PAN AMERICAN SILVER

Annual Information Form

For the Year Ended December 31, 2017

March 22, 2018

1500-625 Howe Street
Vancouver, British Columbia
V6C 2T6

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PAN AMERICAN SILVER CORP.
ANNUAL INFORMATION FORM

WHAT'S INSIDE

IMPORTANT INFORMATION ABOUT THIS DOCUMENT

This annual information form ("AIF") provides important information about Pan American Silver Corp. It describes our business, including its history, our operations and development projects, our mineral reserves and mineral resources, sustainability, the regulatory environment that we operate in, the risks we face, and the market for our products and shares, among other things.

We have prepared this document to meet the requirements of Canadian securities laws, which are different from what US securities laws require.

Throughout this document, the term *Pan American* means Pan American Silver Corp. and the terms *we*, *us*, and *our* mean Pan American and its subsidiaries.

Reporting Currency and Financial Information

Unless we have specified otherwise, all references to dollar amounts or $ or USD are United States dollars. Any references to CAD or CAD$ mean Canadian dollars.

All financial information presented in this AIF was prepared in accordance with international financial reporting standards ("IFRS") as issued by the International Accounting Standards Board.

Non-GAAP Measures

This AIF refers to various non-generally accepted accounting principles ("non-GAAP") measures, such as cash cost per payable ounce of silver, net of by-product credits ("cash costs"), all-in sustaining costs per silver ounce sold ("AISCSOS"), working capital and total debt.

Cash Costs

This AIF presents information about our cash costs for our operating mines. Except as otherwise noted, cash costs is calculated by dividing total cash costs net of by-product credits by total payable silver ounces produced at the relevant mine or mines. Total cash costs include mine operating costs such as mining, processing, administration and royalties, but exclude amortization, reclamation costs, financing costs and capital development and exploration. Certain amounts of stock-based compensation are excluded as well.

Cash costs is included in this AIF because certain investors use this information to assess our performance and also to determine our ability to generate cash flow for use in investing and other activities. The inclusion of cash costs may enable investors to better understand year-over-year changes in our production costs, which in turn affect profitability and cash flow. Cash costs does not have a standardized meaning or a consistent basis of calculation prescribed by IFRS. Investors are cautioned that cash costs should not be considered in isolation or construed as a substitute to costs determined under IFRS as an indicator of performance. Our method of calculating cash costs may differ from the methods used by other entities and, accordingly, our cash costs may not be comparable to similarly titled measures used by other entities. Readers should refer to our management's discussion and analysis for the year ended December 31, 2017 (the "2017 MD&A") for a detailed description and reconciliation of this non-GAAP measure.

All-In Sustaining Costs Per Silver Ounce Sold

This AIF includes information about our calculation of AISCSOS. The Company believes that AISCSOS reflects a comprehensive measure of the full cost of operating its consolidated business given it includes the cost of replacing ounces through exploration, the cost of ongoing capital investment (sustaining capital), general and administrative expenses, direct operating costs, as well as other items that affect the Company's consolidated earnings and cash flow. AISCSOS does not have a standardized meaning or a consistent basis of calculation prescribed by IFRS. Our

method of calculating AISCSOS may differ from the methods used by other entities and, accordingly, our AISCSOS may not be comparable to similarly titled measures used by other entities. Readers should refer to the 2017 MD&A for a detailed description and reconciliation of this non-GAAP measure.

Working Capital

Working capital is a non-GAAP measure calculated as current assets less current liabilities. Working capital does not have any standardized meaning prescribed by IFRS and is therefore unlikely to be comparable to similar measures presented by other companies. The Company and certain investors use this information to evaluate whether the Company is able to meet its current obligations using its current assets.

Total Debt

Total debt is a non-GAAP measure calculated as the total current and non-current portions of long-term debt, finance lease liabilities, and loans payable. Total debt does not have any standardized meaning prescribed by GAAP and is therefore unlikely to be comparable to similar measures presented by other companies. The Company and certain investors use this information to evaluate the financial debt leverage of the Company.

Glossary of Terms

The glossary of terms under "Glossary of Terms" of this AIF contains definitions of certain scientific or technical terms used in this AIF that might be useful for your understanding.

Caution About Forward-Looking Information

Our AIF includes statements and information about our expectations for the future. When we discuss our strategy, plans and future financial and operating performance, or other things that have not yet taken place, we are making statements considered to be forward-looking information or forward-looking statements under Canadian securities laws and the United States Private Securities Litigation Reform Act of 1995. We refer to them together in this AIF as forward-looking information.

Key things to understand about the forward-looking information in this AIF are:

- It typically includes words and phrases about the future, such as *believe*, *estimate*, *anticipate*, *expect*, *plan*, *intend*, *predict*, *goal*, *target*, *forecast*, *project*, *scheduled*, *potential*, *strategy* and *proposed* (see examples starting on page 3).
- It is based on a number of material assumptions, including, but not limited to, those we have listed below, that may prove to be incorrect.
- Actual results and events may be significantly different from what we currently expect, because of, among other things, the risks associated with our business. We list a number of these material risks below under “Material Risks and Assumptions”. We recommend you also review other parts of this AIF, including "Risks Related to Our Business" starting on page 75, and our 2017 MD&A, which include a discussion of other material risks that could cause our actual results to differ from current expectations.

Forward-looking information is designed to help you understand management’s current views of our near and longer term prospects. It may not be appropriate for other purposes. We do not intend to update forward-looking information unless we are required to do so by applicable securities laws.

Examples of Forward-Looking Information in this AIF:

- the price of silver and other metals;
- the sufficiency of our current working capital, anticipated operating cash flow or our ability to raise necessary funds;

- the accuracy of mineral reserve and mineral resource estimates, estimates of future production and future cash, and total costs of production, as applicable, at La Colorada, Dolores, Huaron, Morococha, San Vicente, Manantial Espejo, Navidad, Joaquin or other properties;
- estimated production rates for silver and other payable metals we produce, timing of production and estimated cash and total costs of production, including forecast cash costs of production;
- the estimated cost of and availability of funding for ongoing capital replacement, improvement or remediation programs, and the availability of funding for future construction and development projects;
- estimated costs of construction, development and ramp-up of our projects;
- future successful development of the Cap-Oeste Sur Este ("COSE"), Joaquin, Navidad and other development projects;
- the effects of laws, regulations and government policies affecting our operations, including, without limitation, expectations relating to or the effect of certain highly restrictive laws and regulations applicable to mining in the Province of Chubut, Argentina;
- the estimates of expected or anticipated economic returns from a mining project, as reflected in preliminary economic assessments, pre-feasibility, and feasibility studies or other reports prepared in relation to development of projects;
- estimated exploration expenditures to be incurred on our various silver exploration properties;
- compliance with environmental, health, safety and other regulations;
- estimated future closure, reclamation and remediation costs;
- forecast capital and non-operating spending;
- estimates of foreign exchange rates and future income tax rates;
- future sales of the metals, concentrates or other products produced by us;
- our ability to maintain transparent relationships of trust with our stakeholders and community support for our activities;
- continued access to necessary infrastructure, including, without limitation, access to power, water, lands and roads to carry on activities as planned;
- our plans and expectations for our properties and operations, including, without limitation, production estimates, forecasts regarding investment activities, and other matters discussed under the heading "Outlook for 2018" and under the headings "Capital and Operating Costs" and "Exploration, Development, and Production" with respect to each of our material properties;
- the results of investment and development activities at the La Colorada and Dolores mines, and at our development projects such as Joaquin and COSE; and
- the ability to obtain permits, including for current or future project development and expansion.

Material Risks and Assumptions:

The forward-looking information in this AIF reflects our current views with respect to future events and are necessarily based upon a number of assumptions and estimates that, while considered reasonable by us, are inherently subject to significant business, economic, competitive, political and social uncertainties and contingencies. Many factors, both known and unknown, could cause actual results, performance or achievements to be materially different from the results, performance or achievements that are or may be expressed or implied by such forward-looking information contained in this AIF and documents incorporated by reference, and we have made assumptions based on or related to many of these factors.

Such factors include, without limitation:

- fluctuations in spot and forward markets for silver, gold, base metals and certain other commodities (such as natural gas, fuel oil and electricity);

- restrictions on mining in the jurisdictions in which we operate;
- laws and regulations governing our operation, exploration and development activities;
- our ability to obtain or renew the licenses and permits necessary for the operation and expansion of our existing operations and for the development, construction and commencement of new operations;
- risks and hazards associated with the business of mineral exploration, development and mining (including environmental hazards, potential unintended releases of contaminants, industrial accidents, unusual or unexpected geological or structural formations, pressures, cave-ins and flooding);
- inherent risks associated with tailings facilities and heap leach operations, including failure or leakages;
- the speculative nature of mineral exploration and development;
- diminishing quantities or grades of mineral reserves as properties are mined;
- the inability to determine, with certainty, the production of metals or the price to be received before mineral reserves or mineral resources are actually mined;
- the inability to determine, with certainty, production and cost estimates;
- inadequate or unreliable infrastructure (such as roads, bridges, power sources and water supplies);
- environmental regulations and legislation;
- reclamation and ongoing post-closure monitoring and maintenance requirements;
- the effects of climate change, extreme weather events, water scarcity, and seismic events, and the effectiveness of strategies to deal with these issues;
- risks relating to our operations in Mexico, Peru, Bolivia, Argentina and other foreign jurisdictions where we may operate;
- risks relating to the creditworthiness and financial condition of our suppliers, refiners and other parties;
- fluctuations in currency markets (such as the Peruvian nuevo sol ("PEN"), Mexican peso ("MXN"), Argentine peso ("ARS") and Bolivian boliviano ("BOB") versus the USD and CAD);
- the volatility of the metals markets, and its potential to impact our ability to meet our financial obligations;
- the inability to recruit and retain qualified personnel;
- employee relations;
- disputes as to the validity of mining or exploration titles or claims or rights, which constitute most of our property holdings;
- our ability to complete and successfully integrate acquisitions;
- increased competition in the mining industry for properties and equipment;
- limited supply of materials and supply chain disruptions;
- relations with and claims by indigenous populations;
- relations with and claims by local communities and non-governmental organizations;
- the effectiveness of our internal control over financial reporting;
- claims and legal proceedings arising in the ordinary course of business activities; and
- those factors identified under the caption "Risks Related to our Business" in this AIF and the documents incorporated by reference herein, if any.

You should not attribute undue certainty to forward-looking information. Although we have attempted to identify important factors that could cause actual results to differ materially, there may be other factors that cause results not to be as described. We do not intend to update forward-looking information to reflect changes in assumptions or changes in circumstances or any other events affecting such information, other than as required by applicable law.

Please see "Cautionary Note to U.S. Investors Concerning Estimates of Mineral Reserves and Mineral Resources" on page 7 of this AIF.

Conversion Table

In this AIF, metric units are used with respect to mineral properties located in Mexico, Peru, Bolivia, Argentina and elsewhere, unless otherwise indicated. Conversion rates from imperial measures to metric units and from metric units to imperial measures are provided in the table set out below.

Imperial Measure	=	Metric Unit
2.47 acres		1 hectare
3.28 feet		1 metre
0.62 miles		1 kilometre
0.032 ounces (troy)		1 gram
1.102 tons (short)		1 tonne
0.029 ounces (troy)/ ton (short)		1 gram/tonne
2205 pounds		1 tonne

Metric Unit	=	Imperial Measure
0.4047 hectares		1 acre
0.3048 metres		1 foot
1.609 kilometres		1 mile
31.1 grams		1 ounce (troy)
0.907 tonnes		1 ton (short)
34.28 grams/tonne		1 ounce (troy)/ton (short)

Scientific and Technical Information

Mineral reserve and mineral resource estimates in this AIF relating to La Colorada, Dolores, Huaron, Morococha, San Vicente, Manantial Espejo, and Joaquin are based on information prepared under the supervision of, or have been reviewed by, Christopher Emerson, FAusIMM, Vice President of Business Development and Geology of Pan American, and Martin Wafforn, P.Eng., Senior Vice President, Technical Services and Process Optimization of Pan American. Scientific or technical information in this AIF relating to La Colorada and Manantial Espejo is based on information prepared under the supervision of, or has been reviewed by, Michael Steinmann, P.Geo., President and Chief Executive Officer of Pan American, and Martin Wafforn. Scientific and technical information relating to Huaron, Morococha, and San Vicente is based on information prepared and reviewed by Michael Steinmann, Martin Wafforn and Americo Delgado, P. Eng., Director of Metallurgy of Pan American. Scientific and technical information relating to Dolores and Joaquin is based on information prepared and reviewed by Martin Wafforn, Christopher Emerson, and Americo Delgado. Scientific or technical information relating to the geology of particular properties, and the current and planned exploration programs described in this AIF, are prepared and/or designed and carried out under the supervision of, or have been reviewed by, Christopher Emerson. Scientific and technical information herein relating to the Navidad property is based on information contained in the Navidad Report (as defined below) and the disclosure in this AIF about the Navidad property has been reviewed and consented to by Michael Steinmann, Martin Wafforn and Pamela De Mark, P.Geo., Director of Resources of Pan American, the experts involved in the preparation of the applicable sections of the Navidad Report. In particular, scientific or technical information in this AIF relating to the estimation of mineral resources for the Navidad property was prepared by Pamela De Mark. All other disclosures of scientific and technical information contained in the descriptions of our mineral properties were prepared under the supervision of or have been reviewed by Christopher Emerson and Martin Wafforn. Each of Christopher Emerson, Michael Steinmann, Martin Wafforn, Pamela De Mark, and Americo Delgado is a "Qualified Person" as defined in National Instrument 43-101 – *Standards of Disclosure for Mineral Projects* ("NI 43-101"). A "Qualified Person" means an engineer or geoscientist with a university degree, or equivalent accreditation, in an area of geoscience, or engineering, relating to mineral exploration or mining, with at least five years of experience in mineral exploration, mine development or operation or mineral project assessment, or any combination of these, that is relevant to his or her professional degree or area of practice, has experience relevant to the subject matter of the mineral project, and is a member in good standing of a professional association.

Scientific and technical disclosure in this AIF for our material properties is based on technical reports prepared for those properties in accordance with NI 43-101 (collectively, the "Technical Reports"). The Technical Reports have been filed on SEDAR at www.sedar.com. The technical information in our AIF has been updated with current information where applicable. The Technical Reports are as follows:

- a report entitled "Technical Report – Preliminary Economic Analysis for the Expansion of the La Colorada Mine, Zacatecas, Mexico", dated effective December 31, 2013 (the "La Colorada Report") relating to the La Colorada mine;
- a report entitled "Technical Report for the Dolores Property, Chihuahua, Mexico", dated effective December 31, 2016 (the "Dolores Report") relating to the Dolores mine;
- a report entitled "Technical Report for the Huaron Property, Pasco, Peru" dated effective June 30, 2014 (the "Huaron Report") relating to the Huaron mine;
- a report entitled "Technical Report for the Morococha Property, Yauli, Peru" dated effective June 30, 2014 (the "Morococha Report") relating to the Morococha mine;
- a report entitled "Technical Report for San Vicente Property, Potosi, Bolivia" dated effective December 31, 2014 (the "San Vicente Report") relating to the San Vicente mine;
- a report entitled "Manantial-Espejo Project Canadian Standard NI 43-101, Santa Cruz Province, Argentina" dated March 2006 (the "Manantial Report") relating to the Manantial Espejo mine;
- a report entitled "Pan American Silver Corp.: Navidad Project, Chubut Province, Argentina: Preliminary Assessment" dated January 14, 2011 (the "Navidad Report") relating to the Navidad property; and
- a report entitled "Technical Report for the Joaquin Property, Santa Cruz, Argentina – Pre-feasibility Study" dated effective November 30, 2017 (the "Joaquin Report") relating to the Joaquin property.

Cautionary Note to U.S. Investors Concerning Estimates of Mineral Reserves and Mineral Resources

This AIF and the documents incorporated by reference in it, if any, have been prepared in accordance with the requirements of Canadian securities laws that differ from the requirements of United States securities laws. Unless otherwise indicated, all mineral reserve and mineral resource estimates included in this AIF and the documents incorporated by reference herein have been disclosed in accordance with NI 43-101 and the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") - Definition Standards adopted by the CIM Council. NI 43-101 is a rule developed by the Canadian Securities Administrators that establishes standards for all public disclosure an issuer makes of scientific and technical information concerning mineral projects.

Canadian public disclosure standards, including NI 43-101, differ significantly from the requirements of the U.S. Securities and Exchange Commission (the "SEC"), and information with respect to mineralization and mineral reserves and mineral resources contained or incorporated by reference herein may not be comparable to similar information disclosed by U.S. companies. In particular, and without limiting the generality of the foregoing, these documents use the terms ''Measured Resources'', ''Indicated Resources'' and ''Inferred Resources''. U.S. investors are advised that, while such terms are recognized and required by Canadian securities laws, the SEC does not recognize them. The requirements of NI 43-101 for identification of ''reserves'' are not the same as those of the SEC, and reserves reported by Pan American in compliance with NI 43-101 may not qualify as ''reserves'' under SEC standards. Under U.S. standards, mineralization may not be classified as a ''reserve'' unless the determination has been made that the mineralization could be economically and legally produced or extracted at the time the reserve determination is made. **U.S. investors are cautioned not to assume that any part of a ''Measured Resource'' or ''Indicated Resource'' will ever be converted into a ''reserve''.** U.S. investors should also understand that ''Inferred Resources'' have a great amount of uncertainty as to their existence and as to their economic and legal feasibility. **It cannot be assumed that all or any part of ''Inferred Resources'' exist, are economically or legally mineable or will ever be upgraded to a higher category.** Under Canadian securities laws, ''Inferred Resources'' may not form the basis of feasibility or pre-feasibility studies except in certain cases. Disclosure of ''contained ounces'' in a mineral resource is a permitted disclosure under Canadian securities laws, however, the SEC normally only permits issuers to report mineralization that does not constitute ''reserves'' by SEC standards as in place tonnage and grade, without reference to unit measures. Accordingly, information concerning mineral deposits set forth in this AIF and the documents incorporated by reference herein may not be comparable with information made public by companies that report in accordance with U.S. standards.

CORPORATE STRUCTURE

Incorporation

Pan American is the continuing corporation of Pan American Energy Corporation, which was incorporated under the *Company Act* (British Columbia) on March 7, 1979. Pan American underwent two name changes, the last occurring on April 11, 1995, when the present name of Pan American Silver Corp. was adopted. Amendments to the constating documents of Pan American to that date had been limited to name changes and capital alterations. In May 2006, Pan American obtained shareholder approval to amend our memorandum and articles, including the increase in our authorized share capital from 100,000,000 to 200,000,000 common shares without par value ("Common Shares"), in connection with Pan American's required transition under the *Business Corporations Act* (British Columbia).

Pan American's head office is situated at 1440 - 625 Howe Street, Vancouver, British Columbia, Canada, V6C 2T6 and our registered and records offices are situated at 1200 Waterfront Centre, 200 Burrard Street, Vancouver, British Columbia, Canada, V7X 1T2. Our website is www.panamericansilver.com.

Capital Structure

Pan American's authorized share capital consists of 200,000,000 Common Shares. The holders of Common Shares are entitled to: (i) one vote per Common Share at all meetings of shareholders; (ii) receive dividends as and when declared by the directors of Pan American; and (iii) receive a pro rata share of the assets of Pan American available for distribution to the shareholders in the event of the liquidation, dissolution or winding-up of Pan American. There are no pre-emptive, conversion or redemption rights attached to the Common Shares.

Subsidiaries

A significant portion of our business is carried on through various subsidiaries. The table below lists our significant subsidiaries and their jurisdiction of organization, and the chart following shows the structure of our organization as it relates to the country of our material mineral properties. This information is provided as at December 31, 2017.

Name of Subsidiary	Jurisdiction
Corner Bay Silver Inc. (“Corner Bay”)	Canada
Aquiline Resources Inc. (“Aquiline”)	Ontario
Minefinders Corporation Ltd. (“Minefinders”)	Ontario
Absolut Resources Inc.	Yukon
Pan MacKenzie Resources Inc.	Delaware
PAS (Lux) S.á r.l.[1]	Luxembourg
Pan American Silver (Barbados) Corp.	Barbados
Aquiline Holdings Inc.	Barbados
PASCAP Insurance (Barbados) Ltd. (“PASCAP”)[1]	Barbados
Pico Machay Cayman Ltd.	Cayman Islands
Minera Triton Argentina S.A. (“MTA”)	Argentina
Minera Argenta S.A. (“MASA”)	Argentina
Minera Joaquin S.R.L.	Argentina
Minera Aquiline Argentina S.A.[2]	Argentina
PASMEX, S.A. de C.V.	Mexico
Minera Corner Bay S.A. de C.V.	Mexico
Plata Panamericana S.A. de C.V. (“Plata Panamericana”)	Mexico
Compañía Minera Dolores, S.A. de C.V. (“CMD”)	Mexico
Minera Minefinders S.A. de C.V.	Mexico
Pan American Silver (Peru) S.A.C. (“Pan American Peru”)	Peru
Pan American Silver Huaron S.A. (“PAS Huaron”)	Peru
Compañía Minera Argentum S.A. (“Argentum”)	Peru
Minera Calipuy S.A.C.	Peru
Pan American Silver (Bolivia) S.A. (“PASB”)	Bolivia

Note:

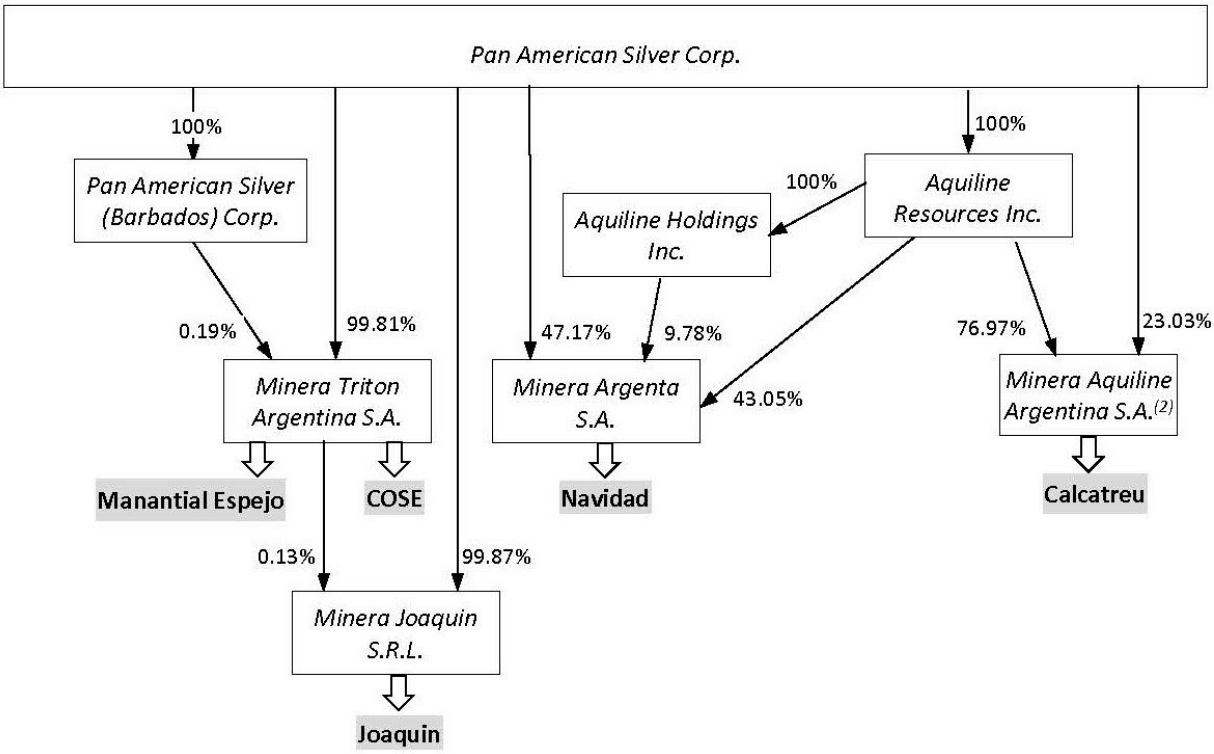
1 PAS (Lux) S.á r.l. and PASCAP are 100% owned by Pan American, but do not appear on the following organization charts.

2 Minera Aquiline Argentina S.A., holder of the Calcatreu project, was sold to a subsidiary of Patagonia Gold Plc subsequent to December 31, 2017.

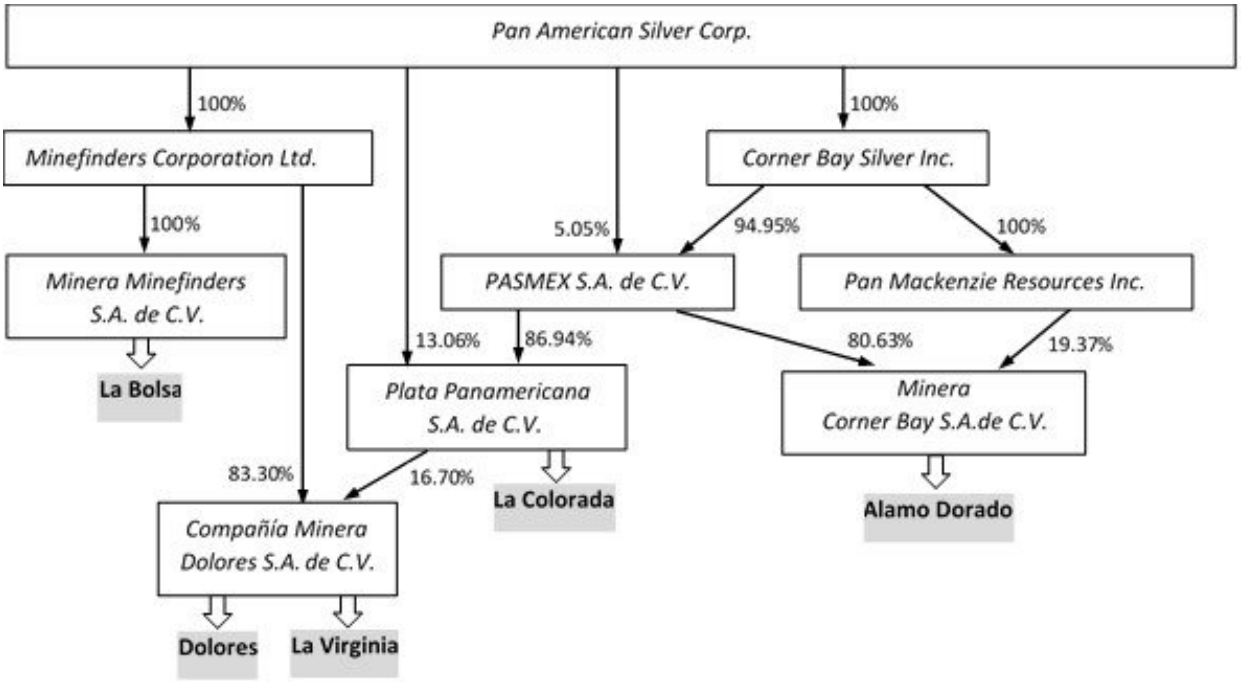
Corporate Organization by Material Mineral Property Location

The following charts depict the corporate organizational structure of our significant subsidiaries as they relate to the country of our material mineral properties as at December 31, 2017, and identifies the main property asset interests held by the respective entities[1].

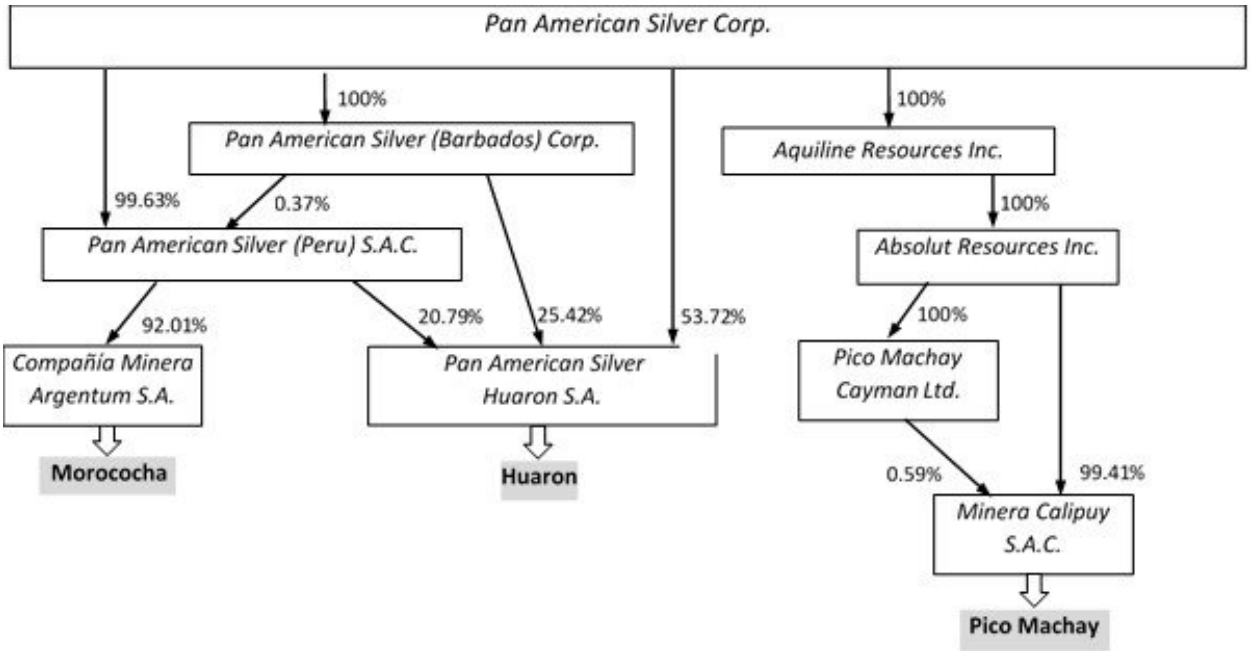
Argentina Properties



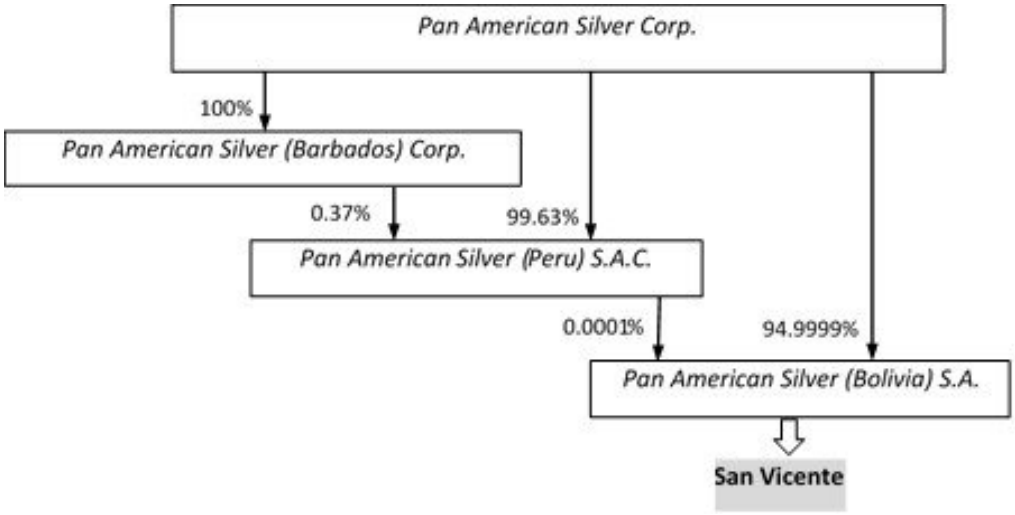
Mexico Properties



Peru Properties



Bolivia Properties



Note:

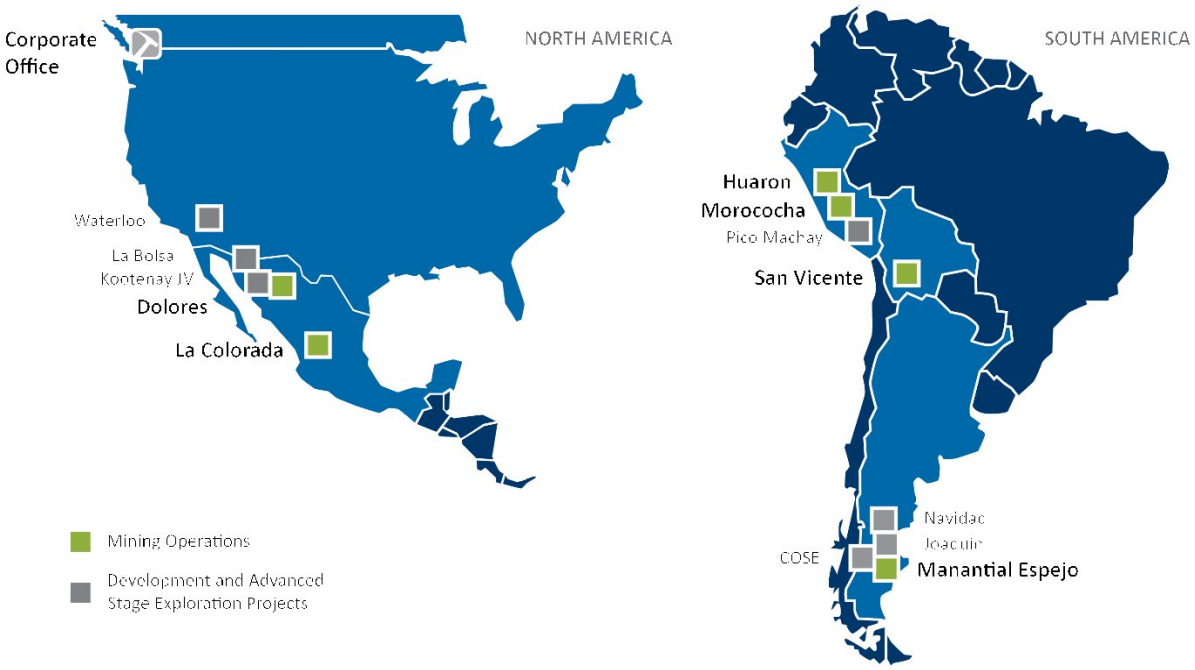
In some jurisdictions in which we operate, laws require that a company operating mineral properties must have more than one shareholder. For those jurisdictions, a nominal interest may be held by an individual or other affiliated entity and this may not be represented on the charts. Percentages shown indicate ownership of common shares and other voting interests and do not include holdings of investment shares in Peru or other non-voting shares. Percentages are rounded (in most cases, to a maximum of two decimal places).

[2] Minera Aquiline Argentina S.A., holder of the Calcatreu project, was sold to a subsidiary of Patagonia Gold Plc subsequent to December 31, 2017.

GENERAL DEVELOPMENT OF THE BUSINESS

Business of Pan American

We are principally engaged in the operation and development of, and exploration for, silver producing properties and assets. Our principal product is silver, although we also produce and sell gold, zinc, lead, and copper. At present, we carry on mining operations and are developing mining projects in Mexico, Peru, Argentina and Bolivia, and have control over non-producing silver assets in each of those jurisdictions and in the United States. Exploration work is carried out in all of those countries, as well as elsewhere throughout the world. The following map depicts the location of our operating mines and certain of our exploration projects.



Corporate Strategy and Objectives

Our mission is to be the world's preeminent silver producer with a reputation for excellence in discovery, engineering, innovation and sustainable development. We will continue to strengthen our position as one of the world's leading primary silver mining companies by acquiring or discovering silver resources that have the potential to be developed economically and to add meaningfully to our production profile while lowering consolidated unit costs of production.

