance with the *Business Corporations Act* (British Columbia) are required to disclose all such conflicts and to govern themselves in respect thereof to the best of their ability in accordance with the obligations imposed upon them by law.



AUDIT COMMITTEE INFORMATION

Audit Committee Charter

The following is the text of the Audit Committee's Charter:

“GENERAL

The primary function of the Audit Committee, under the supervision of the Board of Directors of the Company (the “**Board**”), is to assist the Board in fulfilling its oversight responsibilities regarding the integrity of the Company's accounting and financial reporting processes and provision of financial information to the shareholders and others, the systems of internal controls and disclosure controls, the Company's internal and external audit process, the Company's policies with regard to ethics and business practices, and monitoring compliance with the Company's legal and regulatory requirements with respect to its financial statements.

The Audit Committee is accountable to the Board. In the course of fulfilling its specific responsibilities hereunder, the Audit Committee is expected to maintain open communications between the Company's external auditor, senior management and the Board.

The Audit Committee does not plan or perform audits or warrant or attest to the accuracy or completeness of the Company's financial statements or financial disclosure or compliance with generally accepted accounting procedures as these are the responsibilities of management and the external auditor.

COMPOSITION

The Audit Committee shall be comprised of at least three directors of the Company, who generally shall be appointed or confirmed by the Board annually. The Chair of the Audit Committee shall be appointed by the Board, failing which the members of the Audit Committee may designate a Chair by a majority vote of the full Audit Committee membership. All members of the Audit Committee shall be directors and shall meet the independence, financial literacy and experience requirements under applicable laws, rules and regulations binding on the Company from time to time, including without limitation the applicable rules of any stock exchanges upon which the Company's shares are listed and the requirements for independence and financial literacy under National Instrument 52-110 – *Audit Committees* (“**NI 52-110**”) in Canada, Section 803A of the NYSE Amex Company Guide and Rule 10A-3 of the United States Securities Exchange Act of 1934, as amended (the “**Exchange Act**”). Subject to certain exemptions outlined in NI 52-110, every member of the Audit Committee must be “independent” and “financially literate”, as such terms are defined in NI 52-110. Furthermore, at least one member of the Audit Committee shall qualify as a “financial expert” as such term is defined in Item 407 of Regulation S-K under the Exchange Act.

PROCEDURAL MATTERS

The Audit Committee:

- (a) Shall meet at least four times per year on a quarterly basis, either by telephone conference or in person. Any member of the Audit Committee may call such a meeting. A majority of the members appointed to the Audit Committee shall constitute a quorum. For clarity, quorum may be reached in person, or by telephone, video conference, or other communication facilities acceptable to the Board. Matters decided by the Audit Committee shall be decided by majority votes, and the Chair of the Audit Committee shall only have an ordinary vote with no additional tie-breaking powers.
- (b) May invite the Company's external auditor, the CFO, and such other persons as deemed appropriate by the Audit Committee to attend meetings of the Audit Committee. As part of its mandate to foster open communication, the Audit Committee shall meet at least annually with the



CFO and the external auditor in separate sessions, and to that end the Audit Committee generally shall have as a standing agenda item an in-camera meeting with the external auditors for any meeting at which they attend.

- (c) Shall report material decisions and actions of the Audit Committee to the Board, together with such recommendations as the Audit Committee may deem appropriate, at the next Board meeting.
- (d) Shall review the performance of the Audit Committee on an annual basis and report the results of such review to the Nominating & Corporate Governance Committee.
- (e) Shall review and assess this Charter for the Audit Committee at least annually and submit any proposed revisions to the Board for approval.
- (f) Shall review from time to time as required and recommend to the Board for approval as necessary the indemnification policies, and director and officer insurance policy, if any, of the Company;
- (g) Has the power to conduct or authorize investigations into any matter within the scope of its responsibilities. The Audit Committee has the right to engage independent counsel and other advisors as it determines necessary to carry out its duties, and the right to set and pay, without restriction, the compensation for any such counsel or advisors engaged by the Audit Committee.
- (h) Has the right to communicate directly with the CFO and other members of management who have responsibility for the audit process (“**Internal Audit Management**”), as well as directly with the external auditor.
- (i) Has the right to require payment of (i) compensation to any external auditor engaged for the purpose of preparing or issuing an audit report or performing audit, review or attest services for the Company and (ii) all ordinary expenses of the Audit Committee that are necessary or appropriate in carrying out its duties.

RESPONSIBILITIES

Subject to the powers and duties of the Board, the Board hereby delegates to the Audit Committee the following powers and duties to be performed by the Audit Committee on behalf of and for the Board.

Financial Reporting, Accounting and Financial Management

The Audit Committee has primary responsibility for overseeing the actions of management in all aspects of financial management and reporting. The Audit Committee shall:

- (a) Review and recommend to the Board for approval the Company's annual and interim financial statements, annual and interim Management's Discussion and Analysis, Annual Information Form, annual report filed pursuant to the Exchange Act on Form 40-F (or such other form as may apply), future-oriented financial information or pro-forma information, and other financial disclosure in continuous disclosure documents, including within any annual or interim profit or loss press releases, and any certification, report, opinion or review rendered by the external auditor, before the Company publicly discloses such information. (See also “*Interim Financial Statements*” below.)
- (b) Ensure that it is satisfied that adequate procedures are in place for the review of the Company's public disclosure of financial information extracted or derived from the Company's financial statements (other than public disclosure referred to in subsection (a) immediately above) and periodically assess the adequacy of those procedures as necessary.



- (c) Review material financial risks with management, the plan that management has implemented to monitor and deal with such risks, and the success of management in following such plan.
- (d) Consult annually, and otherwise as required, with the Company's CEO and CFO respecting the adequacy of the internal controls and review any breaches or deficiencies.
- (e) Review as necessary the process with regard to certifications, and ensure certifications by the CEO and CFO attesting to disclosure controls and procedures and internal control over financial reporting are obtained and filed as required under National Instrument 52-109 – *Certification of Disclosure In Issuers' Annual and Interim Filings* and the Exchange Act in connection with the Company's annual and interim financial reporting filings.
- (f) Review management's response to significant written reports and recommendations issued by the external auditor and the extent to which such recommendations have been implemented by management. Review such responses with the external auditor as necessary.
- (g) Review with management the Company's compliance with applicable laws and regulations respecting financial matters.
- (h) Review with management proposed regulatory changes and their impact on the Company.
- (i) Review with management and approve public disclosure of the Audit Committee Charter.

External Auditor

The Audit Committee has primary responsibility for the selection, appointment, dismissal, compensation and oversight of the external auditor, subject to the overall approval of the Board. For this purpose, the Audit Committee may consult with management, but the external auditor shall report directly to the Audit Committee. The specific responsibilities of the Audit Committee with regard to the external auditor are to:

- (a) Recommend to the Board annually:
 - (i) the external auditor to be nominated (whether the current external auditor or a suitable alternative) for the purpose of preparing or issuing an auditor's report or performing other audit, review, or attest services for the Company; and
 - (ii) the compensation of the external auditor.
- (b) Oversee the work of the external auditor engaged for the purpose of preparing or issuing an auditor's report or performing other audit, review or attest services for the Company.
- (c) Resolve disagreements, if any, between management and the external auditor regarding financial reporting. To resolve such disagreements, the Audit Committee shall query management and the external auditor and take other steps as necessary. The Audit Committee shall provide the Board with such recommendations and reports with respect to the financial statements of the Company as it deems advisable.
- (d) Take reasonable steps to confirm the independence of the external auditor, including but not limited to ensuring receipt from the external auditor of a formal written statement delineating all relationships between the external auditor and the Company, actively engaging in a dialogue with the auditor with respect to any disclosed relationship or services and pre-approving any non-audit related services provided by the external auditor to the Company or the Company's subsidiaries, if any, with a view to ensuring independence of the auditor. If necessary, recommend to the Board to take appropriate corrective action to ensure the independence of the external auditor.



- (e) Review and pre-approve all audit and audit-related services and the fees related thereto, provided by the Company's external auditor.
- (f) Review and pre-approve all non-audit services to be performed by the Company's external auditor in accordance with any applicable regulatory requirements, including but not limited to NI 52-110, the Exchange Act and the requirements of any stock exchange upon which the Company's shares are listed. The Audit Committee may delegate pre-approval authority for non-audit services to one or more independent members of the Audit Committee provided that any such pre-approval decisions must be presented to the full Audit Committee at its next meeting thereafter. The Audit Committee may also satisfy this pre-approval requirement if it first adopts specific policies and procedures respecting same in accordance with NI 52-110 such that the pre-approval policies and procedures are detailed as to the particular service, the Audit Committee is informed of each such non-audit service, and the procedures do not include delegation of the Audit Committee's responsibilities to management.
- (g) Obtain from the external auditor confirmation that the external auditor is a 'participating audit' firm for the purpose of National Instrument 52-108 – *Auditor Oversight* and is registered with the Public Company Accounting Oversight Board in the United States and is otherwise in compliance with all applicable governing regulations.
- (h) Review and evaluate the performance of the external auditor.
- (i) Review and approve the Company's hiring policies regarding partners, employees and former partners and employees of the Company's present and former external auditors.

Audit and Financial Reporting Process

The Audit Committee has a duty to receive, review and make any inquiry regarding the completeness, accuracy and presentation of the Company's financial statements to ensure that the financial statements fairly present the financial position and risks of the organization and are prepared in accordance with the applicable generally accepted accounting principles. To accomplish this, the Audit Committee shall:

- (a) Review at least annually the Company's internal system of audit and financial controls, internal audit procedures and results of such audits, and receive regular, generally quarterly, updates from management on such controls, procedures and audit activities.
- (b) Prior to the annual audit by the external auditor, consider the scope and general extent of the external auditor's review, including its engagement letter. Review with management the external auditor's audit plan and intended template for financial statements.
- (c) Ensure the external auditor has full, unrestricted access to required information and has the cooperation of management.
- (d) Review with the external auditor, in advance of the audit, the audit process and standards, as well as regulatory or Company-initiated changes in accounting practices and policies and the financial impact thereof, and selection or application of appropriate accounting principles.
- (e) Review with the external auditor and, if necessary, legal counsel, any litigation, claim or contingency, including tax assessments, or significant judgments made by management that could have a material effect upon the financial position of the Company and the manner in which these matters are being disclosed in the financial statements. Review the appropriateness and disclosure of any off-balance sheet matters. Review disclosure of any related-party transactions.