The key objectives of our strategy are to:

Strategy Objective	Implementation
Increase production	After acquiring our first operating mine (Quiruvilca in Peru) in 1995, we have increased annual silver production almost every year. We also increased gold production to a record high 183,900 ounces in 2016. This long-term growth has been accomplished through a combination of acquisition, development and expansion efforts. In 2018, Pan American expects to produce between 25.0 and 26.5 million ounces of silver and between 175,000 and 185,000 ounces of gold.
Increase mineral reserves and mineral resources	Historically, we have achieved annual increases in our mineral reserves and mineral resources through exploration and acquisitions. In 2017, we added about 33.2 million ounces of new silver mineral reserves, more than replacing the 30.6 million ounces depleted through mining. Pan American's history of replacing silver ounces mined reflects our ability to invest in mine and near-mine exploration programs throughout the silver price cycle and the exploration potential of our asset portfolio. At December 31, 2017, our proven and probable silver and gold mineral reserves were approximately 288.4 million and 1.9 million ounces, respectively, up from the 285.8 million ounces of silver and slightly down from the 2.0 million ounces of gold at the end of 2016. Our measured and indicated mineral resources were approximately 686.2 million ounces of silver and 519.6 thousand ounces of gold as at the end of 2017. Please refer to the complete mineral resource and mineral reserve information under each of our material properties contained in this AIF, and to the "Reserves & Resources" page of our website at www.panamericansilver.com for additional information.
Continue to be a "Low Cost Producer"	Full year 2017 consolidated cash costs[1] to produce an ounce of silver were $4.55, net of by-product credits, which was 28% lower than 2016 cash costs. AISCSOS[1] for the full year 2017 was $10.79, slightly higher than the full year 2016 AISCSOS of $10.17. Our strategy continues to emphasize maintaining low overall unit production costs. For the full year 2018, consolidated cash costs are forecast to be between $3.60 and $4.60 per ounce of silver, net of by-product credits, while AISCSOS is expected to be between $9.30 and $10.80.
Acquire additional silver properties	We actively investigate and evaluate strategic opportunities to acquire promising silver production, development and exploration properties in those jurisdictions where we are presently active as well as elsewhere throughout the world. This includes our acquisition of the Joaquin and COSE projects in 2017, our acquisition of the Dolores mine and the La Bolsa property by virtue of acquiring Minefinders in 2012, and the acquisition of the Navidad property pursuant to our acquisition of Aquiline in 2010.
Maintain strong financial performance from mining operations	In an effort to ensure we continue to have a strong and prosperous business, financial performance is monitored against targets for operating earnings and cash flow from operations, as well as against operating measures such as production and cash costs.
Continue to be a responsible company, committed to sustainable development	We are committed to operating our business in accordance with the highest standards of governance and ethics, and the principles of sustainable development. We also place a high priority and particular emphasis on the health and safety of our personnel. We have operations in a number of countries and across diverse cultures that have the potential to both positively and negatively impact their host communities and nearby populations. Our goal is to minimize the negative impacts and maximize the benefits garnered to local populations, while at the same time achieving success from a business perspective. We conscientiously strive to operate within a framework of moral principles and values and to engage and interact regularly, and in an open and honest way, with governments, shareholders, employees, local communities, business partners and other stakeholders affected by our operations. We have initiated the implementation of the Mining Association of Canada's ("MAC") "Towards Sustainable Mining" ("TSM"), a three-year project designed to enhance our community engagement processes, drive industry-leading environmental practices and reinforce our commitment to the safety and health of our employees and surrounding communities. We have adopted, among other things, a Global Code of Ethical Conduct and a Global Anti-Corruption Policy, an Environmental Policy and a Corporate Social Responsibility Policy, that formalize how we must conduct our business and interact with stakeholders and others. We are aware that our business is in many ways dependent on these various stakeholders and we view establishing relationships of mutual trust and respect as important. By building such relationships and conducting ourselves in a transparent manner, we can further the exchange of information, address specific concerns of stakeholders and work cooperatively and effectively towards achieving mutual goals. We report annually on our sustainable development performance according to the Global Reporting Initiative Framework, with the current report available on Pan American's website.

Note:

[1] Cash costs and AISCSOS are non-GAAP measures and do not have standardized meanings prescribed by IFRS. For additional information, please see "Non-GAAP Measures" on page 2 of this AIF.

Key Developments Over the Last Three Financial Years

Year	Key Developments
2015	• Achieved record annual silver production of just over 26.1 million ounces and increased gold production to 183,700 ounces. La Colorada was our largest silver producer at approximately 5.3 million ounces for the year. Dolores was our second largest silver producer with 4.3 million ounces of silver. • Established a $300 million revolving credit facility in the second quarter of 2015. • Paid total cash dividends of $41.7 million on our Common Shares. • Spent $10.9 million on mine-site exploration and completed over 105 kilometres of diamond drilling. • Announced that we would proceed with the Dolores expansion project and made a number of advances throughout the year, including on the underground ramp and power line construction. We also continued the La Colorada expansion activities, with the shaft 50% complete by year-end, and the new sulphide processing plant approximately 70% complete. • Spent approximately $76.1 million in long-term project capital to advance the La Colorada and Dolores mine expansions.
2016	• Produced 25.4 million ounces of silver and achieved record annual gold production of 183,900 ounces. La Colorada was our largest silver producer at approximately 5.8 million ounces for the year, followed by San Vicente with 4.4 million ounces of silver. • Completed the divestiture of 13 non-core royalties, streams and payment agreements to Maverix Metals Inc. ("Maverix") in exchange for shares and warrants in Maverix (the "Maverix Transaction"). • Commissioned the new Beaty Cimarron mine shaft and sulphide plant at La Colorada, and made significant advancements at the Dolores mine expansion project. • Sold 75% of our interest in the Shalipayco project in Peru to Votorantim Metais – Cajamarquilla S.A. for $15 million cash, a free carried interest of our remaining 25% to commercial production, and a one percent (1%) net smelter returns ("NSR") royalty (which we subsequently sold to Maverix).
2017	• Produced 25.0 million ounces of silver and 160,000 ounces of gold. La Colorada was our largest silver producer at approximately 7.1 million ounces for the year, followed by Dolores with 4.2 million ounces of silver. Dolores also produced 103,000 ounces of gold. • Completed the acquisition of the Joaquin and COSE projects in Santa Cruz, Argentina. These projects will utilize the processing facilities of Manantial Espejo, and both are currently expected to begin production in 2019. • Construction of the La Colorada mine expansion was completed. Full design processing rates of 1,800 tonnes per day were achieved in mid-2017, about six months ahead of schedule. Average throughput exceeded design rates by about 5% during the last six months of 2017. • Construction of the Dolores pulp agglomeration plant was completed and commissioning commenced. Heap leach pad stacking rates achieved 97% of the expanded capacity of 20,000 tonnes per day during the last four months of 2017. • Acquired an approximate 12% interest in New Pacific Metals Corp. (approximately 16% fully diluted), providing exposure to the Silver Sand project in Bolivia. • Final production from Alamo Dorado occurred in 2017 and mining activities concluded. The mine transitioned into the reclamation phase.

Outlook for 2018

In 2018, Pan American expects to produce between 25.0 and 26.5 million ounces of silver at consolidated cash costs of between $3.60 and $4.60 per ounce of silver, net of by-product credits. In addition, we expect to produce between 175,000 and 185,000 ounces of gold. Consolidated AISCSOS are expected to be between $9.30 and $10.80 for 2018. The Company has assumed prices of Ag $16.50/oz, Au $1,250/oz, Zn $3,100/tonne, Pb $2,350/tonne and Cu $6,500/tonne in the calculation of the forecast 2018 cash costs and AISCSOS.

Pan American's 2018 capital budget is targeting a total spend of $150 to $155 million, comprised of $100 to $105 million in sustaining capital and approximately $50 million in project capital. We anticipate spending approximately $21 million on near-mine and regional exploration in 2018, drilling a total of approximately 115,000 metres.

In the first half of 2017, Pan American completed the acquisition of the Joaquin and COSE properties in Santa Cruz, Argentina. At Joaquin, we completed an exploration drill program and engineering analysis, and in December 2017, approved a $37.8 million capital investment to construct an underground mine to exploit the La Morocha deposit and truck the ore to the Manantial Espejo plant for processing. In 2018, we plan to obtain the necessary exploitation permits, construct surface facilities and acquire mining equipment, and start developing the access decline. We are also proceeding with a $23.9 million capital investment at the COSE property (excluding the final $7.5 million project acquisition payment due on the earlier of May 31, 2018, or the commencement of commercial production) to develop an underground mine. Development of the decline was started in the fourth quarter of 2017 and mining equipment, surface infrastructure and development permits are in place. During 2018, the Company plans to continue to develop the decline and obtain the exploitation permits. Production from COSE and Joaquin is expected to commence in 2019 with a life of mine of approximately 18 months for COSE and approximately three years for Joaquin.

Cash costs and AISCSOS are non-GAAP measures and do not have standardized meanings prescribed by Canadian accounting standards. For additional information, please see “Non-GAAP Measures” on page 2 of this AIF.

Principal Products and Operations

Our principal products and sources of sales are silver and gold doré and silver bearing zinc, lead, and copper concentrates. In 2017, the La Colorada, Dolores, Alamo Dorado, Huaron, Morococha, Manantial Espejo and San Vicente mines accounted for all of our production of concentrates and doré.

Consolidated production for the year ended December 31, 2017 was as follows:

	La Colorada	Dolores	Alamo Dorado	Huaron	Morococha[1]	San Vicente[2]	Manantial Espejo	Total[3]
Tonnes Milled[4]	655,000	6,605,000	452,000	928,000	677,000	328,000	793,000	10,438,000
Grade								
Silver - g/t	368	38	43	146	137	374	134	
Gold - g/t	0.32	0.66	0.17	0.23	0.28		1.88	
Zinc %	2.81			2.70	3.01	1.94		
Lead %	1.54			1.23	0.78	0.29		
Copper %				0.84	1.20	0.43		
Production								
Ounces Silver[4]	7,056,000	4,232,000	641,000	3,684,000	2,634,000	3,610,000	3,123,000	24,979,000
Ounces Gold[5]	4,290	103,020	2,120	1,150	3,530	510	45,340	159,960
Tonnes Zinc[5]	15,440			19,370	16,130	4,360		55,300
Tonnes Lead[5]	8,800			8,770	3,460	470		21,510
Tonnes Copper[5]			10	6,090	6,640	630		13,380

Notes:

1 Morococha data represents our 92.3% interest in mine production based on ownership of the operating entity.

2 San Vicente data represents our 95% interest in mine production based on ownership of the operating entity.

3 Totals may not add due to rounding.

4 Rounded to the nearest thousand.

5 Rounded to the nearest ten.

Our approximate revenue by product category for the financial years ended December 31, 2017 and December 31, 2016 was as follows:

Product Revenue	2017	2016
	($000's)	($000's)
Silver and Gold Doré	345,756	399,339
Zinc Concentrate	140,315	93,237
Lead Concentrate	161,981	125,123
Copper Concentrate	114,564	95,123
Silver Concentrate[1]	54,212	61,953
Total	**816,828**	**774,775**

Notes:

1 Silver concentrate was included in the lead and copper concentrates in the 2016 and 2017 condensed interim consolidated financial statements, and in the annual financial statements and annual information form for the year ended December 31, 2016.

Additional segmented information is set forth in Note 26 to Pan American's Audited Consolidated Financial Statements for the year ended December 31, 2017, and further information on individual mine performance and other metrics is presented in the 2017 MD&A under the heading "2017 Operating Performance".

Silver and Gold Doré

Our principal buyers of silver and gold doré produced from our La Colorada, Dolores, Alamo Dorado, and Manantial Espejo mines, once refined, are international bullion banks and traders, except for the gold produced from La Colorada, which is sold to Maverix pursuant to the Maverix Gold Stream as discussed on page 22 herein. Silver and gold doré is delivered to refineries in Mexico, Germany, and the United States, and subsequently transferred to the accounts of our buyers.

Zinc, Lead, Copper and Silver Concentrates

We have contracts with a number of smelters and traders in connection with the metals produced by our operations.

Our principal markets for copper concentrates produced from Morococha and Huaron, as well as a unique copper precipitant product from Alamo Dorado, are Canada, Chile, and China. Copper concentrates are delivered to customers first via truck to seaports, and from there by ship.

Our principal markets for zinc concentrates produced from La Colorada, Morococha, Huaron, and San Vicente are Peru, South Korea, Mexico, and Japan. Zinc concentrates are delivered to Peruvian and Mexican customers by truck. Zinc concentrates are delivered to customers in South Korea and Japan first via truck, or truck and train, to seaports, and from there by ship.

Our principal markets for lead concentrates produced from La Colorada, Morococha, and Huaron are Japan, South Korea, China, and Belgium. Lead concentrates are delivered first via truck to seaports and from there by ship.

Our principal markets for silver concentrates produced from San Vicente are Japan, South Korea, China, and Belgium. Silver concentrates are delivered first via truck to seaports and from there by ship.

Please see the discussion under "Risks Relating to Our Business – Trading Activities and Credit Risk".

Employees and Contractors

At the end of 2017, we had approximately 4,360 employees and just over 3,270 contractors. The majority of those employees and contractors were working at our operations in South America and in Mexico. Pan American also had 44 employees and 1 contractor at our head office in Vancouver as at December 31, 2017. Our Peruvian operations had just over 2,900 total employees and contractors, while our Bolivian operations had almost 630 employees and

contractors, our Argentinean operations had approximately 630 employees and contractors. Our Mexican operations had the largest workforce with over 3,400 employees and contractors.

Research and Development

While we conduct feasibility work and operational enhancement evaluations in order to improve production processes and exploration and mining operations, we do not, in the normal course, embark on any research and development activities in relation to products or services. Costs associated with this work would usually be expensed as incurred. As such, we did not incur any significant research and development costs during 2015, 2016 or 2017.

Working Capital and Liquidity Position

As at December 31, 2017, we had cash and cash equivalents and short-term investment balances of $227.5 million and working capital of $410.8 million, and our total debt outstanding at the end of 2017 was $10.6 million.

On April 15, 2015, we entered into a senior secured revolving credit facility (the "Facility") with a syndicate of eight lenders. The Facility is a USD$300 million secured revolving line of credit available for general corporate purposes, including acquisitions, and originally had a 4-year term. In 2016, we amended the Facility to extend the term by an additional year. The terms of the Facility provide the Company with the flexibility of various borrowing and letter of credit options. With respect to loans drawn based on the average annual rate of interest at which major banks in the London interbank market are offering deposits in US dollars ("LIBOR"), the interest margin on such loan is between 2.125% and 3.125% over LIBOR, depending on the Company's leverage ratio at the time of a specified reporting period. As of December 31, 2017, no amounts were outstanding under the Facility.

Our financial position at December 31, 2017, and the operating cash flows that are expected over the next twelve months lead management to believe that our liquid assets are sufficient to satisfy our 2018 working capital requirements, fund currently planned capital expenditures (including both sustaining and project capital) for existing operations, and to discharge liabilities as they come due. We also remain well positioned to take advantage of further strategic opportunities as they become available.

Environment, Community and Sustainability

All phases of our operations are subject to environmental regulation in the various jurisdictions in which we operate. To the best of management's knowledge, our activities in 2017 were, and continue to be, in compliance in all material respects with such environmental regulations applicable to our mining operations, development, and exploration activities. We have implemented an environmental policy, a corporate social responsibility policy, and a health and safety policy in which we accept our corporate responsibility to practice environmental stewardship, community engagement and development, and provide a safe and healthy workplace for our employees. We also commit to complying with all relevant industry standards, legislation and regulations in the countries where we carry on business and have begun implementation of the best practice TSM program at all our operations.

During 2017, reviews of the environmental and social performance of all our operations were led by Pan American's Vice President, Environment and Sustainability. The reviews included inspections of our mine sites and surrounding areas with key operations personnel, review of monitoring programs and operating procedures and evaluation of the principal environmental and social issues related to each of these operations. The key observations and recommendations from the reviews are reported monthly to senior management and quarterly to the Board of Directors of Pan American (the "Board of Directors") and its Health, Safety, Environment and Communities Committee (the "HSEC Committee"). In addition to the periodic reviews, detailed Corporate Environmental Audits and Social Reviews are conducted at each mine at least once every two years, in accordance with the charter of the HSEC Committee. These audits review environmental compliance and implementation of best practice procedures and management systems. During 2016, audits were undertaken at the Morococha, San Vicente, and Huaron mines, and in 2017, the La Colorada, Dolores, and Manantial Espejo mines were audited. In intervening years between audits, the implementation of the corrective actions required by each audit is checked. The Morococha, San Vicente and Huaron mines' corrective actions were found to be satisfactory in 2016. Social reviews were completed at the Huaron, Morococha, and San Vicente mines in 2017 and no material issues were identified.

Our Huaron, Morococha, La Colorada, Alamo Dorado, Dolores, and San Vicente operations were all inspected by government agencies in 2017 and no material environmental issues were recorded as a result of these inspections.

The Peruvian government modified its receiving water quality limits in December 2015. The new limits remove a controversial sulphate limit which was previously proposed, bringing the limits in line with current international standards and significantly reducing potential cost impacts to our Peruvian operations. We continue to comply with a modified "Adaptation Plan" process to ensure any discharges at our Peruvian operations remain in compliance with the water quality limits. We do not expect that any future water treatment upgrades necessary to meet the limits will have a material impact on either of our Peruvian mines.

We completed our comprehensive Sustainability Report for 2016 in accordance with the Global Reporting Initiative G4 guidelines and improved our disclosure and report quality. The report includes detailed information on our environmental, social, economic, and health and safety performance. The complete Sustainability Report is available on our website at www.panamericansilver.com.

In the financial year-end dated December 31, 2017, our environmental expenditures for concurrent reclamation were approximately $8.7 million. The closure and decommissioning liabilities were prepared using the standard reclamation cost estimator methodology developed in the State of Nevada, USA, using quantity estimates and cost data obtained at each mine site. We currently estimate the aggregate present value of expenditures required for closure and reclamation costs in respect of the Huaron, Morococha, Alamo Dorado, La Colorada, Dolores, Manantial Espejo, and San Vicente mines, along with our development properties, to be approximately $65.4 million.

Other than specific environmental and social concerns discussed in more detail elsewhere in this AIF, we are not aware of any material environment or social related matter requiring significant capital or operating outlays in the immediate future. Closure and reclamation costs and actual costs may vary, perhaps materially, from estimates and investors are cautioned against attributing undue certainty to these estimates. The reclamation and closure costs estimate for each of the operating mines and development projects was updated to reflect the conditions as of December 31, 2017.

Health and Safety

We have implemented a health and safety policy in which we accept corporate responsibility to provide a safe and healthy workplace for our employees and contractors, and commit to comply with all relevant industry standards, legislation, and regulations in the countries where we carry on business. The policy is reviewed annually to ensure that we remain current, if not ahead, of industry standards and best practices.

Periodically, both formal and informal corporate health and safety audits are conducted at our operating mines and active development properties. In 2017, six of our operating mines were subject to internal safety audits conducted by a team of safety managers and operations supervisors from some of our other operations and led by Pan American's Director of Health and Safety. Management reports health and safety findings and mitigation progress to our Board of Directors on a regular basis.

During 2017, we continued to focus on introducing new safety programs and training at our operating mines, as well as maintaining excellent safety records at our development projects. The total hours worked at operating mines and active development and exploration projects was 18.3 million, higher than the 17.5 million hours worked during 2016 due to increased hours worked on the Dolores expansion projects, only partially offset by fewer hours worked at La Colorada following the completion of the expansion projects there. The number of lost time injuries ("LTIs") increased to 23, which resulted in a lost time injury frequency ("LTIF") of 1.26 during 2017, compared to 0.74 during 2016 and 1.09 during 2015. LTIF is calculated as follows:

$$LTIF = \frac{(\#\ of\ accidents) * (1{,}000{,}000)}{Total\ hours\ worked}$$

During 2017, the Company continued efforts on mine safety and continued with the implementation of a fatal accident reduction initiative to bolster existing programs and to create even greater awareness amongst our personnel in order to significantly reduce the occurrences of unpredictable events that are often at the root of serious incidents. Unfortunately, despite these efforts, there was a fatality at our San Vicente mine and at our La Colorada mine during the year.

In 2005, we introduced the "Chairman's Safety Award" which is presented to our mine with the best overall safety performance. In 2017, our Dolores mine in Mexico, our Manantial Espejo mine in Argentina, and our Huaron mine in Peru each had excellent safety records. The winner of the Chairman's Safety Award for 2017 was not yet determined as at the date of this AIF.

Operating and Development Properties

Pursuant to National Instrument 51-102 – *Continuous Disclosure Obligations*, ("NI 51-102"), we have identified the following properties and projects as being material: the La Colorada mine, the Dolores mine, the Huaron mine, the Morococha mine, the San Vicente mine, and the Manantial Espejo mine. We have also identified the Navidad property and Joaquin property as material properties for 2017. We do not consider any of our other development or investment properties to be material properties for the purposes of NI 51-102.

Certain statements in the following property summaries are based on and, in some cases, extracted directly from the relevant Technical Reports identified under the heading "Scientific and Technical Information" beginning on page 6.

Mineral Reserve and Mineral Resource Estimate Information

The process for estimating mineral reserves and mineral resources at our properties is described below in each property section. Although we believe that our mineral reserve and mineral resource estimates will not be materially impacted by external factors such as metallurgical, safety, environmental, permitting, legal, taxation, and other factors disclosed in this AIF, there can be no assurance that these factors will not have an impact. There are numerous uncertainties inherent in estimating mineral reserves and mineral resources. The accuracy of any mineral reserve and mineral resource estimate is the function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Results from drilling, testing, and production, as well as a material change in metal prices or a change in the planned mining method, subsequent to the date of the estimate, may justify revision of such estimates and may differ, perhaps materially, and investors are cautioned against attributing undue certainty to mineral reserves and mineral resources.

I. Operating Properties

A. Mexico

(i) La Colorada Mine

Project Description, Location, and Access

The La Colorada underground silver mine is located in the Chalchihuites district in Zacatecas State, Mexico, approximately 99 kilometres south of the city of Durango and 156 kilometres northwest of the city of Zacatecas. The La Colorada mine is accessed primarily from the cities of Durango and Zacatecas by paved highway and all weather gravel roads.

Our wholly-owned subsidiary, Plata Panamericana, owns and operates the mine. The La Colorada property, including certain exploration concessions outside the mining area, is comprised of 56 mining claims totalling approximately 8,395 hectares. We pay an annual fee to maintain the claims in good standing, and to our knowledge, we have met all of the necessary obligations to retain the property.

We have control over approximately 1,119 hectares of surface rights covering the main workings. All of the La Colorada mineral reserves and mineral resources and all of the known mineralized zones, mine workings, the processing plant, effluent management and treatment systems, and tailings disposal areas are located within the mining claims controlled by us.

In 2016, as part of the Maverix Transaction, Maverix acquired a gold stream equivalent of one hundred percent (100%) of the payable gold production from the La Colorada mine, less a fixed price of USD$650 per ounce for the life of the mine (the "Maverix Gold Stream"). In 2017, the Maverix Gold Stream resulted in Maverix acquiring 2,347 ounces of gold.

To the best of our knowledge, La Colorada is not subject to any other royalties, overrides, back-in rights, payments, or other agreements and encumbrances, other than governmental taxes, fees and duties. The Company's Mexican

operations are subject to governmental taxes, fees and duties, including: (i) a special mining duty ("SMD") of 7.5% applied to taxable earnings before interest, inflation, taxes, depreciation, and amortization; and (ii) a deductible extraordinary mining duty ("EMD") of 0.5% that is applied to the sale of gold, silver, and platinum.

In late December 2016, the Zacatecas state government also enacted a new set of ecological taxes which took effect on January 1, 2017 (the "Zacatecas Tax"). The Zacatecas Tax applies broadly across a number of industries in the State of Zacatecas that involve extraction, emissions to the air, soil or water, and deposits of residue or waste. The Zacatecas Tax primarily effects the La Colorada mine in respect of the materials placed in its tailings storage facility. We paid approximately $1.0 million in respect of the Zacatecas Tax in 2017, however the validity of the Zacatecas Tax has been challenged on constitutional grounds.

While there are no known significant factors or risks that we currently anticipate will affect access or title, or the right or ability to perform work on the property, including permitting and environmental liabilities, please refer to "Risks Related to Our Business" starting on page 75 for a general discussion of the risks relating to our operations.

History

In 1925, the Dorado family operated mines at two locations on the La Colorada property. From 1929 to 1955, Candelaria y Canoas S.A., a subsidiary of Fresnillo S.A., installed a 100 tonne per day ("tpd") flotation plant and worked the old dumps of two previous mines on the La Colorada property. From 1933 to the end of World War II, La Compañía de Industrias Peñoles also conducted mining operations on the property. From 1949 to 1993, Compañía de Minas Victoria Eugenia S.A. de C.V. operated a number of mines on the La Colorada property. In 1994, Minas La Colorada S.A. de C.V. ("MLC") acquired the exploration and exploitation claims and surface rights of Compañía de Minas Victoria Eugenia S.A. de C.V. Until 1997, MLC conducted mining operations on three of the old mines on the La Colorada property at a rate of approximately 150 tpd.

Historically, exploration has been in the form of development drifting on the veins. Prior to our ownership, 131 diamond drill holes had been drilled. In 1997, we entered into an option agreement with MLC, during which time we conducted exploration and diamond drilling programs as part of our due diligence reviews. We acquired the La Colorada mine from MLC in April 1998 and have focussed our production on the Candelaria, Estrella, and Recompensa mines. No activity takes place at the Campaña mine.

Geological Setting, Mineralization, and Deposit Types

The La Colorada property is located on the eastern flanks of the Sierra Madre Occidental mountain range at the contact between the Lower Volcanic Complex and the Upper Volcanic Supergroup. The oldest rocks exposed in the mine area are carbonates and calcareous clastic rocks overlain by a conglomerate unit. Most of the outcrop in the mine area is altered dacite of the regional Lower Volcanic Complex. The stratigraphically highest rocks in the mine area are felsic tuffs correlated with the Upper Volcanic sequence.

Thirteen breccia pipes up to 100 metres in diameter have been identified on the property, which can extend vertically more than 400 metres below the surface. The breccias contain clasts of limestone and trachyte, often mineralized, in an altered trachyte matrix. Clasts of vein material have been found in the breccias, suggesting that the pipes postdate the vein emplacement.

East to northeast striking faults dipping mostly moderately to steeply to the south form the dominant structures in the property area and controlled the deposition of mineralization by acting as conduits for mineralizing hydrothermal fluids.

La Colorada is a typical epithermal silver-gold deposit, with a transition in the lower reaches of the deposit to a more base metal predominant system. There are three separate active mining areas on the property, including the Candelaria, Estrella, and Recompensa areas. The main structure at Candelaria strikes generally east west. The west part of the vein is referred to as HW and the east part is referred to as NC2, and there are a number of off-splits from these veins. The Estrella area includes the Amolillo vein, which is a split from the HW vein, and the Palomas vein, which is a split from Amolillo. The Recompensa zone produces or has produced from three areas: the Recompensa vein; Erika, which is a split from the Recompensa vein; and the Yuri replacement body, which lies between Erika and Recompensa.

Four dominant styles of mineralization are present at La Colorada, including breccia pipes, vein-hosted mineralization, replacement mantos within limestone, and deeper seated transitional mineralization.

Mineralization in the breccia pipes generally has lower silver values and elevated base metal values. Mineralization is associated with intense silicification and occurs as disseminated galena and sphalerite with minor chalcopyrite and bornite. Sulphides are found in the clasts and the matrix.

Most mineralized veins on the property strike east to northeast and dip moderately to steeply to the south and are generally less than two metres in width. The HW Corridor at the Candelaria mine strikes east-west and dips moderately to the south, with true widths of approximately up to 15 metres, but most of the economic mineralization is located in quartz veins, which are on average one to two metres wide. Where the veins are unoxidised, galena, sphalerite, pyrite, native silver, and silver sulphosalts are present. The major mineralized veins are strongly brecciated and locally oxidised.

Manto style mineralization is found near vein contacts where the primary host rock is limestone. This style of mineralization was previously mined at Recompensa and is also present in areas of the Candelaria zone. The mantos can form bodies up to six metres wide. The mineralogy of the mantos is characterized by galena and sphalerite with minor pyrite and chalcopyrite.

The deep seated transition mineralization, also known as NC2 Deep at the Candelaria mine, consists of both vein type mineralization and more diffuse stockwork and breccia zones.

Deep drilling has defined a restricted manto replacement body with lower silver-gold grades and higher lead zinc grades at the 1,000 metre level and remains open to depth. It is adjacent to the known vein system which continues at that depth.

The current mineral resource and mineral reserve currently comprises vein and manto hosted mineralization. The economically most important veins are the NC2 and NCPHW veins at the Candelaria mine, which together comprise 30% of the total mineral reserve ounces of silver as well as the Amolillo vein at the Estrella mine, which contains a further 30% of the total mineral reserve. The majority of the silver mineralization is found in quartz veins that range from 2.0 to 2.9 metres wide.

The NC2 vein contains approximately 13% of the mineral resource and mineral reserve ounces of silver. It is a narrow, one to seven metre wide mainly sulphide and partly oxide vein with a strike length of over 900 metres. It is open to the east where it is cut by a trachyte dyke, and has been confirmed by drilling and drifting to continue in both width and grade on the other side of the dike. We drilled a hole that intersected the vein 300 metres below the current mineral reserves and believe the down-dip exploration potential is significant. There are a number of other splits from this vein numbered NC1 to NC11 that, including NC2, contain approximately 38% of the mineral resource and mineral reserve ounces of silver.

The HW vein, also at the Candelaria mine, is a one to two metre thick vein with a strike length of over 1.1 kilometres. The HW Corridor consists of four structures. The majority of the silver mineralization is found in quartz veins which average two metres wide but can widen up to six to seven metres at the intersections with the HW vein.

At the Estrella mine, the Amolillo oxide/sulphide vein is located 500 metres north of the NC2 and HW vein complex and approximately along strike to the east of the Recompensa vein. The vein has an average width of 1.8 metres and a strike length of approximately 1,300 metres. Our drilling results indicate that the Amolillo vein could be key to a possible mine expansion. Diamond drilling has intersected the vein 300 metres below the deepest mining level, and expanded the lateral extension to the east and west by 900 metres for a total of 1,300 metres of current strike length.

The Recompensa mine contributes the fewest silver ounces to the mineral resources and mineral reserves. The main zones being exploited are the Recompensa and Erika veins and the Yuri manto replacement body located between the two veins. The Recompensa and Yuri are located more than a kilometre northwest of the NC2 and HW vein complex. The vein mineralization averages about 1.6 metres wide in the economically mineable zones, and contains a minor amount of oxide but mostly sulphide material. Erika is a hangingwall split from the Recompensa vein and is relatively narrow at an average width of 0.7 metres in the economically mined zone. It contains only sulphide material.

Exploration

Mining had taken place at La Colorada for several decades prior to any modern exploration work, which identified most of the major structures. For this reason there has been little surface sampling, geophysics, or other surveys. For the past several years we have typically drilled on the order of 25,000 - 30,000 metres each year from surface and underground.

Drilling

The mine undertakes drilling on an annual basis for mineral resource and reserve definition. The drilling database contains on the order of thousands of drillholes. All drilling at La Colorada is diamond core drilling and is performed from both surface and underground by either mine employees using a Company owned drill or by specialized drilling contractors under the supervision of the mine geology department. In the past, underground holes were drilled BQ size until 2000 when the drillhole diameter in the HW corridor was increased to HQ size to improve core recovery. From 2008 to present the surface hole size has been increased to HQ and underground holes are drilled either at HQ, NQ or BQ sizes depending on the location and/or depth of the holes.

Sampling, Analysis, and Data Verification

Channel sampling is performed in ore development areas and stopes by sampling crews under the supervision of the mine geologist. Both channel and drill core sample intervals are approximately a metre in width. There are no known drilling, sampling, or recovery issues that could materially impact the reliability of the results. Underground channel samples are brought directly to the on-site laboratory at the end of each shift. Underground drill cores are brought to the core shack, which is fenced and locked when there are no geology department employees present. Once the drillhole has been logged and sampled, the samples are transported to the on-site laboratory. We have no reason to believe that the integrity of the samples has been compromised.

We have used four commercial labs in the past for exploration assaying at La Colorada, including Bondar Clegg (Vancouver, B.C.), ALS Chemex (Vancouver, B.C.), Luismin (Durango, Mexico) and ALS Chemex de México (Guadalajara, México). All gold and silver assays by the commercial labs have been done using fire assay with either an atomic absorption ("AA") or gravimetric finish. Base metals were assayed using acid digestion and AA determination. All samples are now prepared at the La Colorada mine laboratory, which is ISO9001:2008 certified and operated by our employees. Samples are analyzed for gold and silver using fire assay with gravimetric finish, and for lead, zinc, and copper by acid digestion followed by AA.

The mine geology department conducts a quality assurance/quality control ("QAQC") program that is independent from the laboratory. The program includes the insertion of standards and blanks to the on-site laboratory and the submission of pulp duplicate samples to an external laboratory. The results of the QAQC samples demonstrate acceptable accuracy and precision and that no significant contamination is occurring at the mine laboratory.

Mineral Processing and Metallurgical Testing

As part of normal plant operation procedures, metallurgical analysis and testing is undertaken as required. The majority of these analyses are to assess mill performance and metallurgical recovery. Metal recovery forecasts used in our mine plans are based on the historical performance of the plant operations and the tonnes and grade of material that is planned to be mined.

Mineral Resource and Mineral Reserve Estimates

Management estimates that mineral reserves at La Colorada, as at December 31, 2017, are as follows:

La Colorada Mineral Reserves [1, 2, 3]

Reserve Category	Tonnes (Mt)	Grams of Silver per tonne	Grams of Gold per tonne	% Zinc	% Lead
Proven	3.7	413	0.33	2.97	1.65
Probable	4.1	378	0.31	2.14	1.23
TOTAL	7.7	395	0.32	2.54	1.43

Notes:

1 Estimated using a price of $18.50 per ounce of silver, $1,300 per ounce of gold, $2,600 per tonne of zinc and $2,200 per tonne of lead. Totals may not add due to rounding.

2 Mineral reserve estimates for La Colorada have been prepared under the supervision or were reviewed by Christopher Emerson, FAusIMM, and Martin Wafforn, P. Eng., as Qualified Persons as that term is defined in NI 43-101.

3 Lead and zinc grades shown are the average for the deposit. However, the base metals are only payable in the concentrates produced from the sulphide ores and not in the doré produced from the oxide ores.

Management estimates that mineral resources at La Colorada, as at December 31, 2017, are as follows:

La Colorada Mineral Resources [1, 2, 3]					
Resource Category	**Tonnes (Mt)**	**Grams of Silver per tonne**	**Grams of Gold per tonne**	**% Zinc**	**% Lead**
Measured	0.5	220	0.22	1.04	0.74
Indicated	1.8	221	0.19	0.66	0.39
Inferred	3.7	247	0.25	3.39	2.11

Notes:

1 These mineral resources are in addition to mineral reserves. Estimated using a price of $18.50 per ounce of silver, $1,300 per ounce of gold, $2,600 per tonne of zinc and $2,200 per tonne of lead.

2 Mineral resource estimates for La Colorada have been prepared under the supervision, or were reviewed by Christopher Emerson, FAusIMM, and Martin Wafforn, P. Eng., as Qualified Persons, as that term is defined in NI 43-101.

3 Lead and zinc grades shown are the average for the deposit. However, the base metals are only payable in the concentrates produced from the sulphide ores and not in the doré produced from the oxide ores.

Mineral resources are estimated using a polygonal method based on the data collected from both diamond drilling and underground channel samples. A long section is produced of each structure and then divided into mineable blocks. The volume of the block is estimated from the average width of the vein or mineralization intersection of each drillhole or channel located within a 30 metre radius of the mining block. The grade of each block is estimated using inverse distance squared from the centre of the block by the length weighted average of the grade of the vein or mineralization of each intersection within a 30 metre radius of the block. The samples are assessed and treated for extreme sample grades prior to averaging. Average bulk density values from samples selected from spatially and geologically representative locations are applied to each mining block volume to estimate the tonnes of each block. The data is processed using Excel software for each structure, then combined to arrive at the total tonnes and grade of the mineral resource estimate. The mineral resource estimates are updated annually with new information and updated geological interpretations and depleted annually for mining in the previous year.

Planned dilution is applied to each intersection to achieve a minimum mining width and to account for backfill, some of which is mucked each lift during the cut and fill stoping. Additional unplanned dilution is also applied in order to correlate with the reconciliation between the mineral reserve and the plant results. Mining recovery is estimated depending on vein width and based on experience and observation at each mining area. A value per tonne is calculated in each block considering the value paid for each metal, the expected metallurgical recovery of each metal to concentrate or to doré, and costs including insurance, penalties, refining, and transport.

Mineral resource confidence classifications are based on the proximity and density of sample information in each block, as well as the interpretation and the experience of the mine geologist. Mineral resources are then converted to mineral reserves depending on the resource classification and whether they can be economically mined.

Mineral reserve estimates are based on a number of assumptions that include metallurgical, taxation, and economic parameters. Increasing costs or increasing taxation could have a negative impact on the estimation of mineral reserves. There are currently no known factors that may have a material negative impact on the estimate of mineral reserves or mineral resources at La Colorada.

Mining Operations

The mining method used at all three mines is cut and fill stoping, with mine levels spaced 30 metres apart vertically, which allows optimization of ore recovery and selectivity from irregular, steeply dipping veins. Ground support is provided by rock bolts, with screen and shotcrete as required, as well as by backfilling the voids created by mining with development rock or mill tailings as the ore extraction advances. Either hand-held drills or electric hydraulic jumbo drills are used for development mining to access the ore, depending on the size of the excavation required.

Ore extracted from the Candelaria and Estrella mines is hoisted through the Beaty Cimarron Shaft and hauled to the mill crusher stockpile. When required, Candelaria and Estrella ore can be hauled up to the surface using one of the mine access ramps. Ore extracted from the Recompensa mine is hauled by truck up a ramp and to the mill crusher stockpile.

Processing and Recovery Operations

The operation produces both oxide and sulphide ore, which is processed through separate circuits. The daily processing capacity of the oxide plant is nominally 650 tonnes of ore. A new sulphide ore processing plant began operating in 2016 as part of the mine's expansion project, which is expected to increase annual silver production to approximately 7.4 to 7.7 million ounces in 2018, while also resulting in significant increases in zinc and lead production. The total throughput at both plants reached in excess of 1,800 tpd in 2017 with the current life of mine plan projecting processing of 1,400 tpd of sulphide ore and 400 tpd of oxide ore.

The oxide plant comprises a conventional cyanide leach plant consisting of crushing, grinding, leaching, Merrill Crowe zinc precipitation, and on-site refining to produce precious metal doré. The sulphide plant is a conventional flotation plant comprised of crushing, grinding and selective lead and zinc froth flotation circuits to recover precious and base metals into separate lead and zinc concentrates. Tailings from both plants are delivered as slurry to separate lined tailings storage facilities. Tailings from the sulphide plant are directed, as required, to a hydraulic backfill plant for re-use underground as backfill in the stopes.