- (f) Receive and review with the external auditor the external auditor's audit report and the audited financial statements. Make recommendations to the Board respecting approval of the audited financial statements.
- (g) Review annually the integrity of the Company's internal and external financial reporting and accounting principles, including the clarity, completeness and accuracy of financial disclosure and the degree of conservatism or aggressiveness of the accounting policies and estimates, performance of Internal Audit Management, any significant disagreements or difficulties in obtaining information, adequacy of internal controls over financial reporting and the degree of compliance of the Company with prior recommendations of the external auditor. The Audit Committee shall direct management to implement such changes as the Audit Committee considers appropriate, subject to any required approvals of the Board arising out of the review.
- (h) Meet at least annually with the external auditor, independent of management, consider external auditor's judgments about the quality and appropriateness of the Company's accounting principles and practices, and report to the Board on such meetings.

Interim Financial Statements

Pursuant to its mandate, the Board shall generally approve the Company's annual and interim financial statements. Notwithstanding the foregoing, on an exceptions basis the Board may from time to time delegate to the Audit Committee the power to approve the Company's interim financial statements.

The Audit Committee shall:

- (a) Review on an annual basis the Company's practice with respect to review of interim financial statements by the external auditor.
- (b) Review the interim financial statements with the external auditor if the external auditor conducts a review of the interim financial statements.
- (c) Conduct all such reviews and discussions with the external auditor and management as the Audit Committee deems appropriate.
- (d) Review and, if such authority has been delegated to the Audit Committee by the Board, approve the interim financial statements.
- (e) If authority to approve the interim financial statements has not been delegated to the Audit Committee, make appropriate recommendation to the Board respecting approval of the interim financial statements.

Code of Ethics

The Audit Committee has primary responsibility for overseeing the application of, and compliance with, the Company's Code of Business Conduct and Ethics (the "**Code**"). The Audit Committee shall review at least annually:

- (a) the Code,
- (b) management's approach to business ethics and corporate conduct; and
- (c) programs used by management to monitor compliance with the Code."



COMPLAINTS UNDER WHISTLEBLOWER POLICY

To ensure that the Company has adequate procedures in place for the confidential and anonymous (where permitted by law) receipt, retention, and treatment of complaints received by the Company regarding (a) accounting, internal accounting controls, or auditing matters, and (b) compliance with the Code and all applicable government laws, rules and regulations, the Audit Committee has recommended, established procedures for and the Board has adopted a Company Whistleblower Policy. All such complaints shall be dealt with under the terms of that Policy.”

Composition of the Audit Committee

As at December 31, 2019 and the date of this AIF, the members of the Audit Committee are Terry Krepiakevich, Elaine Sanders and Richard Zimmer, with Mr. Krepiakevich serving as the Chair of the Audit Committee. All of these members are financially literate and independent for the purposes of National Instrument 52-110 (“**NI 52-110**”).

Mr. Krepiakevich qualifies as a financial expert and is financially sophisticated, in that he has an understanding of generally accepted accounting principles and financial statements; is able to assess the general application of accounting principles in connection with the accounting for estimates, accruals and reserves; has experience analyzing or evaluating financial statements that entail accounting issues of equal complexity to the Corporation's financial statements (or actively supervising another person who did so); and has a general understanding of internal controls and procedures for financial reporting and an understanding of audit committee functions.

Mr. Krepiakevich is a member of the board of directors of several publicly-listed and private companies since July 2011. From June 2006 to July 2011, Mr. Krepiakevich was the Chief Financial Officer of SouthGobi Resources Ltd., a publicly-listed mining company focused on exploring and developing coal deposits in Mongolia's South Gobi Region. Previously, Mr. Krepiakevich was Chief Financial Officer for Extreme CCTV Inc., a publicly traded company on the TSX involved in manufacturing high tech surveillance equipment, and Vice-President Finance and Chief Financial Officer of Maynards Industries Ltd., a private firm specializing in retailing, auctioneering, liquidating, and mergers and acquisition services. Prior to his position with Maynards, Mr. Krepiakevich was a senior officer in a number of private and public issuers. He is a Canadian qualified Chartered Professional Accountant and was employed with the international accounting firm Peat Marwick Thorne (KPMG), where he worked with a number of companies in mining and related industries.

Ms. Sanders is the Vice President, Chief Financial Officer and Corporate Secretary for Trilogy Metals Inc. Prior to Trilogy Metals Inc. Ms. Sanders served as Vice President, Chief Financial Officer and Corporate Secretary for NovaGold Resources Inc. Ms. Sanders has over 20 years of experience in audit, finance, and accounting with public and private companies and Bachelor of Commerce degree from the University of Alberta, is a Canadian qualified Chartered Professional Accountant and a Certified Public Accountant in the United States.

Mr. Zimmer is a corporate director and is the former President and Chief Executive Officer of Far West Mining Ltd., which was acquired by Capstone Mining Corp. in 2011. Prior to Far West, Mr. Zimmer worked for Teck Corporation, Teck-Cominco and Teck-Pogo Inc. From 1992 to 2007 he served in various engineering and operating roles and from 1998 to 2007, as Vice President and Project Manager for Teck-Pogo Inc. on the design and construction of the Pogo Mine near Fairbanks, Alaska. Before joining Teck, Mr. Zimmer was employed with Bow Valley Industries as Senior Staff Engineer responsible for evaluation of new mining ventures. Mr. Zimmer has over 40 years of experience in the mining industry and has a B.Sc. degree, B. Eng., MBA and is a P.Eng. in the Province of British Columbia.

Reliance on Certain Exemptions

At no time since the commencement of the Corporation's most recently completed financial year has the Corporation relied on the exemption in Section 2.4 of NI 52-110 (De Minimis Non-audit Services), Section 3.2 of NI 52-110 (Initial Public Offerings), Section 3.3(2) of NI 52-110 (Controlled Companies), Section 3.4 of NI 52-110 (Events Outside Control of Member), Section 3.5 of NI 52-110 (Death, Disability or Resignation of Audit Committee Member), Section 3.6 of NI 52-110 (Temporary Exemption for Limited and Exceptional Circumstances) or Section 3.8 of NI 52-110



(Acquisition of Financial Literacy), or an exemption from NI 52-110, in whole or in part, granted under Part 8 of NI 52-110 (Exemptions).

Audit Committee Oversight

At no time since the commencement of the Corporation's most recently completed financial year was a recommendation of the Committee to nominate or compensate an external auditor not adopted by the board of directors.

Pre-Approval Policies and Procedures

The Audit Committee nominates and engages the independent auditors to audit the financial statements, and approves all audit, audit-related services, tax services and other services provided by the Corporation's independent registered public accounting firm, PricewaterhouseCoopers LLP, Chartered Professional Accountants ("PwC"). Any services provided by PwC that are not specifically included within the scope of the audit must be pre-approved by the audit committee prior to any engagement. The audit committee is permitted to approve certain fees for audit-related services, tax services and other services pursuant to a de minimus exception before the completion of the engagement. No fees paid to PwC in either of the fiscal years ended December 31, 2019 or 2018 were approved pursuant to the de minimus exception.

External Auditor Service Fees (By Category)

PwC, is the independent registered public accounting firm for the Corporation and have acted as the Corporation's independent auditor for the years ended December 31, 2019 and 2018. The chart below sets forth the total amount billed the Corporation by PwC for services performed in these periods and breaks down these amounts by category of service (for audit fees, audit-related fees, tax fees and all other fees):

External Auditor Service Fees (By Category)

Financial Period	Audit Fees^(a)	Audit Related Fees	Tax Fees	All Other Fees
Year ended December 31, 2019	\$451,611	\$Nil	\$Nil	\$Nil
Year ended December 31, 2018	\$377,311	\$Nil	\$Nil	\$Nil

a) "Audit Fees" are the aggregate fees billed by PwC for the following:

- Audits of the Corporation's consolidated annual financial statements;
- Audits of internal control over financial reporting that are provided in connection with statutory and regulatory filings or engagements;
- Reviews of the Corporations quarterly financial statements; and
- Comfort letter, consents, and other services related to the SEC.

LEGAL PROCEEDINGS AND REGULATORY ACTIONS

The Corporation is not a party to any legal proceedings involving a claim for damages in excess of ten percent of the Corporation's current assets, nor is a party to any regulatory actions, and is not aware of any such proceedings or actions known to be contemplated.



INTEREST OF MANAGEMENT AND OTHERS IN MATERIAL TRANSACTIONS

The directors, executive officers and principal shareholders of the Corporation or any associate or affiliate of the foregoing have had no material interest, direct or indirect, in any transactions in which the Corporation has participated within the three most recently completed financial periods prior to the date of this AIF or in the current financial year, and do not have any material interest in any proposed transaction, which has materially affected or is reasonably expected to materially affect the Corporation, except as set out elsewhere in this AIF or as follows:

Certain directors and/or officers of the Corporation have subscribed for common shares of the Corporation pursuant to the public and private placement financings of the Corporation.

TRANSFER AGENTS AND REGISTRARS

The registrar and transfer agent for the common shares of the Corporation in British Columbia and Ontario is Computershare Investor Services Inc., at its offices in Vancouver, British Columbia.

MATERIAL CONTRACTS

The Wheaton SPA, as amended (as described under the heading "General Development of the Business – Three Year History and Significant Acquisitions"), is the only material contract entered into by the Corporation within the year ended December 31, 2019 or before such time that are still in effect, other than in the ordinary course of business. The Wheaton SPA and subsequent amendments are available on the SEDAR website at www.sedar.com under the Corporation's profile.

INTERESTS OF EXPERTS

Names of Experts

The following sets forth each person named as having prepared or certified a report, valuation, statement or opinion described or included in a filing (including this AIF), or referred to in a filing, made under National Instrument 51-102 by the Corporation during, or relating to, its most recently completed financial year and whose profession or business gives authority to the report, valuation, statement or opinion made by the person or company:

- Adrian Churcher P.Eng., Zach Allright, P.Eng., and Paul Hughes, Ph.D., P.Eng., of Mining Plus Canada, Gilles Arseneau, Ph.D., P.Geo. and Cliff Revering, P.Eng. of SRK Consulting (Canada) Inc., David Farrow, Pr.Sci.Nat, P.Geo. of Geostat Consulting Inc., and Hassan Ghaffari, P.Eng. and Ting Lu, M.Sc., P.Eng. of Tetra Tech Canada Inc. prepared the PFS described under "Description of the Business – KHSD Property".
- Alan McOnie, FAusIMM, Vice President, Exploration of the Corporation and Neil Chambers, P.Eng., an employee of the Corporation, are both responsible for certain information of a scientific or technical nature relating to the Corporation's properties in this AIF.

The Corporation's independent auditors are PwC, who have issued the Report of Independent Registered Public Accounting Firm dated March 11, 2020 in respect of the Corporation's annual financial statements as at December 31, 2019 and December 31, 2018 and for each of the years ended December 31, 2019 and December 31, 2018 and the Corporation's internal control over financial reporting as at December 31, 2019.

Interests of Experts

Alan McOnie is currently an executive officer and Neil Chambers is currently an employee of the Corporation, as described above. Both Alan McOnie and Neil Chambers have been granted stock options of the Corporation through the course of their respective employments; however, the individual interests held by each of them throughout their



respective employment terms at all times represented less than one percent of the issued and outstanding common shares of the Corporation.

The Corporation's independent auditors are PwC. PwC has advised the Corporation that they are independent with respect to the Corporation within the meaning of the Chartered Professional Accountants of British Columbia Code of Professional Conduct and within the meaning of the Public Company Accounting Oversight Board Rule 3520, Auditor Independence.

ADDITIONAL INFORMATION

Additional information relating to the Corporation may be found on SEDAR at www.sedar.com, as well as at the Corporation's web site at www.alexcoresource.com.

Additional information, including directors' and officers' remuneration and indebtedness, principal holders of the Corporation's securities, and securities authorized for issuance under equity compensation plans, where applicable, is contained in the Corporation's information circular for its most recent annual general meeting of securityholders that involved the election of directors.

Additional financial information is provided in the Corporation's consolidated financial statements and management's discussion and analysis for its most recently completed financial period, being the year ended December 31, 2019.



SCHEDULE "A"

Summary from PFS

1. Summary

"1.1 EXECUTIVE SUMMARY

Mining Plus Canada Consulting Ltd. (Mining Plus) was retained by Alexco Resource Corp. ("Alexco") to prepare a Preliminary Feasibility Study ("PFS" or the "Study") and Independent Technical Report (the "Technical Report") on the Keno Hill Silver Project (the "Project"), located in the Yukon Territory, Canada. The purpose of this Technical Report is to disclose the results of the PFS. This Technical Report conforms to National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101").

Alexco is a public company with its headquarters in Vancouver, B.C. Alexco, through wholly owned subsidiaries, owns the mineral rights for the Keno Hill Silver District ("KHSD" or the "District") following its successful bid for the assets of United Keno Hill Mines Ltd in 2006. Alexco acquired the properties with all pre-existing liabilities subject to indemnification from the Federal Government of Canada.

The Project contemplates the conventional mining and milling of silver-lead-zinc ore from four deposits in the District. There is an existing mill which will process a high grade silver-lead-zinc ore from four deposits across the District. Over the eight year mine life contemplated in this PFS, the mines will produce 1.18 million ("M") tonnes of mill feed (the probable Mineral Reserves) at an average 805 grams per tonne ("g/t") silver ("Ag"), 2.98% lead ("Pb"), 4.13% zinc ("Zn") and 0.34 g/t gold ("Au"). Following commissioning, the mill will produce two concentrates; a high grade lead-silver concentrate averaging 15,890 g/t Ag, 54% Pb, and 3.7 g/t Au, and a zinc-silver concentrate averaging 649 g/t Ag and 53% Zn. The annualized silver product in concentrate is 4.0 M ounces ("oz").

The KHSD is a historic mining district, with the first production recorded in 1913. Since that time, an estimated 200 million ounces of silver has been produced from over 30 small mines across the district. Due to the high grade, steeply dipping veins which host the mineralization, the historic mines were typically small underground operations "chasing the vein", followed by open pit operations beginning in the 1970's to recover the crown pillars.

In the late 1980's, the then-owner United Keno Hill Mining Company ("UKHM") declared bankruptcy and the site was eventually declared abandoned in 2001, reverting to the Government of Canada. Alexco was the successful bidder in a commercial sale and purchase process and in 2006 became the 100% owner of the assets. Through this transaction, Alexco has the right to mine the deposits and the obligation to develop, permit and implement a reclamation and closure plan for the legacy liabilities across the District. Alexco is fully indemnified for the historic liabilities.

Alexco has been actively developing the Keno Hill Silver District since 2006. Alexco built a new mill complex in 2010 which operated for three years, processing material from the Bellekeno Mine. Since suspending mining operations in 2013, Alexco has maintained the District on a care and maintenance status and focused on additional exploration leading to increases in the estimated Mineral Resources for the Bermingham and Flame & Moth deposits. In 2018, Alexco completed over 1,000 meters ("m") of underground development work including an advanced exploration decline at the Bermingham deposit and a new portal and ramp at the Flame & Moth deposit.

The estimated Mineral Resource includes the Bellekeno, Lucky Queen, Flame & Moth, Onek, and Bermingham. The total estimated Mineral Resource inclusive of estimated probable Mineral Reserves is shown in Table 1-1.



Table 1-1 Keno Hill Mineral Resources (SRK, 2019)

Category	Tonnes	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)	Contained Ag (Oz)
Indicated	3,875,800	594	0.34	2.0	5.3	74,034,000
Inferred	1,660,600	455	0.20	1.6	3.7	24,271,000

Notes:

- All Mineral Resources are classified following the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) of NI 43-101.
- Indicated Mineral Resources are inclusive of probable Mineral Reserves estimates.
- Mineral Resources are not mineral reserves and do not have demonstrated economic viability. All numbers have been rounded to reflect the relative accuracy of the estimates.
- The Mineral Resource estimates comprising Bellekeno, Lucky Queen and Flame & Moth, Onek and Bermingham are supported by disclosure in the news release dated March 28, 2019 entitled "Alexco Announces Positive Pre-Feasibility Study for Expanded Silver Production at Keno Hill Silver District" and this Technical Report filed on SEDAR dated February 13, 2020 with an effective date of March 28, 2019.
- The Mineral Resource estimates for the Bermingham and Bellekeno deposits are based on mineral resource estimates having an effective date of March 28, 2019. The Bellekeno deposit has been depleted to reflect all mine production from the Bellekeno mine to date.
- The mineral resource estimate for the Lucky Queen, Flame & Moth and Onek deposits have an effective date of January 3, 2017.

The mine plan for this Project comprises mining from four deposits (also referred to as "mines"); Bermingham, Flame & Moth, Bellekeno, and Lucky Queen. The majority of the mill feed will come from Bermingham and Flame & Moth (over 90%). Two mines will be operating at any given time, with the exception of the initial three month ramp up period of ore from Bellekeno only.

The mine plan is based on conventional mining methods. Based on the orientation, width of the veins, review of historic mining in the District, and geotechnical information, a combination of mechanized overhand cut and fill, and longhole stoping with cemented rock fill have been selected as the appropriate mining methods for all four deposits. The deposits require the use of mining methods that can adequately support the vein and that are flexible and selective while minimizing the direct mining costs. The backfill is planned to be a mixture of waste rock fill and tailings from the dry stack tailings facility ("DSTF") with cement added as required.

The estimated probable Mineral Reserves calculated by the Qualified Person (from Mining Plus) for this Project are 1.18 M tonnes grading 805 g/t Ag, 2.98% Pb, 4.13% Zn and 0.34 g/t gold for an overall silver equivalent ("AgEq") grade of 1,136 g/t AgEq as of March 28, 2019.

The District mill will be recommissioned at the currently permitted average throughput of 400 tonnes per day ("tpd") (157,000 tonne per year ("tpy")) with a planned increase in throughput in Year 3, for an overall life-of-mine ("LOM") average throughput of 430 tpd. The mill is a conventional flotation mill producing two concentrates. Tailings are thickened, filtered, and placed in a conventional DSTF, which will be progressively reclaimed.

The Bellekeno, Flame & Moth and Lucky Queen mines have all permits and authorizations in place to commence full scale mine production. Although licences are also in place for Onek, there are currently no plans for production from this deposit. The Bermingham deposit requires a final licence amendment, expected in the third quarter of 2019, to commence production. The mill and tailings facilities are fully permitted.

The Project risks are substantially minimized compared to a greenfields project by a combination of Alexco's previous operations at Keno Hill, the recently completed underground development and drilling, the existing and well maintained infrastructure both onsite and offsite (including grid power) and the safe jurisdiction of the Yukon.



The initial capital cost is \$23.2 M. This initial capital (pre-production prior to achieving positive cash flow) comprises \$17.9 M of mine development and PP&E and \$5.3 M of net working capital for the initial construction and ramp up period of five months. The LOM sustaining capital is estimated at \$76.5 M, primarily for ongoing mine development.

The direct operating costs for the Project are estimated at a total of \$362 M or \$312 per tonne of ore. These comprise \$226 M direct mine costs, \$70 M of direct mill costs, and \$67 M for site general and administrative (“G&A”) costs (excluding corporate). However corporate costs are included in calculation of all-in sustaining costs (“AISC”). The AISC is a non-GAAP financial measure that does not have any standardized meaning. Alexco has adopted the practice of calculating this performance measure as the net cost of producing an ounce of silver (our primary payable metal) after deducting revenues gained from incidental by-product production.

Revenue derives from selling four metals (silver as main product and lead, zinc and gold as by-products), reporting to two concentrates; a lead-silver concentrate and a zinc-silver concentrate. The Project will produce a total of 58,200 tonnes of lead-silver concentrate and 67,800 tonnes of zinc-silver concentrate over the eight year mine life. Over the LOM, the payable metals produced in these concentrates total 27.2 M oz Ag, 65.4 M pounds (“lbs”) Pb, 67.2 M lbs Zn and 4,707 oz Au.