The Beaty Cimarron shaft, which is located between the Candelaria and Estrella mines, was commissioned in 2016 and increased hoisting capacity to 2,300 tpd. During 2017, we processed 163,000 tonnes in the oxide plant and 492,000 tonnes in the sulphide plant, producing 7.1 million ounces of silver, 4,300 ounces of gold, 15,400 tonnes of zinc, and 8,800 tonnes of lead. In 2017, silver recovery averaged 83.7% from the oxide processing circuit and 93.1% from the sulphide processing circuit.

All precious metal doré produced at La Colorada is sent to one of two arm's length precious metals refineries for refining under fixed-term contracts. After refining, the silver is sold on the spot market to various bullion traders and banks, and the gold is sold to Maverix pursuant to the Maverix Gold Stream. All lead and zinc concentrates produced at La Colorada are sold to arm's length smelters and concentrate traders under negotiated fixed-term contracts, which consider the presence of any deleterious elements. To date, we have not experienced difficulty with renewing existing or securing new contracts for the sale of the La Colorada doré or concentrates, however, there can be no certainty that we will always be able to do so or what terms will be available in the future. We regularly review the terms of smelting and refining agreements and the terms are considered to be within industry norms. Please see "Risks Related to our Business – Trading Activities and Credit Risk".

The revenues per type of concentrate and doré produced by the La Colorada mine for the past three years were as follows:

2017	**Revenue[1, 2]**	**Quantity Sold**	
Silver and Gold in Doré	$21.7 million	1,365,000	ounces of silver
		632	ounces of gold
Lead Concentrate[3]	$112.1 million	20,688	tonnes
Zinc Concentrate[3]	$37.9 million	26,749	tonnes
2016			
Silver and Gold in Doré	$21.0 million	1,310,000	ounces of silver
		540	ounces of gold
Lead Concentrate[3]	$78.0 million	13,940	tonnes
Zinc Concentrate[3]	$19.3 million	19,270	tonnes
2015			
Silver and Gold in Doré	$21.5 million	1,410,000	ounces of silver
		880	ounces of gold
Lead Concentrate[3]	$56.9 million	9,400	tonnes
Zinc Concentrate[3]	$11.2 million	14,930	tonnes

Notes:

1 Consists of sales to arm's length customers.

2 Calculated as gross revenue plus export credit incentives (as applicable), less treatment and refining charges and export taxes.

3 Lead concentrates contain payable silver and gold. Zinc concentrates contain payable silver.

Infrastructure, Permitting, and Compliance Activities

The mine workings, processing plant, tailings and waste disposal areas, effluent management and treatment facilities, roads, and power and water lines have already been constructed and are located within the boundaries of the mining leases and surface rights controlled by us. To the best of our knowledge, all permits and licenses required to conduct our activities on the property have been obtained and are currently in good standing.

The mine purchases electrical power from the Mexican national power utility and back up diesel power is also available. As part of the expansion project, the mine constructed a new 115 kV power line in 2017. Water for the mining operation is supplied from the underground mine dewatering systems and is adequate for the existing and planned future requirements of the mine.

An environmental impact statement ("EIS") and risk assessment on the La Colorada property was submitted to the Mexican environmental authorities in early March 1999. The EIS described the impact of proposed development and mining activities and provided conceptual plans for closure and remediation. The EIS was approved by the Mexican authorities in November 1999 and renewed in late 2010. In 2013, the Mexican authorities approved a modification to the existing environmental permits that allowed the expansion of the mine and process plant up to 2,000 tpd. A modification application to the plant expansion permit was approved in early 2015.

La Colorada has voluntarily participated in the Mexican Environmental Protection Authority's ("PROFEPA") "Clean Industry" Program, which involves independent verification of compliance with all environmental permits and the implementation of good practice environmental management procedures and practices. The mine obtained its first certification in 2008 and has been re-certified every two years since, with the most recent certificate awarded in 2014. As of December 31, 2017, the mine continued in the re-certification process due to administrative delays.

The main environmental projects at La Colorada focus on the stability and revegetation of historic tailings facilities and an upgrade to the existing mine water treatment infrastructure completed in 2016.

A closure cost estimate for La Colorada was prepared according to State of Nevada approved SRCE methodology in 2011 and is updated every year. Pan American has estimated the present value of the final site reclamation costs for the La Colorada property to be approximately $5.9 million as at December 31, 2017. See "Narrative Description of the Business – Environmental Protection" for further disclosure regarding forward-looking statements related to reclamation costs.

Safety audits are conducted by Pan American's Director of Health and Safety and safety managers from some of our other mines.

La Colorada was the recipient of the prestigious "Casco de Plata" award for 2007, 2009, 2013, 2014, and 2015 for the best safety record for underground mines in Mexico with in excess of 500 employees, and took second place in the same category in 2013. In 2009 and in 2014, La Colorada was awarded our Chairman's Safety Award. During 2017, personnel employed at the mine attended over 56,000 hours of training.

Capital and Operating Costs

In 2017, total capital additions at La Colorada were approximately $20.1 million, with $6.9 million invested in expenditures related to the expansion project. The new sulphide plant and mine shaft were completed in 2016, and the 115 kV power line was completed in 2017. The remainder of the $20.1 million was invested in sustaining capital additions consisting of ventilation raises, equipment replacement and overhaul, diamond drilling, tailings storage facility expansion, site improvements and access road works.

Capital investments in 2018 will total between $21.5 million to $22.0 million. A total of $5.0 million is to be spent in a tailings storage facility lift project intended to generate life of mine savings. The remaining capital investment of between $16.5 million and $17.0 million is primarily related to approximately $12.0 million in equipment additions, replacements and overhauls; $2.0 million for the backfill project; and $2.0 million for exploration.

In 2017, direct operating costs at La Colorada were $67.2 million.

Exploration, Development, and Production

In 2018, we anticipate producing between 7.4 million and 7.7 million ounces of silver, between 4,200 and 4,300 ounces of gold, 17,000 and 18,000 tonnes of zinc, and between 9,200 and 9,400 tonnes of lead. We plan to undertake approximately 15,400 metres of exploration drilling in 2018.

(ii) Dolores Mine

Project Description, Location, and Access

The Dolores open pit silver-gold mine is located in the Sierra Madre Occidental mountain range in the state of Chihuahua, in the municipality of Madera, approximately 250 kilometres west of the city of Chihuahua. The main road access to the property is by maintained dirt access road from Yepachic, Chihuahua. Access is also possible by light aircraft landing on a dirt strip located about eight kilometres from the mine.

In 2012, Pan American acquired all of the issued and outstanding shares of Minefinders and assumed control of the Dolores mine which was held by CMD, a Mexican subsidiary of Minefinders. The area of the concessions is 27,700 hectares. We make the required payments to maintain the concessions in good standing, and to our knowledge, we have met all of the necessary obligations to retain the property. To the best of our knowledge, all permits and licenses required to conduct our activities on the property have been obtained and are currently in good standing.

Much of the surface rights on the property are comprised in communal land registered with the National Agrarian Registry of Mexico (such communal land areas are referred to as an “ejidos”). We have surface rights agreements with the local ejido community, Ejido Huizopa, and with several individual members of the Ejido allowing us irrevocable access and the right to carry out exploration and mining activities for a term of 15 years with a right to extend for a further 15 years. These surface rights provide us with access to our mining operations, waste storage areas, heap leach pad areas, and other facilities.

All of the known mineralized zones, mineral resources and mineral reserves, mine workings, processing plant, effluent management and treatment systems, and heap leach pad areas relating to Dolores are located within the boundaries of the concessions and surface rights.

An NSR royalty of 2% payable on all metal production, plus an additional NSR royalty of 1.25% on gold production, is payable to RG Mexico Inc., a subsidiary of Royal Gold Inc. These royalties are only on the portion of the deposit contained within one of the three concessions. To the best of our knowledge, the Dolores mine is not subject to any other royalties, overrides, back-in rights, payments or other agreements and encumbrances. The Company’s Mexican operations are subject to governmental taxes, fees and duties, including the SMD and the EMD, as described in more detail under “La Colorada – Project Description, Location and Access”.

While there are no known significant factors or risks that we currently anticipate will affect access or title, or the right or ability to perform work on the property, including permitting and environmental liabilities, please refer to "Risks Related to Our Business" starting on page 75 for a general discussion of the risks relating to our operations.

History

Placer mining began in the region of the Dolores mine in the 1860s and was followed by lode mining in 1898. A 25 tpd stamp mill began treating the Dolores ore from 1915 until early 1929, when it was destroyed by fire. Only sporadic production occurred from 1929 to 1931, after which there are no records of any historical production. Incomplete mining records from between 1922 and 1931 indicate that approximately 372,000 tonnes of ore containing over 116,000 ounces of gold and six million ounces of silver were produced from several underground mine operations, including Dolores.

The property lay idle until 1993 when Minefinders began acquiring a land position in the district. Minefinders began a full exploration program in 1995 and commenced diamond drilling and reverse circulation drilling programmes in 1996. In July 1996, Minefinders granted Echo Bay Mines (“Echo Bay”) an option in the property and Echo Bay commenced drilling, sampling, environmental data collection, and metallurgical testing. Minefinders bought back the option, including the technical information collected by Echo Bay, in 1997.

Following construction, Minefinders commenced mining in 2008. During the 2008 to 2011 period, Minefinders mined 25.5 million tonnes and stacked 18.3 million tonnes of ore on the leach pads, producing 210,660 ounces of gold and 6.2 million ounces of silver.

We acquired the Dolores mine at the end of March 2012 and began to operate the mine in April 2012.

Geological Setting, Mineralization, and Deposit Types

Dolores occurs within the Sierra Madre Occidental volcanic belt, a metallogenic terrane well known for its epithermal precious metal deposits. The lower part of the arc comprises calc-alkaline batholiths and equivalent volcano sedimentary rocks referred to as the 'Lower Volcanic Series'. This magmatic activity was followed by two periods of major ignimbrite eruptions. Collectively these constitute the 'Upper Volcanic Series'.

The most important faults, from west to east, are the Chupacabras, San Francisco, and East faults. The San Francisco fault and its footwall host most of the mineralization at Dolores. The immediate footwall and hanging wall of the San Francisco fault form a 500 metre wide northwest-striking corridor of igneous intrusions broadly following the fault.

Silver and gold mineralization at Dolores is hosted in north-northwest trending hydrothermal breccias and sheeted vein zones in the order of 5 metres to 10 metres wide. Most high grade mineralization occurs along three major structures that provided the conduit for metal-bearing hydrothermal fluids. Silver and gold mineralization identified on the surface at Dolores lies over an area 4,000 metres long and up to 1,000 metres wide. The extent of mineralization at depth and along strike has not yet been fully defined.

The highest grade mineralization occurs within the San Francisco Breccia, a well-defined and continuous hydrothermal breccia and stockwork zone that occurs in the immediate footwall of the post-mineral San Francisco Fault. The breccia trends further away from the fault towards the north until it joins a second major breccia zone known as the Alma Maria Breccia.

Hydrothermal breccias carry the highest silver and gold grades and pass outward into vein stock works. The veins are thin, rarely over 30 mm, and tend to occur as sheeted swarms. Economically mineable grades occur where the veins are sufficiently closely spaced.

Exploration

Minefinders carried out reconnaissance geological mapping, detailed mapping, and geophysical surveys including induced polarization surveys, resistivity surveys, and magnetic surveys. Minefinders also collected rock chip samples from the surface and underground, and followed up on promising targets with both reverse circulation and diamond drilling. Since we acquired the Dolores property, we have continued with a program of near mine geological mapping and diamond drilling.

Drilling

The mine undertakes surface and underground drilling on an annual basis for mineral resource and reserve definition. Since we acquired the property in 2012, diamond drilling has been performed using PQ, HQ, and NQ sized diamond drill rigs by Rock Drill of Aguascalientes, Mexico, and other contractors. Approximately 1,500 drillholes have been completed at the property, mostly focussed on a pattern over the mineral resources and mineral reserves, and roughly spaced 25 metres along strike. The majority of the drillholes were drilled from surface. In 2016 we began drilling from underground.

Sampling, Analysis, and Data Verification

Reverse circulation drillholes were drilled either wet or dry, depending on ground conditions, and a sample was selected from the length of the drill rod. Diamond drillhole samples are marked according to geological features by the mine geologist after logging. Most drill core samples have been taken at 2 metre intervals. There are no known drilling, sampling, or recovery issues that could materially impact the reliability of the results.

All samples are transported to the core logging shed by mine employees and the shed is locked when no geological staff is present. Samples are collected from the mine by the commercial laboratory where they are maintained under the control of the laboratory. We have no reason to believe that the integrity of the samples has been compromised.

Minefinders sent samples to Bondar Clegg, ALS Chemex, or Inspectorate laboratories for preparation and analysis. Silver assays were mostly prepared using a multi-acid digestion technique and AA spectrometry. Any sample with an assay greater than 100 or 200 grams per tonne silver was re-assayed using fire assay with gravimetric finish. Gold was analyzed using fire assay with AA finish and with gravimetric finish if the assay was greater than one or two grams per tonne, depending

on which laboratory was used. Since acquiring the project, we have sent samples to SGS Laboratories in Durango, Mexico. Samples are assayed for gold using fire assay with AA finish, and by fire assay with gravimetric finish for samples greater than 10 grams per tonne of gold. Silver is analysed by three acid digestion with ICP-AES finish for trace silver values, by three acid digest with AA finish for samples less than 300 grams per tonne silver, and by fire assay with gravimetric finish for samples containing greater than 300 grams per tonne silver.

Since acquiring the Dolores mine, we have implemented an industry standard QAQC program including the submission of certified standards, blanks, and duplicate samples to the laboratory and review the results regularly to ensure the appropriate action is taken in the event of a QAQC failure.

Mineral Processing and Metallurgical Testing

As part of normal plant operation procedures, metallurgical analysis and testing is undertaken as required. The majority of these analyses are to assess mill performance and metallurgical recovery. Metal recovery forecasts used in our mine plans are based on the recovery model, historical performance of the plant operations and the tonnes, grade and type of material that is planned to be mined.

Mineral Resource and Mineral Reserve Estimates

Management estimates that mineral reserves for the Dolores mine, as at December 31, 2017, are as follows:

Dolores Mineral Reserves [1, 2]			
Reserve Category	**Tonnes (Mt)**	**Grams of Silver per tonne**	**Grams of Gold per tonne**
Proven	34.7	30	0.93
Probable	16.3	25	0.69
TOTAL	51.0	28	0.85

Notes:

1 Estimated using a price of $18.50 per ounce of silver and $1,300 per ounce of gold. Totals may not add due to rounding.

2 Mineral reserve estimates for Dolores were prepared under the supervision of, or were reviewed by, Christopher Emerson, FAusIMM, and Martin G. Wafforn, P.Eng., as Qualified Persons as that term is defined in NI 43-101.

Management estimates that mineral resources at Dolores, as at December 31, 2017, are as follows:

Dolores Mineral Resources [1, 2]			
Resource Category	**Tonnes (Mt)**	**Grams of Silver per tonne**	**Grams of Gold per tonne**
Measured	4.8	18	0.28
Indicated	3.5	21	0.50
Inferred	1.7	60	1.44

Notes:

1 These mineral resources are in addition to mineral reserves. Estimated using metal prices of $25 per ounce of silver and $1,400 per ounce of gold.

2 Mineral resource estimates for Dolores were prepared under the supervision of, or were reviewed by, Christopher Emerson, FAusIMM, and Martin G. Wafforn, P.Eng., as Qualified Persons as that term is defined in NI 43-101.

Mineral resource estimates were prepared using kriging methods within three dimensional geological interpretations using industry standard mining software. The block model was classified for measured, indicated, and inferred confidence categories depending on the location of the block relative to the number of drillhole intersections available to estimate each block, as well as other factors affecting confidence in the estimate.

The mineral resource estimate was then depleted for previous surface and underground mining. Planned dilution was applied to the block model and a value per tonne was estimated and applied to each block based on estimated gold and silver grades, estimated metallurgical recoveries, resource and reserve metal prices as given in the tables above, and mining and processing costs. A reserve pit design and underground stope shapes were prepared using reserve metal prices

on measured and indicated blocks. Resources and reserves are reported separately within the reserve pit design and stope shapes.

Mineral reserve estimates are based on a number of assumptions that include metallurgical, taxation and economic parameters. Increasing costs, lower metal prices or increasing taxation could have a negative impact on the estimated mineral reserves. There are currently no known factors that may have a material negative impact on the estimated mineral reserves or mineral resources at Dolores.

Mining Operations

Mining at Dolores is by standard open pit methods using shovels, loaders, and haul trucks. Each bench is 7.5 metres high. Reverse circulation drill holes are used for grade control to provide high-quality data for interpreting the ore/waste contacts in advance of mining. Medium grade ore may be placed on stockpiles allowing for the preferential crushing and stacking of higher grade ore.

A new underground mine is in development to exploit the ore to the south and below the current open pit mining limits. We intend to ramp up production from the underground mine to 1,500 tonnes per day in order to supplement production of high grade feed to the pulp agglomeration plant. The underground will be fully mechanized sub level open stoping with waste rock placed as backfill. Some cemented rockfill is anticipate to be required in the wider sections.

Construction of the pulp agglomeration plant was completed and commissioning commenced during 2017. Heap leach pad stacking rates achieved 97% of the expanded capacity of 20,000 tonnes per day during the last four months of 2017. The mine schedule indicates a mine life that extends until 2025. The projected mine life of the mining operations may increase if additional mineral resources are defined and can be converted to mineral reserves.

Processing and Recovery Operations

The mine uses conventional cyanide heap leaching technology to produce gold and silver doré. Broken ore is trucked from the open pit to the crushing plant, where it is crushed, conveyed to the leach pads, and placed on the pads using conveyors and a radial stacking system. A distribution piping and nozzle system is used to irrigate the heaps with cyanide solution. The leaching period can cover years, and continues as subsequent lifts are placed on the pads. The pregnant solution is collected in a pond, clarified, and processed through a Merrill-Crowe circuit to precipitate gold and silver from solution onto zinc dust. The solution is pumped to filter presses, where the resulting material containing gold, silver and zinc is dried in a retort oven. The dried material is then melted in a furnace to form doré bars.

The high grade portion of the mined material is processed through the pulp agglomeration treatment plant and is conveyed with the crushed lower grade portion of the mined material to the heap leach pads for leaching. The pulp agglomeration plant is comprised of crushing, grinding, particle size classification, filtration, agglomeration, and reagent facilities.

During 2017, we stacked 6.6 million tonnes on the leach pads and produced approximately 4.2 million ounces of silver and 103,000 ounces of gold.

All production from Dolores is in the form of doré bars, which is refined at arm's length refineries prior to the sale of refined silver and gold to bullion banks and traders. Pan American currently has refining contracts in place with refineries in the USA and Mexico. We have not had any difficulty in securing contracts for the sale of Dolores doré, however, there can be no certainty that we will always be able to do so or what terms will be available at the time. Please see "Risks Related to Our Business – Trading Activities and Credit Risk".

Pan American's revenue from the doré produced by the Dolores mine was as follows:

2017	Revenue[1,2]	Quantity Sold
Silver and Gold in Doré	$197.7 million	4,088,900 ounces of silver
		102,045 ounces of gold
2016		
Silver and Gold in Doré	$189.3 million	3,839,000 ounces of silver
		98,590 ounces of gold
2015		
Silver and Gold in Doré	$166.1 million	4,448,000 ounces of silver
		82,510 ounces of gold

Notes:

1 Consists of sales to arm's length customers.

2 Calculated as gross revenue plus export credit incentives (as applicable), less treatment and refining charges and export taxes.

Infrastructure, Permitting, and Compliance Activities

The mine workings, processing facilities, leach pads, waste disposal areas, effluent management and treatment facilities, roads, and power and water lines have already been constructed and are located within the boundaries of the mining leases and surface rights controlled by us. Water for the operations is sourced from wells, pit and underground ramp dewatering, the nearby Rio Tutuaca, and from the Chabacan dam.

Pan American holds all necessary environmental and operating permits for the development and operation of the existing mine and is in compliance with Mexican law. The Mexican Secretariat of Environment and Natural Resources ("SEMARNAT") approved permit applications for the construction and operation of Dolores, including an Environmental Impact Study or Manifestation ("MIA"), a Technical Justification Study for Change of Land-Use, and an Environmental Risk Study. These studies include a full assessment of the environmental and social impacts of the mine and environmental management plans, which describe the ongoing management and environmental monitoring programs. Other principal permits include an Accident Prevention Program, a Surface Water Extraction Authorization, MIAs for the pulp agglomeration plant and underground mine, and a Waste Management Plan. These permits are renewed regularly and as far as Pan American is aware, all of the permits required for the mine and processing operations are in good standing.

The most significant environmental liabilities associated with Dolores include surface disturbance and reclamation liabilities and issues related to the stability and containment system of heap leach Pad 1, which developed prior to Pan American's acquisition of the Property. A tear in the liner of Pad 1 developed in June 2010 following movement in the stability berm and significant leakage was collected by the leak collection system. Minefinders ceased stacking and irrigation on Pad 1 and relocated approximately 2 million tonnes of ore to heap leach Pad 2. The pad under the excavated material was examined and stabilized with an additional retaining wall structure, and the damaged liner was repaired. No sodium cyanide was detected in the downstream surface and ground water sampling points as a result of the failure, and continued soil and water sampling below Pad 1 has confirmed that no residual cyanide is present.

Approximately 6.4 million tonnes of ore remain in a stable state on Pad 1, awaiting transfer to another operational pad. Full remediation of the Pad 1 liner system will be required as the life of mine plan and leach pad capacity estimates indicate that the pad will be required for use in the future. The additional costs associated with moving the ore and reconstructing the pad, as well as the additional metal production from the partially spent ore currently on Pad 1, have been accounted for in the life of mine plan.

Pan American has implemented additional contingency measures in and around the heap leach pads, including the installation of well riser type over-liner solution collection systems, additional under drain and leak collection systems, and a network of containment, monitoring, and demonstration wells. Pan American also engages in construction and expansions to the pads after application of rigorous quality control to both the design and construction of the facilities.

A closure cost estimate for Dolores was prepared according to State of Nevada approved SRCE methodology in 2012 and is updated every year. We have estimated the present value of reclamation costs for the Dolores property at December 31, 2017 to be approximately $18.1 million. See "Narrative Description of the Business – Environmental Protection" for further disclosure regarding forward-looking statements related to reclamation costs.

Safety audits are conducted by Pan American's Director of Health and Safety and safety managers from some of our other mines. As of the end of December, 2017 the mine has accumulated more than 9.3 million hours of work without an LTI. During 2017, personnel employed at Dolores attended more than 238,000 hours of safety-related training. Dolores was the recipient of the Chairman's Safety Award for safety performance during 2013. In 2015, Dolores was the recipient of the prestigious "Casco de Plata" award for the best 2014 safety record for open pit mines in Mexico with in excess of 500 employees.

Capital and Operating Costs

In 2017, total capital additions at Dolores were approximately $88.3 million, including $38.4 million of sustaining capital, primarily for capitalized pre-stripping and leach pad expansions, as well as $49.9 million invested in the expansion project, including $20.5 million relating to the completion of the construction of the pulp agglomeration plant, and $28.4 million for development of the underground mine.

Capital investments in 2018 will total between $55.5 million to $57 million. Capital investments relating to the expansion project are expected to require $8 million in 2018. The remaining capital investments at Dolores during 2018 are expected to be between $47.5 million and $49.0 million for sustaining capital activities. The major components of these investments include: approximately $26.0 million for pre-stripping activities; $15.0 million in leach pad and pumping system expansions; $4.0 million for equipment additions, replacements and overhauls; and $2.0 million for exploration.

In 2017, direct operating costs at Dolores were $116.1 million.

Exploration, Development, and Production

In 2018, we anticipate producing between 4.5 and 4.9 million ounces of silver and between 138,900 and 147,700 ounces of gold from the Dolores mine. Our goal is ramp up the underground mine to 1,500 tpd, and the pulp agglomeration plant processing rate to 5,600 tpd, in 2018. We plan to undertake 9,800 metres of exploration drilling in 2018.

B. Peru

(i) Huaron Mine

Project Description, Location, and Access

Huaron is an underground silver mine located 320 kilometres northeast of Lima in the province of Pasco in the Central Highlands of Peru. The nearest town is Cerro de Pasco, a major mining center, and is connected to Lima by road and rail. Access to the mine is by a paved highway.

Huaron is 100% owned and operated by PAS Huaron, a Peruvian entity which is approximately 99.94% held (99.8% including investment shares), directly or indirectly, by Pan American. The area of the PAS Huaron concessions spans approximately 29,344 hectares. The concessions owned by us give us exclusive right to explore, develop, exploit, and market all of the products. Mining concession titles have been granted by and are registered with the Institute of Geology, Mining, and Metallurgy of Peru, and we pay an annual fee to keep the licenses in good standing.

The known mineralized zones, mineral resources, mineral reserves, mine workings, the processing plant, existing tailing storage facilities, effluent management and treatment systems, and waste rock storage facilities are located within our concessions.

To the best of our knowledge, Huaron is not subject to any overrides, back-in rights, payments, or other agreements and encumbrances. The Company's Peruvian operations are subject to governmental taxes, fees and duties, including a mining royalty tax and a special mining tax ("SMT"). The royalty is applied on a company's operating income and is based on a sliding scale with marginal rates ranging from 1% to 12% with a minimum royalty rate of 1% of sales regardless of its profitability.

While there are no known significant factors or risks that we currently anticipate will affect access or title, or the right or ability to perform work on the property, including permitting and environmental liabilities, please refer to "Risks Related to Our Business" starting on page 75 for a general discussion of the risks relating to our operations.

History

The underground mine, mill, and supporting villages were originally built in 1912 by a subsidiary of the French Penarroya Company. In 1987, the mine was sold to Mauricio Hochschild and Cia Ltda ("Hochschild"). In April, 1998, a portion of the bed of the nearby Lake Naticocha collapsed and flooded the neighbouring Animon underground mine. Through interconnected tunnels, the lake water entered and flooded the Huaron mine, causing its closure.

After the April 1998 flooding, the Huaron mine operations were shut down, the labour force was terminated, the camp closed, and work was undertaken to clean up the flood damage, drain the workings, and prepare for an eventual mine re-opening. The water level in the lake, which provided the source of floodwater, is currently maintained well below the level where it flooded into the old workings and we do not expect further flooding. In September 2000, the operators of the Animon mine, in accordance with a settlement agreement reached with Cía. Minera Huaron S.A., constructed a channel to route water around the lake to provide water for the Huaron mine operation.

We acquired a majority interest in the Huaron mine from Hochschild in 2000 and began full-scale operations in 2001. We subsequently acquired the remaining interest in the mine and, following a demerger from Pan American Silver Mina Quiruvilca S.A. in connection with the sale of the Quiruvilca mine in 2013, Pan American now holds, directly or indirectly, approximately 99.94% of PAS Huaron.

Prior to our acquisition of the mine, approximately 22 million tonnes of silver-rich base metal sulphide ore were produced at the property. Ore from the mine was processed on site by crushing, grinding, and flotation to produce copper, lead, and zinc concentrates, as it is today.

Geological Setting, Mineralization, and Deposit Types

The Huaron property is located within the Western Cordillera of the Andes Mountains and the regional geology is dominated by Machay Group limestones and Pocobamba continental sedimentary rocks. These groups have been deformed by the Huaron anticline, the dominant structural feature of the area. The limestones and sedimentary rocks are strongly folded and intruded by quartz monzonites and quartz monzonite dikes and associated fracturing. Following the intrusion of the dikes, the sedimentary rocks were further compressed and fractured, and the fractures were subsequently mineralized by hydrothermal fluids.

The main lithology in the area of Huaron is a sequence of continental redbeds which unconformably overlie massive marine limestones. North-south trending sub-vertical porphyritic quartz monzonite dykes cross cut the mine stratigraphy. Huaron is located within an anticline with an axis striking approximately north-south and plunging gently to the north. There are two main fault systems. One system comprises north-south striking thrust faults, parallel to the axis of the anticline, and the other comprises east-west striking tensional faults.

Huaron is a hydrothermal polymetallic deposit of silver, lead, zinc, and copper mineralization hosted within structures likely related to the intrusion of monzonite dikes, principally located within the Huaron anticline. Mineralization is encountered in veins parallel to the main fault systems, in replacement bodies known as "mantos" associated with the calcareous sections of the conglomerates and other favourable stratigraphic horizons, and as dissemination in the monzonitic intrusions at vein intersections.

The mineralized veins vary from a few centimetres to up to 10 metres wide, and may extend along strike for up to 1,800 metres. Most of the structures are open at depth and along strike and have excellent exploration potential. Vein orientations vary but generally trend east-west or north-south. The current mineral reserves are based on approximately 100 different structures which have been grouped into families of mineralized trends according to location and orientation.

The most important economic minerals are tennantite-tetrahedrite, sphalerite, and galena, but more than 90 other minerals have been identified. The principal gangue minerals are pyrite, quartz, calcite, and rhodochrosite. Enargite and pyrrhotite are common in the central copper core of the mine and zinc oxides and silicates are encountered in structures with deep weathering. Silver is also found in pyrargyrite, proustite, polybasite, and pearceite.

Exploration

Since Huaron is an active mining operation, current exploration is conducted using a combination of underground diamond drilling and channel sampling from drifts excavated along the mineralized zones. Vein intersections and sample grade information from both the channel samples and the diamond drillholes are used to estimate mineral resources and mineral reserves. Underground diamond drilling is undertaken by an external drilling contractor supervised by us.

Drilling

The mine undertakes drilling on an annual basis for mineral resource and mineral reserve definition. All underground holes are drilled by an external drilling contractor under our supervision using BQ, NQ, and HQ diameter industry standard underground diamond drill rigs.

Sampling, Analysis, and Data Verification

Diamond drillhole samples are split in half with a diamond bladed saw after the core has been logged and the sample intervals have been marked by the geologist. Channel samples weighing between 4 kilograms and 6 kilograms are collected with a hammer and chisel every 4 metres across the vein in stoping areas, every 2 metres across the vein in sublevels and drifts, and every 1 metre in vertical developments. Samples from both channel samples and diamond drillholes vary between 0.1 metres and 1.5 metres in length. There are no known drilling, sampling, or recovery issues that could materially impact the reliability of the results.

The samples are prepared and analysed within the confines of the general mine security enclosures, and there is no reason to believe that the validity and integrity of the samples have been compromised.

Both the channel and the underground diamond drillhole samples are sent to the on-site laboratory, which is not certified by any standards association but is managed and operated by the international commercial laboratory firm, SGS. Assays for silver, zinc, lead, and copper are performed using acid digestion and AA spectroscopy.

The laboratory conducts a routine internal QAQC program. For each batch of samples at least one blank sample and one certified standard is submitted by the laboratory. A QAQC program supervised by the geology department is also implemented which includes the submission of certified standards, duplicates, and blanks on a daily basis to the onsite laboratory. Duplicate samples are also submitted to a second laboratory to act as a check on the onsite laboratory.

Mineral Processing and Metallurgical Testing

As part of normal plant operation procedures, metallurgical analysis and testing is undertaken as required. The majority of these analyses are to assess mill performance and metallurgical recovery. Metal recovery forecasts used in our mine plans are based on the historical performance of the plant operations and the tonnes and grade of material that is planned to be mined.

Mineral Resource and Mineral Reserve Estimates

Management estimates that mineral reserves at the Huaron mine, as at December 31, 2017, are as follows:

Huaron Mineral Reserves [1, 2]					
Reserve Category	**Tonnes (Mt)**	**Grams of Silver per tonne**	**% Zinc**	**% Lead**	**% Copper**
Proven	5.7	167	2.95	1.43	0.47
Probable	4.0	169	2.91	1.55	0.47
TOTAL	9.7	168	2.94	1.48	0.47

Notes:

1 Estimated using a price of $18.50 per ounce of silver, $2,600 per tonne of zinc, $2,200 per tonne of lead and $5,500 per tonne of copper. Totals may not add due to rounding.

2 Mineral reserve estimates for Huaron were prepared under the supervision of, or were reviewed by, Christopher Emerson, FAusIMM, and Martin G. Wafforn, P.Eng., as Qualified Persons as that term is defined in NI 43-101.

Management estimates that mineral resources at the Huaron mine, as of December 31, 2017, are as follows:

Huaron Mineral Resources [1, 2]					
Resource Category	**Tonnes (Mt)**	**Grams of Silver per tonne**	**% Zinc**	**% Lead**	**% Copper**
Measured	2.2	162	3.00	1.58	0.22
Indicated	1.5	167	3.20	1.66	0.28
Inferred	6.6	163	2.76	1.51	0.41

Notes:

1 These mineral resources are in addition to mineral reserves. Estimated using a price of $18.50 per ounce of silver, $2,600 per tonne of zinc, $2,200 per tonne of lead and $5,500 per tonne of copper.

2 Mineral resource estimates for Huaron were prepared under the supervision of, or were reviewed by, Christopher Emerson, FAusIMM, and Martin G. Wafforn, P.Eng., as Qualified Persons as that term is defined in NI 43-101.

Mineral resource estimates are prepared on an annual basis and updated with the additional diamond drilling and channel samples collected during the year, using a variation of the polygonal method in AutoCAD and Excel software. Each vein structure is projected onto a longitudinal section and divided into a series of geometrical blocks. The average true width of the vein intersections is applied to the block area to determine the volume. Sample grades are reviewed and treated for extreme values if necessary, and then the average grade of the intersections within each block is assigned to the block. Bulk density values are applied to the volume of the block to estimate the tonnes of each block, based on the average of bulk density measurements.

The blocks are then depleted for previous mining. Planned mining dilution is applied to each block considering the width, dip angle, mining method, and expected ground conditions of each vein and an allowance is made for expected mining losses. A value per tonne is applied to each block based on metal content, metal prices, concentrate sales terms, concentrate quality, processing recovery, transportation, refining, and other selling costs such as storage fees, port fees, etc. Metallurgical recoveries are determined separately for each group of veins or structures to account for variability in the recovery. Any blocks that do not meet the criteria of resources are removed. Each block is classified for measured, indicated, and inferred confidence categories depending on the location of the block relative to mine workings, the type of sample available in each block, and the number of samples available to estimate each block. Mineral resources are then converted to mineral reserves depending on the resource classification and whether they can be economically mined.

Mineral reserve estimates are based on a number of assumptions that include metallurgical, taxation and economic parameters. Increasing costs or increasing taxation could have a negative impact on the estimation of mineral reserves. There are currently no known factors that may have a material negative impact on the estimate of mineral reserves or mineral resources.

Mining Operations

Mining is undertaken using a combination of conventional cut and fill, mechanized cut and fill, and mechanized sub-level long hole stoping methods, using unconsolidated development waste and mill tailings for back fill. Mechanized sub-level long hole stoping is the primary mining method at the mine. Both haul trucks and electric locomotives are in place for haulage from the upper parts of the mine. A shaft with a hoist is used for hoisting ore and occasionally waste to the surface. Ore sourced from below the 500 level is hauled to the surface crusher using diesel haul trucks and hoisting in the mine shaft. Over the past several years, the mining operations of the wider veins and ore bodies has been mechanized, with the aim of improving efficiency and operating costs. This mechanization work is now continuing on the narrower veins.

Processing and Recovery Operations

Huaron operates an 870,000 tonne per year nominal capacity mill using froth induced flotation technology to produce silver in copper, lead, and zinc concentrates. The mill flowsheet consists of three-stage crushing, ball mill grinding, and selective flotation of the ore to concentrates, followed by thickening and filtering of the concentrates. Tailings from the processing plant are either returned underground hydraulically to act as backfill material in the cut and fill mining areas or delivered to a tailings storage facility area via a pipeline.

In 2017, the mill processed approximately 928,000 tonnes of ore with metallurgical recoveries averaging 85.2% for silver, 77.6% for zinc, 77.7% for lead, and 78.5% for copper. Metal production during the year was approximately 3.7 million ounces of silver, 19,400 tonnes of zinc, 8,800 tonnes of lead, and 6,100 tonnes of copper.

The silver rich zinc, lead, and copper concentrates from Huaron are sold under contracts with arm's length smelters and concentrate traders, which consider the presence of any deleterious elements. Huaron receives payment for an agreed percentage of the silver, zinc, lead, or copper contained in the concentrates it sells after deduction of smelting and refining costs, based on average spot prices over defined 30-day periods that may differ from the month in which the concentrate was produced. Under these circumstances, we may, from time to time, fix the price for a portion of the payable base metal content during the month that the concentrates are produced. To date, we have been able to secure contracts for the sale of all Huaron concentrates produced, however, there can be no certainty that we will always be able to do so or what terms will be available at the time. Please see "Risks Related to Our Business – Trading Activities and Credit Risk".

The revenue per type of concentrate produced by the Huaron mine for the past three years were as follows:

2017	Revenue[1, 2]	Quantity Sold (Tonnes)
Zinc Concentrate[3]	$45.6 million	42,418
Lead Concentrate[3]	$34.0 million	17,183
Copper Concentrate[3]	$49.5 million	24,839
2016		
Zinc Concentrate[3]	$30.6 million	42,558
Lead Concentrate[3]	$35.7 million	19,896
Copper Concentrate[3]	$39.4 million	25,219
2015		
Zinc Concentrate[3]	$15.7 million	28,899
Lead Concentrate[3]	$19.5 million	13,707
Copper Concentrate[3]	$40.5 million	25,949

Notes:

1 Consists of sales to arm's length customers.

2 Calculated as gross revenue plus export credit incentives (as applicable), less treatment and refining charges and export taxes.