Metal pricing was based on information from external sources. The LOM net revenue (“Net Smelter Return”) is \$652 M and the total cash flow is at \$174 M. These are based on metal pricing assumptions as follows:

- Silver ranging from US\$15.75/oz in 2019 to the long-term price of US\$18.25/oz;
- Zinc: US\$1.25/lb in 2019 and 2020, and US\$1.22/lb thereafter;
- Lead: US\$0.96/lb in 2019, and US\$1.00/lb thereafter; and
- Gold: US\$1,275/oz in 2019, US\$1,315/oz in 2020 and US\$1,325/oz thereafter.

The project economics show this to be a robust project with low capital and high returns with a pre-tax net present value at a 5% discount rate (“NPV₅”) of \$136.2 M and after-tax NPV₅ of \$101.2 M. The pre-tax internal rate of return (“IRR”) is 84% and after-tax IRR is 74%. Considering the Project on a stand-alone basis, the undiscounted after-tax cash flow totals \$129.3 million over the mine life. Simple payback occurs approximately two years from start of production, approximately 26 months after the end of the initial capital period).

The brownfields nature of the Project means a relatively rapid timeline to full production of six months total. The pre-production period is expected to require up to three months, during which the mill modifications and construction of the additional surface infrastructure (expansion of camp, offices) will be completed. Once the permitting process is completed, underground development will continue, and the mill will be re-commissioned. The ramp up to full production in the mill is expected to take three months.

Exploration will continue at Keno Hill, to expand the current resources and in the short term is particularly focused on the Bermingham deposit. Alexco plans approximately 7,500 m of surface diamond drilling at Bermingham and other areas in Galena Hill in 2019; this is not included in the Project costs summarized in this Technical Report. It is recognized that there remains considerable estimated Mineral Resources in the indicated category after extraction of the probable Mineral Reserves considered herein.

1.2 Technical Summary

1.2.1 Property Description and Ownership

The Keno Hill Silver Project is located on Alexco’s Keno Hill Silver District (KHSD) in the central Yukon. The site is located approximately 350 km north of Whitehorse, Yukon, Canada in central Yukon and is in the traditional territory of First Nation of Na-Cho Nyäk Dun (FNNND). Access to the property is via the Alaska, Klondike and Silver Trail highways from Whitehorse to Mayo (407 km) and an all-weather gravel road northeast from Mayo to Elsa (45 km); a total distance of 452 km.



Alexco Keno Hill Mining Corp. (AKHM) is a wholly-owned subsidiary of Alexco and has been incorporated for operation of mineral extraction and development in the KHSD. Elsa Reclamation and Development Company Ltd. (ERDC), a wholly owned subsidiary of Alexco, continues to advance the development and eventual implementation of the District Wide Closure Plan (ESM Reclamation Plan) which addresses the historic environmental liabilities of the district from past mining activities. The potential liabilities associated with the historic operations in the KHSD are indemnified by the Government of Canada under the terms and conditions of the commercial agreement subject to the requirement for ERDC to develop, permit and implement the site Reclamation Plan. The Reclamation Plan for the historic liabilities is currently being reviewed by the Yukon Environmental and Socio-economic Assessment Board (YESAB).

Alexco has been actively developing the KHSD since 2006 under this unique contractual arrangement with the Government of Canada whereby it can enter into production at historic and newly discovered deposits within the district while it undertakes reclamation activities to remediate historic environmental impacts.

The KHSD quartz mining claims and quartz mining leases are held by one of two wholly-owned subsidiaries of Alexco: ERDC or AKHM. The current property ownership, access and licences cover the areas included in the geological model, Mineral Resources and Mineral Reserves in this study.

Alexco has exploration, maintenance, and camp facilities near the location of the historic mining town of Elsa, which is located just off the Silver Trail Highway, and administration, mill and mine facilities at the mill complex located near Keno City, as shown in Figure 1-1. The KHSD is well connected by a network of public and private gravel roads. A large number of roads constructed for past mining operations are still serviceable. The KHSD is supplied with electrical power by Yukon Energy Corporation from two hydroelectric plants near Mayo. The area is covered by NTS map sheets 105M/13 and 105M/14.

The central Yukon is characterized by a subarctic continental climate with cold winters and warm summers. Exploration and mining work can be carried out year-round. Annual precipitation averages 28 cm. Half of this amount falls as snow, which starts to accumulate in October and remains into May or June. The landscape surrounding the KHSD is characterized by rolling hills and mountains with a relief of up to 1,600 m. The highest elevation is Keno Hill at 1,975 m. Slopes are gentle except the north slopes of Keno Hill and Sourdough Hill.





Source: 2018 photo from Alexco files

Figure 1-1 View of the Existing District Mill Showing the Dry Stack Tailings Facility and Christal Lake

1.2.2 History

The Keno Hill mining camp area has a rich history of exploration and mining dating back to the beginning of the 1900s. Notable periods of interest in the historic evolution of the Keno Hill mining camp included:

- Early gold prospecting near Mayo, particularly after the Klondike gold rush of 1898;
- The first silver was found in 1903 and small-scale mining commenced in 1913 at the Silver King mine;
- The end of the First World War and high silver prices led to renewed exploration and production activity by the Yukon Gold Company and later Keno Hill Limited;
- In the early 1920s, the Treadwell Yukon Company Limited (TYC) started mining.
- The 1950s proved to be the most successful period, starting in the early 1960s, new discoveries, and additions to mineral inventory were less than production.
- After the Second World War there was a sharp decline in activity in the Keno Hill camp until a new company, Keno Hill Mining Company Ltd., later United Keno Hill Mines Ltd. (UKHM), purchased all TYC properties, started production and sparked increased exploration activity. Production was primarily from underground mining, following the silver veins;



- The peak activity occurred in the 1950s and early 1960s, with new discoveries across the district adding to mineral inventory and production from the larger underground complexes such as the Hector Calumet camp;
- Open pit mining began in the late 1970's, mainly to recover crown pillars; from 1982 to 1985 Sadie-Ladue and Shamrock were mined on a small scale basis, and from 1989 to 1990 Shamrock, Silver King, Hector-Calumet, Lucky Queen, and Keno were mined;
- UKHM stopped production from the Keno Hill District permanently in early 1989; and
- The mine was declared abandoned in 2001 by the Government of Canada and the assets reverted to the Crown.

Alexco acquired the KHSD in 2006 and produced from Bellekeno mine from 2011 to 2013. Exploration has resulted in development and identification of the Lucky Queen, Flame & Moth, Onek, and Bermingham deposits.

1.2.3 Geology

The Keno Hill mining camp is located in the northwestern part of the Selwyn Basin in an area characterized by the Robert Service and Tombstone Thrust Sheets that are overlapping and trend northwest. The area is underlain by Upper Proterozoic to Mississippian rocks that were deposited in a shelf environment during the formation of the northern Cordilleran continental margin. The KHSD geology is dominated by the Mississippian Keno Hill Quartzite comprising the Basal Quartzite Member and conformably overlying Sourdough Hill Member. The unit is overthrust in the south by the Upper Proterozoic Hyland Group Yusezyu Formation and is conformably underlain in the north by the Devonian Earn Group (McOnie and Read, 2009).

Mineralization is of the polymetallic silver-lead-zinc vein type that typically exhibits a succession of hydrothermally precipitated minerals from the vein wall towards the vein centre. However, in the KHSD, multiple pulses of hydrothermal fluids or fluid boiling, probably related to repeated reactivation and breccia formation along the host fault structures, have formed a series of vein stages with differing mineral assemblages and textures. Supergene alteration may have further changed the nature of the mineralogy in the veins. Much of the supergene zone may have been removed due to glacial erosion.

In general, common gangue minerals include (manganiferous) siderite and, to a lesser extent, quartz and calcite. Silver predominantly occurs in argentiferous galena and argentiferous tetrahedrite (freibergite). In some assemblages, silver is also found as native silver, in polybasite, stephanite, and pyrargyrite. Lead occurs in galena and zinc in sphalerite, which at the KHSD can be either an iron-rich or iron-poor variety. Other sulphides include pyrite, pyrrhotite, arsenopyrite, and chalcopyrite.

The Keno Hill mining camp has long been recognized as a polymetallic silver-lead-zinc vein district with characteristics possibly similar to other well-known mining districts in the world. Examples of this type of mineralization include the Kokanee Range (Slocan), British Columbia; Coeur d'Alene, Idaho; Freiberg and the Harz Mountains, Germany; and Příbram, Czech Republic.

In the KHSD, the largest accumulation of minerals of economic interest occur in areas of increased hydrothermal fluid flow in structurally prepared competent rocks such as the Basal Quartzite Member and Triassic Greenstone. Incompetent rocks like phyllites tend to produce fewer and smaller (if any) open spaces, limiting fluid flow and resulting mineral precipitation.

1.2.4 Exploration and Drilling

The exploration conducted by Alexco since 2005 is the first comprehensive exploration effort in the KHSD since 1997. The work has included a program of geologic data compilation, aerial geophysical surveying, and surface core drilling. Alexco converted the historic maps and documents from nearly 70 years of mining in the district to digital form. The digital data has been used to construct district scale maps and three-dimensional (3D) mine models.



Since acquiring the Keno Hill property, Alexco has completed a total of 737 surface diamond drill holes for a total of 189,529 m. In addition, a total of 431 underground holes for 29,673 m has also been completed, mainly at Bellekeno, but also includes 24 holes for 4,213 m HQ drilled in 2018 from the Bermingham exploration decline.

Exploration drilling by Alexco has primarily been conducted to test targets immediately adjacent to historic resource areas and, to a lesser extent, to evaluate targets based on interpretation of exploration data. The objective has been to locate structurally controlled vein mineralization.

Standard logging and sampling conventions are used to capture information from the drill core. Since 2010 all core logging data has been directly digitally entered to the geology database with data including comments captured in separate tables including lithology, structure, mineralization type, intensity of oxidation, phases and abundance of veining, alteration, stratigraphy, and geotechnical.

1.2.5 Mineral Resource Estimate

Definitions for resource categories used in this report are consistent with the CIM definitions incorporated by reference into NI 43-101. The resource evaluations reported herein are a reasonable representation of the global polymetallic Mineral Resources in the Bellekeno, Lucky Queen, Flame & Moth, Onek, and Bermingham deposits given the current level of sampling.