3 Zinc and lead concentrates contain payable silver. Copper concentrates contain payable silver and gold.

Infrastructure, Permitting, and Compliance Activities

The mine workings, processing plant, tailings and waste disposal areas, effluent management and treatment facilities, roads, and power and water lines have already been constructed and are located within the boundaries of the mining leases and surface rights controlled by us. To the best of our knowledge, all permits and licenses required to conduct our activities on the property have been obtained and are currently in good standing. We are authorized to source the water necessary for our operations from a system of nearby lakes. The primary source of power for the mine is the Peruvian national power grid and is sufficient for the mine's current requirements.

In October 2003, the Peruvian government passed legislation requiring active mining operations to file closure plans. In October 2005, administrative rules associated with this legislation were promulgated, which laid out detailed closure requirements and required that detailed closure plans and cost estimates be filed by October 2006.

The original closure plan for Huaron was filed by mid-year 2004, and in August of 2006, we submitted a comprehensive closure plan for Huaron to the Ministry of Energy and Mines ("MEM") in accordance with that ministry's regulations and the updated rules. The closure plan was prepared by third party consultants registered with the Peruvian authorities as qualified to present closure plans to the MEM. The closure plan includes a summary of the proposed closure scheme for each of the major areas of impact such as mine water, tailings areas, waste rock storage facilities, plant site infrastructure, and underground mine. A detailed cost estimate was prepared based on our and the consultant's shared experience with closure works and experience with other projects in Peru. As required by the MEM, the costs were summarized in three phases: concurrent closure, final closure, and post closure. Updated closure plans are filed as required.

The most significant environmental issue currently associated with the mine is relatively high sediment and metal concentrations in the waters discharged from the mine and the mine's tailings storage facilities. All waters are captured and treated in a treatment plant to achieve compliance with discharge limits. In December 2017, an unintended release of a small amount of water with tailings fines occurred due to a leak in piping in the water decant system of the Huaron tailings facility. The incident was reported to the Peruvian Environmental Evaluation and Fiscalization Organization and the local Huayllay community authorities, and cleaned up within 24 hours. The final report and findings of the authorities related to the event are still outstanding.

An agreement signed in 2000 allows Volcan Compañia Minera S.A.'s ("Volcan") Chungar mine, which neighbours Huaron, to discharge water from its mine dewatering into the Huaron drainage tunnel. The agreement also requires Volcan to contribute to the costs of tunnel maintenance and water treatment and discharge, however provisions of the agreement that would enable water quality and flow measurement between the mines were not implemented and no payments have been made. In 2014, an independent consultant engaged jointly by both companies concluded that the flow from Chungar to Huaron represents 19% of the total flow in the drainage tunnel and recommended the installation of a permanent monitoring system for ongoing verification. We continue to negotiate the details of the joint monitoring and any responsibility for costs with Volcan.

A closure cost estimate for Huaron was prepared according to State of Nevada approved Standard Reclamation Cost Estimator methodology in 2011 and is updated every year. The current present value of closure expenditures at Huaron as at December 31, 2017, is estimated at $11.1 million. See "Narrative Description of the Business – Environmental Protection" for further disclosure regarding forward-looking statements related to reclamation costs.

Safety audits are conducted by Pan American's Director of Health and Safety and safety managers from some of our other mines. During 2017, personnel at Huaron attended more than 176,000 hours of training. The Huaron mine was the recipient of the Chairman's Safety Award for 2016.

Capital and Operating Costs

Since the mine is in operation, any sustaining capital expenditures are justified on an on-going basis. Capital additions at Huaron during 2017 totalled $8.8 million, primarily on mining equipment, plant and infrastructure upgrades, and exploration drilling.

We have forecast sustaining capital investments of between $17.0 million and $17.5 million for 2018, including approximately: $4.0 million in equipment additions, replacements and overhauls; $5.0 million on a tailings facility expansion; $3.0 million on mine deepening; and $4.0 million for exploration.

In 2017, direct operating costs at Huaron were $75.6 million.

Exploration, Development, and Production

In 2018, Huaron is forecast to produce between approximately 3.6 and 3.8 million ounces of silver and 1,000 ounces of gold. Base metal production is expected to be between 18,500 and 18,700 tonnes of zinc, between 7,300 and 7,600 tonnes of lead, and between 6,000 and 6,200 tonnes of copper. We plan to undertake 17,500 metres of exploration drilling in 2018.

(ii) Morococha Mine

Project Description, Location, and Access

The Morococha mine is an underground silver mine located 137 kilometres east of Lima in the province of Yauli. The nearest city is La Oroya, approximately 38 kilometres to the east. Morococha is accessible via Peru's paved central highway and an all-weather gravel road. Rail service from Lima is also available via a national rail line that passes adjacent to the operations.

Morococha is owned and operated by Argentum, a Peruvian company in which Pan American, through our subsidiary Pan American Peru, has a 92.01% voting common share interest (the remaining interest is held by Alejandro Gubbins and Compañía Minera Casapalca S.A.). In addition, we have, directly or indirectly, the majority of the non-voting investment shares resulting in a total ownership interest of approximately 92.3% as at December 31, 2017 (excluding certain investment shares held by Argentum itself).

Morococha is comprised of three economic administrative units ("UEAs") and various concessions held outside of these UEAs, for a total of 541 mining concessions with an area of approximately 10,522 hectares, as well as two processing concessions. The three UEAs contain 454 mining concessions and two processing concessions owned outright by Argentum and 11 concessions transferred to Argentum from Silver Lead Mining Company S. A. There are also 36 concessions under a lease agreement with Corporación Minera Sacracancha S.A.C., 31 concessions under option from Minera Chinalco Peru ("MCP"), and nine concessions held by agreement with different third parties. The majority of the mining concessions comprising Morococha are contiguous.

The known mineralized zones, mineral reserves and mineral resources, mine workings, processing plants, effluent management and treatment systems, and the mine's tailings and waste disposal areas are contained within the boundaries of these concessions. These mining concessions give us the exclusive right to explore, develop, and exploit, as well as the right to market all of the products. Mining concession titles for these properties have been granted by and are registered with the Public Registry of Peru, and we pay an annual fee to keep the licenses in good standing, and to our knowledge, we have met all of the necessary obligations to retain the property. To the best of our knowledge, all permits and licenses required to conduct our activities on the property have been obtained and are currently in good standing.

Argentum did not hold registered legal title to most of the surface lands that overlie the mining concessions which comprise Morococha when we acquired Morococha in 2004, including lands on which Morococha's process plants, shafts and access roads were located. These rights were all formerly owned by Centromin. Centromin granted Argentum a right to use certain of Centromin's surface lands throughout the useful life of its mining operations, provided such use does not interfere with the development of a mine in respect of the Toromocho disseminated copper system, which overlies certain of Argentum's mining concessions and underground mining operations. Argentum had an obligation to pay Centromin $60,000 (adjusted annually for inflation) quarterly commencing May 28, 2003 as consideration for this right. Argentum's and its predecessors' use of these surface lands have been exercised for decades with Centromin's knowledge and Argentum's claim to its continued use of these surface rights was based on concepts of rights acquired through long term use often referred to as adverse possession.

Peru Copper Inc. ("Peru Copper"), a copper mining company carrying on business in Peru, acquired mining concessions and surface rights to the Toromocho property from Centromin. In June 2007, Aluminum Corporation of China ("Chinalco") purchased 100% of the outstanding shares in Peru Copper and formed MCP.

In 2005, Argentum, with the opposition of Centromin, engaged in a number of administrative and judicial proceedings to obtain legal title to surface lands and underground access that comprise part of the rights that were acquired by Peru Copper from Centromin. Following Peru Copper's acquisition of Centromin's rights, we began preliminary discussions with Peru Copper, and later with Chinalco and MCP, in respect of negotiating a resolution to the surface rights issues between the parties.

In May 2008, MCP acquired certain surface rights from Centromin (currently, Activos Mineros S.A.) covering the main Morococha area that had been reserved for the Toromocho project by the Government of Peru. In addition, MCP acquired rights including surface lands in the Morococha area where the Morococha mine administration and operations are taking place, as well as certain underground areas. Certain of the underground areas acquired by MCP would also provide Pan American with easier and less costly underground access to some areas of the Morococha concessions.

In June 2010, we reached an agreement with MCP that defined each party's long term surface rights and therefore provides certainty to the land situation for the Morococha property. The primary focus of the agreement is on the lands and concessions around the Morococha mine and MCP's Toromocho copper project. Under the terms of the agreement, Argentum is required to relocate the core Morococha facilities, including the administration offices, warehouse, maintenance facilities, mine compressors, and some camp facilities and construct a new concentrator over a five-year period and transfer certain mineral concessions and access rights to MCP that it needs in order to proceed with the development of Toromocho, including the surface lands within the planned open pit mining area of the Toromocho project. In exchange, Argentum is to receive a package of surface rights, easements, and other rights to relocate the facilities and to continue uninterrupted operations, and would also obtain rights to a number of mineral concessions outside the planned Toromocho pit area where high grade silver veins have been identified. Lastly, Argentum is to receive periodic cash payments from MCP totalling $40 million, which would offset a portion of the capital required for the facility relocation. Pursuant to the agreement, the transfer of lands and rights and the cash payments will occur over a period of time and are dependent on meeting certain milestones. In addition to the foregoing, the parties agreed to dismiss the judicial and administrative claims between them. To date, Minera Argentum has received a total of $24.0 million (pre-tax) from MCP and has completed a number of phases of the relocation effort. We have completed the abandonment and demolition of all buildings in the Central Shaft area, the construction of the replacement facilities located north of the central highway, but have not yet relocated the plant. We continue to operate the plant, the location of which is projected to eventually interfere with the

advance of the Toromocho open pit. Depending on economic justification, mineral reserve growth, and the advance of the Toromocho open pit, the plant will need to be replaced or relocated. Although no up-to-date engineering studies are available, the estimated cost of a new 800,000 tonne per annum processing plant could be significant. This cost might be partially offset by the remaining payments due from MCP in relation to the June 2010 agreement. Please see "Risks Related to Our Business – Title to Assets".

To the best of our knowledge, and other than as described above, Morococha is not subject to any overrides, back-in rights, payments, or other agreements or encumbrances. The Company's Peruvian operations are subject to governmental taxes, fees and duties, including the mining royalty tax and the SMT, as described under "Huaron – Project Description, Location and Access".

While there are no known significant factors or risks that we currently anticipate might affect access or title, or the right or ability to perform work on the property, including permitting and environmental liabilities, other than as described above, please refer to "Risks Related to Our Business" starting on page 75 for a general discussion of the risks relating to our operations.

History

Mining began in the region around Morococha before the 1500s, and production has been continuous in the district since the late 1800s. Most of the exploration undertaken by former owners of Morococha was limited to underground development along strike of known structures. The Morococha District has excellent exploration potential owing to the prevalence of carbonate units favourable for replacement mineralization as well as the significant vertical extents of known mineralization. As a result, drilling was not typically part of the exploration efforts. Prior to our acquisition of Morococha, little effort was given to the exploration and economic evaluation of areas that were not immediately adjacent to the existing mine workings. Previous operators utilized both surface and underground diamond drilling only to test for potential economic mineralization. Once the presence of economic mineralization was confirmed, the vein or manto was accessed underground for further exploration.

Between 1915 and 1918, much of the district was reorganized and incorporated into Cerro de Pasco Mining Company ("Cerro de Pasco"). By 1924, Cerro de Pasco was producing at a rate of 1,500 tpd from primarily copper ores. Between 1929 and 1934, Cerro de Pasco excavated the 11.5 kilometre long Kingsmill Tunnel, successfully dewatering all of the Morococha District mine workings above the 4,020 metre elevation of the tunnel. The Kingsmill Tunnel is still in use and is a vital feature of the Morococha mining district.

In the 1940s, the Gubbins family began operating mines in the Morococha District through Minera Santa Rita S.A. and Minera Yauli S.A., which were subsequently consolidated in the late 1990s into Sociedad Minera Corona S.A. ("SMC"). Cerro de Pasco continued to operate in other areas around the Morococha District until 1974, when its mines were nationalized by the Peruvian government. Production from the Cerro de Pasco mines in the district continued under the Peruvian national mining company, Centromin, until 2003, when SMC acquired these operations from Centromin through privatization.

On January 20, 2004, we entered into an agreement with 14 individuals, estates and companies, all of whom were arm's length to us and are members of the Gubbins family or entities in which members of the Gubbins family hold beneficial interests (the "Morococha Vendors"), to purchase 92.014% of the voting shares of Argentum, a sociedad anónima organized under Peruvian company law, for approximately $35.4 million in cash. Argentum acquired, through a corporate restructuring undertaken under Peruvian company law, the Anticona and Manuelita mining units and related infrastructure and processing assets from SMC. At the time of acquisition, Argentum held in its treasury as cash all profits earned by SMC's Anticona and Manuelita mining operations since November 1, 2003. The transaction was subject to regulatory approval and a number of conditions, including: (i) the completion of the corporate restructuring; (ii) the listing on the Lima Stock Exchange of 100% of the shares of Argentum, including those issued in connection with the corporate restructuring; and (iii) our successfully undertaking a public bid for not less than 92.014% of the voting shares of Argentum through the Lima Stock Exchange.

On February 24, 2004, we entered into a further agreement with the Morococha Vendors to purchase all of the issued and outstanding shares of Empresa Minera Natividad S.A. ("Natividad"), a corporation organized under Peruvian company law which holds mining concessions and operations that are complementary to the Anticona and Manuelita mining units, for $1.5 million in cash. Closing of the acquisitions of Argentum and Natividad occurred contemporaneously in August 2004, with effect as of July 1, 2004 and in 2005, Argentum amalgamated with Natividad. Argentum made all necessary applications for delisting its shares from the Lima Stock Exchange and the delisting process was completed in 2006. In addition, Pan American Peru continues to acquire the labour shares in Argentum when able to do so. The labour shares

were created as a means through which workers would be able to take part in our success (but do not afford the holders of such shares influence over our decision-making, as they are non-voting), and are held either by current workers, former workers or by third parties who have bought labour shares in the free market.

Extensive mining has taken place at the property prior to Pan American's acquisition in 2004, but there are no known reliable historical production figures. For the 15 years between 1989 and 2003, approximately 7.9 million tonnes of ore was mined at a grade of 227 ppm Ag, 0.5% Cu, 1.7% Pb, and 4.6% Zn.

Geological Setting, Mineralization, and Deposit Types

Morococha is located on the eastern side of the Western Cordillera of the Andes. The host rocks for the mineralization in the Morococha district comprise schists, volcanic rocks, and predominantly carbonate sediments cut by a series of intrusions. The structures that account for the majority of the vein mineralization in the Morococha district trend predominantly northeast to east-northeast.

The structural setting of the area is dominated by shallowly northwest plunging folds, the most important of which is the anticlinal feature referred to as the Yauli Dome, which trends north-northwest and divides the district roughly in half. Compression gave rise to early northwest trending shears, and the uplifting effect of the intrusion of quartz monzonite stocks produced an arching of the Yauli Dome and an associated phase of tension faulting generally trending perpendicular (northeast-southwest) to the axis of the anticline. This latter set is the most heavily mineralized set of fractures and accounts for the majority of fault hosted mineralization in the Morococha District.

Vein mineralization formed along the dominant system of northeast trending tensional faults. Mineralization associated with the veins is mostly fracture filling in nature. Replacement manto mineralization is generally restricted to receptive stratigraphic horizons where favourable lithologies are intersected by mineralized veins or are proximal to pre-mineral intrusives. Some of the replacement mineralization occurs as structurally controlled irregular chimneys within generally favourable stratigraphic horizons.

Mineralization at Morococha includes epi-mesothermal silver-zinc-lead-copper veins, bedded silver-base metal replacements or mantos, intrusive-sediment contact skarns, and the quartz porphyry-hosted Toromocho disseminated copper system. Shoots range up to 400 metres in length with some traced for over 800 metres down plunge. Economic vein widths range from 0.5 metres to more than 6.0 metres. Vein width averages in the district are on the order of 1.2 metres.

Replacement manto mineralization is generally restricted to receptive stratigraphic horizons where favourable lithologies, especially carbonates, are intersected by mineralized veins or are proximal to pre-mineral intrusive rocks. Mantos can have a significant strike extent where the veins are closely spaced, and can range from less than one metre to up to 12 metres in width.

Sphalerite, galena, and chalcopyrite are the most important primary minerals for zinc, lead, and copper while silver is generally present as freibergite (silver-tetrahedrite) or argentiferous galena.

Exploration

Since Morococha is an active mining operation, exploration is conducted using a combination of underground diamond drilling and channel sampling from drifts excavated along the mineralized zones. Channel samples weighing between 4.0 kilograms and 6.0 kilograms are collected by our employees from the backs of drifts, the ribs of crosscuts, the backs of stopes, and the ribs of raises. The channel samples are taken every two metres across the veins or mantos in exploration drifts and the stopes are sampled on two metre centres along strike. Sample intervals are usually between 0.2 metres and 2.0 metres wide. Vein intersections and sample grade information from both the channel samples and the diamond drillholes are used to estimate mineral resources and mineral reserves.

Drilling

The mine undertakes drilling on an annual basis for mineral resource and reserve definition. Both surface and underground holes are drilled by external drilling contractors under Pan American supervision using BQ, NQ, and HQ diameter industry standard underground diamond drill rigs. In 2017, we embarked on a significant program of infill and near-mine exploration drilling.

Sampling, Analysis, and Data Verification

Diamond drill hole sample intervals within the veins vary in length between 0.10 and 1.5 metres. The channel samples weigh between 4 kilograms and 6 kilograms and are taken every two metres across the veins or mantos in exploration drifts and the stopes are sampled on two metre centres along strike. There are no known drilling, sampling, or recovery issues that could materially impact the reliability of the results.

The samples are prepared and analysed within the confines of the general mine security enclosures, and there is no reason to believe that the validity and integrity of the samples have been compromised.

Both the channel and underground diamond drillhole samples are prepared by the on-site laboratory, which is not certified by any standards association but is managed and operated by the international commercial laboratory firm, SGS. Assays for silver, zinc, lead, and copper are performed using acid digestion and AA spectroscopy.

Mineral Processing and Metallurgical Testing

As part of normal plant operation procedures, metallurgical analysis and testing is undertaken as required. The majority of these analyses are to assess mill performance and metallurgical recovery. Metal recovery forecasts used in our mine plans are based on the historical performance of the plant operations and the tonnes and grade of material that is planned to be mined.

Mineral Resource and Mineral Reserve Estimates

Management estimates that mineral reserves for the Morococha mine, as at December 31, 2017, are as follows:

Morococha Mineral Reserves [1, 2, 3]

Reserve Category	Tonnes (Mt)	Grams of Silver per tonne	% Zinc	% Lead	% Copper
Proven	3.0	160	3.59	1.06	0.53
Probable	2.9	159	3.64	1.53	0.36
TOTAL	5.9	159	3.62	1.29	0.45

Notes:

1 Estimated using a price of $18.50 per ounce of silver, $2,600 per tonne of zinc, $2,200 per tonne of lead and $5,500 per tonne of copper. Totals may not add due to rounding.

2 Mineral reserve estimates for Morococha were prepared under the supervision of, or were reviewed by, Christopher Emerson, FAusIMM, and Martin G. Wafforn, P.Eng., as Qualified Persons, as that term is defined in NI 43-101.

3 Tonnes are shown for 92.3% of the Morococha property. Through our subsidiary, Pan American Peru, we have a 92.3% interest in the Morococha property.

Management estimates that mineral resources at the Morococha mine, as at December 31, 2017, are as follows:

Morococha Mineral Resources [1, 2, 3]

Resource Category	Tonnes (Mt)	Grams of Silver per tonne	% Zinc	% Lead	% Copper
Measured	0.3	153	1.66	0.72	0.20
Indicated	0.5	152	2.32	1.01	0.42
Inferred	4.4	148	3.31	1.12	0.62

Notes:

1 These mineral resources are in addition to mineral reserves. Estimated using a price of $18.50 per ounce of silver, $2,600 per tonne of zinc, $2,200 per tonne of lead and $5,500 per tonne of copper.

2 Mineral resource estimates for Morococha were prepared under the supervision of, or were reviewed by, Christopher Emerson, FAusIMM, and Martin G. Wafforn, P.Eng., as Qualified Persons as that term is defined in NI 43-101.

3 Tonnes are shown for 92.3% of the Morococha property.

Mineral resource estimates are prepared on an annual basis and updated with the additional diamond drilling and channel samples collected during the year, using either a variation of the polygonal method in AutoCAD and Excel software or a three dimensional interpretation in mining software. Using the polygonal method, each vein structure is projected onto a longitudinal section and divided into a series of geometrical blocks. The average true width of the vein intersections is applied to the block area to determine the volume. Sample grades are reviewed and treated for extreme values if necessary, and then the average grade of the intersections within each block is assigned to the block. Using the three dimensional method, a block model is created and grade is estimated using ordinary kriging. The samples are composited to equal lengths and treated for extreme grade values if necessary. Bulk density values are applied to the volume of the block to estimate the tonnes of each block, based on the average of bulk density measurements.

The blocks are then depleted for previous mining. Planned mining dilution is applied to each block considering the width, dip angle, mining method, and expected ground conditions of each vein, and an allowance is made for expected mining losses. A value per tonne is applied to each block based on metal content, metal prices, concentrate sales terms, concentrate quality, processing recovery, transportation, refining, and other selling costs such as storage fees, port fees, etc. Any blocks which are considered uneconomic after these parameters are applied either remain as mineral resources or may be removed from the inventory completely if they do not meet the criteria of mineral resources. The mineral reserves are classified as proven or probable depending on the resource classification.

Mineral reserve estimates are based on a number of assumptions that include metallurgical, taxation, and economic parameters. Increasing costs or increasing taxation could have a negative impact on the estimation of mineral reserves. There are currently no known factors that may have a material negative impact on the estimate of mineral reserves or mineral resources.

Mining Operations

Underground mining operations at Morococha consist primarily of long hole open stoping, and some conventional and mechanized overhand cut and fill. Classified tailings pumped hydraulically to stopes and waste rock are used for backfill where needed. Drilling is undertaken with hand held drills or electric hydraulic jumbo drills and the broken ore is removed using scoop trams. Mining of the wider veins and ore bodies has been mechanized with the aim of improving efficiency and operating costs. This mechanization is continuing on the narrower veins.

In the Manuelita and Sulfurosa areas of the mine, locomotives transport the ore in rail cars from the chutes to the shafts for hoisting. Other locomotives then transport the ore in rail cars to an adit where trucks then haul the ore to the stockpiles at the mill. In the Codiciada and Alapampa areas of the mine, ore is transported to underground stockpiles using scoop trams and then loaded onto haul trucks for transportation to surface via a haulage ramp.

The Manuelita (also known as Yauli) shaft has been deepened, and a new loading system is now available for production hoisting from a new mine level 70 metres below the Kingsmill tunnel. The Manuelita shaft is equipped with two 2.6 tonne skips which feed into chutes at an underground adit level from where material is transported in rail cars by a small locomotive to an adjacent surface truck loading facility. Ore is then trucked to the processing plant. The deepening project includes the development of a pumping station and other infrastructure to permit mechanized narrow vein stoping operations.

Processing and Recovery Operations

Morococha operates an 803,000 tonne per year capacity mill, known as the Amistad mill, using froth induced selective flotation technology to produce silver in zinc, lead, and copper concentrates. The mill flowsheet consists of two-stage crushing, ball mill grinding, selective flotation of the ore to concentrates, followed by thickening and filtering of the concentrates. About half of the tailings from the concentrator are pumped to the Huascacocha tailings facility and the other half is transported back underground where it is used for hydraulic backfill.

The life of mine plan is based on the mineral reserves and contemplates, on a 100% basis, an annual processing rate of 1,726 tpd and then gradually increasing as more mining areas become available. The Morococha deposit is extensive and if current mineral resources can be converted to mineral reserves and/or if new mineral resources are defined and can be converted to mineral reserves, then a new plant may be required to replace the current Amistad plant. The future economic justification of a new plant will rely primarily on mineral reserve growth and metal prices. Although no up-to-date engineering studies are available, the estimated cost of a new 800,000 tonne per annum processing plant could be significant. This cost might be partially offset by the remaining payments due from MCP to honour the June 2010 agreement.

In 2017, the mill processed approximately 733,600 tonnes of ore with metallurgical recoveries of 89.2% for silver, 79.6% for zinc, 66.7% for lead, and 83.9% for copper. Total metal production for the year, on a 100% basis, was approximately 2.9 million ounces of silver, 3,800 ounces of gold, 17,500 tonnes of zinc, 3,800 tonnes of lead, and 7,200 tonnes of copper.

The silver-rich zinc, lead, and copper concentrates from Morococha are sold under contracts with arm's length smelters and concentrate traders, which consider the presence of any deleterious elements. Morococha receives payment for an agreed percentage of the silver, zinc, lead, and copper contained in the concentrates it sells, after the deduction of smelting and refining costs. We have not had any difficulty securing contracts for the sale of Morococha concentrates; however, there can be no certainty that we will always be able to do so or what terms will be available at the time. Please see "Risks Related to Our Business - Trading Activities and Credit Risk".

The revenue per type of concentrate produced by Morococha for the past three years were as follows:

2017	**Revenue[1, 2]**	**Quantity Sold (Tonnes)**
Zinc Concentrate[3]	$42.6 million	34,769
Lead Concentrate[3]	$15.8 million	7,019
Copper Concentrate[3]	$61.8 million	35,659
2016		
Zinc Concentrate[3]	$26.6 million	35,280
Lead Concentrate[3]	$11.5 million	5,948
Copper Concentrate[3]	$54.9 million	43,820
2015		
Zinc Concentrate[3]	$13.3 million	25,927
Lead Concentrate[3]	$9.2 million	5,473
Copper Concentrate[3]	$42.2 million	47,627

Notes:

1 Consists of sales to arm's length customers.

2 Calculated as gross revenue plus export credit incentives (as applicable), less treatment and refining charges and export taxes.

3 Zinc and lead concentrates contain payable silver. Copper concentrates contain payable silver and gold.

Infrastructure, Permitting, and Compliance Activities

The mine workings, processing plant, tailings and waste disposal areas, effluent management and treatment facilities, roads, and power and water lines have already been constructed and are located within the boundaries of the mining leases and surface rights controlled by us. To the best of our knowledge, all permits and licenses required to conduct our activities on the property have been obtained and are currently in good standing. The mine is authorized to source the water necessary for operations from nearby lakes. Several mine development waste disposal and tailings storage facilities exist and are sufficient to meet the needs of mining operations. The primary source of power for the mine is the Peruvian national power grid and is sufficient for the mine's current requirements.

In October 2003, the Peruvian government passed legislation requiring active mining operations to file closure plans. In October 2005, administrative rules associated with this legislation were promulgated, which laid out detailed closure requirements and required that detailed closure plans and cost estimates be filed by October 2006.

The original closure plan for Morococha was filed by mid-year 2004, and in August of 2006, we submitted a comprehensive closure plan for Morococha to the MEM in accordance with that ministry's regulations and new rules. The closure plan was prepared by third party consultants registered with the Peruvian authorities as qualified to present closure plans to the MEM. The closure plan includes a summary of the proposed closure scheme for each of the major areas of impact such as mine water, tailing storage facilities areas, waste rock facilities, plant site infrastructure, and the underground mine. A detailed cost estimate was prepared based on Pan American's and the consultant's shared experience with closure works and experience with other projects in Peru. As required by the MEM, the costs were summarized in three phases: concurrent closure, final closure, and post closure. Updated closure plans are filed as required.

The most significant environmental liability identified at the Morococha mine is the mine's potential share of the cost to operate the Kingsmill Tunnel water treatment plant. The Kingsmill Tunnel is an 11.5 kilometre long underground opening excavated between 1929 and 1934 to dewater the Morococha district mine workings above 4,020 metres above sea level. The water treatment plant was built and is currently being operated by MCP to treat the 1.5 to 1.8 cubic metres per second of water draining from the Kingsmill Tunnel into the Rio Yauli. Morococha's share of the cost was defined by a hydrogeological study completed in 1997 which apportioned responsibility for the costs of constructing and operating the treatment plant as follows: (i) Centromin (72.2%); (ii) our Morococha operations (12.3%); (iii) Soc. Minera Puquiococha (8.5%); (iv) Soc. Minera Austria Duvaz (4.9%); and (v) Minera Centrominas (2.1%). Subsequent to the apportionment of costs, it appears that in connection with the acquisition by MCP of the mining concessions near Morococha, MCP assumed the cost of the construction of the Kingsmill water treatment plant.

The treatment and operating costs for the water treatment facility are directly proportional to both constituent load and flow determined in the 1997 study. The distribution of responsibility stated in the 1997 study was accepted by all involved parties. Our potential share of the responsibility for treatment of the baseline flows, 12.3%, was included in the terms of its purchase of the applicable mining concessions. As a purchase contract entered into during 2003 between Natividad and Argentum establishes that the purchaser is responsible for incremental flows in those concessions, subsequent studies in 2004 were carried out to further characterize the baseline flow conditions in order to establish benchmarks for the determination of responsibility for potential future increases. The results of this 2004 study estimated that 38.46% of the baseline flows were derived from Natividad and Corona concessions now under our control. We challenged this estimate but our challenge was not accepted. The scope of the 2004 study and the resulting recommendations exceeded the terms of the study and presented conclusions that conflicted with previous conclusions and the terms of our purchase of the applicable concessions.

A closure cost estimate for Morococha was prepared according to State of Nevada approved SRCE methodology in 2011 and is updated every year. The current present value of closure expenditures at Morococha as at December 31, 2017, is approximately $6.6 million. See "Narrative Description of the Business – Environmental Protection" for further disclosure regarding forward looking statements related to reclamation costs.

Safety audits are conducted by Pan American's Director of Health and Safety and safety managers from some of our other mines. During 2017, personnel employed at Morococha attended a total of over 118,000 hours of training. The Morococha mine was the recipient of the Chairman's Safety Award for 2015. During 2015, the Morococha mine was also awarded first place in the underground mining category by the mining safety institute (ISEM) in Peru for safety performance.

Capital and Operating Costs

Capital additions at Morococha during 2017 totalled $12.5 million, primarily on long-term mine development advances and infrastructure including the Manuelita shaft deepening project, exploration drilling, plant upgrades, and equipment acquisitions.

In 2018, we anticipate investing between approximately $12.0 million and $12.5 million in sustaining capital and $2.0 million in project capital. The sustaining capital expenditure forecast includes mine equipment additions, replacements and overhauls, the completion of the deepening of the Manuelita zone, and mine development (primarily raise boring). The project capital is related to engineering studies on plant design in connection with the eventual mill relocation.

In 2017, direct operating costs at Morococha were $64.0 million.

Exploration, Development, and Production

In 2018, based on an ownership interest of approximately 92.3% of Argentum, our proportionate interest in Morococha's production is forecast to be between 2.5 and 2.7 million ounces of silver, between 2,200 and 2,300 ounces of gold, between 18,000 and 18,600 tonnes of zinc, between 4,300 and 4,700 tonnes of lead, and between 5,100 and 5,300 tonnes of copper. We plan to undertake approximately 25,600 metres of exploration drilling in 2018.

C. Bolivia

(i) San Vicente

Project Description, Location, and Access

The San Vicente underground silver-zinc mine is located in the south of Bolivia in the Province of Sud-Chichas, Department of Potosí. San Vicente is located 100 kilometres west of the town of Tupiza and 120 kilometres south of the town of Uyuni. The property is accessible by gravel road from Tupiza and Uyuni. Daily commercial flights operate between Uyuni and La Paz. Both Uyuni and Tupiza are connected through the Bolivian rail system to the ports of Arica and Antofagasta in Chile.

Pan American holds a 95% interest in PASB. The remaining 5% of PASB is owned by Urion Holdings (Malta) Ltd. ("Urion"), an affiliate of Trafigura Baheer B.V. ("Trafigura"). PASB has a joint venture agreement (Contrato de Riesgo Compartido) with Corporación Minera de Bolivia ("COMIBOL") the state mining company of the Plurinational State of Bolivia, pursuant to which PASB holds a 62.5% interest in the cash flow from the operations and is the operator of the San Vicente property.

The mine property concessions cover an area of 7,021 hectares and consist of 11 concessions, all of which are held in the name of COMIBOL, and PASB is contractually responsible for paying the annual mining tenure tax to maintain the concessions. All of the concessions include the rights for mining, water, and surface usage. As far as we are aware, all of the concessions are in good standing, and to our knowledge, we have met all of the necessary obligations to retain the property.

The known mineralized zones, mineral resources and mineral reserves, mine workings, the processing plant, tailings storage facilities, waste rock storage facilities, and effluent management and treatment systems are located within the concessions held by COMIBOL which are subject to the agreement between PASB and COMIBOL.

Pursuant to a joint venture agreement entered into with COMIBOL in June 1999 (as subsequently amended) with respect to the development of the San Vicente property, PASB became obligated to pay COMIBOL a participation fee of 37.5% (the "Participation Fee") of the operations cash flow and to fund additional development of the mine. Once full commercial production of the expanded San Vicente mine began in 2009, the Participation Fee was reduced to approximately 9.4% until PASB recovered its investment in the San Vicente property, which occurred in December 2012. Thereafter, the Participation Fee reverted back to its original 37.5%. In 2017, the royalties to COMIBOL amounted to approximately $8.5 million (2016 - $14.3 million).

A 2% royalty on 80% of the NSR is also payable to Empresa Minera Unificada S.A. ("EMUSA"), a former partner of PASB on the project. The royalty became payable only after PASB recovered its capital investment in the project and applies only when the average price of silver in a given financial quarter is $9.00 per ounce or greater. The first royalty payment was made in 2012 and payments have been made annually since then. $0.9 million was paid in respect of this royalty in 2017.

A Bolivian state mining royalty is applied to gross metal value of sales before smelting and refining deductions, and the royalty percentage is a sliding scale of 1% to 6% depending on metal prices. The royalty is deductible from our taxable income only when the metal price of silver is above $5.50 per ounce. If the metal price is below $5.50 per ounce of silver, the royalty is creditable against corporate income tax otherwise payable. For the year ended December 31, 2017, the royalty amounted to $5.0 million (2016 - $5.6 million).

To the best of our knowledge, the San Vicente mine is not subject to any other royalties, overrides, back-in rights, payments, or other agreements and encumbrances. PASB is subject to Bolivian taxes, fees and duties.

On May 28, 2014, the Bolivian government enacted Mining Law No. 535 (the "New Mining Law"). Among other things, the New Mining Law established a new Bolivian mining authority to provide principal mining oversight (varying the role of COMIBOL) and sets out a number of economic and operational requirements relating to state participation in mining projects. Further, the New Mining Law provides that all pre-existing contracts are to migrate to one of several new forms of agreement within a prescribed period of time. As a result, we anticipate that the current joint venture agreement with COMIBOL relating to the San Vicente mine will be subject to migration to a new form of agreement and may require renegotiation of some terms in order to conform to the New Mining Law requirements. We are assessing the potential impacts of the New Mining Law and are awaiting further regulatory developments, but the primary effects on the San

Vicente operation and our interest therein will not be known until such time as we have, if required to do so, renegotiated the existing contract, and the full impact may only be realized over time.

On June 25, 2015, the Bolivian government further enacted the new Conciliation and Arbitration Law No. 708 (the "New Conciliation and Arbitration Law"), which endeavors to set out newly prescribed arbitral norms and procedures, including for foreign investors. However, whether the New Conciliation and Arbitration Law applies specifically to pre-existing agreements between foreign investors and COMIBOL, and how this new legislation interacts with the New Mining Law, remains unclear. As a result, we await clarification by regulatory authorities and will continue to assess the potential impacts of the New Conciliation and Arbitration Law on our business.

Additional risks of doing business in Bolivia include being subject to new higher taxes and mining royalties, some of which have already been proposed or threatened, and threatened expropriation of assets, all of which could have a material adverse effect on the mine and the mine's profitability. Please see the discussion under "Risks Relating to Our Business - Foreign Operations" for a further discussion of this risk.

While there are no known significant factors or risks that we currently anticipate might affect access or title, or the right or ability to perform work on the property, including permitting and environmental liabilities, other than as described above, please refer to "Risks Related to Our Business" starting on page 75 for a general discussion of the risks relating to our operations.

History

Surface mining of veins in the area of San Vicente has occurred sporadically since colonial times. Several different owners operated the mine from 1911 through 1950. From 1950 to 1952, the mine was operated by the Aramayo Mining Company. In 1952, the Bolivian government nationalized the mine and placed it under the control of COMIBOL. Following the discovery of new silver and zinc veins in the late nineteen sixties, COMIBOL constructed the 400 tpd Vetillas concentrating plant in 1972, which produced a silver rich zinc concentrate.

The mine was operated by COMIBOL until 1993, at which time mining was suspended pending the privatization of mining in Bolivia. In 1995, the San Vicente mine was made available as part of a joint venture arrangement with COMIBOL. On June 21, 1999, PASB, at that time a wholly-owned subsidiary of Pan American, signed a joint venture agreement with COMIBOL. Under the original terms of the agreement, COMIBOL was entitled to a participation fee equal to 20% to 30% of cash flow for each financial term once the recovery period for PASB's initial investment ended. The contract had a term of 30 years and required a minimum investment by PASB of $20 million.

Between late 2001 and early 2009, PASB and COMIBOL entered into a number of toll mining agreements with EMUSA to process San Vicente's ore at EMUSA's nearby Chilcobija mill. In 2003, PASB entered into a share purchase agreement with EMUSA, whereby EMUSA could acquire up to 49% of the outstanding shares of PASB. This agreement required EMUSA to fund feasibility and development related expenses to an aggregate of $2.5 million by May 1, 2005. EMUSA subsequently met the funding requirement and acquired the 49% interest.

In the fourth quarter of 2005, Pan American negotiated a shareholders' agreement with EMUSA and Trafigura (a minority stakeholder of EMUSA), which agreement contemplated an increase in our shareholding in PASB from 50% to 55%. Pursuant to this shareholders' agreement, which was signed in January 2006, EMUSA would hold 40% of the shares of PASB and Trafigura would hold the remaining 5%.

In July 2006, PASB and COMIBOL renegotiated the terms of the main joint venture contract, changing COMIBOL's participation fee to a fixed percentage participation fee of 37.5% of the operating cash flow, subject to certain deductions in respect of development costs and a reduction in the rate during the recovery period of PASB's investment. Pursuant to an amendment to the contract signed in June 2006, PASB committed to build a new mill, tailings storage facilities and other civil works at San Vicente during an 18-month time period which began in June 2007. The total investment to expand San Vicente and build the new processing facilities was approximately $72 million, excluding recoverable value-added tax. As part of the 2007 amendments, certain other terms were renegotiated, including changing COMIBOL's participation fee to a fixed percentage of 37.5% of the operating cash flow, subject to certain deductions in respect of development costs.

In 2007, Pan American purchased EMUSA's 40% interest in PASB, increasing our share ownership from 55% to the current 95%, and Trafigura continued to hold its 5% interest in PASB. Between 2008 and 2009, we completed construction of a new 750 tpd capacity selective flotation plant and infrastructure as well as continued mining and toll treating ores under an agreement with COMIBOL. Commercial production from the flotation plant commenced at the end of the first

quarter of 2009. Pan American and Trafigura entered into a new shareholders' agreement in 2010 to reflect the new shareholder relationship. Trafigura assigned its 5% interest in PASB to its affiliate, Urion, in 2013.

Geological Setting, Mineralization, and Deposit Types

San Vicente is located 2.5 kilometres west of the prominent north-south striking San Vicente thrust fault, which forms the eastern limit of the Bolivian Altiplano basin. Mineralization at the property is hosted by conglomerates over-thrusted by a turbidite sequence which outcrops on the east side of the mine.

The regional sedimentary sequence consists of a basement of marine siliciclastic sediments that was folded and later unconformably overlain by continental sediments and a thick sequence of continental clastic sediments (the Potoco and San Vicente formations).

San Vicente is a polymetallic vein deposit formed by hydrothermal systems forming vein type and disseminated polymetallic deposits. Mineralization in the district is known to cover an area of three by four kilometres to a depth of 300 metres. It consists of replacement veins filling pre-existing faults, replacements in brecciated conglomerates in the San Vicente fault, and mineralization in dacitic dykes. Wide veins form in the west-northwest trending structures, with widths of between two and six metres, while veins present in the northwest structures are thinner and shorter. The widest and highest grade veins form in northeast trending faults.

The minerals of economic importance are sphalerite, tetrahedrite, chalcopyrite, and galena. Cassiterite, covellite, and bornite are found in some veins. The primary gangue minerals are quartz, pyrite, marcasite, and barite.

Exploration

Prior to our involvement in the property, there was no known modern exploration on the property other than the exploitation of silver from exposed veins. Our exploration program began in 1999 following the execution of the joint venture agreement with COMIBOL. Surface diamond drilling was undertaken using HQ sized drill rigs and underground diamond drilling was done using NQ sized drill rigs. In addition to the diamond drilling, an extensive channel sampling program was undertaken in the mine, initially by COMIBOL and later by PASB.

The results of the underground channel samples and the surface and underground drillholes are used for the estimation of mineral resources and mineral reserves. Channel sampling was originally partially done by COMIBOL and later by PASB employees under the supervision of PASB geologists. Diamond drilling is executed by third party contractors under the supervision of PASB geologists.

Drilling

The mine undertakes drilling on an annual basis for mineral resource and reserve definition. Diamond drilling at the mine has been undertaken using a combination of HQ sized drill rigs at the surface and NQ sized drill rigs from underground. Drillhole spacing is variable and ranges from between 35 to 100 metres, depending on the vein.

Sampling, Analysis, and Data Verification

Channel samples are taken by PASB staff from the backs of drifts, the ribs of crosscuts, the backs of stopes, and the ribs of raises, every four metres across the veins in 20 centimetre wide channels approximately three centimetres deep. Stopes are channel sampled every 1.6 metres vertical cut on two metre centres along strike. The sample interval varies from 0.2 to 10.8 metres.

During the entire procedure from drilling, sampling, and analysis, sample security is controlled by PASB employees or by the commercial laboratories once the samples have been delivered to the sample preparation facilities. We have no reason to believe that the validity and integrity of the samples have been compromised.

In the past, the channel samples were prepared by Bondar-Clegg laboratories (now ALS Chemex) in Oruro, Bolivia or by SGS in La Paz, and then sent to their respective Lima facilities for analysis of silver, zinc, lead, and copper content using AA spectroscopy. The drill core samples are crushed, split, and pulverised by ALS Chemex, then analysed for silver, zinc, lead, and copper content using AA spectroscopy. Any sample with a silver grade greater than 500 grams per tonne is re-assayed by fire assay, and samples with greater than 10% zinc are performed using titrimetric analysis.

The QAQC program includes the submission of blanks, standards, and duplicate samples to the primary laboratory and the submission of check samples to a secondary laboratory. The results of the QAQC programs indicate that the sample assays are reliable for the estimation of mineral resources and mineral reserves.

Mineral Processing and Metallurgical Testing

As part of normal plant operation procedures, metallurgical analysis and testing is undertaken as required. The majority of these analyses are to assess mill performance and metallurgical recovery. Metal recovery forecasts used in our mine plans are based on the historical performance of the plant operations and the tonnes and grade of material that is planned to be mined.

Mineral Resource and Mineral Reserve Estimates

Management estimates that mineral reserves at the San Vicente mine, as at December 31, 2017, are as follows:

San Vicente Mineral Reserves [1, 2, 3]

Reserve Category	Tonnes (Mt)	Grams of Silver per tonne	% Zinc	% Lead	% Copper
Proven	1.9	416	3.00	0.36	0.43
Probable	0.6	449	2.92	0.46	0.50
TOTAL	2.5	424	2.98	0.38	0.45

Notes:

1 Estimated using a price of $18.50 per ounce of silver, $2,600 per tonne of zinc, $2,200 per tonne of lead, and $5,500 per tonne of copper. Totals may not add due to rounding.

2 Mineral reserve estimates for San Vicente were prepared under the supervision of, or were reviewed by, Christopher Emerson, FAusIMM, and Martin G. Wafforn, P.Eng., as Qualified Persons as that term is defined in NI 43-101.

3 Tonnes are shown for 95% of the San Vicente property as Pan American holds a 95% interest in PASB.

Management estimates that mineral resources at the San Vicente mine, as at December 31, 2017, are as follows:

San Vicente Mineral Resources [1, 2, 3]

Resource Category	Tonnes (Mt)	Grams of Silver per tonne	% Zinc	% Lead	% Copper
Measured	0.8	148	2.31	0.17	0.20
Indicated	0.1	177	1.43	0.19	0.23
Inferred	3.3	295	2.92	0.35	0.27

Notes:

1 These mineral resources are in addition to mineral reserves. Estimated using a price of $18.50 per ounce of silver, $2,600 per tonne of zinc, $2,200 per tonne of lead, and $5,500 per tonne of copper.

2 Mineral resource estimates for San Vicente were prepared under the supervision of, or were reviewed by, Christopher Emerson, FAusIMM, and Martin G. Wafforn, P.Eng., as Qualified Persons as that term is defined in NI 43-101.

3 Tonnes are shown for 95% of the San Vicente property as Pan American holds a 95% interest in PASB.

Mineral resource estimates are prepared annually and updated with the additional drillhole and channel samples collected during the year, using industry standard mining software. The samples are composited to equal lengths and treated for extreme grade values if necessary. A block model for each vein is constructed based on the interpretations from mapping, channel and drillhole logs, and assay values. Silver, lead, and zinc grades are estimated into the blocks using ordinary kriging, and bulk density assigned to each block based on the average of density measurements. The estimate is validated and classified for confidence categories depending on the number of samples available to the estimate. Any vein with a width of less than the minimum mining width is diluted with waste to the minimum mining width, and mining dilution and recovery factors are applied to each block. The dilution and loss applied to each vein is assessed each year and adjusted according to the actual dilution experienced during mining. The estimate is depleted annually to account for production occurring during the previous year.

Following the estimation of diluted tonnes and grade in each block, a value per tonne is applied to each block based on metal content, metal prices, concentrate sales terms, concentrate quality, metallurgical recovery, transportation, refining, and other selling costs such as storage fees, port fees, etc., as well as operating costs and mining costs dependent upon the mining method. Any blocks which are considered uneconomic after these parameters are applied either remain as mineral resources or may be removed from the inventory completely if they do not meet the criteria of mineral resources. The mineral reserves are classified as proven or probable depending on the resource classification.

Mineral reserve estimates are based on a number of assumptions that include metallurgical, taxation, and economic parameters. Increasing costs or increasing taxation could have a negative impact on the estimation of mineral reserves. There are currently no known factors that may have a material negative impact on the estimate of mineral reserves or mineral resources at San Vicente.

Mining Operations

Ore is mined using conventional shrinkage stoping and long hole mining with development waste used as backfill in the long hole stopes. Access to the mine for workers and equipment is provided by ramps and the Pelayo shaft while waste and ore material is brought to the surface using both haul trucks on the ramp and hoisting at the Pelayo shaft. Locomotives are used to move broken ore and waste on the levels in the conventional areas of the mine.

Processing and Recovery Operations

San Vicente operates a 750 tpd nominal capacity plant using a standard flotation process to produce a silver-zinc concentrate and a silver-lead concentrate. Ore passes through a jaw crusher at the plant, and then is fed into a semi-autogenous mill/ ball mill grinding circuit. Following the concentration process in the flotation circuit, the concentrates are thickened and dewatered in filter presses prior to shipping. Tailings are stored in a tailings storage facility approximately 1.5 kilometres from the concentrator. In 2017, a total of 345,300 tonnes of ore were processed with metallurgical recoveries of 92.6% for silver, 68.4% for zinc, 84.0% for copper, and 80.0% for lead. Total metal production for the year was approximately 3.8 million ounces of silver, 4,600 tonnes of zinc, 500 tonnes of lead, and 700 tonnes of copper.

The silver-zinc and silver-lead concentrates from San Vicente are sold under contracts with arm's length smelters and concentrate traders, which consider the presence of any deleterious elements. Both the silver-zinc and the silver-lead concentrates are taken by truck and rail to ports in Chile for shipment. We have not had any difficulty in securing contracts for the sale of the San Vicente concentrates, however, there can be no certainty we will always be able to do so or what terms will be available at the time. Please see "Risks Related to our Business – Trading Activities and Credit Risk".

The revenues per type of concentrate produced at San Vicente for the past three years were as follows:

2017	**Revenue[1, 2]**	**Quantity Sold (Tonnes)**
Zinc Concentrate[3]	$14.3 million	9,204
Silver Concentrate[3 4]	$54.2 million	8,656
2016	**Revenue[1, 2]**	**Quantity**
Zinc Concentrate[3]	$16.8 million	13,177
Silver Concentrate[3 4]	$62.0 million	8,689
2015	**Revenue[1, 2]**	**Quantity**
Zinc Concentrate[3]	$14.0 million	14,152
Lead Concentrate[3]	$50.4 million	6,744

Notes:

1 Consists of sales to arm's length customers.

2 Calculated as gross revenue plus export credit incentives (as applicable), less treatment and refining charges and export taxes.

3 Zinc concentrates contain payable silver. Lead concentrates contain payable silver and gold. Silver concentrates contain payable gold, lead, and copper.

4 Silver concentrate was included in the lead and copper concentrates in the 2016 and 2017 condensed interim consolidated financial statements, and in the annual financial statements and the annual information form for the year-ended December 31, 2016.

Infrastructure, Permitting, and Compliance Activities

The mine workings, processing plant, tailings and waste disposal areas, effluent management and treatment facilities, roads, and power and water lines have already been constructed and are located within the boundaries of the mining leases and surface rights controlled by us. To the best of our knowledge, all permits and licenses required to conduct our activities on the property have been obtained and are currently in good standing. We have agreements in place to obtain the water required for mining and processing from a combination of water wells and surface water. A power transmission line connects the mine to the Bolivian national power grid at Portugalete and supplies sufficient power for the plant and mining operations.

In compliance with the Environmental Regulation for Mining Activities, PASB commissioned MINCO SRL, a Bolivian consulting firm, to conduct a base line environmental audit ("ALBA") of the San Vicente mine, as well as other environmental studies in satisfaction of Bolivian laws and regulations. The ALBA sets out the present situation of the environment at the property and identifies environmental liabilities regarding pre-existing waste rock storage facilities and the environmental impact on soil, water, vegetation and solid residues caused by previous mining activities conducted on the property.

Construction of the new processing plant, tailings storage facility and ancillary facilities at San Vicente required another update to the environmental licence that was originally issued in 2002. To this end, PASB presented the application in 2007 and was advised by the Bolivian authorities that a comprehensive environmental impact assessment ("EIA") would be required for the proposed projects due to the scope and nature of the proposed changes to the operations. After a public consultation period, PASB submitted a comprehensive EIA in December 2007. A review of the EIA was initiated by the Bolivian authorities and the environmental license was granted for the San Vicente mine in May 2008.

The most significant environmental issues currently associated with the San Vicente mine are related to the waste storage facilities, acidic water from mine dewatering, acid drainage from the Pelayo waste rock storage facilities that runs into the San Vicente River, and water discharge from the San Juan and San Francisco adits. PASB constructed and operates an active chemical treatment system to improve the water quality and comply with its environmental permits. Upgrades to the reagent dosing system and sludge handling at the plant were completed in 2016. Improvements to the historic Pelayo waste rock storage facilities were implemented in 2013, 2015, and 2017 to reduce contact with the San Vicente River.

In order to remediate environmental hazards or concerns caused by previous operators of the San Vicente mine, PASB has focused on the recommendations outlined in the EIA, together with the complementary studies of Health and Industrial Safety, the Handling of Solid Residues procedures, the Closure and Rehabilitation Plan and the Contingency Plan. As per the joint venture agreement between COMIBOL and PASB, the equipment, facilities and infrastructure become the property and responsibility of COMIBOL upon the cessation of operations.

A closure cost estimate for San Vicente was prepared according to State of Nevada approved SRCE methodology in 2011 and is updated every year. We have estimated the present value of reclamation costs for the San Vicente property to be approximately $3.5 million at December 31, 2017. Pan American has not accrued any amounts for any prior existing environmental liabilities. See "Narrative Description of the Business – Environmental Protection" for further disclosure regarding forward-looking statements related to reclamation costs.

Safety audits are conducted by Pan American's Director of Health and Safety and safety managers from some of our other mines. During 2017, personnel employed at the mine attended 6,600 hours of safety training.

Capital and Operating Costs

In 2017, capital additions at San Vicente totalled $8.1 million and consisted primarily of investments in mining equipment and overhauls, mine infrastructure upgrades, and exploration drilling.

The expected sustaining capital budget for 2018 at San Vicente totals between $6.0 million and $7.0 million, the major components of which include mine equipment refurbishment and replacements, extension of the mine access ramp, completion of a tailings storage facility expansion and near mine exploration.

In 2017, direct operating costs at San Vicente were $34.7 million.

Exploration, Development, and Production

In 2018, based on an ownership interest of approximately 95% of PASB, we anticipate producing between 3.9 million and 4.1 million ounces of silver, 200 ounces of gold, between 6,500 and 6,700 tonnes of zinc, 200 tonnes of lead, and 900 tonnes of copper. We plan to undertake approximately 5,300 metres of exploration drilling in 2018.

D. Argentina

(i) Manantial Espejo

Project Description, Location, and Access

The Manantial Espejo open pit and underground silver-gold mine is located in the Province of Santa Cruz, Argentina. Puerto San Julian is located 160 kilometres to the east on the Atlantic coast and Gobernador Gregores is located 60 kilometres to the west. The main access is via a gravel secondary road that connects the property with Puerto San Julian and Gobernador Gregores, the nearest major urban centers to the mine. Puerto San Julian has a population of approximately 5,500.

The mine is held 100% by our wholly owned Argentine subsidiary, MTA. The Manantial Espejo mine consists of 17 mineral concessions covering a total of 25,533 hectares. The mineral concessions forming Manantial Espejo are, by law, subject to minimum expenditure requirements with respect to which we had entered into an agreement with the government of Argentina. We believe that MTA has continuously been in compliance with such agreement, and to our knowledge, we have met all of the necessary obligations to retain the property. The property includes ownership of three surface properties purchased by MTA to facilitate support and to improve the performance of its mining and exploration activities. These surface rights cover an area of 43,207 hectares and at this time all mining and processing related activities occur within these properties. To the best of our knowledge, all permits and licenses required to conduct our activities on the property have been obtained and are currently in good standing. All of the mineral resources and mineral reserves, mine workings, plant facilities, tailings ponds, and waste storage areas are contained within the leases controlled by MTA.

Production from the Manantial Espejo property is subject to royalties to be paid to Barrick Exploraciones Argentina S.A. (“Barrick”) according to the following: (i) $0.60 per metric tonne of ore mined from the property and fed to process at a mill or leaching facility to a maximum of 1 million tonnes; and (ii) one-half of one percent (0.5%) of the NSR derived from the production of minerals from the property. In addition, MTA has negotiated a royalty equal to 3.0% of operating cash flow payable to the Province of Santa Cruz.

To the best of our knowledge, the mine is not subject to any other royalties, overrides, back-in rights, payments or other agreements and encumbrances. The Company’s operations in Argentina are subject to taxes, fees and duties.

While there are no known significant factors or risks that we currently anticipate will affect access or title, or the right or ability to perform work on the property, including permitting and environmental liabilities, please refer to "Risks Related to Our Business" starting on page 75 for a general discussion of the risks relating to our operations.

History

Reconnaissance exploration on the Manantial Espejo property was first carried out in the 1970s by the Argentinean government and in 1989, ownership of the original interest in the mineral properties constituting the Manantial Espejo property was acquired by Mr. Roberto Schupbach. Pursuant to an agreement entered into in 1991 between Mr. Schupbach and Compañía Minera San Jose S.A. (a wholly owned subsidiary of St. Joe Minerals), Mr. Schupbach sold his mineral property rights to Minera San Jose. Later in the same year, St. Joe Minerals was acquired by Lac Minerals Ltd., and then in 1994, Barrick acquired Lac Minerals Ltd. and assumed ownership.

In 1996, Triton Mining Corporation (“Triton”) entered into an option agreement with Barrick to earn the right to acquire an 80% interest in the property for a total cost of $2.5 million, which right Triton then assigned to its wholly owned subsidiary MTA. Exploration on the property was advanced in 1996 by Barrick, which completed 62 diamond drill holes on the Maria Vein. In 1997, an additional 42 core drill holes were completed and a pre-feasibility study commenced for the construction of an open pit mine and cyanidation mill processing facility to treat and recover silver and gold from the Maria Vein.

In 1998, MTA completed making the required payments under the option agreement. Barrick and MTA subsequently incorporated Compañía Minera Alto Valle (“Alto Valle”) for the purpose of holding beneficial title to the

properties, and pursuant to a shareholders' agreement, Barrick held 20% and MTA held 80% of the shares of Alto Valle, respectively, and MTA was designated operator of the property.

In 1998, Blackhawk Mining Inc. ("Blackhawk") purchased all of the issued shares of Triton. Also, in 1998, Silver Standard Resources ("SSR") entered into an option agreement with Triton to acquire a 50% interest in MTA. Then, in April of 2001, SSR acquired Barrick's 20% interest in Alto Valle (2,400 shares), half of which it agreed to sell to Blackhawk in consideration for an interest in an unrelated mining venture.

In 2002, SSR acquired Triton's remaining 50% interest in MTA, as well as Blackhawk's 1,200 shares in Alto Valle. Concurrently, SSR agreed to sell to us 50% of the shares of MTA and half of the shares (1,200) it held in Alto Valle directly. Pan American acquired this 50% interest in the property for a purchase price of $1,912,433, which consisted of a cash payment in the amount of $662,433 and a transfer of 231,511 of our Common Shares valued at $1,250,000. In addition, we agreed to pay 50% of $200,000 in order to eliminate a 1.2% NSR royalty payable by SSR to Blackhawk and agreed to fund the first $3 million of joint venture expenditures following the issuance of a production notice. In March 2006, we negotiated and entered into a purchase agreement with SSR to acquire SSR's 50% interest in MTA and Alto Valle, respectively, thus becoming a 100% owner of the Manantial Espejo property.

In March 2006, we received approval of the EIS from the Santa Cruz Province of Argentina and signed an agreement with the Federal Government of Argentina and the Province of Santa Cruz to bring grid electrical power to the town of Gobernador Gregores with a sub-connection to Manantial Espejo. In April 2006, mine development activities were initiated and by 2008, mining operations in two open pits and two underground mines and the mills, leach circuits, counter-current-decantation, Merrill Crowe, and refinery commenced operations. The primary crusher, recycle pebble crusher and concentrate circuits were completed by early 2009.

In 2010, we completed a merger of MTA with Alto Valle.

In October 2017, we finished mining in the open pit, and continued producing only from the underground and surface stockpiles.

Geological Setting, Mineralization, and Deposit Types

Manantial Espejo lies near the southwestern end of the Deseado Massif, a large igneous province dominated by ignimbrites of the Chon Aike and La Matilde Formations and minor andesites and basaltic andesites of the Bajo Pobre Formation. The property area consists of a volcanic complex related to a collapsed caldera. The lithologies of the area consist mostly of sub-aerial volcanic extrusive sequences.

Silver and base metal mineralization in the Manantial Espejo district is spatially and genetically related to the Deseado Massif, where mineralization is hosted by the Chon Aike and La Matilde Formations.

The styles of mineralization predominantly include massive quartz veins, as well as vein breccias, sheeted and stockwork veining, and minor dissemination. Gold occurs mainly as electrum in pyrite while the silver occurs in a number of forms including argentiferous galena and silver sulphosalts. Sulphides account for up to 3% to 5% of the rock mass as veinlets and disseminations.

Mineralization at Manantial Espejo is hosted in four main veins known as María, Karina/Unión, Melissa, and Concepción. The majority of the mineralization outlined to date is in the María Vein. The vein is a thick silica vein exposed on surface for more than one kilometre and has been intersected at a depth of up to 275 metres. This vein averages 7.8 metres in true width and ranges from 0.63 metres to 20 metres and is open to the east and at depth. Economic grade mineralization of the vein is less continuous. Open pit economic grade zones measure tens to hundreds of metres. Underground economic grade zones measure tens of metres, with over 100 metres of vertical extent in the María West area.

The Karina/Unión Vein is exposed on surface for a distance of 850 metres and has been drilled to a depth of 150 metres. Several interconnected high grade silver-gold epithermal veins in excess of 20 metre true widths have been observed in drillhole intersections.

The Melissa vein is thought to be the extensional component to the María shear system. The Melissa Vein has been defined by drill holes along a 300 metre strike length and 200 metres down dip and averages from between 1.5 metres and 2.5 metres wide.

The Concepción Vein is a single quartz vein. Mineralization occurs over a strike length of 600 metres and is open at depth and at both ends.

Exploration

Reconnaissance exploration on the Manantial Espejo mine was first carried out in the 1970s by the Argentinean government. Exploration on the property was advanced in 1996 and 1997 by Barrick, which drilled 104 diamond holes on the María vein. In 1998, Triton, with SSR as the operator, drilled 18 diamond drillholes on the María vein, and in 1999, Triton completed some additional prospecting, soil sampling, mapping, and a further 17 holes on other targets. In 2000, a reverse circulation and diamond drilling campaign was completed to sample the newly defined Karina, Unión, and Melissa deposits. In 2001, a reconnaissance campaign was conducted with the goal of expanding the mineral resources by drilling the María, Melissa, and Karina-Unión veins.

We began exploration efforts in 2002 by collecting surface trench samples and have completed diamond drilling programs on an annual basis to estimate mineral resources and mineral reserves. All of the property exploration has been carried out by Company geologists or contractors under the supervision of Company geologists.

Drilling

The mine undertakes diamond drilling on an annual basis for mineral resource and reserve definition. Previous drilling methods included reverse circulation and wagon-mounted percussion drilling. All MTA core has been HQ diameter with the exception of re-entry into Barrick holes for deepening, for which NQ diameter was used.

Sampling, Analysis, and Data Verification

All drill core is delivered from the drill rigs to the core shed at the property by mine personnel and transported by mine personnel to Puerto San Julian, where they are then transported by bus or truck to Mendoza. Once the samples are received by ALS Chemex, they are maintained under the control of the laboratory. There is no reason to believe that the validity and integrity of the samples has been compromised.

Samples average approximately 1.0 metres in length. There are no known drilling, sampling, or recovery factors that could materially impact the accuracy of reliability of the results.

ALS Chemex assays the sample for gold using fire assay with AA finish and for silver by four acid digest with AA finish. Any samples with assays greater than 100 grams per tonne silver and/or 10 grams per tonne gold are re-assayed by fire assay with gravimetric finish. MTA geologists submit certified standard samples and blanks to the primary laboratory and approximately 10% of the samples are sent to Acme Analytical Laboratories S. A. of Santiago for check assays.

Mineral Processing and Metallurgical Testing

As part of normal plant operation procedures, metallurgical analysis and testing is undertaken as required. The majority of these analyses are to assess mill performance and metallurgical recovery. Metal recovery forecasts used in our mine plans are based on the historical performance of the plant operations and the tonnes and grade of material that is planned to be mined.

Mineral Resource and Mineral Reserve Estimates

Management estimates that mineral reserves at Manantial Espejo, as at December 31, 2017, are as follows:

Manantial Espejo Mineral Reserves [1, 2]			
Reserve Category	**Tonnes (Mt)**	**Grams of Silver per tonne**	**Grams of Gold per tonne**
Proven	1.5	91	0.77
Probable	0.6	305	3.37
TOTAL	2.1	149	1.47

Notes:

1 Estimated using prices of $16.50 per ounce of silver and $1,250 per ounce of gold for planned 2018 production, then using $18.50 per ounce of silver and $1,300 per ounce of gold. Totals may not add due to rounding.

2 Mineral reserve estimates for Manantial Espejo were prepared under the supervision of, or were reviewed by Christopher Emerson, FAusIMM, and Martin G. Wafforn, P.Eng., as Qualified Persons as that term is defined in NI 43-101.

Management estimates that mineral resources at Manantial Espejo, as at December 31, 2017, are as follows:

Manantial Espejo Mineral Resources [1, 2]			
Resource Category	**Tonnes (Mt)**	**Grams of Silver per tonne**	**Grams of Gold per tonne**
Measured	0.1	145	1.89
Indicated	0.4	192	1.91
Inferred	0.4	187	2.69

Notes:

1 These mineral resources are in addition to mineral reserves. Estimated using prices of $25 per ounce of silver and $1,400 per ounce of gold.

2 Mineral resource estimates for Manantial Espejo were prepared under the supervision of, or were reviewed by Christopher Emerson, FAusIMM, and Martin G. Wafforn, P.Eng., as Qualified Persons as that term is defined in NI 43-101.

Mineral resource estimates are prepared on an annual basis using industry standard mining software and based on the additional information collected during drilling in the previous year. Three dimensional interpretations of lithology, grade estimation domains, clay alteration, disseminated pyrite content, and bulk density are prepared and applied to the block model. The samples are composited to a common length and treated for extreme grades. Ordinary kriging is used to estimate gold and silver grades into the block model. The mineral resource estimate is then classified for confidence categories based on the density of available drillholes. The mineral resource estimate is diluted with respect to the anticipated mining method in each area, and depleted for the previous year's mining. Metal prices, cost, revenue, and metal extraction parameters are estimated on an annual basis to define a silver equivalent cut-off grade.

Mineral reserves are estimated by discounting the mineral resources for mining losses associated with pillars left behind for stability and safety reasons. Optimized pit designs are prepared for each open pit mining area and geometries are prepared for underground mining panels. Any blocks which are considered uneconomic after these parameters are applied either remain as mineral resources or may be removed from the inventory completely if they do not meet the criteria of mineral resources. The mineral reserves are classified as proven or probable depending on the resource classification.

Mineral reserve estimates are based on a number of assumptions that include metallurgical, taxation, and economic parameters. Increasing costs or increasing taxation could have a negative impact on the estimation of mineral reserves. There are currently no known factors that may have a material negative impact on the estimate of mineral reserves or mineral resources at Manantial Espejo.

Mining Operations

Ore was mined at Manantial Espejo using a combination of conventional open pit and underground mining methods until October 2017, when open pit mining ceased. All production now is from underground and surface stockpiles. The

surface mining operations used 54 tonne and 30 tonne trucks and front end loaders and track shovel loading equipment. The underground mining operations consist primarily of long-hole mining methods utilizing development waste as backfill. The underground mine is expected to operate into 2021.

Processing and Recovery Operations

Ore is treated by conventional crushing, semi-autogenous/ball mill grinding, bulk gravity concentration, intensive gravity concentrate agitation leaching, thickening, agitated cyanide leaching of the gravity tailings slurry, counter current decantation thickening, Merrill Crowe zinc precipitation, sulphur dioxide cyanide neutralization, conventional pulp tailings disposal, and conventional silver and gold doré bar production from melting of the Merrill Crowe precipitate. The nominal treatment rate at design capacity is 2,000 tpd of ore.

In 2017, we processed approximately 793,500 tonnes of ore with metallurgical recoveries of 90.5% silver and 93.7% gold, producing 3.1 million ounces of silver and 45,300 ounces of gold.

All production from the Manantial Espejo mine is in the form of doré bars, which is refined at arm's length refineries prior to the sale of refined silver and gold to bullion banks and traders. We have entered into multi-year refining contracts with two refineries for the production from Manantial Espejo. We have not had any difficulty in securing contracts for the sale of Manantial Espejo doré, however, there can be no certainty that we will always be able to do so or what terms will be available at the time. Please see "Risks Related to our Business – Trading Activities and Credit Risk".

During the past three years, the revenue produced by the Manantial Espejo mine was as follows:

2017	**Revenue[1, 2]**	**Quantity Sold**	
Silver and Gold in Doré	$111.6 million	3,170,713	ounces of silver
		46,532	ounces of gold
2016			
Silver and Gold in Doré	$144.0 million	3,032,604	ounces of silver
		67,558	ounces of gold
2015	**Revenue[1, 2]**	**Quantity Sold**	
Silver and Gold in Doré	$145.0 million	3,654,556	ounces of silver
		82,735	ounces of gold

Notes:

1 Consists of sales to arm's length customers.

2 Calculated as gross revenue plus export credit incentives (as applicable), less treatment and refining charges and export taxes.

Infrastructure, Permitting, and Compliance Activities

The mine workings, processing plant, tailings and waste disposal areas, effluent management and treatment facilities, roads, and power and water lines have already been constructed and are located within the boundaries of the mining leases and surface rights controlled by us. To the best of our knowledge, all permits and licenses required to conduct our activities on the property have been obtained and are currently in good standing. Power is sourced from a diesel generating plant at the site. Water is sourced from underground mine water and surface mine dewatering wells.

An EIA for the project, as required under provincial and federal laws, was prepared including mine design, tailing storage facility design, utility supply, water development studies, impact assessment, and records of extensive public consultation. In March 2006, we obtained approval of the EIA from the Province of Santa Cruz. The EIA is updated every two years.

No reclamation bond is currently required for mining operations in Argentina, however environmental reclamation insurance is required and we hold a policy for Manantial Espejo. A preliminary reclamation plan was developed for the property and included in the EIS submitted to the Argentine government during 2006. An updated EIA approved in December 2015 included an update to the reclamation plan and fulfills all closure planning requirements under Argentine law. A further update to the closure plan was approved in 2017. In 2017, we established a $40 million Argentine peso fund in relation to the period up to 2019 to be controlled by Pan American and used for social closure and infrastructure activities in Gobernador Gregores.

A closure cost estimate for Manantial Espejo was prepared according to State of Nevada approved SRCE methodology in 2011 and is updated every year. Pan American has estimated the present value of reclamation costs for the Manantial Espejo mine to be approximately $11.5 million as at December 31, 2017. See "Narrative Description of the Business – Environmental Protection" for further disclosure regarding forward-looking statements related to reclamation costs.

Safety audits are conducted by Pan American's Director of Health and Safety and safety managers from some of our other mines. Manantial Espejo was the recipient of the Chairman's Safety Award for safety performance in 2010 and in 2011, years in which Manantial Espejo went without any LTIs, and also worked all of 2013 without an LTI. Personnel at Manantial Espejo attended more than 10,000 hours of training during 2017.

Capital and Operating Costs

Capital additions at Manantial Espejo during 2017 totalled $3.3 million and consisted mainly of exploration drilling and equipment refurbishments.

Capital investments in 2018 are expected to be between $1.0 million and $2.0 million, primarily for near mine exploration.

In 2017, direct operating costs at Manantial Espejo were $110.4 million.

Exploration, Development, and Production

In 2018, we anticipate producing between 3.2 and 3.3 million ounces of silver, and between 28,500 and 29,500 ounces of gold. We plan to undertake approximately 2,500 metres of exploration drilling in 2018.

II. Development Properties

(i) Navidad Property

Project Description, Location, and Access

The Navidad silver development property is located in Gastre Department in the Province of Chubut, southern Argentina, 1,580 kilometres southwest of Buenos Aires and 360 kilometres west of Puerto Madryn. The Navidad property is accessible year round by road from the small communities of Gastre and Gan Gan, which are located on a provincial highway. The nearest airport is located in Esquel, about four hours' drive to the southwest by gravel road.

We are the operators of the development project through our wholly owned subsidiary, MASA. The main Navidad property block containing all of the current mineral resources is comprised of four 2,500 ha blocks granted with Manifestación de Descubrimiento ("MD") permits. MASA also holds the rights to additional MDs in the Province of Chubut. All of these MDs are in good standing with the mining authorities of the Province of Chubut, and to our knowledge, we have met all of the necessary obligations to retain the property. Our tenements are subject to Argentinean law and policy, which may in the future result in surrender of certain of its tenements outright and/or the reduction in area of our holdings.

Access to land for drilling and other exploration activities is allowed through outright surface ownership as well as through a series of easement contracts with neighbouring surface owners. We hold large surface land rights covering all known mineral resources through MASA. The remaining surface rights belong to several other land holders and access is either in negotiation or has been granted through agreements with the owners.

All of the known mineralized zones and planned mine workings, processing plant, effluent management and treatment systems, and tailings storage areas relating to the property are located within the boundaries of the concessions and surface rights.

Wheaton Precious Metals Corp. (formerly Silver Wheaton Corp.), through its subsidiary, Silverstone Resources (Barbados) Corp., has the right to purchase 12.5% of the life of mine payable silver produced at the Loma de La Plata deposit pursuant to a convertible debenture that, upon conversion, committed Aquiline to a future "silver stream" agreement. This agreement remains to be negotiated.

There is a provincial royalty of 3% of the "Operating Income" in the Province of Chubut. Operating Income is defined as revenue minus production cost (not including mining costs), treatment and transportation charges.

To the best of our knowledge, the property is not subject to any other royalties, overrides, back-in rights, payments or other agreements and encumbrances. The Company's operations in Argentina are subject to government taxes, fees and duties.

The Province of Chubut passed a law in 2003 ("Law 5001") that prohibits open pit mining and the use of cyanide in mineral processing in the entire province, effectively preventing the development of Navidad. To date, this law remains in place. Please see the discussion below under "Risks Relating to Our Business – Government Regulation".

There are material governmental and legal factors that affect the mineral resources at Navidad and the conversion of the mineral resources to mineral reserves. Legislation in place in the Province of Chubut currently prohibits open pit mining and the use of cyanide in the entire province. No cyanide will be used to process the material anticipated to be mined at Navidad, but given the depth and orientation of the deposits, the economic mine plan involves open pit mining. Because of these governmental and legal factors, the otherwise economically viable portions of the deposit cannot be estimated as mineral reserves at this time.

Since 2011, the Federal Government of Argentina increasingly controlled foreign exchange, imports and exports and the inflow and outflow of capital in response to unfavourable domestic economic trends. With the election of a new Federal Government in Argentina in late 2015, certain of these restrictions have been eased, but it remains uncertain as to whether such changes will be lasting, whether additional changes will be made or how our business will be impacted. See "Risks Related to Our Business – Foreign Operations".

While there are no other known significant factors or risks that we currently anticipate will affect access or title, or the right or ability to perform work on the property, including permitting and environmental liabilities, please refer to "Risks Related to Our Business" starting on page 75 for a general discussion of the risks relating to our operations.