The Mineral Resources have been estimated in conformity with the generally accepted CIM *Estimation of Mineral Resources and Mineral Reserves Best Practices Guidelines* (CIM, 2003) and are reported in accordance with NI 43-101. Mineral resources are not mineral reserves and have not demonstrated economic viability.

In the opinion of the QPs from SRK Consulting (Canada) Inc. (SRK), the resource evaluations reported herein are a reasonable representation of the global polymetallic Mineral Resources in the Bellekeno, Lucky Queen, Flame & Moth, Onek, and Bermingham deposits given the current level of sampling. The databases used to update the Bellekeno mine and Flame & Moth mineral resource estimates were audited by the Qualified Persons (QPs). The QPs are of the opinion that the current drilling information is sufficiently reliable to interpret with confidence the boundaries for the polymetallic mineralization and that the assay data are sufficiently reliable to support mineral resource estimation.

Mintec's MineSight software was used to construct the geological solids for all five deposits. The Lucky Queen and Onek, geological models and database were imported into GEMS format Access databases for geostatistical analysis, block model construction, metal grades estimates, and the tabulation of the Mineral Resources. Maptek's Vulcan software was used for geostatistical analysis and block model estimation for the Bermingham mineral resource estimate. Isatis was used for geostatistical analysis and variography, block model construction, estimating metal grades, and mineral resource tabulation for Bellekeno. The Lucky Queen, Flame & Moth, and Onek block models were estimated using GEMS.

Methodology for the five deposits employed the following procedures:

- Database compilation and verification;
- Construction of wireframe models for the boundaries of the polymetallic mineralization;
- Definition of resource domains;
- Estimation of bulk density;
- Data conditioning (compositing and capping) for geostatistical analysis and variography;
- Block modelling and grade interpolation;
- Resource classification and validation;
- Assessment of "reasonable prospects for economic extraction" and selection of appropriate cutoff grades; and



- Preparation of the Mineral Resource Statement.

A summary of the mineral resource estimate for the Project is shown in Table 1-2.

Table 1-2 Summary of Mineral Resource Estimates

Category ^{1,2,3}	Deposit	Tonnes	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)	Contained Ag (oz)
<i>Indicated</i>	Bellekeno ^{2,4&5}	262,000	585	<i>n/a</i>	3.5%	5.3%	4,928,000
	Lucky Queen ^{2,4&6}	132,300	1,167	0.2	2.4%	1.6%	4,964,000
	Flame & Moth ^{2,4&6}	1,679,000	498	0.4	1.9%	5.3%	26,883,000
	Onek ^{4&6}	700,200	191	0.6	1.2%	11.9%	4,300,000
	Birmingham ^{2,4&5}	1,102,300	930	0.1	2.4%	1.7%	32,959,000
Total Indicated		3,875,800	594	0.34	2.0%	5.3%	74,034,000
<i>Inferred</i>	Bellekeno ^{4&5}	243,000	428	<i>n/a</i>	4.1%	5.1%	3,344,000
	Lucky Queen ^{4&6}	257,900	473	0.1	1.0%	0.8%	3,922,000
	Flame & Moth ^{4&6}	365,200	356	0.3	0.5%	4.3%	4,180,000
	Onek ^{4&6}	285,100	118	0.4	1.2%	8.3%	1,082,000
	Birmingham ^{4&5}	509,400	717	0.2	1.7%	1.5%	11,743,000
Total Inferred		1,660,600	455	0.2	1.6%	3.7%	24,271,000
Notes:							
1. All Mineral Resources are classified following the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) of NI 43-101.							
2. Indicated Mineral Resources are inclusive of probable Mineral Reserves estimates.							
3. Mineral resources are not Mineral Reserves and do not have demonstrated economic viability. All numbers have been rounded to reflect the relative accuracy of the estimates.							
4. The Mineral Resource estimates comprising Bellekeno, Lucky Queen and Flame & Moth, Onek and Birmingham are supported by disclosure in the news release dated March 28, 2019 entitled "Alexco Announces Positive Pre-Feasibility Study for Expanded Silver Production at Keno Hill Silver District" and this Technical Report filed on SEDAR dated February 13, 2020 with an effective date of March 28, 2019.							
5. The mineral resource estimate for the Birmingham and Bellekeno deposits are based on mineral resource estimates having an effective date of March 28, 2019. The Bellekeno deposit has been depleted to reflect all mine production from the Bellekeno mine to date.							
6. The mineral resource estimate for the Lucky Queen, Flame & Moth and Onek deposits have an effective date of January 3, 2017.							

1.2.6 Mineral Reserve Estimate

The Mineable Shape Optimizer (MSO) tool was used to create mineable shapes using the NSR values coded into the block models. The results generated from the MSO process were used as guidance to generate detailed development layouts and crosscut designs. The economic viability of all stope blocks and levels were tested to ensure that all the probable Mineral Reserves are economically viable.

The Mineral Reserves (Table 1-3) show the total Mineral Reserves for the Keno Hill Silver District; all Mineral Reserves are probable Mineral Reserves. External dilution and mineable recovery has been applied to the Mineral Reserves. Please note that rounding of tonnes, average grades, and contained metal may result in apparent discrepancies with totals rounded.



Table 1-3 Mineral Reserves, Alexco Resource Corp. – Keno Hill Silver District Project

Deposit ³	Category	Tonnes	Ag (g/t)	Pb (%)	Zn (%)	Au (g/t)	Contained Metal (000 Ag) oz	Contained Metal (000 Au) oz	Contained Metal (M lbs Pb)	Contained Metal (M lbs Zn)
Bellekeno	Proven	-	-	-	-	-	-	-	-	-
	Probable	40,109	843.1	11.79	6.31	-	1,087	-	10	6
Lucky Queen	Proven	-	-	-	-	-	-	-	-	-
	Probable	70,717	1,244.39	2.63	1.38	0.12	2,829	-	4	2
Flame and Moth	Proven	-	-	-	-	-	-	-	-	-
	Probable	704,211	671.95	2.71	5.73	0.49	15,214	11	42	89
Birmingham	Proven	-	-	-	-	-	-	-	-	-
	Probable	362,343	972.02	2.59	1.32	0.13	11,324	2	21	11
Total	Proven	-	-	-	-	-	-	-	-	-
	Probable	1,177,380	804.51	2.98	4.13	0.34	30,454	13	77	107

Notes:

1. Mineral Reserves are reported herein based on an NSR cutoff value using estimated metallurgical recoveries, assumed metal prices and smelter terms, which include payable factors, treatment charges, penalties, and refining charges
2. Tonnage and grade measurements are in metric units. Contained gold and silver ounces are reported as troy ounces
3. The Bellekeno, Lucky Queen, Flame & Moth and Birmingham deposits are incorporated into the current mine plan supported by disclosure in the news release dated March 28, 2019 entitled "Alexco Announces Positive Pre-Feasibility Study for Expanded Silver Production at Keno Hill Silver District".
4. Rounding as required by reporting guidelines may result in apparent summation differences between tonnes, grade and contained metal content.

The Mineral Reserves identified comply with CIM definitions and standards for a NI 43-101 technical report. Detailed information on mining, processing and other relevant factors are contained in the following sections and combined demonstrate that the KHSD Project is an economically viable project.



1.2.7 Mining Methods

The project contains four separate deposits: Bellekeno, Bermingham, Flame & Moth, and Lucky Queen. All are characterized by high-grades and narrow vein widths. A photo of the existing Bellekeno portal is shown in Figure 1-2, and similarly of the current Bermingham portal in



Figure 1-3.

Source: 2018 photo from Alexco files

Figure 1-2 View of the Current Bellekeno Portal



Source: 2-18 photo from Alexco files

Figure 1-3 View of the Current Bermingham Portal



The KHSD is historically known for locally challenging ground conditions encountered that limit the applicable mining methods to fully supported methods with limited spans, such as cut and fill or very small scale longhole. For most of its historic mining life, the most successful method was square set stoping with timber.

Historical mining methods used in the KHSD have included cut and fill, small scale longhole stoping, shrinkage stoping, and square set stoping. The veins typically have dips around 70 to 80 degrees but vary between deposits from approximately 50 degrees at Lucky Queen to 80 degrees at Flame & Moth.

Numerous geotechnical studies have been carried out on the KHSD most recently by Jacobs Engineering (Jacobs, 2019). Geotechnical data for this study was only available for the Flame & Moth and Bermingham deposits which comprise approximately 90% of the PFS mill feed. Operational experience gained during previous production mining at the Lucky Queen and Bellekeno deposits has been used to guide (but not directly influence) the development of geotechnical mine design parameters for the PFS. At a feasibility level the geotechnical conditions of the Lucky Queen and Bellekeno would need to be verified.

To understand the ground conditions at the KHSD Project, geotechnical domains were created for the BM and FM deposits. Preliminary geotechnical parameters were assessed using major lithology types as identified by Alexco geology personnel. The geotechnical domains are outlined below on which ground support designs have been based:

- Domain 1: Quartzite (waste development);
- Domain 2 Schist (waste development);
- Domain 3: Faults (waste and production development); and
- Domain 4: Mineralization (production development).

Based on the estimated rock mass classification Q values, ground support classes were developed for standard lateral development and production drifts for the Flame & Moth and Bermingham deposits. Mining of the Lucky Queen and Bellekeno deposits will exploit existing underground development. For this study, previously used ground support standards or the standards outlined for the Flame & Moth and Bermingham deposits (whichever provides greater capacity) will be used in the limited additional development that is planned. The ground support uses conventional technology; a combination of shotcrete, rock bolts and mesh.

In general, the infrastructure and development excavations are open for the long-term, and support has been designed accordingly. The infrastructure has been designed to avoid areas with potential poor ground conditions; in some situations, this is unavoidable, and support will be increased to provide long term stability.

The mine design strategy for the Project was to design as many areas as practical using small scale longhole mining methods while planning mechanized overhand cut and fill for areas where ground conditions were poor, or where the combination of vein dip and true width was not compatible with longhole stoping methods. A 3D design of the development and stope shapes was completed for all four deposits using Deswik Software.

Based on the orientation, width of the veins, review of historic mining in the district, and geotechnical information, a combination of mechanized overhand cut and fill, and longhole stoping with cemented rock fill has been selected as the appropriate mining methods for all four deposits. The deposits require the use of mining methods that can adequately support the vein and that are flexible and selective while minimizing the direct mining costs. The backfill is planned to be a mixture of waste rock fill and tailings from the DSTF with cement added as required.

For the majority of the mine life two deposits will be providing mill feed at all times. The only exceptions are early in the mine life when only the Bellekeno mine will be producing the mill feed and late in the mine life. There will be a 10-month development period at Flame & Moth and Bermingham with steady state production being reached in Year 2 of the 8-year mine life. Steady state production over the 8-year mine life will average about 160,000 tonnes per annum.



Revenue comes from selling four metals (silver as main product and lead, zinc and gold as by-products), reporting to two concentrates; a lead-silver concentrate and a zinc-silver concentrate. Stope shapes and mining areas were created and manually validated based upon an NSR value per tonne cutoff of \$339. This NSR cutoff value was calculated by using the initial operating cost estimate. Mining recovery was applied at 95% for Bellekeno, Flame & Moth, Bermingham and Lucky Queen which is in line with Alexco's historic operational experience. All stope shapes and mining areas were reviewed to remove any unprofitable areas.

To maximize project value a higher cutoff value was selected on a mine-by-mine basis. This accelerates payback and eliminates the scheduling of marginal or near marginal tonnes. Based on the directive of Alexco management to target minimum 650 g/t Ag average LOM head grade for each deposit. The cut off values selected to meet this mandate are in Table 1-4 below.

Table 1-4 Mine Design Criteria – Cutoff Values

Mine	Cutoff Value (\$/t)
Bellekeno	420
Lucky Queen	460
Bermingham	350
Flame & Moth	350

Stope dilution is calculated in the block model for each block, based on the specific block width, and is also reported to give an average dilution for the entire stope. To factor in unplanned dilution outside the stopes shapes boundaries, a dilution skin of 0.5 m was applied to both the hanging wall (HW) and footwall (FW) during the stope optimizer process. This dilution was considered when evaluating whether or not shapes are economic to ensure only diluted economic stope shapes are included in the mine plan.

Internal dilution (Planned Dilution) is primarily a function of the width of the orebody and minimum mining width. Minimum mining width for cut and fill method in both Bermingham and Flame & Moth deposits is 3.5 m wide and for the Lucky Queen deposit is 2.5 m wide which is determined from the size of the equipment selected and consistent with the geotechnical design parameters. For longhole stoping, the minimum mining width is planned at 1.8m. Dilution for the four deposits is; Flame & Moth 15%, Bermingham 37%, Lucky Queen 39%, and Bellekeno 21%.

The underground mine design for all four deposits results in total probable Mineral Reserves of 1,177,380 tonnes (diluted) with an average grade of 805 g/t Ag, 2.98% Pb, and 4.13% Zn. The overall NSR value for the reserve is \$554/tonne.

A monthly production schedule was generated using excel for each task associated with mine development and production. This schedule was created using Deswik Scheduling software and targeted approximately 16,000 tonnes ore/month coming from two deposits at any given time. The total annual mill feed and waste production from the four mines are summarized in Table 1-5 below.



Table 1-5 Mine Production Summary

	TOTAL	2019	2020	2021	2022	2023	2024	2025	2026	2027
ORE TONNES ¹	1,177,380	58,384	136,174	163,200	199,800	198,800	142,324	164,655	105,468	8,575
WASTE TONNES	755,123	102,696	235,874	147,658	122,717	45,717	51,897	28,920	19,644	-
TOTAL TONNES	1,932,502	161,080	372,048	310,858	322,517	244,516	194,222	193,575	125,111	8,575
Calculated Average Grade										
Ag(g/t)	805	881	875	903	784	796	775	822	595	672
Au(g/t)	0.34	0.1	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.9
Pb(%)	2.98%	9.1%	2.5%	3.3%	2.9%	2.6%	3.3%	2.0%	2.0%	2.2%
Zn(%)	4.13%	5.5%	3.7%	3.3%	4.3%	3.6%	4.3%	3.4%	6.6%	8.7%
Calculated Contained Metal										
Ag(Oz)	30,453,593	1,653,067	3,832,080	4,740,188	5,034,181	5,088,284	3,548,358	4,353,560	2,018,645	185,230
Au(Oz)	12,992	119	1,191	1,572	1,844	1,862	2,029	2,380	1,752	243
Pb(lbs)	77,289,572	11,712,803	7,367,704	11,981,444	12,644,948	11,156,854	10,219,624	7,128,997	4,656,048	421,150
Zn(lbs)	107,195,512	7,119,086	11,101,079	11,734,556	19,030,982	15,630,812	13,436,290	12,247,614	15,258,571	1,636,522
Notes:										
1. The term "ore" in this document means the total probable Mineral Reserve as presented in Chapter 15 of this report.										



Key equipment requirements during the pre-production and production period will include jumbos, load-haul-dumps (LHDs), haulage trucks, bolters, shotcrete sprayers and a longhole drill. Raise development will be carried out using alimaks. Alexco currently owns much of the mining equipment required; the additional major equipment required is assumed to be leased for the Project.

Manpower will consist of technical staff, mining crews, mechanics, electricians and other support staff. Manpower reaches 222 personnel at full production with up to 122 personnel on site at any given time.

The ventilation system for each deposit is designed to meet Yukon regulations. Permanent fans will be located on surface at the raise collars. All intake air entering the mine workings will be heated above freezing point during the winter months.

1.2.8 Metallurgical Testing and Mineral Processing

Metallurgical testwork has been conducted independently on each of the four deposits included in the production plan independently. Testwork performed from 1996 through 2009 was the basis for the design and construction of the mill facility in 2010. The Bellekeno mine and mill complex achieved commercial production in January 2011, processing an average of 253 tpd in 2012. Since 2011, samples from Lucky Queen, Flame & Moth, and Birmingham deposits were tested to assess flotation performance.

The KHSD Property (the Property) is of a polymetallic silver-lead-zinc vein type mineralization. According to this PFS production plan, additional deposits of Flame & Moth, Birmingham, and Lucky Queen, as well as the remnant Bellekeno deposit will feed the mill complex at 400 tpd for the first two years before reaching the peak capacity 550 tpd at year three. Bellekeno mineralization at the Property was processed in the Keno Hill District Mill at 250 tpd from 2011 and 2013. The existing Keno Hill District Mill will be upgraded to allow processing of material from additional deposits at the increased feed capacity.

Based on metallurgical testwork described in Section 13.0 and previous operation experience, a conventional sequential flotation process with regrinding stages on both lead and zinc rougher concentrates has been selected for this Project to produce silver-lead concentrate and zinc concentrate. The target primary grind size P80 was designed to be 100 to 120 μm to recover liberated lead and zinc minerals in rougher flotation circuits. A regrind mill in each of the lead and zinc cleaner flotation circuits will be included for further liberation and upgrading.

Based on the mill capacity/modification reviews, modifications to the existing Keno Hill District Mill will be required in three areas including grinding circuit, flotation circuit, and tailings dewatering circuit and have been included in this PFS. Specifically, one additional grinding ball mill, two regrinding ball mills, and one larger plate frame filter for tailings dewatering will be installed. To reach the higher rate 550 tpd, campaigns will be run to identify additional modifications in the initial operation. An allowance of \$1 million has been included in this Project for this purpose.

Ore will be crushed and then processed in a conventional flotation mill producing two concentrates. Concentrates will be thickened, filtered, and trucked off site for sale. Tailings will be also thickened, filtered, and stored in a dry stack tailing facility adjacent to the mill. Process water will be stored in the mill pond adjacent to the mill complex and recycled to the plant for varied applications. A simplified process flowsheet is included in Section 17.0 (Figure 17-1). The primary makeup water source is from the Flame & Moth underground mine which will be treated within the already constructed water treatment plant.

The expected metallurgical recoveries are shown in Table 1-6 for the life of mine (including ramp up and commissioning) and for the period after the ramp up and commissioning in Year 1. The total concentrate production over the life of mine is shown in Table 1-7. Also shown in this table, for comparison, is the concentrate production starting after the ramp up and commissioning period through to the end of the mine life.

While the overall recoveries are similar for both time periods, the concentrate characteristics differ. This is due to the different head grades and metallurgical performance of the Bellekeno production which is used for the startup and commissioning.



Table 1-6 Expected Metallurgical Performance¹ – Recovery to Concentrates

	Average LOM	Average LOM Following Commissioning ²
% into Pb-Ag Concentrate		
Ag	90.9	90.9
Pb	88.6	88.3
Au	49.0	49.0
% into Zn Concentrate		
Ag	4.6	4.7
Zn	73.6	73.5
Notes:		
1. Based on the total probable Mineral Reserves presented in Section 15 and mine plan presented in Section 16, metallurgical testing presented in Section 13.		
2. "following commissioning" refers to Year 2 through to end of mine.		

Table 1-7 Expected Metallurgical Performance¹ – Concentrates

	LOM (including year 1)	Average LOM Following Commissioning ²
Pb-Ag Concentrate		
Dry tonnes	58,151	52,772
Ag g/t ³	14,822	15,890
Pb % ³	54.0	54.0
Au g/t ³	3.4	3.7
Zn Concentrate		
Dry tonnes	67,768	65,436
Ag g/t ³	642	649
Zn % ³	53.0	53.0
Notes:		
1. Based on the total probable Mineral Reserves presented in Section 15 and mine plan (Section 16).		
2. "following commissioning" refers to Year 2 through to end of mine.		
3. Grades are calculated weighted averages		

1.2.9 Project Infrastructure

There is considerable infrastructure on site since the mine was in production from 2011 to 2013. This infrastructure has remained either in use (by the site activities for Care and Maintenance) or has been regularly maintained.

In Elsa, there are administrative, engineering and exploration offices, as well as maintenance and warehouse facilities. The nearby Flat Creek camp facilities include bunkhouses, a kitchen facility and drillers dry, as well as houses at the old Flat Creek town site (part of Elsa).

At the mill, to the east of Elsa and adjacent to the Flame & Moth portal, there are mine and mill offices and dry, an assay lab, and the mill and DSTF complex as shown in Figure 1-1 above. Power, water, roads and communications are in place and maintained throughout the site. There is a network of access roads and haul roads throughout the district. Haul roads have been upgraded between Birmingham and the mill, and a bypass constructed around Keno City to reduce traffic and noise for the residents.