History

The first known exploration program that included the Navidad property area consisted of a preliminary regional geochemical sampling program conducted by Normandy Argentina ("Normandy") in mid-2000 to locate additional deposits to supplement those known at its Calcatreu Property, a gold and silver deposit located approximately 80 kilometres from Navidad. The program consisted of 1,200 bulk leach extractable gold (BLEG) stream sediment samples taken from what was then considered open exploration ground, and resulted in the identification of Navidad.

In January and February 2002, Newmont Mining ("Newmont") purchased Normandy's worldwide mining interests. In September 2002, IMA Exploration Inc. ("IMA") signed a confidentiality agreement in order to obtain a copy of the information brochure and technical data related to Newmont's Argentinean interests, which included the Calcatreu property. In December 2002, IMA applied for exploration concessions over the Navidad area, utilizing and relying upon the Normandy BLEG data, and began undertaking a regional exploration program including regional mapping and sampling. From December 2002 to July 2006, IMA conducted diamond drilling, geochemical sampling, geophysical exploration, and mineral resource estimates at Navidad.

In January 2003, Aquiline entered into an agreement with Newmont, which was completed in July 2003, to purchase all of the shares of Normandy and Newmont's 100% interest in Calcatreu, and acquired all of Newmont's assets including the BLEG data. In May 2003, Aquiline reviewed the BLEG data and found that the ground covered by the BLEG data had already been claimed by IMA. After failure to receive a credible response from IMA as to how they could otherwise have made a legitimate discovery at Navidad without having breached the terms of the confidentiality agreement, Aquiline went on to file suit in the Supreme Court of British Columbia in March 2004.

The Supreme Court of British Columbia awarded ownership of the Navidad property to Aquiline on July 14, 2006, following a court case with IMA where IMA was found to have breached the confidentiality agreement. IMA subsequently appealed to the Court of Appeal of British Columbia, but lost the appeal in June 2007. An application for leave to appeal to the Supreme Court of Canada was filed by IMA in September 2007. Sole ownership rights were granted to Aquiline by the Supreme Court of Canada on December 20, 2007, subject to Aquiline making payment to IMA which would reimburse the latter for its accrued exploration expenditures up to the July 2006 court decision. Aquiline's final payment to IMA was made on February 8, 2008, giving Aquiline full ownership of the Navidad property.

From October 2006, Aquiline undertook diamond drilling, geophysical and geochemical exploration, metallurgical test work, resource estimates, and a preliminary economic assessment for Loma de La Plata.

On October 14, 2009, we announced a friendly offer to acquire all of the issued and outstanding shares of Aquiline. On December 7, 2009, we acquired approximately 85% of the issued and outstanding shares of Aquiline and extended our bid to December 22, 2009, and on that later date, we took up approximately an additional 7% of the issued and outstanding shares in the capital of Aquiline. Since the offer to acquire the Aquiline shares was accepted by holders of more than 90% of the Aquiline shares, on December 23, 2009, we provided notice to the remaining shareholders of our intention to exercise our right to acquire the remaining issued and outstanding Aquiline shares pursuant to the compulsory acquisition provisions of the Business Corporation Act (Ontario). Pursuant to the compulsory acquisition, we acquired the balance of the Aquiline shares on or about January 22, 2010.

Early in 2010, we took possession of the Navidad property. We continued with a drilling campaign, metallurgical testing, hydrologic analysis, environmental studies, and several other works on the Navidad property site during 2011. A preliminary economic assessment of the Navidad property deposits was completed in January 2011.

Geological Setting, Mineralization, and Deposit Types

The Navidad property is located on the southwest edge of the Northern Patagonia Massif in southern Argentina. This boundary of the massif is coincident with the Gastre Fault System, one of a series of northwest to southeast trending half grabens and tectonic basins. Granitoid rocks of the basement in the northern part of the Province of Chubut belong to the Mamil Choique and Lipetren formations. At Navidad the sequence consists of ignimbrites, volcanic agglomerates, and lavas of the Lonco Trapial Formation and sandstones, mudstones, and limestones of the Cañadón Asfalto Formation. The latter of these formations hosts the Navidad mineralization.

The basin includes, and is defined by, three northwest-striking major fault zones, generally referred to as 'trends'. These comprise the Argenta, Esperanza, and Navidad trends. The Navidad Trend, which includes the bulk of the silver mineralization, occurs in the immediate hanging wall of a major northeast-striking fault known as the Sauzal Fault. Most of the economic mineralization is hosted by the upper of two trachytic andesite lava flows referred to as latite.

To date, the Navidad property comprises eight individual epithermal mineral deposits in the Navidad, Esperanza, and Argenta trends. The six deposits of the Navidad Trend occur along strike over a distance of about 5.8 kilometres and are essentially continuous. They comprise, from northwest to southeast: Calcite NW, Calcite Hill, Navidad Hill, Connector Zone, Galena Hill, and Barite Hill. The Valle Esperanza deposit occurs on the east flank of the Esperanza Trend and is found approximately 400 metres south-southwest of Galena Hill. The Loma de La Plata deposit occurs in the north part of the Argenta Trend, approximately 2.2 kilometres southwest from Calcite Hill.

Silver and base metal mineralization includes native silver, clots of black sulphide comprising argentite/acanthite, discrete grains of sphalerite, galena, chalcopyrite, cuprite, bornite, native copper, and copper carbonates (malachite, azurite). Similar styles of mineralization and a similar paragenesis occur in most of the deposits, however, the proportion of sulphides varies considerably. Loma de La Plata is silver-rich, but is sulphide-poor and contains very low levels of lead, zinc, and copper. Various pulses of mineralization are observed, principally at Galena Hill.

The principal metal association is Ag-Pb. Other associations include Ag-Pb-Cu and Cu-Ag and, more rarely, Ag-Zn. Occasionally there is Ag only, or Cu-Pb-Zn or simply isolated occurrences of these base metals. Gold appears to be totally absent from the system.

Exploration

The first exploration on the Navidad property area consisted of a preliminary regional geochemical sampling program conducted by Normandy in mid-2000. The program consisted of 1,200 BLEG stream sediment samples taken from drainage systems overlying volcanic rocks in the Province of Chubut in the general vicinity of Calcatreu, Mina Angela, Gastre, Lagunita Salada, Gan Gan, and other areas. This program resulted in the identification of various anomalies, including the Flamingo Prospect and the Navidad property.

IMA commenced initial detailed outcrop mapping of the Navidad property along the Navidad Trend in 2003 and expanded the mapping in 2004 to cover a wider portion of the mineral tenement at larger scales. Commencing in 2002 and continuing through 2006, IMA collected soil, rock chip and stream silt samples over the Navidad property. Collectively the anomalous rock chip samples clearly delineate the Navidad, Esperanza and Argenta trends, as does the soil geochemistry. Between 2003 and 2006, IMA completed 367 drillholes on the property.

Between October 2006 and June 2009, Aquiline focused exploration efforts on identifying new exploration targets with diamond drilling, with delineation and infill drilling at the Loma de La Plata deposit, and with minor infill drilling of the

other previously identified mineralized zones. Exploration for additional deposits through the use of fence drilling across prospective covered areas was also undertaken. Geological mapping and geophysical and geochemical exploration also progressed to provide data for structural interpretation. Prior to our acquisition of the property, 950 drillholes had been drilled on the property.

We continued exploration drilling on several open or new targets along the mineralized trends as well as infill drilling at Loma de La Plata, Valle Esperanza, Barite Hill, Calcite Hill, Calcite NW, Connector Zone, and Galena Hill during 2010 and 2011, completing approximately 129,500 metres of diamond drillholes. These infill drillholes also provided new samples for metallurgical analysis. In addition, condemnation and geotechnical drilling was conducted in the various planned facility areas during 2010.

All exploration work on the property has been undertaken by employees of IMA, Aquiline, or MASA, or by contractors under the supervision of these employees.

All of the samples collected during surface exploration have been used to guide the location of diamond drillholes.

Drilling

All diamond drilling has been completed by Boart Longyear Connors Argentina S.A. of Mendoza, Argentina, which was subsequently acquired by Boart Longyear in 2007. Nearly all holes have been drilled at HQ3 diameter with 3 metre long rods. Approximately 320,000 metres of drilling have been completed on the Navidad property, mostly on 25 metre centres across the eight deposits. The results of these drilling campaigns are used to estimate mineral resources at Navidad.

Sampling, Analysis, and Data Verification

Sample intervals vary from between 1 metre and 3 metres long. There are no known drilling, sampling, or drill core recovery factors that could materially impact the accuracy and reliability of the results and the data is considered suitable for use in mineral resource estimates. Drill core logging, cutting, sampling, and sample preparation and analytical techniques at the Navidad property follow industry practices. There are no known drilling, sampling, or recovery issues that could materially impact the reliability of the results.

Sample security is a low risk considering the remote nature of the property and the core storage facilities. There is no reason to believe that the validity and integrity of the samples have been compromised.

All diamond drill core samples at the Navidad property have been analysed by Alex Stewart Assayers Argentina S.A. of Mendoza, Argentina, and have been analysed by fire assay with gravimetric finish for silver and with AAS finish for gold and ICP-ES for 19 elements using the ICP ORE technique. The QAQC protocol employed by Alex Stewart consisted in batches of 50 samples for fire assay and up to 100 samples for ICP. Fire assay batches included one preparation blank, one analytical blank, one coarse duplicate, four pulp duplicates, one international certified standard for base metal and silver, one uncertified in-house standard, and two standards made from pure silver to calibrate losses in cupellation. ICP batches included two blanks, four standards, and 10% duplicates.

Certified standards, blanks, and field duplicates were routinely inserted by the mine geologist with sample submissions as part of the sample assay QAQC program. Analysis of the QAQC samples submitted with the geological samples used to estimate mineral resources at Navidad indicates that there is no significant source of bias, cross contamination, or inaccuracy.

Mineral Processing and Metallurgical Testing

Extensive metallurgical testing has taken place on the Navidad mineralization, including mineralogical studies, flotation and recovery test work, grinding test work, and variability test work. The results indicate that the material responds well to flotation with acceptable recoveries and concentrate grades. The expected metallurgical performance for the Navidad mineralization was determined by laboratory bench-scale flotation test methods and a pilot plant test on one feed type. There are two distinct feed types that have been defined as copper-silver feed and lead-silver feed. The metal recoveries and the concentrate tonnage for both the silver-copper feed and the lead-silver feed vary by the degree of oxidation, lithology, and grade. Recovery algorithms have been constructed for each feed type using an analysis of the laboratory and pilot test results. The algorithms are used to project recoveries by feed type, oxidation state, lithology, and grade. Average recoveries of 77.8% for silver, 51.9% for copper, and 56.6% for lead were estimated for the silver-copper feed and average recoveries of 33.6% for silver, 32.6% for copper, and 76.6% for lead were estimated for silver-lead feed.

Mineral Resource Estimates

Management estimates that mineral resources at the Navidad property, as at April, 2009, are as follows:

Navidad Mineral Resource [1, 2]

Resource Category	Tonnes (Mt)	Grams of Silver per tonne	% Lead	% Copper
Measured	15.4	137	1.44	0.10
Indicated	139.8	126	0.79	0.04
Inferred	45.9	81	0.57	0.02

Notes:

1 Estimated and reported above a 50 g/t AgEQ using a silver equivalence formula of AgEQ = Ag + (Pb × 10,000/365) and a price of $12.52 per ounce of silver and $1,100 per tonne of lead. The most likely cut-off grade for these deposits is not known at this time and must be confirmed by the appropriate economic studies. The estimated metal content does not include any consideration of mining, mineral processing, or metallurgical recoveries.

2 Mineral resource estimates for Navidad were prepared by Pamela De Mark, P. Geo., as a Qualified Person as that term is defined in NI 43-101.

Mineral resource estimates were prepared as of April 2009 using industry standard mining software. Geological interpretations and modelling of lithological and mineralization domains were completed based on the drillhole data. A three dimensional block model was prepared and bulk density values were applied to the blocks according to the mean of bulk density measurements. Silver and lead grades were estimated into the blocks using multiple indicator kriging and copper grades were estimated using ordinary kriging. The mineral resources were classified for confidence categories with respect to the confidence in the data and the interpretation, and the drillhole density. Mineral resources were reported above a cut-off grade of 50 grams per tonne silver equivalent, using metal prices of $12.52 per ounce of silver and $1,100 per tonne of lead.

Mineral resource estimates are based on a number of assumptions that include metallurgical, taxation, and economic parameters. Increasing costs or increasing taxation could have a negative impact on the estimation of mineral reserves. Aside from the previously mentioned factors, there are currently no other known factors that may have a material negative impact on the estimate of mineral resources at Navidad.

Mining Operations

A preliminary economic assessment completed in 2011 anticipated a daily production rate of 15,000 tpd from open pit mines at the eight deposits using shovels and 150 tonne trucks. The mine schedule, based on the current mineral resources, was anticipated to last nearly 15 years after a pre-production and construction period with an additional 18 months of re-handling feed from a low grade stockpile for plant feed after mining is completed.

Processing and Recovery Operations

The process plant was anticipated to consist of a gyratory crusher, stockpile, and a 15,000 tpd capacity semi-autogenous/ball mill with flotation and filtration, producing a copper silver concentrate and a lead silver concentrate. There are no contracts in place for the sale of the concentrates.

Infrastructure, Permitting, and Compliance Activities

The planned mine workings, processing plant, tailings and waste disposal areas, effluent management and treatment facilities, roads, and power and water lines are expected to be located within the boundaries of the mining leases and surface rights controlled by us. Permit application for any future mine at Navidad have not been submitted. To the best of our knowledge, all permits and licenses required to conduct our care and maintenance activities on the property have been obtained and are currently in good standing. Electrical power is provided by several small generators. We are authorized to use water from several bore holes for camp use.

Drilling at the Navidad property requires a separate permit for each affected tenement valid for one year, subject to the submission of an EIS update within a one year period from the date of granting each successive permit. An updated EIS is required to cover the exploration activities, environmental impacts, and mitigation/monitoring actions implemented in the period following the last permit. The level of the exploration activity dictates the level of study required.

Environmental and social baseline studies have been completed for the Navidad property. The most recent EIS update was submitted in 2011 and is currently under administrative review by the Chubut Ministry for the Environment and Control of Sustainable Development. This drilling permit in connection with the EIS would allow for the operation of up to eight drill rigs, however no drilling is planned in the immediate future. Rehabilitation of the drilling platforms and impacted areas is carried out continuously, and we maintain an environmental management and monitoring program on site.

Water rights are treated separately from environmental permits. Two extraction wells have been permitted for use in exploration or reclamation activities.

Currently, Chubut's Law 5001 prohibits open pit mining and the use of cyanide in mineral processing in the entire province. Law 5001 banning open pit mining methods would need to be changed before permits for the development of Navidad can be obtained.

A closure cost estimate for Navidad was prepared according to State of Nevada approved SRCE methodology in 2011 and is updated every year. We have estimated the present value of reclamation costs for the Navidad development property to be approximately $0.4 million at December 31, 2017. Minera Argenta holds environmental reclamation insurance for the Navidad property in accordance with Argentinean law. See "Narrative Description of the Business – Environmental Protection" for further disclosure regarding forward-looking information related to reclamation costs.

Capital and Operating Costs

In 2017, $2.9 million was spent on activities at Navidad, while in 2016, $3.4 million was spent. Over the past year, the Navidad property budget assumed that the law in the Province of Chubut would not be amended in a manner that would encourage further investment at this stage and hence, our activities at Navidad were guided by an investment plan that focussed primarily on satisfying the legal requirements necessary to maintain our property interests under the current mining law. We plan to continue with such maintenance requirements. All expenditures will be expensed as incurred.

Exploration, Development, and Production

We plan to continue with our maintenance requirements, and have no plans to undertake any exploration drilling in 2018. All expenditures will be expensed as incurred.

(ii) Joaquin Property

Project Description, Location, and Access

Joaquin is an advanced stage silver-gold property located in Santa Cruz Province, approximately 100 kilometres northeast of the town of Gobernador Gregores. The property is accessed from Provincial Route 25, either from Gobernador Gregores 40 kilometres to the east or from Puerto San Julian 170 kilometres to the west, and then via Provincial Route 12 leading north for 120 kilometres to the Las Vallas estancia. From Las Vallas, the property and camp are accessed by a local road leading west for 15 kilometres. All of the roads are gravel. Commercial air services are available in El Calafate, Argentina, approximately 330 kilometres to the southwest of Gobernador Gregores.

On February 10, 2017, Pan American acquired 100% of the property from Coeur Mining Inc. ("Coeur"). The consideration for the acquisition was $25.0 million, comprised of $15.0 million in cash and $10.0 million of the Company's common shares valued as of January 13, 2017 (525,654 total common shares), plus a 2.0% NSR royalty on the property. Duties and royalties payable to the government include a Santa Cruz Provincial Royalty of 3% on margin offset by a 2.5% silver doré export credit. There are no other known back-in rights, payments, agreements, or encumbrances in place. The Company's operations in Argentina are subject to government taxes, fees and duties.

The property mineral rights are held under seven contiguous concessions with a total area of 28,660 hectares covering the entire mineral resource and mineral reserve, and proposed underground mine and surface infrastructure. Pan American has acquired responsibility for the annual payments required to maintain the concessions and has agreements in place granting it surface rights and access to the property, and to Pan American's knowledge, all obligations required for the conduct of activities at the property are currently in good standing.

While there are no known significant factors or risks that we currently anticipate will affect access or title, or the right or ability to perform work on the property, including permitting and environmental liabilities, please refer to "Risks Related to Our Business" starting on page 75 for a general discussion of the risks relating to our operations.

History

Mirasol Resources Ltd ("Mirasol"), which had a 100% interest in the property, discovered mineralization in the Joaquin area, including the La Morocha, La Negra, Joaquin Main, and La Morena prospects, during an evaluation of regional targets in 2004. Following reconnaissance work and sampling of the prospects in 2005, Mirasol and Coeur signed an agreement for the property in November 2006, granting Coeur an option to earn up to a 71% managing interest in a joint venture, subject to certain conditions. The first diamond drilling programs on the property began in late 2007 and continued annually until 2013. Coeur disclosed the results of mineral resource estimates at the La Morocha and La Negra deposits in 2011, 2012, and 2013, using open pit mining and on-site agitated leach and heap leach processing assumptions. Additionally, Coeur carried out geological mapping, surface sampling, geophysical surveys, spectral studies, and metallurgical studies. On December 21, 2012, Coeur acquired 100% ownership of the property through the acquisition of Mirasol's remaining 49% interest in the property. Coeur's activity on the property significantly decreased from 2014.

We acquired the Joaquin property in February 2017 and are proceeding with an approximately $37.8 million capital investment, excluding $3.6 million in recoverable value added tax ("VAT"), to construct an underground mine at La Morocha, with development of the underground access decline scheduled to begin in the second quarter of 2018, with ore production occurring between late 2019 and the end of 2021.

Geological Setting, Mineralization, and Deposit Types

The property is located within the Deseado Massif geological province. Regional bedrock comprises ignimbrites and tuffs of the Chon Aike Formation, which hosts silver and gold mineralization on the property within a northwest trending structure that dips 45° to the northeast and trends for 375 metres, between 110 metres and 310 metres below surface. The majority of the mineralization is hosted within a silicified breccia. Silver is present as native silver, bromargyrite, and acanthite/argentite, with lesser stromeyerite, freibergite, and pyrargyrite/stephanite. The sulphide content is low and consists principally of pyrite and galena.

Exploration in the property area was focussed principally on the discovery and delineation of low sulphidation, silver-gold epithermal mineralization of the type well documented throughout the Deseado Massif. Mineralization at Joaquin is classified as low sulphidation hydrothermal breccia.

Exploration

The first geological reconnaissance and geochemical sampling at the property was undertaken by Mirasol during 2005 and 2006. Following the agreement between Coeur and Mirasol, exploration was undertaken in the form of geological mapping, rock chip geochemical sampling, ground and aerial geophysical surveys, clay studies, mineralogical studies, and diamond drilling. This work resulted in the identification of the La Morocha, La Negra, Joaquin Main, Joaquin Norte, and La Morena prospects. A program of geological mapping at 1:20,000 scale, ASTER alteration mapping, and structural interpretation was carried out over these prospects, as well as geological mapping and rock chip geochemical sampling over the majority of the concessions.

Three ground magnetic surveys undertaken in 2009 by Akubra S.A. of Mendoza, Argentina, showed a clear magnetic response at La Morocha and a low magnetic response at La Negra. In 2010, an airborne magnetic survey covering 3,420 line kilometres over the property area, in north-south lines spaced every 200 metres, was carried out by Geodatos Limitada of Mendoza, Argentina, which produced magnetic lineaments over La Morocha and La Negra.

Exploration potential exists at the La Negra deposit, where two steeply dipping trends of mineralization located 350 metres apart along strike have been defined by wide spaced drilling (60 metres along strike) but is currently uneconomic by either open pit or underground methods, assuming transport to Manantial Espejo for processing. The northern zone is 170 metres long and 20 metres in depth, and defined by 16 drillhole intersections with average downhole widths of 5.2 metres and average grades of 1,497 ppm Ag and 0.45 ppm Au. The southern zone is 300 metres long and 125 metres in depth, and defined by 24 drillhole intersections with average downhole intersection widths of 2.0 metres and average grades of 454 ppm Ag and 1.06 ppm Au.

Drilling

Diamond drilling on the property was completed by Coeur with a program of 54,811 metres in 348 holes between 2007 and 2013 and by Pan American with a program of 6,996 metres in 51 holes during 2017. Pan American's drilling included 39 holes for 6,479.4 metres at La Morocha and 12 holes at La Negra for 517 metres. Drillhole spacing at La Morocha

is 25 metres along strike and between 30 metres and 60 metres down dip. At La Negra, drillhole spacing is 60 metres along strike.

Sampling, Analysis, and Data Verification

All drill core on the split with a diamond saw for sampling by Coeur or Pan American geologists. Samples are transported to the laboratory using a third party commercial transportation company. The sample chain of custody follows standard industry practice.

Coeur used Alex Stewart laboratories in Mendoza, Argentina, as the primary laboratory from 2007 until the end of 2009, with another approximately 1,100 samples assayed at ALS Chemex in Lima, Peru. The laboratory was then switched to ALS, with sample preparation in Mendoza, Argentina and geochemical analysis in La Serena, Chile. The samples were dried if necessary, then crushed in a jaw crusher, riffle split to obtain a 300 gram subsample, and pulverized to 75 microns. All samples were assayed for silver and gold using fire assay with gravimetric finish, using a 50 gram charge at Alex Stewart and a 30 gram charge at ALS.

Pan American used Alex Stewart laboratories in Mendoza, Argentina. The samples were dried, crushed to 80% passing #10 mesh, riffle split to obtain a 600 gram sub-sample, then pulverized to 95% passing #140 mesh. Samples were assayed for silver and gold using fire assay with AA finish with a 50 gram charge.

Quality control measures implemented during the drilling programs included the submission of blanks, certified standards, and duplicate samples dispatched with the drill samples. We believe that the preparation, analytical, and security procedures followed for the samples are sufficient and reliable for the purpose of the mineral resource and mineral reserve estimates.

Mineral Processing and Metallurgical Testing

The available metallurgical test work includes cyanide leaching, flotation, sulphuric acid leaching followed by cyanide leaching, bottle roll tests with particle size and cyanide concentration optimization, and grinding and thickening tests. This work has shown that the silver and gold in the La Morocha ore is recoverable by agitated cyanide leaching in tanks at the Manantial Espejo processing facilities. The metallurgical recovery of both gold and silver is estimated to average 81%.

There are no known material issues or deleterious elements that could have a significant effect on the economic extraction of the Joaquin ore.

Mineral Resource and Mineral Reserve Estimates

Management estimates that mineral reserves at Joaquin, as at December 31, 2017, are as follows:

Joaquin Mineral Reserves [1, 2]			
Reserve Category	**Tonnes (Mt)**	**Grams of Silver per tonne**	**Grams of Gold per tonne**
Probable	0.47	721	0.41
TOTAL	0.47	721	0.41

Notes:

1 Estimated using prices of $18.50 per ounce of silver and $1,300 per ounce of gold. Totals may not add due to rounding.

2 Mineral reserve estimates for Joaquin were prepared under the supervision of, or were reviewed by Christopher Emerson, FAusIMM, and Martin G. Wafforn, P.Eng., as Qualified Persons as that term is defined in NI 43-101.

Management estimates that mineral resources at Joaquin, as at December 31, 2017, are as follows:

Joaquin Mineral Resources [1, 2]			
Resource Category	**Tonnes**	**Grams of Silver per tonne**	**Grams of Gold per tonne**
Indicated	58,000	385	0.58
Inferred	6,000	389	1.29

Notes:

1 Mineral resources are in addition to mineral reserves. Estimated using prices of $25 per ounce of silver and $1,400 per ounce of gold.

2 Mineral resource estimates for Joaquin were prepared under the supervision of, or were reviewed by Christopher Emerson, FAusIMM, and Martin G. Wafforn, P.Eng., as Qualified Persons as that term is defined in NI 43-101.

Mineral resource estimates were prepared using ordinary kriging within three dimensional geological interpretations using industry standards software. The block model was classified for measured, indicated, and inferred confidence categories depending on the location of the block relative to the number of drillhole intersections available to estimate each block, as well as other factors affecting confidence in the estimate.

Dilution was applied to the estimate using the estimated grade of the waste material. No mining recovery was considered for the estimation of mineral resources. For mineral resources, an NSR value was applied to each block based on grade, metallurgical recovery, mineral resource metal prices, and estimated costs. Potentially mineable stope shapes were generated around the diluted mineralized zones based on geometrical, geotechnical, and economic NSR cut-off value constraints.

For mineral reserves, an NSR value was applied to each block based on grade, metallurgical recovery, mineral reserve metal prices, and estimated costs. The same dilution parameters used for mineral resources were applied for mineral reserves. Additionally, mining recovery assumptions account for expected losses during mining based on mining method. Stope designs were created around the diluted mineralized zones based on geometrical, geotechnical, and economic NSR cut-off value constraints. The inventory within these stopes was further refined to exclude material in pillars, in spatial outliers, within poor geometric stope shapes, and any other unmineable stopes. Resources and reserves are reported separately within the stope shapes.

Mineral reserve estimates are based on a number of assumptions that include metallurgical, taxation and economic parameters. Increasing costs, lower metal prices or increasing taxation could have a negative impact on the estimated mineral reserves. There are currently no known factors that may have a material negative impact on the estimated mineral reserves or mineral resources at Joaquin.

Mining Operations

Mining will be undertaken using underground methods with ore hauled by diesel trucks from underground to surface stockpiles. The deposit dips from 40° to 45° and has widths of less than one metre up to 40 metres. Three variants of underground cut and fill mining methods were selected to suit this geometry, including traditional cut and fill, drift and fill, and post pillar cut and fill, using mine development waste rock for backfill.

Processing and Recovery Operations

The Joaquin ore will be trucked to Manantial Espejo and processed at the existing cyanide leach plant using conventional crushing, semi-autogenous/ball mill grinding, concentration, leaching, thickening, counter current decantation thickening, Merrill Crow precipitation, cyanide neutralization, conventional pulp tailings disposal, and conventional silver and gold doré bar production from melting of the Merrill Crowe precipitate.

All production of Joaquin ore at the Manantial Espejo mine will be in the form of doré bars, which will be refined at arm's length refineries prior to the sale of refined silver and gold to bullion banks and traders. As with Manantial Espejo doré, we anticipate entering into multi-year refining contracts for the production from Joaquin. We have not had any difficulty in securing contracts for the sale of Manantial Espejo doré and similarly do not anticipate difficulties for Joaquin doré, however, there can be no certainty that we will always be able to do so or what terms will be available at the time. Please see "Risks Related to our Business – Trading Activities and Credit Risk".

Infrastructure, Permitting, and Compliance Activities

The planned mine workings, ore stockpiles, temporary waste rock stockpiles, roads, and power and water lines are expected to be located within the boundaries of the mining leases and surface rights controlled by us. Surface infrastructure, such as camps, offices, fuel and tanks, and maintenance facilities, will also be utilized. No processing facilities will be present on site. Road haulage trucks will transport the ore to the processing facilities at Manantial Espejo, located 145 kilometres by gravel road to the south of Joaquin.

Joaquin is located in the cold, semi-arid ecoregion of the Patagonian Steppe, more than 100 kilometres from the closest community, Gobernador Gregores, and environmental baseline studies have been completed to Argentine and international standards. Those studies show that the potentially impacted areas are relatively small in scale and hold environmental values that are well represented throughout the region. Work completed to date includes exploration diamond drilling, surface sampling, and the construction of camp facilities. Permits have been approved for construction of camp and surface facilities. Operations permits are being submitted as an expansion of the Manantial Espejo EIA in order to allow commencement of the decline ramp.

A closure cost estimate for Joaquin was prepared according to State of Nevada approved SRCE methodology. We have estimated the present value of reclamation costs for the Joaquin development property to be approximately $0.01 million at December 31, 2017. See "Narrative Description of the Business – Environmental Protection" for further disclosure regarding forward-looking information related to reclamation costs.

Capital and Operating Costs

Over the life of mine, the estimated initial capital cost is $37.8 million, excluding project acquisition costs, and including mine development and equipment, infrastructure, permitting and studies, general and administrative, and contingency costs. A $3.6 million allowance is estimated for recoverable VAT payments that are paid using capital funds prior to the commencement of production. Based on the underground mine schedule, the total life of mine operating cost is estimated to be $96.2 million, including all ore mining, transport, and processing costs. The transport of the ore from Joaquin to the processing facilities at Manantial Espejo is estimated at a total operating cost over the life of mine of $18.9 million.

Excluding the purchase price, the estimated life of mine cash flow of the project is $14.1 million. The project payback is estimated to occur at the end of February 2021, 18 months after construction completion. The NPV at a 5% discount rate is $9.1 million and $5.1 million at a 10% discount rate. The IRR of the project is 18%.

Exploration, Development, and Production

Pan American is proceeding with an approximately $37.8 million capital investment, excluding $3.6 million in recoverable VAT, to construct an underground mine at La Morocha, with development of the underground access decline ramp scheduled to begin in the second quarter of 2018, and with ore production occurring between late 2019 and the end of 2021.

III. Non-Material Properties and Interests

Other Operations, Exploration, Resource and Investment Properties

We own interests in other investment and mineral properties in each of the jurisdictions in which we operate, including the COSE property in Argentina, the La Bolsa property in Mexico, and the Pico Machay property in Peru, the Waterloo property in the United States, and certain other interests in Canada. Our Alamo Dorado mine in Mexico is now in the reclamation phase and mining activity has ceased. Pan American does not consider these properties to be material properties for the purposes of NI 51-102 or NI 43-101.

Mineral Property Expenditures

The following table sets out our acquisition, exploration and development expenditures (rounded, in thousands) for the periods indicated:

		2017	2016	2015
Acquisition	COSE	$ 7,497	$ -	$ -
	Joaquin	12,722	-	-
	TOTAL[1]	20,219	-	-
Development	Huaron	$ 8,412	$ 8,854	$ 13,610
	Morococha	9,283	8,034	7,713
	Alamo Dorado	-	-	-
	Dolores	85,374	113,227	53,117
	La Colorada	21,963	64,519	58,037
	Manantial Espejo	8,590	2,868	14,061
	Navidad	27	5	-
	San Vicente	8,146	4,864	3,286
	Other	437	290	401
	TOTAL[1]	$ 142,232	$ 202,661	$ 150,225
Exploration	Huaron	$ 1,713	$ 837	$ 765
	Morococha	1,629	1,053	1,202
	Alamo Dorado	-	-	-
	Dolores	2,316	1,685	544
	La Colorada	251	186	254
	Manantial Espejo	4,588	-	-
	Navidad	2,894	3,377	7,057
	San Vicente	-	-	-
	Other[2]	4,466	4,196	208
	TOTAL[1, 3]	$ 17,858	$ 11,334	$ 11,940

Notes:

1 Numbers may not add due to rounding.

2 Includes spending on the early stage exploration projects, including with respect to the La Negra option and Joaquin property, as well as other indirect exploration spending.

3 The amounts for 2017 exclude $1.9 million from non-cash project development write-downs.

Metals Trading

We take the view that our precious metals production should not be hedged, thereby allowing the maximum exposure to precious metal prices.

We have engaged in forward sales and hedging of base metals production from our mines over the past several years. The forward sales of base metals in 2015, 2016 and 2017 were as follows:

- During 2017, we had 620 tonnes of lead exercised at a strike price of $1,965 per tonne, resulting in a realized loss of $0.2 million, and 5,090 tonnes of zinc exercised at an average strike price of approximately $2,187 per tonne, resulting in a realized loss of $3.0 million.

- During 2016, we had 930 tonnes of lead exercised at a strike price of $1,965 per tonne, resulting in a realized loss of $0.2 million, and 8,465 tonnes of zinc exercised at an average strike price of approximately $2,098 per tonne, resulting in a realized loss of $2.6 million.
- During 2015, we settled 4,080 tonnes of copper in forward sales at an average price of approximately $6,044 per tonne. We realized a gain of approximately $3.0 million from the settlement of the copper contracts during 2015.

Please see the discussion below under “Risks Related to Our Business – Trading Activities and Credit Risk”.

RISKS RELATED TO OUR BUSINESS

The risk factors described below could materially affect the Company's future operating results and could cause actual events to differ materially from those described in forward-looking statements relating to the Company. Additional risks not presently known to us, or that we currently consider immaterial, may also impair our operations.

Metal Price Fluctuations

The majority of our revenue is derived from the sale of silver, gold, zinc, copper and lead, and therefore fluctuations in the price of these metals significantly affects our operations and profitability. The Company's sales are directly dependent on metal prices, and metal prices have historically shown significant volatility and are beyond the Company's control. The Board of Directors continually assesses Pan American's strategy towards our base metal exposure, depending on market conditions.

The price of silver and other metals are affected by numerous factors beyond our control, including:

- global and regional levels of supply and demand;
- sales by government holders and other third parties;
- metal stock levels maintained by producers and others;
- increased production due to new mine developments and improved mining and production methods;
- speculative activities;
- inventory carrying costs;
- availability, demand and costs of metal substitutes;
- international economic and political conditions;
- interest rates, inflation and currency values;
- increased demand for silver or other metals for new technologies; and
- reduced demand resulting from obsolescence of technologies and processes utilizing silver and other metals.

Declining market prices for these metals could materially adversely affect our operations and profitability. A decrease in the market price of silver, gold and other metals could affect the commercial viability of our mines and production at some of our mining properties. Lower prices could also adversely affect future exploration and our ability to develop mineral properties and mines, including the development of capital intensive projects such as Navidad, all of which would have a material adverse impact on our financial condition, results of operations and future prospects. There can be no assurance that the market prices will remain at sustainable levels.

If market prices of gold and silver remain below levels used in Pan American's impairment testing and reserve prices for an extended period of time, Pan American may need to reassess its long-term price assumptions, and a significant decrease in the long-term price assumptions would be an indicator of potential impairment, requiring Pan American to perform an impairment assessment on related assets. Pan American further discusses key assumptions used in measuring the recoverable amounts of its mining assets in Note 11 of Pan American's Audited Consolidated Financial Statements for the year ended December 31, 2017. Due to the sensitivity of the recoverable amounts to long term metal prices, as well as to other factors including changes to mine plans and cost escalations, any significant change in these key assumptions and inputs could result in impairment charges in future periods.

From time to time, we mitigate the market price risk associated with our base metal production by committing some of our forecast base metal production to forward sales and options contracts. However, decisions relating to hedging may have material adverse effects on our financial performance, financial position, and results of operations. The Board of Directors continually assesses Pan American's strategy towards our base metal exposure, depending on market conditions. The Company had the following outstanding positions at December 31, 2017: put and call contracts for 11,100 tonnes of zinc, 6,450 tonnes of lead, and 3,030 tonnes of copper.

We take the view that our precious metals production should not be hedged, thereby allowing the maximum exposure to precious metal prices. However, in extreme circumstances, the Board of Directors may make exceptions to this approach. Such decisions could have material adverse effects upon our financial performance, financial position, and results of operations.

Foreign Operations

All of our current production and revenues are derived from our operations in Peru, Mexico, Argentina and Bolivia, and, as a result, we are exposed to a number of risks and uncertainties, including:

- expropriation, nationalization, and the cancellation, revocation, renegotiation, or forced modification of existing contracts, permits, licenses, approvals, or title, particularly without adequate compensation;
- changing political and fiscal regimes, and economic and regulatory instability;
- unanticipated adverse changes to laws and policies, including those relating to mineral title, royalties and taxation;
- delays or inability to obtain or maintain necessary permits, licenses or approvals;
- opposition to mine development projects, which include the potential for violence, property damage and frivolous or vexatious claims;
- restrictions on foreign investment;
- unreliable or undeveloped infrastructure;
- labour unrest and scarcity;
- difficulty obtaining key equipment and components for equipment;
- regulations and restrictions with respect to imports and exports;
- high rates of inflation;
- extreme fluctuations in currency exchange rates and restrictions on foreign exchange, currencies and repatriation;
- inability to obtain fair dispute resolution or judicial determinations because of bias, corruption or abuse of power;
- abuse of power of foreign governments who impose, or threaten to impose, fines, penalties or other similar mechanisms, without regard to the rule of law;
- difficulties enforcing judgments, particularly judgments obtained in Canada or the United States, with respect to assets located outside of those jurisdictions;

- difficulty understanding and complying with the regulatory and legal framework with respect to mineral properties, mines and mining operations, and permitting;
- violence and the prevalence of criminal activity, including organized crime, theft and illegal mining;
- civil unrest, terrorism and hostage taking;
- military repression and increased likelihood of international conflicts or aggression; and
- increased public health concerns.

Certain of these risks and uncertainties are illustrated well by circumstances in Bolivia.

In early 2009, a new constitution was enacted in Bolivia that further entrenched the government's ability to unilaterally amend or enact laws, and which enshrined the concept that all natural resources belong to the Bolivian people. On May 28, 2014, the Bolivian government enacted the New Mining Law. Among other things, the New Mining Law established a new Bolivian mining authority to provide principal mining oversight (varying the role of COMIBOL) and set out a number of new economic and operational requirements relating to state participation in mining projects. Further, the New Mining Law provided that all pre-existing contracts were to migrate to one of several new forms of agreement within a prescribed period of time. As a result, we anticipate that our current joint venture agreement with COMIBOL relating to the San Vicente mine will be subject to such migration and possible renegotiation of key terms. The primary effects on the San Vicente operation and our interest therein will not be known until such time as we have, if required to do so, renegotiated the existing contract, and the full impact may only be realized over time. We will take appropriate steps to protect and, if necessary, enforce our rights under our existing agreement with COMIBOL. There is, however, no guarantee that governmental actions, including possible expropriation or additional changes in the law, and the migration of our contract will not impact our involvement in the San Vicente operation in an adverse way and such actions could have a material adverse effect on us and our business.

On June 25, 2015, the Bolivian government further enacted the New Conciliation and Arbitration Law, which endeavors to set out newly prescribed arbitral norms and procedures, including for foreign investors. However, its application is unclear and we await clarification by regulatory authorities in order to assess its impact on our business.

In most cases, the effect of these risks and uncertainties cannot be accurately predicted and, in many cases, their occurrence is outside of our control. Although we are unable to determine the impact of these risks on our future financial position or results of operations, many of these risks and uncertainties have the potential to substantially affect our exploration, development and production activities and could therefore have a material adverse impact on our operations and profitability.

Governmental Regulation

Our operations, exploration, and development activities are subject to extensive laws and regulations in the jurisdictions in which we conduct our business, including with respect to:

- environmental protection, including carbon emissions;
- permitting;
- management and use of toxic substances and explosives;
- management and use of natural resources, including water and energy supplies;
- management of waste and waste water;
- exploration, development, production, and post-closure reclamation of mines;
- imports and exports;
- transportation;
- price controls;
- taxation;
- mining royalties;

- labour standards, employee profit-sharing and occupational health and safety, including mine safety;
- human rights;
- social matters, including historic and cultural preservation, engagement and consultation, local hiring and procurement, development funds;
- anti-corruption and anti-money laundering; and
- data protection and privacy.

The costs associated with compliance with these and future laws and regulations can be substantial, and changes to existing laws and regulations (including the imposition of higher taxes and mining royalties) could cause additional expense, capital expenditures, restrictions on, or suspensions of, our operations, and delays in the development of our properties. In addition, the regulatory and legal framework in some jurisdictions in which we operate are out-dated, unclear and at times, inconsistent. A failure to comply with these laws and regulations, including with respect to our past and current operations, and possibly even actions of parties from whom we acquired our mines or properties, could lead to, among other things, the imposition of substantial fines, penalties, sanctions, the revocation of licenses or approvals, expropriation, forced reduction or suspension of operations, and other civil, regulatory or criminal proceedings.

Unanticipated or drastic changes in laws and regulations have affected our operations in the past. For example, under the previous political regime in Argentina, the government intensified the use of severe price, foreign exchange, and import controls in response to unfavourable domestic economic trends. These included informal restrictions on dividend, interest, and service payments abroad and limitations on the ability to convert ARS into USD, exposing us to additional risks of ARS devaluation and high domestic inflation. The new federal government elected in 2015 has eased many of the previously instituted controls and restrictions, but it is unknown whether these changes will be lasting, and what, if any, additional steps will be taken by the current or future administrations. As such, the Company continues to monitor and assess the situation in Argentina.

Many of the jurisdictions in which we operate also have certain laws or policies that impose restrictions on mining activities. For example, there are currently laws in the Province of Chubut, Argentina, which, among other things, prohibit open pit mining and the use of cyanide in mineral processing across the entire Province. As currently enacted, the laws in the Province of Chubut would likely render any future construction and development of the Navidad property uneconomic or not possible at all. There is no guarantee that these restrictions on mining will be removed or that they will not become more restrictive, or that new constraints will not be imposed, including those that might have significant economic impacts on our operations and profitability.

Taxation and royalties are often subject to change and are vulnerable to increases in both poor and good economic times, especially in resource rich countries. The addition of new taxes, specifically those aimed at mining companies, could have a material impact on our operations and will directly affect profitability and our financial results.

In late December 2016, the Zacatecas state government in Mexico enacted a new set of ecological taxes which took effect on January 1, 2017. The Zacatecas Tax applies broadly across a number of industries in the State of Zacatecas that involve extraction, emissions to the air, soil or water, and deposits of residue or waste. The Zacatecas Tax primarily effects the La Colorada mine in respect of the materials placed in its tailings storage facility. We paid approximately $1.0 million in respect of the Zacatecas Tax in 2017, however, the validity of the Zacatecas Tax has been challenged on constitutional grounds by various parties, including Pan American.

In addition to more targeted changes in taxation, we are also subject to broad-based changes. For example, while we do not expect that its provisions will result in any material impact on our income tax expense, in December 2017, the United States' *Tax Cuts and Job Act* (the "US Tax Reform") was enacted, which made significant changes to income tax law in the United States. Among the many provision included in the US Tax Reform, the most notable change was a reduction in the general corporate income tax rate from 35% to 21%, effective January 1, 2018.

Permits

We are required to obtain and renew governmental permits for the operation and expansion of existing operations or for the development, construction, and commencement of new operations. Obtaining or renewing the necessary governmental permits can be costly and involve extended timelines. We may not be able to obtain or renew permits that are necessary to our operations, or the cost to obtain or renew permits may exceed our expected recovery from a given property once in production. Failure to obtain the necessary permits or maintain compliance with the permits can result in fines, penalties, or suspension or revocation of the permits. Our ability to obtain and renew permits is contingent upon certain variables, some of which are not within our control, including, introduction of new permitting legislation, the interpretation of applicable requirements implemented by the permitting authority, the need for public consultation hearings or approvals, and political or social pressure. Any unexpected delays, failure to obtain permits, failure to comply with the terms of the permit, or costs associated with the permitting process could impede the development or operation of a mine, which could adversely impact our operations and profitability.

Operational Risks

The ownership, operation, and development of a mine or mineral property involves significant risks and hazards which even the combination of experience, knowledge, and careful evaluation may not be able to overcome.

These risks include:

- environmental and health hazards;
- industrial and equipment accidents, explosions and third party accidents;
- the encountering of unusual or unexpected geological formations;
- ground falls and cave-ins;
- flooding;
- labour disruptions;
- mechanical equipment, machinery, and facility performance problems;
- seismic events; and
- periodic interruptions due to inclement or hazardous weather conditions.

These risks could result in:

- damage to, or destruction of, mineral properties or production facilities;
- personal injury or death;
- environmental damage and liabilities;
- delayed production;
- labour disruptions;
- increased production costs;
- asset write downs;
- abandonment of assets;
- monetary losses;
- civil, regulatory or criminal proceedings, including fines and penalties, relating to health, safety and the environment;
- community unrest, protests, and legal proceedings at local or international levels;
- loss of social acceptance for our activities; and
- other liabilities.

Advancements in science and technology and in mine design, methods, equipment, and training have created the possibility of reducing some of these risks, but there can be no assurances that such occurrences will not take place and that they will not negatively impact us, our operations, and our personnel.

In addition to those other risks identified above, mining operations are also subject to ownership and operating risks relating to the valuable nature of the product being produced. Our Mexican operations have experienced armed robberies of doré within the past three years. We have instituted a number of additional security measures and a more frequent shipping schedule in response to these incidents. We have subsequently renewed our insurance policy to mitigate some of the financial loss that would result from such criminal activities in the future, however, a substantial deductible amount would apply to any such losses in Mexico.

Liabilities that we incur may exceed the policy limits of our insurance coverage or may not be insurable, in which case we could incur significant costs that could adversely impact our business, operations, profitability, or value.

Exploration and Development Risks

The long-term operation of our business and its profitability is dependent, in part, on the cost and success of our exploration and development programs. Mineral exploration and development is highly speculative and involves significant risks. Few properties that are explored are ultimately developed into producing mines. There is no assurance that our mineral exploration and development programs will result in discoveries of economic quantities of mineralization that are necessary for a property to be brought into commercial production. The commercial viability of a mineral deposit, once discovered, is also dependent upon a number of factors, including, among other things, (i) the particular attributes of the deposit, such as size, grade, and metallurgy; (ii) interpretation of geological data; (iii) feasibility studies; (iv) proximity to infrastructure and availability of labour, power, and water; (v) metal prices; (vi) foreign currency exchange rates; and (vii) government regulations, including regulations relating to development, taxation, royalties, import and export, and environmental protection.

The actual operating results of our projects may differ materially from those we had anticipated due to these and other factors, many of which are beyond our control. There can be no assurance that our acquisition, exploration, and development programs will yield new mineral reserves to replace or expand current mineral reserves, or that they will result in additional production. Unsuccessful exploration or development programs could have a material adverse effect on our operations and profitability.

Title to Assets

The validity of mining or exploration titles or claims or rights, which constitute most of our property holdings, can be uncertain and may be contested. Our properties may be subject to prior unregistered liens, agreements or transfers, indigenous land claims, or undetected title defects. In some cases, we do not own or hold rights to the mineral concessions we mine, including in Bolivia where the government has title to the concessions and our right to mine is contractual in nature. We have not conducted surveys of all the claims in which we hold direct or indirect interests and therefore, the precise area and location of such claims may be in doubt. No assurance can be given that applicable governments will not revoke or significantly alter the conditions of the applicable exploration and mining titles or claims, or that such exploration and mining titles or claims will not be challenged or impugned by third parties. We may be unable to operate our properties as expected, or to enforce our rights to our properties. Any defects in title to our properties, or the revocation of our rights to mine, could have a material adverse effect on our operations and financial condition.

We operate in countries with developing mining laws, and changes in such laws could materially impact our rights or interests to our properties. We are also subject to expropriation risk in a number of countries in which we operate, including the risk of expropriation or extinguishment of property rights based on a perceived lack of development or advancement. There is limited activity at our Navidad project, for example, as a result of legal restrictions relating to mining, and there is a risk that the federal or provincial governments in Argentina are dissatisfied with a lack of advancement. Expropriation, extinguishment of rights and any other such similar governmental actions would likely have a material adverse effect on our operations and profitability.

In many jurisdictions in which we operate, legal rights applicable to mining concessions are different and separate from legal rights applicable to surface lands. Accordingly, title holders of mining concessions in many jurisdictions must agree with surface land owners on compensation in respect of mining activities conducted on such land. We do not hold title to all of the surface lands at many of our operations and rely on contracts or other similar rights to conduct surface activities.

For example, we do not own most of the surface rights to the areas that overlie our mining concessions comprising the Morococha property, nor to the areas where administration and operations are taking place, but were used by us pursuant to a usufruct agreement. These surface rights have been the subject of various disputes over the many years of operation at Morococha. In June 2010, we reached an agreement with MCP that clearly defines each party's long-term surface rights and therefore provides more certainty to the land situation for our Morococha mine. The primary focus of the agreement is on the lands and concessions around the Morococha mine and MCP's Toromocho copper project. Under the terms of the agreement, Argentum is required to relocate the core Morococha facilities over a 5-year period and transfer certain mineral concessions and access rights to MCP that it needs in order to proceed with the development of the Toromocho project, including the surface lands within the planned open pit mining area of the Toromocho project. In exchange, Argentum is to receive a package of surface rights, easements, and other rights to relocate the facilities and to continue uninterrupted operations, and would also obtain rights to a number of mineral concessions outside the planned Toromocho pit area where high-grade silver veins have been identified. Lastly, Argentum is to receive periodic cash payments from MCP totalling $40 million, which would off-set a portion of the capital required for the facility relocation. In addition to the foregoing, the parties agreed to dismiss the judicial and administrative claims between them. Pursuant to the agreement, the transfer of lands and rights and the cash payments will occur over a period of time and are dependent on meeting certain milestones. During the course of the agreement, however, certain adjustments have been made by the parties with respect to the timing of achieving milestones, in some cases informally, and additional adjustments will be required going forward. As of December 31, 2017, the Morococha facilities had not been relocated within the time period originally established in the agreement, and the parties had not yet agreed on a revised milestone. Although this agreement has diminished the risks associated with the Morococha land situation, there is no certainty that amended milestones can be agreed upon or achieved by the parties, that the relationship will continue in an amicable fashion, and that the future relocation and other costs associated with the commitments in the agreement will not render continued operations at the Morococha mine uneconomic.

Competitive Conditions

The mining industry is very competitive, particularly with respect to properties that produce, or are capable of producing, silver, gold, and other metals. Mines have limited lives and, as a result, Pan American continually seeks to replace and expand mineral reserves through the acquisition of new properties. In addition, there is a limited supply of desirable mineral lands available in areas where we would consider conducting exploration and/or production activities. Because we face strong competition for new properties from other mining companies, some of which have greater financial resources than we do, we may be unable to acquire attractive new mining properties on terms that we consider acceptable.

Competition for resources is intense, particularly affecting the availability of manpower, drill rigs, mining equipment, and production equipment. Competition in the mining business for limited sources of capital could adversely impact our ability to acquire and develop suitable silver mines, silver developmental projects, silver producing companies, or properties having significant exploration potential. As a result, there can be no assurance that our acquisition and exploration programs will yield new mineral reserves to replace or expand current mineral reserves, or that we will able to maintain production levels in the future.

Our competitive position is largely determined by our costs compared to other producers throughout the world and our ability to maintain our financial integrity through the lows of the metal price cycles. Costs are governed to a large extent by the location, grade, and nature of mineral reserves as well as by operating and management skills. In contrast with diversified mining companies, we focus on silver production, development, and exploration, and are therefore subject to unique competitive advantages and disadvantages related to the price of silver and to a lesser extent, the price of gold and base metal by-products. If silver prices substantially increase, we will be in a relatively stronger competitive position than diversified mining companies that produce, develop, and explore for other minerals

in addition to silver. Conversely, if silver prices substantially decrease, we may be at a competitive disadvantage to diversified mining companies.

Replacement of Reserves

The La Colorada, Dolores**,** Alamo Dorado, Huaron, Morococha, San Vicente and Manantial Espejo mines accounted for all of our production in 2017. Current life-of-mine plans provide for a defined production life for mining at each of our mines. For example, active mining at the Alamo Dorado mine ended in 2017 and the mine has transitioned to a reclamation phase. There is no assurance that any of our green field or near mine exploration projects will be successful, and substantial expenditures are required to establish mineral reserves. If our mineral reserves are not replaced either by the development or discovery of additional reserves and/or extension of the life-of-mine at our current operating mines or through the acquisition or development of additional producing mines, this could have an adverse impact on our future cash flows, earnings, results of operations, and financial condition, and this may be compounded by requirements to expend funds for reclamation and decommissioning.

Imprecision in Mineral Reserve and Mineral Resource Estimates

Our mineral reserves and mineral resources are estimates. No assurances can be given that the estimated levels of mineral reserves or mineral resources are accurate, or that the estimates will result in material being produced or processed profitably. These estimates are expressions of judgment based on knowledge and experience, and are based on assumptions and interpretation of available geological, geochemical and operational data and information. Valid estimates made at a given time may significantly change when new information becomes available. It may take many years from the initial phase of drilling before production occurs, and during that time, the economic feasibility of our projects may change and may ultimately prove unreliable.

Fluctuations in the market price of silver, gold and other metals, as well as increased capital or production costs or reduced recovery rates, may render our mineral reserves uneconomic to develop for a particular project or result in a reduction of mineral reserves. No assurances can be given that any resource estimate will ultimately be reclassified as proven or probable mineral reserves or that mineralization can be mined or processed profitably. Inferred mineral resources have a great amount of uncertainty as to their existence and as to their economic and legal feasibility. Resource estimate may also be recalculated based on actual production experience. The evaluation of mineral reserves or mineral resources is influenced by economic and technological factors, which may change over time. If our mineral reserve or mineral resource figures are reduced in the future, this could have an adverse impact on Pan American's future cash flows, earnings, results of operations, and financial condition.

Production and Cost Estimates

We prepare estimates of future production and future production costs for our operations. No assurance can be given that production and cost estimates will be achieved. These production and cost estimates are based on many factors and assumptions, including: the accuracy of mineral reserve estimates; ground conditions and physical characteristics of ores, such as hardness and the presence or absence of particular metallurgical characteristics; equipment and mechanical availability; labour availability and productivity; access to the mine; facilities and infrastructure; sufficient materials and supplies on hand; and the accuracy of estimated rates and costs of mining and processing, including the cost of human and physical resources required to carry out our activities. Failure to achieve production or cost estimates, or increases in costs, could have an adverse impact on our future cash flows, earnings, results of operations, and financial condition.

Actual production and costs may vary from estimates for a variety of reasons, including actual ore mined varying from estimates of grade, tonnage, dilution and metallurgical and other characteristics; short-term operating factors relating to the mineral reserves**,** such as the need for sequential development of orebodies and the processing of new or different ore grades; and risks and hazards associated with mining. In addition, there can be no assurance that silver recoveries or other metal recoveries in small scale laboratory tests will be duplicated in larger scale tests under on-site conditions or during production, or that the existing known and experienced recoveries will continue. Costs of production may also be affected by a variety of factors, including: changing stripping ratios, ore grade metallurgy, labour costs and productivity, costs of supplies and services (such as, for example, fuel and power), general

inflationary pressures, and currency exchange rates. Failure to achieve production estimates could have an adverse impact on our future cash flows, earnings, results of operations, and financial condition.

Infrastructure

Mining, processing, development, and exploration activities depend, to one degree or another, on adequate infrastructure. Reliable roads, bridges, power, and water supply are important determinants for capital and operating costs, and sufficient and functional processing equipment and facilities are critical to our operations. The lack of availability or the delay in the availability of any one or more of these items could prevent or delay the development of our projects, result in the failure to achieve the anticipated production volume, and increase the construction costs and ongoing operating costs associated with our projects and operations. Similarly, continued improvements or replacement of existing infrastructure may require high capital investments and involve significant delays. In addition, unusual weather phenomena, sabotage, government, or other interference in the maintenance or provision of such infrastructure could adversely affect our operations and profitability.

Environmental Legislation, Regulations, and Hazards

We are subject to environmental laws and regulation in the various jurisdictions in which we operate that impose requirements or restrictions on our activities, such as mine development, water management, use of hazardous substances, reclamation, and waste transportation, storage and disposal. Compliance with environmental laws and regulations may require significant costs and may cause material changes or delays in our operations. There is no assurance that we will be in full compliance with environmental legislation at all times. Failure to comply with applicable environmental legislation could lead to adverse consequences, including expropriation, suspension or forced cessation of operations, revocation of or restrictions on permits, fines and other penalties, civil or regulatory proceedings, and, in certain circumstances, criminal proceedings. Furthermore, any such failures could increase costs and extend timelines, requiring additional capital expenditures and remedial actions. These negative consequences could significantly impact our financial condition, operations, and cash flow.

Future environmental legislation could also require stricter standards and mandate increased enforcement, fines and penalties for non-compliance, more stringent environmental assessments of proposed projects and a heightened degree of responsibility for companies and their officers, directors and employees.

Environmental hazards may exist on our properties which are currently unknown to us. We may be liable for losses associated with such hazards, or may be forced to undertake extensive remedial cleanup action or to pay for governmental remedial cleanup actions, even in cases where such hazards have been caused by previous or existing owners or operators of the property, or by the past or present owners of adjacent properties, or by natural conditions. The costs of such cleanup actions may have a material adverse effect on our operations and profitability.

We are subject to environmental reclamation requirements to minimize long-term effects of mining exploitation and exploration disturbance by requiring the operating company to control possible deleterious elements and to re-establish, to some degree, pre-disturbance land forms and vegetation. These environmental reclamation requirements vary depending on the location of the property and the managing governmental agency. We are actively providing for and carrying out reclamation activities on our properties as required. In 2017, we commenced full scale closure and reclamation of the Alamo Dorado property and have applied some of that experience to closure cost estimates for our other mines. Any significant environmental or social issues that may arise, however, could lead to increased reclamation expenditures and have a material adverse effect on our financial resources.

Our operations at Dolores involve heap leaching and this method of mineral processing may be employed in the future at other mines and projects. Heap leaching often employs sodium cyanide, a hazardous material, to leach metal-bearing ore and then collect the resulting metal-bearing solution. There is an inherent risk of unintended discharge of hazardous materials in the operation of leach pads. Should sodium cyanide escape from a leach pad and collection infrastructure or otherwise be detected in the downstream surface and ground water points, we could become subject to liability for remediation costs, which could be significant and may not be insured against. In addition, metal production could be delayed or halted to prevent further discharges and to allow for remediation. Such delays or cessations in production could be long-term or, in some cases, permanent, and any interference with production could result in a significant reduction in, or loss of, cash flow and value for us. While appropriate steps may be taken

to prevent discharges of sodium cyanide and other hazardous materials into the ground water, surface water, and the downstream environment, there is inherent risk in the operation of leach pads and there can be no assurance that a release of hazardous materials would not occur.

We operate six tailings storage facilities, have one closed tailings facility at the Alamo Dorado mine, and operate a water dam at Dolores. In 2013 and 2014 we conducted detailed internal safety reviews of all seven tailings storage facilities. Those reviews, completed in August and September 2014, found that the storage facilities design, construction, operation and monitoring at all of our tailings storage facilities are generally in line with the Canadian Dam Safety Guidelines and best practice. Additionally, an independent safety review for the Huaron tailings storage facilities was commissioned to Newfields consultants of Denver, Colorado. Newfields also conducted an independent review of the tailings facility at San Vicente mine in 2017. The reviews concurred with the previously completed internal reviews. Design of all of our tailings and water storage facilities includes detailed consideration of stability under static and dynamic (pseudostatic) seismic conditions to ensure exceedance of relevant safety factors. While we believe that appropriate steps have been taken to prevent safety incidents, there are inherent risks involved with tailings facilities, including among other things, seismic activity, particularly in seismically active regions such as Peru, and the ability of field investigations completed prior to construction to detect weak foundation materials. There can be no assurance that a dam or other tailings facility safety incident will not occur and such an incident could have a material adverse effect on our operations and profitability.

Responsibility for the operation of a water treatment plant for the Kingsmill Tunnel and the tailings mitigation program at Huascacocha Lake, near the Morococha mine, have been apportioned by Water Management Consultants Inc. in environmental studies among the Morococha mine and the mining companies operating neighbouring projects. The continued development of the Toromocho project by MCP may alleviate some of our funding requirements. There can be no guarantee, however, that our proportionate share of the costs of such environmental projects will not change and this may affect cash flow from the Morococha mine operations.

Developments Regarding Aboriginal and Indigenous Peoples

Some of our operations are near areas presently or previously inhabited or used by aboriginal and indigenous peoples, or have local communities nearby. There are many national and international laws, regulations, conventions, codes and other instruments dealing with the rights of aboriginal and indigenous peoples that impose obligations on governments and entities. Many of these are complex and interwoven in application. New or amended laws, regulations and conventions respecting the rights of these peoples, including with respect to the acquisition and use of lands, may alter decades old arrangements or agreements made by prior owners of our mines and properties, or even those made by us in more recent years. There can be no guarantee that we have entered into all agreements with aboriginal and indigenous people and with local communities in accordance with the laws governing aboriginal and indigenous peoples and local communities or that future laws and actions will not have a material adverse effect on our rights or ability to explore or mine, or on our financial position, cash flow, and results of operations. Furthermore, it is not uncommon for local communities and aboriginal and indigenous peoples to challenge agreements or arrangements previously entered into for various reasons. Public opposition to mining activities has also increased in recent years, in part due to the perceived effects of those activities on local communities and on aboriginal and indigenous peoples.

If we cannot maintain an agreement or positive relationship with aboriginal or indigenous peoples or with the communities where we operate, there may be significant disruptions in our operations and activities, we may be subject to legal or administrative proceedings, and we may be precluded from operating, or from continuing to operate, in such areas. There could also be significant harm to our reputation. The risks associated with operating or conducting activities in or near areas presently or previously inhabited by aboriginal or indigenous peoples could further impact our ability to acquire or advance development projects and complete, or realize benefits from, future acquisitions.

Community Action

Communities and non-governmental organizations ("NGOs") have become more vocal and active with respect to mining activities at or near their communities. Some communities and NGOs have taken actions that could have a material adverse effect on our operations, such as setting up road closures and commencing lawsuits. In certain

circumstances, such actions might ultimately result in the cessation of mining activities and the revocation of permits and licenses. These actions relate not only to current activities but are often in respect of past activities by prior owners of mining properties. The Company has initiated the implementation of the Mining Association of Canada's "Towards Sustainable Mining" ("TSM"), a three-year project designed to enhance our community engagement processes, drive world-leading environmental practices and reinforce our commitment to the safety and health of our employees and surrounding communities. However, there is no assurance that our efforts will be successful at mitigating all impacts of community actions to our operations, and we may suffer material negative consequences to our business.

Trading Activities and Credit Risk

The zinc, lead, and copper concentrates produced by us are sold through long-term supply arrangements to metal traders or integrated mining and smelting companies. The terms of the concentrate contracts may require us to deliver concentrate that has a value greater than the payment received at the time of delivery, thereby introducing us to credit risk of the buyers of our concentrates. Should any of these counterparties not honour supply arrangements, or should any of them become insolvent, we may incur losses for products already shipped and be forced to sell our concentrates in the spot market or we may not have a market for our concentrates and therefore our future operating results may be materially adversely impacted. For example, the Doe Run Peru smelter, a significant buyer of our production in Peru, experienced financial difficulties in the first quarter of 2009 and closed. We continued to sell copper concentrates to other buyers but on inferior terms. The Doe Run Peru smelter remains closed and we are owed approximately $8.2 million under the terms of our contract with Doe Run Peru. We continue to pursue all legal and commercial avenues to collect the amount outstanding.

As at December 31, 2017, we had receivable balances associated with buyers of our concentrates of $52.0 million (2016 - $45.0 million). The vast majority of the Company's concentrate is sold to a limited number of concentrate buyers.

Silver doré production is refined under long term agreements with fixed refining terms at three separate refineries worldwide. We generally retain the risk and title to the precious metals throughout the process of refining and therefore are exposed to the risk that the refineries will not be able to perform in accordance with the refining contract and that we may not be able to fully recover our precious metals in such circumstances. As at December 31, 2017, we had approximately $21.9 million contained in precious metal inventory at refineries (2016 - $28.5 million). We maintain insurance coverage against the loss of precious metals at our mine sites, in-transit to refineries, and while at the refineries.

Refined silver and gold is sold in the spot market to various bullion traders and banks. Credit risk may arise from these activities if we are not paid for metal at the time it is delivered, as required by spot sale contracts.

We maintain trading facilities with several banks and bullion dealers for the purposes of transacting our trading activities. None of these facilities are subject to margin arrangements. Our trading activities can expose us to our counterparties' credit risk to the extent that our trading positions have a positive mark-to-market value.

Supplier advances for products and services yet to be provided are a common practice in some jurisdictions in which the Company operates. These advances represent a credit risk to the Company to the extent that supplies do not deliver products or perform services as expected. As at December 31, 2017, the Company had made $14.3 million of supplier advances (December 31, 2016 - $28.8 million), which are reflected in "Trade and other receivables" on the Company's balance sheet.

Management constantly monitors and assesses the credit risk resulting from our concentrate sales, refining arrangements, and commodity contracts. Furthermore, management carefully considers credit risk when allocating prospective sales and refining business to counterparties. In making allocation decisions, management attempts to avoid unacceptable concentration of credit risk to any single counterparty.

From time to time, we may invest in equity securities of other companies. Just as investing in Pan American is inherent with risks such as those set out in this AIF, by investing in other companies we will be exposed to the risks associated with owning equity securities and those risks inherent in the investee companies.

Taxation Risks

In addition to the risks relating to taxation discussed under the heading "Risks Related to Our Business – Governmental Regulation", we are also exposed to other tax related risks. In assessing the probability of realizing income tax assets recognized, the Company makes estimates related to expectations of future taxable income, applicable tax planning opportunities, expected timing of reversals of existing temporary differences and the likelihood that tax positions taken will be sustained upon examination by applicable tax authorities. In making its assessments, we give additional weight to positive and negative evidence that can be objectively verified. Estimates of future taxable income are based on forecasted cash flows from operations and the application of existing tax laws in each jurisdiction. We consider relevant tax planning opportunities that are within the Company's control, are feasible, and within management's ability to implement. Examination by applicable tax authorities is supported based on individual facts and circumstances of the relevant tax position examined in light of all available evidence. Where applicable tax laws and regulations are either unclear or subject to ongoing varying interpretations, it is reasonably possible that changes in these estimates can occur that materially affect the amounts of income tax assets recognized. Also, future changes in tax laws could limit the Company from realizing the tax benefits from the deferred tax assets. We reassess unrecognized income tax assets at each reporting period.

Economic Dependence

We have 16 customers that account for 100% of our concentrate and silver and gold sales revenue. We have seven customers that accounted for 23%, 16%, 15%, 14%, 8%, 6%, and 5% of total sales in 2017. The loss of certain of these customers or curtailment of purchases by such customers could have a material adverse effect on our results of operations, financial condition, and cash flows.

Exchange Rate Risk

We report our financial statements in USD; however we operate in jurisdictions that utilize other currencies. As a consequence, the financial results of our operations, as reported in USD, are subject to changes in the value of the USD relative to local currencies. Since Pan American's sales are denominated in USD and a portion of our operating costs and capital spending are in local currencies, we are negatively impacted by strengthening local currencies relative to the USD and positively impacted by the inverse.

From time to time, the Company mitigates part of this currency exposure by accumulating local currencies, entering into contracts designed to fix or limit the Company's exposure to changes in the value of local currencies relative to the USD, or assuming liability positions to offset financial assets subject to currency risk. The Company held cash and short-term investments of $25.1 million in CAD, $5.2 million in MXN, $4.7 million in BOB, $4.2 million in ARS, and $2.3 million in PEN at December 31, 2017. The Company recorded losses of $0.8 million and gains of $3.8 million on the MXN forward contracts for Q4 2017 and full-year 2017, respectively (Q4 2016 and full-year 2016 losses of $0.8 million and $1.5 million, respectively), but had no outstanding positions on its foreign currency exposure of MXN purchases as at December 31, 2017.

Our balance sheet contains various monetary assets and liabilities, some of which are denominated in foreign currencies. Accounting convention dictates that these balances are fair valued at the end of each period, with resulting adjustments being reflected as foreign exchange gains or losses on our statement of operations.

In addition to the foregoing, governmental restrictions and controls relating to exchange rates also impact our operations. In Argentina, for example, the government has at times established official exchanges rates that were significantly different than the unofficial exchange rates more readily utilized locally to determine prices and value. Our investments in Argentina are primarily funded from outside of the country, and therefore conversion of foreign currencies, like USD, at the official exchange rate has had the effect of reducing purchasing power and substantially increasing relative costs in an already high inflationary market. Maintaining monetary assets in ARS also exposes us to the risks of ARS devaluation and high domestic inflation.

Liquidity Risk

Liquidity risk is the risk that we will not be able to meet our financial obligations as they come due. The volatility of the metals markets can impact our ability to forecast cash flow from operations. We must maintain sufficient liquidity to meet our short-term business requirements, taking into account our anticipated cash flows from operations, our holdings of cash and cash equivalents, and committed loan facilities.

We manage our liquidity risk by continuously monitoring forecasted and actual cash flows. We have in place a rigorous reporting, planning and budgeting process to help determine the funds required to support our normal operating requirements on an ongoing basis and our expansion plans. We continually evaluate and review capital and operating expenditures in order to identify, decrease, and limit all non-essential expenditures.

Employee Recruitment, Retention and Human Error

Recruiting and retaining qualified personnel is critical to our success. We are dependent on the services of key executives including Pan American's President and Chief Executive Officer and other highly skilled and experienced executives and personnel focused on managing our interests. The number of persons skilled in acquisition, exploration, and development of mining properties is limited and competition for such persons is intense. As our business activity grows, we will require additional key financial, administrative, and mining personnel as well as additional operations staff. There can be no assurance that we will be successful in attracting, training, and retaining qualified personnel as competition for persons with these skill sets increases. If we are not successful in attracting, training, and retaining qualified personnel, the efficiency of our operations could be impaired, which could have an adverse impact on Pan American's future cash flows, earnings, results of operations, and financial condition.

Despite efforts to attract and retain qualified personnel, as well as the retention of qualified consultants, to manage our interests, even when those efforts are successful, people are fallible and human error and mistakes could result in significant uninsured losses to us. These could include, but are not limited to, loss or forfeiture of mineral claims or other assets for non-payment of fees or taxes, erroneous or incomplete filings or non-fulfillment of other obligations, significant tax liabilities in connection with any tax planning effort we might undertake or mistakes in interpretation and implementation of tax laws and practices, and legal claims for errors or mistakes by our personnel.

Employee Relations

Some of our employees and contractors are unionized. In particular, unions have been established at our operations in Peru, Argentina, and Bolivia. Although we have reached agreements with our various unions and place significant emphasis on maintaining positive relationships with the unions and employees, we have experienced labour strikes and work stoppages in the past. Should they occur, some labour strikes and work stoppages have the potential to materially affect our operations and thereby adversely impact our future cash flows, earnings, production, and financial conditions.

Acquisitions and Integration

An element of our business strategy is to make selected acquisitions. For example, Pan American completed the acquisitions of: the La Colorada mine in 1998; Corner Bay (the Alamo Dorado mine) in 2003; Argentum (the Morococha mine) in 2004; the remaining 50% interest in the Manantial Espejo project in 2006; an additional 40% interest in PASB in respect of the San Vicente mine in May 2007; Aquiline (Navidad) in 2010; Minefinders (the Dolores mine) in 2012; and in 2017, the Joaquin and COSE properties in Argentina. We expect to continue to evaluate acquisition opportunities on a regular basis and intend to pursue those opportunities that we believe are in our long-term best interests. The success of our acquisitions will depend upon a number of factors, including the adequacy, completeness, analysis and interpretation of information obtained during due diligence, our ability to effectively manage the integration and operations of entities once we complete an acquisition, and our ability, in some cases, to make improvements or advancements that we anticipated. The process of managing acquired businesses may involve unforeseen difficulties and risks, and may require a disproportionate amount of management resources and expenditures. There can be no assurance that we will be able to successfully manage the integration and operations of businesses we acquire, or that the anticipated benefits of our acquisitions will be realized.

In addition to acquisitions, we periodically enter into joint venture, option and similar arrangements which, among other things, that also require an investment in time and capital, and are subject to risks associated with due diligence matters. We also occasionally make investments in other mining companies, such as our investments in Maverix Metals Inc. and in New Pacific Metals Corp. Such arrangements may depend, in part, on other parties and may be speculative in nature. There is no guarantee that any of these arrangements will be successful or that we will recover any capital or other investments made in relation thereto.

Limited Supplies and Supply Chain Disruptions

Our operations depend on an uninterrupted supply of reagents (including, but not limited to, cyanide at some operations), production inputs, and other supplies and resources such as skilled personnel. Supply may be interrupted due to a shortage or the scarce nature of inputs, especially with regard to chemical reagents. Supply might also be interrupted due to transportation and logistics associated with the remote location of some of our operations, and government restrictions or regulations which delay importation of necessary items. Any interruptions to the procurement and supply of reagents, production inputs and other supplies, or the availability of skilled personnel could have an adverse impact on our future cash flows, earnings, results of operations, and financial condition.

Commodity Hedging Activities

We occasionally hedge commodities needed in our business, primarily to reduce price risk. During the year ended December 31, 2015, the Company entered into diesel swap contracts designated to fix or limit the Company's exposure to higher fuel prices (the "diesel fuel swaps"). The diesel fuel swaps had an initial notional value of $25.5 million of which $nil remained outstanding as at December 31, 2016 (December 31, 2015 - $14.7 million). The Company recorded gains of $1.0 million on the Diesel fuel swaps in the year ended December 31, 2016 (2015 - losses of $3.1 million). There were no diesel fuel swaps in 2017.

Internal Control over Financial Reporting

Management of the Company is responsible for establishing and maintaining an adequate system of internal control, including internal controls over financial reporting. Internal control over financial reporting is a process designed by, or under the supervision of, the President and Chief Executive Officer and the Chief Financial Officer and effected by the Board of Directors, management and other personnel to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with International Financial Reporting Standards. Management assesses the effectiveness of our internal control over financial reporting based on the criteria set forth in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). We also engage an independent registered public accounting firm to audit and provide independent opinions on the effectiveness of our internal control over financial reporting.