There is minimal additional infrastructure required for this Project; minor additional office/dry expansion, and mill modifications to reliably achieve the throughput. The capital projects required for mine development, such as ventilation raises, are included in the mine planning and costing.



Offsite infrastructure includes highway access to between Whitehorse and the Keno Hill site as well as to Skagway (for concentrate shipping). Alexco has an administrative office in Whitehorse. No additional offsite infrastructure is required for this Project.

1.2.10 Market Studies and Contracts

The principal commodities at KHSD are freely traded, at prices that are widely known, so that prospects for sale of any production are virtually assured. Future production will continue to be sold in concentrate form and revenue will be based on terms provided by traders or smelters to which the concentrate is sold. For the economic analysis herein, concentrate sales terms were developed from discussions with various traders or smelters, and compared with other current projects.

Alexco has entered into contracts with the following companies to support the operations of the Project:

- Canadian Lynden Transport is contracted by Alexco to transport lead and zinc concentrates to a smelter in North America and to back haul supplies to the site;
- Yukon Energy Corporation provides power under contract to various substations; and
- Superior Propane provides propane with the largest consumption for mine air heating in the winter.

1.2.11 Environmental Studies, Permitting, and Social or Community Impact

Alexco and its subsidiary, ERDC, have a unique commercial agreement with the Government of Canada in which Alexco is responsible for the care, maintenance, and closure of the historical mines, with government and company funding provided to address the historical liabilities. Under the agreement, Alexco is indemnified from the historic environmental liabilities. The company, along with territorial, federal, and First Nation governments, is responsible for developing a district-wide closure plan that addresses these historic environmental liabilities arising from past mining activities. The UKHM Reclamation Plan is currently within the Yukon environmental assessment process under the Yukon Environment and Socio-economic Assessment Act (YESAA). That work is not part of this PFS.

1.2.11.1 Environment and Water Quality

The KHSD has an extensive database of environmental monitoring and environmental impacts assessments, going back twenty years in some areas. This is in large part due to the historic operations and the reclamation planning requirements. The additional environmental requirements for both operations and closure have been clearly defined through the permitting processes.

Geochemical and water quality studies consistently show that the site is not a source of acid rock drainage. However, oxidation of sulphides and metal leaching under circumneutral conditions does occur, with local zones of acidity in areas of higher sulphide material, particularly proximal to the mineralized veins. The tailings are neither net acid generating nor a source of metal leaching. Tailings are deposited in a lined dry stack tailings facility which is progressively reclaimed during operations. There are comprehensive waste management, water management and monitoring programs defined by permits and in effect on site.

1.2.11.2 Environmental Assessment and Permitting

The Bellekeno, Flame & Moth, and Lucky Queen mines have all permits and authorizations in place to commence full scale mine production. Although licences are also in place for Onek, there are currently no plans to bring this deposit into production.

The Birmingham deposit has in place a Class 4 Mining Land Use Approval which authorizes the underground development and advanced exploration drilling completed to date. Before milling and further mining of material from the Birmingham deposit, an amendment to the Water Use Licence and Quartz Mining Licence are required. The water licence renewal process is well advanced. The public hearing process is expected in Q2 2019 followed by issuance of the water licence amendment in Q3 2019.

The existing approvals and amendments submitted are for the mill throughput of 400 tonnes per day (tpd) (based upon a 12-month average) and would require a minor amendment to increase mine throughput to 550 tpd.



1.2.11.3 Community and First Nations

The KHSD is situated in the traditional territory of the FNNND. Alexco has met regularly with stakeholders and First Nations regarding their ongoing operations as well as the new plans, presenting detailed information about the Project and seeking expression of concerns.

Alexco has signed a Comprehensive Cooperation and Benefits Agreement (CCBA) with the FNNND that recognizes the rights, obligations, and opportunities of the two parties. The Agreement includes detailed discussion about respecting and protecting the environment, including enhanced opportunities for FNNND to be involved in environmental management of all operations, from mining through to closure and reclamation. The CCBA was reviewed and amended in May 2016 and there are no material changes to the CCBA.

1.2.11.4 Mine Reclamation and Closure

An updated Reclamation and Closure Plan was approved by the Government of Yukon in 2018 that encompasses all of the active mining and processing activities in the KHSD (Alexco, 2018). Alexco will have a site presence for many years while reclamation of the historical liabilities occurs. Therefore, monitoring of the Bellekeno, Lucky Queen, Flame & Moth, and Birmingham mine areas can be integrated with KHSD monitoring programs over the long term. This is expected to improve the efficiency of these ongoing water treatment and monitoring activities.

The YG requires financial security in the form of a letter of credit to cover potential liabilities associated with the cost of reclamation and closure. Alexco has posted a total of \$6.5M of security. The estimated cost for the additional reclamation is recently estimated at \$6.6M. Any additional security that may be required following amendment of the quartz and water use licence would be posted as change to the value of the current surety.

1.2.12 Capital and Operating Costs

Capital costs were developed by Alexco, and the QPs from Mining Plus and Tetra Tech (process plant only). The QPs from Mining Plus and Tetra Tech reviewed the costs in detail and modified as required to be consistent with a PFS study and the Project. All costs are in Canadian dollars unless otherwise noted. Mining Plus considers the accuracy of capital cost estimate components to be at a prefeasibility level of +/- 25%. A 12.5% contingency has been included in the capital cost estimate based upon a review of the capital details.

The capital cost estimates are based primarily on quotations by vendors on equipment, mill modifications, materials, and supplies. The remaining estimates were developed from first principles and previous site experience. Escalation has not been included in the estimate. The capital cost estimates were generated by Alexco and were reviewed and modified based upon detailed review by the QP.

The capital costs include the restart of the Bellekeno mine, completion of development of the Flame & Moth deposit, completion of development of the Birmingham deposit and the reopening of the Lucky Queen plus the necessary modifications to process plant and infrastructure for the restart of operations.

The capital cost estimate for the Project includes the initial and sustaining capital costs. The initial (pre-production) capital cost of \$23.2 million comprises two components: \$17.9 million of mine development, PP&E (property, plant and equipment), mill upgrades and site wide infrastructure modifications costs prior to mill recommissioning, plus an additional \$5.3 million of net working capital for two months of ramp up prior to achieving positive cash flow.

Total sustaining capital (including underground development and property, plant and equipment (PP&E) is estimated to be \$76.5M which excludes the initial capital of \$23.2M. The sustaining capital is mainly the major mine development in the deposits to be mined.

The LOM direct operating costs total \$362 million comprising \$226 million of direct mine costs (primarily mine development), \$70 million of direct processing costs, and \$67 million for site general and administrative ("G&A") costs (excluding corporate) as shown in Table 1-8. This corresponds to a LOM unit cost of \$312 per tonne of ore. These costs were developed by Alexco and reviewed by the QPs from Mining Plus (model and all components except processing plant) and Tetra Tech (processing plant only)



and. Operating costs do not include contingency. Operating costs are in Canadian dollars. Operating costs are based on vendor quotations or build up from first principles

Table 1-8 Life of Mine Direct Operating Cost Summary

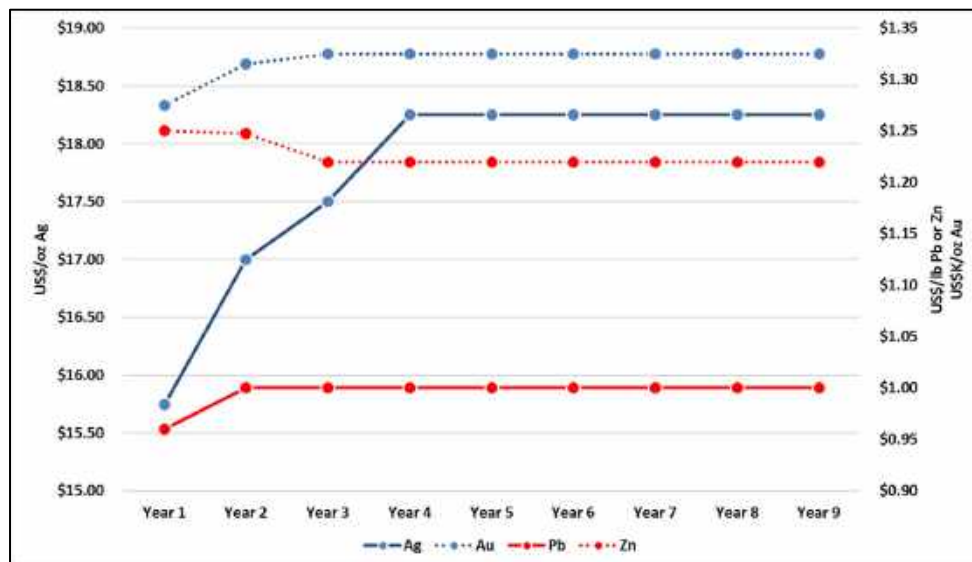
Area	LOM Opex (\$ M)	Unit Cost (\$/tonne ore)
Mine	225.9	194
Mill	69.5	60
G&A	66.9	58
LOM Total Site	362.3	312

1.2.13 ECONOMIC ANALYSIS

The Project presented herein will process 1.18 million tonnes of mill feed (the probable Mineral Reserves) and produce two concentrates; 52,772 tonnes of lead silver concentrate and 65,436 tonnes of zinc concentrate. The LOM total payable silver in concentrate is 27.2 million ounces, or an annualized silver production of 4 million ounces per year. At the design processing throughput averaging 430 tpd over the mine life, following ramp up, the current project life totals 8 years. The Project economics are based on assumptions for marketing of concentrate directly to a smelter. This financial analysis does not include any sunk costs for exploration and project advancement prior to the completion of this study.

The project value is determined on a pre-tax and after-tax basis at 5% discount rate with the following additional economic criteria:

- Metal prices as shown in Figure 1-4 ;
- 25% of silver is sold to Wheaton Precious Metals under a streaming agreement at a price ranging from US\$5.59/oz to US\$11.79/oz silver;
- NSR includes shipping, treatment, and refining costs;
- There is a 1.5% NSR (to a maximum of \$4 million) to the Government of Canada.;
- Revenue is recognized at the time of production; and
- Pre-production period: 3 months, following mill start up a further 2 months of production will be required until the operation is cash-flow positive.