We may fail to achieve and maintain the adequacy of our internal control over financial reporting as such standards are modified, supplemented, or amended from time to time, and we may not be able to ensure that we can conclude on an ongoing basis that we have effective internal control over financial reporting. Also, projections of any evaluation of the effectiveness of internal control over financial reporting to future periods are subject to the risk that the controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. No evaluation can provide complete assurance that our internal control over financial reporting will prevent or detect misstatements on a timely basis, or detect or uncover all failures of persons employed by us to disclose material information otherwise required to be reported. The effectiveness of our control and procedures could also be limited by simple errors or faulty judgments. In addition, as we continue to expand, the challenges involved in implementing appropriate internal control over financial reporting will increase and will require that we continue to improve our internal control over financial reporting.

Our failure to satisfy these requirements on a timely basis could result in the loss of investor confidence in the reliability of our financial statements, which in turn could harm our business and negatively impact the trading price of our shares or market value of our other securities. In addition, any failure to implement required new or improved controls, or difficulties encountered in their implementation, could harm our operating results or cause us to fail to meet our reporting obligations. There can be no assurance that we will be able to remediate material

weaknesses, if any, identified in future periods, or maintain all of the controls necessary for continued compliance, and there can be no assurance that we will be able to retain sufficient skilled finance and accounting personnel, especially in light of the increased demand for such personnel among publicly traded companies. Future acquisitions of companies may provide us with challenges in implementing the required processes, procedures and controls in our acquired operations. Acquired companies may not have disclosure controls and procedures or internal control over financial reporting that are as thorough or effective as those required by securities laws currently applicable to us.

Compliance

We are subject to complex laws and regulatory regimes that differ in the various jurisdictions in which we operate and are sometimes extra-jurisdictional in application. Ensuring that such laws and regulatory requirements are understood and followed by our personnel is difficult and we may inadvertently fail to comply with such laws and requirements or they may be contravened by our personnel. We have established programs, policies and training to reduce and mitigate risks in certain areas, including anti-corruption compliance. In this respect, we have adopted a Global Code of Ethical Conduct and a Global Anti-Corruption Policy, developed a training program, and taken other steps to reduce the risk of non-compliance with applicable anti-corruption laws, including in the United States and Canada. However, there is no guarantee such programs, policies or training will prevent violations of the law, particularly by individual employees or agents. Violations of such laws, particularly those relating to corruption, could lead to the imposition of substantial fines, penalties or other civil or criminal prosecution or sanctions, and could severely damage our reputation. Such fines, penalties, and sanctions, and any damage to our reputation, could have a material adverse effect on our business.

Climate Change

Governments are introducing climate change legislation and treaties at the international, national, and local levels. Regulation relating to emission levels and energy efficiency is becoming more stringent. Some of the costs associated with reducing emissions can be offset by increased energy efficiency and technological innovation. If the current regulatory trend continues, this may result in increased costs at some of our operations. The physical risks of climate change may also adversely impact our operations. These risks may include extreme weather events, resource shortages, changes in rainfall and storm patterns and intensities, water shortages, changing sea levels and changing temperatures.

Claims and Legal Proceedings

We are subject to various claims and legal proceedings covering a wide range of matters that arise in the ordinary course of business activities. Many of these claims relate to current or ex-employees, or employees of former or current owners of our operations, some of which involve claims of significant value, for matters ranging from workplace illnesses, such as silicosis, to claims for additional profit-sharing and bonuses in prior years. Furthermore, we are in some cases the subject of claims by local communities, indigenous groups or private land owners relating to land and mineral rights and such claimants may seek sizeable monetary damages against us and/or the return of surface or mineral rights that are valuable to us and which may impact our operations and profitability if lost. Each of these matters is subject to various uncertainties and it is possible that some of these matters may be resolved unfavourably to us. We establish provisions for matters that are probable and can be reasonably estimated. We also carry liability insurance coverage, however such insurance does not cover all risks to which we might be exposed and in other cases, may only partially cover losses incurred by the Company. In addition, we may be involved in disputes with other parties in the future that may result in litigation, which may result in a material adverse effect on our financial position, cash flow and results of operations.

Information and Cyber Security

With the increasing dependence and interdependence on electronic data communication and storage, including the use of cloud-based services and personal devices, the Company is exposed to evolving technological risks relating to its information and data. These risks include targeted attacks on our systems or on systems of third parties that we rely on, failure or non-availability of a key information technology system, or a breach of security measures designed to protect our systems. While the Company employs security measures in respect of its information and data, we cannot be certain that we will be successful in securing this information and data and there may be

instances where the Company is exposed to malware, cyber-attacks or other unauthorized access or use of its information and data. While the Company employs security measures in respect of its information and data, we cannot be certain that we will be successful in securing this information and data and there may be instances where the Company is exposed to malware, cyber-attacks or other unauthorized access or use of its information and data. Any data breach or other improper or unauthorized access or use of our information could have a material adverse effect on our business and could severely damage our reputation.

DIVIDENDS

On February 15, 2010, the Company's Board declared its first cash dividend, and has paid a dividend quarterly since that time. Over the past three years, we have declared the following dividends:

Year	Declaration Date	Amount per Common Share
2017	• November 8	• $0.025
	• August 9	• $0.025
	• May 9	• $0.025
	• February 14	• $0.025
2016	• November 14	• $0.0125
	• August 11	• $0.0125
	• May 11	• $0.0125
	• February 17	• $0.0125
2015	• November 11	• $0.05
	• August 13	• $0.05
	• May 11	• $0.05
	• February 18	• $0.125

Each of the foregoing dividends was designated to be an eligible dividend for the purposes of the *Income Tax Act* (Canada). The amounts and specific distribution dates of any future dividends will be evaluated and determined by the Board of Directors on an ongoing basis.

MARKET FOR SECURITIES

Pan American's Common Shares are listed and posted for trading on the Toronto Stock Exchange and The Nasdaq Stock Market under the symbol "PAAS". The majority of trading of our Common Shares takes place on The Nasdaq Stock Market. The following table outlines the closing share price trading range and volume of shares traded by month in 2017:

Toronto Stock Exchange (CAD$)				Nasdaq Stock Market (USD$)			
Month	**High**	**Low**	**Volume**	**Month**	**High**	**Low**	**Volume**
January	$25.67	$20.35	8,043,621	January	$19.70	$15.14	37,056,414
February	$27.99	$23.22	4,338,651	February	$21.29	$17.64	37,532,863
March	$24.68	$21.27	5,090,515	March	$18.43	$15.80	45,763,089
April	$25.76	$22.37	6,023,164	April	$19.43	$16.39	38,801,666
May	$25.30	$21.53	4,705,872	May	$18.60	$15.64	40,080,091
June	$24.49	$21.14	5,800,445	June	$18.21	$15.98	58,516,898
July	$21.45	$19.45	3,681,292	July	$17.10	$15.08	30,040,988
August	$23.62	$19.88	4,798,162	August	$18.91	$15.66	33,881,943
September	$24.27	$20.80	4,699,284	September	$19.56	$16.82	24,603,223
October	$22.49	$20.69	2,867,432	October	$18.00	$16.05	22,717,889
November	$21.33	$18.31	4,872,327	November	$16.59	$14.43	39,619,288
December	$20.34	$18.00	3,255,242	December	$15.89	$13.99	24,913,068

EXCEPTIONS FROM NASDAQ CORPORATE GOVERNANCE REQUIREMENTS

Under Rule 4350(a) of the Nasdaq Stock Market Rules (the "Nasdaq Rules"), a foreign private issuer (as defined in Rule 12b-2 under the U.S. Securities Exchange Act of 1934, as amended) may follow its home country practice in lieu of certain of the corporate governance requirements of the Nasdaq Rules.

Pursuant to Rule 4350(a), Pan American follows British Columbia practice with respect to quorum requirements in lieu of Nasdaq Rule 4350(f). Nasdaq Rule 4350(f) requires that the minimum quorum for a shareholder meeting is 33-1/3% of the outstanding common shares, whereas Pan American's articles provide that the minimum quorum for a meeting of the holders of our Common Shares is two individuals who are shareholders, proxy holders representing shareholders or duly authorized representatives of corporate shareholders personally present and representing shares aggregating not less than 25% of the issued Common Shares of Pan American carrying the right to vote at that meeting. In the event there is only one shareholder, the quorum is one person personally present and being, or representing by proxy, that shareholder, or in the case of a corporate shareholder, a duly authorized representative of that shareholder. Pan American's quorum requirement complies with the *Business Corporations Act* (British Columbia), which requires that unless the articles otherwise provide, two shareholders entitled to vote at a meeting of shareholders, whether in person or represented by proxy, constitute a quorum. Furthermore, the rules of the Toronto Stock Exchange, upon which our Common Shares are also listed, do not contain specific quorum requirements.

On March 21, 2018, Pan American informed the Nasdaq Stock Market that we intended to follow Canadian law with respect to independence requirements for members of its Human Resources and Compensation Committee (the "Compensation Committee") and its Nominating and Governance Committee (the "Nominating Committee") in lieu of those required by Rules 5605(d)(2)(A) and 5605(e)(1)(B) of the Nasdaq Rules, respectively. Rules 5605(d)(2)(A) and 5605(e)(1)(B) require members of compensation committees and nominations committees be independent pursuant to Rule 5605(a)(2)(E) of the Nasdaq Rules. The corporate governance guidelines in Canadian *National Instrument 58-201* recommend that a company's board of directors appoint a compensation committee composed entirely of independent directors and the Disclosure of Corporate Governance Practices in Canadian *National Instrument 58-101* ("NI 58-101") requires (a) disclosure whether or not a company's board of directors has a

compensation committee composed entirely of independent directors, and, if not, (b) a description of what steps the board takes to ensure an objective process for determining such compensation. There is no equivalent independence guidance with respect to the Nominating Committee, but NI 58-101 requires (a) disclosure whether or not a company's board of directors has a nominating committee composed entirely of independent directors, and, if not, (b) a description of what steps the board takes to encourage an objective nomination process. Mr. Christopher Noel Dunn, a member of both the Compensation Committee and the Nominating Committee until our Board of Directors accepted his resignation from each of these committees on March 22, 2018, is not considered independent as he serves as an executive officer of another publicly listed company where, for an approximate ten month period from May 2017 to March 2018, an executive officer of Pan American served on its compensation committee. Pan American's executive officer stepped down and no longer serves on that listed company's compensation committee. Mr. Dunn has been replaced on those committees by an independent director pursuant to Rule 5605(a)(2)(E) of the Nasdaq Rules, at which time we fully complied with Rules 5605(d)(2)(A) and 5605(e)(1)(B) of the Nasdaq Rules. Pan American will provide relevant disclosure required by NI 58-101 in its next Management Information Circular.

DIRECTORS AND EXECUTIVE OFFICERS

The names of our directors and executive officers as at December 31, 2017, are set out below, as well as their municipalities of residence, positions with Pan American, and principal occupations for the past five years:

Name and Municipality of Residence	Position with Pan American	Principal Occupation During the Past Five Years
ROSS J. BEATY[5] Vancouver, B.C. Canada	Director and Chairman (director of Pan American since September 30, 1988)	Business Executive and Chairman of Pan American.
MICHAEL CARROLL[1,5] Walnut Creek, California, U.S.A.	Director since January 1, 2011	Corporate Director
CHRISTOPHER N. DUNN [2,3,5,6] Vancouver, B.C. Canada	Director since January 1, 2012	Corporate Director, Executive Chairman of Ero Copper Corporation.
NEIL DE GELDER, Q.C.[1, 3] Vancouver, B.C. Canada	Director since July 3, 2012	Exec. VP of Stern Partners, a private diversified investment firm.
DAVID PRESS[2,4] West Vancouver, B.C. Canada	Director since May 13, 2008	Corporate Director
WALTER T. SEGSWORTH[2, 4,7] West Vancouver, B.C. Canada	Director since May 12, 2009	Corporate Director
MICHAEL STEINMANN [4,5] North Vancouver, B.C. Canada	Director (since January 1, 2016) and President and CEO	CEO of Pan American since January 1, 2016; President since February 18, 2015; Exec. VP, Corporate Development & Geology since September 1, 2008.
GILLIAN WINCKLER[1,4,6] Vancouver, B.C. Canada	Director since May 11, 2016	Corporate Director
STEVEN BUSBY Vancouver, B.C. Canada	COO	COO of Pan American since May 13, 2008.
A. ROBERT DOYLE North Vancouver, B.C. Canada	CFO	CFO of Pan American since January 2004.
CHRISTOPHER EMERSON Lima Peru	VP, Business Development and Geology	VP, Business Development & Geology of Pan American since August 10, 2015; previously Geology Manager for Glencore South America.
GEORGE GREER Surrey, B.C. Canada	Sr. VP, Project Development	Sr. VP, Project Development of Pan American since January 1, 2012.
CHRISTOPHER LEMON Vancouver, B.C. Canada	General Counsel	General Counsel of Pan American since August 2, 2017; previously General Counsel of First Quantum Minerals Ltd.
SEAN MCALEER Vancouver, B.C. Canada	VP, Human Resources and Security	VP, Human Resources and Security of Pan American since February 1, 2010.

Notes:

1 Member of the Audit Committee.

2 Member of the Human Resources and Compensation Committee.

3 Member of the Nominating and Governance Committee.

4 Member of the Health, Safety, Environment and Communities Committee.

5 Member of the Finance Committee.

6 Effective March 22, 2018, Mr. Dunn resigned from each of the Committees on which he served. Ms. Winckler resigned from the Health, Safety, Environment and Communities Committee and replaced Mr. Dunn on the Nominating and Governance Committee and the Human Resources and Compensation Committee.

7 Mr. Segsworth is our Lead Independent Director.

The directors of Pan American are elected at each annual general meeting to hold office until the next annual general meeting or until their successors are elected or appointed. As at December 31, 2017, the Board of Directors consisted of eight directors, six of whom, Ross Beaty, Michael Carroll, Neil de Gelder, David Press, Walter Segsworth and Gillian Winckler, qualify as unrelated directors who are independent of management. While the Board is not of the view that Mr. Dunn had a material relationship that would reasonably be expected to interfere with the exercise of his independent judgement, Mr. Dunn is not considered independent pursuant to the National Instrument 58-201 – Corporate Governance Guidelines and the Nasdaq Stock Market Rules because he serves as an executive officer of another publicly listed company where, for a brief period of time, an executive officer of Pan American also served on the compensation committee of its board of directors. Pan American's executive officer has since stepped down and no longer serves on that company's compensation committee. Mr. Steinmann is not independent due to his current management position with us.

The Board of Directors has established five committees: the Audit Committee, the Human Resources and Compensation Committee, the Health, Safety, Environment and Communities Committee, the Nominating and Governance Committee, and the Finance Committee. Detailed information regarding the duties and obligations of the Audit Committee is annexed as Appendix "A" to this AIF. The Board of Directors does not have an Executive Committee. The composition of the various committees as at December 31, 2017, is set forth in the preceding table.

As at March 21, 2017, the directors and executive officers of Pan American named above as a group exercised control or direction or beneficially owned, directly or indirectly, 3,147,548 Common Shares approximately 2.05% of the issued and outstanding Common Shares of Pan American.

Except as noted below, none of Pan American's directors or executive officers:

(a) are, as at the date of this AIF, or have been, within 10 years before the date of this AIF, a director, chief executive officer or chief financial officer of any company (including Pan American) that,

(i) was subject to cease trade order, an order similar to a cease trade order, or an order that denied the relevant company access to any exemption under securities legislation (collectively, an "Order") that was issued while the director or executive officer was acting in the capacity as director, chief executive officer or chief financial officer; or

(ii) 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;

(b) are, as at the date of this AIF, or has been within 10 years before the date of this AIF, a director or executive officer of any company (including Pan American) 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

(c) have, 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 director or executive officer.

In addition, none of Pan American's directors and executive officers has been subject to:

(a) any penalties or sanctions imposed by a court relating to securities legislation or by a securities regulatory authority or has entered into a settlement agreement with a securities regulatory authority; or

(b) any other penalties or sanctions imposed by a court or regulatory body that would likely be considered important to a reasonable shareholder in making an investment decision.

Audit Committee

As at December 31, 2017, the members of the Audit Committee were Michael Carroll (Chair), Neil de Gelder, and Gillian Winckler. The Board of Directors has determined based on the information provided by each director that all members of the Audit Committee meet the independence requirements set out in National Instrument 52-110 – *Audit Committees*, and as defined under Rule 10A-3 of the U.S. Securities Exchange Act of 1934, as amended, and the rules and regulations of the Nasdaq Stock Market. All members of the Audit Committee are financially literate and Michael Carroll, an individual serving on the audit committee of the Board of Directors, is an audit committee financial expert, as that term is defined in General Instruction B(8)(b) of Form 40-F.

The SEC has indicated that the designation of a person as an audit committee financial expert does not make such person an "expert" for any purpose, impose any duties, obligations or liabilities on such person that are greater than those imposed on members of the audit committee and the board of directors who do not carry this designation or affect the duties, obligations or liability of any other member of the audit committee or board of directors.

Relevant Education and Experience of Audit Committee Members

The relevant education and experience of each member of the Audit Committee that is relevant to the performance of the Audit Committee responsibilities are as follows:

Michael L. Carroll (Chair) is a Certified Public Accountant with over 30 years of financial management expertise, primarily with publicly traded mining companies and has previously served on the audit committee of another public company.

Neil de Gelder, Q.C., has over 25 years of experience as a lawyer specializing in corporate, mergers and acquisitions, and financing matters with a major Canadian law firm, frequently advising boards of publicly traded companies. He has been the Executive Director of the British Columbia Securities Commission, and is currently Executive Vice-President of a private diversified investment firm based in Vancouver. In this capacity, he is routinely involved in reviewing internal management financial reporting and external audited and unaudited financial statements from the perspective of an owner or director. Mr. de Gelder has served on a wide variety of corporate, Crown, charitable, and community boards over the years, including serving on the audit committee of a B.C. venture capital fund.

Gillian Winckler is a former mining and business executive with over 25 years of diversified experience in the metals and mining industry and the financial sector. Among other senior positions, Ms. Winckler has been both a Chief Executive Officer and Chief Financial Officer of a Canadian and Australian publicly listed coal development

company. Ms. Winckler has been extensively involved with corporate and divisional strategy, mergers and acquisitions, divestments, exploration, as well as project evaluation and development. Ms. Winckler is a Chartered Accountant (South Africa), with a BSc and BComm (Hons) obtained in South Africa. Her professional expertise includes strategic planning, mergers, acquisitions and divestments in the mining sector, as well as IFRS, GAAP, risk management and regulatory reporting. Ms. Winckler also currently serves on the audit committee of another reporting issuer in Canada.

External Auditor Service Fees

Audit Fees

The aggregate fees billed by Deloitte LLP, Pan American's Independent Registered Public Accounting Firm, for the fiscal years ended December 31, 2017 and 2016 for professional services rendered by Deloitte LLP for the audit of Pan American's annual consolidated financial statements or services that are normally provided by Deloitte LLP in connection with statutory and regulatory filings or engagements for such years were approximately $1,877,000 and $1,788,000, respectively.

Audit-Related Fees

The aggregate fees billed by Deloitte LLP for the fiscal years ended December 31, 2017 and 2016 for assurance and related services rendered by it that are reasonably related to the performance of the audit or review of Pan American's consolidated financial statements and are not reported above as audit fees were approximately $0 and $101,000, respectively.

Tax Fees

The aggregate fees billed by Deloitte LLP for the fiscal years ended December 31, 2017 and 2016 for professional services rendered by it for tax compliance, tax advice, tax planning, and other services were approximately $42,000 and $58,000, respectively. In 2017, such fees related primarily to the provision of services related to transfer pricing and tax compliance reporting (foreign income tax and VAT returns).

Other Fees

The aggregate fees billed by Deloitte LLP for the fiscal years ended December 31, 2017 and 2016 for products and services provided by Deloitte LLP, other than the services reported in the preceding three paragraphs, were approximately $0 and $0, respectively.

Audit Committee Pre-Approval Policies

All audit and non-audit services performed by the Independent Registered Public Accounting Firm are pre-approved by the Audit Committee.

CONFLICTS OF INTEREST

To the best of our knowledge, and other than as disclosed in this AIF, there are no known existing or potential conflicts of interest between us and any of our directors or officers, except that certain officers and directors of the Company are officers and directors of, or are associated with, other public or private companies. Such associations may give rise to conflicts of interest from time to time between their duties as an officer or director of the Company and their duties as an officer or director or such other companies. The directors are aware of laws requiring them to act honestly and in good faith with a view to act in the best interests of Pan American and our shareholders and to disclose any conflicts of interest.

LEGAL PROCEEDINGS AND REGULATORY ACTIONS

A description of certain legal proceedings to which we are a party appear under the heading "Commitments and Contingencies" in Note 29 to our Audited Consolidated Financial Statements for the year ended December 31, 2017. We have not been subject to any regulatory penalties or sanctions during the financial year, nor entered into any settlement agreements relating to securities legislation.

INTEREST OF MANAGEMENT AND OTHERS IN MATERIAL TRANSACTIONS

To the best of our knowledge, no director or executive officer of the Company, nor any person or company that beneficially owns, controls, directs, directly or indirectly, more than 10% of our Common Shares, nor any associate or affiliate of any of the foregoing persons, has or had a material interest in any transaction within the three most recently completed financial years or during the current financial year that has materially affected or is reasonably expected to materially affect the Company.

TRANSFER AGENTS AND REGISTRAR

The transfer agent and registrar for our Common Shares is Computershare Investor Services Inc. at its principal office in Vancouver, British Columbia, and Computershare Trust Company, N. A. at its office in Denver, Colorado, U.S.A.

MATERIAL CONTRACTS

Except for contracts entered into in the ordinary course of business, no material contracts have been entered into by the Company during the financial year ended December 31, 2017 or before such time which are still in effect.

INTERESTS OF EXPERTS

Deloitte LLP, Independent Registered Public Accounting Firm, is the auditor of Pan American and is independent within the meaning of the Rules of Professional Conduct of the Chartered Professional Accountants of British Columbia.

The Qualified Persons as defined by NI 43-101 who have prepared or supervised the preparation of Pan American's mineral reserve and mineral resource estimates as at December 31, 2017, and who supervised the preparation of and approved the scientific and technical information disclosed in this AIF, as described under the heading "Scientific and Technical Information" on page 6, are Michael Steinmann, President and Chief Executive Officer, Martin Wafforn, Senior Vice President, Technical Services and Process Optimization, Chris Emerson, FAusIMM, Vice

President, Business Development and Geology, Pamela De Mark, Director of Resources, and Americo Delgado, Director of Metallurgy, all of whom are employees of Pan American.

Michael Steinmann, P. Geo., Martin Wafforn, P. Eng., Chris Emerson, FAusIMM, Pamela De Mark, P. Geo., and Americo Delgado, P.Eng. are the persons who have prepared or certified a statement, report, or valuation described in this AIF.

None of Michael Steinmann, P. Geo., Martin Wafforn, P. Eng., Chris Emerson, FAusIMM, Pamela De Mark, P. Geo., or Americo Delgado, P. Eng. beneficially owns, directly or indirectly, 1% or more of any class of Pan American's outstanding securities.

ADDITIONAL INFORMATION

Additional information, including directors' and officers' remuneration and indebtedness, principal holders of Pan American's securities, and securities authorized for issuance under equity compensation plans, is contained in our management information circular for the most recent annual meeting of shareholders. Additional financial information is also provided in our audited consolidated financial statements for the years ended December 31, 2017 and 2016, and management's discussion and analysis for the year ended December 31, 2017. The foregoing disclosure documents, along with additional information relating to Pan American, may be found on SEDAR at www.sedar.com, on the United States Securities and Exchange Commission website at www.sec.gov, or on our website at www.panamericansilver.com.

GLOSSARY OF TERMS

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

"*inferred mineral resource*" – That part of a mineral resource for which quantity and grade or quality can be estimated on the basis of geological evidence and limited sampling and reasonably assumed, but not verified, geological grade and continuity. The estimate is based on limited information and sampling gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.

"*indicated mineral resource*" – That part of a mineral resource for which quantity, grade or quality, densities, shape, physical characteristics are so well established that they can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough for geological and grade continuity to be reasonably assumed.

"measured mineral resource" – That part of a mineral resource for which quantity, grade or quality, densities, shape, and physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough to confirm both geological and grade continuity.

"*mineral reserve*" – A mineral reserve is the economically mineable part of a measured or indicated mineral resource demonstrated by at least a preliminary feasibility study. This study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified. A mineral reserve includes diluting materials and allowances for losses that may occur when the material is mined.

"probable mineral reserve" - The economically mineable part of an indicated, and in some circumstances, a measured mineral resource demonstrated by at least a preliminary feasibility study. This study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified.

"proven mineral reserve" - The economically mineable part of a measured mineral resource demonstrated by at least a preliminary feasibility study. This study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction is justified.

APPENDIX "A"

AUDIT COMMITTEE CHARTER

PURPOSE

Senior management of Pan American Silver Corp. (the "**Company**"), as overseen by its Board of Directors (the "**Board**"), has primary responsibility for the Company's financial reporting, accounting systems and internal controls. The Audit Committee (the "**Committee**") is a standing committee of the Board established for the purposes of overseeing:

a. the quality and integrity of the Company's financial and accounting reporting processes and internal accounting and financial control systems;

b. the external auditor's qualifications and independence;

c. management's responsibility for assessing the effectiveness of internal controls; and

d. the Company's compliance with legal and regulatory requirements in connection with financial and accounting matters.

COMPOSITION AND OPERATION

a. The Committee shall be composed of at least three independent directors and all members of the Committee shall, to the satisfaction of the Board, be Financially Literate and at least one member will be a Committee Financial Expert ("**Financially Literate**" and "**Committee Financial Expert**" are defined in the Definitions section of this Charter).

b. The members of the Committee shall be appointed by the Board, based on the recommendation of the Nominating and Governance Committee, to serve a one-year term and are permitted to serve an unlimited number of consecutive terms.

c. The Committee shall appoint a chair (the "**Chair**") from among its members who shall be an independent director. If the Chair is not present at any meeting of the Committee, one of the other Committee members present at the meeting shall be chosen to preside at the meeting.

d. The Committee will make every effort to meet at least five times per year and each member is entitled to request that an additional meeting be called, which will be held within two weeks of the request for such meeting if practicable. A quorum at meetings of the Committee shall be two members present in person or by telephone. The Committee may also act by unanimous written consent of its members as described under the heading "**Authority**" in this Charter.

e. The external auditor may request the Chair to call a meeting of the Committee to consider any matter that the auditor believes should be brought to the attention of the directors or the shareholders of the Company. In addition to the external auditor, each committee chair, members of board, as well as the Chief Executive Officer or Chief Financial Officer shall be entitled to request the Chair to call a meeting, which meeting shall be held as soon as practicable after receiving the request.

f. Notice of the time and place of every meeting shall be given in writing or by email communication to each member of the Committee at least 24 hours prior to the time fixed for such meeting.

g. The Committee shall fix its own procedure at meetings, keep records of its proceedings and provide a verbal report to the Board routinely at the next regularly scheduled Board meeting and shall provide

copies of finalized minutes of meetings to the Corporate Secretary to be kept with the official minute books of the Company.

h. The Committee will review and approve its minutes of meetings and copies will be made available to the external auditor or its members as requested.

i. In camera sessions will be scheduled for each regularly scheduled quarterly Committee meeting, and as needed from time to time.

j. On an ad hoc basis, the Committee may also meet separately with head of internal audit, the Chief Executive Officer, the Chief Financial Officer, the General Counsel and such other members of management as they may deem necessary.

RESPONSIBILITIES AND DUTIES

Overall Committee:

To fulfill its responsibilities and duties the Committee will:

a. review this Charter periodically, but at least once per annum, and recommend to the Board any necessary amendments;

b. review and, where necessary, recommend revisions to the Company's disclosure in the Management Information Circular regarding Committee's composition and responsibilities and how they are discharged;

c. assist the Board in the discharge of its responsibilities relating to the quality, acceptability and integrity of the Company's accounting policies and principles, reporting practices and internal controls;

d. review and recommend approval by the Board of all significant and material financial disclosure documents to be released by the Company, including but not limited to, quarterly and annual financial statements and management discussion and analysis, annual reports, Form 40-F, annual information forms, and prospectuses containing material information of a financial nature; and

e. oversee the relationship and maintain a direct line of communication with the Company's internal and external auditors and assess their respective performance.

Public Filings, Policies and Procedures:

The Committee is responsible for:

a. ensuring adequate procedures are in place for the review of the Company's disclosure of financial information extracted or derived from the Company's financial statements and periodically assess the Company's disclosure controls and procedures, and management's evaluation thereof, to ensure that financial information is recorded, processed, summarized and reported within the time periods required by law;

b. reviewing disclosures made to the Committee by the Chief Executive Officer and the Chief Financial Officer during their certification process for any significant deficiencies in the design or operation of internal controls or material weaknesses therein and any fraud involving management or other employees who have a significant role in internal controls;

c. reviewing with management and the external auditor any correspondence with securities regulators or other regulatory or government agencies which raise material issues regarding the Company's financial reporting or accounting policies; and

d. regularly reviewing with management, the external auditors and the Company's legal counsel, any claim or other contingency, including tax assessments, that could have a material effect upon the financial position or operating results of the Company and the manner in which these matters have been disclosed in the financial statements.

External Auditors

The responsibilities and duties of the Committee as they relate to the external auditor are to:

a. consider and make recommendations to the Board with respect to the external auditor to be nominated for appointment by shareholders at each annual general meeting of the Company and the compensation of the external auditor;

b. review the performance of the external auditor and, where appropriate, recommend to the Board the removal of the external auditor;

c. confirm the independence and effectiveness of the external auditor, which will require receipt from the external auditor of a formal written statement delineating all relationships between the auditor and the Company and any other factors that might affect the independence of the auditor;

d. oversee the work of the external auditor generally, including review and, as applicable, approval of the following :

   i. the external auditor's engagement letter and audit plans;

   ii. the reasonableness of the estimated fees and other compensation to be paid to the external auditor;

   iii. the form and content of the quarterly and annual audit report, which should include, *inter alia*:

      - a summary of the Company's internal controls and procedures;
      - any material issues raised in the most recent meeting of the Committee; and
      - any other related audit, review or attestation services performed for the Company by the external auditors.

   iv. form and content of other reports of the auditors.

   The Committee shall report to the Board, as necessary, in respect of the above noted matters.

e. actively engage in dialogue with the external auditor with respect to any disclosed relationships or services that may affect the independence and objectivity of the external auditor and take, or recommend that the Board take, appropriate actions to oversee the independence of the external auditor;

f. review and pre-approve all non-audit services provided to the Company or its subsidiaries by the external auditor prior to the commencement of such services, and in doing so, the Committee may delegate to one or more independent members of the Committee the authority to pre-approve any such non-audit services, provided that the decision of such member(s) on such non-audit services will be presented to the Committee at its next regularly scheduled meeting, and in all cases, pre-approval of non-audit services must satisfy the requirements set out in National Instrument 52-110 – Audit Committees;

g. monitor the relationship between management and the external auditor and resolve any disagreements between them regarding financial reporting;

h. engage the external auditor in discussions regarding any amendments to critical accounting policies and practices; alternative treatments of financial information within generally accepted accounting principles related to material items that have been discussed with management, including any potential ramifications and the preferred treatment by the independent auditor; and lastly, written communication between management and the independent auditor, including but not limited to, the management letter and schedules of adjusted and unadjusted differences, as applicable.

Internal Controls and Financial Reporting

The Committee will:

a. obtain reasonable assurance from discussions with (and/or reports from) management, and reports from external and internal auditors that the Company's financial and accounting systems are reliable and that the prescribed internal controls are operating effectively;

b. in consultation with the external auditor, the CEO, the CFO, and where necessary, other members of management, review the integrity of the Company's financial reporting process and the internal control structure;

c. review the acceptability of the Company's accounting principles and direct the auditors' examinations to particular areas of question or concern, as required;

d. request the auditors to undertake special examinations (e.g., review compliance with conflict of interest policies) when it deems necessary;

e. together with management, review control weaknesses identified by the external and internal auditors;

f. review the appointments of the chief financial officer and key financial executives;

g. ensure CEO and CFO certifications pursuant to Sarbanes-Oxley Act sections 302 and 906 and pursuant to Canadian securities laws are prepared and filed and will make inquiry and initiate discussion as necessary with management regarding the practices and procedures adopted to permit management's assurance on the underlying controls; and

h. during the annual audit process, consider if any significant matters regarding the Company's internal controls and procedures over financial reporting, including any significant deficiencies or material weaknesses in their design or operation, need to be discussed with the external auditor, and review whether internal control recommendations made by the auditor have been implemented by management.

Internal Audit

The Committee shall be responsible for reviewing:

a. activities, organization structure and qualifications of the internal audit function;

b. the resources, budget, reporting relationships and planned activities of the internal audit function;

c. internal audit findings and determine that they are being properly followed up;

d. the internal audit procedures and recommending changes, if any; and

e. the adequacy of the line of communication between internal audit and the Committee, ensuring that it is maintained.

Ethical and Legal Compliance and Risk Management

The responsibilities and duties of the Committee as they relate to compliance and risk management are to:

a. satisfy itself as to the integrity of the CEO and other senior management and that the CEO and other senior management strive to create a culture of integrity throughout the Company;

b. review the adequacy, appropriateness and effectiveness of the Company's policies and business practices which impact on the integrity, financial and otherwise, of the Company, including those relating to hedging, insurance, accounting, information services and systems, financial controls and management reporting;

c. receive a report from management on tax issues and planning, including compliance with the Company's source deduction obligations and other remittances under applicable tax or other legislation;

d. receive a report on the annual policy attestation process for the Company's Global Code of Ethical Conduct (the "Code") and Global Anti-Corruption Policy;

e. review annually the adequacy and quality of the Company's financial and accounting staffing, including the need for and scope of internal audit reviews (if any);

f. receiving reports from management and other Board committees, including without limitation the Health Safety, Environment and Community Committee, on the identification, assessment and management of risks;

g. in conjunction with any other committee designated by the Board from time to time, reviewing major financial, audit and accounting related risks and the policies, guidelines and mechanisms that management has put in place to govern the process of monitoring, controlling and reporting such risks;

h. establish procedures for:

   i. the receipt, retention and treatment of complaints received by the Company regarding accounting, internal controls, or auditing matters; and

   ii. the confidential, anonymous submission by employees of the Company of concerns regarding questionable accounting or auditing matters.

i. review any complaints and concerns received regarding accounting, internal controls, or auditing matters or with respect to the Code, and the investigation and resolution thereof, and provide all relevant information relating to such complaints and concerns to the Nominating and Governance Committee, taking into account complainant confidentiality concerns and the roles and responsibilities of each Committee;

j. review and monitor the Company's compliance with applicable legal and regulatory requirements related to financial reporting and disclosure;

k. review all related-party transactions; and

l. carry the responsibility for reviewing reports from management, internal and external auditors with respect to the Company's compliance with the laws and regulations having a material impact on financial reporting and disclosure, including: tax and financial reporting laws and regulations; legal withholding requirements; environmental protection laws and regulations; and any other laws and regulations which expose directors to liability.

AUTHORITY

a. The Committee shall have the authority to:

   i. engage independent counsel and other advisors as it determines necessary to carry out its duties;

   ii. set and pay the compensation for any advisors employed by the Committee; and

   iii. communicate directly with the internal and external auditors.

b. The Committee shall have the power, authority and discretion delegated to it by the Board which shall not include the power to change the membership of or fill vacancies in the Committee.

c. A resolution approved in writing by the members of the Committee shall be valid and effective as if it had been passed at a duly called meeting. Such resolution shall be filed with the minutes of the proceedings of the Committee and shall be effective on the date stated thereon or on the latest date stated in any counterpart.

d. The Board shall have the power at any time to revoke or override the authority given to or acts done by the Committee except as to acts done before such revocation or act of overriding and to terminate the appointment or change the membership of the Committee or fill vacancies in it as it shall see fit.

e. The Committee shall have unrestricted and unfettered access to all Company personnel and documents and shall be provided with the resources necessary to carry out its responsibilities.

f. At the invitation of the Chair, one or more officers or employees of the Company may, and if required by the Committee, shall attend a meeting of the Committee.

g. The Committee, upon approval by a majority of the members of the Committee, may delegate certain of its duties and responsibilities to subcommittees of the Committee, which must report back to the full Committee.

DEFINITIONS

Capitalized terms used in this Charter and not otherwise defined have the meaning attributed to them below:

"**Financially Literate**" means the ability to read and understand a set of financial statements that present a breadth and level of complexity of accounting issues that are generally comparable to the breadth and complexity of the issues that can reasonably be expected to be raised in the Company's financial statements.

"**Committee Financial Expert**" means a person who has the following attributes:

a. an understanding of generally accepted accounting principles and financial statements;

b. the ability to assess the general application of such principles in connection with the accounting for estimates, accruals and reserves;

c. experience preparing, auditing, analyzing or evaluating financial statements that present a breadth and level of complexity of accounting issues that are generally comparable to the breadth and level of complexity of issues that can reasonably be expected to be raised in the Company's financial statements, or experience actively supervising one or more persons engaged in such activities;

d. an understanding of internal controls and procedures for financial reporting; and

e. an understanding of audit committee functions; acquired through any one or more of the following:

    i. education and experience as a principal financial officer, principal accounting officer, controller, public accountant or auditor or experience in one or more positions that involve the performance of similar functions;

    ii. experience actively supervising a principal financial officer, principal accounting officer, controller, public accountant, auditor or person performing similar functions; or

    iii. experience overseeing or assessing the performance of companies or public accountants with respect to the preparation, auditing or evaluation of financial statements; or other relevant experience.