Source: Mining Plus 2019



Figure 1-4 Metal Price Projection

An exchange rate of \$0.75 US\$/CDN\$ in first six months and increasing to \$0.77 US\$/CDN\$ long-term were used was assumed to convert US\$ market price projections and particular components of the initial capital cost estimates into CDN\$. No provision was made for the effects of inflation. Current Canadian tax regulations were applied within the financial model by Alexco Management with support from Alexco's tax advisors.

1.2.14 Cash Flow Analysis

Considering the Project on a stand-alone basis, the undiscounted after-tax cash flow totals \$129.3 million over the mine life. Simple payback occurs approximately two years from start of production, approximately 26 months after the end of the initial capital period.

An estimate of all-in sustaining cost ("AISC") per contained silver ounce on a by-product basis was calculated and is summarized below. Corporate G&A after mine closure is not considered in the project economic evaluation. All costs below are calculated in United States Dollars (US\$). Metal price and foreign exchange assumptions are presented in Section 22.1. The AISC is US\$12.36/contained oz Ag. For comparison, the AISC at current (March 22, 2019) metal prices and foreign exchange rates was calculated at US\$11.30/contained oz Ag. Pricing assumptions are detailed in Section 21.3.

The after-tax Net Present Value (NPV) at a 5% discount rate is \$101.2 million, and the after-tax Internal Rate of Return (IRR) is 74%. The pre-tax NPV at a 5% discount rate is \$136.2 million, and the pre-tax IRR is 84%.

1.2.15 Sensitivity Analysis

Project risks can be identified in both economic and non-economic terms. Key economic risks were examined by running cash flow sensitivities:

- Silver price;
- Exchange rate;
- Silver head grade;
- Operating costs; and
- Capital costs.

After-tax NPV and IRR sensitivity over the base case has been calculated for a range of variations. The after-tax sensitivities are shown in Table 1-9, Figure 1-5, and Figure 1-6.

Table 1-9 Results of Sensitivity Analysis

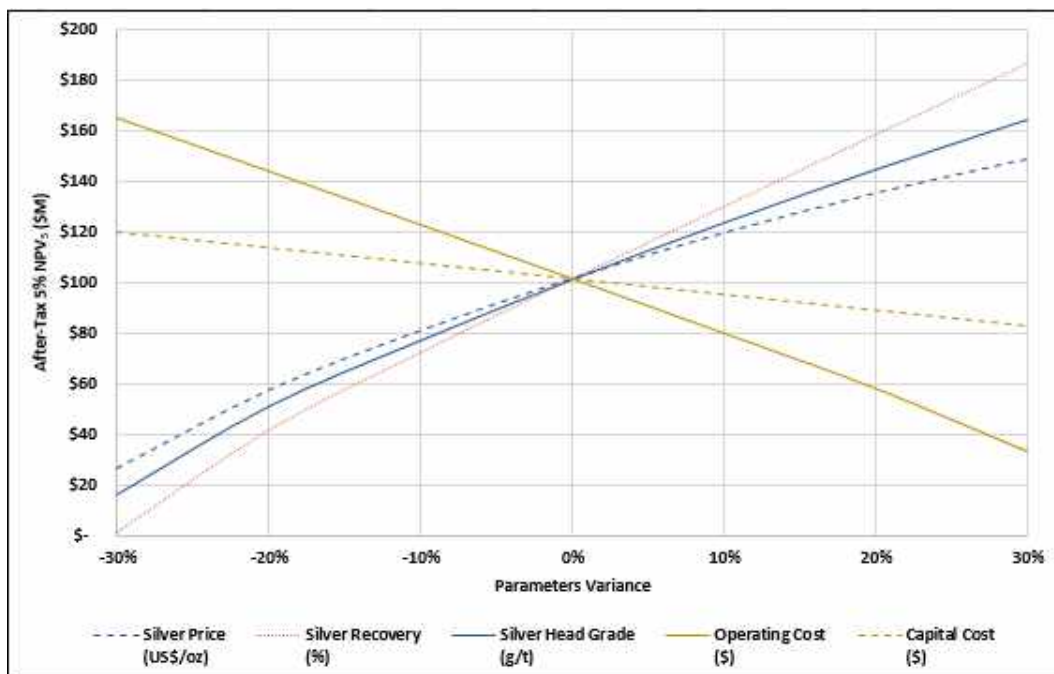
Project Variables	Factors (%)	5% NPV ₅ (\$ M)	IRR (%)
Silver Price (US\$/oz)	-30%	\$26	19%
	-20%	\$57	38%
	-10%	\$81	56%
	0%	\$101	74%
	10%	\$119	94%
	20%	\$135	114%
	30%	\$148	136%
Silver Recovery (%)	-30%	\$1	6%
	-20%	\$42	29%
	-10%	\$72	50%
	0%	\$101	74%
	10%	\$130	103%
	20%	\$158	138%
	30%	\$186	179%
Silver Head Grade	-30%	\$16	15%



Project Variables	Factors (%)	5% NPV ₅ (\$ M)	IRR (%)
(g/t)	-20%	\$51	35%
	-10%	\$77	54%
	0%	\$101	74%
	10%	\$124	96%
	20%	\$145	119%
	30%	\$165	143%
Operating Cost (\$)	-30%	\$165	174%
	-20%	\$144	131%
	-10%	\$123	99%
	0%	\$101	74%
	10%	\$80	54%
	20%	\$58	38%
Capital Cost (\$)	30%	\$33	23%
	20%	\$89	54%
	10%	\$95	63%
	0%	\$101	74%
	-10%	\$108	88%
	-20%	\$114	106%
-30%	\$120	129%	

From both NPV and IRR analysis, project value is most sensitive to silver recovery. For $\pm 10\%$ variance in silver recovery, project NPV and IRR can vary by 30% and 28% respectively. With the historical data from Alexco on mill performance, there is sufficient confidence in the recovery estimation. It is recognized that the various mill feed ore sources considered in this evaluation (from different properties) represent slight variances in mineral composition, however this does not constitute major risk in terms of silver recovery of project cashflows.

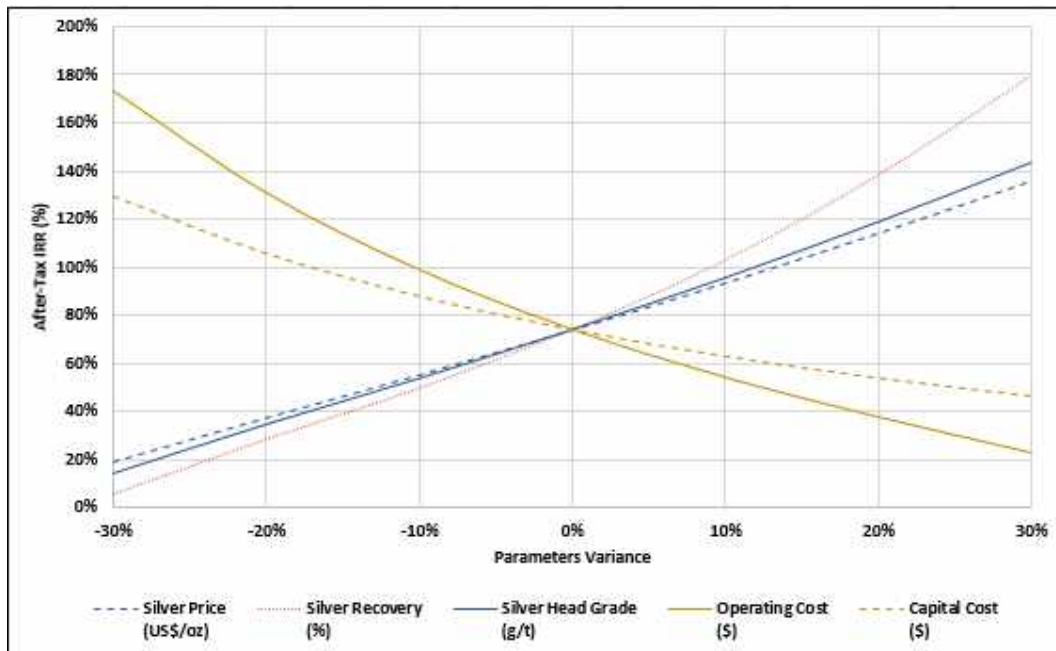
Project value is also sensitive to silver head grade; during the analysis process, change in silver head grade also results in a change to the silver recovery. Taking account of the downstream effect on silver recovery, a $\pm 10\%$ variance in silver head grade resulted in a 23% variance in NPV and 21% variance in IRR.



Source: Mining Plus 2019



Figure 1-5 After-Tax 5% NPV Sensitivity



Source: Mining Plus 2019

Figure 1-6 After-Tax IRR Sensitivity

Amongst the selected parameters, project value is least sensitive to capital cost. The result is reflective of the low project capital requirements, leveraging the existing development and infrastructure.

1.3 RECOMMENDATIONS

The authors provide the following recommendations, the majority of which are opportunities to improve the level of detail for the next stage of project study:

- The QPs from Mining Plus and SRK consider that there is an opportunity to extend the mine life by additional drilling and sampling, considering the in situ remaining resources, net of the reserves considered in this Project.
- The QPs from Tetra Tech consider that more detailed metallurgical predictions of production could be achieved with additional variability locked cycle testing of different blends (that is, of ore from different mines) according to the LOM production plan. There may be an opportunity to improve concentrate grades with further testing.
- During the first year of operation, it is recommended that the Company conduct campaigns of higher plant throughput above the 400 tpd to identify potential bottlenecks and requirements for mill modifications to achieve 550 tpd throughput.
- Additional work on the geomechanics is recommended at a feasibility level including verification of the geotechnical conditions of the LQ and BK, and 3D inelastic modeling to confirm stope geometry stability and extraction sequence. It is recommended that geotechnical mapping and estimation of Q values, along with collection of excavation performance should commence once development begins.
- The QP from Mining Plus recommends that due to the multiple orebodies to be mined, along with their varying grade a comprehensive global optimization process should occur. This should consider timing of Lucky Queen orebody development as well as the timing of increasing the mill capacity.”

